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# Anaconda Documentation

Anaconda Inc.

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Whether you want to build data science/machine learning models, deploy your work to production, or securely manage a team of engineers, Anaconda provides the tools necessary to succeed. This documentation is designed to aid in building your understanding of Anaconda software and assist with any operations you may need to perform to manage your organization's users and resources.



## POPULAR PAGES

What's New? Check out the latest updates for our cloud offerings

Getting Started Familiarize yourself with the Operating System for AI

Installing Anaconda The Anaconda Distribution for Windows, Mac, and more

Installing Navigator Your handy desktop portal for Data Science



## CAPABILITIES

The following table lists the capabilities available for each tier of Anaconda for **individuals** and **organizations**. Depending on your set of problems, one bundle of capabilities may be better suited to your needs.

Capabilities	Free	Starter	Pro	Business	Enterprise
<i>Distribution &amp; Packages</i>	Yes	Yes	Yes	Yes	Yes
<i>Navigator</i>	Yes	Yes	Yes	Yes	Yes
<i>Anaconda Community</i>	Yes	Yes	Yes	Yes	Yes
<i>Cloud Notebooks</i>	5GB	10GB	20GB	20GB	20GB
<i>Anaconda Learning</i>	Limited	Yes	Yes	Yes	Yes
<i>Curated Repository</i>	—	—	Yes	Yes	Yes
<i>Signature Verification</i>	—	—	Yes	Yes	Yes
<i>CVE Visibility</i>	—	—	—	Yes	Yes
<i>Policy Filters</i>	—	—	—	Yes	Yes
<i>Virtual Channels</i>	—	—	—	Yes	Yes
<i>Collaboration</i>	—	—	—	—	Yes
<i>Deployment</i>	—	—	—	—	Yes

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### 2.1 Distribution & Packages

*Anaconda® Distribution* is a Python/R data science distribution containing conda. Conda is an environment and package manager that helps users manage the other 7,500+ open-source packages made available to them through the distribution.

### 2.2 Navigator

*Anaconda Navigator* is a desktop graphical user interface (GUI) included in Anaconda® Distribution that allows you to launch applications and manage conda packages, environments, and channels without using command line interface (CLI) commands. Navigator can search for packages on Anaconda.org or in a local Anaconda Repository. It is available for Windows, macOS, and Linux.

## 2.3 Anaconda Community

Engage with others in the [Anaconda Community Forum](#) and learn the basics and beyond with instructor-guided walkthroughs and lessons from [Anaconda Learning](#).

## 2.4 Cloud Notebooks

*Anaconda Notebooks* allows anyone, anywhere to begin their data science journey. Spin up awesome data science projects directly from your browser with all the packages and computing power you need.

## 2.5 Anaconda Learning

Master the foundations of data science through a full library of structured, on-demand courses. Code along with your course instructors, develop projects, and save your progress directly inside [Anaconda Learning](#).

## 2.6 Curated Repository

Gain access to a curated, premium repository designed for business and enterprises. Includes tokenized access and guaranteed uptime SLAs.

## 2.7 Signature Verification

Signature verification certifies the integrity and authenticity of packages downloaded from the Anaconda Repository.

## 2.8 CVE Visibility

View CVE (Common Vulnerabilities and Exposures) data associated with your channels' packages. Anaconda regularly pulls its CVE databases from the National Vulnerability Database (NVD) and the US National Institute of Standards and Technology (NIST) to minimize the risk of vulnerable software in our applications and web pages. Anaconda has an extensive and well-established process for curating CVEs, assessing whether or not packages that Anaconda built are affected by any CVEs, determining which versions in our repository are affected, and mitigating the vulnerability.

- *[CVE documentation for Business \(Cloud\)](#)*
- [CVE documentation for Business \(On-prem\) and Enterprise](#)



## 2.9 Policy Filters

Apply policy filters to a channel to restrict the available packages that channel can source. You can filter packages by license, common vulnerability and exposure (CVE) score, CVE status, package age, and by using the [conda spec](#).

- [Policy filter documentation for Business \(Cloud\)](#)
- [Mirroring filter documentation for Business \(On-prem\) and Enterprise](#)

## 2.10 Virtual Channels

Customize virtual copies of Anaconda-curated and -maintained repositories for your organization with policy filters, allowing for multiple variances of a repository's package set.

- [Channel documentation for Business \(Cloud\)](#)
- [Channel documentation for Business \(On-prem\)](#)
- [Channel documentation for Enterprise](#)

## 2.11 Collaboration

[Share your projects](#) with authorized users for increased collaboration on enterprise-level efforts. Connect to an external version control repository and fine-tune user access on the individual project and repository level.

## 2.12 Deployment

Publish your interactive data visualizations, live notebooks, and machine learning models in a [self-contained deployment](#) with all the necessary dependencies. View activity and system logs to gain insights into your user services and troubleshoot issues.

### 2.12.1 Free tier

The topics and products documented in this Free tier section are available to all users, regardless of subscription tier.

#### **Anaconda Distribution**

Anaconda® Distribution is a Python/R data science distribution that contains conda, a package and environment manager, which helps users manage a collection of [over 7,500+ open-source packages](#) available to them.

[View the Anaconda Distribution documentation](#)

#### **Anaconda Navigator**

Anaconda Navigator is a desktop graphical user interface (GUI) included in Anaconda® Distribution that allows you to launch applications and manage conda packages, environments, and channels without using command line interface (CLI) commands. Navigator can search for packages on Anaconda.org or in a local Anaconda Repository. It is available for Windows, macOS, and Linux.

[View the Anaconda Navigator documentation](#)

#### **Anaconda Notebooks**

Anaconda Notebooks offers a cloud-hosted notebook service with a fully loaded and ready-to-code interactive development environment. Runs on any browser, any system. 100% installation and configuration free.

*[View the Anaconda Notebooks documentation](#)*

### Anaconda.org

[Anaconda.org](#) is a package management service by Anaconda. Anaconda.org makes it easy to find, access, store and share public notebooks, environments, and conda and standard Python packages. Anaconda.org hosts hundreds of useful Python packages, notebooks, projects, and environments for a wide variety of applications.

*[View the Anaconda.org documentation](#)*

## Anaconda Distribution

*The Most Trusted Distribution for Data Science*

### Installation

- *[Installing Anaconda Distribution](#)*
- *[Verifying your installation](#)*
- *[Installing previous versions of Anaconda Distribution](#)*
- *[Using Anaconda on older operating systems](#)*
- *[Updating from older versions](#)*
- *[Uninstalling Anaconda Distribution](#)*

Follow along with step-by-step videos to [download](#) and install Anaconda, learn the basics, and gain hands-on experience from the Anaconda Learning team here:

### Anaconda Learning

#### Getting started

- *[What is Anaconda Distribution?](#)*
- *[Should I use Anaconda Distribution or Miniconda?](#)*
- *[Getting started with Anaconda Distribution](#)*

### Packages

- *[Configuring a shared package cache](#)*
- *[Installing conda packages](#)*
- *[Using R language with Anaconda](#)*
- *[Working with GPU packages](#)*
- *[Disabling anaconda-anon-usage package](#)*

## Applications/Integrations

- *Cloudera CDH*
- *Docker*
- *Launch an Anaconda AMI on AWS*
- *TensorFlow*

## Jupyter Notebooks

- *Free course on Jupyter Notebook basics*
- *Running Jupyter Notebook on a remote server*
- *Using Jupyter Notebook extensions*

## System/Environment configurations

- *Switching between Python 2 and Python 3 environments*
- *Using Anaconda behind a company proxy*
- *Moving Anaconda from one directory to another*
- *Finding your Anaconda Python interpreter path*

## IDE tutorials

- *Eclipse and PyDev*
- *IDLE*
- *IntelliJ*
- *Microsoft Visual Studio Code (VS Code)*
- *Ninja IDE*
- *PyCharm*
- *Python for Visual Studio Code*
- *Python Tools for Visual Studio (PTVS)*
- *Spyder*
- *Sublime Text*
- *Wing IDE*

### Reference

- [Conda cheatsheet](#)
- [How to contribute to Anaconda](#)
- [Default repositories](#)
- [Excel plugins for Anaconda](#)
- [FAQ](#)
- [Installer file hashes](#)
- [Packages](#)
- [Release notes](#)
- [Security practices](#)
- [Troubleshooting](#)

### Installation

Review the system requirements listed below before installing Anaconda Distribution. If you don't want the hundreds of packages included with Anaconda, [install Miniconda](#), a mini version of Anaconda that includes just conda, its dependencies, and Python.

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**Tip:** Looking for Python 3.5 or 3.6? See our [FAQ](#).

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### System requirements

*As of 2023-04-04*

- License: Free use and redistribution under the terms of the [EULA for Anaconda Distribution](#).
- Operating system: Windows 10 or newer, 64-bit macOS 10.13+, or Linux, including Ubuntu, RedHat, CentOS 7+, and others.
- If your operating system is older than what is currently supported, you can find older versions of the Anaconda installers in our [archive](#) that might work for you. See [Using Anaconda on older operating systems](#) for version recommendations.
- System architecture: Windows- 64-bit x86; MacOS- 64-bit x86 & M1; Linux- 64-bit x86, 64-bit aarch64 (AWS Graviton2), 64-bit Power8/Power9, s390x (Linux on IBM Z & LinuxONE).
- Minimum 5 GB disk space to download and install.

On Windows, macOS, and Linux, it is best to install Anaconda for the local user, which does not require administrator permissions and is the most robust type of installation. However, with administrator permissions, you can install Anaconda system wide.

## Installing on Windows

### Using Anaconda in a commercial setting?

You may need to purchase a license to stay compliant with our [Terms of Service](#). This can be accomplished through several of Anaconda's tiers: [Pro](#), [Business \(On-prem\)](#), [Business \(Cloud\)](#), or [Enterprise](#). If you have already subscribed to the Pro or Business tiers, see the quickstart guides for [Pro](#) or [Business](#) to get started!

Visit the [Organizations pricing page](#) to compare tier capabilities and pricing.

More of a visual learner? Watch the **Installing Anaconda (Windows)** video in the course linked below!

### Anaconda install for Windows

#### Installation

1. Download the [Anaconda installer](#).
2. Go to your Downloads folder and double-click the installer to launch. To prevent permission errors, do not launch the installer from the [Favorites folder](#).

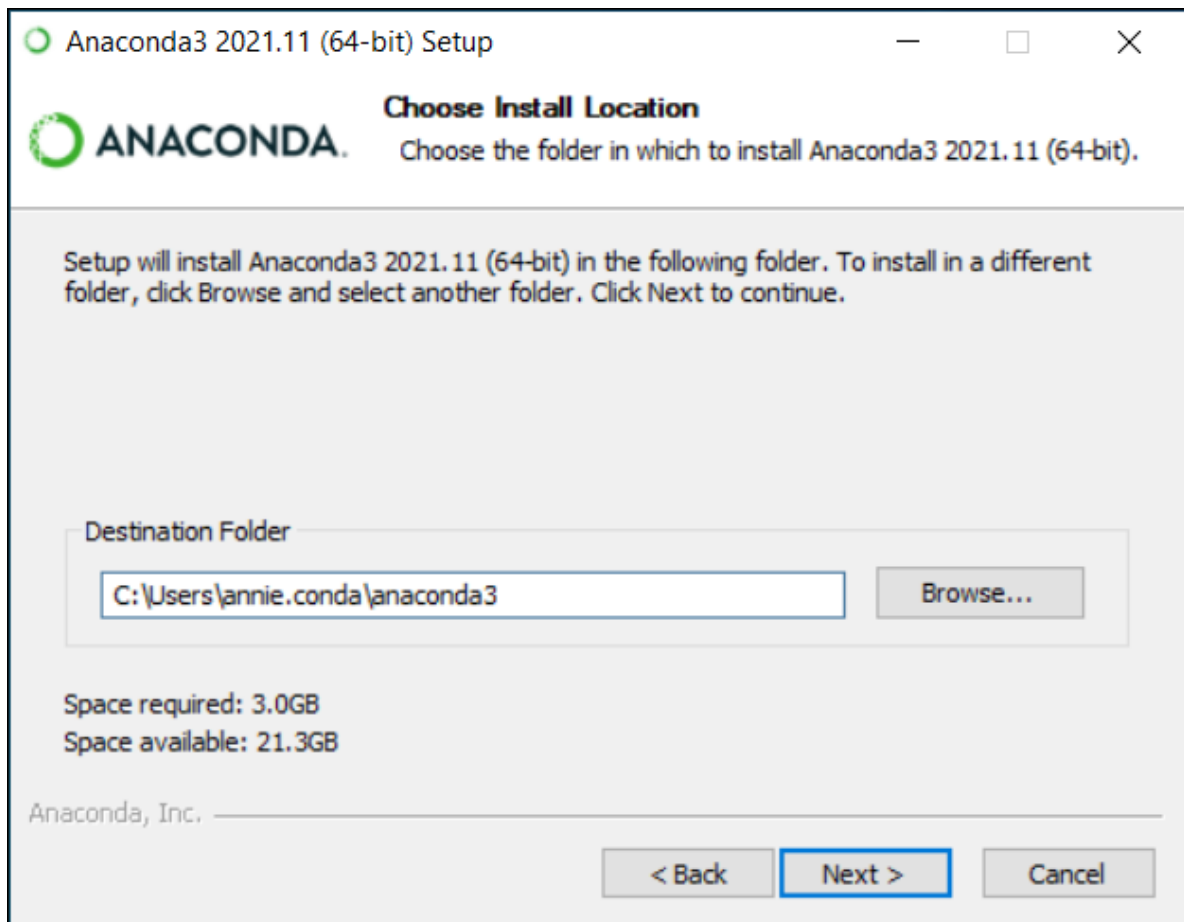
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**Note:** If you encounter issues during installation, temporarily disable your anti-virus software during install, then re-enable it after the installation concludes. If you installed for all users, uninstall Anaconda and re-install it for your user only.

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3. Click **Next**.
4. Read the licensing terms and click **I Agree**.
5. It is recommended that you install for **Just Me**, which will install Anaconda Distribution to just the current user account. Only select an install for **All Users** if you need to install for all users' accounts on the computer (which requires Windows Administrator privileges).
6. Click **Next**.
7. Select a destination folder to install Anaconda and click **Next**. Install Anaconda to a directory path that does not contain spaces or unicode characters. For more information on destination folders, see the [FAQ](#).

**Caution:** Do not install as Administrator unless admin privileges are required.

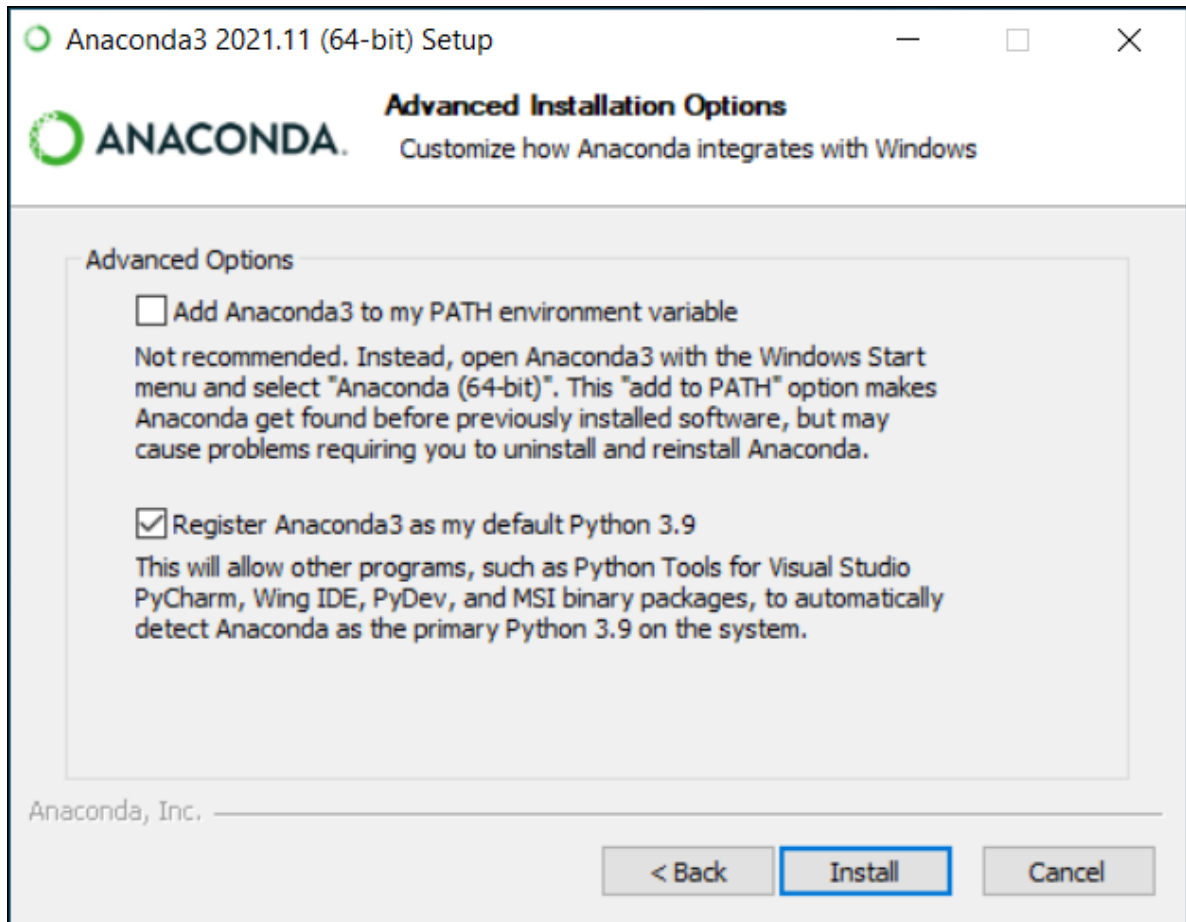


8. Choose whether to add Anaconda to your PATH environment variable or register Anaconda as your default Python. We **don't recommend** adding Anaconda to your PATH environment variable, since this can interfere with other software. Unless you plan on installing and running multiple versions of Anaconda or multiple versions of Python, accept the default and leave this box checked. Instead, use Anaconda software by opening Anaconda Navigator or the Anaconda Prompt from the Start Menu.

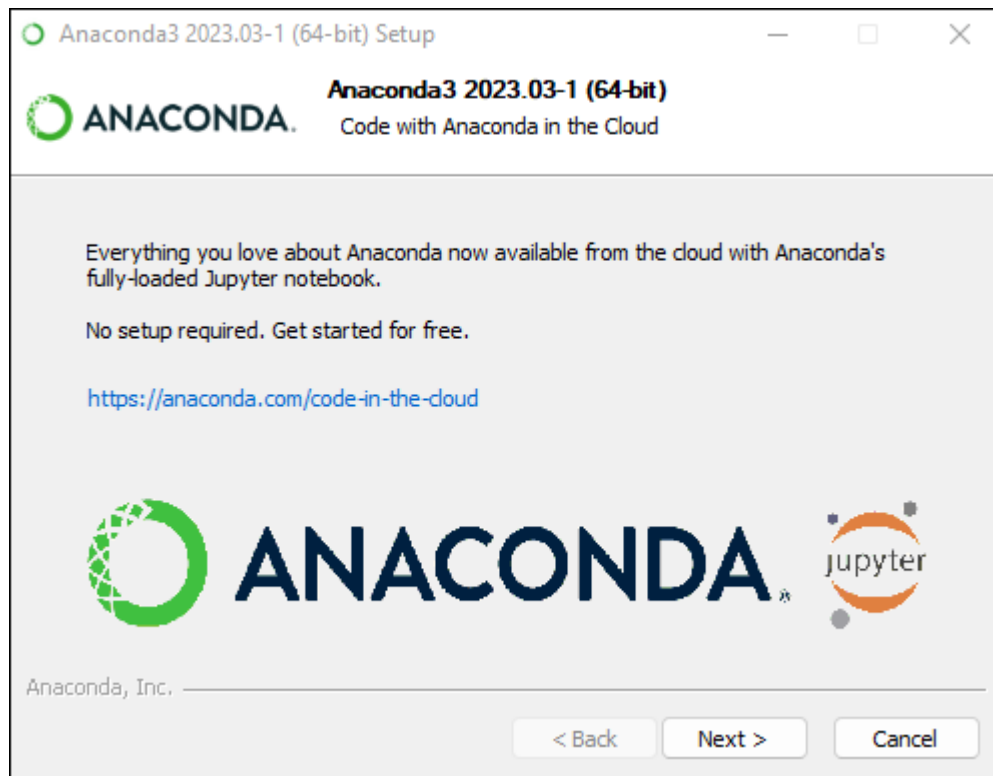
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**Note:** As of Anaconda Distribution 2022.05, the option to add Anaconda to the PATH environment variable during an **All Users** installation has been disabled. This was done to address [a security exploit](#). You can still add Anaconda to the PATH environment variable during a **Just Me** installation.

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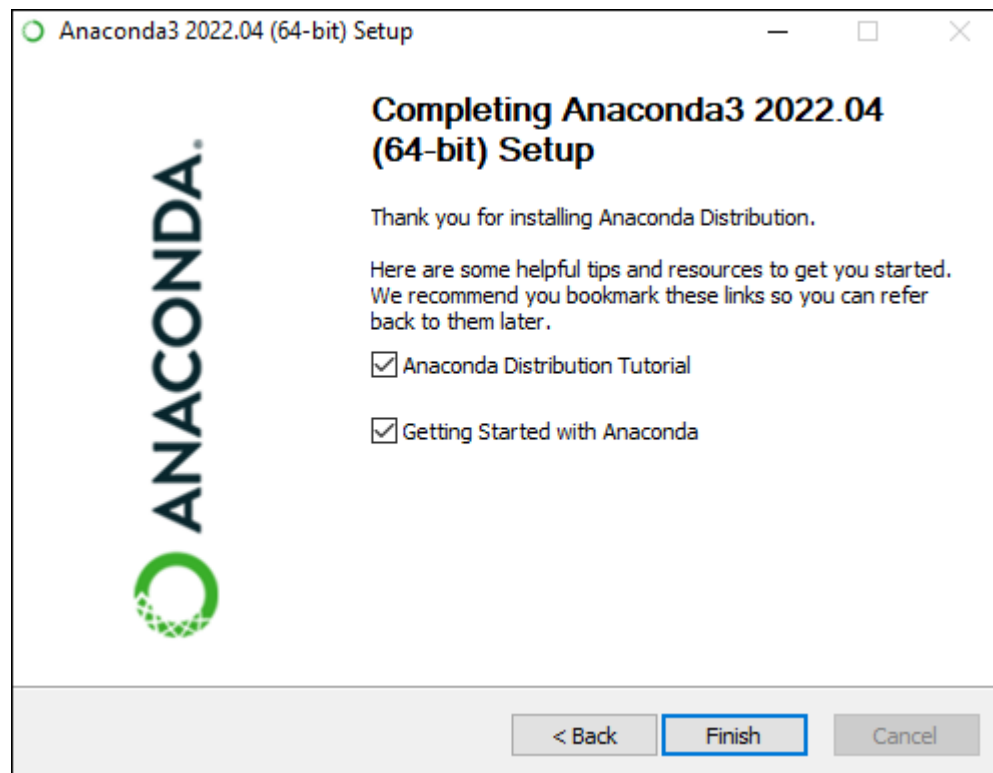


9. Click **Install**. If you want to watch the packages Anaconda is installing, click Show Details.
10. Click **Next**.
11. Optional: To learn more about Anaconda's cloud notebook service, go to <https://www.anaconda.com/code-in-the-cloud>.



Or click **Continue** to proceed.

12. After a successful installation you will see the “Thanks for installing Anaconda” dialog box:



13. If you wish to read more about Anaconda.org and how to get started with Anaconda, check the boxes “Anaconda



Distribution Tutorial” and “Learn more about Anaconda”. Click the **Finish** button.

14. *Verify your installation.*

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**Tip:** If you are behind a company proxy, you may need to do some additional setup. See how to set up your *proxy*.

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## Problems?

See *troubleshooting*.

## What's next?

Get started programming with Anaconda in the *Getting started with Anaconda* guide.

Visit [Anaconda Cloud](#) to start programming for FREE in a notebook. Learn how from [Anaconda Learning](#), too!

## Installing on macOS

### Using Anaconda in a commercial setting?

You may need to purchase a license to stay compliant with our [Terms of Service](#). This can be accomplished through several of Anaconda's tiers: *Pro*, *Business (On-prem)*, *Business (Cloud)*, or *Enterprise*. If you have already subscribed to the Pro or Business tiers, see the quickstart guides for *Pro* or *Business* to get started!

Visit the [Organizations pricing page](#) to compare tier capabilities and pricing.

Install Anaconda Distribution using either the install wizard or the command line instructions below. If you are unsure, choose the graphical install.

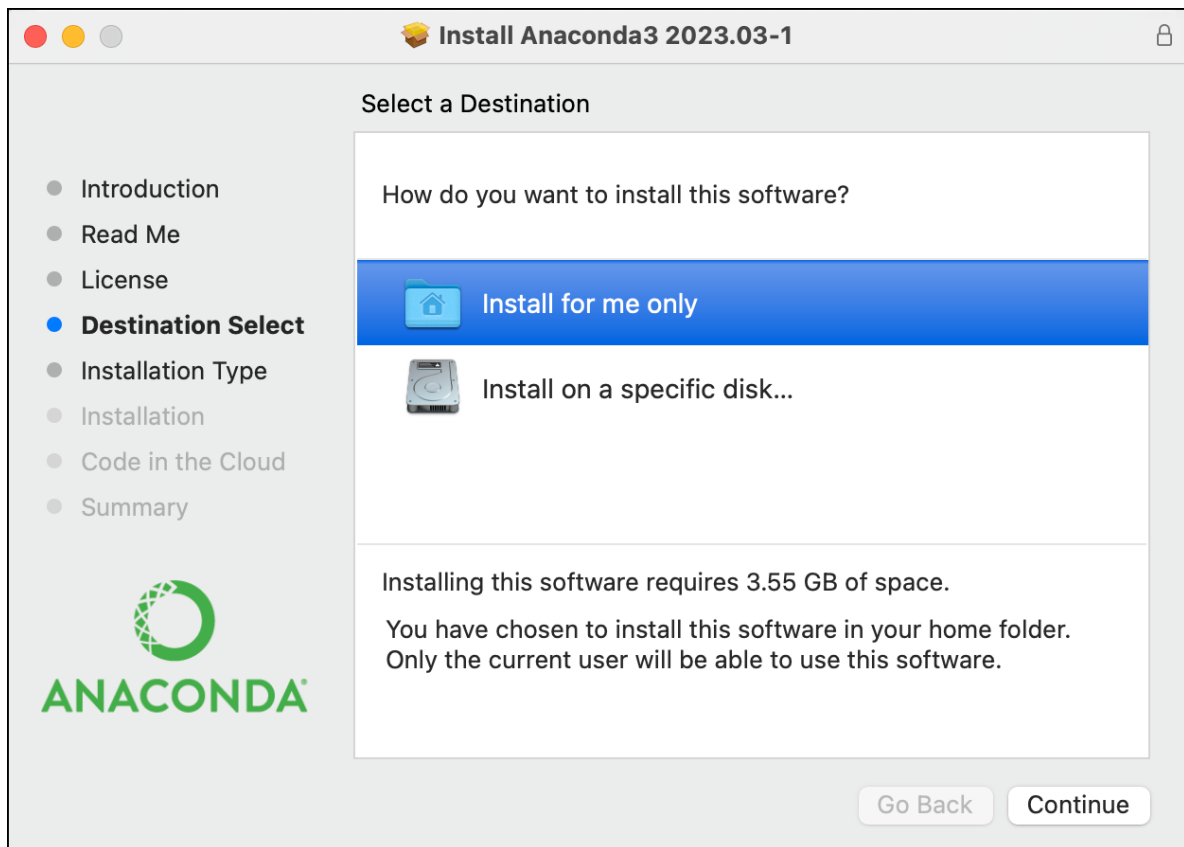
### Wizard install

More of a visual learner? Watch the **Installing Anaconda (Mac)** video in the course linked below!

#### Anaconda install for macOS

1. Download the graphical [macOS installer](#) for your version of Python.
2. Double-click the downloaded file and click **Continue** to start the installation.
3. Answer the prompts on the Introduction, Read Me, and License screens.
4. Anaconda recommends that you choose **Install for me only**. If you do not want to install Anaconda Distribution into your home folder, select **Install on a specific disk...**

**Caution:** The installer may skip the Destination Select page during installation, which will cause the installation to fail. If the installer skips this page, click **Change Install Location...** on the Installation Type page to get to this step.

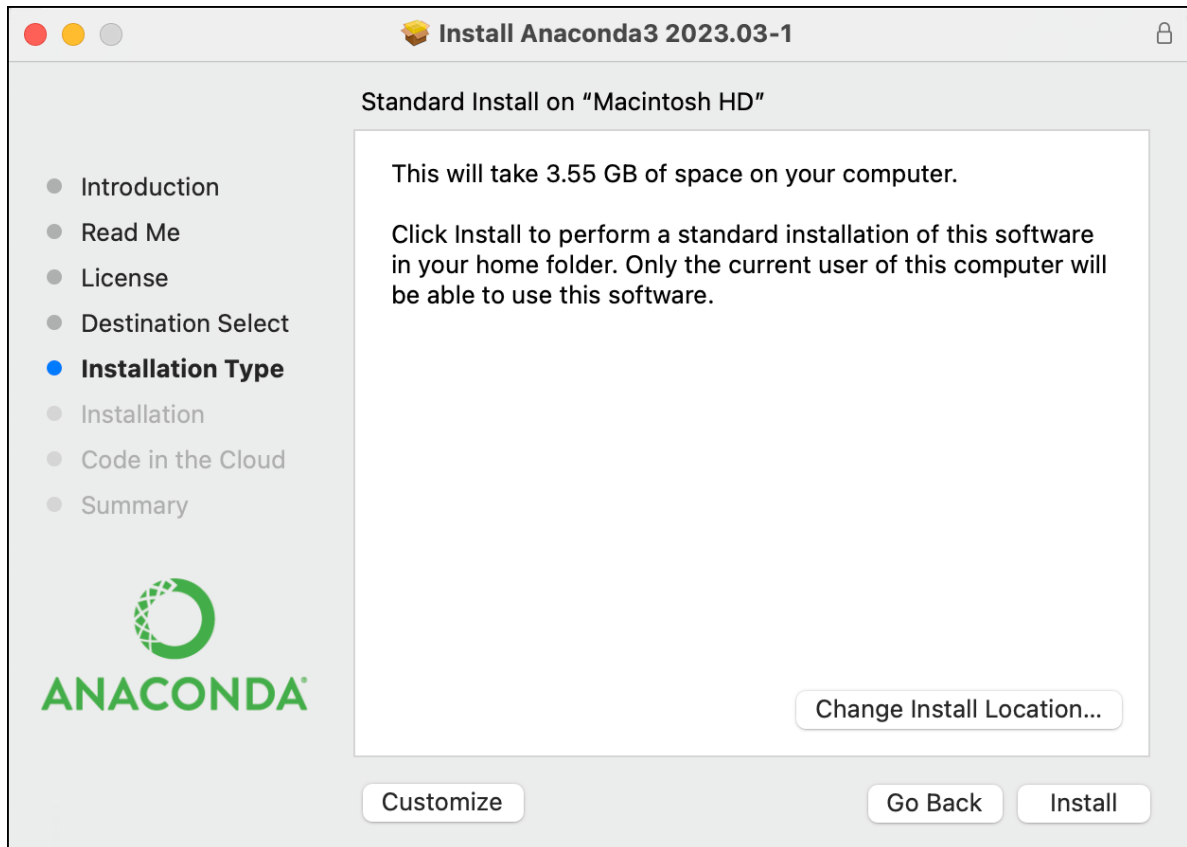


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**Note:** If you get the error message “You cannot install Anaconda in this location,” reselect **Install for me only**.

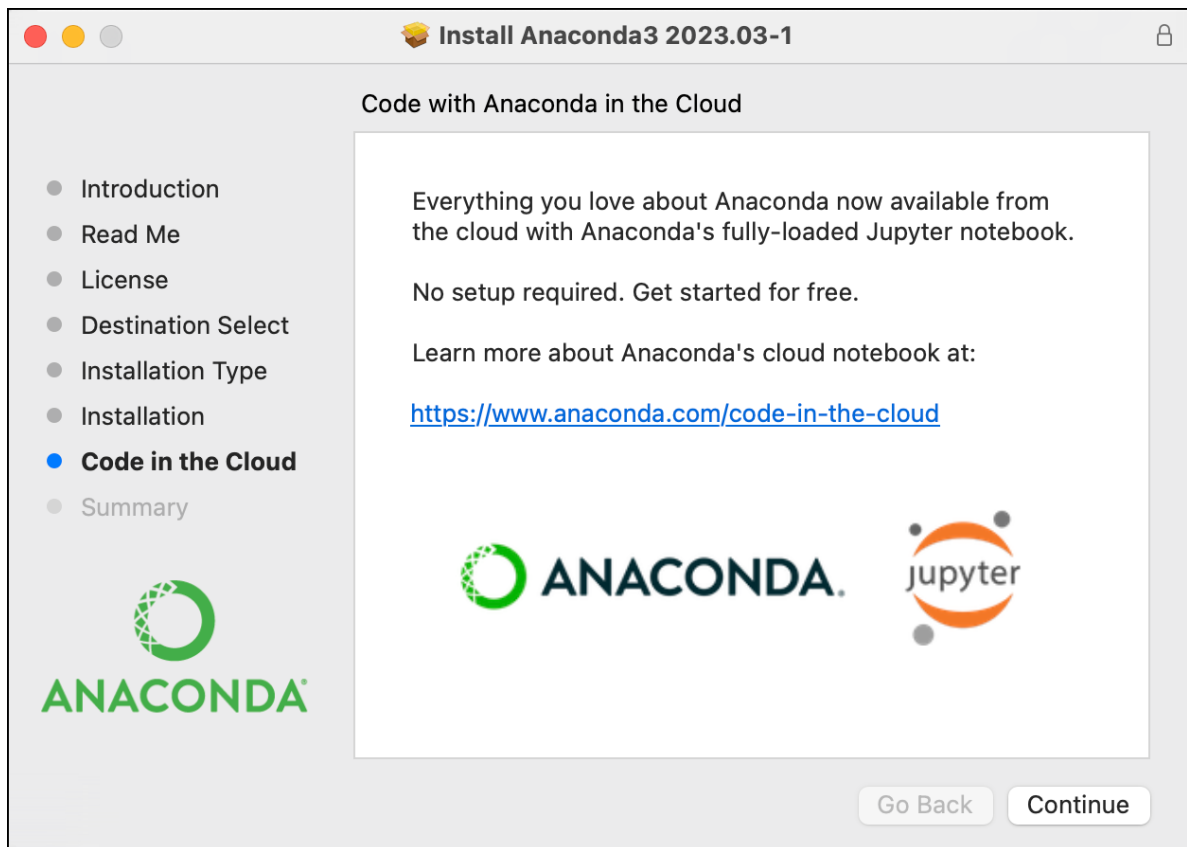
---

5. Click **Install**.



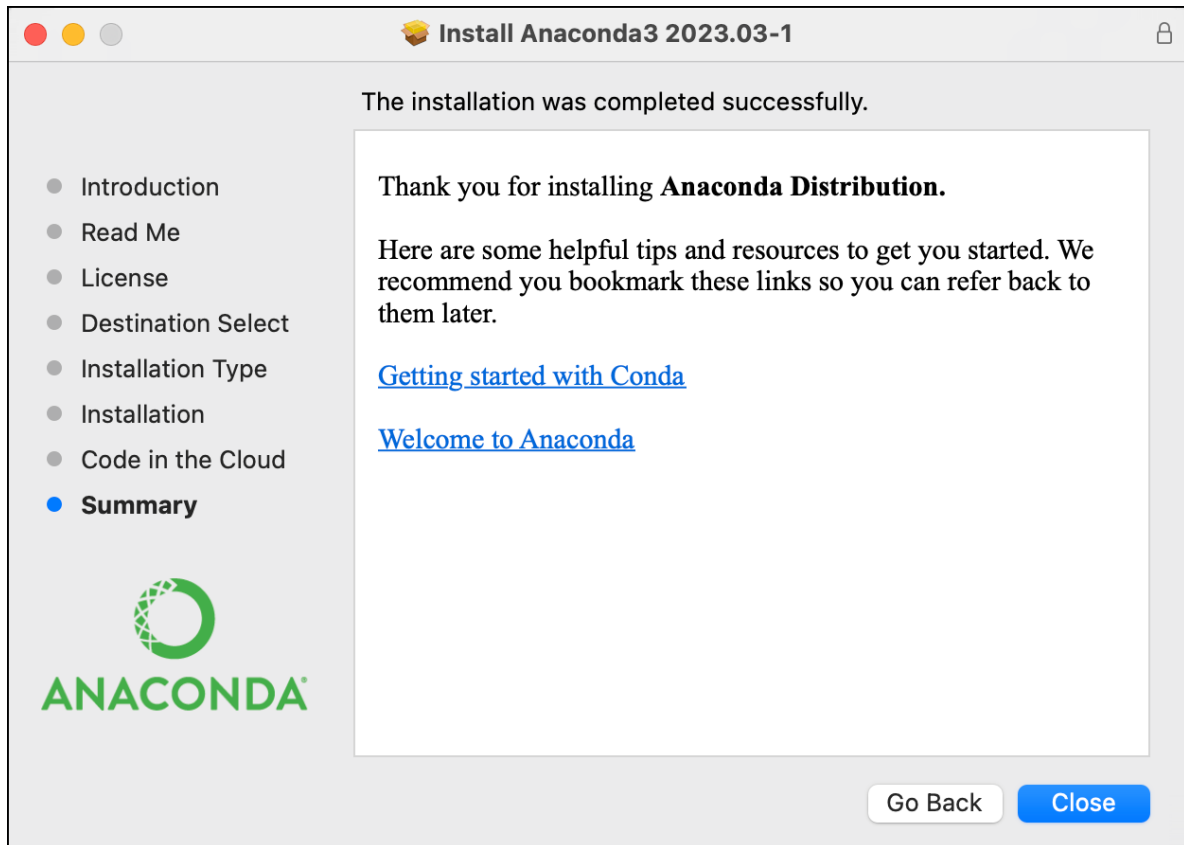
**Note:** If you get the error message “This package is incompatible with this version of macOS,” please see [here](#) for troubleshooting help.

6. Once the install is complete, click **Continue**.
7. Optional: To learn more about Anaconda’s cloud notebook service, go to <https://www.anaconda.com/code-in-the-cloud>.



Or click **Continue** to proceed.

8. A successful installation displays the following screen:



9. *Verify your installation.*

## Command line install

Use this method if you prefer to use a terminal window.

1. In your browser, download the command-line version of the [macOS installer](#) for your system.
2. (Recommended) *Verify the installer's data integrity with SHA-256*. For more information on hash verification, see [cryptographic hash validation](#).

- Open a terminal and run the following:

```
shasum -a 256 /PATH/FILENAME
# Replace /PATH/FILENAME with your installation's path and filename.
```

3. Install for Python 3.7 or 2.7:

- For Python 3.7, enter the following:

```
# Include the bash command regardless of whether or not you are using the Bash_
↪ shell
bash ~/Downloads/Anaconda3-2020.05-MacOSX-x86_64.sh
# Replace ~/Downloads with your actual path
# Replace the .sh file name with the name of the file you downloaded
```

- For Python 2.7, open the Terminal.app or iTerm2 terminal application and then enter the following:

```
# Include the bash command regardless of whether or not you are using the Bash_
↪ shell
bash ~/Downloads/Anaconda2-2019.10-MacOSX-x86_64.sh
# Replace ~/Downloads with your actual path
# Replace the .sh file name with the name of the file you downloaded
```

4. Press Enter to review the license agreement. Then press and hold Enter to scroll.
5. Enter “yes” to agree to the license agreement.
6. Use Enter/return to accept the default install location, use CTRL+C to cancel the installation, or enter another file path to specify an alternate installation directory.

---

**Note:** Anaconda recommends you accept the default install location. Do not choose the path as `/usr` for the Anaconda/Miniconda installation.

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7. If you accept the default install location, the installer displays `PREFIX=/home/<USER>/anaconda<2/3>` and continues the installation. It may take a few minutes to complete.
8. Installation may take a few minutes to complete.
9. The installer prompts you to choose whether to initialize Anaconda Distribution by running `conda init`. Anaconda recommends entering “yes”.

If you enter “no”, then conda will not modify your shell scripts at all. In order to initialize conda after the installation process is done, run the following commands:

```
# Replace <PATH_TO_CONDA> with the path to your conda install
source <PATH_TO_CONDA>/bin/activate
conda init
```

---

**Note:** If you are on macOS 10.15+, the new default shell is zsh. Once the installation process has completed, initialize conda in a zsh shell by running `source <PATH_TO_CONDA>/bin/activate` followed by `conda init` and `zsh`.

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10. The installer finishes and displays, “Thank you for installing Anaconda<2/3>!”
11. Close and re-open your terminal window for the installation to take effect, or enter the command `source ~/.bashrc` to refresh the terminal.
12. You can also control whether or not your shell has the base environment activated each time it opens.

```
# The base environment is activated by default
conda config --set auto_activate_base True

# The base environment is not activated by default
conda config --set auto_activate_base False

# The above commands only work if conda init has been run first
# conda init is available in conda versions 4.6.12 and later
```

13. Verify your installation.

---

**Note:** If you install multiple versions of Anaconda, the system defaults to the most current version, as long as you haven't altered the default install path.

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## Problems?

See [troubleshooting](#).

## What's next?

Get started programming with Anaconda in the [Getting started with Anaconda](#) guide.

## Installing on Linux

### Using Anaconda in a commercial setting?

You may need to purchase a license to stay compliant with our [Terms of Service](#). This can be accomplished through several of Anaconda's tiers: [Pro](#), [Business \(On-prem\)](#), [Business \(Cloud\)](#), or [Enterprise](#). If you have already subscribed to the Pro or Business tiers, see the quickstart guides for [Pro](#) or [Business](#) to get started!

Visit the [Organizations pricing page](#) to compare tier capabilities and pricing.

## Prerequisites

To use GUI packages with Linux, you will need to install the following extended dependencies for Qt:

Debian	<code>apt-get install libgl1-mesa-glx libegl1-mesa libxrandr2 libxrandr2 libxss1 libxcursor1 libxcomposite1 libasound2 libxi6 libxtst6</code>
Red-Hat	<code>yum install libXcomposite libXcursor libXi libXtst libXrandr alsa-lib mesa-libEGL libXdamage mesa-libGL libXScrnSaver</code>
Arch-Linux	<code>pacman -Sy libxau libxi libxss libxtst libxcursor libxcomposite libxdamage libxfixes libxrandr libxrender mesa-libgl alsa-lib libglvnd</code>
OpenSUSE/SLES	<code>zypper install libXcomposite1 libXi6 libXext6 libXau6 libX11-6 libXrandr2 libXrender1 libXss1 libXtst6 libXdamage1 libXcursor1 libxcb1 libasound2 libX11-xcb1 Mesa-libGL1 Mesa-libEGL1</code>
Gen-too	<code>emerge x11-libs/libXau x11-libs/libxcb x11-libs/libX11 x11-libs/libXext x11-libs/libXfixes x11-libs/libXrender x11-libs/libXi x11-libs/libXcomposite x11-libs/libXrandr x11-libs/libXcursor x11-libs/libXdamage x11-libs/libXScrnSaver x11-libs/libXtst media-libs/alsa-lib media-libs/mesa</code>

### Installation

For x86 systems.

1. In your browser, download the [Anaconda installer for Linux](#).
2. Search for “terminal” in your applications and click to open.
3. (Recommended) *Verify the installer's data integrity with SHA-256*. For more information on hash verification, see [cryptographic hash validation](#).

- In the terminal, run the following:

```
shasum -a 256 /PATH/FILENAME
# Replace /PATH/FILENAME with your installation's path and filename.
```

4. Install for Python 3.7 or 2.7 in the terminal:

- For Python 3.7, enter the following:

```
# Include the bash command regardless of whether or not you are using the Bash_
↪shell
bash ~/Downloads/Anaconda3-2020.05-Linux-x86_64.sh
# Replace ~/Downloads with your actual path
# Replace the .sh file name with the name of the file you downloaded
```

- For Python 2.7, enter the following:

```
# Include the bash command regardless of whether or not you are using the Bash_
↪shell
bash ~/Downloads/Anaconda2-2019.10-MacOSX-x86_64.sh
# Replace ~/Downloads with your actual path
# Replace the .sh file name with the name of the file you downloaded
```

5. Press Enter to review the license agreement. Then press and hold Enter to scroll.
6. Enter “yes” to agree to the license agreement.
7. Use Enter to accept the default install location, use CTRL+C to cancel the installation, or enter another file path to specify an alternate installation directory. If you accept the default install location, the installer displays PREFIX=/home/<USER>/anaconda<2/3> and continues the installation. It may take a few minutes to complete.

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**Note:** Anaconda recommends you accept the default install location. Do not choose the path as /usr for the Anaconda/Miniconda installation.

---

8. Anaconda recommends you enter “yes” to initialize Anaconda Distribution by running `conda init`.

If you enter “no”, then conda will not modify your shell scripts at all. In order to initialize conda after the installation process is done, run the following commands:

```
# Replace <PATH_TO_CONDA> with the path to your conda install
source <PATH_TO_CONDA>/bin/activate
conda init
```

For more information, see the [FAQ](#).

9. The installer finishes and displays, “Thank you for installing Anaconda<2/3>!”



10. Close and re-open your terminal window for the installation to take effect, or enter the command `source ~/.bashrc` to refresh the terminal.
11. You can also control whether or not your shell has the base environment activated each time it opens.

```
# The base environment is activated by default
conda config --set auto_activate_base True

# The base environment is not activated by default
conda config --set auto_activate_base False

# The above commands only work if conda init has been run first
# conda init is available in conda versions 4.6.12 and later
```

12. *Verify your installation.*

---

**Note:** If you install multiple versions of Anaconda, the system defaults to the most current version, as long as you haven't altered the default install path.

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## Problems?

See [troubleshooting](#).

## What's next?

Get started programming quickly with Anaconda in the [Getting started with Anaconda](#) guide.

## Installing on AWS Graviton2 (arm64)

### Using Anaconda in a commercial setting?

You may need to purchase a license to stay compliant with our [Terms of Service](#). This can be accomplished through several of Anaconda's tiers: *Pro*, *Business (On-prem)*, *Business (Cloud)*, or *Enterprise*. If you have already subscribed to the Pro or Business tiers, see the quickstart guides for *Pro* or *Business* to get started!

Visit the [Organizations pricing](#) page to compare tier capabilities and pricing.

## Installation

1. In your browser, navigate to the [Anaconda Installers](#) section of the Anaconda Distribution page, and copy the link for the Linux-aarch64 installer.

You can also use `curl` in your terminal to download installers from the archive. For example:

```
curl -O https://repo.anaconda.com/archive/Anaconda3-2021.04-Linux-aarch64.sh
```

2. (Recommended) *Verify the installer's data integrity with SHA-256*. For more information on hash verification, see [cryptographic hash validation](#).
  - Open a terminal and run the following:

```
shasum -a 256 /PATH/FILENAME
# Replace /PATH/FILENAME with your installation's path and filename.
```

3. Install Anaconda Distribution:

```
# Include the bash command regardless of whether or not you are using a Bash shell.
bash ~/Downloads/Anaconda3-2021.04-Linux-aarch64.sh
# If you didn't download to your Downloads directory, replace ~/Downloads/ with the
↳ path to the file you downloaded.
```

4. Press Enter to review the license agreement. Then press and hold Enter to scroll.
5. Enter “yes” to agree to the license agreement.
6. Use Enter to accept the default install location, use CTRL+C to cancel the installation, or enter another file path to specify an alternate installation directory. If you accept the default install location, the installer displays PREFIX=/home/<USER>/anaconda<2/3> and continues the installation. It may take a few minutes to complete.

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**Note:** Anaconda recommends you accept the default install location. Do not choose the path as /usr for the Anaconda/Miniconda installation.

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7. Anaconda recommends you enter “yes” to initialize Anaconda Distribution by running `conda init`.

If you enter “no”, then conda will not modify your shell scripts at all. In order to initialize conda after the installation process is done, run the following commands:

```
# Replace <PATH_TO_CONDA> with the path to your conda install
source <PATH_TO_CONDA>/bin/activate
conda init
```

For more information, see the [FAQ](#).

8. The installer finishes and displays, “Thank you for installing Anaconda<2/3>!”
9. Close and re-open your terminal window for the installation to take effect, or enter the command `source ~/.bashrc` to refresh the terminal.
10. You can also control whether or not your shell has the base environment activated each time it opens.

```
# The base environment is activated by default
conda config --set auto_activate_base True

# The base environment is not activated by default
conda config --set auto_activate_base False

# The above commands only work if conda init has been run first
# conda init is available in conda versions 4.6.12 and later
```

11. *Verify your installation.*

---

**Note:** If you install multiple versions of Anaconda, the system defaults to the most current version as long as you haven’t altered the default install path.

---

## Problems?

See [troubleshooting](#).

## What's next?

Get started programming with Anaconda in the [Getting started with Anaconda](#) guide.

## Installing on Linux-s390x (IBM Z)

### Using Anaconda in a commercial setting?

You may need to purchase a license to stay compliant with our [Terms of Service](#). This can be accomplished through several of Anaconda's tiers: [Pro](#), [Business \(On-prem\)](#), [Business \(Cloud\)](#), or [Enterprise](#). If you have already subscribed to the Pro or Business tiers, see the quickstart guides for [Pro](#) or [Business](#) to get started!

Visit the [Organizations pricing page](#) to compare tier capabilities and pricing.

## Installation

1. In your browser, download the [Anaconda installer for Linux-s390x](#).

You can also use `curl` in your terminal to download installers from the archive. For example:

```
curl -O https://repo.anaconda.com/archive/Anaconda3-2022.05-Linux-s390x.sh
```

2. (Recommended) [Verify the installer's data integrity with SHA-256](#). For more information on hash verification, see [cryptographic hash validation](#).

- Open a terminal and run the following:

```
shasum -a 256 /PATH/FILENAME
# Replace /PATH/FILENAME with your installation's path and filename.
```

3. Install Anaconda Distribution:

```
# Include the bash command regardless of whether or not you are using a Bash shell.
bash ~/Downloads/Anaconda3-2021.04-Linux-s390x.sh
# If you didn't download to your Downloads directory, replace ~/Downloads/ with the
↳ path to the file you downloaded.
```

4. Press Enter to review the license agreement. Then press and hold Enter to scroll.
5. Enter “yes” to agree to the license agreement.
6. Use Enter to accept the default install location, use CTRL+C to cancel the installation, or enter another file path to specify an alternate installation directory. If you accept the default install location, the installer displays `PREFIX=/home/<USER>/anaconda<2/3>` and continues the installation. It may take a few minutes to complete.

---

**Note:** Anaconda recommends you accept the default install location. Do not choose the path as `/usr` for the Anaconda/Miniconda installation.

---

7. Anaconda recommends you enter “yes” to initialize Anaconda Distribution by running `conda init`.

If you enter “no”, then conda will not modify your shell scripts at all. In order to initialize conda after the installation process is done, run the following commands:

```
# Replace <PATH_TO_CONDA> with the path to your conda install
source <PATH_TO_CONDA>/bin/activate
conda init
```

For more information, see the [FAQ](#).

8. The installer finishes and displays, “Thank you for installing Anaconda<2/3>!”
9. Close and re-open your terminal window for the installation to take effect, or enter the command `source ~/.bashrc` to refresh the terminal.
10. You can also control whether or not your shell has the base environment activated each time it opens.

```
# The base environment is activated by default
conda config --set auto_activate_base True

# The base environment is not activated by default
conda config --set auto_activate_base False

# The above commands only work if conda init has been run first.
# conda init is available in conda versions 4.6.12 and later.
```

11. *Verify your installation.*

---

**Note:** If you install multiple versions of Anaconda, the system defaults to the most current version, as long as you haven’t altered the default install path.

---

## Problems?

See [troubleshooting](#).

## What’s next?

Get started programming with Anaconda in the [Getting started with Anaconda](#) guide.

## Installing on Linux POWER

### Using Anaconda in a commercial setting?

You may need to purchase a license to stay compliant with our [Terms of Service](#). This can be accomplished through several of Anaconda’s tiers: [Pro](#), [Business \(On-prem\)](#), [Business \(Cloud\)](#), or [Enterprise](#). If you have already subscribed to the Pro or Business tiers, see the quickstart guides for [Pro](#) or [Business](#) to get started!

Visit the [Organizations pricing page](#) to compare tier capabilities and pricing.

## Prerequisites

To use GUI packages with Linux, you will need to install the following extended dependencies for Qt:

Red-Hat	<code>yum install libXcomposite libXcursor libXi libXtst libXrandr alsa-lib mesa-libEGL libXdamage mesa-libGL libXScrnSaver</code>
Open-Suse/SLES	<code>zypper install libXcomposite1 libXi6 libXext6 libXau6 libX11-6 libXrandr2 libXrender1 libXss1 libXtst6 libXdamage1 libXcursor1 libxcb1 libasound2 libX11-xcb1 Mesa-libGL1 Mesa-libEGL1</code>

## Installation

1. In your browser, download the [Anaconda installer for POWER8 and POWER9](#).

You can also use `curl` in your terminal to download installers from the archive. For example:

```
curl -O https://repo.anaconda.com/archive/Anaconda3-2022.05-Linux-ppc64le.sh
```

2. (Recommended) *Verify the installer's data integrity with SHA-256*. For more information on hash verification, see [cryptographic hash validation](#).

- Open a terminal and run the following:

```
shasum -a 256 /PATH/FILENAME
# Replace /PATH/FILENAME with your installation's path and filename.
```

3. Install for Python 3.7 or 2.7:

- For Python 3.7 enter the following:

```
# Include the bash command regardless of whether or not you are using the Bash
↪shell
bash ~/Downloads/Anaconda3-2022.05-Linux-ppc64le.sh
# Replace ~/Downloads with your actual path
# Replace the .sh file name with the name of the file you downloaded
```

- For Python 2.7, open the Terminal.app or iTerm2 terminal application and then enter the following:

```
# Include the bash command regardless of whether or not you are using the Bash
↪shell
bash ~/Downloads/Anaconda2-2019.10-Linux-ppc64le.sh
# Replace ~/Downloads with your actual path
# Replace the .sh file name with the name of the file you downloaded
```

4. Press Enter to review the license agreement. Then press and hold Enter to scroll.
5. Enter “yes” to agree to the license agreement.
6. Use Enter to accept the default install location, use CTRL+C to cancel the installation, or enter another file path to specify an alternate installation directory. If you accept the default install location, the installer displays `PREFIX=/home/<USER>/anaconda<2/3>` and continues the installation. It may take a few minutes to complete.

---

**Note:** Anaconda recommends you accept the default install location. Do not choose the path as `/usr` for the Anaconda/Miniconda installation.

---

7. Anaconda recommends you enter “yes” to initialize Anaconda Distribution by running `conda init`.

If you enter “no”, then conda will not modify your shell scripts at all. In order to initialize conda after the installation process is done, run the following commands:

```
# Replace <PATH_TO_CONDA> with the path to your conda install
source <PATH_TO_CONDA>/bin/activate
conda init
```

For more information, see the [FAQ](#).

8. The installer finishes and displays, “Thank you for installing Anaconda<2/3>!”
9. Close and re-open your terminal window for the installation to take effect, or enter the command `source ~/.bashrc` to refresh the terminal.
10. You can also control whether or not your shell has the base environment activated each time it opens.

```
# The base environment is activated by default
conda config --set auto_activate_base True

# The base environment is not activated by default
conda config --set auto_activate_base False

# The above commands only work if conda init has been run first
# conda init is available in conda versions 4.6.12 and later
```

11. *Verify your installation.*

---

**Note:** Anaconda on Power8 or Power9 only supports little endian mode.

---

---

**Note:** If you install multiple versions of Anaconda, the system defaults to the most current version as long as you haven’t altered the default install path.

---

## Problems?

See [troubleshooting](#).

## What’s next?

Get started programming with Anaconda in the [Getting started with Anaconda](#) guide.

## Installing in silent mode

When installing in silent mode, you can supply additional arguments to the install command through your command line interface (CLI) or via script. Silent mode installation can be useful when deploying Anaconda Distribution or Miniconda to many clients, as the installation can be completed automatically without the user needing to manually select options in an installer wizard GUI or within the CLI itself.

## Anaconda Distribution installers

- Latest installers: <https://www.anaconda.com/download/>
- All installers: <https://repo.anaconda.com/archive/>

## Miniconda installers

- Latest installers: <https://docs.conda.io/projects/miniconda/en/latest/>
- All installers: <https://repo.anaconda.com/miniconda/>

## Windows

Download Miniconda or Anaconda Distribution manually from one of the links above or use `curl -O` to download via your CLI.

```
# Make sure you download the correct installer for your operating system's bit count
curl -O https://repo.anaconda.com/archive/Anaconda3-2022.05-Windows-x86_64.exe
curl -O https://repo.anaconda.com/miniconda/Miniconda-latest-Windows-x86_64.exe
```

**Note:** The following instructions are for Miniconda. For Anaconda Distribution, substitute Anaconda for Miniconda in all of the commands.

To run the Windows installer for Miniconda in silent mode, use the `/S` argument. The following optional arguments are supported:

- `/InstallationType=[JustMe|AllUsers]`—Default is `JustMe`.
- `/AddToPath=[0|1]`—Default is `0`.
- `/RegisterPython=[0|1]`—Make this the system's default Python. Default is `0`.
- `/S`—Install in silent mode.
- `/D=<installation path>`—Destination installation path. Must be the last argument. Do not wrap in quotation marks. Required if installing in silent mode.

All arguments are case-sensitive.

EXAMPLE: The following batch file command installs Miniconda for the current user without registering Python as the system's default:

```
start /wait "" Miniconda3-latest-Windows-x86_64.exe /InstallationType=JustMe /
RegisterPython=0 /S /D=%UserProfile%\Miniconda3
```

---

**Note:** As of Anaconda Distribution 2022.05, the option to add Anaconda to the PATH environment variable during an **All Users** installation has been disabled. This was done to address a [security exploit](#). You can still add Anaconda to the PATH environment variable during a **Just Me** installation.

---

### Linux & macOS

Download Miniconda or Anaconda Distribution manually from one of the links above or use `curl -o` to download via your CLI.

---

**Note:** The following instructions are for Miniconda. For Anaconda Distribution, substitute **Anaconda** for **Miniconda** in all of the commands and change `https://repo.anaconda.com/miniconda` to `https://repo.anaconda.com/archive` for downloading the installer.

---

To run the silent installation of Miniconda for macOS or Linux, specify the `-b` and `-p` arguments of the bash installer. The following arguments are supported:

- `-b`—Batch mode with no PATH modifications to `~/.bashrc`. Assumes that you agree to the license agreement. Does not edit the `.bashrc` or `.bash_profile` files.
- `-p`—Installation prefix/path.
- `-f`—Force installation even if the installation prefix/path already exists.

EXAMPLE:

```
#Downloading the latest Miniconda installer for macOS. Your architecture may vary.
curl https://repo.anaconda.com/miniconda/Miniconda3-latest-MacOSX-x86_64.sh -o ~/
↳miniconda.sh
#Downloading the latest Miniconda installer for Linux. Your architecture may vary.
wget https://repo.anaconda.com/miniconda/Miniconda3-latest-Linux-x86_64.sh -O ~/
↳miniconda.sh
bash ~/miniconda.sh -b -p $HOME/miniconda
```

The installer will not prompt you for anything, including setup of your shell to activate conda. To add this activation in your current shell session:

```
eval "$(/Users/jsmith/miniconda/bin/conda shell.YOUR_SHELL_NAME hook)"
```

For instance, if your shell is `zsh`, replace `YOUR_SHELL_NAME` with `zsh`.

With this activated shell, install conda's shell functions for easier access in the future:

```
conda init
```

If you'd prefer that conda's base environment not be activated on startup, set the `auto_activate_base` parameter to `false`:

```
conda config --set auto_activate_base false
```



## Installing for multiple users

The default Anaconda installation option is “Just Me,” which creates an independent installation of Anaconda that will not be shared with other users on the same system. The other option is to install for all users.

### All users

If you have administrator access, you can choose to install for “All Users.” This is a good option for a multi-user system where you want to allow users to import Python libraries and run Python applications.

This option does not give write permissions by default, so the users will not be able to install packages in the base environment. It allows an administrator to protect what is in the base environment. If packages are needed in the base environment, elevate the privileges to administrator from the Command Prompt and run install commands.

### Multi-user Anaconda installation on Windows

1. Download the [Anaconda installer](#).
2. Double-click the installer to launch.
3. Click **Next** to continue.
4. Read the licensing terms and click **I Agree**.
5. Select an install for **All Users** (this requires administrator privileges on the computer) and click **Next**.
6. Click **Yes** to allow the installer to make changes to your computer.
7. Select a destination folder that is accessible to the users. The default is C:\ProgramData\Anaconda.
8. After your install is complete, open **Computer Management**, navigate to **Local Users and Groups**. Create a new group for your Anaconda users. Add users to this new group, Anaconda-Users.
9. Navigate to your Anaconda folder and then right-click and select **Properties**. Uncheck the box for **Attributes: Read-only** and save changes. Go to **Security** and click **Edit**. From there, add Anaconda-Users and set permissions. Your group will need read and write privileges.

### Multi-user Anaconda installation on Linux

To set up a multi-user Anaconda or Miniconda installation on Linux operating systems:

---

**Note:** sudo access is required.

---

1. Install Anaconda.
2. After installation is complete, do the following:

```
#Create a new group
sudo group add mygroup
# Change the group ownership to "mygroup" on the entire directory where Anaconda is
→installed. Replace /PATH/TO/ANACONDA/INSTALL with the actual path to your
→installed Anaconda file.
sudo chgrp -R mygroup /PATH/TO/ANACONDA/INSTALL
# Set read and write permission for the owner, root, and the mygroup only. Replace /
→PATH/TO/ANACONDA/INSTALL with the actual path to your installed Anaconda file.
```

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```
sudo chmod 770 -R /PATH/TO/ANACONDA/INSTALL
# Add users to a group. Replace USERNAME with the username of the user you are
→adding.
sudo adduser username mygroup
```

Users added to the “mygroup” group now have the ability to access Anaconda, install packages, and create environments.

This is another option for all-user installation. It installs Anaconda at `C:\Anaconda`, which is not a protected directory and can have write permissions set for users. This is a good option if your username has spaces in it because the Anaconda installer cannot install in paths that contain spaces.

## Verifying your installation

Confirm that Anaconda is installed and working with Anaconda Navigator or conda with the following instructions.

### Anaconda Navigator

Anaconda Navigator is a graphical user interface (GUI) that is automatically installed with Anaconda. Navigator will open if the installation was successful. If Navigator does not open, review our [help resources](#).

- Windows: Click **Start**, search for Anaconda Navigator, and click to open.
- macOS: Click **Launchpad** and select Anaconda Navigator. Or use **Cmd+Space** to open Spotlight Search and type “Navigator” to open the program.
- Linux: See next section.

### Conda

If you prefer using a command line interface (CLI), use conda to verify the installation using Anaconda Prompt on Windows or the terminal on Linux and macOS.

To open Anaconda Prompt:

- Windows: Click **Start**, search for Anaconda Prompt, and click to open.
- macOS: Use **Cmd+Space** to open Spotlight Search and type “Navigator” to open the program.
- Linux–CentOS: Open **Applications > System Tools > terminal**.
- Linux–Ubuntu: Open the Dash by clicking the Ubuntu icon, then type “terminal”.

After opening Anaconda Prompt or the terminal, choose any of the following methods to verify:

- Enter `conda list`. If Anaconda is installed and working, this will display a list of installed packages and their versions.
- Enter the command `python`. This command runs the Python shell, also known as the REPL. If Anaconda is installed and working, the version information it displays when it starts up will include “Anaconda”. To exit the Python shell, enter the command `quit()`.
- Open Anaconda Navigator with the command `anaconda-navigator`. If Anaconda is installed properly, Anaconda Navigator will open.

## Problems?

If you encounter any errors, see the following resources:

- [Navigator troubleshooting](#)
- [Troubleshooting guide](#) for general troubleshooting
- [Help and support](#) for resources such as free community support and bug reports

## Updating from older versions

Follow the instructions below to update Anaconda to the latest version.

- Windows: Open Anaconda Prompt.
- macOS or Linux: Open a terminal window.

---

**Note:** These steps assume you are starting in the base environment created by the installer.

---

To update to the latest version of Anaconda, enter these commands:

```
#update the conda package manager to the latest version
conda update conda
#use conda to update Anaconda to the latest version
conda update anaconda
```

To update to a specific version of Anaconda, enter these commands:

```
#update the conda package manager to the latest version
conda update conda
#use conda to install a specific version of Anaconda
conda install anaconda=VERSION-NUMBER
```

## More information

The below content provides more details about what is happening when you update Anaconda.

`conda install anaconda=VERSION-NUMBER` grabs the specific release of the Anaconda metapackage; for example, `conda install anaconda=2022.05`. That metapackage represents a pinned state that has undergone testing as a collection. Read more about [metapackages](#).

There is a special “custom” version of the Anaconda metapackage that has all the package dependencies, but none of them are constrained. The “custom” version is lower in version ordering than any actual release number. `conda install anaconda=VERSION-NUMBER` may remove packages if the new metapackage that is replacing your old one has removed packages. As of conda 4.7, when a package loses its connection to the set of specs that have been requested in the past, it gets removed.

See all of the [available Anaconda versions](#).

`conda update --all` will unpin everything. This updates all packages in the current environment to the latest version. In doing so, it drops all the version constraints from the history and tries to make everything as new as it can.

Removing packages has the same behavior. If any packages are orphaned by an update, they are removed. `conda update --all` may not be able to make everything the latest versions because you may have conflicting constraints in your environment.

With Anaconda 2019.07's newer Anaconda metapackage, `conda update --all` will make the metapackage go to the custom version in order to update other specs.

`conda update --all` will only update the selected environment. If you have other environments you'd like to update, update them in the command line with the following:

```
conda update -n myenv --all
```

When you use `conda update pkgName` or `conda install pkgName`, conda may not be able to update or install that package without changing something else you specified in the past.

In the case of the Anaconda metapackage, when you enter `conda update ipython` but you have Anaconda 2019.03 currently installed, conda can and should “downgrade” Anaconda to the “custom” version so that iPython can be updated.

When conda cannot fulfill the request for the latest package available, it usually means that newer packages exist for your spec but are in conflict. To force the change, try `conda install <PACKAGE_NAME>=<NEW_VERSION>`.

### Installing previous versions of Anaconda Distribution

Previous versions of Anaconda are available in the [archive](#). For a list of packages included in each previous version, see [Old package lists](#).

Anaconda2 includes Python 2.7 and Anaconda3 includes Python 3.7. However, it does not matter which one you download, because you can create new environments that include any version of Python packaged with conda. See [Managing Python with conda](#).

### Using Anaconda on older operating systems

Anaconda recommends upgrading your operating system (OS) to the latest available or to one that is commonly used and supported. Most OSs that are no longer supported in the latest Anaconda distribution are no longer receiving security updates. Upgrading your OS allows you to get the latest packages, performance improvements, bug fixes, etc.

To use Anaconda on older operating systems, download from our [archive](#). You will not be able to use conda to update or install packages beyond the Anaconda version noted in the table below, unless you limit it to versions available at the time that particular version of Anaconda was released. See what was available by checking the [package table archives](#).

Table 1: Outdated operating system support

Operating system	How to install Anaconda
macOS 10.10-10.12; Windows 7 or 8	Use the command line or graphical installers for Anaconda versions 2019.10 and earlier. Download from our <a href="#">archive</a> .
Windows 7	Use the command line or graphical installers for Anaconda versions 2019.10 and earlier. Download from our <a href="#">archive</a> .
Windows 8	Use the command line or graphical installers for Anaconda versions 2022.10 and earlier. Download from our <a href="#">archive</a> .
macOS 10.9	Use the command line or graphical installers for Anaconda versions 5.1 and earlier.  <b>Note:</b> Qt and other packages released after Anaconda Distribution 5.1 (February 15th, 2018) may not work on macOS 10.9, so it may be necessary to not update certain packages beyond this point.
macOS 10.7 and 10.8	Use the command line installers for Anaconda versions 4.2 and earlier.
macOS 10.5 and 10.6	Use the command line installers for Anaconda versions 1.8 and earlier.  <b>Note:</b> These installer files end in <code>.sh</code> , not <code>.pkg</code> .
Windows XP	Use Anaconda versions 2.2 and earlier.
Windows 32-bit	Use Anaconda versions 2022.05 and earlier.
Centos6 (or equivalent)	Use Anaconda versions 2020.11 and earlier.
Centos5 (or equivalent)	Use Anaconda versions 4.3 and earlier.

## Uninstalling Anaconda Distribution

**Note:** These instructions will also work for a Miniconda installation. Replace `anaconda` with `miniconda` for all instructions.

To uninstall your Anaconda installation:

### Windows

1. Search for and open **Add or remove programs**.
2. Select your Anaconda installation.
3. Click **Uninstall**.
4. Complete the uninstall instructions that appear.

### macOS or Linux

1. Open your terminal application.
2. (Optional) Remove any conda initialization scripts from all your terminal shell profiles by running the following command:

```
conda activate
conda init --reverse --all
```

3. Remove your entire anaconda3 directory with `rm -rf`. Depending on your installation, this directory will be in your root folder or in your opt folder.

```
# The following are a few examples of how you
# may need to delete your Anaconda folder
rm -rf anaconda3
rm -rf ~/anaconda3
rm -rf ~/opt/anaconda3
```

4. Close and reopen your terminal to refresh it. You should no longer see (base) in your terminal prompt.

### Silent mode install

Use *silent mode* to automatically accept default settings and have no screen prompts appear during installation.

### Need to use Anaconda on an older operating system?

See *Using Anaconda on older operating systems*.

### Installing Anaconda on a non-networked machine (air gap)

1. Obtain a local copy of the appropriate Anaconda installer for the non-networked machine. You can copy the Anaconda installer to the target machine using many different methods, including a portable hard drive, USB drive, or CD.
2. After copying the installer to the non-networked machine, follow the detailed installation instructions for your operating system.

---

**Tip:** Install offline copies of both docs.anaconda.com and enterprise-docs.anaconda.com by installing the conda package anaconda-docs: `conda install anaconda-docs`

Install offline copies of documentation for many of Anaconda's open-source packages by installing the conda package anaconda-oss-docs: `conda install anaconda-oss-docs`

---

### Other ways to get Anaconda or Miniconda

The official [Anaconda or Miniconda AMIs](#) are on the AWS Marketplace.

The official [Anaconda and Miniconda Docker images](#) are on Docker Hub.

If you have a CDH (Cloudera Distributed Hadoop) cluster, [install the Anaconda parcel](#) using Cloudera Manager. The Anaconda parcel provides a static installation of Anaconda, based on Python 2.7, that can be used with Python and PySpark jobs on the cluster.

### Troubleshooting

If you experience errors during the installation process, review our [Troubleshooting topics](#).

## Getting started with Anaconda Distribution

### What is Anaconda Distribution?

Anaconda® Distribution is a free Python/R data science distribution that contains:

- [conda](#) - a package and environment manager for your command line interface
- *Anaconda Navigator* - a desktop application built on conda, with options to launch other development applications from your managed environments
- *250 automatically-installed packages* that work well together out of the box
- access to the [Anaconda Public Repository](#), with 8000 open-source data science and machine learning packages

Anaconda Distribution is free, easy to install, and offers [free community support](#).

### Should I use Anaconda Distribution or Miniconda?

Both Anaconda Distribution and Miniconda include the conda package and environment manager, but how you plan to use the software will determine which download you want to choose.

#### **I'm just starting out and don't know what packages I should use.**

Install Anaconda Distribution! It includes over *250 standard data science and machine learning packages*, which will give you a kickstart in your development journey.

#### **I don't have much experience with the command line.**

Install Anaconda Distribution! The install includes Anaconda Navigator, a desktop application that is built on top of conda. You can use Navigator's graphical user interface (GUI) to create environments, install packages, and launch development applications like Jupyter Notebooks and Spyder. For more information on Navigator, see *Getting started with Navigator*.

#### **I know exactly what packages I want to use and I don't want a large download.**

Install Miniconda! Miniconda is a minimal installer that only includes conda, Python, and a few other packages. For more information, see the [Miniconda documentation](#).

#### **I only use the command line.**

Install Miniconda *or* Anaconda Distribution! Both installations include conda, the command line package and environment manager. For more information on conda, take the [20-minute conda test drive](#) or download the [conda cheatsheet](#).

## Your first Python program: Hello, Anaconda!

### *Back to Getting Started*

This tutorial will take you through a short programming exercise, using Navigator and then a command line interface (CLI).

### Launching development environment applications from Navigator

We will first go through some short exercises using Anaconda Navigator to launch two different integrated development environments (IDEs), Spyder and Jupyter Notebook.

#### Open Navigator

Choose the instructions for your operating system:

- **Windows** - From the Start menu, click the Anaconda Navigator desktop app.
- **macOS** - Open Launchpad, then click the Anaconda-Navigator icon.
- **Linux** - Open a terminal window and use the command `anaconda-navigator`.

#### Run Python in Spyder

---

**Tip:** More of a visual learner? Follow along with [Create a simple Python program in Spyder](#) on Anaconda Learning instead!

---

1. On Navigator's Home tab, in the applications pane on the right, launch the Spyder IDE from its tile.

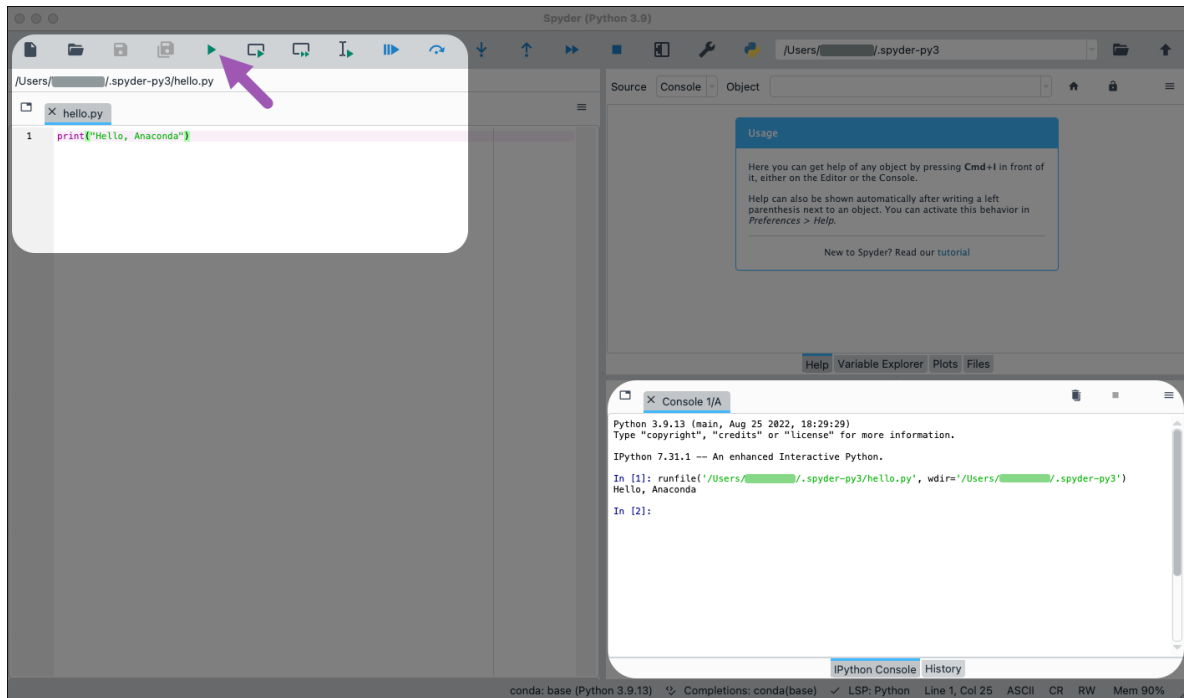
---

**Note:** If Spyder is not installed in your current environment, click **Install** to install it.

---

2. Spyder opens with a `temp.py` file open on the left.
3. In `temp.py`, delete any placeholder text and add `print("Hello, Anaconda")` to line 1.
4. In the top menu, click **File** > **Save As** and name your new program `hello.py`.
5. Run your new program by clicking the triangle **Run** button.
6. Click **Run** in the run settings dialog that appears.
7. You can see your program's output in the bottom right console pane.





8. Close Spyder.

## Run Python in a Jupyter Notebook

**Tip:** More of a visual learner? Watch our short training videos on [Jupyter Notebook](#) and [JupyterLab](#) on Anaconda Learning instead!

1. On Navigator's Home tab, in the applications pane on the right, launch Jupyter Notebook from its tile.

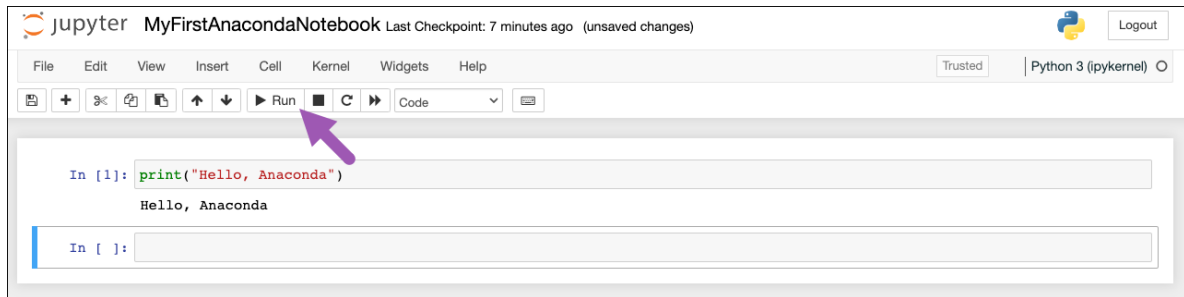
**Note:** If Jupyter Notebook is not installed in your current environment, click **Install** to install it.

2. Jupyter Notebook launches in a new browser window (or a new tab), showing the [Notebook Dashboard](#).



3. Click the **New** dropdown.
4. Create a new notebook with the Python version you installed.
5. Click your new notebook's "Untitled" name to rename it. You can name it to whatever you'd like, but for this example we'll use "MyFirstAnacondaNotebook".
6. In the first line of the Notebook, add `print("Hello, Anaconda")`.

7. Save your notebook.
8. Run your new program by clicking **Run** or selecting **Cell > Run All** from the top menu.



9. Close the browser tab containing Jupyter Notebook.

### Close Navigator

From here, you can close Navigator and move on to the conda CLI tutorial below:

- **Windows** - Go to **File > Quit** in the Navigator File menu.
- **macOS** - Go to **Anaconda Navigator > Quit Anaconda-Navigator** in the top menu.

### Write a Python program using a CLI

#### Open your CLI

There are many command line interface (CLI) options available to you. Anaconda recommends that Windows users use Anaconda Prompt, while macOS and Linux users are welcome to use whatever CLI they are comfortable with.

---

**Note: macOS and Linux users** - If you aren't seeing (base) in your chosen CLI, you need to either initialize conda or activate your base environment. See either the [macOS](#) or [Linux](#) install instructions for more information.

---

#### Start Python

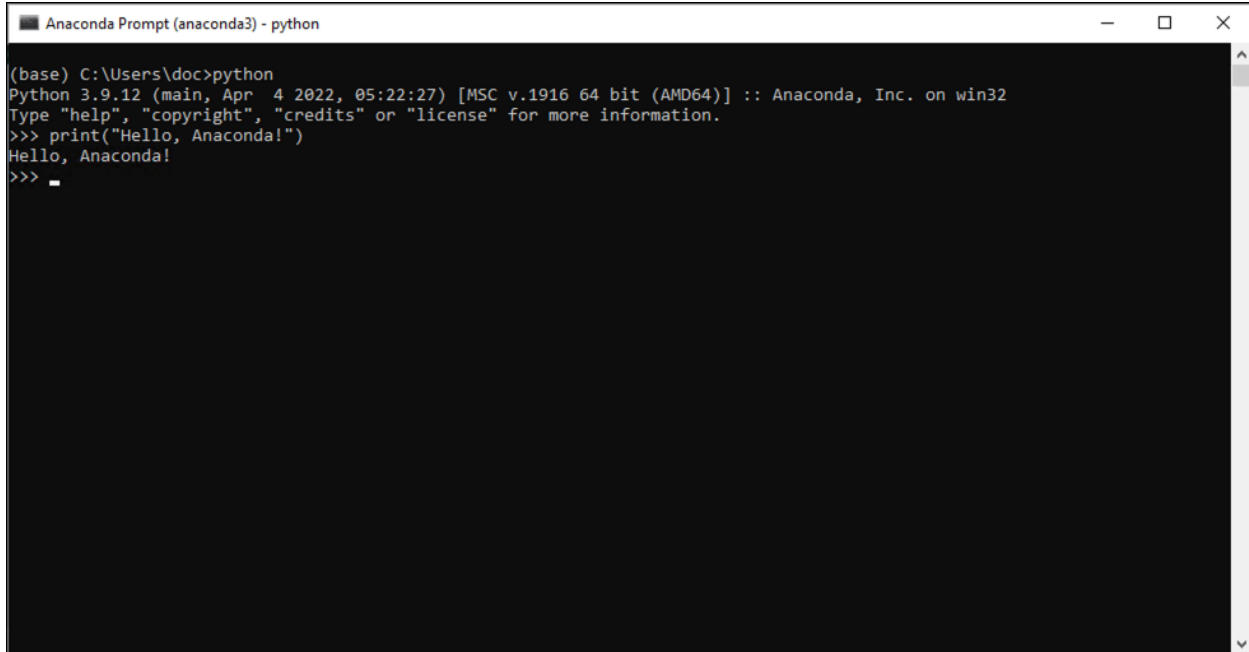
In your CLI, type `python` and press **Enter** or **return**.

A `>>>` appears in your CLI and means you are in the Python interpreter, which allows you to run simple scripts right from the command line.

#### Write a Python program

At the `>>>`, type `print("Hello, Anaconda!")` and press **Enter** or **return**.

When you press **Enter** or **return**, your program runs. The words "Hello, Anaconda!" print to the screen. You're programming in Python!



```
(base) C:\Users\doc>python
Python 3.9.12 (main, Apr 4 2022, 05:22:27) [MSC v.1916 64 bit (AMD64)] :: Anaconda, Inc. on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> print("Hello, Anaconda!")
Hello, Anaconda!
>>> _
```

## Exit Python

- **Windows** - Press **CTRL-Z** and press **Enter**.
- **macOS or Linux** - Type `exit()` and press **Enter** or **return**.

## Optional: Launch Spyder or Jupyter Notebook from the command line

- In your CLI, type `spyder` and press **Enter** or **return**. Spyder opens just like it does when launched from Anaconda Navigator.
- In your CLI, type `jupyter-notebook` and press **Enter** or **return**. Jupyter Notebook opens in a tab in your browser.

You can run the same exercises in [Run Python in Spyder](#) and [Run Python in a Jupyter Notebook](#) after opening Spyder and Jupyter Notebook from your CLI.

Welcome to Anaconda! This document is here to help you get started with Anaconda Distribution, the free installation that includes [conda](#), [Anaconda Navigator](#), and over 250 scientific and machine learning [packages](#).

## Should I use Anaconda Navigator or conda?

Anaconda Navigator is a desktop application that is included with every installation of Anaconda Distribution. It is built on top of conda, the open-source package and environment manager, and allows you to manage your packages and environments from a graphical user interface (GUI). This is especially helpful when you're not comfortable with the command line.

A command line interface (or CLI) is a program on your computer that processes text commands to do various tasks. Conda is a CLI program, which means it can only be used via the command line. On Windows computers, Anaconda recommends that you use the Anaconda Prompt CLI to work with conda. MacOS and Linux users can use their built-in command line applications.

---

**Note:** If you installed Miniconda instead of Anaconda Distribution (see *Should I use Anaconda Distribution or Miniconda?*), Anaconda Navigator is not included. Use the command `conda install anaconda-navigator` to manually install Navigator onto your computer.

---

### Free Anaconda Learning course - Get Started with Anaconda

Learn to use Anaconda Navigator to launch an application. Then, create and run a simple Python program with Spyder and Jupyter Notebook. Watch our short training videos on Anaconda Learning to get up and running with Jupyter Notebook and JupyterLab, along with several other popular integrated development environments (IDEs):

#### Anaconda Learning

### An introduction to Navigator and the command line

Navigator and the CLI interact with conda in similar but distinct ways, and each have their benefits and drawbacks. Anaconda recommends that you learn the basics of both to determine what is preferable for your programming workflow. See *My first Python program: Hello, Anaconda!* to go through a short programming exercise and get a better idea for what you prefer.

### What's next?

#### Navigator tutorials

- *Getting started with Navigator (10 minutes)*
- *Navigator user guide*

#### Conda resources

- *Getting started with conda (20 minutes)*
- *Conda cheatsheet*
- *Conda user guide*

#### IDE tutorials

The following tutorials show you the basics of using some popular IDEs (integrated development environments) with Anaconda:

- *Eclipse and PyDev*
- *IDLE*
- *Sublime Text*
- *Ninja IDE*
- *Python Tools for Visual Studio (PTVS)*
- *Python for Visual Studio Code*

- [\*Spyder\*](#)
- [\*Wing IDE\*](#)
- [\*IntelliJ\*](#)
- [\*Using PyCharm\*](#)

### Jupyter Notebook external resources

Jupyter Notebook is a web-based development application that you can launch from Navigator. The resources below can help get you started and provide more information about using notebooks for your education, research, and work:

- [Jupyter Notebook Beginner's Guide](#)
- [Jupyter Project Homepage](#)
- [Jupyter Notebook Documentation](#)

### Spyder external resources

Spyder is a free development environment that you can launch from Navigator. The resources below provide more information about using notebooks for your education, research, and work:

- [Spyder Project Homepage](#)
- [Spyder Documentation](#)

## Packages

### Configuring a shared package cache

If you have your own installation of Anaconda or Miniconda on your system, you can improve the speed at which packages are installed or new environments are created and save disk space by setting up the configuration to use a shared package cache.

Normal installation sets a package cache relative to the install directory. This can be found with the following command listed under package cache:

```
conda info
```

The normal path to the package cache is:

**Windows** - C:\Users\username\Anaconda{2,3}\pkgs

**macOS** - ~/anaconda{2,3}

**Linux** - /home/username/anaconda{2,3}/pkgs

Each user has their own package cache so when a package is installed, the package is put into their own cache and not shared with anyone else.

The benefit of a shared package cache is that once a particular version of a package has already been downloaded by a user it will not be downloaded again and stored in a separate cache. This saves disk usage and speeds up the install as it does not need to download the package again.

### Shared package cache setup

Create a directory on your system where the shared users have read and write access.

Then, for each user who will have access, edit the `.condarc` file found in their home directory.

**Windows** - `C:\Users\username\.condarc`

**macOS and Linux** - `/home/username/.condarc`

Edit the `.condarc` with the following entry, specifying the full path to the shared directory:

```
pkgs_dirs:
- /path/to/shared_directory
```

Verify the package cache by running `conda info` again.

### Installing conda packages

You can install the conda package manager with *Anaconda Distribution or Miniconda*. From there, you have several ways in which you can get packages to use in your conda environments:

- Over *250 packages* are automatically installed with Anaconda.
- Over 7,500 additional open-source packages (including R) can be individually installed from the Anaconda repository with the `conda install` command.
- Thousands of other packages are available from [Anaconda.org](https://anaconda.org).
- You can download other packages using the `pip install` command that is installed with Anaconda. *Pip packages* provide many of the features of conda packages and in some cases they can work together. However, the preference should be to install the conda package if it is available.
- You can also make your own *custom packages* using the `conda build` command, and you can share them with others by uploading them to [Anaconda.org](https://anaconda.org), PyPI, or other repositories.

For more information about using the conda package manager in Anaconda Prompt (terminal on Linux or macOS), see the [conda documentation](#).

You can also use the graphical interface *Anaconda Navigator* to install conda packages with just a few clicks.

Open an Anaconda Prompt (terminal on Linux or macOS) and follow these instructions.

### Installing a conda package

Enter the command:

```
conda install package-name
```

## Installing specific versions of conda packages

Include the desired version number or its prefix after the package name:

```
conda install package-name=2.3.4
```

To specify only a major version, run:

```
conda install package-name=2
```

These commands install into the environment that is currently active. To install into a named environment, run:

```
conda install package-name=2.3.4 -n some-environment
```

If the package is specific to a Python version, conda uses the version installed in the current or named environment. For details on versions, dependencies and channels, see [Conda FAQ](#) and [Conda Troubleshooting](#).

## Installing packages on a non-networked (air-gapped) computer

To directly install a conda package from your local computer, run:

```
conda install /package-path/package-filename.tar.bz2
```

Conda installs packages into the `anaconda/pkgs` directory.

To install a `.tar` file containing many conda packages, run the following command:

```
conda install /packages-path/packages-filename.tar
```

If conda cannot find the file, try using an absolute path name instead of a relative path name.

---

**Note:** Installing packages directly from the file does not resolve dependencies. If your installed package does not work, it may have missing dependencies that need to be resolved manually.

---

## Using R language with Anaconda

With Anaconda, you can easily install the R programming language and over 6,000 commonly used R packages for data science. You can also create and share your own custom R packages.

---

**Note:** When using conda to install R packages, you will need to add `r-` before the regular package name. For instance, if you want to install `rbokeh`, you will need to use `conda install r-rbokeh` or for `rJava`, type `conda install r-rjava`.

---

The R Essentials bundle contains approximately 200 of the most popular R packages for data science, including the `IRKernel`, `dplyr`, `shiny`, `ggplot2`, `tidyr`, `caret`, and `nnet`. It is used as an example in the following guides.

R is the default interpreter installed into new environments. You can specify the R interpreter with the `r-base` package. Unless you change the R interpreter, conda will continue to use the default interpreter in each environment.

To run the commands below on Windows, use Start - Anaconda Prompt. On macOS or Linux, open a terminal.

### Updating R packages

- Update all of the packages and their dependencies with one command:

```
conda update r-caret
```

- If a new version of a package is available in the R channel, you can use `conda update` to update specific packages.

### Creating and sharing custom R bundles

Creating and sharing custom R bundles is similar to creating and sharing conda packages.

EXAMPLE: Create a simple custom R bundle metapackage named “Custom-R-Bundle” that contains several popular programs and their dependencies:

```
conda metapackage custom-r-bundle 0.1.0 --dependencies r-irkernel jupyter r-ggplot2 r-  
↳dplyr --summary "My custom R bundle"
```

Share the new metapackage by uploading it to your channel on [anaconda.org](https://anaconda.org):

```
conda install anaconda-client  
anaconda login  
anaconda upload custom-r-bundle-0.1.0-0.tar.bz2
```

Anyone can now access your custom R bundle from any computer:

```
conda install -c <your anaconda.org username> custom-r-bundle
```

### Creating an environment with R

1. [Download and install Anaconda.](#)
2. Create a new conda environment with all the r-essentials conda packages built from CRAN:

```
conda create -n r_env r-essentials r-base
```

3. Activate the environment:

```
conda activate r_env
```

4. List the packages in the environment:

```
conda list
```

The list shows that the package `r-base` is installed and `r` is listed in the build string of the other R packages in the environment.

Anaconda Navigator, the Anaconda graphical package manager and application launcher, creates R environments by default.



## Creating a new environment with R

When creating a new environment, you can use R by explicitly including `r-base` in your list of packages.

With conda 4.6:

```
conda create -n r-environment r-essentials r-base
conda activate r-environment
```

## Mirroring the R channel

Many Enterprise customers maintain a local mirror of the R channel.

When mirroring the R channel for the first time, clean the existing packages by running the command `anaconda-server-sync-conda` with the option `--clean`.

## Uninstalling R Essentials

To uninstall the R Essentials package, run: `conda remove r-essentials`

---

**Note:** This removes only R Essentials and disables R language support. Other R language packages are not removed.

---

## Resources

Here are some additional resources on using Anaconda with the R programming language:

- *[R Language packages available for use with Anaconda](#)*—There are hundreds of R language packages now available and several ways to get them.
- *[Navigator tutorial](#)*—Use the R programming language with Anaconda Navigator. The Anaconda Navigator graphical interface (GUI) makes it easy for even new users to use and run the R language in a Jupyter Notebook.
- *[Webinar: Anaconda for R Users](#)*—Download the slides from the webinar to see how Anaconda makes package, dependency and environment management easy with R language and other Open Data Science languages.

## Working with GPU packages

The Anaconda Distribution includes several packages that use the GPU as an accelerator to increase performance, sometimes by a factor of five or more. These packages can dramatically improve machine learning and simulation use cases, especially deep learning. Read more about [getting started with GPU computing in Anaconda](#).

While both AMD and NVIDIA are major vendors of GPUs, NVIDIA is currently the most common GPU vendor for machine learning and cloud computing. The information on this page applies only to NVIDIA GPUs.

## GPU compatibility

GPU acceleration requires the author of a project such as TensorFlow to implement GPU-specific code paths for algorithms that can be executed on the GPU. A GPU-accelerated project will call out to NVIDIA-specific libraries for standard algorithms or use the NVIDIA GPU compiler to compile custom GPU code. Only the algorithms specifically modified by the project author for GPU usage will be accelerated, and the rest of the project will still run on the CPU.

For most packages, GPU support is either a compile-time or run-time choice, allowing a variant of the package to be available for CPU-only usage. When GPU support is a compile-time choice, Anaconda will typically need to build two versions of the package, to allow the user to choose between the “regular” version of the project that runs on CPU only and the “GPU-enabled” version of the project that runs on GPU.

Due to the different ways that CUDA support is enabled by project authors, there is no universal way to detect GPU support in a package. For many GPU-enabled packages, there is a dependency on the `cuda-toolkit` package. Other packages such as Numba do not have a `cuda-toolkit` dependency, because they can be used without the GPU.

## Hardware requirements

NVIDIA released the CUDA API for GPU programming in 2006, and all new NVIDIA GPUs released since that date have been CUDA-capable regardless of market. Although any NVIDIA GPU released in the last 10 years will technically work with Anaconda, these are the best choices for machine learning and specifically model training use cases:

- Tesla P100 or V100
- Titan RTX
- GeForce RTX 3050
- Various recent Quadro models

Deployed models do not always require a GPU. When a GPU is required for a deployed model, there are other Tesla GPU models that are more optimized for inference than training, such as the Tesla P4, P40, and T4.

Cloud and on-premise data center deployments require Tesla cards, whereas the GeForce, Quadro, and Titan options are suitable for use in workstations.

Most users will have an Intel or AMD 64-bit CPU. Anaconda recommends having at least two to four times more CPU memory than GPU memory, and at least 4 CPU cores to support data preparation before model training. There are a limited number of Anaconda packages with GPU support for IBM POWER 8/9 systems as well.

## Software requirements

The best performance and user experience for CUDA is on Linux systems. Windows is also supported. No Apple computers have been released with an NVIDIA GPU since 2014, so they generally lack the memory for machine learning applications and only have support for Numba on the GPU.

Anaconda requires that the user has installed a recent NVIDIA driver that meets the version requirements in the table below. Anaconda does not require the installation of the CUDA SDK.

Ubuntu and some other Linux distributions ship with a third party open-source driver for NVIDIA GPUs called Nouveau. CUDA requires replacing the Nouveau driver with the official closed source NVIDIA driver.

All other CUDA libraries are supplied as conda packages.

GPU-enabled packages are built against a specific version of CUDA. Currently supported versions include CUDA 11.8, 12.0, 12.1, and 12.2. The NVIDIA drivers are designed to be backward compatible to older CUDA versions, so a system with NVIDIA driver version 525.60.13 can support CUDA 12.0 packages and earlier. As a result, if a user is

not using the latest NVIDIA driver, they may need to manually pick a particular CUDA version by selecting the version of the `cuda-toolkit` conda package in their environment. To select a `cuda-toolkit` version, add a selector such as `cuda-toolkit=12.1` to the version specification.

Required NVIDIA driver versions, excerpted from the [NVIDIA CUDA Toolkit Release Notes](#):

CUDA Version	Linux x86_64 Driver Version	Windows x86_64 Driver Version
CUDA 11.8.x	>= 450.80.02	>= 452.39
CUDA 12.0.x	>= 525.60.13	>= 527.41
CUDA 12.1.x	>= 525.60.13	>= 527.41
CUDA 12.2.x	>= 525.60.13	>= 527.41

Sometimes specific GPU hardware generations have a minimum CUDA version. As of August 27th, 2018, the only relevant constraint is that the Tesla V100 and Titan V (using the “Volta” GPU architecture) require CUDA 9 or later.

## Available packages

### TensorFlow

TensorFlow is a general machine learning library, but most popular for deep learning applications. There are three supported variants of the `tensorflow` package in Anaconda, one of which is the NVIDIA GPU version. This is selected by installing the meta-package `tensorflow-gpu`.

```
conda install tensorflow-gpu
```

Other packages, such as Keras, depend on the generic `tensorflow` package name and will use whatever version of TensorFlow is installed. This makes it straightforward to switch between variants in an environment.

### PyTorch

PyTorch is another machine learning library with a deep learning focus. PyTorch detects GPU availability at run-time, so the user does not need to install a different package for GPU support.

```
conda install pytorch
```

### Caffe (Linux only)

Caffe was one of the first popular deep learning libraries.

```
conda install caffe-gpu
```

### Chainer/CuPy

Chainer is a deep learning library that uses NumPy or CuPy for computations.

```
conda install chainer
```

Chainer's companion project CuPy is a GPU-accelerated clone of the NumPy API that can be used as a drop-in replacement for NumPy with a few changes to user code. When CuPy is installed, Chainer is GPU-accelerated. CuPy can also be used on its own for general array computation.

```
conda install cupy
```

### XGBoost (Windows/Linux only)

XGBoost is a machine learning library that implements gradient-boosted decision trees. Training several forms of trees is GPU-accelerated.

```
conda install py-xgboost-gpu
```

### MXNet (Linux only)

MXNet is a machine learning library supported by various industry partners, most notably Amazon. Like TensorFlow, it comes in three variants, with the GPU variant selected by the `mxnet-gpu` meta-package.

```
conda install mxnet-gpu
```

### Numba

Numba is a general-purpose JIT compiler for Python functions. It provides a way to implement custom GPU algorithms in purely Python syntax when the `cuda-toolkit` package is present.:

```
conda install numba cuda-toolkit
```

### GPU support in Enterprise

GPU-enabled conda packages can be used in AE5 projects when the cluster has resource profiles that include GPUs. For more details see [the GPU support section of the AE5 FAQ](#).

### Disabling the `anaconda-anon-usage` package

The `anaconda-anon-usage` package is installed as a dependency of Anaconda Navigator and therefore comes with any install of Anaconda Distribution. The package augments the request header data that conda delivers to package servers during index and package requests. The three randomly generated tokens used for this process are designed to reveal *no* personal identifying information. For more specific information on how `anaconda-anon-usage` works, see the package's [public Readme file on Github](#).

Because this package is delivered as a dependency of other Anaconda packages, you may not be able to remove it from your conda environment. You may, however, disable the delivery of the three tokens that `anaconda-anon-usage` supplies:

1. Open a terminal application (Anaconda Prompt on Windows).
2. Disable `anaconda-anon-usage` by running the following command:

```
conda config --set anaconda_anon_usage off
```

To re-enable `anaconda-anon-usage`, run the following command:

```
conda config --set anaconda_anon_usage on
```

## Applications/Integrations

### Cloudera CDH



Cloudera provides Apache Hadoop-based software, support, and services, as well as training to business customers. Their open-source Apache Hadoop distribution, CDH (Cloudera Distribution Including Apache Hadoop), targets enterprise-class deployments of that technology.

You can use Anaconda on an existing cluster with [Cloudera CDH](#), Cloudera's distribution including Apache Hadoop. See the blog post [Self-service Open Data Science: Custom Anaconda parcels for Cloudera](#), or follow the steps below.

### Install the Anaconda parcel

The following procedure describes how to install the Anaconda parcel on a CDH cluster using Cloudera Manager. The Anaconda parcel provides a static installation of Anaconda, based on Python 2.7, that can be used with Python and PySpark jobs on the cluster.

1. In the Cloudera Manager Admin Console, in the top navigation bar, click the Parcels icon.
2. At the top right of the parcels page, click the Edit Settings button.
3. In the Remote Parcel Repository URLs section, click the plus symbol, and then add the following repository URL for the Anaconda parcel:

```
https://repo.anaconda.com/pkg/misc/parcels/
```

4. At the top of the page, click the Save Changes button.
5. In the top navigation bar, click the Parcels icon to return to the list of available parcels, where you should see the latest version of the Anaconda parcel that is available.

6. To the right of the Anaconda parcel listing, click the Download button.
7. After the parcel is downloaded, click the Distribute button to distribute the parcel to all of the cluster nodes.
8. After the parcel is distributed, click the Activate button to activate the parcel on all of the cluster nodes.
9. When prompted, confirm the activation.

After the parcel is activated, Anaconda is available on all of the cluster nodes.

You can submit Spark jobs along with the `PYSPARK_PYTHON` environment variable that refers to the location of Anaconda. For example, enter the following command all on one line:

```
PYSPARK_PYTHON=/opt/cloudera/parcels/Anaconda/bin/ python spark-submit pyspark_script.py
```

---

**Note:** The repository URL shown above installs the most recent version of the Anaconda parcel. To install an older version of the Anaconda parcel, add <https://repo.anaconda.com/pkg/misc/parcels/archive/> to the Remote Parcel Repository URLs in Cloudera manager, and then follow the above steps with your desired version of the Anaconda parcel.

---

### Parcel updates

Anaconda builds new Cloudera parcels at least once a year each spring and also offers custom parcel creation for our enterprise customers. The Anaconda parcel provided at the repository URL shown above is based on Python 2.7. To use the Anaconda parcel with other versions of Python or with additional packages, contact [sales@anaconda.com](mailto:sales@anaconda.com) for more information about custom Anaconda parcel builds or other enterprise solutions for using Anaconda with cluster computing.

Anaconda Workgroup and Enterprise tier subscribers can also use the professional repository to *create and distribute their own custom Anaconda parcels for Cloudera Manager*.

For more information about managing Cloudera parcels, see the [Cloudera documentation](#).

### Docker

Docker is an open platform for developers and system administrators to build, ship, and run distributed applications, whether on laptops, data center virtual machines, or the cloud. Anaconda, Inc. provides Anaconda and Miniconda Docker images.

Read the [official Docker documentation](#) and specifically the information related to [Docker images](#).

Begin by browsing the available Anaconda images [on our Docker profile](#).

To obtain a fully working Anaconda image:

1. In a terminal window, run this command to display a list of available images:

```
docker search continuumio
```

2. Pull the desired image:

```
docker pull continuumio/miniconda3
```

3. Create a container using the image:

```
docker run -t -i continuumio/miniconda3 /bin/bash
```

This gives you direct access to the container where the conda tool is already available.

4. Test the container:

```
conda info
```

You now have a fully working Anaconda image.

To install and launch the Jupyter Notebook, execute the following command all on one line from the host machine:

```
docker run -i -t -p 8888:8888 continuumio/miniconda3 /bin/bash \
-c "/opt/conda/bin/conda install jupyter -y --quiet && mkdir \
/opt/notebooks && /opt/conda/bin/jupyter notebook \
--notebook-dir=/opt/notebooks --ip='*' --port=8888 \
--no-browser --allow-root"
```

**Note:** Line breaks in the example above are for readability only. Enter the command all on one line.

To access the Jupyter notebook open <http://localhost:8888> in your browser, or open <http://<DOCKER-MACHINE-IP>:8888> if you are using a Docker Machine VM.

**Note:** Replace <DOCKER-MACHINE-IP> with your Docker Machine VM IP address.

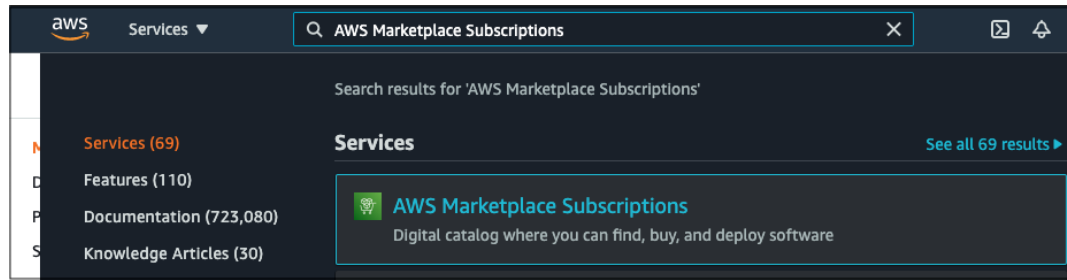
## Launch an Anaconda AMI on AWS

Follow the steps below to launch *Amazon Elastic Compute Cloud* (EC2) instances using *Amazon Machine Images* (AMI) with pre-installed Anaconda products (e.g. *Anaconda Distribution* or *Miniconda*).

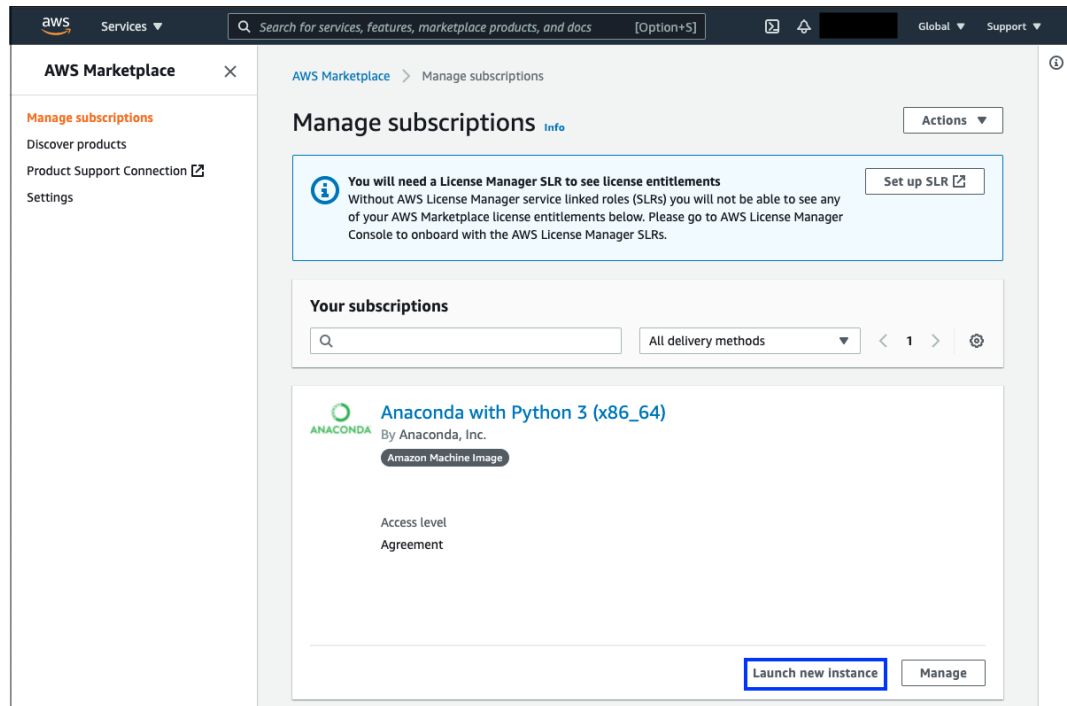
1. Log in to your [AWS Management Console](#).
2. Subscribe to an Anaconda AMI product. (If you've already done this, skip to step 3.)
  - a. Go to [Anaconda's AWS Marketplace product page](#) and select the product you wish to use. We currently support AMIs with the following specifications:

Architecture	Anaconda Product	Python	AWS Marketplace Product Name
Linux x86_64	Anaconda Distribution	3.8	<a href="#">Anaconda with Python 3 (x86_64)</a>
Linux x86_64	Miniconda	3.8	<a href="#">Miniconda with Python 3 (x86_64)</a>
Linux aarch64/arm64	Anaconda Distribution	3.8	<a href="#">Anaconda with Python 3 (aarch64/arm64)</a>

- b. On the product's page, click **Continue to Subscribe**.
  - c. Review and accept the terms. The subscription should take a few minutes to take effect.
3. From the **AWS Management Console**, in the search field, enter "AWS Marketplace Subscriptions" and select the result.

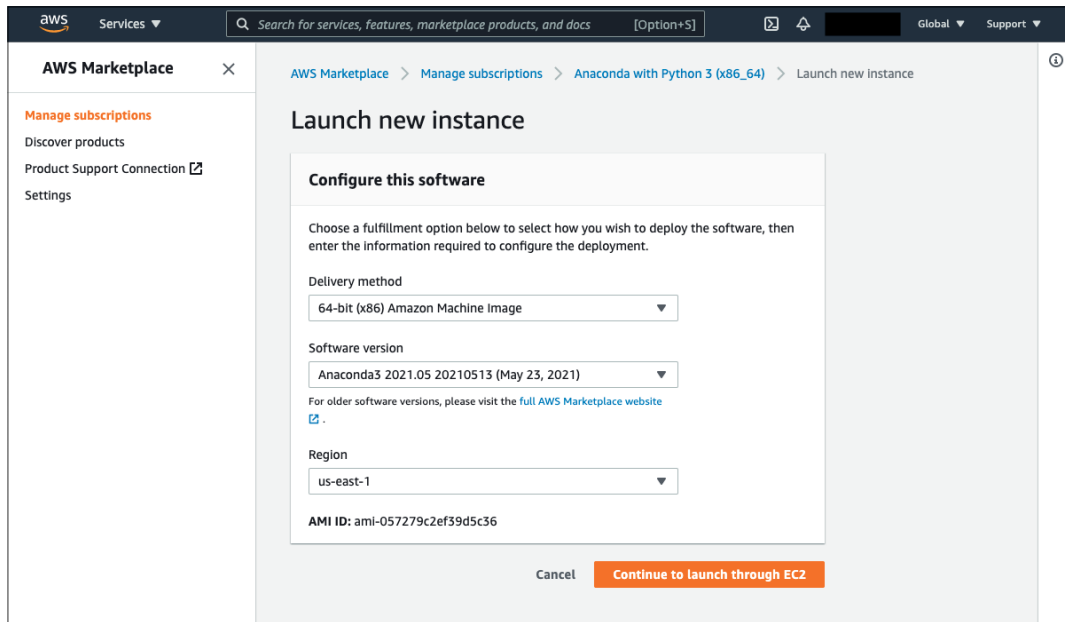


4. On the **Manage subscriptions** page, find the Anaconda product you wish to launch and click **Launch new instance**.

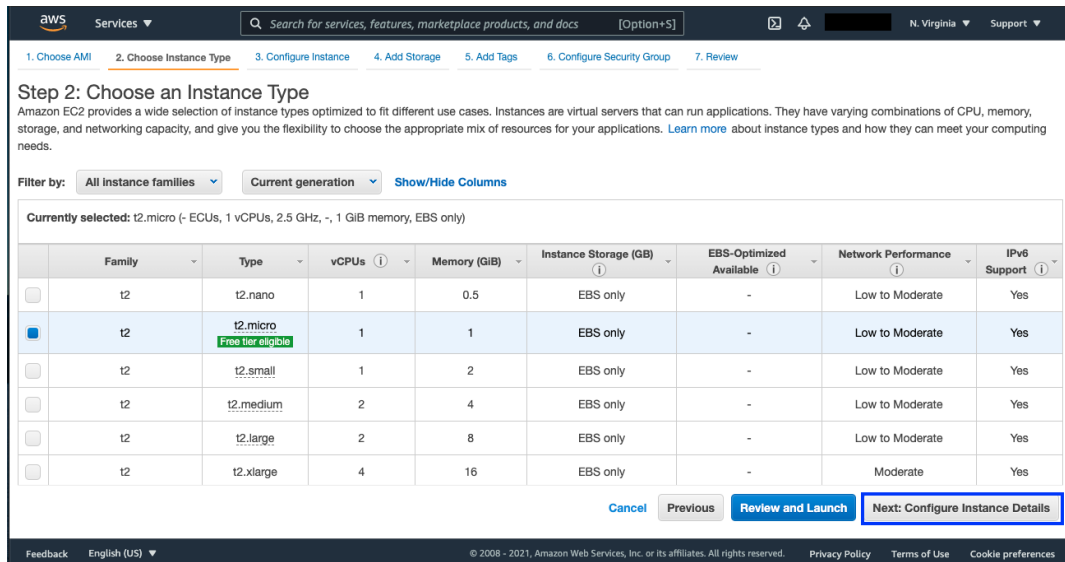


5. On the **Launch new instance** page, confirm the delivery method, software version, and your region. Then click **Continue to launch through EC2**.





6. Choose an instance type, and then click **Next: Configure Instance Details**. Optionally select the remaining configuration details (e.g. storage, tags, and security).



7. On the final **Review** step, review your configuration details. Select **Previous** to return to a previous screen to make changes. Click **Launch** when you are ready to launch the instance.

**Step 7: Review Instance Launch**  
Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.

**AMI Details** [Edit AMI](#)

**Anaconda with Python 3 (x86\_64)**  
Anaconda3 2021.05 on Amazon Linux 20210524.1854  
Root Device Type: ebs Virtualization type: hvm

**Hourly Software Fees:** \$0.00 per hour on t2.micro instance. Additional taxes or fees may apply. Software charges will begin once you launch this AMI and continue until you terminate the instance.

If you have an existing license entitlement to use this software, then you can launch this software without creating a new subscription. If you do not have an existing entitlement, then by launching this software, you will be subscribed to this software and agree that your use of this software is subject to the pricing terms and the seller's [End User License Agreement](#)

**Instance Type** [Edit instance type](#)

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	-	1	1	EBS only	-	Low to Moderate

[Cancel](#) [Previous](#) [Launch](#)

8. Select an existing key pair or create a new key pair, check the acknowledge agreement box, and then click **Launch Instances**.

**Select an existing key pair or create a new key pair** ×

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Choose an existing key pair ▼

**Select a key pair** ▼

☒ I acknowledge that I have access to the corresponding private key file, and that without this file, I won't be able to log into my instance.

[Cancel](#) [Launch Instances](#)

9. Click **View Instances** to check the status of your instance.

## Additional resources

- [FAQ](#)

## TensorFlow

[TensorFlow](#) enables your data science, machine learning, and artificial intelligence workflows. This page shows how to install TensorFlow using the conda package manager included in Anaconda and Miniconda.

TensorFlow CPU with conda is supported on 64-bit Ubuntu Linux 16.04 or later and macOS 10.12.6 or later.

TensorFlow GPU with conda is only available through version 2.4.1 (2021). For the latest TensorFlow GPU installation, follow the [installation instructions on the TensorFlow website](#).

## Install TensorFlow

1. Download and install [Anaconda](#) or [Miniconda](#).
2. Open a terminal application and use the default bash shell.
3. Choose a name for your TensorFlow environment, such as “tf”.
4. Use the following commands to install the current release of TensorFlow. CPU-only is recommended for beginners.

### CPU-only TensorFlow

```
conda create -n tf tensorflow
conda activate tf
```

### GPU TensorFlow

---

**Note:** GPU TensorFlow is only available via conda for Windows and Linux.

---

```
conda create -n tf-gpu tensorflow-gpu
conda activate tf-gpu
```

TensorFlow is now installed and ready to use.

For using TensorFlow with a GPU, refer to the [TensorFlow documentation](#), specifically the section on [device placement](#).

### CUDA versions

GPU TensorFlow uses CUDA. For a version compatibility table for GPU TensorFlow on Linux, see <https://www.tensorflow.org/install/source#gpu>. For Windows, see [https://www.tensorflow.org/install/source\\_windows#gpu](https://www.tensorflow.org/install/source_windows#gpu).

GPU TensorFlow conda packages are currently only supported for Windows or Linux.

---

**Note:** TensorFlow 2.10 was the last release that supported GPU on Windows Native.

---

To install GPU TensorFlow with a non-default CUDA version like 9.0, run the following commands:

```
conda create -n tf-gpu-cuda9 tensorflow-gpu cudatoolkit=9.0
conda activate tf-gpu-cuda9
```

### Nightly builds

Advanced users may wish to install the latest nightly build of TensorFlow. These nightly builds are unstable and are only available as pip packages on PyPI.

To install the nightly build of CPU-only TensorFlow:

```
conda create -n tf-n python
conda activate tf-n
pip install tf-nightly
```

Or, to install the nightly build of GPU TensorFlow on Linux or Windows:

```
conda create -n tf-n-gpu python
conda activate tf-n-gpu
pip install tf-nightly-gpu
```

### Jupyter Notebooks

#### Running Jupyter Notebook on a remote server

Follow the following steps to use Jupyter Notebook launched from remote server.

1. Launch Jupyter Notebook from remote server, selecting a port number for <PORT>:

```
# Replace <PORT> with your selected port number
jupyter notebook --no-browser --port=<PORT>
```

For example, if you want to use port number 8080, you would run the following:

```
jupyter notebook --no-browser --port=8080
```

Or run the following command to launch with default port:

```
jupyter notebook --no-browser
```

**Please note the port setting.** You will need it in the next step.

2. You can access the notebook from your remote machine over SSH by setting up a SSH tunnel. Run the following command from your local machine:

```
# Replace <PORT> with the port number you selected in the above step
# Replace <REMOTE_USER> with the remote server username
# Replace <REMOTE_HOST> with your remote server address
ssh -L 8080:localhost:<PORT> <REMOTE_USER>@<REMOTE_HOST>
```

The above command opens up a new SSH session in the terminal.

3. Open a browser from your local machine and navigate to <http://localhost:8080/>, the Jupyter Notebook web interface. Replace 8080 with your port number used in step 1.

## Using Jupyter Notebook extensions

You can open Jupyter Notebook by running `jupyter notebook`, or by opening Anaconda Navigator and clicking the Jupyter Notebook icon.

With Anaconda you can download and install 4 extensions for the Jupyter Notebook which make the notebook easier to use:

- RISE
- Notebook anaconda.org (nb\_anacondacloud)
- Notebook Conda (nb\_conda)
- Notebook Conda Kernels (nb\_conda\_kernels)

Installing any of the 4 installs all of them. The `_nb_ext_conf` package is also installed, which activates the extensions.

## Obtaining the extensions

To get the extensions using Anaconda Navigator:

1. Install and manage notebook extensions packages like any other packages. See [Navigator user guide](#).
2. To use the new extensions, on the Navigator **Home** tab, open Jupyter Notebook.

To install all Jupyter Notebook extensions from the command line, run:

```
conda install nb_conda
```

**Note:** These extensions were already installed in Anaconda versions 4.1 and 4.2. If you have Anaconda v4.1 or v4.2 installed, there is no need to install them separately. To begin using them, open a new or existing notebook.

### Uninstalling the extensions

To remove all Jupyter Notebook extensions, run:

```
conda remove nb_conda
```

Uninstalling `nb_conda` or any other 1 of the 4 extensions uninstalls all 4.

To disable Jupyter Notebook extensions individually without uninstalling them, run:

```
python -m nb_conda_kernels.install --disable --prefix=<ENV_PREFIX>

jupyter-nbextension disable nb_conda --py --sys-prefix
jupyter-serverextension disable nb_conda --py --sys-prefix

jupyter-nbextension disable nb_anacondacloud --py --sys-prefix
jupyter-serverextension disable nb_anacondacloud --py --sys-prefix

jupyter-nbextension disable nbpresent --py --sys-prefix
jupyter-serverextension disable nbpresent --py --sys-prefix
```

---

**Note:** Replace `<ENV_PREFIX>` with your root environment or another conda environment where the extensions have been installed.

---

### RISE

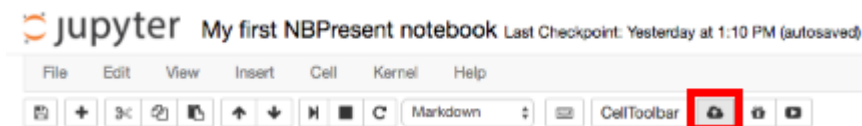
You can access the install instructions for the [RISE extension from anaconda.org](#).

[In-depth documentation](#) can be found there as well.

### Notebook anaconda.org

You must have an [anaconda.org](#) account for this extension to work. You can sign up for a free account at [anaconda.org](#).

1. You can upload your notebook to your Cloud account with a simple button push:



You can use the Attach conda environment option described below to embed a copy of your conda environment as an `environment.yaml` file in the notebook metadata.

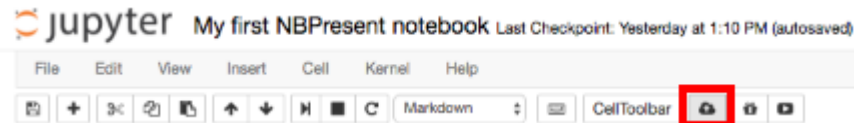
2. Sign in to Cloud:

- If you are not signed in to Cloud, a dialog box appears asking for your Cloud username and password.
- You may instead log in at the command line:

```
anaconda login
```

**Note:** This is recommended if you do not have a secure connection.

3. Open Jupyter Notebook, then open the notebook you wish to upload to Cloud.
4. In the top navigation bar, click the Publish to anaconda.org button:

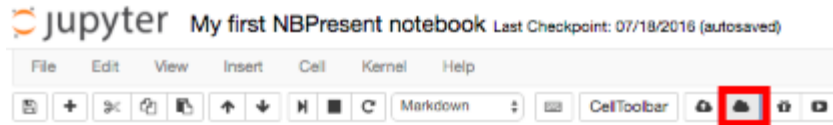


5. In the dialog box that appears, select your username.
6. Type a description of the notebook for display on Cloud:

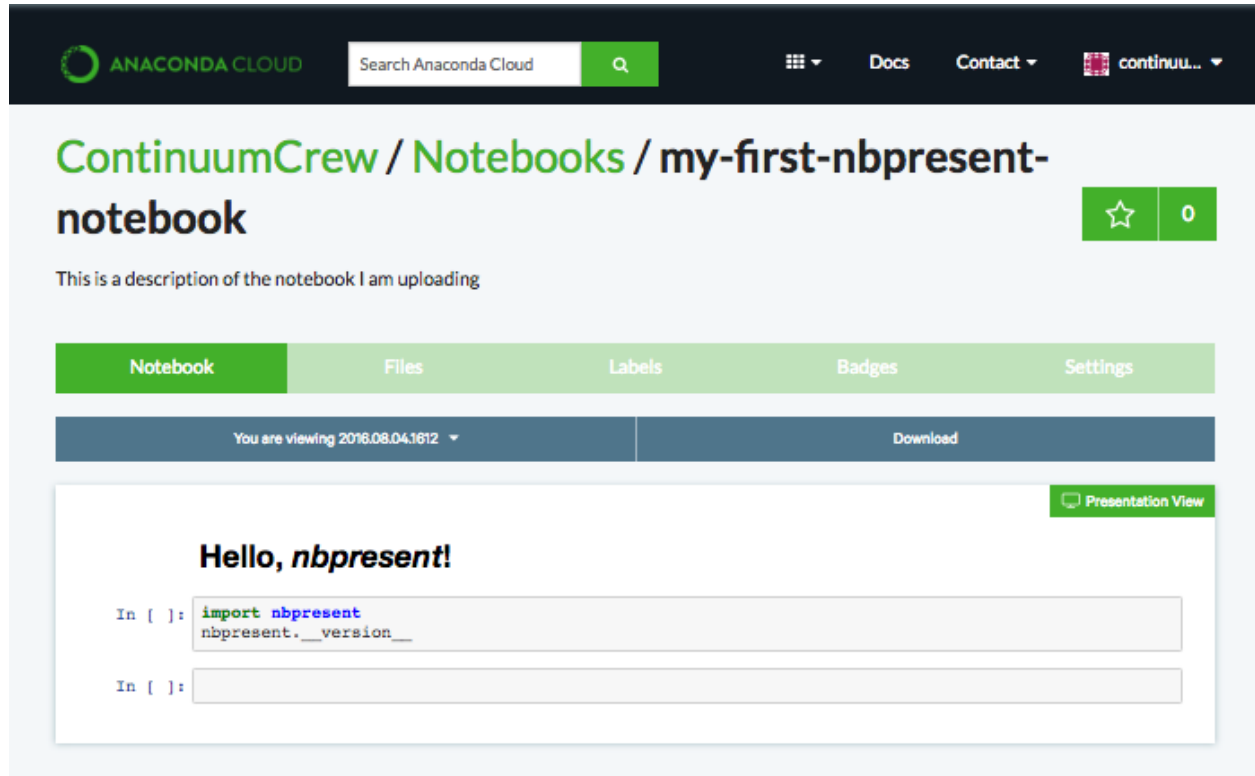
 A screenshot of a dialog box titled 'Publish My first NBPresent notebook to ANACONDA CLOUD'. The dialog contains the following elements:
 

- A dropdown menu for 'User/Organization' with 'ContinuumCrew (Continuum Crew)' selected.
- A text input field for 'Summary' containing the text 'This is a description of the notebook I am uploading'.
- An 'Environment' section with a checked checkbox labeled 'Attach conda environment'.
- A green 'Publish' button with a cloud icon.
- Information text stating: 'This notebook was previously published as <https://anaconda.org/continuumcrew/my-first-nbpresent-notebook>'.
- Text indicating the default visibility: 'Initially, all published notebooks will be **public**'.
- Text with options: 'Make **My first NBPresent notebook** **private** or **authenticated** on the [Anaconda Cloud settings page](#)'.
- A 'Close' button in the bottom right corner.

7. If you want the identical environment to be included when the notebook is downloaded and opened, select the Attach conda environment checkbox.
8. Click the Publish button.
9. After publishing, you can view the notebook or play the presentation on Cloud from the top navigation bar by clicking the Cloud button:



Your notebook on anaconda.org will look similar to this one:



For more information on Cloud, see [Anaconda.org](http://Anaconda.org).

## Notebook conda

This extension provides conda environment and package access from within Jupyter Notebook.

To manage all environments:

1. While viewing the dashboard file manager, select the **Conda** tab, which shows your current conda environments:





Files	Running	Clusters	Conda
4 Conda environments <span style="float: right;">+ ↺</span>			
Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/TestUser/screenshottest/envs/default
	flowers		/projects/TestUser/screenshottest/envs/flowers
	snakes		/projects/TestUser/screenshottest/envs/snakes

**Note:** To add a new conda environment, click the + button above the environments list on the right side.

2. Select an environment by clicking its name.
3. In the package management section that displays, the icons from left to right have the following meanings:
  - Search for packages in your current environment.
  - Refresh your packages list.
  - Update selected packages.
  - Remove selected packages.

**Conda Packages** ×

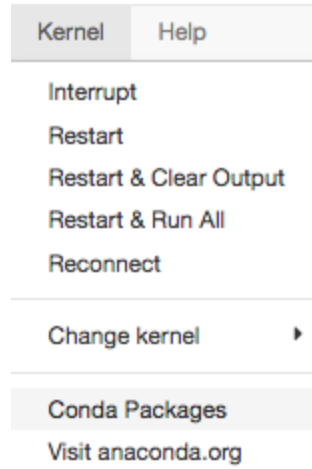
562 available packages

Name	Version	Channel
<input type="checkbox"/> _license	1.1	defaults
<input type="checkbox"/> _nb_ext_conf	0.2.0	defaults
<input type="checkbox"/> abstract-rendering	0.5.1	defaults
<input type="checkbox"/> accelerate	2.3.0	defaults
<input type="checkbox"/> accelerate_cudaib	2.0	defaults

53 installed packages in environment "snakes"

Name	Version	Build	Available
<input type="checkbox"/> appnope	0.1.0	py27_0	
<input type="checkbox"/> backports	1.0	py27_0	
<input type="checkbox"/> backports_abc	0.4	py27_0	
<input type="checkbox"/> configparser	3.5.0b2	py27_1	
<input type="checkbox"/> decorator	4.0.10	py27_0	
<input type="checkbox"/> entrypoints	0.2.2	py27_0	

To manage the current kernel environment, in the **Kernel** menu, select Conda Packages, which displays a list of conda packages in the current environment:

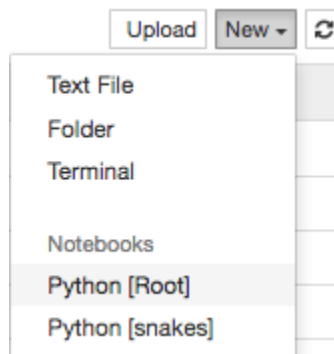


For more information on using and managing conda packages, see [Managing packages](#).

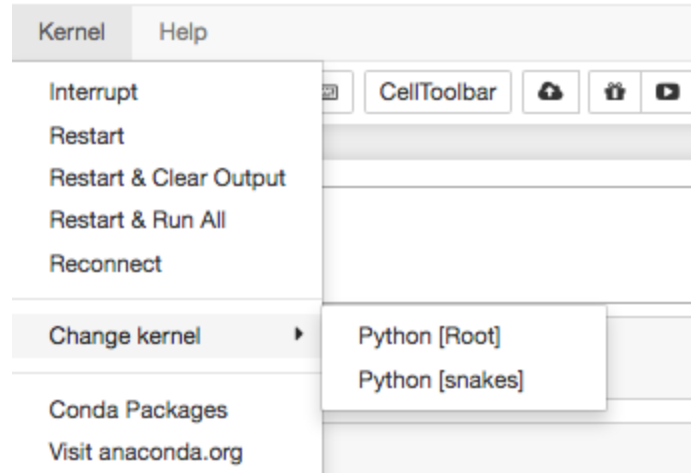
## Notebook Conda Kernels

This extension allows you to use conda environment-based kernels from the dashboard and the notebook's **Kernel** menu. It makes the notebook aware of your conda environments, and it is required for Notebook anaconda.org and Notebook Conda.

When creating a new notebook on the **Files** tab, you can pick any of the Python or R language kernels in any of your environments:



You can also change to those kernels on a current notebook:



## System/Environment configurations

### Switching between Python 2 and Python 3 environments

You can easily maintain separate environments for Python 2 programs and Python 3 programs on the same computer, without worrying about the programs interacting with each other. Switching to an environment is called activating it.

1. Create a Python 2 environment named py2, install Python 2.7:

```
conda create --name py2 python=2.7
```

2. Create a new environment named py3, install Python 3.5:

```
conda create --name py3 python=3.5
```

Now you have two environments with which to work. You can install packages and run programs as desired in either one.

3. Activate and use the Python 2 environment.

Windows:

```
activate py2
```

macOS, Linux:

```
conda activate py2
```

4. Deactivate the Python 2 environment. Use your py2 environment to install packages and run programs as desired. When finished, deactivate the environment.

Windows:

```
deactivate
```

macOS, Linux:

```
conda deactivate
```

5. Activate and use the Python 3 environment.

Windows:

```
activate py3
```

macOS, Linux:

```
conda activate py3
```

Use the py3 environment to install and run programs as desired. When finished, deactivate the environment

6. Deactivate the Python 3 environment.

Windows:

```
deactivate
```

macOS, Linux:

```
conda deactivate
```

### Using Anaconda behind a company proxy

When using Anaconda with a company proxy, you may encounter an HTTP and SSL error due to custom security profiles managed by corporate IT departments.

```
CondaHTTPError: HTTP 000 CONNECTION FAILED for url https://repo.anaconda.com/pkg/main/
↳ win-64/current_repodata.jsonElapsed:
An HTTP error occurred when trying to retrieve this URL.
HTTP errors are often intermittent, and a simple retry will get you on your way.
If your current network has https://www.anaconda.com blocked, please file
a support request with your network engineering team.
ConnectTimeout(MaxRetryError("HTTPConnectionPool(host='repo.anaconda.com', port=443):
Max retries exceeded with url: /pkg/main/win-64/current_repodata.json
(Caused by ConnectTimeoutError(<urllib3.connection.VerifiedHTTPSConnection object
at 0x0000001B79FFE3278>, 'Connection to repo.anaconda.com timed out.
(connect timeout=9.15)'))"))
```

There are 3 potential ways to resolve this. Start with updating the `.condarc` file before trying the other methods.

### Update the `.condarc` file

Anaconda recommends updating your `.condarc` file to include the `proxy_servers` key. This is the preferred method because this will affect only conda and not the system environment variables.

Read more about the [.condarc file and using proxies](#).

For example:

```
proxy_servers:
  http: http://username:password@corp.com:8080
  https: https://username:password@corp.com:8080
```

You can see if your proxy is set by running `conda info --all`.

## Environment variables

You can also resolve this error by updating the system environment variables. This can affect all CLI software across the whole system.

### Windows

To change environment variables on Windows:

1. In the Start menu, search for “env”.
2. Select “Edit Environment Variables for your account”
3. Select “Environment Variables...”
4. Press “New...”
5. Add two variables `http_proxy` and `https_proxy` both with the same value: [http://proxy-XX:XXX](#)

### MacOS

To change environment variables on macOS:

1. Check the current environment variable settings by running `printenv` in the terminal.
2. To check a specific environment variable, use `echo $variable_name`.
3. Temporarily change the environment variables by running `export variable_name=variable_value`. You can check if it's there by running `conda info --all`.

To change your environment variables on macOS permanently, review this [guide](#).

### Linux

To change environment variables on Linux:

1. Run `export variable_name=variable_value`
2. To output the value of the environment variable from the shell, run `echo $variable_name`.

Read more about [unsetting](#), [listing](#), and [persisting environment variables](#).

### Netrc authentication

A `.netrc` file is an alternate way to accomplish the same goal of setting the `*_PROXY` environment variables or configuring things only for conda in the `.condarc` file. The risk in this approach is that changing the environment variables here will affect the system settings as a whole.

[Read more about the .netrc file.](#)

### Moving Anaconda from one directory to another

Anaconda environment management requires known paths, and Anaconda must know the exact path where it is installed at installation time.

If you simply copy the Anaconda files to a new directory, Anaconda will not work.

To move Anaconda from one directory to another:

1. OPTIONAL: Save your environments using the conda [managing environments](#) instructions.
2. *Uninstall Anaconda.*
3. Go to the new directory and install it there following the *[Anaconda installation instructions](#)*.
4. OPTIONAL: Restore your environments using the conda [managing environments](#) instructions.

### Finding your Anaconda Python interpreter path

IDEs often require you to specify the path to your Python interpreter.

This path varies according to which operating system version and which Anaconda version you use, so you will need to search your file system to find the correct path to your Python interpreter.

You can search for the Python interpreter with your operating system's file manager, such as File Explorer on Windows, Finder on macOS, or Nautilus on Ubuntu Linux.

You can also use the command line to show the location of the Python interpreter in the active conda environment.

### Windows

1. From the Start Menu open the Anaconda Prompt.
2. If you want the location of a Python interpreter for a conda environment other than the root conda environment, run `activate environment-name`.
3. Run `where python`.

### macOS and Linux

1. Open a terminal window.
2. If you want the location of a Python interpreter for a conda environment other than the root conda environment, run `conda activate environment-name`.
3. Run `which python`.

## Examples

- Windows 10 with Anaconda3 and username “jsmith” – `C:\Users\jsmith\Anaconda3\python.exe`.

The Python image in a conda environment called “my-env” might be in a location such as `C:\Users\jsmith\Anaconda3\envs\my-env\python.exe`

- macOS – `~/anaconda/bin/python` or `/Users/jsmith/anaconda/bin/python`
- Linux – `~/anaconda/bin/python` or `/home/jsmith/anaconda/bin/python`

Instead of `anaconda`, the folder in your home directory might be named one of the following:

- `anaconda2`
- `anaconda3`

If you have installed Miniconda instead of Anaconda, the folder might be named:

- `miniconda`
- `miniconda2`
- `miniconda3`

## Using IDEs

Data science is a team sport, so we have built the Anaconda platform to be language-agnostic as well as extensible.

You can use the following IDEs with Anaconda:

### Eclipse and PyDev

[Eclipse](#) is an open-source platform that provides an array of convenient and powerful code-editing and debugging tools. [PyDev](#) is a Python IDE that runs on top of Eclipse.

If you do not already have Eclipse and PyDev installed:

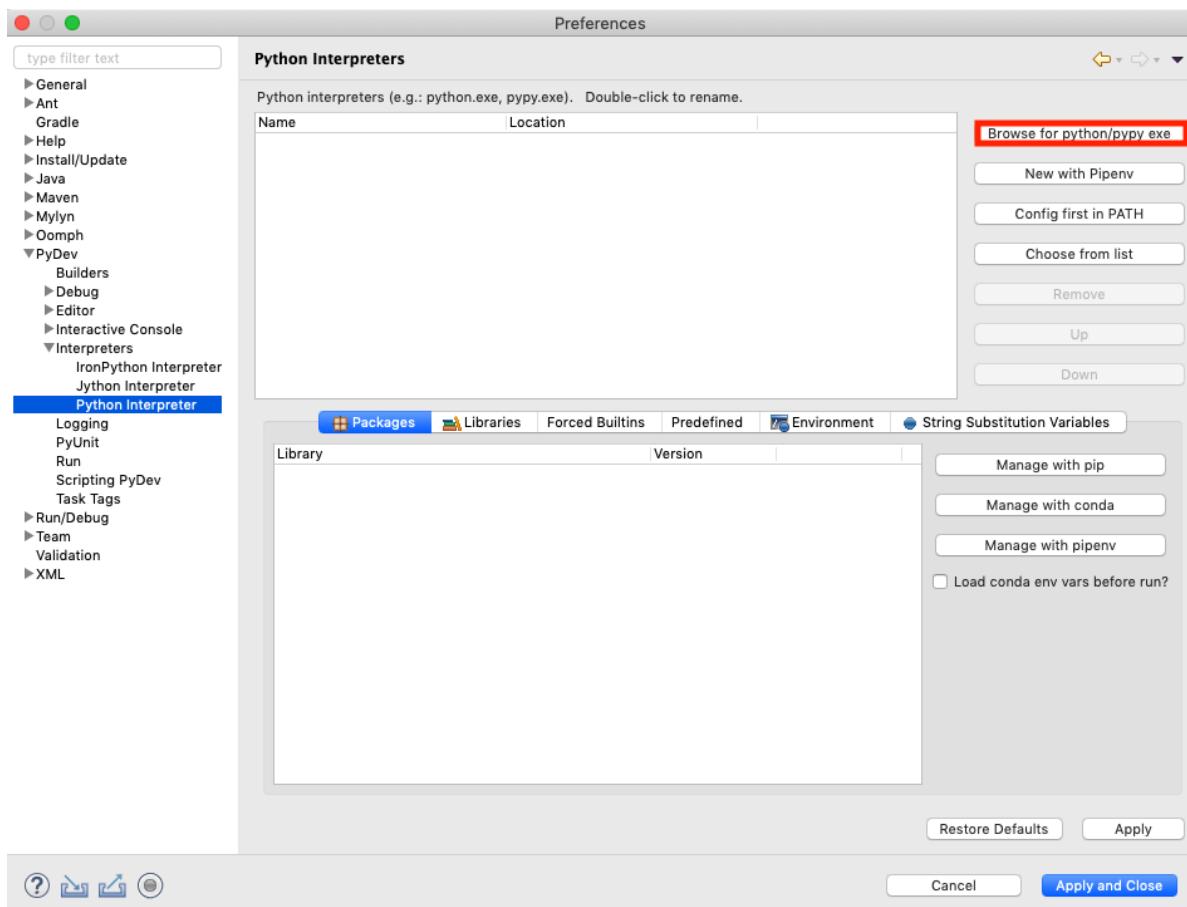
- [Download Eclipse](#) and read the [Eclipse resources](#).
- You may need to install the latest [Java JDK/JRE](#) before installing PyDev in order for PyDev to show up in the Eclipse Preferences menu after PyDev installation.
- [Install PyDev](#).

After you have Eclipse, PyDev, and Anaconda installed, set Anaconda Python as your default:

1. Open the Eclipse Preferences window:



2. In the PyDev list, select Interpreters, and then select Python Interpreter.
3. Click the Browse for python/pypy exe button:

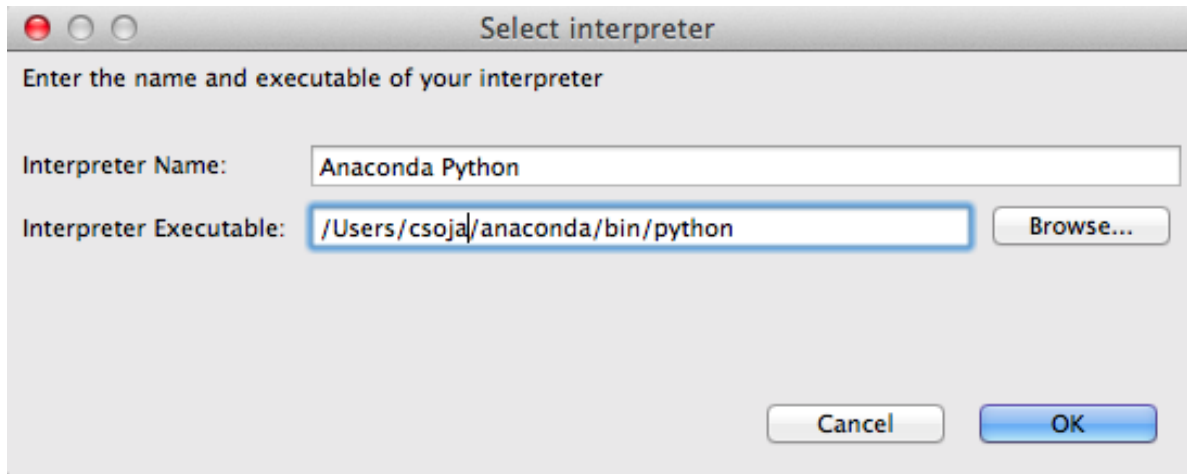


4. In the Interpreter Name box, type **Anaconda Python**.
5. Browse to your *Anaconda Python interpreter path*. The interpreter you choose is related to your environment, so Eclipse will have access to all of the packages in that environment. To add new packages, you may need to



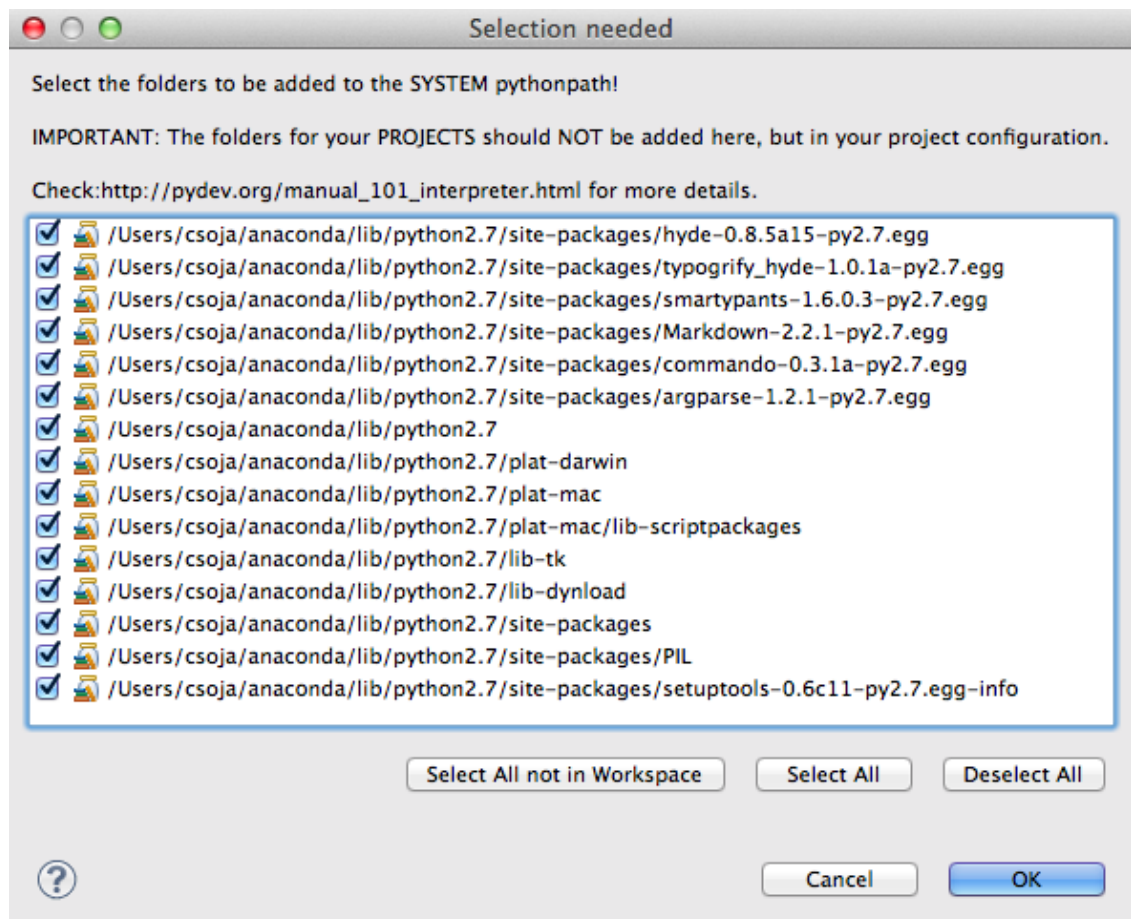
`conda install package-name` in your Anaconda Prompt or terminal.

6. Click the OK button:



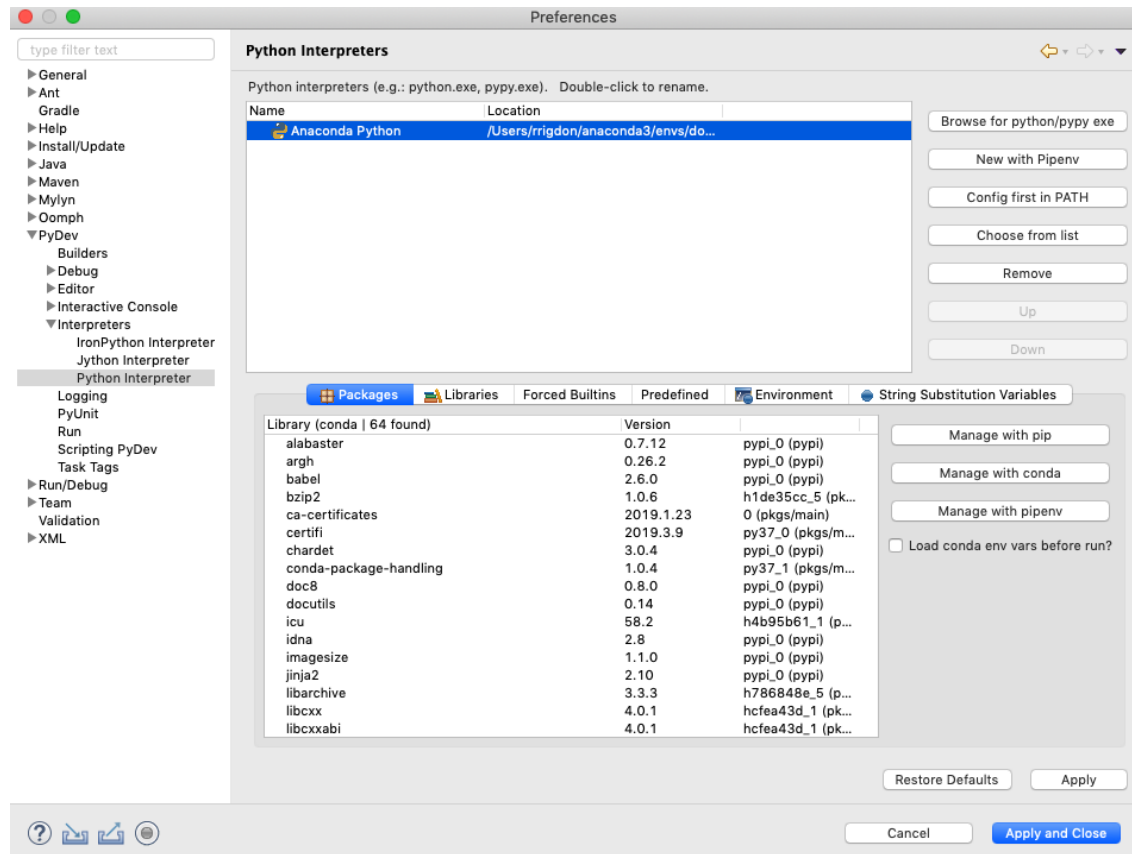
7. In the next window, select the folders to add to the SYSTEM Python path:

- a. Select all the folders:



- b. Click the OK button.

The Python Interpreters window now displays Anaconda Python:



c. Click the Apply and Close button.

You are now ready to use Anaconda Python with your Eclipse and PyDev installation.

## IDLE

IDLE is a very small and simple cross-platform IDE that is included free with Python and is released under the open-source Python Software Foundation License.

Anaconda and Miniconda include IDLE.

To use IDLE:

1. Find the IDLE program file:

EXAMPLES for Miniconda with Python 3 and user name "jsmith":

- On macOS, the full path may be /Users/jsmith/miniconda3/bin/idle3.5
- On Windows, the full path may be C:\Users\jsmith\Miniconda3\Scripts\idle

2. Run IDLE from file explorer or from the command line by entering the full path.

**Tip:** You can make a shortcut to the IDLE program file on your desktop.

## IntelliJ

IntelliJ IDEA Community Edition is the open-source version of [IntelliJ IDEA](#), an IDE (Integrated Development Environment) for Java, Groovy, and other programming languages such as Scala or Clojure. It is made by JetBrains, maker of *PyCharm Python IDE*.

### Before you start

You should have both Miniconda and IntelliJ installed and working.

### Set up IntelliJ using Miniconda

Find location of Miniconda Python executable:

```
which python
```

The system responds with your path to Python. You need this in the next step.

### Within IntelliJ

1. Go to File > Project Structure > Platform Settings > SDKs
2. Click the Add (+) icon
3. Choose Python SDK
4. Enter location of Miniconda Python executable `/Users/UserName/miniconda3/bin/python`

---

**Note:** Substitute your actual path to Miniconda that you found in the previous step.

---

5. Go to File > Project Settings > Project > Project SDK
6. Select from the drop-down: Python 3.6.0 (~/.miniconda3/bin/python...)
7. Go to Run > Debug
8. Click the Add (+) icon
9. Select Python and then enter the following:  
Name: MyProject  
Script: /Users/UserName/MyProject/my\_file.py  
Use Specified Interpreter: Python 3.6.0 (~/.miniconda3/bin/python...)

For more information, see the [IntelliJ IDEA documentation](#).

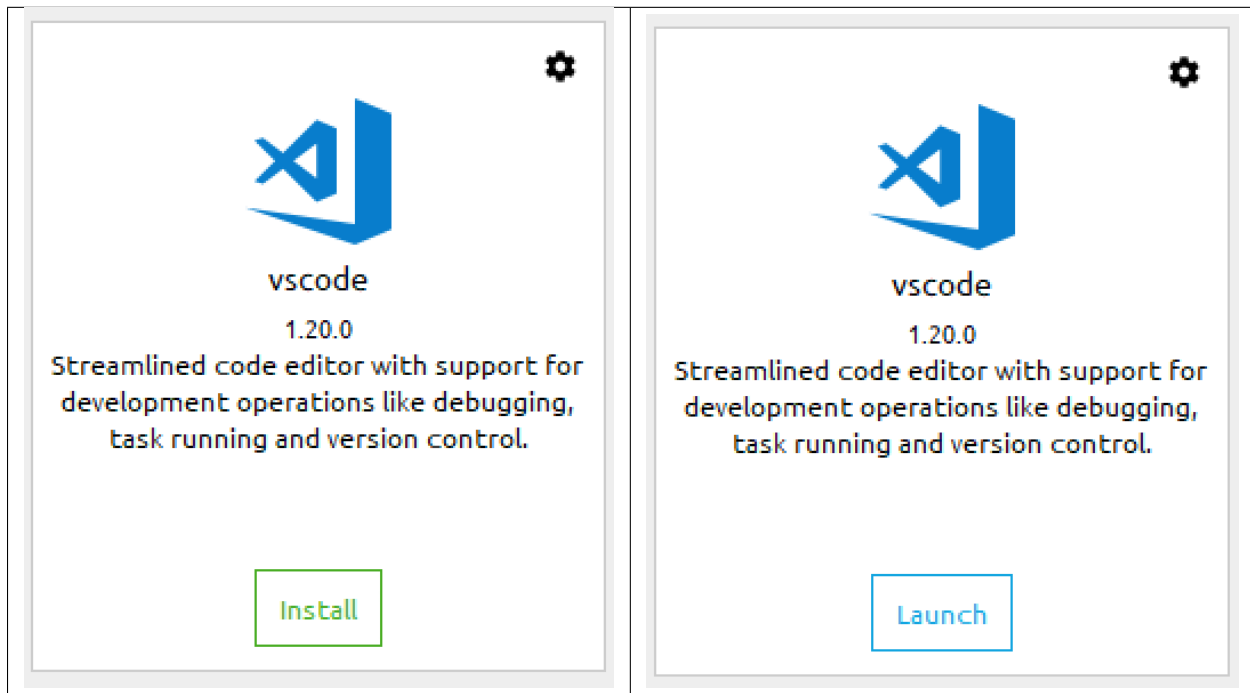
## Microsoft Visual Studio Code (VS Code)

Anaconda Distribution works with Visual Studio Code (VS Code), Microsoft's lightweight and fast open-source code editor.

VS Code is free for both private and commercial use, runs on Windows, macOS, and Linux, and includes support for linting, debugging, task running, version control and Git integration, IntelliSense code completion, and conda environments.

VS Code is openly extensible and [many extensions](#) are available.

In Anaconda Navigator version 1.7 or higher, use the VS Code tile on the home screen to install or launch VS Code.



When you launch VS Code from Navigator, VS Code is configured to use the Python interpreter in the currently selected environment.

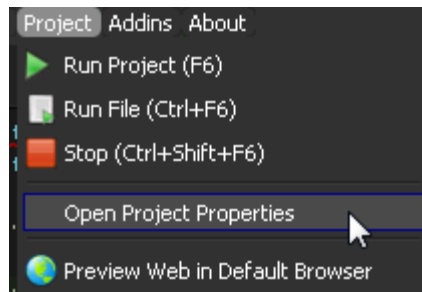
In addition to VS Code, Anaconda fully supports [Spyder](#), Jupyter Notebook, and other IDEs.

## Ninja IDE

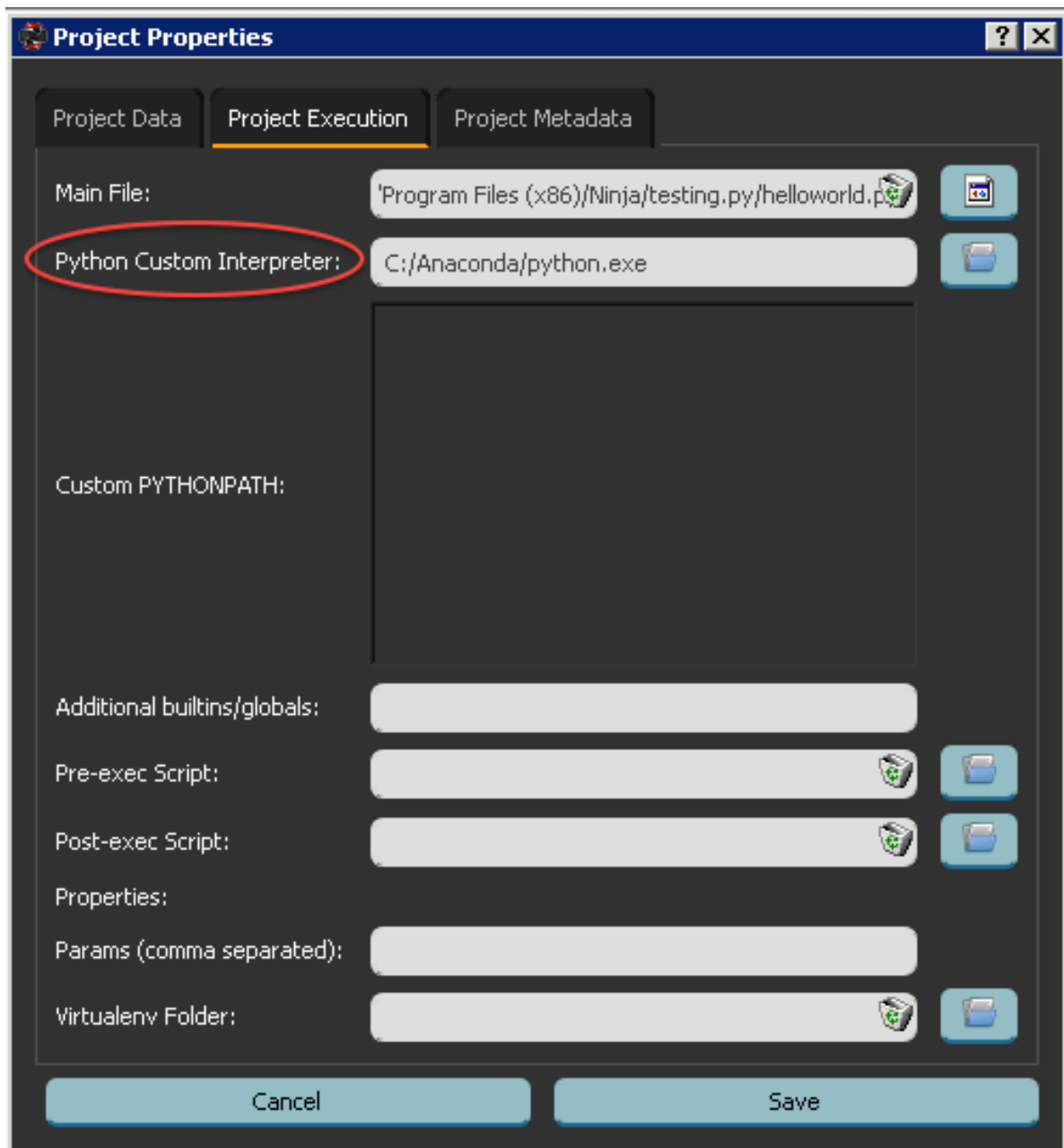
[Ninja IDE](#) is a cross-platform, free, open-source IDE specially designed for Python application development.

To use Anaconda Python with the Ninja IDE:

1. In the **Project** menu, select Open Project Properties:



2. On the **Project Execution** tab, in the Python Custom Interpreter box, enter *the Anaconda Python interpreter path* to select Anaconda Python:



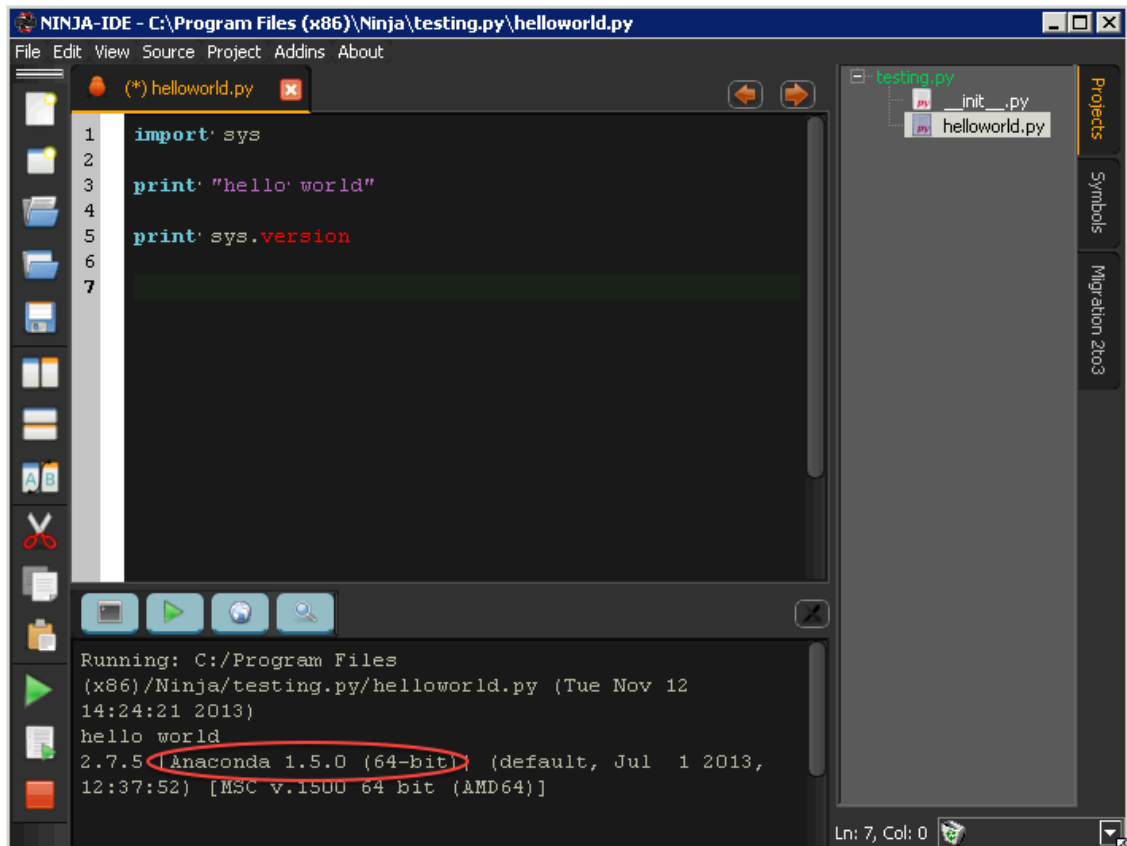
3. Verify the setup with a test script:

- a. To create the test script, enter this code:

```
import sys
print(sys.version)
```

- b. Run your test script.

In the command output, your Anaconda Python version is listed:



For more information, see the [Ninja-IDE documentation](#).

## Using PyCharm

**PyCharm** is an IDE that integrates with IPython Notebook, has an interactive Python console, and supports [Anaconda](#) as well as multiple scientific packages. PyCharm also supports creating virtual environments for Python with conda. This topic will cover the following:

## Configuring a conda environment in PyCharm

Many times, Python projects will require very different setups, with access to different versions of Python and different packages and their dependencies. Conda environments can be used with PyCharm projects to ensure that each of your projects are being built and run to the exact Python specifications that they require.

You can create a new conda environment when you create a new Python project in PyCharm, configure an existing conda environment to a new project, or switch conda environments within a project that already exists.

### Creating a new conda environment from a PyCharm project

PyCharm will create a basic conda environment for you (with a selected Python version) as part of an initial project setup, and will link your PyCharm project to that environment.

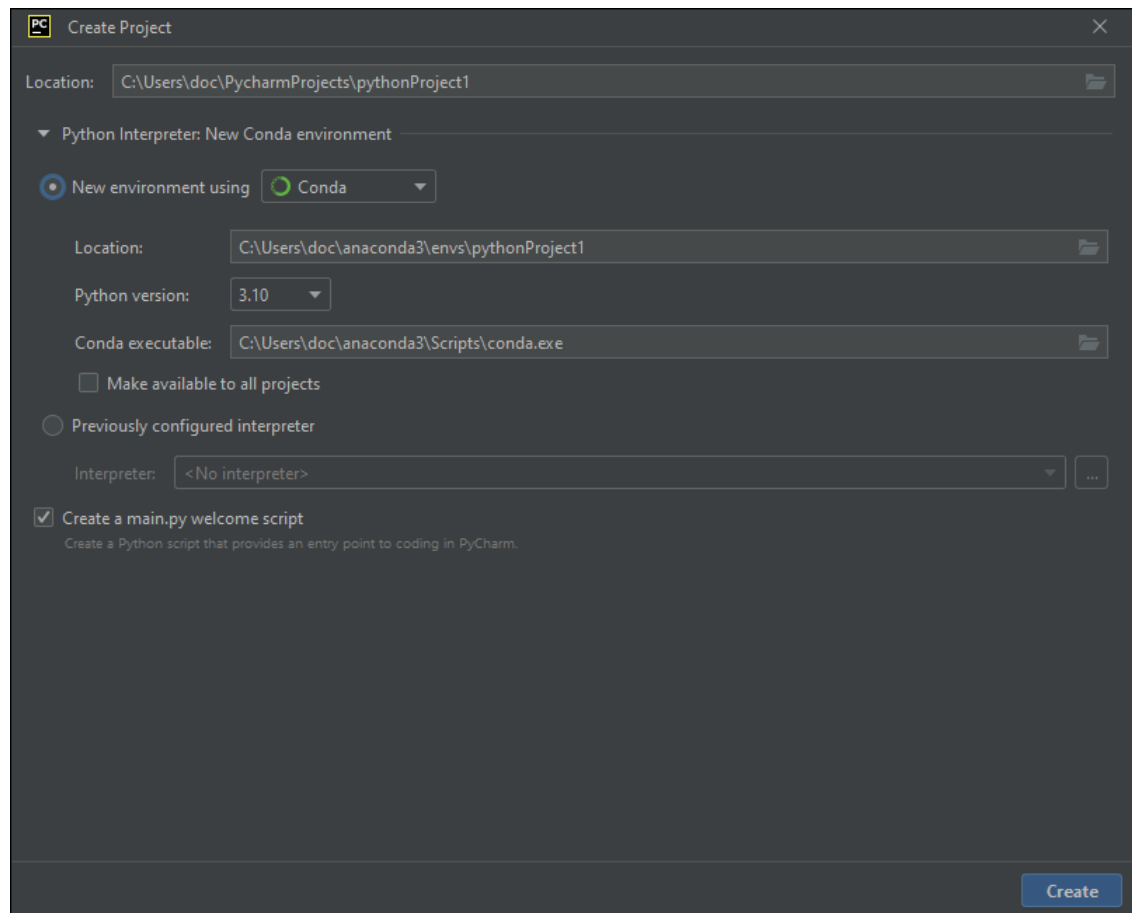
1. After opening PyCharm, click **New Project**.
  - a. Use **Location** to change your project's name and file location, if necessary.
  - b. Expand **Python Interpreter**, if necessary.
  - c. Your **New environment** should use Conda instead of the default Virtualenv.
  - d. Specify the location and name of the new conda environment in **Location**.

---

**Note:** The directory where the new conda environment is located must be empty.

---

- e. Select the correct **Python version**.
- f. Specify the location of the **Conda executable** file.
- g. Select whether to **Make available to all projects**.

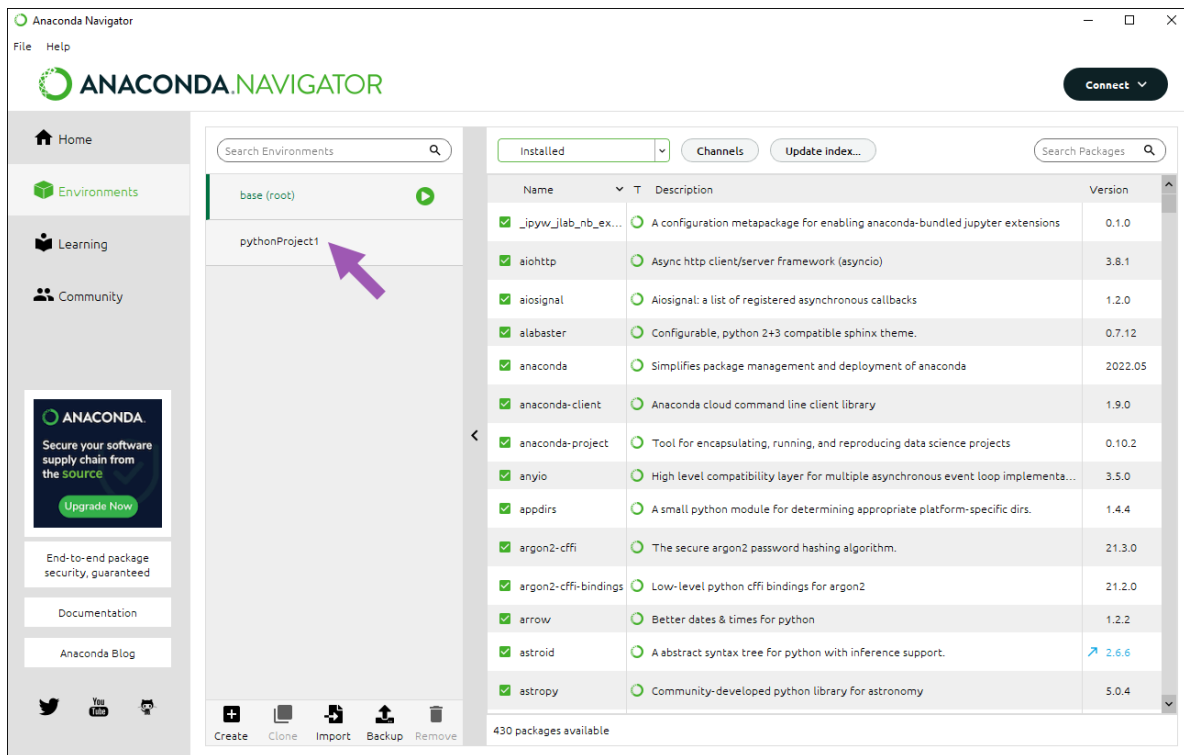


2. Click **Create** to create the PyCharm project and conda environment.
3. You can check that the conda environment was created by using `conda list env` in your Terminal or Anaconda Prompt:

```
(base) C:\Users\doc> conda env list
# conda environments:
#
base                * C:\Users\doc\anaconda3
pythonProject1      C:\Users\doc\anaconda3\envs\pythonProject1
```

Or you can look at the Environments tab in Navigator to see the same information:

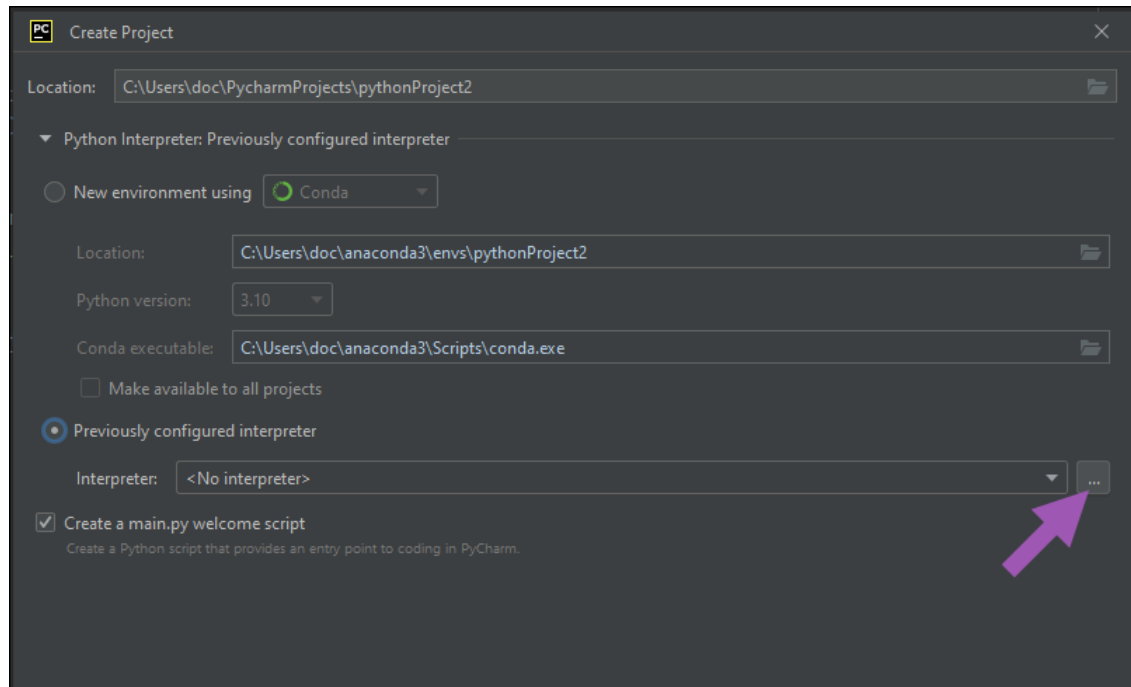




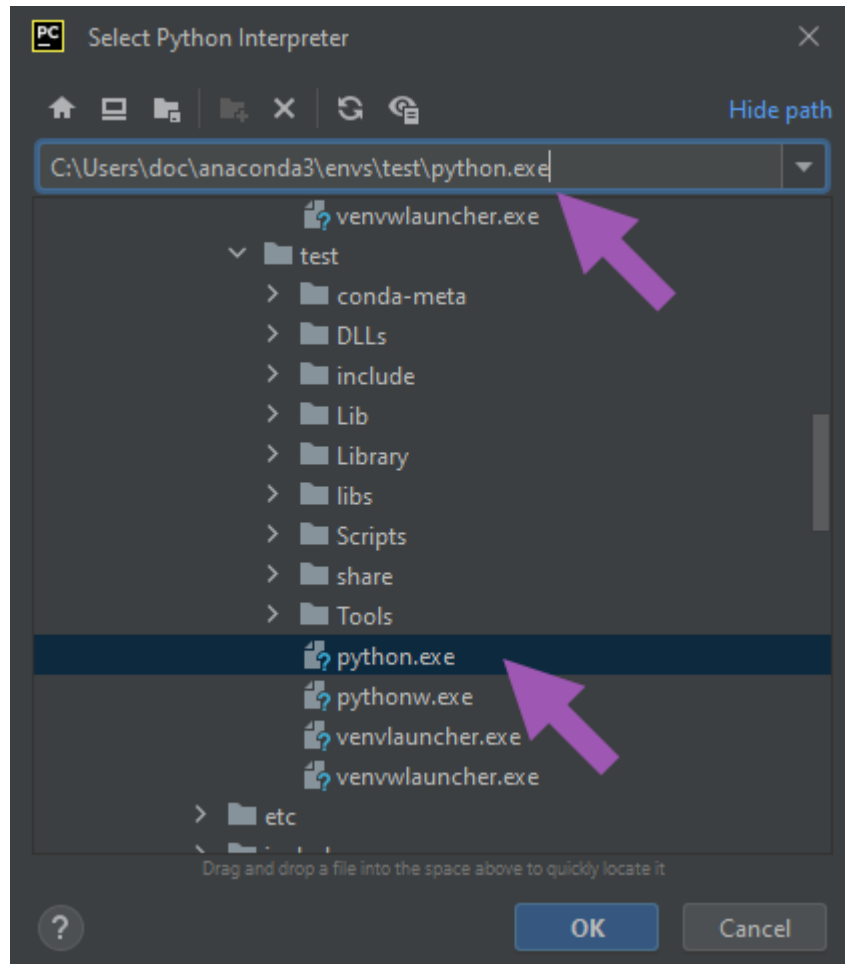
## Configuring a PyCharm Project with an existing conda environment

Let's say you've already created a conda environment that you know will be perfect for your latest PyCharm project. You can easily link an existing conda environment to a project in PyCharm using the following instructions:

1. After opening PyCharm, click **New Project**.
  - a. Use **Location** to change your project's name and file location, if necessary.
  - b. Expand **Python Interpreter**, if necessary.
  - c. Choose **Previously configured interpreter**.
  - d. Click the three dots to add a Python Interpreter.



- e. Choose **Conda Environment**.
- f. If the link to the correct environment's bin folder does not appear in the **Interpreter** dropdown, you can easily find the file path using your Terminal or Anaconda Prompt:
- Open the correct environment using `conda activate ENV-NAME`, replacing ENV-NAME with the name of your environment.
- ```
(base) C:\Users\doc> conda activate my_env
(my_env) C:\Users\doc>
```
- Then, use either `where.exe python` (Windows) or `which python` (macOS or Linux) to determine the file path location of that environment's Python installation.
- ```
(my_env) C:\Users\doc> where.exe python
C:\Users\doc\anaconda3\envs\my_env\python.exe
```
- g. Select the three dots beside **Interpreter** and copy the path. If that instance of Python exists, the file tree will open to its file directory and select it.

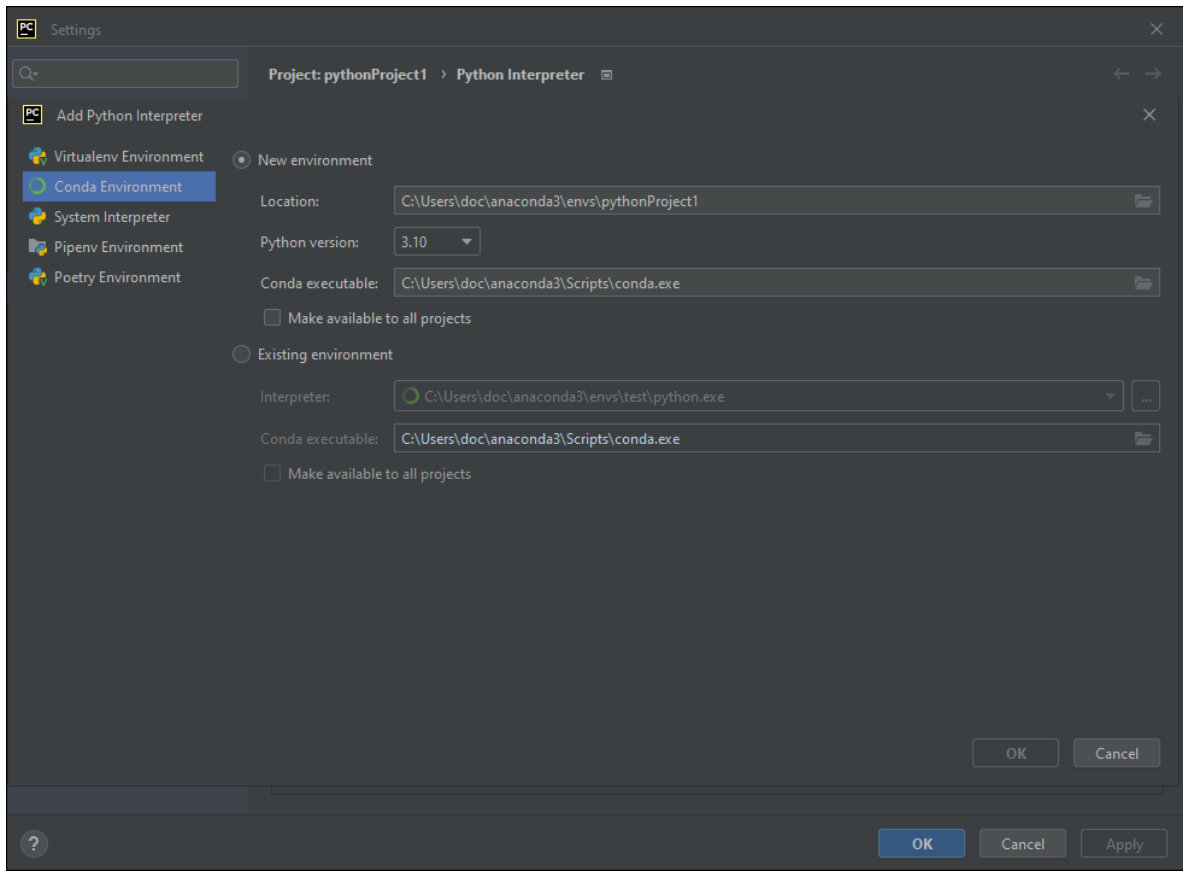


- h. If necessary, change the file path to your conda installation and choose whether to make this environment available to all PyCharm projects.
2. Click **OK** and then **Create** to finish creating your new project.

### Switching environments within a PyCharm Project

Sometimes you may want to change the conda environment associated with an ongoing project. You can use the following instructions to change your project environment preferences:

1. Open the PyCharm project associated with the conda environment you want to change.
2. Open the Settings/Preferences dialog. In Windows, go to **File > Settings**. In macOS, go to **PyCharm > Preferences**.
3. Select **Project: <project name>**, then **Project Interpreter**.
4. Select a new Python Interpreter by clicking the gear and then clicking **Add**.
5. Select **Conda Environment**.



6. To create a new environment:

- a. Select **New environment**.
- b. Specify the location and name of the new conda environment in **Location**.

---

**Note:** The directory where the new conda environment should be located must be empty.

---

- c. Select the correct **Python version**.
- d. Specify the location of the **Conda executable** file.
- e. Select whether to **Make available to all projects**.

7. To use an existing environment:

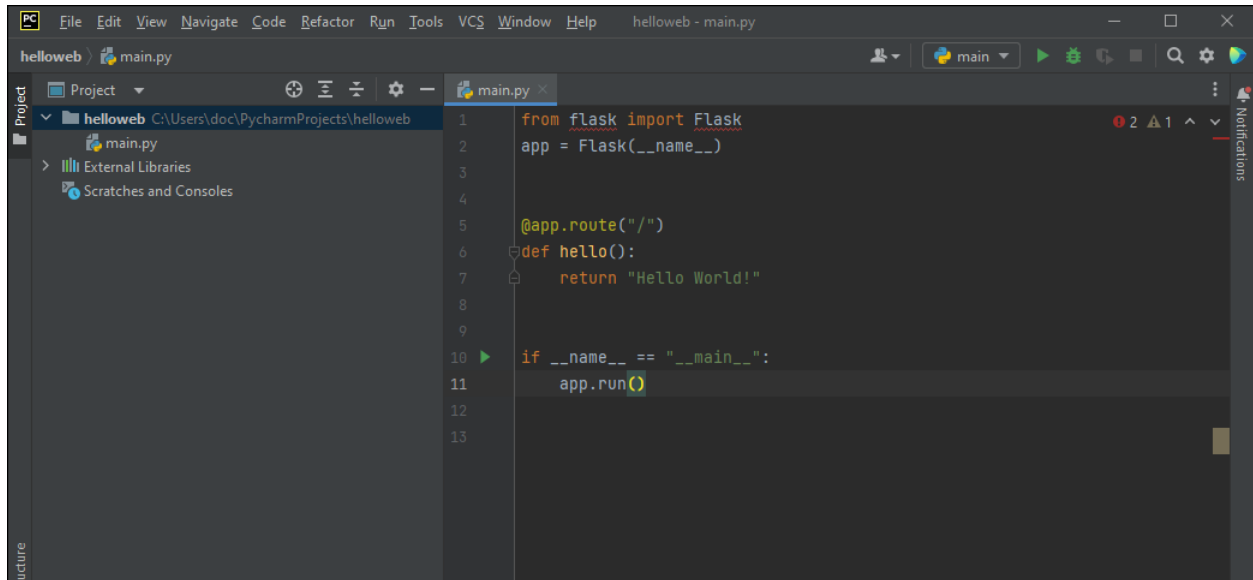
- a. Select **Existing environment**.
- b. Specify the required interpreter. For more information on finding the correct environment, see [Configuring a PyCharm Project with an existing conda environment](#).
- c. Select whether to **Make available to all projects**.

8. Click **OK** to finish changing your PyCharm project's environment.

## Adding a package to a project

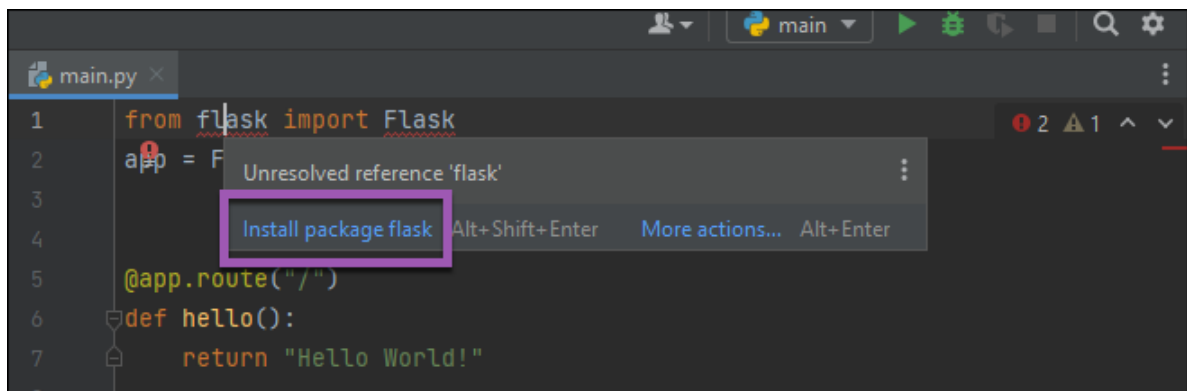
If you've added a package to your PyCharm project that is not within the standard Python library, you can add it to your project's conda environment with PyCharm.

The project in this example uses the `flask` package.

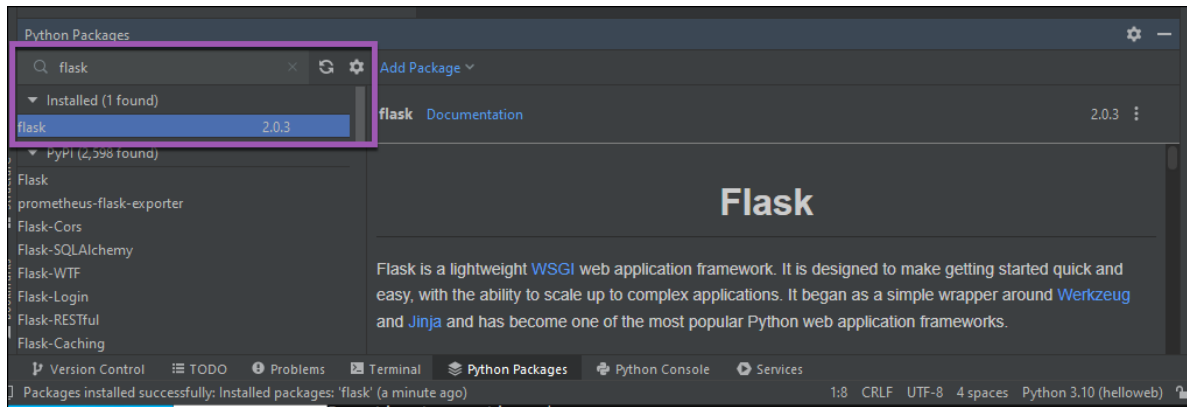


You can see that the package import is red underlined in the code. If you hover over one of them, PyCharm tells you that the reference to `flask` is unresolved. That means that the package is not available to the program and needs to be installed.

1. Click **Install package flask** in the popup to install `flask` to the environment you currently have connected to your project.



2. After `flask` is installed, it will be displayed in your project's python packages. Click **Python Packages** and search for "flask" to view newly installed package.



## Adding a repository to a project

Sometimes packages you're using in your PyCharm project won't be available in any Anaconda default channels. To add a new repository to your PyCharm project, use the Python Packages tool window.

1. Go to **View > Tool Windows > Python Packages**.
2. Click the gear next to the search bar.
3. Click **+**.
4. Enter the name of the repository.
5. Enter the repository URL.
6. If the repository is local, choose "None" for **Authorization**. Otherwise, choose "Basic HTTP" and enter your username and password for the repository.

For repositories like conda-forge, the easiest way to install packages is to use your terminal/Anaconda Prompt. Activate your project's environment and install the package.

```
(base) C:\Users\doc> conda activate my_env
(my_env) C:\Users\doc> conda install -c conda-forge PKG-NAME
```

Replace PKG-NAME with the name of the package you are trying to install. Once installation is complete, you will see the package listed in the package list for the selected conda environment for your PyCharm project.

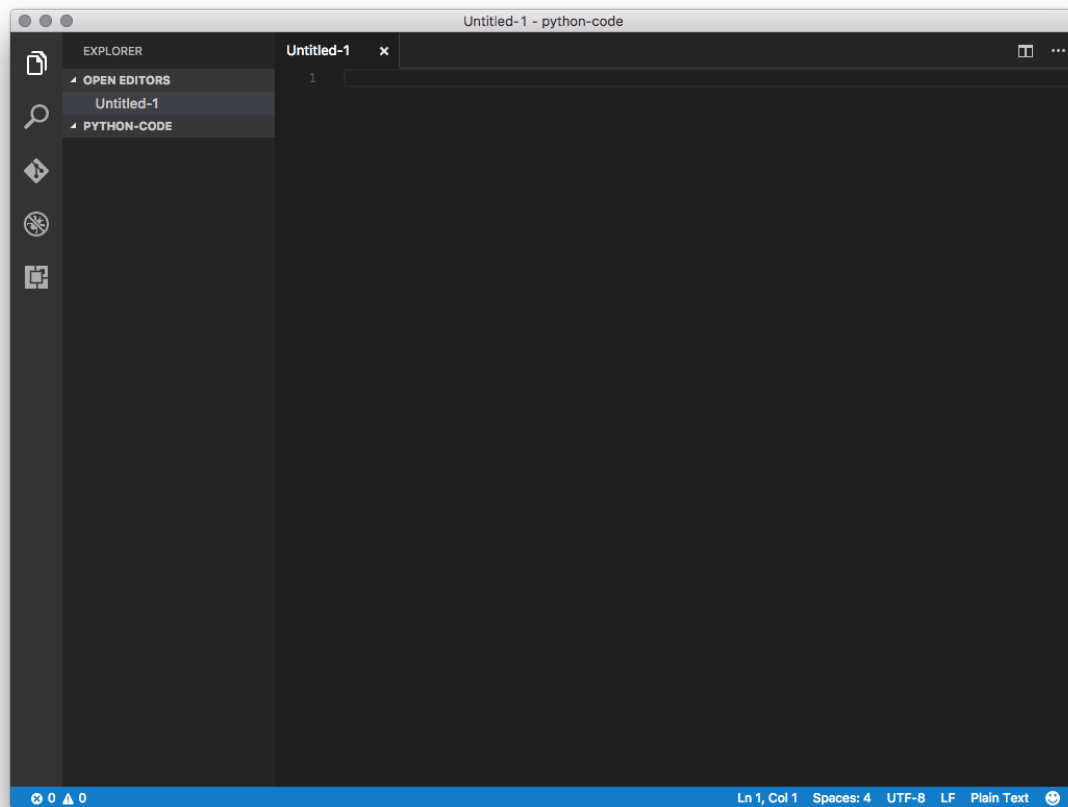
For more information on adding repositories to your PyCharm project's conda environment, see [the PyCharm documentation](#).

## Python for Visual Studio Code

[Visual Studio Code](#) (VSC) is a free cross-platform source code editor. The [Python for Visual Studio Code](#) extension allows VSC to connect to Python distributions installed on your computer.

If you've installed Anaconda as your default Python installation and installed Python for Visual Studio Code, your VSC installation is already set to use Anaconda's Python interpreter.

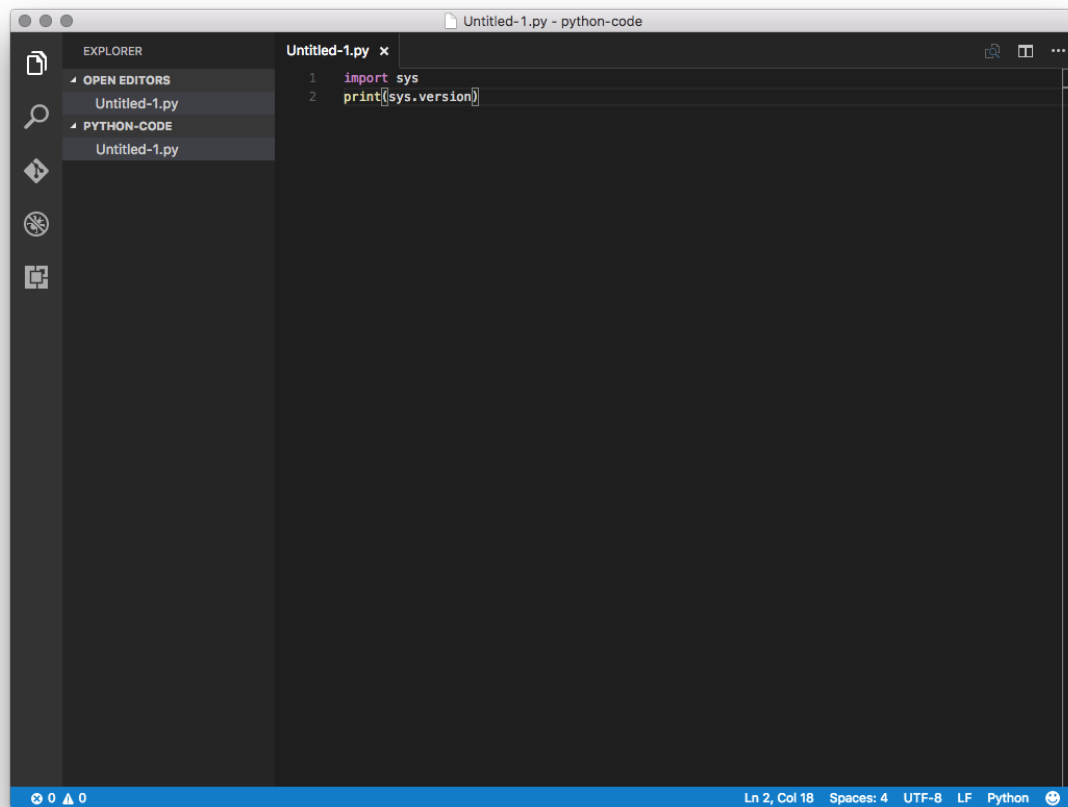
1. Create a new Python source code file:
  1. In the **File** menu, select Open to choose a directory to place the code.
  2. In the **File** menu, select New File. Your screen will now look like this:



2. Click Plain Text at the bottom of the window to associate the new file with the Python interpreter.

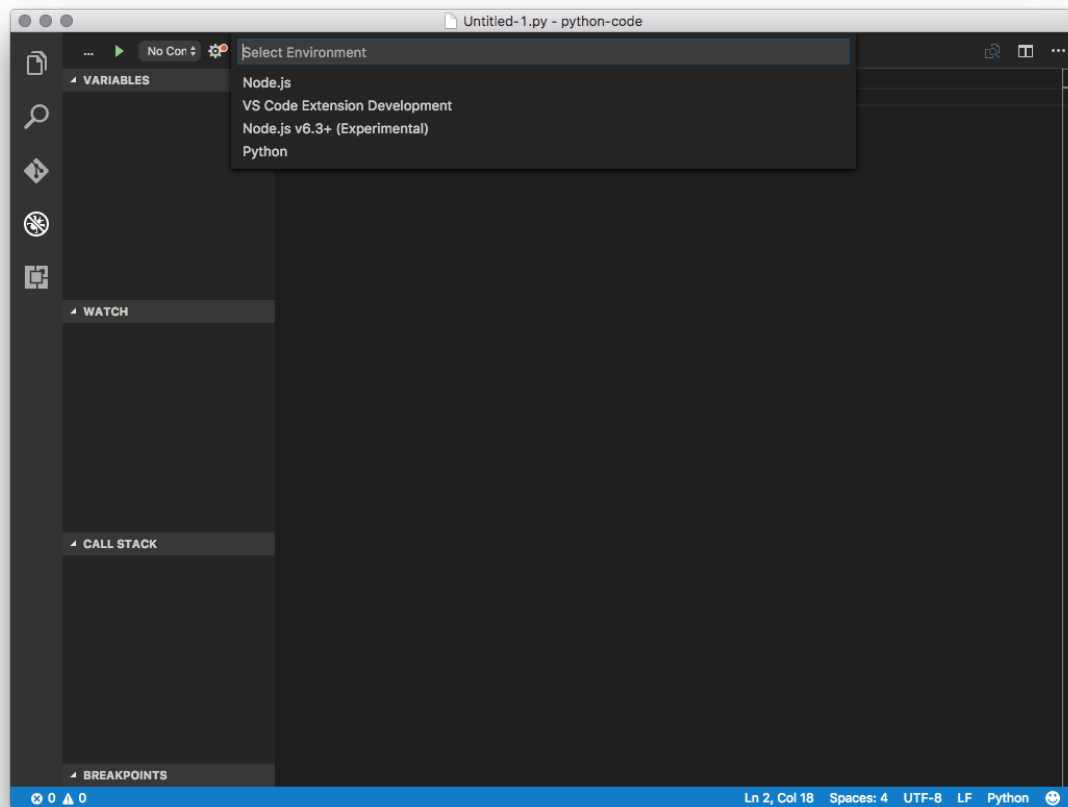


3. In the menu that displays, type or select Python.
4. In the pane on the right, add source code:



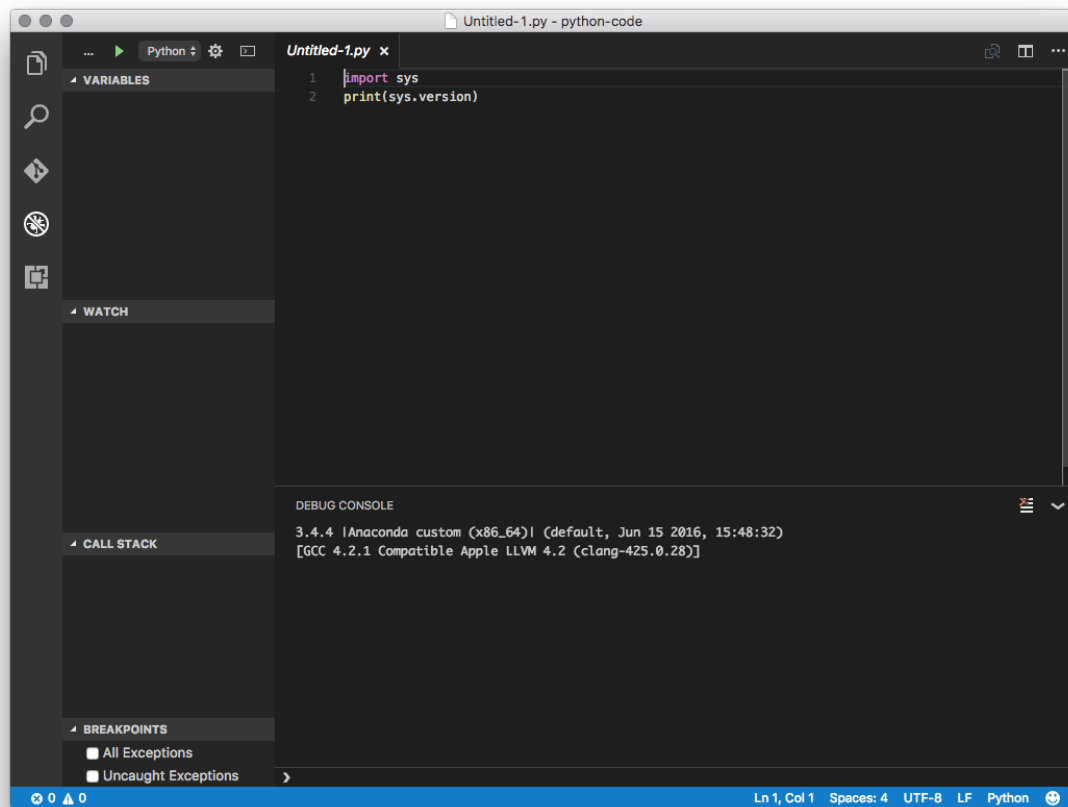
5. To save the file, in the **File** menu, select Save.
6. To open the Debug pane, click the bug icon. Click the gear icon, and then select Python:





7. At the top-right, click the green run arrow next to Python.

The source code is run using your Anaconda Python interpreter:



## Python Tools for Visual Studio (PTVS)

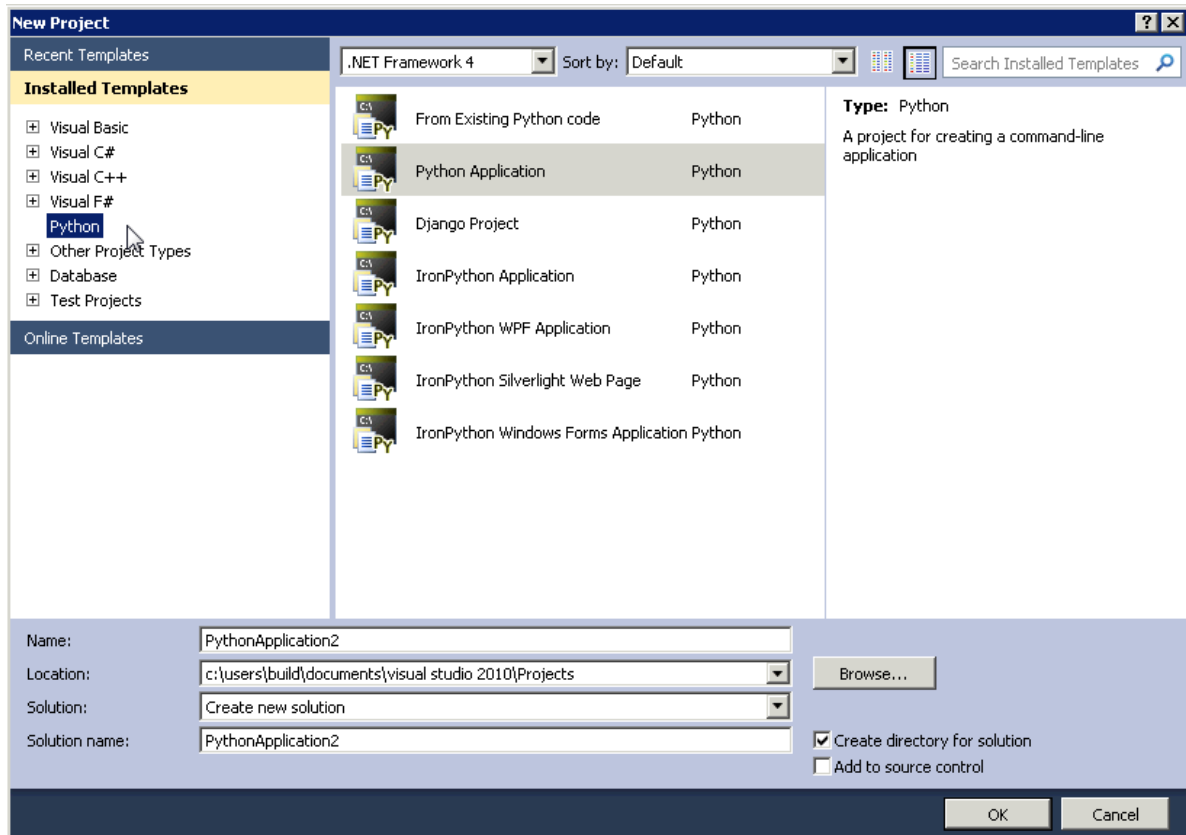
[Python Tools for Visual Studio](#) is a free, open source plugin that turns Visual Studio into a Python IDE.

If you have installed Anaconda as your default Python installation and installed PTVS, your Visual Studio installation is already set to use Anaconda's Python interpreter in PTVS.

To verify this, create a new Python project and then check whether Anaconda is the Python that it uses.

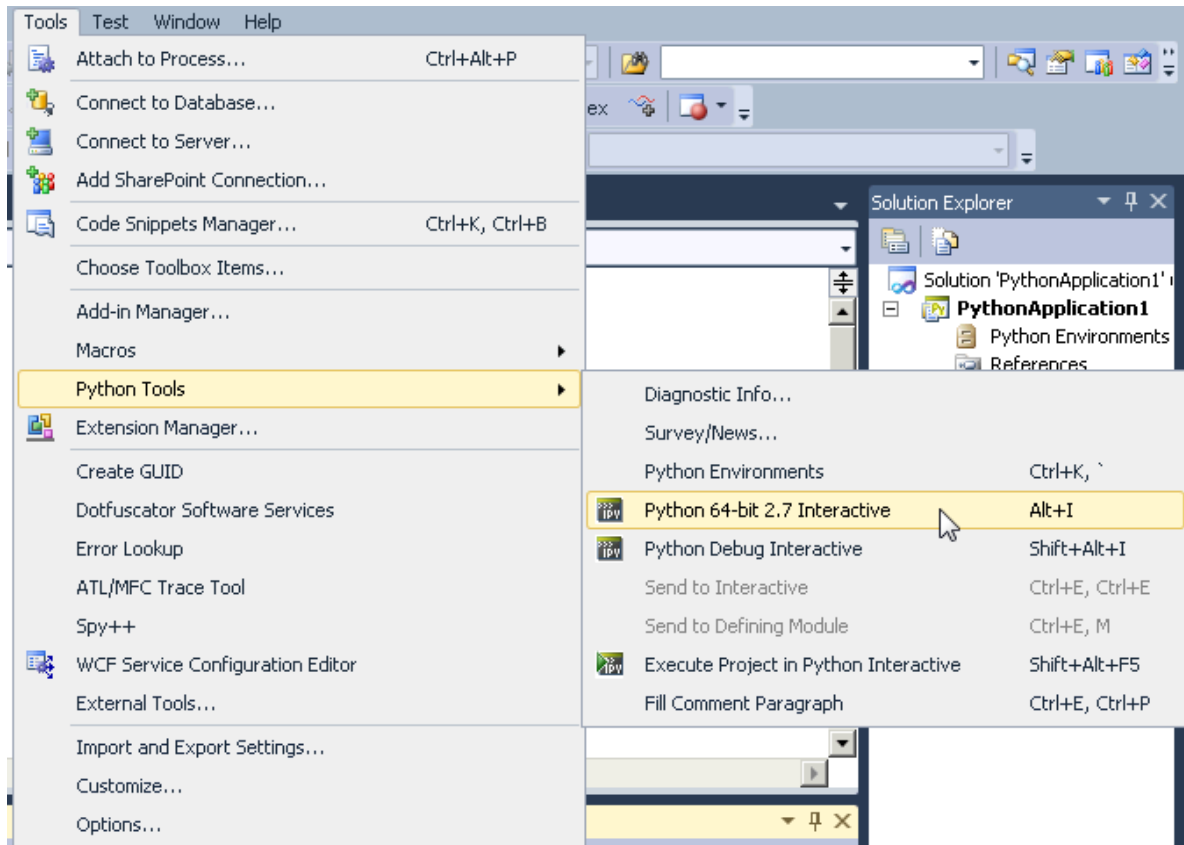
To create a new Python project:

1. In the **File** menu, select New, and then select Project. The keyboard shortcut is Ctrl-Shift-N.
2. Select Python Application:



To check which Python the project uses:

1. From the **Tools** menu, select Python Tools, and then select Python Interactive. The keyboard shortcut is Alt+I:



2. In the **Python Interactive** window, type `import sys` and then press Enter.
3. Type `sys.version` and then press Enter.

If PTVS is using Anaconda, your Anaconda Python version is displayed. In the example below, it is Anaconda 1.5.0 (64-bit):

```

Python 64-bit 2.7 Interactive
Python interactive window. Type $help for a list of commands.
>>> import sys
>>> sys.version
'2.7.5 |Anaconda 1.5.0 (64-bit)| (default, Jul 1 2013, 12:37:52) [MSC v.1500 64 bit (AMD64)]'
>>>
  
```

If PTVS does not automatically discover Anaconda, see the [official PTVS documentation](#), especially the section on [Selecting and Installing Python Interpreters](#) and the [PTVS installation instructions](#).

## Spyder

Spyder, the Scientific Python Development Environment, is a free integrated development environment (IDE) that is included with Anaconda. It includes editing, interactive testing, debugging, and introspection features.

After you have installed Anaconda, start Spyder on Windows, macOS, or Linux by running the command `spyder`.

Spyder is also pre-installed in *Anaconda Navigator*, which is included in Anaconda. On the Navigator **Home** tab, click the Spyder icon.

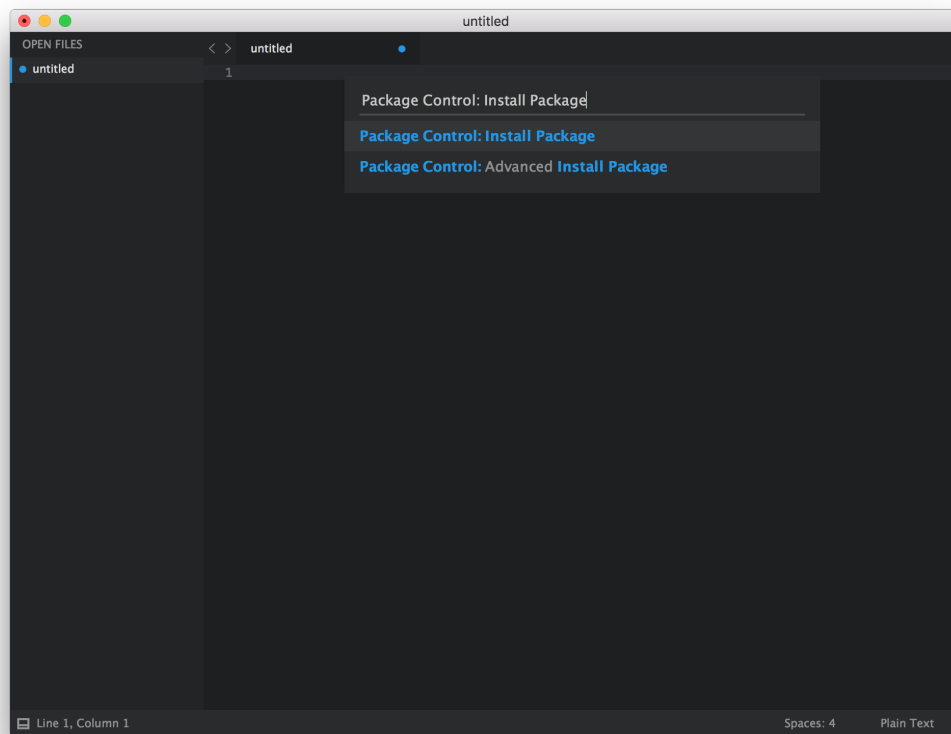
For more information about Spyder, see the [Spyder web page](#) or the [Spyder documentation](#).

## Sublime Text

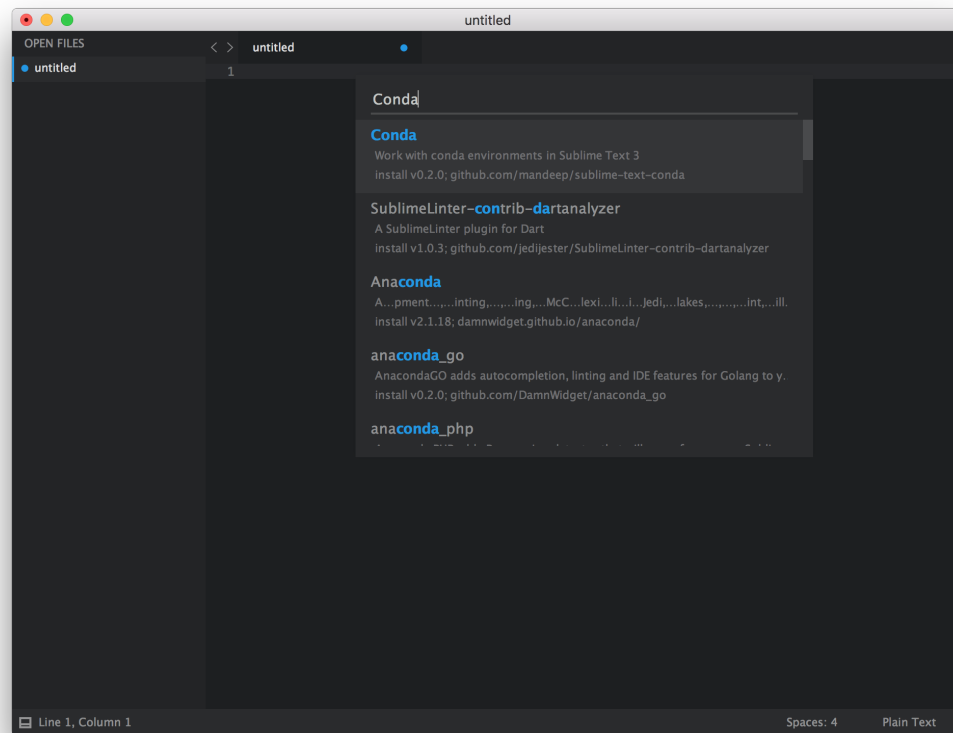
Sublime Text is a cross-platform text editor for code, markup, and prose. [Download and Install Sublime Text](#).

To use your Anaconda installation with Sublime Text:

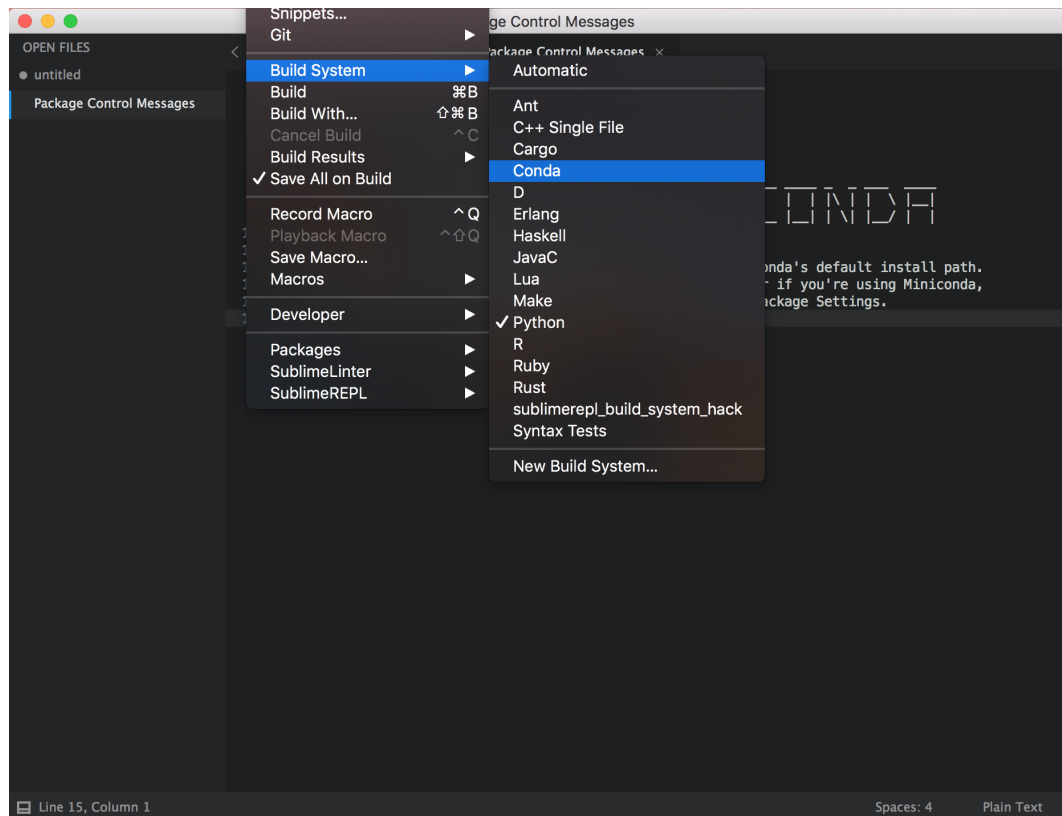
1. [Download Package control](#).
2. Open the Sublime Text command palette by pressing CTRL+Shift+p (Windows, Linux) or CMD+Shift+p (macOS).
3. All Package Control commands begin with “Package Control:”. Start by typing “Package”.
4. Select “Package Control: Install Package”.



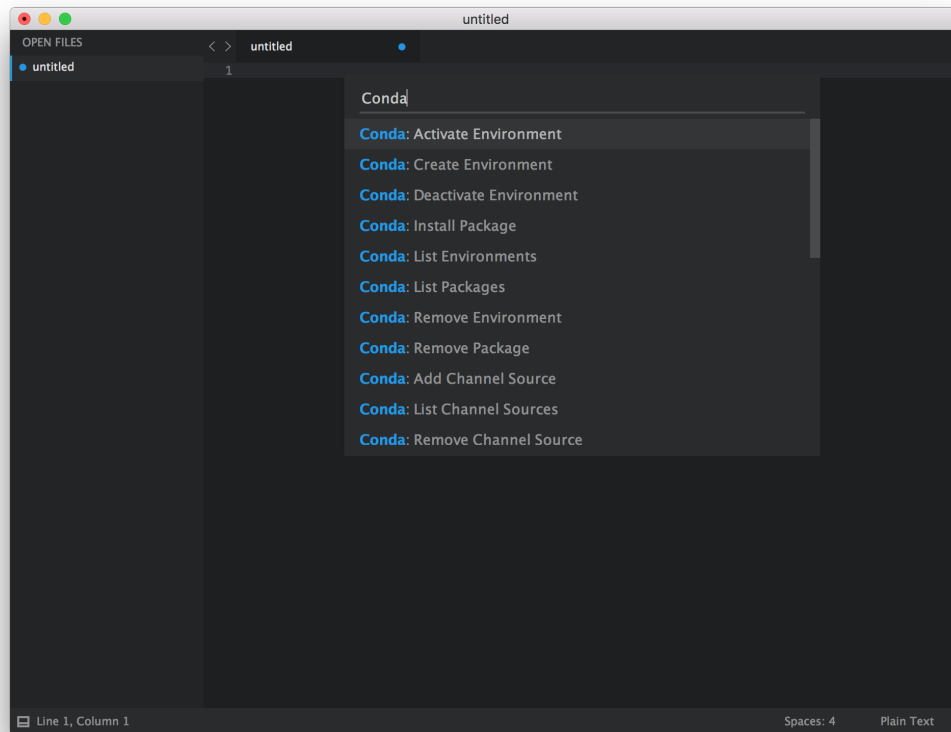
5. Search for `conda` in the command palette and select the conda plugin. When the plugin is installed, a Package Control Message will open in the Sublime Text window.



6. Change the current Build System to conda by accessing Tools -> Build System -> Conda in the menu bar.



7. Access the conda Commands with the Command Palette by searching for conda.



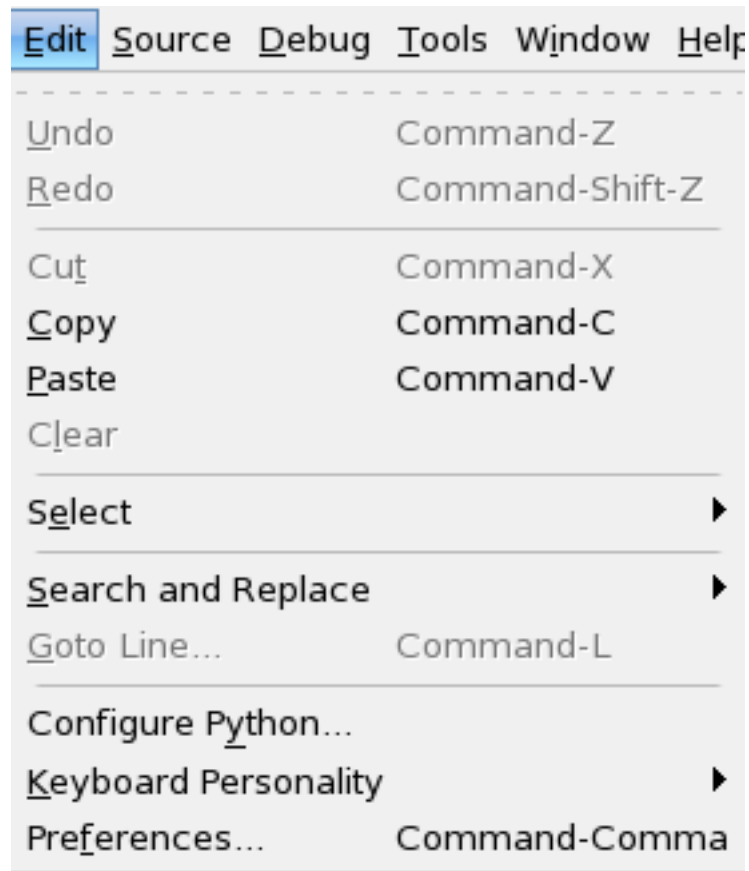
## Wing IDE

**Wing IDE** is an IDE designed specifically for the Python programming language. Wing IDE is offered in a paid Pro version and in free Personal and 101 versions.

To set up your Wing IDE installation to use Anaconda:

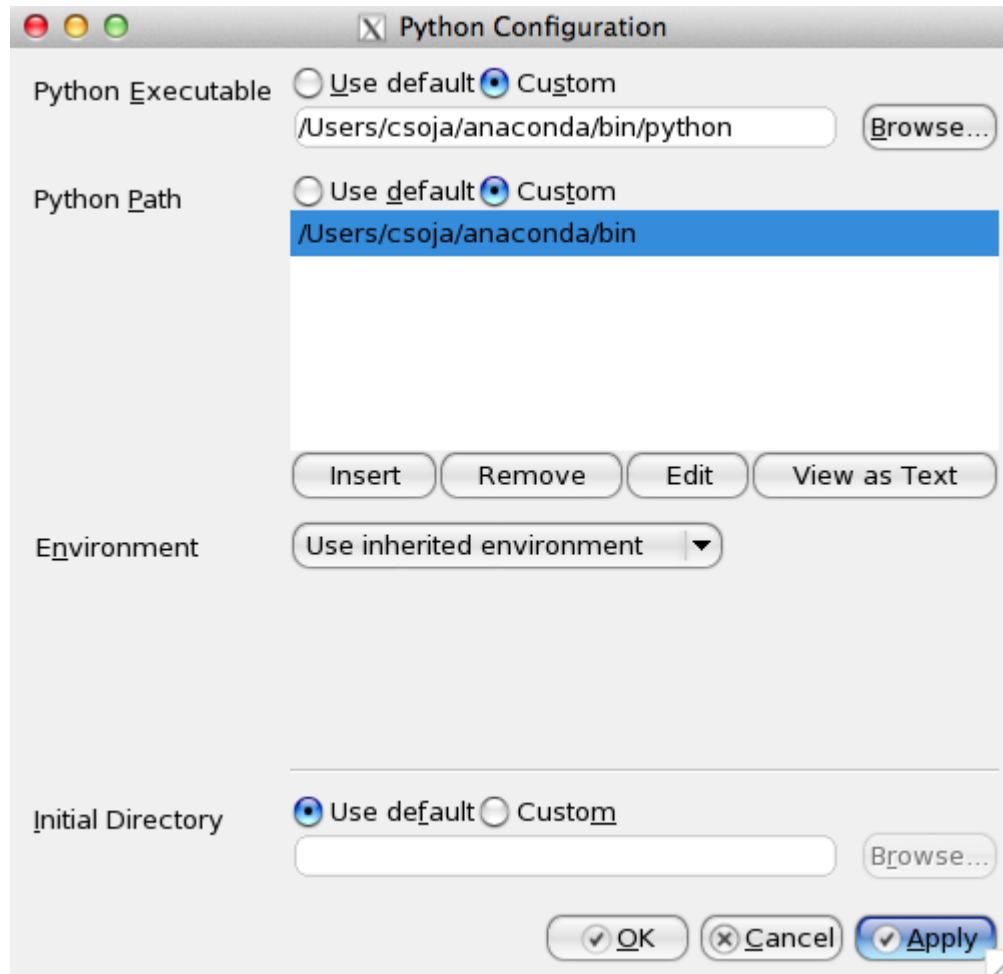
1. Navigate to the Python configuration window:
  - In Wing 101, in the **Edit** menu, select Configure Python.
  - In Wing Personal and Wing Pro, in the **Project** menu, select Project Properties.

The Wing 101 menu looks like this:

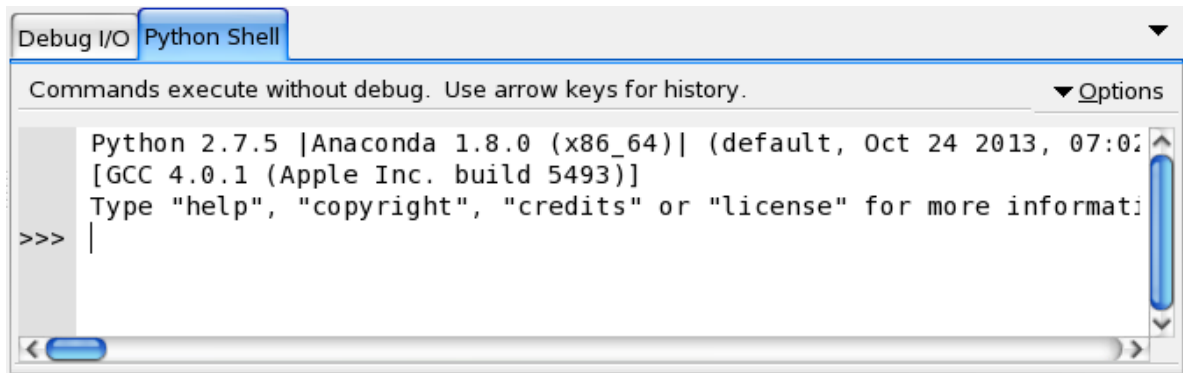


2. Next to Python Executable, click the Custom radio button.
3. Click the Browse button and navigate to your *Anaconda Python interpreter path*.
4. For Python Path, click the Custom radio button.
5. Click the Insert button and browse to your *Anaconda Python interpreter path*.
6. Click the OK button:





7. If you are prompted to reload your Python shell, do so. After the reload, Anaconda is displayed on the **Python Shell** tab:



Wing IDE is now set up to Anaconda's Python.

For more information, see the [Wing IDE documentation](#).

---

**Note:** IDEs often require you to specify the path to your Python interpreter. See [Finding your Anaconda Python interpreter path](#).

---

### Reference

#### Cheat sheet

Download the [conda cheat sheet](#) for a handy list of conda commands.

#### How to contribute to Anaconda

Community engagement makes Anaconda Distribution, conda, and conda-build better. We value our open-source community and encourage all users to contribute to the Anaconda ecosystem. The best contributions start by helping and encouraging others, especially newcomers who are struggling with something you've overcome. See below for other ways you can contribute.

#### Social

The easiest way to contribute is to tell your friends about all of the things you can do with Anaconda. Be sure to mention that Anaconda provides package and environment management and over 7,500+ open source packages—completely free.

Check our social media to keep up with what's happening at Anaconda and add to the conversation.

[Twitter](#) | [Facebook](#) | [LinkedIn](#) | [SlideShare](#)

#### Community Help

Join the [Anaconda community](#) to help other users answer questions, debug issues, and suggest solutions.

#### GitHub issues

If you want to get involved in contributing code for Anaconda, conda, or conda-build, Anaconda recommends collaborating with others, resolving bug issues, and submitting pull requests with those resolutions.

- [Conda issues](#).
- [Conda-build issues](#).
- [Anaconda issues](#).

#### Stack Overflow

Answer questions and suggest resolutions and workarounds on [Stack Overflow](#).

## Documentation

Notice an error or gap in our documentation? We welcome pull requests for conda and conda-build documentation improvements and additions.

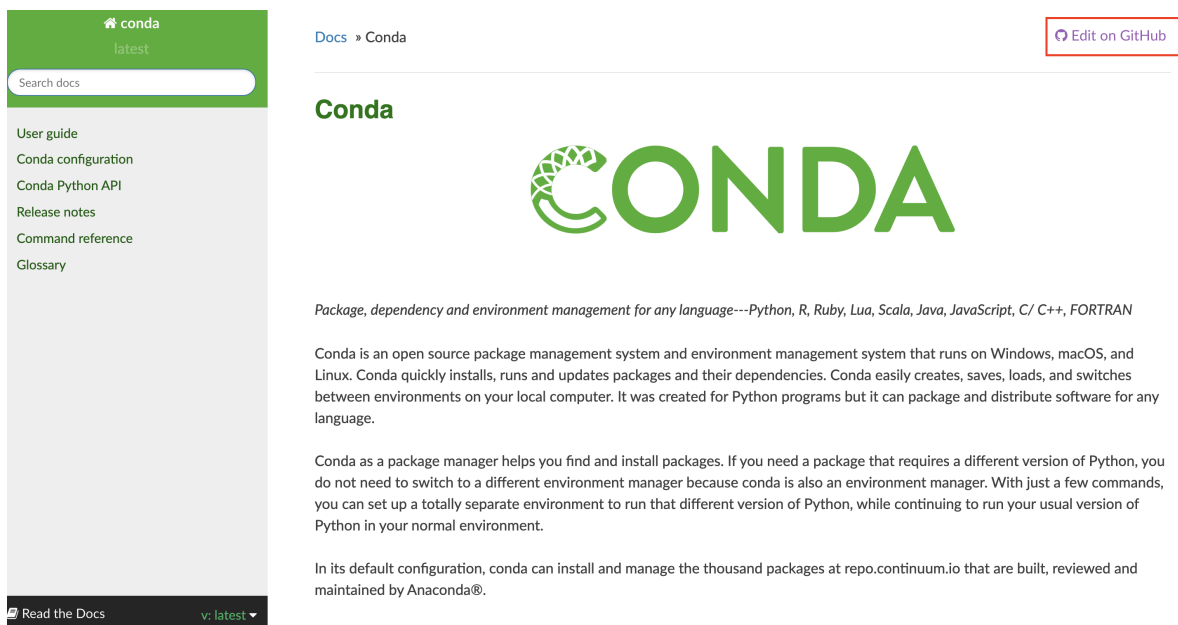
- [Conda documentation](#).
- [Conda GitHub](#).
- [Conda-build documentation](#).
- [Conda-build GitHub](#).

If a documentation change is needed in Distribution, open a ticket on [anaconda-issues](#).

## Example documentation contribution

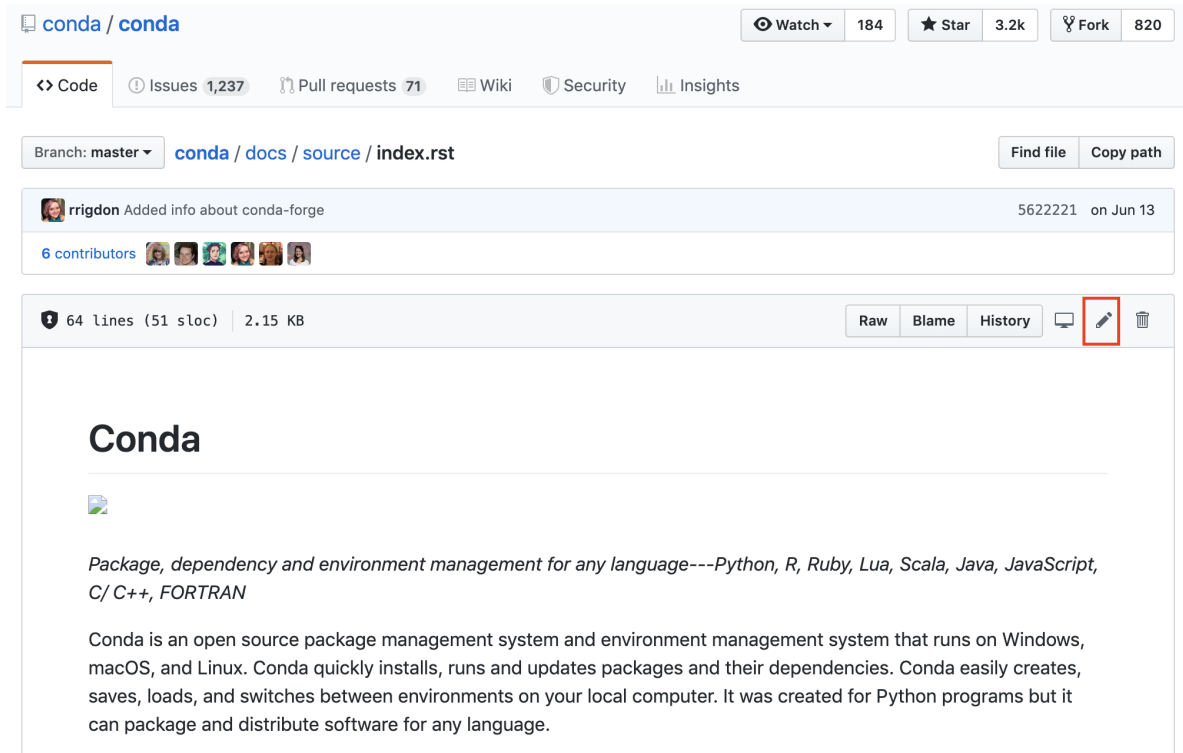
Follow the directions below to submit a documentation PR using the GitHub interface.

1. Start in the [conda](#) or [conda-build](#) documentation.
2. Select “Edit on GitHub” on the page needing the edit.



The screenshot shows the Conda documentation page. On the left is a sidebar with a green header containing 'conda' and 'latest', a search bar, and a list of links: 'User guide', 'Conda configuration', 'Conda Python API', 'Release notes', 'Command reference', and 'Glossary'. At the bottom of the sidebar is a 'Read the Docs' button and a version selector set to 'v: latest'. The main content area has a breadcrumb 'Docs » Conda' and a red-bordered button labeled 'Edit on GitHub'. Below this is the 'Conda' title and a large green logo. The text describes Conda as a package, dependency, and environment management system for various languages, including Python, R, Ruby, Lua, Scala, Java, JavaScript, C/C++, and FORTRAN. It explains that Conda is an open-source system that runs on Windows, macOS, and Linux, and can create separate environments for different versions of Python.

3. Edit the file in GitHub.



conda / conda

Watch 184 Star 3.2k Fork 820

Code Issues 1,237 Pull requests 71 Wiki Security Insights


Branch: master conda / docs / source / index.rst Find file Copy path

rrigdon Added info about conda-forge 5622221 on Jun 13

6 contributors

64 lines (51 sloc) 2.15 KB Raw Blame History

## Conda



*Package, dependency and environment management for any language---Python, R, Ruby, Lua, Scala, Java, JavaScript, C/ C++, FORTRAN*

Conda is an open source package management system and environment management system that runs on Windows, macOS, and Linux. Conda quickly installs, runs and updates packages and their dependencies. Conda easily creates, saves, loads, and switches between environments on your local computer. It was created for Python programs but it can package and distribute software for any language.

4. Commit your changes.

### Commit changes

Sample documentation edits

Add an optional extended description...

☐ You can't commit to `master` because it is a **protected branch**.

☒ Create a **new branch** for this commit and start a pull request. [Learn more about pull requests.](#)

sample-patch-1

Commit changes

Cancel

5. PR review process

- PR is submitted.
- Anaconda community members and/or staff review the PR, providing comments and revisions.
- New contributors sign the CLA.
- PR is merged.

## Conda-forge feedstocks

Contribute to [conda-forge feedstocks](#) where you can improve, update, and/or add new conda-build recipes to conda-forge. See our [tutorials](#) on how to build conda-build recipes.

The recipes here are often used as the base of recipes used to build packages for defaults/repo.anaconda.com. Helping conda-forge increases the number and quality of packages available to install with conda, as well as helping Anaconda do the same for packages shipped in defaults.

---

**Tip:** A good way to find feedstocks to work on is to look at the [staged recipes](#) issues with the “Package request” label.

---

## Enterprise Tier

Ready to scale up your projects? The Enterprise tier is an enterprise-ready, secure, and scalable data science platform that empowers teams to govern data science assets, collaborate, and deploy their data science projects.

Read more about [Enterprise](#) to see if it’s the right option for you and your team.

## Using default repositories

When you use a conda command that involves looking for a package to install or upgrade, by default conda searches the default repository located at <https://repo.anaconda.com/pkg>.

## Active default channels

### Main channel

<https://repo.anaconda.com/pkg/main>

Added Sept 26, 2017 with the release of Anaconda 5.0 and conda 4.3.27, the main channel includes packages built by Anaconda, Inc. with the new compiler stack. The majority of all new Anaconda, Inc. package builds are hosted here. This is the top priority channel in conda’s default channel list.

### More info

[Utilizing the New Compilers in Anaconda Distribution 5](#)

### R Language channel

<https://repo.anaconda.com/pkg/r>

Mirror: <https://anaconda.org/r>

Anaconda, Inc.’s R conda packages and Microsoft R Open conda packages. This channel is included in conda’s “defaults” channel. When creating new environments, R is the default R implementation.

### MSYS2 channel

<https://repo.anaconda.com/pkgs/msys2>

Mirror: <https://anaconda.org/msys2>

Windows only - included in conda's default channels. Necessary for Anaconda, Inc.'s R conda packages and some others in /main and /free. It provides a bash shell, Autotools, revision control systems and the like for building native Windows applications using MinGW-w64 toolchains.

### Archived channels

A channel may be archived for a variety of reasons, most often because its packages caused problems (e.g. insecure compilers, incompatible with newer software) or we no longer upload new packages to them.

Nevertheless, you may wish to use archived channels for one of the following reasons:

- You need packages from those channels for reproducibility
- You are using an old course that requires specific older versions of packages
- The package you need was never built and made available in the Main channel

### Free channel

<https://repo.anaconda.com/pkgs/free>

As of conda 4.7, the free channel was removed from conda's default channels.

The free channel contains packages built without the new compiler stack. It includes packages built as far back as Fall 2012. The majority of these packages are compatible with the packages in main. Learn more about the [free channel](#).

### Archive channel

<https://repo.anaconda.com/pkgs/archive>

Sometimes a package that is released onto one of the other channels has an issue that forces Anaconda, Inc. to remove it from the channel. In these cases, the package is archived to this channel for anyone who still needs it.

### Pro channel

<https://repo.anaconda.com/pkgs/pro>

Now deprecated, though still available in conda's default channels. Packages in this channel were once sold commercially, but are now open source and available without charge. The last package was updated Feb. 2017. Includes MKL Optimizations, IOPro, and Accelerate.

### More info

- [Open sourcing Anaconda Accelerate](#)

## Anaconda Extras channel

<https://anaconda.org/anaconda-extras>

This channel contains packages custom built for customers by Anaconda, Inc.

## Anaconda channel on anaconda.org

<https://anaconda.org/anaconda>

The Anaconda channel on anaconda.org is a mirror of the packages available in <https://repo.anaconda.com/pkg/main>.

## Anaconda installer file hashes

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below. We do not suggest MD5 verification as SHA-256 provides greater security.

If the SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, the hash you generated, and the hash on the site.

	Python 3	Python 2
64-bit Windows	<i>64-bit Windows, Py3</i>	<i>64-bit Windows, Py2</i>
32-bit Windows	<i>32-bit Windows, Py3</i>	<i>32-bit Windows, Py2</i>
macOS graphical installer	<i>macOS, Py3</i>	<i>macOS, Py2</i>
macOS command line installer	<i>macOS, Py3</i>	<i>macOS, Py2</i>
64-bit Linux	<i>64-bit Linux, Py3</i>	<i>64-bit Linux, Py2</i>
32-bit Linux	<i>32-bit Linux, Py3</i>	<i>32-bit Linux, Py2</i>

## Information for all files on a single page

### Hashes for all files

Name	Size	Time modified	SHA256 hash
Anaconda3-2023.09-0-Linux-aarch64.sh	838.8 MiB	2023-09-29 11:43:29	69ee26361c1ec974199bce5c0369e3e9a71
Anaconda3-2023.09-0-Linux-ppc64le.sh	525.2 MiB	2023-09-29 11:43:29	5ea1ed9808af95eb2655fe6a4ffdb66bea6
Anaconda3-2023.09-0-Linux-s390x.sh	366.2 MiB	2023-09-29 11:43:30	ee817071a2ad94e044fb48061a721bc8660
Anaconda3-2023.09-0-Linux-x86_64.sh	1.1 GiB	2023-09-29 11:43:30	6c8a4abb36fbb711dc055b7049a23bbfd61
Anaconda3-2023.09-0-MacOSX-arm64.pkg	741.8 MiB	2023-09-29 11:43:31	0466f3f82663fc581c6684daeb4c66cb303
Anaconda3-2023.09-0-MacOSX-arm64.sh	744.0 MiB	2023-09-29 11:43:31	34121775d9e30a6ea12af0a462e1881670b
Anaconda3-2023.09-0-MacOSX-x86_64.pkg	772.0 MiB	2023-09-29 11:43:32	c92dc16aa21255c5894913b4364dc29409f
Anaconda3-2023.09-0-MacOSX-x86_64.sh	774.1 MiB	2023-09-29 11:43:34	0c64a2c634fe31335079d97340c277c81b3
Anaconda3-2023.09-0-Windows-x86_64.exe	1.0 GiB	2023-09-29 11:43:35	810da8bfff79c10a708b7af9e8f21e6bb474
Anaconda3-2023.07-2-Linux-aarch64.sh	727.4 MiB	2023-08-04 11:56:04	75967bc2113d9e336e670e1e557c9198d8b
Anaconda3-2023.07-2-Linux-ppc64le.sh	473.8 MiB	2023-08-04 11:56:04	7a72e301fb3b8e175a96b6457fc84654dd2
Anaconda3-2023.07-2-Linux-s390x.sh	340.8 MiB	2023-08-04 11:56:05	121743a62210249dd9fb9d6527d545d08f6

Table 2 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda3-2023.07-2-Linux-x86_64.sh	1015.6 MiB	2023-08-04 11:56:05	589fb34fe73bc303379abbceba50f313125
Anaconda3-2023.07-2-MacOSX-arm64.pkg	643.9 MiB	2023-08-04 11:56:05	c95a37465f505a50bdeb22de59ea1034814
Anaconda3-2023.07-2-MacOSX-arm64.sh	645.6 MiB	2023-08-04 11:56:06	8b08ca8a94dd5fda20d134fea13fa6c55c7
Anaconda3-2023.07-2-MacOSX-x86_64.pkg	610.5 MiB	2023-08-04 11:56:06	f5ff78eebb4f9960acf7d99103a2012d84d
Anaconda3-2023.07-2-MacOSX-x86_64.sh	612.1 MiB	2023-08-04 11:56:07	a2f7d0c19f60d00742154db21bfb3976d82
Anaconda3-2023.07-2-Windows-x86_64.exe	898.6 MiB	2023-08-04 11:56:07	b48e103546742b2fcb77c4099660a289014
Anaconda3-2023.07-1-Linux-aarch64.sh	711.9 MiB	2023-07-13 16:29:06	2ebe549375f3f5ffec9558a8a8405ebd697
Anaconda3-2023.07-1-Linux-ppc64le.sh	468.7 MiB	2023-07-13 16:32:26	ee149f55ebdd3f15fc1db4e9cddb5126da6
Anaconda3-2023.07-1-Linux-s390x.sh	336.1 MiB	2023-07-13 16:29:06	49aad1bc077334f30177443c234f3c982f1
Anaconda3-2023.07-1-Linux-x86_64.sh	1010.4 MiB	2023-07-13 16:29:06	111ce0a7f26e606863008a9519fd608b149
Anaconda3-2023.07-1-MacOSX-arm64.pkg	628.1 MiB	2023-07-13 16:29:07	a581f911fe6366597a8d61b03927db9889e
Anaconda3-2023.07-1-MacOSX-arm64.sh	629.9 MiB	2023-07-13 16:29:07	322045ad100dcc380decde5812db58c6179
Anaconda3-2023.07-1-MacOSX-x86_64.pkg	593.8 MiB	2023-07-13 16:29:07	ecc2ed39860e6adaaf4c63bf47db1d4eed1
Anaconda3-2023.07-1-MacOSX-x86_64.sh	595.4 MiB	2023-07-13 16:29:08	803b2d0c5a142af3de14b410517c2c8889e
Anaconda3-2023.07-1-Windows-x86_64.exe	893.8 MiB	2023-07-13 16:29:08	f52d9d658e49d62754266e4e38e0dfc46fa
Anaconda3-2023.07-0-Linux-aarch64.sh	711.9 MiB	2023-07-11 14:17:00	5f4865448c1111fb80cb49abff0f9b38b29
Anaconda3-2023.07-0-Linux-ppc64le.sh	468.7 MiB	2023-07-11 14:17:00	98efb73758680b84f890d818b5748d7a08e
Anaconda3-2023.07-0-Linux-s390x.sh	336.1 MiB	2023-07-11 14:17:01	f6933a8b70d346d423e089843fc151c46bd
Anaconda3-2023.07-0-Linux-x86_64.sh	1010.4 MiB	2023-07-11 14:17:01	ac738639aba0b676a618911600d0a0e7825
Anaconda3-2023.07-0-MacOSX-arm64.pkg	628.2 MiB	2023-07-11 14:17:01	e441647d9b655052b7008aa4357acca2ebd
Anaconda3-2023.07-0-MacOSX-arm64.sh	629.9 MiB	2023-07-11 14:17:02	23a9deb80acb145c65375bd73cbaa8793be
Anaconda3-2023.07-0-MacOSX-x86_64.pkg	593.8 MiB	2023-07-11 14:17:02	3cce8fe03abdf23432c574ec0feb486d7e2
Anaconda3-2023.07-0-MacOSX-x86_64.sh	595.4 MiB	2023-07-11 14:17:02	b6ea24fe16544d5b2d5adf6c913c1fc89a6
Anaconda3-2023.07-0-Windows-x86_64.exe	893.9 MiB	2023-07-11 14:17:03	fc75a8843169366e47a54c58ddd28ff95f4
Anaconda3-2023.03-1-Linux-aarch64.sh	618.7 MiB	2023-04-24 13:41:04	54e600faa2af63a25717af30ecaddf1ee42
Anaconda3-2023.03-1-Linux-ppc64le.sh	435.1 MiB	2023-04-24 13:41:05	a31f2d6da83534cff7c994403cc11fa634b
Anaconda3-2023.03-1-Linux-s390x.sh	361.2 MiB	2023-04-24 13:41:05	5af1406c6350b4ba6839c49faa32a3c90f2
Anaconda3-2023.03-1-Linux-x86_64.sh	860.6 MiB	2023-04-24 13:41:05	95102d7c732411f1458a20bdf47e4c1b0b6
Anaconda3-2023.03-1-MacOSX-arm64.pkg	564.4 MiB	2023-04-24 13:41:06	d22ab7a22ab4ba3c02d6fe4e9c2a9c673ff
Anaconda3-2023.03-1-MacOSX-arm64.sh	566.0 MiB	2023-04-24 13:41:06	85152324c423fedbeed2e7491cb32e597ea
Anaconda3-2023.03-1-MacOSX-x86_64.pkg	600.1 MiB	2023-04-24 13:41:06	561ea77b7172e15568d21b854c4de417878
Anaconda3-2023.03-1-MacOSX-x86_64.sh	601.6 MiB	2023-04-24 13:41:07	3593921c8a5516db82f0d7dd1c691f7ee77
Anaconda3-2023.03-1-Windows-x86_64.exe	786.6 MiB	2023-04-24 13:41:07	f13a2ae812d2069654521e7b1d897227ea4
Anaconda3-2023.03-0-Linux-aarch64.sh	618.2 MiB	2023-03-20 11:41:34	613797154d9383355677f7dfee10db32b2c
Anaconda3-2023.03-0-Linux-ppc64le.sh	434.6 MiB	2023-03-20 11:41:34	eafeacc9a96f60ebb0aa0052d9baac8ea2
Anaconda3-2023.03-0-Linux-s390x.sh	360.7 MiB	2023-03-20 11:41:34	2648337081c3ce4b760457c5f00fb768ecd
Anaconda3-2023.03-0-Linux-x86_64.sh	860.1 MiB	2023-03-20 11:41:35	19737d5c27b23a1d8740c5cb2414bf62531
Anaconda3-2023.03-0-MacOSX-arm64.pkg	564.1 MiB	2023-03-20 11:41:35	b55403d2b77973ecf4ca1e3adfa09b74e87
Anaconda3-2023.03-0-MacOSX-arm64.sh	565.4 MiB	2023-03-20 11:41:35	d27ee5432438972e90548e3dfa89490c5dc
Anaconda3-2023.03-0-MacOSX-x86_64.pkg	599.7 MiB	2023-03-20 11:41:36	52d1109e371856b4fca8dcd1e1916ecc31d
Anaconda3-2023.03-0-MacOSX-x86_64.sh	601.0 MiB	2023-03-20 11:41:36	cc37b1eb85bdc2ade3f95201a746cdc63ee
Anaconda3-2023.03-0-Windows-x86_64.exe	786.0 MiB	2023-03-20 11:41:36	849daee6c1926bb43306d0e4ce0cc50719b
Anaconda3-2022.10-Linux-aarch64.sh	534.5 MiB	2022-10-17 17:15:40	fbadbfae5992a8c96af0a4621262080eea4
Anaconda3-2022.10-Linux-ppc64le.sh	360.0 MiB	2022-10-17 17:15:37	8fdebcb79f63b74daad421a2674d43299fa9
Anaconda3-2022.10-Linux-s390x.sh	282.4 MiB	2022-10-17 17:15:37	f5ccc24aedab1f3f9cccf1945ca1061bee1
Anaconda3-2022.10-Linux-x86_64.sh	737.6 MiB	2022-10-17 17:15:39	e7ecbccbc197ebd7e1f211c59df2e37bc69
Anaconda3-2022.10-MacOSX-arm64.pkg	484.1 MiB	2022-10-17 17:15:36	4999ce8718c5d387940b1e213beb2c525e6
Anaconda3-2022.10-MacOSX-arm64.sh	472.5 MiB	2022-10-17 17:15:38	200700077db8eed762fbc996b830c3f8cc5
Anaconda3-2022.10-MacOSX-x86_64.pkg	688.6 MiB	2022-10-17 17:15:38	bd6147a59939009718ecc18ed6fd0cf1639



Table 2 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda3-2022.10-MacOSX-x86_64.sh	681.6 MiB	2022-10-17 17:15:37	dfcd1431a8206506799cb142b04d2db3be8
Anaconda3-2022.10-Windows-x86_64.exe	621.2 MiB	2022-10-17 17:15:39	38b9d53a579843fe41fd05fd3c4f9ac3887
Anaconda3-2022.05-Linux-aarch64.sh	567.6 MiB	2022-05-10 14:22:00	dc6bb4eab3996e0658f8bc4bbd229c18f55
Anaconda3-2022.05-Linux-ppc64le.sh	367.3 MiB	2022-05-10 14:22:01	a50bf5bd26b5c5a2c24028c1aff6da2fa4d
Anaconda3-2022.05-Linux-s390x.sh	279.8 MiB	2022-05-10 14:22:01	c14415df69e439acd7458737a84a45c6067
Anaconda3-2022.05-Linux-x86_64.sh	658.8 MiB	2022-05-10 14:22:00	a7c0afe862f6ea19a596801fc138bde0463
Anaconda3-2022.05-MacOSX-arm64.pkg	316.4 MiB	2022-06-07 13:40:24	0140970944a3e6088be5995ef7ce8525c1b
Anaconda3-2022.05-MacOSX-arm64.sh	304.8 MiB	2022-06-07 13:40:25	a12119931945a9a1453993582259cc67318
Anaconda3-2022.05-MacOSX-x86_64.pkg	591.0 MiB	2022-05-10 14:22:02	e884c5c384d4e5723b7b0c9fcd9756bb48f
Anaconda3-2022.05-MacOSX-x86_64.sh	584.0 MiB	2022-05-10 14:22:01	1a10c06660ebe1204e538b4e9d810142441
Anaconda3-2022.05-Windows-x86.exe	487.8 MiB	2022-05-10 14:21:59	cd8c688349bcd1f429e3b383620fb0d19f5
Anaconda3-2022.05-Windows-x86_64.exe	593.9 MiB	2022-05-10 14:22:02	2766eb102f9d65da36d262b65177358de3
Anaconda3-2021.11-Linux-aarch64.sh	487.7 MiB	2021-11-17 13:08:43	4daacb88fbd3a6c14e28cd3b37004ed4c26
Anaconda3-2021.11-Linux-ppc64le.sh	254.9 MiB	2021-11-17 13:08:44	7eb6a95925ee756240818599f8dcbb7a15
Anaconda3-2021.11-Linux-s390x.sh	241.7 MiB	2021-11-17 13:08:44	1504e9259816c5804eff1304fe7e339517b
Anaconda3-2021.11-Linux-x86_64.sh	580.5 MiB	2021-11-17 13:08:44	fedf9e340039557f7b5e8a8a86affa9d299
Anaconda3-2021.11-MacOSX-x86_64.pkg	515.1 MiB	2021-11-17 13:08:44	203f5134d94390531b0cf1ff0f7e702abba
Anaconda3-2021.11-MacOSX-x86_64.sh	508.4 MiB	2021-11-17 13:08:44	6a9217d1a08c599f860045d56ef64fc6c3e
Anaconda3-2021.11-Windows-x86.exe	404.1 MiB	2021-11-17 13:08:45	dc0746dded06cc480328c20b73369803ce9
Anaconda3-2021.11-Windows-x86_64.exe	510.3 MiB	2021-11-17 13:08:45	1b3d593d1deb22b835be5c68897075e0fc9
Anaconda3-2021.05-Linux-aarch64.sh	412.6 MiB	2021-05-13 23:08:46	3a3d5a61df5422f7c8c7816217b926ec7e2
Anaconda3-2021.05-Linux-ppc64le.sh	285.3 MiB	2021-05-13 23:08:47	097064807a9adae3f91fc4c5852cd90df2b
Anaconda3-2021.05-Linux-s390x.sh	291.7 MiB	2021-05-13 23:08:48	a7d1a83279f439e7d8a6c53aa725552e195
Anaconda3-2021.05-Linux-x86_64.sh	544.4 MiB	2021-05-13 23:08:47	2751ab3d678ff0277ae80f9e8a74f218cfc
Anaconda3-2021.05-MacOSX-x86_64.pkg	440.3 MiB	2021-05-13 23:08:47	b61e6ca9c338ed39f41408774143f582fc1
Anaconda3-2021.05-MacOSX-x86_64.sh	432.7 MiB	2021-05-13 23:08:47	0407bee87eeecad521f1e38eb607b0a85ba
Anaconda3-2021.05-Windows-x86.exe	408.5 MiB	2021-05-13 23:08:48	b95b6ada0a54fe1df06f6cde84f8fa58650
Anaconda3-2021.05-Windows-x86_64.exe	477.2 MiB	2021-05-13 23:08:48	93db42390444019e98b442ab281e1091671
Anaconda3-2021.04-Linux-aarch64.sh	407.6 MiB	2021-05-07 11:44:23	4a2d3515e41660b3a0598bdd5513d388cad
Anaconda3-2021.04-Linux-ppc64le.sh	285.3 MiB	2021-05-10 15:23:03	6954278e3eb85f98ad29a44b0da574156ce
Anaconda3-2021.04-Linux-s390x.sh	291.7 MiB	2021-05-07 11:45:26	b0b857aa68964cb1388ce1657cc6f32c689
Anaconda3-2021.04-Linux-x86_64.sh	539.9 MiB	2021-05-10 15:21:09	2d6dcbe4360d023c3cec6a6be8678d906c
Anaconda3-2021.04-MacOSX-x86_64.pkg	436.9 MiB	2021-05-10 15:21:10	d3fb9c189d2f7fdefe672dc454432cb822a
Anaconda3-2021.04-MacOSX-x86_64.sh	429.3 MiB	2021-05-10 15:21:08	e945565945eb02fcc0755ca9d419ae36cb0
Anaconda3-2021.04-Windows-x86.exe	405.0 MiB	2021-05-10 15:21:09	61a4e246098886acc1b3cbb977d58ca6dd1
Anaconda3-2021.04-Windows-x86_64.exe	473.7 MiB	2021-05-10 15:21:09	65fd8be6ab9aed8106bd1c9a228ecd7fd3e
Anaconda3-2020.11-Linux-ppc64le.sh	278.9 MiB	2020-11-18 17:45:36	870535ada0a8ae75eeda8cd2bf7dde853ac
Anaconda3-2020.11-Linux-x86_64.sh	528.8 MiB	2020-11-18 17:45:36	cf2ff493f11eaad5d09ce2b4feaa5ea90db
Anaconda3-2020.11-MacOSX-x86_64.pkg	435.3 MiB	2020-11-18 17:45:35	b230c042237ba3e89193d3144179deddae0
Anaconda3-2020.11-MacOSX-x86_64.sh	427.8 MiB	2020-11-18 17:45:35	ec11e325c792a6f49dbdbe5e641991d0a29
Anaconda3-2020.11-Windows-x86.exe	403.0 MiB	2020-11-18 17:45:34	362de9bc1e9e368dcdbcdee1a175a523983c
Anaconda3-2020.11-Windows-x86_64.exe	457.2 MiB	2020-11-18 17:45:34	aa523115daf31c431bb392faf75e70d35ad
Anaconda3-2020.07-Linux-ppc64le.sh	290.4 MiB	2020-07-23 13:16:47	0df7c3784973ab46a9ef9848aced01311d0
Anaconda3-2020.07-Linux-x86_64.sh	550.1 MiB	2020-07-23 13:16:50	38ce717758b95b3bd0b1797cc6ccfb76f29
Anaconda3-2020.07-MacOSX-x86_64.pkg	462.3 MiB	2020-07-23 13:16:42	e095c487d2837e4c984d0fcd2217be42c61
Anaconda3-2020.07-MacOSX-x86_64.sh	454.1 MiB	2020-07-23 13:16:44	3980c2a57fde5de2ccfd0d7973f95ac1a3
Anaconda3-2020.07-Windows-x86.exe	397.3 MiB	2020-07-23 13:16:51	19803e5ccc357b57051cf7fa272e6b499df
Anaconda3-2020.07-Windows-x86_64.exe	467.5 MiB	2020-07-23 13:16:46	66acb9bdf7d2d5925df8762311a85ad72f5
Anaconda3-2020.02-Linux-ppc64le.sh	276.0 MiB	2020-03-11 11:32:32	d6d1827a38b988cbbe714d6e0357c9e251c

Table 2 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda3-2020.02-Linux-x86_64.sh	521.6 MiB	2020-03-11 11:32:37	2b9f088b2022edb474915d9f69a803d6449
Anaconda3-2020.02-MacOSX-x86_64.pkg	442.2 MiB	2020-03-11 11:32:57	4f7cc14b5b1d7aec3d9a5e781dede065e21
Anaconda3-2020.02-MacOSX-x86_64.sh	430.1 MiB	2020-03-11 11:32:34	d237e6c976eb9c58368ca156a51bd913d63
Anaconda3-2020.02-Windows-x86.exe	423.2 MiB	2020-03-11 11:32:58	d13381d6145c47755b198662af8a5f41283
Anaconda3-2020.02-Windows-x86_64.exe	466.3 MiB	2020-03-11 11:32:35	83c2f53c7174253adcc2de7d1293a7408c3
Anaconda2-2019.10-Linux-ppc64le.sh	295.3 MiB	2019-10-15 10:26:13	0521743829c1b3c301542a20fa0daecda20
Anaconda2-2019.10-Linux-x86_64.sh	477.4 MiB	2019-10-15 10:26:03	8b2e7dea2da7d8cc18e822e8ec180405210
Anaconda2-2019.10-MacOSX-x86_64.pkg	635.7 MiB	2019-10-15 10:27:30	d82b6aa37b41782b7823ff712b0899374cf
Anaconda2-2019.10-MacOSX-x86_64.sh	408.8 MiB	2019-10-15 10:27:31	463cbd0b90c47d02ec341377110653870c7
Anaconda2-2019.10-Windows-x86.exe	355.6 MiB	2019-10-15 10:26:15	b4731acd02f96923922d995bb16984d71b4
Anaconda2-2019.10-Windows-x86_64.exe	412.8 MiB	2019-10-15 10:26:08	3e09c8e95e10f077be1e1d26f26df8d6a13
Anaconda3-2019.10-Linux-ppc64le.sh	320.3 MiB	2019-10-15 10:26:11	118c579f625555e1b116f0c3fd3842772e8
Anaconda3-2019.10-Linux-x86_64.sh	505.7 MiB	2019-10-15 10:26:05	46d762284d252e51cd58a8ca6c8adc9da2e
Anaconda3-2019.10-MacOSX-x86_64.pkg	653.5 MiB	2019-10-15 10:27:33	8b2192cbd586939d68bac00b0f9cbd2bfe5
Anaconda3-2019.10-MacOSX-x86_64.sh	424.2 MiB	2019-10-15 10:27:31	4f77299ff4170cda64fdcc27ac609a37d6
Anaconda3-2019.10-Windows-x86.exe	409.6 MiB	2019-10-15 10:26:10	05e6738919673a6d57b5895b8b4df0b7e3f
Anaconda3-2019.10-Windows-x86_64.exe	461.5 MiB	2019-10-15 10:27:17	9e632439ed40620b8518f11469ded7316ec
Anaconda2-2019.07-Linux-ppc64le.sh	298.2 MiB	2019-07-25 10:36:29	ee7f61dab233cdd0acb376ad55e977b16fd
Anaconda2-2019.07-Linux-x86_64.sh	476.1 MiB	2019-07-25 10:36:01	189e16e7adf9ba4b7b7d06ecdc10ce4ad41
Anaconda2-2019.07-MacOSX-x86_64.pkg	634.1 MiB	2019-07-25 10:37:04	7f8a0defa2905bd5e3ca679d6772c896bef
Anaconda2-2019.07-MacOSX-x86_64.sh	407.8 MiB	2019-07-25 10:37:45	3e63919eed116826e683ed7d480d06517de
Anaconda2-2019.07-Windows-x86.exe	360.5 MiB	2019-07-25 10:36:49	1bd676a51ccdee57c2c01a2bc87fa8b1bd4
Anaconda2-2019.07-Windows-x86_64.exe	427.2 MiB	2019-07-25 10:36:11	fb7493a5c40d28ab47e54c57f025186dc26
Anaconda3-2019.07-Linux-ppc64le.sh	326.0 MiB	2019-07-25 10:36:56	e788094f7a18bfe14038accb26c8809a812
Anaconda3-2019.07-Linux-x86_64.sh	516.8 MiB	2019-07-25 10:36:20	69581cf739365ec7fb95608eef694ba959d
Anaconda3-2019.07-MacOSX-x86_64.pkg	653.1 MiB	2019-07-25 10:38:03	bc1a4cb642b775159125521d1dbcf8bd1dd
Anaconda3-2019.07-MacOSX-x86_64.sh	435.4 MiB	2019-07-25 10:37:06	dcbbdbab37c5b5f3873fe24d2617a4325bc
Anaconda3-2019.07-Windows-x86.exe	418.4 MiB	2019-07-25 10:37:26	3d26ddf9ddb2287822a14ac1da3359a0db6
Anaconda3-2019.07-Windows-x86_64.exe	485.8 MiB	2019-07-25 10:37:53	37e753801a881649ceb608449b66ff9daa3
Anaconda2-2019.03-Linux-ppc64le.sh	291.3 MiB	2019-04-04 17:00:36	3ab35c11b50ff26965266655d7dc76cf229
Anaconda2-2019.03-Linux-x86_64.sh	629.5 MiB	2019-04-04 17:00:35	cedfee5b5a3f62fcdac0a1d2d12396d0f23
Anaconda2-2019.03-MacOSX-x86_64.pkg	624.3 MiB	2019-04-04 17:01:08	4e335d60fc9dcfb31cae809143352e28d4
Anaconda2-2019.03-MacOSX-x86_64.sh	530.2 MiB	2019-04-04 17:00:34	414917d00deaeefa38719992e6437470f54
Anaconda2-2019.03-Windows-x86.exe	492.5 MiB	2019-04-04 17:00:43	76be4b3d1f7a1207b786cbb54b3ed526126
Anaconda2-2019.03-Windows-x86_64.exe	586.9 MiB	2019-04-04 17:00:53	96c21ae0d152755e8f4ac4a593da4063e0f
Anaconda3-2019.03-Linux-ppc64le.sh	314.5 MiB	2019-04-04 17:00:58	b4ecfca3b6d6c284a3f9370f6a5ccfac1b6
Anaconda3-2019.03-Linux-x86_64.sh	654.1 MiB	2019-04-04 17:00:31	45c851b7497cc14d5ca060064394569f724
Anaconda3-2019.03-MacOSX-x86_64.pkg	637.4 MiB	2019-04-04 17:00:33	1d89450ec2b8236404bab5a47aaa9c69fd8
Anaconda3-2019.03-MacOSX-x86_64.sh	541.6 MiB	2019-04-04 17:00:27	b232f0b16181f48667d2ca89c04a4ee4b39
Anaconda3-2019.03-Windows-x86.exe	545.7 MiB	2019-04-04 17:00:28	03d94f55c4c5e1187382ff414c78e662448
Anaconda3-2019.03-Windows-x86_64.exe	661.7 MiB	2019-04-04 17:00:30	d2c90169879f40816eac91bec585a1f9f78
Anaconda2-2018.12-Linux-ppc64le.sh	289.7 MiB	2018-12-21 14:14:33	4ff037544f9191e24887176b44b04100c27
Anaconda2-2018.12-Linux-x86.sh	518.6 MiB	2018-12-21 14:13:15	e086c041695c0e50642aee8f4e7adad3185
Anaconda2-2018.12-Linux-x86_64.sh	628.2 MiB	2018-12-21 14:13:10	1821d4b623ed449e0acb6df3ecbabd3944c
Anaconda2-2018.12-MacOSX-x86_64.pkg	640.7 MiB	2018-12-21 14:14:30	f07fb39c41f9cc7839adababdece209d9da
Anaconda2-2018.12-MacOSX-x86_64.sh	547.1 MiB	2018-12-21 14:14:31	5c590b1b3cdc2eedd52edce0caabbce6665
Anaconda2-2018.12-Windows-x86.exe	458.6 MiB	2018-12-21 14:16:27	d75d51c8f9a7c345128805a55db3856f699
Anaconda2-2018.12-Windows-x86_64.exe	560.6 MiB	2018-12-21 14:16:17	7571d334eac3b9bd4f3e199fc5f493f0601
Anaconda3-2018.12-Linux-ppc64le.sh	313.6 MiB	2018-12-21 14:13:03	f636f747d5b581ea05e5f20edb1c9ae5db7

Table 2 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda3-2018.12-Linux-x86.sh	542.7 MiB	2018-12-21 14:13:14	7895052814921d45ed0585d1fb19f8edd6f
Anaconda3-2018.12-Linux-x86_64.sh	652.5 MiB	2018-12-21 14:13:06	1019d0857e5865f8a6861eaf15bfe535b87
Anaconda3-2018.12-MacOSX-x86_64.pkg	652.7 MiB	2018-12-21 14:14:32	e40e076194df57f3fce8734acd5b2e3f609
Anaconda3-2018.12-MacOSX-x86_64.sh	557.0 MiB	2018-12-21 14:13:13	4ccd3944d994fd47e5701c341725a63e984
Anaconda3-2018.12-Windows-x86.exe	509.7 MiB	2018-12-21 14:13:12	3f2955c1874ca452b985627a10859f6906e
Anaconda3-2018.12-Windows-x86_64.exe	614.3 MiB	2018-12-21 14:14:34	09d84a789013d5e2bfb0148bdd9f5d69a6b
Anaconda2-5.3.1-Linux-x86.sh	507.6 MiB	2018-11-19 14:37:35	a38017dfa59141c63ec9882a15bd35e7ce6
Anaconda2-5.3.1-Linux-x86_64.sh	617.8 MiB	2018-11-19 14:37:31	f0650ad2f9ca4ae3f3162d7204a32950bc7
Anaconda2-5.3.1-MacOSX-x86_64.pkg	628.4 MiB	2018-11-19 14:37:38	7dc614e281df33f09fa006b245a955b9488
Anaconda2-5.3.1-MacOSX-x86_64.sh	539.0 MiB	2018-11-19 14:37:43	df81e9d5d7d4c6595609a8d353eab80102a
Anaconda2-5.3.1-Windows-x86.exe	458.1 MiB	2018-11-19 14:38:32	59680be839aa8b58477a24519a7575756be
Anaconda2-5.3.1-Windows-x86_64.exe	580.1 MiB	2018-11-19 14:37:47	63b8a687cddcf462f9f61993d07ba88389c
Anaconda3-5.3.1-Linux-x86.sh	527.3 MiB	2018-11-19 14:38:49	5dab8b2c95595df7fa55b88643f8372135c
Anaconda3-5.3.1-Linux-x86_64.sh	637.0 MiB	2018-11-19 14:38:46	d4c4256a8f46173b675dd6a62d12f566ed3
Anaconda3-5.3.1-MacOSX-x86_64.pkg	634.0 MiB	2018-11-19 14:38:54	ee9fb23d4beb30e5ed9d27d5703b46a02e2
Anaconda3-5.3.1-MacOSX-x86_64.sh	543.7 MiB	2018-11-19 14:38:57	23c373abce2463d4df495f5a1c7e8b0faec
Anaconda3-5.3.1-Windows-x86.exe	509.5 MiB	2018-11-19 14:39:54	a028d0550bf307c69af7c3210f487e23004
Anaconda3-5.3.1-Windows-x86_64.exe	632.5 MiB	2018-11-19 14:38:59	295fed5940369d4ea1e2c6d04d418619d99
Anaconda2-5.3.0-Linux-ppc64le.sh	285.7 MiB	2018-09-27 17:00:22	b71cdf75ca10875d49170eb64a02920f47a
Anaconda2-5.3.0-Linux-x86.sh	507.5 MiB	2018-09-27 17:00:27	58d4229ad7097e1f3387d7f6582dcf2bbc6
Anaconda2-5.3.0-Linux-x86_64.sh	617.6 MiB	2018-09-27 17:00:25	50eeaab24bfa2472bc6485fe8f0e612ed67
Anaconda2-5.3.0-MacOSX-x86_64.pkg	628.3 MiB	2018-09-27 16:59:12	834c221b413bdcbbce434f0a3008511f5bd
Anaconda2-5.3.0-MacOSX-x86_64.sh	538.9 MiB	2018-09-27 17:00:31	bea3eb7667d265c8fe678ddde8432ac1f82
Anaconda2-5.3.0-Windows-x86.exe	457.2 MiB	2018-09-27 16:59:15	f18bdb9a38e5c444a3cb79c5c6bc927fbcd
Anaconda2-5.3.0-Windows-x86_64.exe	579.0 MiB	2018-09-27 16:59:14	30bf9131df2314c00a9cd5e5f0b7d6184c3
Anaconda3-5.3.0-Linux-ppc64le.sh	305.1 MiB	2018-09-27 17:01:33	550dd67626172a42eb0dd02a08bc78a67e8
Anaconda3-5.3.0-Linux-x86.sh	527.2 MiB	2018-09-27 17:01:37	c15ffac2ae35179a15dc5872e5bb405b402
Anaconda3-5.3.0-Linux-x86_64.sh	636.9 MiB	2018-09-27 17:01:35	cfbf5fe70dd1b797ec677e63c61f8efc92d
Anaconda3-5.3.0-MacOSX-x86_64.pkg	633.9 MiB	2018-09-27 16:59:18	013e9968f437f91f7a1dfdfe4c7d6f9d3b7
Anaconda3-5.3.0-MacOSX-x86_64.sh	543.6 MiB	2018-09-27 17:01:41	bc073b6e6d3b2ef29d01a2caf1de7c206c9
Anaconda3-5.3.0-Windows-x86.exe	508.7 MiB	2018-09-27 17:00:05	1dceb687efbf5a609a66d19dc2528ef78a5
Anaconda3-5.3.0-Windows-x86_64.exe	631.4 MiB	2018-09-27 16:59:20	1083d05eeec45707940a6c7afb375a5f330
Anaconda2-5.2.0-Linux-ppc64le.sh	269.6 MiB	2018-05-30 14:04:31	a8fcac3f0884520c35103e76549fcc45d64
Anaconda2-5.2.0-Linux-x86.sh	488.7 MiB	2018-05-30 14:05:30	402758c24767e9eb3b77312c388725a058f
Anaconda2-5.2.0-Linux-x86_64.sh	603.4 MiB	2018-05-30 14:04:33	cb0d7a08b0e2cec4372033d3269979b4e72
Anaconda2-5.2.0-MacOSX-x86_64.pkg	616.8 MiB	2018-05-30 14:05:32	f7695a3571eb8e8ae71fe9f413c36f57c92
Anaconda2-5.2.0-MacOSX-x86_64.sh	527.1 MiB	2018-05-30 14:05:34	d7d46e566306da5979cd5632079497fe610
Anaconda2-5.2.0-Windows-x86.exe	443.4 MiB	2018-05-30 14:04:17	2b81916c477e64db917821bb48a97000fad
Anaconda2-5.2.0-Windows-x86_64.exe	564.0 MiB	2018-05-30 14:04:16	e5ff95332d08a7b006a5bb723e0a5124c4c
Anaconda3-5.2.0-Linux-ppc64le.sh	288.3 MiB	2018-05-30 14:05:40	024c811526ffc40ed6fa243a25795fbab5b
Anaconda3-5.2.0-Linux-x86.sh	507.3 MiB	2018-05-30 14:05:46	f3527d085d06f35b6aeb96be2a9253ff9ec
Anaconda3-5.2.0-Linux-x86_64.sh	621.6 MiB	2018-05-30 14:05:43	09f53738b0cd3bb96f5b1bac488e5528df9
Anaconda3-5.2.0-MacOSX-x86_64.pkg	613.1 MiB	2018-05-30 14:07:00	dae8befc73d32b480faef31fa6fb7333257
Anaconda3-5.2.0-MacOSX-x86_64.sh	523.3 MiB	2018-05-30 14:07:03	c8089121dc89ffe8f9a0c01205bab75a112
Anaconda3-5.2.0-Windows-x86.exe	506.3 MiB	2018-05-30 14:04:19	643054c0041aaf4a3fd0fee4466d7b7f23
Anaconda3-5.2.0-Windows-x86_64.exe	631.3 MiB	2018-05-30 14:04:18	2672f6537e2c8a79ae9540cf3c49b18bb9b
Anaconda2-5.1.0-Linux-ppc64le.sh	267.3 MiB	2018-02-15 10:08:49	ff9baa4d3710bb24bc3a6a40cf4ef69150
Anaconda2-5.1.0-Linux-x86.sh	431.3 MiB	2018-02-15 10:08:51	5af0c7a09a5f3aaf3666c0b362246d342d8
Anaconda2-5.1.0-Linux-x86_64.sh	533.0 MiB	2018-02-15 10:08:50	5f26ee92860d1dfdc20910ff2cf75572c

Table 2 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda2-5.1.0-MacOSX-x86_64.pkg	588.0 MiB	2018-02-15 10:08:52	edbe9ef1ee5cfe62e131d7650e07c031ab1
Anaconda2-5.1.0-MacOSX-x86_64.sh	505.9 MiB	2018-02-15 10:08:53	b686e01aeadb33526d9c154a0ac6f691dfa
Anaconda2-5.1.0-Windows-x86.exe	419.8 MiB	2018-02-15 10:08:55	fa78c71d88b01e6367f0c3cbd23da1f82e8
Anaconda2-5.1.0-Windows-x86_64.exe	522.6 MiB	2018-02-15 10:08:54	3674c8d8c233dbea30842f14dc76cc3feaf
Anaconda3-5.1.0-Linux-ppc64le.sh	285.7 MiB	2018-02-15 10:08:56	58d1d093450dabefef9279694c9345afed7
Anaconda3-5.1.0-Linux-x86.sh	449.7 MiB	2018-02-15 10:08:58	0e940272517d8f8a6f26316a19e4be2bdae
Anaconda3-5.1.0-Linux-x86_64.sh	551.2 MiB	2018-02-15 10:08:57	7e6785caad25e33930bc03fac4994a434a2
Anaconda3-5.1.0-MacOSX-x86_64.pkg	594.7 MiB	2018-02-15 10:09:06	d6bf6309ccaafa84314d85ca7421fddc1605
Anaconda3-5.1.0-MacOSX-x86_64.sh	511.3 MiB	2018-02-15 10:10:24	be705b3c3a0ca29ee32ce7658890bb5edb3
Anaconda3-5.1.0-Windows-x86.exe	435.5 MiB	2018-02-15 10:10:28	7a05da21fd592991d181ac8467faac51345
Anaconda3-5.1.0-Windows-x86_64.exe	537.1 MiB	2018-02-15 10:10:26	7d192e58915d7e7fbfd0c987ddc4db38a22
Anaconda2-5.0.1-Linux-x86.sh	413.2 MiB	2017-10-24 13:13:07	88c8d698fff16af15862daca10e94a0a463
Anaconda2-5.0.1-Linux-x86_64.sh	507.7 MiB	2017-10-24 13:13:52	23c676510bc87c95184ecaeb327c0b2c880
Anaconda2-5.0.1-MacOSX-x86_64.pkg	562.8 MiB	2017-10-23 21:01:12	22350fe830e6786a263d7727e537f066b13
Anaconda2-5.0.1-MacOSX-x86_64.sh	486.5 MiB	2017-10-23 20:51:04	e3a9a5c84cb89ff079b0781ba773a3433d4
Anaconda2-5.0.1-Windows-x86.exe	403.4 MiB	2017-10-24 13:08:14	1a50fac8644f2128e318337b218299e53e9
Anaconda2-5.0.1-Windows-x86_64.exe	499.8 MiB	2017-10-23 22:57:22	c43f94c51623850b0c1a826710fe9c8e50b
Anaconda3-5.0.1-Linux-x86.sh	431.0 MiB	2017-10-23 19:07:51	991a4b656fcb0236864fbb27ff03bb7f3d9
Anaconda3-5.0.1-Linux-x86_64.sh	525.3 MiB	2017-10-23 18:52:55	55e4db1919f49c92d5abbf27a4be5986ae1
Anaconda3-5.0.1-MacOSX-x86_64.pkg	568.9 MiB	2017-10-23 21:01:19	50c28594c785f5828990c95053468488563
Anaconda3-5.0.1-MacOSX-x86_64.sh	491.0 MiB	2017-10-23 20:51:10	f438a0af923bc1edc7bca53f496c59a668d
Anaconda3-5.0.1-Windows-x86.exe	420.4 MiB	2017-10-24 13:37:10	9edc3012324c9c8c9aa5257688bd793277e
Anaconda3-5.0.1-Windows-x86_64.exe	514.8 MiB	2017-10-24 13:37:59	0b1ec18b7425f8c8518d6dc2fc0bc8ec2f0
Anaconda2-5.0.0.1-Linux-x86.sh	411.9 MiB	2017-10-02 11:50:13	00fbd979c815ede0bbad48fb4ef62cda333
Anaconda2-5.0.0.1-Linux-x86_64.sh	506.3 MiB	2017-10-02 11:50:12	18730808d863a5c194ab3f59dd395c1a63c
Anaconda3-5.0.0.1-Linux-x86.sh	429.8 MiB	2017-10-02 11:50:15	407576899d3aa546bc3c2c4a13cbc18ab5b
Anaconda3-5.0.0.1-Linux-x86_64.sh	524.0 MiB	2017-10-02 11:50:14	092c92427f44687d789a41922ce8426fbdc
Anaconda2-5.0.0-Linux-ppc64le.sh	282.3 MiB	2017-09-26 17:25:07	e0512f3c81251e5dcd48fcf02fe2044a660
Anaconda2-5.0.0-Linux-x86.sh	411.4 MiB	2017-09-26 15:48:02	a3ed8769d20d55a41c04cf7c04e81c95974
Anaconda2-5.0.0-Linux-x86_64.sh	505.7 MiB	2017-09-26 15:37:21	58a7117f89c40275114bf7e824a613a963d
Anaconda2-5.0.0-MacOSX-x86_64.pkg	561.3 MiB	2017-09-26 17:25:08	3ee5cfe80d51685d6f374f83a9b76fa7ecb
Anaconda2-5.0.0-MacOSX-x86_64.sh	485.3 MiB	2017-09-26 17:25:09	d85198c63657924fae11b6ea5961f50d81d
Anaconda2-5.0.0-Windows-x86.exe	402.2 MiB	2017-09-26 17:25:09	078551cfb0df72779897026724f375671e1
Anaconda2-5.0.0-Windows-x86_64.exe	498.2 MiB	2017-09-26 15:30:49	5fb73395cdf003613f5d44844da9870dbdc
Anaconda3-5.0.0-Linux-ppc64le.sh	296.3 MiB	2017-09-25 15:39:31	3574d423084e604a9d85a9f38ea481e0fc9
Anaconda3-5.0.0-Linux-x86.sh	429.3 MiB	2017-09-26 15:48:02	634d2dfa97d19f2cc15e941cb4d059bc83a
Anaconda3-5.0.0-Linux-x86_64.sh	523.4 MiB	2017-09-26 15:37:22	67f5c20232a3e493ea3f19a8e273e0618ab
Anaconda3-5.0.0-MacOSX-x86_64.pkg	567.2 MiB	2017-09-26 17:25:10	06d959384869290845bc61346bb33a18dd0
Anaconda3-5.0.0-MacOSX-x86_64.sh	489.9 MiB	2017-09-26 17:25:11	23df1e3a38a6b4aaa0ab559d0c1e51be76e
Anaconda3-5.0.0-Windows-x86.exe	415.8 MiB	2017-09-26 17:25:12	a0d5d8e328b1d3a1ed921cadeecda659c49
Anaconda3-5.0.0-Windows-x86_64.exe	510.0 MiB	2017-09-26 15:14:53	53bd80727099b5767b9f20f99e908f9c19c
Anaconda2-4.4.0.1-Linux-ppc64le.sh	271.4 MiB	2017-07-26 17:10:02	e14acab146181699e47ca108fc624ecea
Anaconda3-4.4.0.1-Linux-ppc64le.sh	285.6 MiB	2017-07-26 17:08:42	d7c367c9c4fffec37c31c6570218c994486
Anaconda2-4.4.0-Linux-ppc64le.sh	276.6 MiB	2017-05-17 16:45:20	c19edfd9a3bd2fcb37ddb0c3aa09339c9e2
Anaconda2-4.4.0-Linux-x86.sh	415.0 MiB	2017-05-26 19:23:30	452aa91ac83d3b6a68b79cea3042170ec59
Anaconda2-4.4.0-Linux-x86_64.sh	485.2 MiB	2017-05-26 19:22:48	2d30b91ed4d215b6b4a15162a3389e9057b
Anaconda2-4.4.0-MacOSX-x86_64.pkg	438.0 MiB	2017-05-26 19:36:08	e5acf026892eaeabb055e6317af96f295d39
Anaconda2-4.4.0-MacOSX-x86_64.sh	375.4 MiB	2017-05-26 19:35:52	ab95aef1110c2a385fd39a17e5f11dfbaab
Anaconda2-4.4.0-Windows-x86.exe	354.4 MiB	2017-05-26 18:52:15	0dec861f8839fdf2cbe4fa306c127f69e5

Table 2 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda2-4.4.0-Windows-x86_64.exe	430.7 MiB	2017-05-26 18:53:22	7a8ec1a36f385ebf28a1a8cf63b8b03ac0f
Anaconda3-4.4.0-Linux-ppc64le.sh	290.7 MiB	2017-05-17 16:45:50	605251829edecd0c39df8db856d4f09e406
Anaconda3-4.4.0-Linux-x86.sh	428.7 MiB	2017-05-26 19:23:45	b0e492206d43067314b25963bc7d1f01209
Anaconda3-4.4.0-Linux-x86_64.sh	499.0 MiB	2017-05-26 19:23:04	3301b37e402f3ff3df216fe0458f1e6a4cc
Anaconda3-4.4.0-MacOSX-x86_64.pkg	442.5 MiB	2017-05-26 19:36:17	c5fc645f11505ac3ef710023b4072b7fb24
Anaconda3-4.4.0-MacOSX-x86_64.sh	380.4 MiB	2017-05-26 19:35:59	10fe58f09ae524df2548d17b8bb1e75db17
Anaconda3-4.4.0-Windows-x86.exe	362.2 MiB	2017-05-26 18:54:21	37afe00b8305cc09b7bd8dd07f65cec3f4e
Anaconda3-4.4.0-Windows-x86_64.exe	437.6 MiB	2017-05-26 18:55:34	ea582602541e748053df550514460426202
Anaconda2-4.3.1-Linux-x86.sh	387.7 MiB	2017-03-06 17:12:31	4519ac724d5120d21bb80289c5509c0d1fd
Anaconda2-4.3.1-Linux-x86_64.sh	462.0 MiB	2017-03-06 17:12:14	e9b8f2645df6b1527ba56d61343162e0794
Anaconda2-4.3.1-MacOSX-x86_64.pkg	419.4 MiB	2017-03-06 17:26:18	f5d950451c038f9a7ca80d4036b6a8152c3
Anaconda2-4.3.1-MacOSX-x86_64.sh	358.2 MiB	2017-03-06 17:26:02	35261360f2b01793f441b29715a94052dce
Anaconda2-4.3.1-Windows-x86.exe	339.0 MiB	2017-03-06 17:18:12	fc363cea3c321c17b43a0bf2137aa845fef
Anaconda2-4.3.1-Windows-x86_64.exe	413.7 MiB	2017-03-06 17:18:59	c0e13a756a856d7b7757b10d65bee577d8c
Anaconda3-4.3.1-Linux-x86.sh	399.3 MiB	2017-03-06 17:12:47	7b70bdba282a18ddbdc167afe8131f75320
Anaconda3-4.3.1-Linux-x86_64.sh	474.3 MiB	2017-03-06 17:12:24	4447b93d2c779201e5fb50cfc45de0ec96c
Anaconda3-4.3.1-MacOSX-x86_64.pkg	424.1 MiB	2017-03-06 17:26:27	ca608d58b1acf77b5c77d10e937b9084e59
Anaconda3-4.3.1-MacOSX-x86_64.sh	363.4 MiB	2017-03-06 17:26:09	a42267203e207cb5e0f539e0d879ead12e4
Anaconda3-4.3.1-Windows-x86.exe	348.1 MiB	2017-03-06 17:19:46	adf322f49542cf509d4f72152cea24e54ed
Anaconda3-4.3.1-Windows-x86_64.exe	422.1 MiB	2017-03-06 17:20:48	65ce6d7c09884935fee9eb8d318b30e95f7
Anaconda2-4.3.0.1-Windows-x86.exe	338.1 MiB	2017-02-02 15:19:05	863702665aa2b55ede2103a8ca7d26435ef
Anaconda2-4.3.0.1-Windows-x86_64.exe	412.8 MiB	2017-02-02 15:20:08	2198e28e9e8e3c43ab72a8371e5b2d0a9aa
Anaconda3-4.3.0.1-Windows-x86.exe	347.2 MiB	2017-02-02 15:21:02	7f8ffce6b2c3a968ce19171c9dc332dec61
Anaconda3-4.3.0.1-Windows-x86_64.exe	421.2 MiB	2017-02-02 15:22:10	b5954bf7da9a92d351d905dfdfa0e7bee1c
Anaconda2-4.3.0-Linux-x86.sh	386.8 MiB	2017-01-27 15:14:15	b80d471839e8cf7b100e59308720cc13c14
Anaconda2-4.3.0-Linux-x86_64.sh	461.1 MiB	2017-01-27 15:15:08	7c52e6e99aabb24a49880130615a48e685d
Anaconda2-4.3.0-MacOSX-x86_64.pkg	418.4 MiB	2017-01-27 15:26:23	3e1d1026d2c0b87213a8b4a5f28431060b0
Anaconda2-4.3.0-MacOSX-x86_64.sh	357.3 MiB	2017-01-27 15:26:08	834ac0287062929ab5930661735ee617fd3
Anaconda2-4.3.0-Windows-x86.exe	338.1 MiB	2017-01-27 15:17:06	a98767acefdeda02fe8d3ef9dadda1a3439
Anaconda2-4.3.0-Windows-x86_64.exe	412.8 MiB	2017-01-27 15:17:59	1117839746a8eabf7ed26ff311fc74e44a5
Anaconda3-4.3.0-Linux-x86.sh	398.4 MiB	2017-01-27 15:14:29	f7ce2eeec3e42c2ba1ee3b9fcd670478fd3
Anaconda3-4.3.0-Linux-x86_64.sh	473.4 MiB	2017-01-27 15:15:21	e9169c3a5029aa820393ac92704eb9ee070
Anaconda3-4.3.0-MacOSX-x86_64.pkg	423.1 MiB	2017-01-27 15:26:32	f4522ac099ba292940bb47429e8e53eb9a0
Anaconda3-4.3.0-MacOSX-x86_64.sh	362.6 MiB	2017-01-27 15:26:15	c53059b810c5e7a9a5ef9c46a7ed76675df
Anaconda3-4.3.0-Windows-x86.exe	347.2 MiB	2017-01-27 15:18:45	4a5dfea30b926074b4d6e0f1cea3e976579
Anaconda3-4.3.0-Windows-x86_64.exe	421.2 MiB	2017-01-27 15:19:41	324568dbef777a6ac8a25c1e8ae1975ffbd
Anaconda2-4.2.0-Linux-x86.sh	365.0 MiB	2016-09-27 16:50:20	618b720f309fe8da4f235415f11b6ce3db0
Anaconda2-4.2.0-Linux-x86_64.sh	446.0 MiB	2016-09-27 16:49:54	beee286d24fb37dd6555281bba39b3deb58
Anaconda2-4.2.0-MacOSX-x86_64.pkg	403.9 MiB	2016-10-17 20:33:11	4a74d34c3a3a82df31673ab49497816b035
Anaconda2-4.2.0-MacOSX-x86_64.sh	346.4 MiB	2016-09-27 16:50:02	a8b3ef86233635d9dcc3499dc384980762a
Anaconda2-4.2.0-Windows-x86.exe	324.1 MiB	2016-09-27 16:54:50	a97ca79cb771568d051ef7773d25c0dda40
Anaconda2-4.2.0-Windows-x86_64.exe	381.0 MiB	2016-09-27 16:55:47	6254b150edee53000c94e9abfc9c51a2d2e
Anaconda3-4.2.0-Linux-x86.sh	373.9 MiB	2016-09-27 16:50:34	1a8320635f2f06ec9d8610e77d6d0f9cb2c
Anaconda3-4.2.0-Linux-x86_64.sh	455.9 MiB	2016-09-27 16:50:04	73b51715a12b6382dd4df3dd1905b531bd6
Anaconda3-4.2.0-MacOSX-x86_64.pkg	407.1 MiB	2016-10-17 20:33:47	44fe57910aa10967c4afe41ab5663cb4923
Anaconda3-4.2.0-MacOSX-x86_64.sh	349.5 MiB	2016-09-27 16:50:07	95448921601e1952e01a17ba9767cd3621c
Anaconda3-4.2.0-Windows-x86.exe	333.4 MiB	2016-09-27 16:56:30	e7b79a9886da3f840b52882c47ecab3eda0
Anaconda3-4.2.0-Windows-x86_64.exe	391.4 MiB	2016-09-27 16:57:21	84e30c99833e142a27fc9ee2c748b03f16c
Anaconda2-4.1.1-Linux-x86.sh	324.6 MiB	2016-07-08 12:19:57	1ab001c7a469345a90d549ebf4afa3376f0

Table 2 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda2-4.1.1-Linux-x86_64.sh	399.6 MiB	2016-07-08 12:19:56	9413b1d3ca9498ba6f53913df9c43d685dd
Anaconda2-4.1.1-MacOSX-x86_64.pkg	345.0 MiB	2016-07-08 12:19:59	879385461cc65bd9dbf9639bbf4471ecf17
Anaconda2-4.1.1-MacOSX-x86_64.sh	295.8 MiB	2016-07-08 12:20:00	3b2fb323eb26c1c58788f63c41e164c20c4
Anaconda2-4.1.1-Windows-x86.exe	286.0 MiB	2016-07-08 12:20:01	4708d73952a0a8040bf1594ea42027a30e9
Anaconda2-4.1.1-Windows-x86_64.exe	341.2 MiB	2016-07-08 12:20:01	7be13a69df254b86e47612c726b0b2ba9ff
Anaconda3-4.1.1-Linux-x86.sh	329.1 MiB	2016-07-08 12:20:02	931626363f4030c7a1e8897549b1d3589dc
Anaconda3-4.1.1-Linux-x86_64.sh	406.3 MiB	2016-07-08 12:20:02	4f5c95feb0e7efeadd3d348dcef117d7787
Anaconda3-4.1.1-MacOSX-x86_64.pkg	347.9 MiB	2016-07-08 12:21:15	b5e8cf44958d0aa03a7cc2da15fa835b1e1
Anaconda3-4.1.1-MacOSX-x86_64.sh	298.7 MiB	2016-07-08 12:21:17	7c3c06e9281c41f1213d357cb5f233fd99d
Anaconda3-4.1.1-Windows-x86.exe	293.8 MiB	2016-07-08 12:21:18	224e3dd90850651ae0d1c9216b4c317d1d5
Anaconda3-4.1.1-Windows-x86_64.exe	352.9 MiB	2016-07-08 12:21:17	b4889513dc574f9d6f96db089315d69d293
Anaconda2-4.1.0-Linux-x86.sh	324.4 MiB	2016-06-28 12:28:28	54c06cd1b11cb687db6ba3613df443c057f
Anaconda2-4.1.0-Linux-x86_64.sh	398.8 MiB	2016-06-28 12:28:28	3b7e504ca0132fb555d1f10e174cae07007
Anaconda2-4.1.0-MacOSX-x86_64.pkg	344.2 MiB	2016-06-28 12:28:29	a97840be50d8c86b28caf8be1786bbe7485
Anaconda2-4.1.0-MacOSX-x86_64.sh	295.1 MiB	2016-06-28 12:28:30	8b2c2a32f5e0da75cf8c81c568124cc1ea7
Anaconda2-4.1.0-Windows-x86.exe	285.1 MiB	2016-06-28 12:28:31	c4ad4eeffdfb6d838424c62c8b524352d8b
Anaconda2-4.1.0-Windows-x86_64.exe	340.2 MiB	2016-06-28 12:28:30	7a62880ff9bb7f747d70f518f024dfd1795
Anaconda3-4.1.0-Linux-x86.sh	328.4 MiB	2016-06-28 12:28:32	7764093f337a43e4962b12d01508c1a385f
Anaconda3-4.1.0-Linux-x86_64.sh	405.0 MiB	2016-06-28 12:28:31	11d32cf4026603d3b327dc4299863be6b81
Anaconda3-4.1.0-MacOSX-x86_64.pkg	346.7 MiB	2016-06-28 12:28:32	83772b5fcd3d6deb945316ec96ecc7b0cdc
Anaconda3-4.1.0-MacOSX-x86_64.sh	297.6 MiB	2016-06-28 12:28:33	4c45c8d75665fa5194ebe4e355d3427f5aa
Anaconda3-4.1.0-Windows-x86.exe	292.6 MiB	2016-06-28 12:28:34	4f444ed9400505e822bb475e986800fac05
Anaconda3-4.1.0-Windows-x86_64.exe	351.4 MiB	2016-06-28 12:28:33	9acde60b591233452dba23ac15800f39f2d
Anaconda2-4.0.0-Linux-x86.sh	332.3 MiB	2016-03-29 12:14:57	41341c840cea4185ef5bd82520c1de72b42
Anaconda2-4.0.0-Linux-x86_64.sh	392.5 MiB	2016-03-29 12:14:55	ae312143952ca00e061a656c2080e0e4fd3
Anaconda2-4.0.0-MacOSX-x86_64.pkg	339.2 MiB	2016-03-29 12:14:57	242691c7dc9e20143d7620fd9e0cc344fec
Anaconda2-4.0.0-MacOSX-x86_64.sh	290.2 MiB	2016-03-29 12:14:59	aa7ba6e1a40e08e672660c00c3151f0124f
Anaconda2-4.0.0-Windows-x86.exe	281.0 MiB	2016-03-29 12:15:00	f8185ad2fe89356ab001e55a463b663bcb
Anaconda2-4.0.0-Windows-x86_64.exe	334.6 MiB	2016-03-29 12:14:59	213c7d94bdb6f0931edd31bb14ae33ab557
Anaconda3-4.0.0-Linux-x86.sh	336.9 MiB	2016-03-29 12:15:03	e1469fa0d24de12f33661ce3d7a06d77968
Anaconda3-4.0.0-Linux-x86_64.sh	398.4 MiB	2016-03-29 12:15:02	36a558a1109868661a5735f5f32607643f6
Anaconda3-4.0.0-MacOSX-x86_64.pkg	341.5 MiB	2016-03-29 12:16:08	32a089b1be465a8b03c837041bbfbcb761d
Anaconda3-4.0.0-MacOSX-x86_64.sh	292.7 MiB	2016-03-29 12:16:21	704a776c0cf3fcca6e0c5a1e6b604372822
Anaconda3-4.0.0-Windows-x86.exe	283.1 MiB	2016-03-29 12:16:22	b5a31a9d130a40c3110c0592a6c8fbd43a5
Anaconda3-4.0.0-Windows-x86_64.exe	345.4 MiB	2016-03-29 12:16:22	39bf467cd142c1f8fdb7d673fdea273d87e
Anaconda2-2.5.0-Linux-x86.sh	330.4 MiB	2016-02-03 16:41:54	4911047df51c46661f551d6022aee21a7e5
Anaconda2-2.5.0-Linux-x86_64.sh	390.9 MiB	2016-02-03 16:41:18	e10abf459cde4a838bd6fc5ca3023c3401
Anaconda2-2.5.0-MacOSX-x86_64.pkg	367.9 MiB	2016-02-03 16:55:31	0f546ed4f388299824e98a31ca9e3fe9823
Anaconda2-2.5.0-MacOSX-x86_64.sh	316.1 MiB	2016-02-03 16:41:22	e7aa3b41210ee7ccf3c12e5b5ea43190d18
Anaconda2-2.5.0-Windows-x86.exe	296.2 MiB	2016-02-03 16:45:21	a0336729f0400ff12fe18a7d5e20c3f9b45
Anaconda2-2.5.0-Windows-x86_64.exe	348.6 MiB	2016-02-03 16:46:14	4423b43eb23184b4239abc426a564760d6d
Anaconda3-2.5.0-Linux-x86.sh	334.4 MiB	2016-02-03 16:42:07	22ac26c8bde7c4153ea859f6f6d8aca93bb
Anaconda3-2.5.0-Linux-x86_64.sh	395.6 MiB	2016-02-03 16:41:27	addadcb927f15cb0b5b6e36890563d3352a
Anaconda3-2.5.0-MacOSX-x86_64.pkg	369.8 MiB	2016-02-03 16:56:04	b1a6945f0f025086806624c59de5d92e523
Anaconda3-2.5.0-MacOSX-x86_64.sh	318.3 MiB	2016-02-03 16:41:27	9bb0f926927db210f8c2a8de881213d1a44
Anaconda3-2.5.0-Windows-x86.exe	296.3 MiB	2016-02-03 16:46:53	4a3441aaaa269d06f39e1430155f9f25a8a
Anaconda3-2.5.0-Windows-x86_64.exe	361.1 MiB	2016-02-03 16:47:40	4728044d77da715e48d4c95d7f2e3c2a02c
Anaconda2-2.4.1-Linux-x86.sh	248.5 MiB	2015-12-08 16:00:50	2388cc714567afe7697bf43b4063ff0ea21
Anaconda2-2.4.1-Linux-x86_64.sh	265.0 MiB	2015-12-08 16:00:49	2de682c96edf8cca2852071a84ff860025f

Table 2 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda2-2.4.1-MacOSX-x86_64.pkg	245.8 MiB	2015-12-08 16:00:50	1e2445aaf9faf84e801404bf89091fbf4a0
Anaconda2-2.4.1-MacOSX-x86_64.sh	212.0 MiB	2015-12-08 16:00:51	f4bd45a21e0dff106e36d11cfd532f2b505
Anaconda2-2.4.1-Windows-x86.exe	287.8 MiB	2015-12-08 16:00:52	65fb15559b0ddb5055c110ecdb84823a6fb
Anaconda2-2.4.1-Windows-x86_64.exe	354.2 MiB	2015-12-08 16:00:51	cfbe5539cb7f2e5807ec3d2fa2e59db3a4
Anaconda3-2.4.1-Linux-x86.sh	253.2 MiB	2015-12-08 16:00:53	00d13413f5b8129e863dabcc2296a181c69
Anaconda3-2.4.1-Linux-x86_64.sh	270.7 MiB	2015-12-08 16:00:53	0735e69199fc37135930ea2fd4fb6ad0ade
Anaconda3-2.4.1-MacOSX-x86_64.pkg	247.6 MiB	2015-12-08 16:00:54	95e9f2d370f7816ed72b862c9413c973efb
Anaconda3-2.4.1-MacOSX-x86_64.sh	213.9 MiB	2015-12-08 16:00:54	22a3267638da9b7d64210d7da90d8762da7
Anaconda3-2.4.1-Windows-x86.exe	299.1 MiB	2015-12-08 16:00:56	dfe50d13473547b5230f6194dfe6bdf961
Anaconda3-2.4.1-Windows-x86_64.exe	363.7 MiB	2015-12-08 16:00:55	21d155a4b43805042499b8d008835bcdfd9
Anaconda2-2.4.0-Linux-x86.sh	279.9 MiB	2015-11-02 17:22:19	478a8fdde3a6e4040a68c57d7bdd6fab1a4
Anaconda2-2.4.0-Linux-x86_64.sh	288.4 MiB	2015-11-02 17:22:19	49d19834da06b1b82b6fa85bc647d2e78fa
Anaconda2-2.4.0-MacOSX-x86_64.pkg	274.3 MiB	2015-11-02 17:22:20	d6842135062f3c3d2f8bd3318133376d4f
Anaconda2-2.4.0-MacOSX-x86_64.sh	239.5 MiB	2015-11-02 17:22:20	53c9123c9d508555100805fdb44d9845511
Anaconda2-2.4.0-Windows-x86.exe	321.4 MiB	2015-11-02 17:22:21	2a05db81a0fe4155bc2dd83a689294d3ac7
Anaconda2-2.4.0-Windows-x86_64.exe	388.0 MiB	2015-11-02 17:22:21	7a40484e58e91f62d91961c8607de586d3e
Anaconda3-2.4.0-Linux-x86.sh	277.4 MiB	2015-11-02 17:22:22	f6080c6493cefc603cfeb67aaf6c3c4c6b8
Anaconda3-2.4.0-Linux-x86_64.sh	285.2 MiB	2015-11-02 17:22:22	fb4e480059e991f2fa632b5a9bcbdd284c7f
Anaconda3-2.4.0-MacOSX-x86_64.pkg	267.4 MiB	2015-11-02 17:22:23	791f045258bd39bbcd4c5425dce082ecd
Anaconda3-2.4.0-MacOSX-x86_64.sh	233.8 MiB	2015-11-02 17:22:23	f0cd785dbed0bab28dfc08a391c9de1b016
Anaconda3-2.4.0-Windows-x86.exe	316.4 MiB	2015-11-02 17:22:25	a69a9fe00ce337b0cfd7d024b79ba5141cd
Anaconda3-2.4.0-Windows-x86_64.exe	392.3 MiB	2015-11-02 17:22:24	beaa1b803dd30022c6aca1c6f05182beaea
Anaconda-2.3.0-Linux-x86.sh	309.6 MiB	2015-07-01 14:35:09	73fdbbb3e38207ed18e5059f71676d18d48
Anaconda-2.3.0-Linux-x86_64.sh	323.9 MiB	2015-07-01 14:35:08	7c02499e9511c127d225992cfe1cd815e88
Anaconda-2.3.0-MacOSX-x86_64.pkg	283.7 MiB	2015-07-01 14:35:09	f920ae6211d9da3288b5e160100543667cf
Anaconda-2.3.0-MacOSX-x86_64.sh	249.9 MiB	2015-07-01 14:35:10	c4bb59a57bf44dde80612041bbbcfd2e5ca
Anaconda-2.3.0-Windows-x86.exe	277.4 MiB	2015-07-01 14:35:11	3b60ddfb84533539e767889706bd64298a7
Anaconda-2.3.0-Windows-x86_64.exe	334.7 MiB	2015-07-01 14:35:10	70b4a84e78c721bd46f3de39c75acb37d19
Anaconda3-2.3.0-Linux-x86.sh	322.6 MiB	2015-07-01 14:35:13	4cc10d65c303191004ada2b6d75562c8ed8
Anaconda3-2.3.0-Linux-x86_64.sh	336.7 MiB	2015-07-01 14:35:12	3be5410b2d9db45882c7de07c554cf4f103
Anaconda3-2.3.0-MacOSX-x86_64.pkg	292.8 MiB	2015-07-01 14:35:13	0b936ab3067bbf32b5a52768f31ff437f0e
Anaconda3-2.3.0-MacOSX-x86_64.sh	257.4 MiB	2015-07-01 14:35:14	6a0c94a49f41f9fda0138c8e966bd7b0a89
Anaconda3-2.3.0-Windows-x86.exe	281.1 MiB	2015-07-01 14:35:15	02d5f84da308f96d1a252a6669f3ca91e12
Anaconda3-2.3.0-Windows-x86_64.exe	336.4 MiB	2015-07-01 14:35:14	bd693b61cf191666ae0473327f3c15bcf32
Anaconda-2.2.0-Linux-x86.sh	303.2 MiB	2015-03-25 16:19:54	6437d5b08a19c3501f2f5dc3ae1ae16f91a
Anaconda-2.2.0-Linux-x86_64.sh	317.3 MiB	2015-03-25 16:20:08	ca2582cb2188073b0f348ad42207211a2b8
Anaconda-2.2.0-MacOSX-x86_64.pkg	279.7 MiB	2015-03-25 16:27:27	65784323db94b0c297e998bc81db5978e89
Anaconda-2.2.0-MacOSX-x86_64.sh	247.1 MiB	2015-03-25 16:17:33	20570e2f3911e38a78d8f888f3ff445d6c0
Anaconda-2.2.0-Windows-x86.exe	274.2 MiB	2015-03-25 16:28:48	247e8e7e386224a3df736ffe607596546f4
Anaconda-2.2.0-Windows-x86_64.exe	331.2 MiB	2015-03-25 16:30:13	1e01d7e1560668f4c05d1cfafeb59b79da1
Anaconda3-2.2.0-Linux-x86.sh	313.3 MiB	2015-03-25 16:20:07	223655cd256aa912dfc83ab24570e47bb38
Anaconda3-2.2.0-Linux-x86_64.sh	326.9 MiB	2015-03-25 16:20:14	4aac68743e7706adb93f042f970373a6e7e
Anaconda3-2.2.0-MacOSX-x86_64.pkg	288.8 MiB	2015-03-25 16:28:12	16a5154267d7d52d3e7e0d12ec3405077df
Anaconda3-2.2.0-MacOSX-x86_64.sh	254.5 MiB	2015-03-25 16:17:44	81a2089ea6127717f146454e99ea0be2bd5
Anaconda3-2.2.0-Windows-x86.exe	277.7 MiB	2015-03-25 16:31:19	20c46fff048fb313aaf1a49171c1a7b96a4
Anaconda3-2.2.0-Windows-x86_64.exe	332.6 MiB	2015-03-25 16:32:30	28c5a13b27a9dbd57c7c633316c5f4beb0c
Anaconda-2.1.0-Linux-x86.sh	321.2 MiB	2014-09-25 11:50:30	fd70c08719e6b5caae45b7c8402c6975a8c
Anaconda-2.1.0-Linux-x86_64.sh	337.4 MiB	2014-09-25 11:50:15	191fbf290747614929d0bdd576e330c944b
Anaconda-2.1.0-MacOSX-x86_64.pkg	275.0 MiB	2014-09-25 12:33:13	d8001bae990e7024b81e74c6b06d0f488dd



Table 2 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda-2.1.0-MacOSX-x86_64.sh	241.0 MiB	2014-09-25 11:53:13	128fd4f53e0895e0d23f33e924ae32e0117
Anaconda-2.1.0-Windows-x86.exe	310.2 MiB	2014-09-25 12:05:03	c39193c9018a9c1e9e8f3c1d2692ac63513
Anaconda-2.1.0-Windows-x86_64.exe	367.0 MiB	2014-09-25 12:07:11	d9d7c8ed1c914312848407f08fff3d19350
Anaconda3-2.1.0-Linux-x86.sh	317.7 MiB	2014-09-25 11:50:35	657cb599004c21e37ce693515ea33922e00
Anaconda3-2.1.0-Linux-x86_64.sh	332.8 MiB	2014-09-25 11:50:20	af3225ccbe8df0ff918939e009aa57740e
Anaconda3-2.1.0-MacOSX-x86_64.pkg	277.3 MiB	2014-09-25 12:40:54	2780df02f400e44c0adcd209825fdc9555
Anaconda3-2.1.0-MacOSX-x86_64.sh	243.5 MiB	2014-09-25 11:53:23	efdb7e9d1e539cbcd62dc3874b0de6a141f
Anaconda3-2.1.0-Windows-x86.exe	308.7 MiB	2014-09-25 12:09:01	8ffa252aa2b4f63889888ae85a81626ce95
Anaconda3-2.1.0-Windows-x86_64.exe	363.3 MiB	2014-09-25 12:11:03	ea4059469b1820069f62bd6c256def6259d
Anaconda-2.0.1-Linux-x86.sh	309.1 MiB	2014-06-12 16:02:41	e8ffc63f31673b5ce41a95796a1f729ddcf
Anaconda-2.0.1-Linux-x86_64.sh	327.9 MiB	2014-06-12 16:02:33	074204fa26872b4a946123071d15b8390c0
Anaconda-2.0.1-MacOSX-x86_64.pkg	244.3 MiB	2014-06-12 16:02:50	d6a0ce0422daa004929a4aef6b485d94f5e
Anaconda-2.0.1-MacOSX-x86_64.sh	214.4 MiB	2014-06-12 16:02:56	4ecda163c6f46e70cc6a1fe62dece4c6ecd
Anaconda-2.0.1-Windows-x86.exe	287.3 MiB	2014-06-12 16:03:27	be5a341bc3f9bf8386c686cfc9ad253f307
Anaconda-2.0.1-Windows-x86_64.exe	343.7 MiB	2014-06-12 16:03:07	5b27e7de356312da711a19ae6a4438c1c85
Anaconda3-2.0.1-Linux-x86.sh	287.7 MiB	2014-06-12 16:00:00	21293fabbd3d5c5fbb1afe0c9a8b39e0bc4d
Anaconda3-2.0.1-Linux-x86_64.sh	304.8 MiB	2014-06-12 15:59:53	3c3b834793e461f3316ad1d9a9178c67859
Anaconda3-2.0.1-MacOSX-x86_64.pkg	230.7 MiB	2014-06-12 16:00:05	0d53815a83a50bdcfcfb5ada686f582730bc
Anaconda3-2.0.1-MacOSX-x86_64.sh	203.3 MiB	2014-06-12 16:00:09	7a08509d4e45efcc7055a6d06d8406a7737
Anaconda3-2.0.1-Windows-x86.exe	265.7 MiB	2014-06-12 16:00:27	b08803296d7439413d590fd1f967b201279
Anaconda3-2.0.1-Windows-x86_64.exe	319.8 MiB	2014-06-12 16:00:15	e2b6d3d6a9e378fc0d0dd63342417c02bdf
Anaconda-2.0.0-Linux-x86.sh	298.4 MiB	2014-05-28 17:50:36	efb9d3987134d484d88a9d915437b1bd568
Anaconda-2.0.0-Linux-x86_64.sh	316.9 MiB	2014-05-28 17:50:30	3aa27ddf4a0ba5046ba52b97da99e20eb06
Anaconda-2.0.0-MacOSX-x86_64.pkg	236.2 MiB	2014-05-28 17:50:41	e2eb3805451a26235b2ed7f3e63535fc39b
Anaconda-2.0.0-MacOSX-x86_64.sh	206.1 MiB	2014-05-28 17:50:45	ad6271ad21403166bf54d0734ba8c7f7eb6
Anaconda-2.0.0-Windows-x86.exe	278.2 MiB	2014-05-28 17:51:02	d86cc7100b4c04ec25768267b81798f70a8
Anaconda-2.0.0-Windows-x86_64.exe	334.4 MiB	2014-05-28 17:50:53	60078f8677e62e435e5a53f1084e6f39df7
Anaconda3-2.0.0-Linux-x86.sh	277.5 MiB	2014-05-27 17:35:55	439761159d5604e182951650a478dd53caf
Anaconda3-2.0.0-Linux-x86_64.sh	294.4 MiB	2014-05-27 17:26:59	57ce4f97e300cf94c5724f72d992e9eecef
Anaconda3-2.0.0-MacOSX-x86_64.pkg	222.9 MiB	2014-05-27 17:30:16	4d4189ec0c514d344389e216b3ad4eeacd6
Anaconda3-2.0.0-MacOSX-x86_64.sh	195.3 MiB	2014-05-27 18:02:53	776a1cf8a8e898b41bb6558c093632cc922
Anaconda3-2.0.0-Windows-x86.exe	256.9 MiB	2014-05-27 17:59:13	37986ce4c104ed3c82838de74b3a4de1791
Anaconda3-2.0.0-Windows-x86_64.exe	310.9 MiB	2014-05-27 18:01:42	a8046fc82da7463ef53cdeaba97c72433c3
Anaconda-1.9.2-Linux-x86.sh	411.8 MiB	2014-04-08 18:33:09	1f7c850d0b98c011a717b3b757d82077acc
Anaconda-1.9.2-Linux-x86_64.sh	484.0 MiB	2014-04-08 18:32:38	7181d399833a2549a9584255bb477487f2f
Anaconda-1.9.2-MacOSX-x86_64.pkg	281.0 MiB	2014-04-10 11:05:32	2fff6dca12507f675b04ed1f303d0ee99d7
Anaconda-1.9.2-MacOSX-x86_64.sh	245.4 MiB	2014-04-08 18:34:03	be4611ca671f80b984fa330d4ecf82244c3
Anaconda-1.9.2-Windows-x86.exe	311.8 MiB	2014-04-08 18:39:25	fe005aeacd1345b856c73d640856b79ed94
Anaconda-1.9.2-Windows-x86_64.exe	367.3 MiB	2014-04-08 18:41:16	ef9cfb69c831210fc9000ee5482d2d98ba6
Anaconda-1.9.1-Linux-x86.sh	411.8 MiB	2014-02-20 14:34:56	9aa39c05f723fee18c54a9cc17299861932
Anaconda-1.9.1-Linux-x86_64.sh	483.9 MiB	2014-02-20 14:35:16	f6455e06a72b8cc11c8a96fb88a85518a2f
Anaconda-1.9.1-MacOSX-x86_64.pkg	280.9 MiB	2014-02-20 16:44:04	2aa707b162e71d488495085fd13232f8c30
Anaconda-1.9.1-MacOSX-x86_64.sh	245.3 MiB	2014-02-20 14:02:05	7e4358adbaae2db9e17d1e0e4263b9a0174
Anaconda-1.9.1-Windows-x86.exe	311.7 MiB	2014-02-20 16:08:42	46cbe29a30cfcfd56018f7f69a35525708f2
Anaconda-1.9.1-Windows-x86_64.exe	367.3 MiB	2014-02-20 16:10:34	d0c3c2faca03b3820ff8fc39688f500bd14
Anaconda-1.9.0-Linux-x86.sh	545.3 MiB	2014-02-10 11:23:30	16471e90b3deb7be1b3d449d8883983d81f
Anaconda-1.9.0-Linux-x86_64.sh	618.8 MiB	2014-02-10 11:23:05	855f1265e4c0b40d50f5a3a0fe7bae05b1c
Anaconda-1.9.0-MacOSX-x86_64.pkg	279.8 MiB	2014-02-10 11:23:46	b74134e7626f10fc4d86209a3ebbb19de3c
Anaconda-1.9.0-MacOSX-x86_64.sh	244.4 MiB	2014-02-10 11:23:47	722fe4d4406e88c5023e7ee21dc1401bb2a



Table 2 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda-1.9.0-Windows-x86.exe	308.6 MiB	2014-02-10 11:24:52	2c8c58cf21e537e930535df5a0e8fd4b6d6
Anaconda-1.9.0-Windows-x86_64.exe	365.1 MiB	2014-02-10 11:24:18	265c7e849688164f7a7fe9df541be018675
Anaconda-1.8.0-Linux-x86.sh	393.0 MiB	2013-11-04 16:37:29	2c08a5cd6ccaa9dc84063b0ee9b007aa82e
Anaconda-1.8.0-Linux-x86_64.sh	465.7 MiB	2013-11-04 16:37:12	69f42966d918f4197040e4dd126d2e3cc3c
Anaconda-1.8.0-MacOSX-x86_64.pkg	263.0 MiB	2013-11-04 14:57:20	fb92afc7750bc58ac12f3cbd65c18ee0f80
Anaconda-1.8.0-MacOSX-x86_64.sh	228.8 MiB	2013-11-04 14:10:16	5844ca595b5930399a1213db64ab53e9b7e
Anaconda-1.8.0-Windows-x86.exe	290.0 MiB	2013-11-04 14:54:14	719bc0987be80b46f9c6b745822777fa1f0
Anaconda-1.8.0-Windows-x86_64.exe	342.1 MiB	2013-11-04 14:55:59	434c2b325a368958b66d52cee4cc710f5ea
Anaconda-1.7.0-Linux-x86.sh	381.0 MiB	2013-09-08 18:02:26	af372a27a1887e11061485e2a854c535775
Anaconda-1.7.0-Linux-x86_64.sh	452.6 MiB	2013-09-08 18:01:59	6115cfaf55a0746b4ae4128be839c99db39
Anaconda-1.7.0-MacOSX-x86_64.pkg	256.7 MiB	2013-09-09 13:15:34	d277f7e162c77043e416d03a754389a0d9f
Anaconda-1.7.0-MacOSX-x86_64.sh	223.3 MiB	2013-09-09 12:52:45	046b592245bc2c11e733acb9700dc50947f
Anaconda-1.7.0-Windows-x86.exe	280.6 MiB	2013-09-08 18:10:23	b434776dfeac98f37328c6e538f5a1a5319
Anaconda-1.7.0-Windows-x86_64.exe	330.1 MiB	2013-09-08 18:12:00	59a3667fd33f8de1ed476d7ff07917d726b
Anaconda-1.6.2-Windows-x86.exe	244.4 MiB	2013-07-09 14:44:58	0873576bbd979e3b7859808bccc2311edae
Anaconda-1.6.2-Windows-x86_64.exe	289.9 MiB	2013-07-09 14:46:28	641fc25c1d13e49cc030df5f4040170d123
Anaconda-1.6.1-Linux-x86.sh	247.1 MiB	2013-07-02 12:59:07	745b9452fd18720deefb465a6687c0d66df
Anaconda-1.6.1-Linux-x86_64.sh	317.6 MiB	2013-07-02 12:57:42	81d1819ba08069343f228b9c819cdba0e4d
Anaconda-1.6.1-MacOSX-x86_64.pkg	197.3 MiB	2013-07-02 18:30:12	7c79819dd40a14e52439664c3e88e89ecba
Anaconda-1.6.1-MacOSX-x86_64.sh	170.0 MiB	2013-07-02 12:59:25	bbc15de34208ce8af5aceedeea1334636fe
Anaconda-1.6.1-Windows-x86.exe	244.4 MiB	2013-07-02 13:02:59	a823dc7688cec49499bb5922783377c262c
Anaconda-1.6.1-Windows-x86_64.exe	289.9 MiB	2013-07-02 13:04:26	8cad320d4d6981644fbd1741bd5589d198f
Anaconda-1.6.0-Linux-x86.sh	241.6 MiB	2013-06-21 15:23:39	d6aeedfcb39d648fdfb5bd72c4d0b3063a9
Anaconda-1.6.0-Linux-x86_64.sh	309.5 MiB	2013-06-21 15:23:51	20f5b70193af4b0b8f10aa0e66aabca5528
Anaconda-1.6.0-MacOSX-x86_64.sh	169.0 MiB	2013-06-21 15:26:14	e03317888c36c07451a349577b426f435a7
Anaconda-1.6.0-Windows-x86.exe	244.9 MiB	2013-06-21 15:36:46	3dc2588557455484b3b38feb14fa95d941d
Anaconda-1.6.0-Windows-x86_64.exe	290.4 MiB	2013-06-21 15:38:20	6e95dc3612ed430ded28bb48fa1671b32a1
Anaconda-1.5.1-MacOSX-x86_64.sh	166.2 MiB	2013-05-09 15:26:20	6d3c86a2fdbaeec2a6c251d5c9034a32b7
Anaconda-1.5.0-Linux-x86.sh	238.8 MiB	2013-05-08 10:18:43	ca7e356dc1b8c8ef27dfb74b32c77563df7
Anaconda-1.5.0-Linux-x86_64.sh	306.7 MiB	2013-05-08 10:18:36	f4cdc194f076e1b438c8a34e7e5f53e70c2
Anaconda-1.5.0-MacOSX-x86_64.sh	166.2 MiB	2013-05-08 10:18:44	c69609f0f48f33ca5a12d425a9e4d0fc91b
Anaconda-1.5.0-Windows-x86.exe	236.0 MiB	2013-05-08 10:18:44	d3dd92fa00d999a94638513daf2d4aeed15
Anaconda-1.5.0-Windows-x86_64.exe	280.4 MiB	2013-05-08 10:20:08	7edbe2e51b71c69e7e7a1ec01d8d83954ad
Anaconda-1.4.0-Linux-x86.sh	220.5 MiB	2013-03-09 17:46:53	065284c5de369c9b89dcae79e7169ce9b73
Anaconda-1.4.0-Linux-x86_64.sh	286.9 MiB	2013-03-09 17:46:38	85ae8a0a6e3a41cf7845be3def36ed40582
Anaconda-1.4.0-MacOSX-x86_64.sh	156.4 MiB	2013-03-09 17:46:57	e5d5dae6e93bb7df528abc19f5ed3a69cc4
Anaconda-1.4.0-Windows-x86.exe	210.1 MiB	2013-03-09 17:55:45	e590e45d36d3f164fcacf58cda6a3cb09252
Anaconda-1.4.0-Windows-x86_64.exe	241.4 MiB	2013-03-09 17:57:09	6ff0a3bf82fd5c6f0568d12ff030237ee9

## Anaconda with Python 2 on 64-bit Windows

To verify the file integrity using MD5 or SHA-256, see [cryptographic hash verification](#).

### Hashes for Anaconda2-2019.10-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1571149568.0
time file was last modified, in human readable format	2019-10-15 07:26:08
exact file size, in bytes	432851808
file size, in human friendly format	412.8 MiB
md5	b152e6f36032ed414ad88cca9ace331a
sha256	3e09c8e95e10f077be1e1d26f26df8d6a13356449e06d7d47ddc066fbaf435f5

### Hashes for Anaconda2-2019.07-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1564065371.0
time file was last modified, in human readable format	2019-07-25 07:36:11
exact file size, in bytes	447973832
file size, in human friendly format	427.2 MiB
md5	4813b22808b4042ed54120fd0e44327a
sha256	fb7493a5c40d28ab47e54c57f025186dc26309183b21c8a0df733837e86b1aad

## Hashes for Anaconda2-2019.03-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1554411653.0
time file was last modified, in human readable format	2019-04-04 14:00:53
exact file size, in bytes	615389640
file size, in human friendly format	586.9 MiB
md5	042809940fb2f60d979eac02fc4e6c82
sha256	96c21ae0d152755e8f4ac4a593da4063e0f3796064dbe25dbbad163e926f94ec

## Hashes for Anaconda2-2018.12-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419777.0
time file was last modified, in human readable format	2018-12-21 11:16:17
exact file size, in bytes	587793280
file size, in human friendly format	560.6 MiB
md5	10ff4176a94fcff86e6253b0cc82c782
sha256	7571d334eac3b9bd4f3e199fc5f493f0601890620c22e6d487246bde90497425

## Hashes for Anaconda2-5.3.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1542656267.0
time file was last modified, in human readable format	2018-11-19 11:37:47
exact file size, in bytes	608275536
file size, in human friendly format	580.1 MiB
md5	ff29ffcd1f767cde91bab71110c00294
sha256	63b8a687cddcf462f9f61993d07ba88389c413265d3035a1b1bdb2c481592f1c

### Hashes for Anaconda2-5.3.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538081954.0
time file was last modified, in human readable format	2018-09-27 13:59:14
exact file size, in bytes	607139640
file size, in human friendly format	579.0 MiB
md5	19fb5f9eedf834b4329dcdeac9824516
sha256	30bf9131df2314c00a9cd5e5f0b7d6184c3aec38e4068eaa9c962f62018110a1

### Hashes for Anaconda2-5.2.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1527703456.0
time file was last modified, in human readable format	2018-05-30 11:04:16
exact file size, in bytes	591413392
file size, in human friendly format	564.0 MiB
md5	595e427e4b625b6eab92623a28dc4e21
sha256	e5ff95332d08a7b006a5bb723e0a5124c4c4c9a9e4289afdd05941791a79ec81

## Hashes for Anaconda2-5.1.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707334.0
time file was last modified, in human readable format	2018-02-15 07:08:54
exact file size, in bytes	548001744
file size, in human friendly format	522.6 MiB
md5	b16d6d6858fc7decf671ac71e6d7cfdb
sha256	3674c8d8c233dbea30842f14dc76cc3feaf4badf7d9dfe4145aa5b6679fabf2e

## Hashes for Anaconda2-5.0.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1508813842.0
time file was last modified, in human readable format	2017-10-23 19:57:22
exact file size, in bytes	524040968
file size, in human friendly format	499.8 MiB
md5	b8d9bc02edd61af3f7ece3d07e726e91
sha256	c43f94c51623850b0c1a826710fe9c8e50b0d73708874c9cf9b6ef03806ba2b7

## Hashes for Anaconda2-5.0.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506454249.0
time file was last modified, in human readable format	2017-09-26 12:30:49
exact file size, in bytes	522426032
file size, in human friendly format	498.2 MiB
md5	8323b1d5f0b1c3fdb5b85efbb099beb0
sha256	5fb73395cdf003613f5d44844da9870dbdc2a35cede0f928b02c38b5ee2ebb55

### Hashes for Anaconda2-4.4.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495839202.0
time file was last modified, in human readable format	2017-05-26 15:53:22
exact file size, in bytes	451651872
file size, in human friendly format	430.7 MiB
md5	0f60aa52ef3a5d6170aeb6f7e3651f91
sha256	7a8ec1a36f385ebf28a1a8cf63b8b03ac0f7744e1531f5d359ce6a6d903913e0

### Hashes for Anaconda2-4.3.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1488838739.0
time file was last modified, in human readable format	2017-03-06 14:18:59
exact file size, in bytes	433804976
file size, in human friendly format	413.7 MiB
md5	bfd41f4de09a690f8b3525d3fb79bd2f
sha256	c0e13a756a856d7b7757b10d65bee577d8c9826317050eecec42d2e48d2ea6fc

### Hashes for Anaconda2-4.3.0.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1486066808.0
time file was last modified, in human readable format	2017-02-02 12:20:08
exact file size, in bytes	432863736
file size, in human friendly format	412.8 MiB
md5	56b181af1959de40e67fb5ef50612ae2
sha256	2198e28e9e8e3c43ab72a8371e5b2d0a9aa6574391aebbc94bf768a50a57aaa

### Hashes for Anaconda2-4.3.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1485548279.0
time file was last modified, in human readable format	2017-01-27 12:17:59
exact file size, in bytes	432864904
file size, in human friendly format	412.8 MiB
md5	2c02e21e542d61760c3e19bf0b3086fe
sha256	1117839746a8eabf7ed26ff311fc74e44a58e319555e306f241e04b32363aeda

### Hashes for Anaconda2-4.2.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1475009747.0
time file was last modified, in human readable format	2016-09-27 13:55:47
exact file size, in bytes	399546128
file size, in human friendly format	381.0 MiB
md5	0a30d509568724dac0ae193e139b9c37
sha256	6254b150edee53000c94e9abfc9c51a2d2e5ef3453d8e7cc7ef0a848d6d3b422

### Hashes for Anaconda2-4.1.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467994801.0
time file was last modified, in human readable format	2016-07-08 09:20:01
exact file size, in bytes	357765440
file size, in human friendly format	341.2 MiB
md5	1db0244dbf02579f452d1b19ce245144
sha256	7be13a69df254b86e47612c726b0b2ba9ffa35c060b4d28edb348004c1f729a9

### Hashes for Anaconda2-4.1.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467131310.0
time file was last modified, in human readable format	2016-06-28 09:28:30
exact file size, in bytes	356677104
file size, in human friendly format	340.2 MiB
md5	6c1066a240b28dbb33e9293a97cd40f5
sha256	7a62880ff9bb7f747d70f518f024dfd1795a26d4130a20d1ff30043d05ec712f



## Hashes for Anaconda2-4.0.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1459268099.0
time file was last modified, in human readable format	2016-03-29 09:14:59
exact file size, in bytes	350807856
file size, in human friendly format	334.6 MiB
md5	6b2ad997c42fbf58bb1b54baa5619e4f
sha256	213c7d94bdb6f0931edd31bb14ae33ab557cee52c4ac949300e512397a29e03e

## Hashes for Anaconda2-2.5.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1454535974.0
time file was last modified, in human readable format	2016-02-03 13:46:14
exact file size, in bytes	365581384
file size, in human friendly format	348.6 MiB
md5	57e42190411054333781c1208822659d
sha256	4423b43eb23184b4239abc426a564760d6ddf0187ce451468546b88931de4023

## Hashes for Anaconda2-2.4.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1449608451.0
time file was last modified, in human readable format	2015-12-08 13:00:51
exact file size, in bytes	371393960
file size, in human friendly format	354.2 MiB
md5	733ce916c4c392367c611efd493410b0
sha256	cfbe5539cb7f2e5807ec3d2fa2e59db3a419caa1ef8f0497516dd0c861f92bfe

### Hashes for Anaconda2-2.4.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1446502941.0
time file was last modified, in human readable format	2015-11-02 14:22:21
exact file size, in bytes	406819096
file size, in human friendly format	388.0 MiB
md5	00a09d300d13c9f4754165920396625d
sha256	7a40484e58e91f62d91961c8607de586d3ef14645319c0395683e5f7182551bd

### Hashes for Anaconda2-2.3.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1435775710.0
time file was last modified, in human readable format	2015-07-01 11:35:10
exact file size, in bytes	350951272
file size, in human friendly format	334.7 MiB
md5	93d3d5d2aae82c175cd9ef4a570c2ab0
sha256	70b4a84e78c721bd46f3de39c75acb37d1980a3afa23cf3cef387569606f7ca3

## Hashes for Anaconda-2.2.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1427315413.0
time file was last modified, in human readable format	2015-03-25 13:30:13
exact file size, in bytes	347294944
file size, in human friendly format	331.2 MiB
md5	27230171e315bcdee370ef97ef622158
sha256	1e01d7e1560668f4c05d1cfafcb59b79da1b352671dc913a5ec8b766dde12190

## Hashes for Anaconda-2.1.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1411661231.0
time file was last modified, in human readable format	2014-09-25 09:07:11
exact file size, in bytes	384818768
file size, in human friendly format	367.0 MiB
md5	a80eea69583fcee6d3d0f6a63a900b2e
sha256	d9d7c8ed1c914312848407f08fff3d19350c20d754c8872d36ef455ce7541c5aa

## Hashes for Anaconda-2.0.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1402603387.0
time file was last modified, in human readable format	2014-06-12 13:03:07
exact file size, in bytes	360443904
file size, in human friendly format	343.7 MiB
md5	b498d9bf6b266bc09507d2ef9d4b7b55
sha256	5b27e7de356312da711a19ae6a4438c1c857b9c4e357c4aa3275d014db73c80a

### Hashes for Anaconda-2.0.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1401313853.0
time file was last modified, in human readable format	2014-05-28 14:50:53
exact file size, in bytes	350647728
file size, in human friendly format	334.4 MiB
md5	9ec65c4cc0d640ff36f89193cb9e7b7d
sha256	60078f8677e62e435e5a53f1084e6f39df7f4874892b77d04fbd819033c44ef5

### Hashes for Anaconda-1.9.2-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1396996876.0
time file was last modified, in human readable format	2014-04-08 15:41:16
exact file size, in bytes	385184016
file size, in human friendly format	367.3 MiB
md5	a610322f6752413c9b02abf72f960ff9
sha256	ef9cfb69c831210fc9000ee5482d2d98ba609d4f9e05746f93f569045bad04

### Hashes for Anaconda-1.9.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1392930634.0
time file was last modified, in human readable format	2014-02-20 13:10:34
exact file size, in bytes	385134224
file size, in human friendly format	367.3 MiB
md5	b8a404c9f5bfd2452316db3710d2b8ef
sha256	d0c3c2faca03b3820ff8fc39688f500bd140f207aab7553c50005484ff755505

### Hashes for Anaconda-1.9.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1392049458.0
time file was last modified, in human readable format	2014-02-10 08:24:18
exact file size, in bytes	382872112
file size, in human friendly format	365.1 MiB
md5	3c5e322e71428167e4d38725e1d92be0
sha256	265c7e849688164f7a7fe9df541be018675772f2e91be39d116e6d0e07181c25

### Hashes for Anaconda-1.8.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1383594959.0
time file was last modified, in human readable format	2013-11-04 11:55:59
exact file size, in bytes	358748424
file size, in human friendly format	342.1 MiB
md5	dccc94b5e1b77e56385a318c5c91b6d1
sha256	434c2b325a368958b66d52cee4cc710f5ea40e45657854a9be2b54dd50b9c661

### Hashes for Anaconda-1.7.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1378678320.0
time file was last modified, in human readable format	2013-09-08 15:12:00
exact file size, in bytes	346131087
file size, in human friendly format	330.1 MiB
md5	c4e6987a83b00da8d36fc4e559df7d01
sha256	59a3667fd33f8de1ed476d7ff07917d726be51de239deaf7ce13ab277bb4153d

### Hashes for Anaconda-1.6.2-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1373395588.0
time file was last modified, in human readable format	2013-07-09 11:46:28
exact file size, in bytes	303973708
file size, in human friendly format	289.9 MiB
md5	80bc3fe5f8d2f83110eee775946ed3b8
sha256	641fc25c1d13e49cc030df5f4040170d123072e54b439e7097531a61cc38542e

## Hashes for Anaconda-1.6.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1372784666.0
time file was last modified, in human readable format	2013-07-02 10:04:26
exact file size, in bytes	303973712
file size, in human friendly format	289.9 MiB
md5	3e63a96cc45f665bf53fa38b18491f94
sha256	8cad320d4d6981644fbd1741bd5589d198f5e4ca1e1f66a10d57c704ee485c3e

## Hashes for Anaconda-1.6.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1371843500.0
time file was last modified, in human readable format	2013-06-21 12:38:20
exact file size, in bytes	304462009
file size, in human friendly format	290.4 MiB
md5	d215a5aca9515f1875cf131b0c35d78d
sha256	6e95dc3612ed430ded28bb48fa1671b32a185c976eba905796707f9b5b44e984

## Hashes for Anaconda-1.5.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1368022808.0
time file was last modified, in human readable format	2013-05-08 07:20:08
exact file size, in bytes	294062717
file size, in human friendly format	280.4 MiB
md5	058a62bb0fbaf53870b92798453e718a
sha256	7edbe2e51b71c69e7e7a1ec01d8d83954ada9e885e08adffdd624b9e1b10fb3

### Hashes for Anaconda-1.4.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1362869829.0
time file was last modified, in human readable format	2013-03-09 14:57:09
exact file size, in bytes	253175221
file size, in human friendly format	241.4 MiB
md5	7e4ff5278e86cc88852abb5da453ae7a
sha256	6ff0a3bf82fd5c6f0568d12ff030237ee90825bb0ea60e4cf3833db847535f9

### Anaconda with Python 3 on 64-bit Windows

To verify the file integrity using MD5 or SHA-256, see [cryptographic hash verification](#).

### Hashes for Anaconda3-2023.09-0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1696002215.3113174
time file was last modified, in human readable format	2023-09-29 11:43:35
exact file size, in bytes	1095571496
file size, in human friendly format	1.0 GiB
md5	e1040bfdedd8e5bc126a6cee3c29f8b3
sha256	810da8bff79c10a708b7af9e8f21e6bb47467261a31741240f27bd807f155cb9

### Hashes for Anaconda3-2023.07-2-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1691164567.5368931
time file was last modified, in human readable format	2023-08-04 08:56:07
exact file size, in bytes	942216640
file size, in human friendly format	898.6 MiB
md5	1803c5344a1144ad9ae6ba27ad9d189a
sha256	b48e103546742b2fcb77c4099660a28901476932472d16eef6c5a63de8b6a7ce

### Hashes for Anaconda3-2023.07-1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689280148.797525
time file was last modified, in human readable format	2023-07-13 13:29:08
exact file size, in bytes	937260904
file size, in human friendly format	893.8 MiB
md5	e6136578cb207e7b68bc2e6ac8a0f202
sha256	f52d9d658e49d62754266e4e38e0dfc46fabda485de7139cef263187472f7445

### Hashes for Anaconda3-2023.07-0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689099423.3685057
time file was last modified, in human readable format	2023-07-11 11:17:03
exact file size, in bytes	937278376
file size, in human friendly format	893.9 MiB
md5	301406daa4d77c40cf9ba81b60396301
sha256	fc75a8843169366e47a54c58ddd28ff95f4edb6a088731dd62acfc8f955439f9

### Hashes for Anaconda3-2023.03-1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1682358067.60801
time file was last modified, in human readable format	2023-04-24 10:41:07
exact file size, in bytes	824774840
file size, in human friendly format	786.6 MiB
md5	a0db56365060cbc95e2a04ca3f832900
sha256	f13a2ae812d2069654521e7b1d897227ea4af52bff7cd8b3d80e7b2271fc79e4

### Hashes for Anaconda3-2023.03-0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1679326896.9080594
time file was last modified, in human readable format	2023-03-20 08:41:36
exact file size, in bytes	824175688
file size, in human friendly format	786.0 MiB
md5	050c0b10077fd8c4335bb66c1e50570d
sha256	849daee6c1926bb43306d0e4ce0cc50719b5bb5e43e085fc5092513ef8bf1fd5

### Hashes for Anaconda3-2022.10-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1666041339.7003393
time file was last modified, in human readable format	2022-10-17 14:15:39
exact file size, in bytes	651399256
file size, in human friendly format	621.2 MiB
md5	18b472105e38c67bc931d55ee0785c5a
sha256	38b9d53a579843fe41fd05fd3c4f9ac3887f580e7bd9b43f220bbc3aea2367eb

### Hashes for Anaconda3-2022.05-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1652206922.819294
time file was last modified, in human readable format	2022-05-10 11:22:02
exact file size, in bytes	622731992
file size, in human friendly format	593.9 MiB
md5	9dec53982beb2659b65107a6ad10e863
sha256	2766eb102f9d65da36d262b651777358de39fbe5f1a74f9854a2e5e29caeeec

### Hashes for Anaconda3-2021.11-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1637172525.2703638
time file was last modified, in human readable format	2021-11-17 10:08:45
exact file size, in bytes	535052832
file size, in human friendly format	510.3 MiB
md5	424c58208a444f06f0766dee1b69d5c6
sha256	1b3d593d1deb22b835be5c68897075e0fc9dea240ab4191c55674aba259a78ff

### Hashes for Anaconda3-2021.05-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620961728.5321963
time file was last modified, in human readable format	2021-05-13 20:08:48
exact file size, in bytes	500375944
file size, in human friendly format	477.2 MiB
md5	d62d396a00c6dd51ebf70cde1b5f4c51
sha256	93db42390444019e98b442ab281e1091671b6dce64daf08928d337ffc83cf3d2

### Hashes for Anaconda3-2021.04-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620674469.5368521
time file was last modified, in human readable format	2021-05-10 12:21:09
exact file size, in bytes	496672144
file size, in human friendly format	473.7 MiB
md5	777ff665ef5b5dc323999824cb286c0e
sha256	65fd8be6ab9aed8106bd1c9a228ecd7fd3e23d0d15b9d72415e3a884a69a8462

### Hashes for Anaconda3-2020.11-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1605739534.48883
time file was last modified, in human readable format	2020-11-18 14:45:34
exact file size, in bytes	479396152
file size, in human friendly format	457.2 MiB
md5	0841ffcb927a3c2edbd682520f52e546
sha256	aa523115daf31c431bb392faf75e70d35ada935e36dc7b1dd8902baee240bcc1

### Hashes for Anaconda3-2020.07-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1595524606.0
time file was last modified, in human readable format	2020-07-23 10:16:46
exact file size, in bytes	490200880
file size, in human friendly format	467.5 MiB
md5	7c718535a7dd89fa46b147626ada9e46
sha256	66acb9bdf7d2d5925df8762311a85ad72f57dfd340447bf00636d35a28454244

### Hashes for Anaconda3-2020.02-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1583940755.0
time file was last modified, in human readable format	2020-03-11 08:32:35
exact file size, in bytes	488908696
file size, in human friendly format	466.3 MiB
md5	6b02c1c91049d29fc65be68f2443079a
sha256	83c2f53c7174253adcc2de7d1293a7408c37b295abbbb8feca32cb8428a26158

### Hashes for Anaconda3-2019.10-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1571149637.0
time file was last modified, in human readable format	2019-10-15 07:27:17
exact file size, in bytes	483964816
file size, in human friendly format	461.5 MiB
md5	fafcdbf5feb6dc3081bf07cbb8af1dbe
sha256	9e632439ed40620b8518f11469ded7316eccb489d0dfc41770f72ca2b2202dd9

### Hashes for Anaconda3-2019.07-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1564065473.0
time file was last modified, in human readable format	2019-07-25 07:37:53
exact file size, in bytes	509439656
file size, in human friendly format	485.8 MiB
md5	56edfc7280fb8def19922a0296b45633
sha256	37e753801a881649ceb608449b66ff9daa35a393409c6e651e56a60c5043bd46

### Hashes for Anaconda3-2019.03-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1554411630.0
time file was last modified, in human readable format	2019-04-04 14:00:30
exact file size, in bytes	693800272
file size, in human friendly format	661.7 MiB
md5	bfb4da8555ef5b1baa064ef3f0c7b582
sha256	d2c90169879f40816eac91bec585a1f9f788016fe0a8215ca066299e4b6531b9

### Hashes for Anaconda3-2018.12-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419674.0
time file was last modified, in human readable format	2018-12-21 11:14:34
exact file size, in bytes	644094168
file size, in human friendly format	614.3 MiB
md5	8d068f924a77e8d015906e81e91b31ab
sha256	09d84a789013d5e2bfb0148bdd9f5d69a6baa2127edabb9a8e50e77c6fc57ecc



### Hashes for Anaconda3-5.3.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1542656339.0
time file was last modified, in human readable format	2018-11-19 11:38:59
exact file size, in bytes	663195528
file size, in human friendly format	632.5 MiB
md5	3e4d013223d8a71d0fa4d58fe5b31023
sha256	295fed5940369d4ea1e2c6d04d418619d9942c19d925921cbeb941bbc5bd7659

### Hashes for Anaconda3-5.3.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538081960.0
time file was last modified, in human readable format	2018-09-27 13:59:20
exact file size, in bytes	662059680
file size, in human friendly format	631.4 MiB
md5	1807a3c595ed2dab9fc7662f2cdf79fd
sha256	1083d05ecec45707940a6c7afb375a5f330d7a24a9de1e6f8d86b4f4e49be3fb

### Hashes for Anaconda3-5.2.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1527703458.0
time file was last modified, in human readable format	2018-05-30 11:04:18
exact file size, in bytes	661987080
file size, in human friendly format	631.3 MiB
md5	62244c0382b8142743622fdc3526eda7
sha256	2672f6537e2c8a79ae9540cf3c49b18bb9ba35caec649191b5fa1e759f15b4c3

### Hashes for Anaconda3-5.1.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707426.0
time file was last modified, in human readable format	2018-02-15 07:10:26
exact file size, in bytes	563168960
file size, in human friendly format	537.1 MiB
md5	83a8b1edcb21fa0ac481b23f65b604c6
sha256	7d192e58915d7e7fbfd0c987ddc4db38a22d5fc47a22db71ac5873ef9ba8a503

### Hashes for Anaconda3-5.0.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1508866679.0
time file was last modified, in human readable format	2017-10-24 10:37:59
exact file size, in bytes	539829832
file size, in human friendly format	514.8 MiB
md5	3dde7dbbef158db6dc44fce495671c92
sha256	0b1ec18b7425f8c8518d6dc2fc0bc8ec2f06ba57f15727aee4731a4f98278174

### Hashes for Anaconda3-5.0.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506453293.0
time file was last modified, in human readable format	2017-09-26 12:14:53
exact file size, in bytes	534742736
file size, in human friendly format	510.0 MiB
md5	fee3fad608d0006afa5c7bca4de3d02b
sha256	53bd80727099b5767b9f20f99e908f9c19cea7572c14f9538dc1c8ca7ab5e742

### Hashes for Anaconda3-4.4.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495839334.0
time file was last modified, in human readable format	2017-05-26 15:55:34
exact file size, in bytes	458893576
file size, in human friendly format	437.6 MiB
md5	aa200a1c059a551e0ba9a5314a9554a5
sha256	ea582602541e748053df550514460426202fb4507edf9af4d7d706bc41044dca

### Hashes for Anaconda3-4.3.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1488838848.0
time file was last modified, in human readable format	2017-03-06 14:20:48
exact file size, in bytes	442630816
file size, in human friendly format	422.1 MiB
md5	16f337426454eac463fd0d41c6d2bbb8
sha256	65ce6d7c09884935fee9eb8d318b30e95f75f6efe8a8ba221df282cf22c390cd

### Hashes for Anaconda3-4.3.0.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1486066930.0
time file was last modified, in human readable format	2017-02-02 12:22:10
exact file size, in bytes	441680784
file size, in human friendly format	421.2 MiB
md5	07ea8c5a2306ac8fabf3902bd6623787
sha256	b5954bf7da9a92d351d905dfdafa0e7bee1cfd8c74ed0532a29416849a92bb2f

### Hashes for Anaconda3-4.3.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1485548381.0
time file was last modified, in human readable format	2017-01-27 12:19:41
exact file size, in bytes	441681320
file size, in human friendly format	421.2 MiB
md5	137043b3f9860519967759fc8ea76514
sha256	324568dbef777a6ac8a25c1e8ae1975ffbd95bb621dc91cb3869606cc5924353

### Hashes for Anaconda3-4.2.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1475009841.0
time file was last modified, in human readable format	2016-09-27 13:57:21
exact file size, in bytes	410431504
file size, in human friendly format	391.4 MiB
md5	0ca5ef4dcfe84376aad073bbb3f8db00
sha256	84e30c99833e142a27fc9ee2c748b03f16c8b1a3ced765024d5db4e68bfbfeeb

### Hashes for Anaconda3-4.1.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467994877.0
time file was last modified, in human readable format	2016-07-08 09:21:17
exact file size, in bytes	370055720
file size, in human friendly format	352.9 MiB
md5	a3be394f8274c391148efdfbc63e8ca4
sha256	b4889513dc574f9d6f96db089315d69d293f8b17635da4d2e6eee118dc105f38

### Hashes for Anaconda3-4.1.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467131313.0
time file was last modified, in human readable format	2016-06-28 09:28:33
exact file size, in bytes	368509992
file size, in human friendly format	351.4 MiB
md5	50fe73c084b91e55837f4d090809a35e
sha256	9acde60b591233452dba23ac15800f39f2de9b7a180a89916dfa3b6edb326250

### Hashes for Anaconda3-4.0.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1459268182.0
time file was last modified, in human readable format	2016-03-29 09:16:22
exact file size, in bytes	362171448
file size, in human friendly format	345.4 MiB
md5	a6b7a787c6c574867cee3f2d12ecfc50
sha256	39bf467cd142c1f8fdb7d673fdea273d87ec011af1dbf4b4804c2b0994c61c56

### Hashes for Anaconda3-2.5.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1454536060.0
time file was last modified, in human readable format	2016-02-03 13:47:40
exact file size, in bytes	378634984
file size, in human friendly format	361.1 MiB
md5	6572ceba288b6f145e9b3d0c02a5281c
sha256	4728044d77da715e48d4c95d7f2e3c2a02c4ea7de9d2c69acc851bf2945005b2

### Hashes for Anaconda3-2.4.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1449608455.0
time file was last modified, in human readable format	2015-12-08 13:00:55
exact file size, in bytes	381329960
file size, in human friendly format	363.7 MiB
md5	17c562ff74676f004ba8dd029718c09c
sha256	21d155a4b43805042499b8d008835bcd9c3a45fe53d1183de9e0a937170679

### Hashes for Anaconda3-2.4.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1446502944.0
time file was last modified, in human readable format	2015-11-02 14:22:24
exact file size, in bytes	411312288
file size, in human friendly format	392.3 MiB
md5	bc74a4fb4e8455e8e7c61b7f100e3bac
sha256	beaa1b803dd30022c6aca1c6f05182beaea3cd8a17130f73906851269dfe0783

### Hashes for Anaconda3-2.3.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1435775714.0
time file was last modified, in human readable format	2015-07-01 11:35:14
exact file size, in bytes	352774600
file size, in human friendly format	336.4 MiB
md5	ad4abc78581f6fa68b7f7fc342003f6c
sha256	bd693b61cf191666ae0473327f3c15bcf32b7d09961a0aa0284c10e7ea7240fb

### Hashes for Anaconda3-2.2.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1427315550.0
time file was last modified, in human readable format	2015-03-25 13:32:30
exact file size, in bytes	348764152
file size, in human friendly format	332.6 MiB
md5	cd7dae4fd482c94156b4d60bf21d8771
sha256	28c5a13b27a9dbd57c7c633316c5f4beb0cd32cf19b148debd1a81eac86f3c7a

### Hashes for Anaconda3-2.1.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1411661463.0
time file was last modified, in human readable format	2014-09-25 09:11:03
exact file size, in bytes	380970064
file size, in human friendly format	363.3 MiB
md5	5d559802f3c699a885c66ea6064f5440
sha256	ea4059469b1820069f62bd6c256def6259d801d7382be70523e081c5adbedcfd



### Hashes for Anaconda3-2.0.1-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1402603215.0
time file was last modified, in human readable format	2014-06-12 13:00:15
exact file size, in bytes	335317304
file size, in human friendly format	319.8 MiB
md5	139c6d32c484e0886c6cbe530b9fbd4c
sha256	e2b6d3d6a9e378fc0d0dd63342417c02bdf6a9676040e05ff8017396d6449c11

### Hashes for Anaconda3-2.0.0-Windows-x86\_64.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1401228102.0
time file was last modified, in human readable format	2014-05-27 15:01:42
exact file size, in bytes	325992440
file size, in human friendly format	310.9 MiB
md5	35fb9536ccb1aca93ec34714e8e69a5b
sha256	a8046fc82da7463ef53cdeaba97c72433c37b211c50fa87f1bc19bdf5163328

### Anaconda with Python 2 on 32-bit Windows

To verify the file integrity using MD5 or SHA-256, see [cryptographic hash verification](#).



## Hashes for Anaconda2-2019.10-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1571149575.0
time file was last modified, in human readable format	2019-10-15 07:26:15
exact file size, in bytes	372892232
file size, in human friendly format	355.6 MiB
md5	0057a4b9d432ef0b78badee4f74a54a0
sha256	b4731acd02f96923922d995bb16984d71b4a934b7af6737984dd9eb5d8cc6389

## Hashes for Anaconda2-2019.07-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1564065409.0
time file was last modified, in human readable format	2019-07-25 07:36:49
exact file size, in bytes	378051296
file size, in human friendly format	360.5 MiB
md5	38d96b86f4266a125bf3180c225292d9
sha256	1bd676a51ccdee57c2c01a2bc87fa8b1bd48cf7a6c0b16c44a241374f798f919

## Hashes for Anaconda2-2019.03-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1554411643.0
time file was last modified, in human readable format	2019-04-04 14:00:43
exact file size, in bytes	516464832
file size, in human friendly format	492.5 MiB
md5	4b055a00f4f99352bd29db7a4f691f6e
sha256	76be4b3d1f7a1207b786cbb54b3ed526126ee0d4facf41e662b4136224581860

### Hashes for Anaconda2-2018.12-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419787.0
time file was last modified, in human readable format	2018-12-21 11:16:27
exact file size, in bytes	480837024
file size, in human friendly format	458.6 MiB
md5	f123fda0ec8928bb7d55d1ca72c0d784
sha256	d75d51c8f9a7c345128805a55db3856f6999dd6aa11f31c0009c640fe0e8da61

### Hashes for Anaconda2-5.3.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1542656312.0
time file was last modified, in human readable format	2018-11-19 11:38:32
exact file size, in bytes	480313024
file size, in human friendly format	458.1 MiB
md5	7286587bcfb6a5a164d70fe02c1968d5
sha256	59680be839aa8b58477a24519a7575756bead26b300eb7aae8c82086781bd3a8

## Hashes for Anaconda2-5.3.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538081955.0
time file was last modified, in human readable format	2018-09-27 13:59:15
exact file size, in bytes	479430240
file size, in human friendly format	457.2 MiB
md5	45a5880d1a56aa8e444b43edcc5e6aa2
sha256	f18bdb9a38e5c444a3cb79c5c6bc927fbcd863683b4197713337216af7300a68

## Hashes for Anaconda2-5.2.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1527703457.0
time file was last modified, in human readable format	2018-05-30 11:04:17
exact file size, in bytes	464889960
file size, in human friendly format	443.4 MiB
md5	4a3729b14c2d3fccd3a050821679c702
sha256	2b81916c477e64db917821bb48a97000fad78cd1041022b343cec3ceb9e9efa

## Hashes for Anaconda2-5.1.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707335.0
time file was last modified, in human readable format	2018-02-15 07:08:55
exact file size, in bytes	440226936
file size, in human friendly format	419.8 MiB
md5	a09347a53e04a15ee965300c2b95dfde
sha256	fa78c71d88b01e6367f0c3cbd23da1f82e86e02088b0d281437789bf59d53

### Hashes for Anaconda2-5.0.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1508864894.0
time file was last modified, in human readable format	2017-10-24 10:08:14
exact file size, in bytes	422964800
file size, in human friendly format	403.4 MiB
md5	623e8d9ca2270cb9823a897dd0e9bfce
sha256	1a50fac8644f2128e318337b218299e53e92ee20ddaf47911ff2b22255c63ad

### Hashes for Anaconda2-5.0.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506461109.0
time file was last modified, in human readable format	2017-09-26 14:25:09
exact file size, in bytes	421720568
file size, in human friendly format	402.2 MiB
md5	bd3ed48229db828cef4c6b371a8759d1
sha256	078551cfb0df72779897026724f375671e12a5fd384cabeaede5cc325cac12e3

### Hashes for Anaconda2-4.4.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495839135.0
time file was last modified, in human readable format	2017-05-26 15:52:15
exact file size, in bytes	371653096
file size, in human friendly format	354.4 MiB
md5	51f14d30b08b82cd5e44bbb6b0d63349
sha256	0decdd861f8839fdf2cbe4fa306c127f69e50b54374e56d7960ba5217087bf943

### Hashes for Anaconda2-4.3.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1488838692.0
time file was last modified, in human readable format	2017-03-06 14:18:12
exact file size, in bytes	355485664
file size, in human friendly format	339.0 MiB
md5	4f5ed9917f8c2d2ae2e027e45a85fe8b
sha256	fc363cea3c321c17b43a0bf2137aa845fef349c534fcf511dc285ebb8ae57316

### Hashes for Anaconda2-4.3.0.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1486066745.0
time file was last modified, in human readable format	2017-02-02 12:19:05
exact file size, in bytes	354548480
file size, in human friendly format	338.1 MiB
md5	4bff7044ecf0229a0974ba8429520cad
sha256	863702665aa2b55ede2103a8ca7d26435efef614e9d201909c21ec572878fc0e

### Hashes for Anaconda2-4.3.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1485548226.0
time file was last modified, in human readable format	2017-01-27 12:17:06
exact file size, in bytes	354550816
file size, in human friendly format	338.1 MiB
md5	ffd6296dc4b359684c54ce6f3d10e144
sha256	a98767acefdeda02fe8d3ef9dadda1a3439fec110ede9bf5d0e359be76ac173b

### Hashes for Anaconda2-4.2.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1475009690.0
time file was last modified, in human readable format	2016-09-27 13:54:50
exact file size, in bytes	339829096
file size, in human friendly format	324.1 MiB
md5	f4f12af8811759e56464eef5a484963d
sha256	a97ca79cb771568d051ef7773d25c0dda407c63e7ec91305f35dff790aeda042

## Hashes for Anaconda2-4.1.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467994801.0
time file was last modified, in human readable format	2016-07-08 09:20:01
exact file size, in bytes	299852168
file size, in human friendly format	286.0 MiB
md5	b319d6867c67723ba74aef4f9dd35f82
sha256	4708d73952a0a8040bf1594ea42027a30e9bacb4d6760cc5d3e4414b6bfd9161

## Hashes for Anaconda2-4.1.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467131311.0
time file was last modified, in human readable format	2016-06-28 09:28:31
exact file size, in bytes	298958864
file size, in human friendly format	285.1 MiB
md5	ec44ea5c92542ca0112a6be79aff79bf
sha256	c4ad4eefdfbf6d838424c62c8b524352d8b8e4752382b0a09e9d8b7e9e44b9d4

## Hashes for Anaconda2-4.0.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1459268100.0
time file was last modified, in human readable format	2016-03-29 09:15:00
exact file size, in bytes	294659856
file size, in human friendly format	281.0 MiB
md5	9fb16479d7eb3dd63cf4ad6704622c8a
sha256	f8185ad2fe89356ab001e55a463b663bcb9e7699ab7f7c1775a98d5332dbd93

### Hashes for Anaconda2-2.5.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1454535921.0
time file was last modified, in human readable format	2016-02-03 13:45:21
exact file size, in bytes	310590880
file size, in human friendly format	296.2 MiB
md5	506c08af8932332303561e822f285d9b
sha256	a0336729f0400ff12fe18a7d5e20c3f9b45f14cd07fe654029daa1ec611e2266

### Hashes for Anaconda2-2.4.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1449608452.0
time file was last modified, in human readable format	2015-12-08 13:00:52
exact file size, in bytes	301790720
file size, in human friendly format	287.8 MiB
md5	0e6cdba39322c28240f4dceaf7bf72f8
sha256	65fb15559b0ddb5055c110ecdb84823a6fbc8d3938932fbfa0110bb6d3395275



## Hashes for Anaconda2-2.4.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1446502941.0
time file was last modified, in human readable format	2015-11-02 14:22:21
exact file size, in bytes	337056800
file size, in human friendly format	321.4 MiB
md5	5a5225bd2f74a5be9ef840ae8e62c82a
sha256	2a05db81a0fe4155bc2dd83a689294d3ac7fa1d1a68a5ec6bdaafaac9140d451a

## Hashes for Anaconda-2.3.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1435775711.0
time file was last modified, in human readable format	2015-07-01 11:35:11
exact file size, in bytes	290903240
file size, in human friendly format	277.4 MiB
md5	7efff6446dcb06e4c44607539c953689
sha256	3b60ddfb84533539e767889706bd64298a73d07a7bfe944a3c5c7f951e395190

## Hashes for Anaconda-2.2.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1427315328.0
time file was last modified, in human readable format	2015-03-25 13:28:48
exact file size, in bytes	287557144
file size, in human friendly format	274.2 MiB
md5	32246b48658d4c3faeef425cec64a131
sha256	247e8e7e386224a3df736ffe607596546f4bdd64b44a945fd831db5603782dab

### Hashes for Anaconda-2.1.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1411661103.0
time file was last modified, in human readable format	2014-09-25 09:05:03
exact file size, in bytes	325285048
file size, in human friendly format	310.2 MiB
md5	4b4303ff83c94f6af128fe43c202756b
sha256	c39193c9018a9c1e9e8f3c1d2692ac635133e9b68e72d7864c758410863378ff

### Hashes for Anaconda-2.0.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1402603407.0
time file was last modified, in human readable format	2014-06-12 13:03:27
exact file size, in bytes	301248280
file size, in human friendly format	287.3 MiB
md5	579ed15c9599cc49bc073dbbe8870021
sha256	be5a341bc3f9bf8386c686cfc9ad253f3074670c96f130b345b731370ce89d5a

## Hashes for Anaconda-2.0.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1401313862.0
time file was last modified, in human readable format	2014-05-28 14:51:02
exact file size, in bytes	291661544
file size, in human friendly format	278.2 MiB
md5	c3b147e0d5f6d708e884ee03d8856040
sha256	d86cc7100b4c04ec25768267b81798f70a8563a2bdb6dacfe6ec7e45bfbbbad0

## Hashes for Anaconda-1.9.2-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1396996765.0
time file was last modified, in human readable format	2014-04-08 15:39:25
exact file size, in bytes	326939720
file size, in human friendly format	311.8 MiB
md5	7217cfa5c5b45de3e683ff09a10ce35b
sha256	fe005aeacd1345b856c73d640856b79ed94a6694245ea8df8cbf94aa7bac776d

## Hashes for Anaconda-1.9.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1392930522.0
time file was last modified, in human readable format	2014-02-20 13:08:42
exact file size, in bytes	326889840
file size, in human friendly format	311.7 MiB
md5	5404da4f89dca1a4f5c9efd5ae6fbc5a
sha256	46cbe29a30cfc0d56018f7f69a35525708f2d14211a613e7344f91ad4171a84c7

### Hashes for Anaconda-1.9.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1392049492.0
time file was last modified, in human readable format	2014-02-10 08:24:52
exact file size, in bytes	323587016
file size, in human friendly format	308.6 MiB
md5	02496bcd853574628adfbe1defe5c40f
sha256	2c8c58cf21e537e930535df5a0e8fd4b6d60d4dbe87f13b5964bf2f5f4d27cb3

### Hashes for Anaconda-1.8.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1383594854.0
time file was last modified, in human readable format	2013-11-04 11:54:14
exact file size, in bytes	304130696
file size, in human friendly format	290.0 MiB
md5	3b3bbc639556499d62342f653443553a
sha256	719bc0987be80b46f9c6b745822777fa1f0cb7386ff746fa8e71763bfd997c44

## Hashes for Anaconda-1.7.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1378678223.0
time file was last modified, in human readable format	2013-09-08 15:10:23
exact file size, in bytes	294250542
file size, in human friendly format	280.6 MiB
md5	91a6398f63a8cc6fa3db3a1e9195b3bf
sha256	b434776dfeac98f37328c6e538f5a1a53199e0c6ca2ef3a39cb3cd2e64db2edb

## Hashes for Anaconda-1.6.2-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1373395498.0
time file was last modified, in human readable format	2013-07-09 11:44:58
exact file size, in bytes	256262643
file size, in human friendly format	244.4 MiB
md5	5d9ca457b14fe9af5f8f5e338f9db9e2
sha256	0873576bbd979e3b7859808bcc2311edaea3d34f4d6ed1f6b44b1ba1cf1a700

## Hashes for Anaconda-1.6.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1372784579.0
time file was last modified, in human readable format	2013-07-02 10:02:59
exact file size, in bytes	256262655
file size, in human friendly format	244.4 MiB
md5	3cdf41952ad09f00ab03cca5a289fe50
sha256	a823dc7688cec49499bb5922783377c262cbf456830ff8db7c0d4018a2321dc0

### Hashes for Anaconda-1.6.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1371843406.0
time file was last modified, in human readable format	2013-06-21 12:36:46
exact file size, in bytes	256780921
file size, in human friendly format	244.9 MiB
md5	156a48269ae6b2bfc0bede9c3ff719cc
sha256	3dc2588557455484b3b38feb14fa95d941de732e06678365860cd4961c19feac

### Hashes for Anaconda-1.5.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1368022724.0
time file was last modified, in human readable format	2013-05-08 07:18:44
exact file size, in bytes	247436755
file size, in human friendly format	236.0 MiB
md5	871f9f4f2321cede8d25ff83f24e70da
sha256	d3dd92fa00d999a94638513daf2d4aeeed15a387b820eb08b1907387a4f2e8388

## Hashes for Anaconda-1.4.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1362869745.0
time file was last modified, in human readable format	2013-03-09 14:55:45
exact file size, in bytes	220256092
file size, in human friendly format	210.1 MiB
md5	797f4a28462db075de4d21e7977f32a5
sha256	e590e45d36d3f164fcdf58cda6a3cb09252a502af5942e0909324b394710f212

## Anaconda with Python 3 on 32-bit Windows

To verify the file integrity using MD5 or SHA-256, see [cryptographic hash verification](#).

## Hashes for Anaconda3-2022.05-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1652206919.651179
time file was last modified, in human readable format	2022-05-10 11:21:59
exact file size, in bytes	511528600
file size, in human friendly format	487.8 MiB
md5	f581359e0f0081a8cc83071556f9fd1d
sha256	cd8c688349bcd1f429e3b383620fb0d19f52be0f765b2eae78d63b41aefb2e73



### Hashes for Anaconda3-2021.11-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1637172525.4893715
time file was last modified, in human readable format	2021-11-17 10:08:45
exact file size, in bytes	423733040
file size, in human friendly format	404.1 MiB
md5	1e8811a592fced788a9ec13db808f350
sha256	dc0746dded06cc480328c20b73369803ce98df1971bda669d93859e02c1c0664

### Hashes for Anaconda3-2021.05-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620961728.102181
time file was last modified, in human readable format	2021-05-13 20:08:48
exact file size, in bytes	428292816
file size, in human friendly format	408.5 MiB
md5	538586430492ddd24b5cb815034715ab
sha256	b95b6ada0a54fe1df06f6cde84f8fa586501ac86eeb86f760106cf87b87168e2

### Hashes for Anaconda3-2021.04-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1620674469.8088617
time file was last modified, in human readable format	2021-05-10 12:21:09
exact file size, in bytes	424628208
file size, in human friendly format	405.0 MiB
md5	7adeb27de653a970476c374408342954
sha256	61a4e246098886acc1b3cbb977d58ca6dd1aeb7a1cd67f4e4f11b12cf6670f87

### Hashes for Anaconda3-2020.11-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1605739534.8688438
time file was last modified, in human readable format	2020-11-18 14:45:34
exact file size, in bytes	422586464
file size, in human friendly format	403.0 MiB
md5	ca1f6f3e75eb346f5ab2d87bab005878
sha256	362de9bc1e9e368dcbcdee1a175a523983c48dd8c04f83caf8d7ceaf7956bddd

### Hashes for Anaconda3-2020.07-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1595524611.0
time file was last modified, in human readable format	2020-07-23 10:16:51
exact file size, in bytes	416619544
file size, in human friendly format	397.3 MiB
md5	aa7dcf4d02baa25d14baf5728e29d067
sha256	19803e5ccc357b57051cf7fa272e6b499dfedf13790778dc24af302f894e3281

### Hashes for Anaconda3-2020.02-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1583940778.0
time file was last modified, in human readable format	2020-03-11 08:32:58
exact file size, in bytes	443796296
file size, in human friendly format	423.2 MiB
md5	64ae8d0e5095b9a878d4522db4ce751e
sha256	d13381d6145c47755b198662af8a5f412836adecdb68627bc297be6738a3bdac

### Hashes for Anaconda3-2019.10-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1571149570.0
time file was last modified, in human readable format	2019-10-15 07:26:10
exact file size, in bytes	429475496
file size, in human friendly format	409.6 MiB
md5	0e71632df6a17f625c1103b34f66e8ba
sha256	05e6738919673a6d57b5895b8b4df0b7e3f4d7ed0e30faf9c9f1b7d3399e9f52

### Hashes for Anaconda3-2019.07-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1564065446.0
time file was last modified, in human readable format	2019-07-25 07:37:26
exact file size, in bytes	438674400
file size, in human friendly format	418.4 MiB
md5	861c83778458be287f4739ef89413cce
sha256	3d26ddf9ddb2287822a14ac1da3359a0db6ceb302b57edb9fcc69061f39276a3

### Hashes for Anaconda3-2019.03-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1554411628.0
time file was last modified, in human readable format	2019-04-04 14:00:28
exact file size, in bytes	572204080
file size, in human friendly format	545.7 MiB
md5	f1f636e5d34d129b6b996ff54f4a05b1
sha256	03d94f55c4c5e1187382ff414c78e66244893170fa7aacd0deb71536b7a925e5

### Hashes for Anaconda3-2018.12-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419592.0
time file was last modified, in human readable format	2018-12-21 11:13:12
exact file size, in bytes	534439744
file size, in human friendly format	509.7 MiB
md5	dc26da1eea1e5cc78121b1d3f80a6e9c
sha256	3f2955c1874ca452b985627a10859f6906eb21d4f6a4c055b78049cf6822b46d

### Hashes for Anaconda3-5.3.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1542656394.0
time file was last modified, in human readable format	2018-11-19 11:39:54
exact file size, in bytes	534242616
file size, in human friendly format	509.5 MiB
md5	52d9041d33c0134dd3824e6c15b458c4
sha256	a028d0550bf307c69af7c3210f487e23004fcb6384f94523e216cc8021390da6

### Hashes for Anaconda3-5.3.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538082005.0
time file was last modified, in human readable format	2018-09-27 14:00:05
exact file size, in bytes	533359800
file size, in human friendly format	508.7 MiB
md5	72e4f7bf75eb46c60f496d326631fddd
sha256	1dceb687efbf5a609a66d19dc2528ef78a54439a74c98b239041744174c6a461

### Hashes for Anaconda3-5.2.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1527703459.0
time file was last modified, in human readable format	2018-05-30 11:04:19
exact file size, in bytes	530914888
file size, in human friendly format	506.3 MiB
md5	285387e7b6ea81edba98c011922e235a
sha256	64305a4c0041aaf4a3fd0fee4466d7b7f238fddd9e44a4c8c10f5fa059e826c6

### Hashes for Anaconda3-5.1.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707428.0
time file was last modified, in human readable format	2018-02-15 07:10:28
exact file size, in bytes	456610264
file size, in human friendly format	435.5 MiB
md5	7a2291ab99178a4cdec530861494531f
sha256	7a05da21fd592991d181ac8467faac51345fb64acca6553609b53c9825e5e42d

### Hashes for Anaconda3-5.0.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1508866630.0
time file was last modified, in human readable format	2017-10-24 10:37:10
exact file size, in bytes	440867256
file size, in human friendly format	420.4 MiB
md5	9d2ffb0aac1f8a72ef4a5c535f3891f2
sha256	9edc3012324c9c8c9aa5257688bd793277ee25bc99c9c8da6610b5f45585354

### Hashes for Anaconda3-5.0.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506461112.0
time file was last modified, in human readable format	2017-09-26 14:25:12
exact file size, in bytes	436033392
file size, in human friendly format	415.8 MiB
md5	4a48ded89f15b4a2e39ffa69f3532df2
sha256	a0d5d8e328b1d3a1ed921cadeecda659c49b6042980558f5c5f491e884bf842a

### Hashes for Anaconda3-4.4.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495839261.0
time file was last modified, in human readable format	2017-05-26 15:54:21
exact file size, in bytes	379794600
file size, in human friendly format	362.2 MiB
md5	c7a66350b79354773dabbef6f58a3af
sha256	37afe00b8305cc09b7bd8dd07f65cec3f4e1534966c275eb55df7c91fb6601f1

### Hashes for Anaconda3-4.3.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1488838786.0
time file was last modified, in human readable format	2017-03-06 14:19:46
exact file size, in bytes	365005040
file size, in human friendly format	348.1 MiB
md5	27fa7486dfe82cf31642eb355b9a184f
sha256	adf322f49542cf509d4f72152cea24e54edfb4ff279ba3ab19582a5f27461329

### Hashes for Anaconda3-4.3.0.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1486066862.0
time file was last modified, in human readable format	2017-02-02 12:21:02
exact file size, in bytes	364057456
file size, in human friendly format	347.2 MiB
md5	5dd0a8b09a5eb6c9d002dc26d6f31492
sha256	7f8ffce6b2c3a968ce19171c9dc332dec61741113f7cac4b52953596f9e200d7

### Hashes for Anaconda3-4.3.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1485548325.0
time file was last modified, in human readable format	2017-01-27 12:18:45
exact file size, in bytes	364059456
file size, in human friendly format	347.2 MiB
md5	ae7ec9752cf81c01983fcf0ddf8d7cc2
sha256	4a5dfea30b926074b4d6e0f1cea3e9765799fd33532b4347fa0d3d9aaacfe889



### Hashes for Anaconda3-4.2.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1475009790.0
time file was last modified, in human readable format	2016-09-27 13:56:30
exact file size, in bytes	349560232
file size, in human friendly format	333.4 MiB
md5	96e5fe052b22d667da9360fb4edce363
sha256	e7b79a9886da3f840b52882c47ecab3eda0c97505019c1f8f0c8b7eb15c2d638

### Hashes for Anaconda3-4.1.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467994878.0
time file was last modified, in human readable format	2016-07-08 09:21:18
exact file size, in bytes	308116424
file size, in human friendly format	293.8 MiB
md5	39bd047c2169a9d072e98403f487c9e8
sha256	224e3dd90850651ae0d1c9216b4c317d1d553d8c118a83c9bc7e315daf85f063

### Hashes for Anaconda3-4.1.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1467131314.0
time file was last modified, in human readable format	2016-06-28 09:28:34
exact file size, in bytes	306794104
file size, in human friendly format	292.6 MiB
md5	2f96e23dd2e5f04f9a5059b8ef5d7fd2
sha256	4f444ed9400505e822bb475e986800fac058ef6f23298c2b00d285d05df0a4e4

### Hashes for Anaconda3-4.0.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1459268182.0
time file was last modified, in human readable format	2016-03-29 09:16:22
exact file size, in bytes	296840248
file size, in human friendly format	283.1 MiB
md5	ae5c9ba0c6f4639fbf94848f81c3d4b4
sha256	b5a31a9d130a40c3110c0592a6c8fbd43a51522e32fdddf20afe15595db8019f

### Hashes for Anaconda3-2.5.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1454536013.0
time file was last modified, in human readable format	2016-02-03 13:46:53
exact file size, in bytes	310656088
file size, in human friendly format	296.3 MiB
md5	f7ce22122319026697cc8e7dda80300b
sha256	4a3441aaaa269d06f39e1430155f9f25a8a24122cf48b9fc6bdccb0e96a82819

### Hashes for Anaconda3-2.4.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1449608456.0
time file was last modified, in human readable format	2015-12-08 13:00:56
exact file size, in bytes	313632120
file size, in human friendly format	299.1 MiB
md5	78eef53e753cf9a72babe06c374db8ed
sha256	dfe50d13473547b5230f6194dfe6bdf961a8b7f5e3c22edef8c7788194b7129

### Hashes for Anaconda3-2.4.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1446502945.0
time file was last modified, in human readable format	2015-11-02 14:22:25
exact file size, in bytes	331748568
file size, in human friendly format	316.4 MiB
md5	0d3b78e2a4747d5975097c47129c0e70
sha256	a69a9fe00ce337b0cfd7d024b79ba5141cd04b1d51982196658df26c0d3707fc

### Hashes for Anaconda3-2.3.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1435775715.0
time file was last modified, in human readable format	2015-07-01 11:35:15
exact file size, in bytes	294752872
file size, in human friendly format	281.1 MiB
md5	8edec318e2957a934bd99a6062ddebd9
sha256	02d5f84da308f96d1a252a6669f3ca91e125c011d1b89ae33f05f6bebe49031a8

### Hashes for Anaconda3-2.2.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1427315479.0
time file was last modified, in human readable format	2015-03-25 13:31:19
exact file size, in bytes	291166920
file size, in human friendly format	277.7 MiB
md5	7c49a4e76e1c383038c4a1e8c4ac506f
sha256	20c46fff048fb313aaf1a49171c1a7b96a42f5be09e1e1e7052800dcec7ac85f

### Hashes for Anaconda3-2.1.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1411661341.0
time file was last modified, in human readable format	2014-09-25 09:09:01
exact file size, in bytes	323724400
file size, in human friendly format	308.7 MiB
md5	a2392f068d550bee23673529734ef5d4
sha256	8ffa252aa2b4f63889888ae85a81626ce952a1f9ac20d4c065070514acfad400

## Hashes for Anaconda3-2.0.1-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1402603227.0
time file was last modified, in human readable format	2014-06-12 13:00:27
exact file size, in bytes	278631456
file size, in human friendly format	265.7 MiB
md5	cbf8ff3b86731df7225bd2f7fb2af7f6
sha256	b08803296d7439413d590fd1f967b20127916c8d766802a27badc15a3a81b0c3

## Hashes for Anaconda3-2.0.0-Windows-x86.exe

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1401227953.0
time file was last modified, in human readable format	2014-05-27 14:59:13
exact file size, in bytes	269399872
file size, in human friendly format	256.9 MiB
md5	1fd12fc8c5c3defcdf3a0bee6f5129fa
sha256	37986ce4c104ed3c82838de74b3a4de17918cc2f408235b9de9d4283d3a5561d

## Graphical installers for Anaconda with Python 2 on macOS

To verify the file integrity using MD5 or SHA-256, see [cryptographic hash verification](#).

### Hashes for Anaconda2-2019.10-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1571149650.0
time file was last modified, in human readable format	2019-10-15 07:27:30
exact file size, in bytes	666625158
file size, in human friendly format	635.7 MiB
md5	67dba3993ee14938fc4acd57cef60e87
sha256	d82b6aa37b41782b7823ff712b0899374cf2ac4f87e0ccf85d0a79089ecb61a6

### Hashes for Anaconda2-2019.07-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1564065424.0
time file was last modified, in human readable format	2019-07-25 07:37:04
exact file size, in bytes	664854967
file size, in human friendly format	634.1 MiB
md5	10a47bc056e166569ed805455d04aaed
sha256	7f8a0defa2905bd5e3ca679d6772c896befe2fcf27cb3d6dfc211e596796a3fa

### Hashes for Anaconda2-2019.03-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1554411668.0
time file was last modified, in human readable format	2019-04-04 14:01:08
exact file size, in bytes	654629979
file size, in human friendly format	624.3 MiB
md5	f45d327c921ec856da31494fb907b75b
sha256	4e335d60fc9dcfb31caee809143352e28d49e4b2df93a6eed97e5a97045366

### Hashes for Anaconda2-2018.12-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419670.0
time file was last modified, in human readable format	2018-12-21 11:14:30
exact file size, in bytes	671854049
file size, in human friendly format	640.7 MiB
md5	c2bfeef310714501a59fd58166e6393d
sha256	f07fb39c41f9cc7839adababdece209d9da209a935418082f9a6270e9e56ee3f

### Hashes for Anaconda2-5.3.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1542656258.0
time file was last modified, in human readable format	2018-11-19 11:37:38
exact file size, in bytes	658971672
file size, in human friendly format	628.4 MiB
md5	d6139f371aa6cf81c3f002ecdd09b748
sha256	7dc614e281df33f09fa006b245a955b94883d37fdecea6bbdae18ee421473cb

### Hashes for Anaconda2-5.3.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538081952.0
time file was last modified, in human readable format	2018-09-27 13:59:12
exact file size, in bytes	658824275
file size, in human friendly format	628.3 MiB
md5	8e02050e148d48a31b99994d906900fb
sha256	834c221b413bdcbbce434f0a3008511f5bd5532d6b3e7f482d03c11bd0dc8163

### Hashes for Anaconda2-5.2.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1527703532.0
time file was last modified, in human readable format	2018-05-30 11:05:32
exact file size, in bytes	646731039
file size, in human friendly format	616.8 MiB
md5	2836c839d29be8d9569a715f4c631a3b
sha256	f7695a3571eb8e8ae71fe9f413c36f57c92bc8882174c0dbf778e17550ff3e2f

### Hashes for Anaconda2-5.1.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1518707332.0
time file was last modified, in human readable format	2018-02-15 07:08:52
exact file size, in bytes	616553453
file size, in human friendly format	588.0 MiB
md5	4f9c197dfe6d3dc7e50a8611b4d3cfa2
sha256	edbe9ef1ee5cfe62e131d7650e07c031ab14fd0e8bd12c15a095b73039eb8377

### Hashes for Anaconda2-5.0.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1508806872.0
time file was last modified, in human readable format	2017-10-23 18:01:12
exact file size, in bytes	590135749
file size, in human friendly format	562.8 MiB
md5	46fc99d1cf1e27f3b2a3eb63fee1a532
sha256	22350fe830e6786a263d7727e537f066b13fd9f4646982796bd20248da3f3257

### Hashes for Anaconda2-5.0.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506461108.0
time file was last modified, in human readable format	2017-09-26 14:25:08
exact file size, in bytes	588579426
file size, in human friendly format	561.3 MiB
md5	8a2bbf7eb66290eb0bc82963056fb96c
sha256	3ee5cfe80d51685d6f374f83a9b76fa7ecbf7dc1a20f49a506e963641f2e1066



### Hashes for Anaconda2-4.4.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495841768.0
time file was last modified, in human readable format	2017-05-26 16:36:08
exact file size, in bytes	459233116
file size, in human friendly format	438.0 MiB
md5	d2d5d213764a0c849eb1d53acba0d418
sha256	e5acf026892eae3bb055e6317af96f295d39cf1d1a06ce6a1c6ca154ae3cabdf6

### Hashes for Anaconda2-4.3.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1488839178.0
time file was last modified, in human readable format	2017-03-06 14:26:18
exact file size, in bytes	439742086
file size, in human friendly format	419.4 MiB
md5	1961c7158bf89f4daf5b7a7d4f265075
sha256	f5d950451c038f9a7ca80d4036b6a8152c35d48fee685df3de486729dbae0de3

### Hashes for Anaconda2-4.3.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1485548783.0
time file was last modified, in human readable format	2017-01-27 12:26:23
exact file size, in bytes	438746148
file size, in human friendly format	418.4 MiB
md5	899e90455db3120d584b2d4961c4eede
sha256	3e1d1026d2c0b87213a8b4a5f28431060b0cfe5cdc8a368b39248dbb66b53175

### Hashes for Anaconda2-4.2.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1476750791.0
time file was last modified, in human readable format	2016-10-17 17:33:11
exact file size, in bytes	423495522
file size, in human friendly format	403.9 MiB
md5	cd2ccc991b7f1503335367d80d0317b0
sha256	4a74d34c3a3a82df31673ab49497816b03547bab7054525fdd92eeef63c8bcd2

### Hashes for Anaconda2-4.1.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467994799.0
time file was last modified, in human readable format	2016-07-08 09:19:59
exact file size, in bytes	361721748
file size, in human friendly format	345.0 MiB
md5	e88beae19868dc01fae908dd1e067bda
sha256	879385461cc65bd9dbf9639bbf4471ecf1713611617eda8d3a05f33a45682400

### Hashes for Anaconda2-4.1.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467131309.0
time file was last modified, in human readable format	2016-06-28 09:28:29
exact file size, in bytes	360909420
file size, in human friendly format	344.2 MiB
md5	b2e2a6ee2fc2436a099ed0a3cc5e8fda
sha256	a97840be50d8c86b28caf8be1786bbe7485770b14501911e3e7331d33f2a3bc2

### Hashes for Anaconda2-4.0.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1459268097.0
time file was last modified, in human readable format	2016-03-29 09:14:57
exact file size, in bytes	355703551
file size, in human friendly format	339.2 MiB
md5	7c4e4a25a38106d50dc3bc25a7a3009e
sha256	242691c7dc9e20143d7620fd9e0cc344fec7a2a534d1dba5f3b6522f04648261

### Hashes for Anaconda2-2.5.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1454536531.0
time file was last modified, in human readable format	2016-02-03 13:55:31
exact file size, in bytes	385762781
file size, in human friendly format	367.9 MiB
md5	3256a5000b44e4fec1466e509aa641e6
sha256	0f546ed4f388299824e98a31ca9e3fe9823a49a2143d1cbd982caeb536e3de02

### Hashes for Anaconda2-2.4.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1449608450.0
time file was last modified, in human readable format	2015-12-08 13:00:50
exact file size, in bytes	257787337
file size, in human friendly format	245.8 MiB
md5	0407becd94e2c67d500700863cccaf82
sha256	1e2445aaf9faf84e801404bf89091fbf4a018709712a3901490fb3f45d44c23b

### Hashes for Anaconda2-2.4.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1446502940.0
time file was last modified, in human readable format	2015-11-02 14:22:20
exact file size, in bytes	287613909
file size, in human friendly format	274.3 MiB
md5	1da04d414117e3d5ffdae13a686f300f
sha256	d6842135062f3c3d2f8bd33318133376d4f2c789c32818b24f9010ca2240b29c

## Hashes for Anaconda-2.3.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1435775709.0
time file was last modified, in human readable format	2015-07-01 11:35:09
exact file size, in bytes	297482814
file size, in human friendly format	283.7 MiB
md5	1fdb7eb4db925edb48f678c72f70f795
sha256	f920ae6211d9da3288b5e160100543667cf1ceb21fa09b16d6cda82f113e8445

## Hashes for Anaconda-2.2.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1427315247.0
time file was last modified, in human readable format	2015-03-25 13:27:27
exact file size, in bytes	293316812
file size, in human friendly format	279.7 MiB
md5	53777c4bbba5b6e6f9124e041f024bc9
sha256	65784323db94b0c297e998bc81db5978e8951801c44808589e2b9665ad199c7b

## Hashes for Anaconda-2.1.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1411662793.0
time file was last modified, in human readable format	2014-09-25 09:33:13
exact file size, in bytes	288368463
file size, in human friendly format	275.0 MiB
md5	0632392578c6b4796c9c2a3964f9f2f9
sha256	d8001bae990e7024b81e74c6b06d0f488dd8717a9e0779db20d3e8831435b7e6

### Hashes for Anaconda-2.0.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1402603370.0
time file was last modified, in human readable format	2014-06-12 13:02:50
exact file size, in bytes	256197898
file size, in human friendly format	244.3 MiB
md5	8c3fa107375b1c4782531b7f6e7eddae
sha256	d6a0ce0422daa004929a4aef6b485d94f5e60b67f6d727047719815949fd59bf

### Hashes for Anaconda-2.0.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1401313841.0
time file was last modified, in human readable format	2014-05-28 14:50:41
exact file size, in bytes	247641929
file size, in human friendly format	236.2 MiB
md5	39d1624555ddc087785bc9557ecaa7b7
sha256	e2eb3805451a26235b2ed7f3e63535fc39bf32b46bfa8407f8b6240924cf8007

## Hashes for Anaconda-1.9.2-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1397142332.0
time file was last modified, in human readable format	2014-04-10 08:05:32
exact file size, in bytes	294660294
file size, in human friendly format	281.0 MiB
md5	432ac816e681c51f0238f30e4207e789
sha256	2fff6dca12507f675b04ed1f303d0ee99d755402c3b2b64c131d93c3b4f14f75

## Hashes for Anaconda-1.9.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1392932644.0
time file was last modified, in human readable format	2014-02-20 13:44:04
exact file size, in bytes	294577771
file size, in human friendly format	280.9 MiB
md5	772b8e5dc385bf5ea3f78cdd21a8ec71
sha256	2aa707b162e71d488495085fd13232f8c30ac0f5003e6dd983c99897813d2796

## Hashes for Anaconda-1.9.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1392049426.0
time file was last modified, in human readable format	2014-02-10 08:23:46
exact file size, in bytes	293412173
file size, in human friendly format	279.8 MiB
md5	e702b99930507a43b59fd258744bd456
sha256	b74134e7626f10fc4d86209a3ebbb19de3c4404d0aecf071bedfa184bab22fae

### Hashes for Anaconda-1.8.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1383595040.0
time file was last modified, in human readable format	2013-11-04 11:57:20
exact file size, in bytes	275773973
file size, in human friendly format	263.0 MiB
md5	2b909458ddc208807efa3516c9ecab2f
sha256	fb92afc7750bc58ac12f3cbd65c18ee0f80ec22b80f07e236e739bf5ec5e7b85

### Hashes for Anaconda-1.7.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1378746934.0
time file was last modified, in human readable format	2013-09-09 10:15:34
exact file size, in bytes	269206281
file size, in human friendly format	256.7 MiB
md5	6e9e2fe69d3c1d847ca162b2f723f7b2
sha256	d277f7e162c77043e416d03a754389a0d9fb83636dc78bbb67e7433e29097fca



## Hashes for Anaconda-1.6.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1372804212.0
time file was last modified, in human readable format	2013-07-02 15:30:12
exact file size, in bytes	206839424
file size, in human friendly format	197.3 MiB
md5	01fe24a1c6605bec8d482dcda9de314a
sha256	7c79819dd40a14e52439664c3e88e89ecba29c5f4d2fd72726124d7a138f5df4

## Graphical installers for Anaconda with Python 3 on macOS

To verify the file integrity using MD5 or SHA-256, see [cryptographic hash verification](#).

## Hashes for Anaconda3-2023.09-0-MacOSX-arm64.pkg

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1696002211.419173
time file was last modified, in human readable format	2023-09-29 11:43:31
exact file size, in bytes	777823476
file size, in human friendly format	741.8 MiB
md5	ec7378283edf043aa2555ddb9afdafca
sha256	0466f3f82663fc581c6684daeb4c66cb303a65c992110bfd6da17a7356709cda

### Hashes for Anaconda3-2023.09-0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1696002212.7322218
time file was last modified, in human readable format	2023-09-29 11:43:32
exact file size, in bytes	809541189
file size, in human friendly format	772.0 MiB
md5	fa53f4713476fd219a29704c943887e8
sha256	c92dc16aa21255c5894913b4364dc29409f13828c7a0d03f8c5d5a8888d64a8b

### Hashes for Anaconda3-2023.07-2-MacOSX-arm64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1691164565.952835
time file was last modified, in human readable format	2023-08-04 08:56:05
exact file size, in bytes	675172370
file size, in human friendly format	643.9 MiB
md5	1e917ec7101b4b4e36b48a150101e829
sha256	c95a37465f505a50bdeb22de59ea10348141bf8999b3199f6086b832aea6dd8f

### Hashes for Anaconda3-2023.07-2-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1691164566.6658611
time file was last modified, in human readable format	2023-08-04 08:56:06
exact file size, in bytes	640173442
file size, in human friendly format	610.5 MiB
md5	133420bd0287a943f4af854b1469b7b1
sha256	f5ff78eebb4f9960acf7d99103a2012d84de3d279eda fae1f098b4f617e0a7c8

### Hashes for Anaconda3-2023.07-1-MacOSX-arm64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689280147.2904692
time file was last modified, in human readable format	2023-07-13 13:29:07
exact file size, in bytes	658640788
file size, in human friendly format	628.1 MiB
md5	7d430035162641bae604fb2eb0eb65e0
sha256	a581f911fe6366597a8d61b03927db9889e1b82ea3107291dab4699cb3907f0c

### Hashes for Anaconda3-2023.07-1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689280147.960494
time file was last modified, in human readable format	2023-07-13 13:29:07
exact file size, in bytes	622597114
file size, in human friendly format	593.8 MiB
md5	0b60f4deb8a5b68fdc87690a8787ae4
sha256	ecc2ed39860e6adaaf4c63bf47db1d4eed18f3e24915dfb28146da7c75db5f3a

### Hashes for Anaconda3-2023.07-0-MacOSX-arm64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689099421.8594499
time file was last modified, in human readable format	2023-07-11 11:17:01
exact file size, in bytes	658665213
file size, in human friendly format	628.2 MiB
md5	19ada7a0905ff20e051c996a7d2b3691
sha256	e441647d9b655052b7008aa4357acca2ebd121c95038ce3021e28741be18f9b7

### Hashes for Anaconda3-2023.07-0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689099422.5454752
time file was last modified, in human readable format	2023-07-11 11:17:02
exact file size, in bytes	622620286
file size, in human friendly format	593.8 MiB
md5	7c25cfd6b40d86901e212e860366af7d
sha256	3cce8fe03abdf23432c574ec0feb486d7e2f376bfdaf6f6cd0ea35673452bdee

### Hashes for Anaconda3-2023.03-1-MacOSX-arm64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1682358066.2509599
time file was last modified, in human readable format	2023-04-24 10:41:06
exact file size, in bytes	591855932
file size, in human friendly format	564.4 MiB
md5	0ab3cbae1aa82c134f16a1a06b602ee9
sha256	d22ab7a22ab4ba3c02d6fe4e9c2a9c673ff34b80442922e4e49663287f6ace3f

### Hashes for Anaconda3-2023.03-1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1682358066.8879833
time file was last modified, in human readable format	2023-04-24 10:41:06
exact file size, in bytes	629271003
file size, in human friendly format	600.1 MiB
md5	463de12f552a9839f87cbd8cbb13da37
sha256	561ea77b7172e15568d21b854c4de4178789ca59caca16af9a6449653bfd9a21

### Hashes for Anaconda3-2023.03-0-MacOSX-arm64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1679326895.5740101
time file was last modified, in human readable format	2023-03-20 08:41:35
exact file size, in bytes	591467143
file size, in human friendly format	564.1 MiB
md5	4ff8e689a05522e69a9574fd6ae9f927
sha256	b55403d2b77973ecf4ca1e3adfa09b74e871f3d99f383bcdbe2defdc08c16523

### Hashes for Anaconda3-2023.03-0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1679326896.1630318
time file was last modified, in human readable format	2023-03-20 08:41:36
exact file size, in bytes	628878986
file size, in human friendly format	599.7 MiB
md5	bad9d5b1524b040c87f8305f4589bd16
sha256	52d1109e371856b4fca8dcd1e1916ecc31d38b834369e370127d0372f56c34c1

### Hashes for Anaconda3-2022.10-MacOSX-arm64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1666041336.867235
time file was last modified, in human readable format	2022-10-17 14:15:36
exact file size, in bytes	507596410
file size, in human friendly format	484.1 MiB
md5	66cf2c3887de6b0834db0c5c11a91a52
sha256	4999ce8718c5d387940b1e213beb2c525e61eca94fd0e4e93bf5674b09ac3382

### Hashes for Anaconda3-2022.10-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1666041338.3512895
time file was last modified, in human readable format	2022-10-17 14:15:38
exact file size, in bytes	722077992
file size, in human friendly format	688.6 MiB
md5	6af29012d4d1c1e196280d08d452baa3
sha256	bd6147a59939009718ecc18ed6fd0cf1639dc1f1626af249be7c311874c3c2b4

### Hashes for Anaconda3-2022.05-MacOSX-arm64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1654623624.7639313
time file was last modified, in human readable format	2022-06-07 10:40:24
exact file size, in bytes	331776796
file size, in human friendly format	316.4 MiB
md5	fc81e4173742eba78eb097eaeaaa1221
sha256	0140970944a3e6088be5995ef7ce8525c1b2f8d5080e317423b3671f38a0460e

### Hashes for Anaconda3-2022.05-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1652206922.3602774
time file was last modified, in human readable format	2022-05-10 11:22:02
exact file size, in bytes	619723042
file size, in human friendly format	591.0 MiB
md5	04f6171ffc042a9712f1365ad20dfd4f
sha256	e884c5c384d4e5723b7b0c9fcd9756bb48fa07f2de187eaf4ea94a8e142424cd



### Hashes for Anaconda3-2021.11-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1637172524.7333443
time file was last modified, in human readable format	2021-11-17 10:08:44
exact file size, in bytes	540170449
file size, in human friendly format	515.1 MiB
md5	22e457db954f17371ed163d7bdde3a9b
sha256	203f5134d94390531b0cf1ff0f7e702abba60a77ba60559d93745c0475aefc71

### Hashes for Anaconda3-2021.05-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620961727.8831732
time file was last modified, in human readable format	2021-05-13 20:08:47
exact file size, in bytes	461691073
file size, in human friendly format	440.3 MiB
md5	0198acd5268012b81c66d11b9ddeb2c8
sha256	b61e6ca9c338ed39f41408774143f582fc1e05a3aeaf0d2e986b6b16b2c5e8d7

### Hashes for Anaconda3-2021.04-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1620674470.097872
time file was last modified, in human readable format	2021-05-10 12:21:10
exact file size, in bytes	458102986
file size, in human friendly format	436.9 MiB
md5	e2aabaa1dc1a4d4a4fc01281fc2a34c7
sha256	d3fb9c189d2f7fdefe672dc454432cb822af4781f61c756ad0a332a5771e9b09

### Hashes for Anaconda3-2020.11-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1605739535.2138562
time file was last modified, in human readable format	2020-11-18 14:45:35
exact file size, in bytes	456476867
file size, in human friendly format	435.3 MiB
md5	2f96bb47eb5a949da6f99a71d7d66420
sha256	b230c042237ba3e89193d3144179deddae0393facc6d8a6e599b1df1ae0b1ae9

### Hashes for Anaconda3-2020.07-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1595524602.0
time file was last modified, in human readable format	2020-07-23 10:16:42
exact file size, in bytes	484710586
file size, in human friendly format	462.3 MiB
md5	2941ddbaf0cdb49b342c18cde51fee43
sha256	e095c487d2837e4c984d0fcd2217be42c615504a2d7d6651095d34c2fa9807a0

### Hashes for Anaconda3-2020.02-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1583940777.0
time file was last modified, in human readable format	2020-03-11 08:32:57
exact file size, in bytes	463718746
file size, in human friendly format	442.2 MiB
md5	d1e7fe5d52e5b3ccb38d9af262688e89
sha256	4f7cc14b5b1d7aec3d9a5e781dede065e21cfe61915de4d3de192b9329195707

### Hashes for Anaconda3-2019.10-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1571149653.0
time file was last modified, in human readable format	2019-10-15 07:27:33
exact file size, in bytes	685285794
file size, in human friendly format	653.5 MiB
md5	5b051bf25188cd4bdcb7794f5bea6886
sha256	8b2192cbd586939d68bac00b0f9cbd2bfe555798c52b4cf4aecf6f9442123647

### Hashes for Anaconda3-2019.07-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1564065483.0
time file was last modified, in human readable format	2019-07-25 07:38:03
exact file size, in bytes	684809889
file size, in human friendly format	653.1 MiB
md5	1c50485dde8e6a2c28e33c09b619ea78
sha256	bc1a4cb642b775159125521d1dbc8bd1dd811b0880fd0c2a6612070d7b78476

### Hashes for Anaconda3-2019.03-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1554411633.0
time file was last modified, in human readable format	2019-04-04 14:00:33
exact file size, in bytes	668331738
file size, in human friendly format	637.4 MiB
md5	c0c6fbeb5c781c510ba7ee44a8d8efcb
sha256	1d89450ec2b8236404bab5a47aaa9c69fd85b63c6a9b8c35960dfa11f7550538

### Hashes for Anaconda3-2018.12-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419672.0
time file was last modified, in human readable format	2018-12-21 11:14:32
exact file size, in bytes	684396431
file size, in human friendly format	652.7 MiB
md5	34741dbb84e8b0f25c53acd056e7b95d
sha256	e40e076194df57f3fce8734acd5b2e3f60901ceeaea8ddbf5bd42284a2bce626

### Hashes for Anaconda3-5.3.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1542656334.0
time file was last modified, in human readable format	2018-11-19 11:38:54
exact file size, in bytes	664821768
file size, in human friendly format	634.0 MiB
md5	6a5cbe559a5b83e2508b39a3b72e90c8
sha256	ee9fb23d4beb30e5ed9d27d5703b46a02e23a93601373bc0de18bf6282116de0

### Hashes for Anaconda3-5.3.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538081958.0
time file was last modified, in human readable format	2018-09-27 13:59:18
exact file size, in bytes	664674040
file size, in human friendly format	633.9 MiB
md5	d3075bb9e63d560af3908d5f092e1c07
sha256	013e9968f437f91f7a1dfdfc4c7d6f9d3b7f7aeab5c6766a867ecb01c13ee163

### Hashes for Anaconda3-5.2.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1527703620.0
time file was last modified, in human readable format	2018-05-30 11:07:00
exact file size, in bytes	642866657
file size, in human friendly format	613.1 MiB
md5	9c35bf27e9986701f7d80241616c665f
sha256	dae8befc73d32b480faef31fa6fb73332579442a524bc68f6d475743f5bb84c0

### Hashes for Anaconda3-5.1.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707346.0
time file was last modified, in human readable format	2018-02-15 07:09:06
exact file size, in bytes	623585451
file size, in human friendly format	594.7 MiB
md5	6ed496221b843d1b5fe8463d3136b649
sha256	d6bf6309ccaafa84314d85ca7421fddc16057ac2d824d698a213ccd597e896897

### Hashes for Anaconda3-5.0.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1508806879.0
time file was last modified, in human readable format	2017-10-23 18:01:19
exact file size, in bytes	596524910
file size, in human friendly format	568.9 MiB
md5	eef112a1b8cbe8854e189eea1969f699
sha256	50c28594c785f5828990c95053468488563c775038b6744951847f9853ed0bbf

### Hashes for Anaconda3-5.0.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506461110.0
time file was last modified, in human readable format	2017-09-26 14:25:10
exact file size, in bytes	594734978
file size, in human friendly format	567.2 MiB
md5	de004893c4d5714e06d4903e0780aabd
sha256	06d959384869290845bc61346bb33a18dd02573836f50ba263b72028d2a6a5b1

### Hashes for Anaconda3-4.4.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495841777.0
time file was last modified, in human readable format	2017-05-26 16:36:17
exact file size, in bytes	464033256
file size, in human friendly format	442.5 MiB
md5	c6cd9c30b94c2ba2a5449e6f234d15f5
sha256	c5fc645f11505ac3ef710023b4072b7fb24ad31634b48e793e50b0067dc30154a

### Hashes for Anaconda3-4.3.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1488839187.0
time file was last modified, in human readable format	2017-03-06 14:26:27
exact file size, in bytes	444660396
file size, in human friendly format	424.1 MiB
md5	390ba506140e4dfb7e0ab368f6ab18d6
sha256	ca608d58b1acf77b5c77d10e937b9084e5997b8706445bac3754459e54c43f39

### Hashes for Anaconda3-4.3.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1485548792.0
time file was last modified, in human readable format	2017-01-27 12:26:32
exact file size, in bytes	443649282
file size, in human friendly format	423.1 MiB
md5	30b108a9cbc5d215a60187c5de89c459
sha256	f4522ac099ba292940bb47429e8e53eb9a0fe2ad3421513b2d618d0766337c17

### Hashes for Anaconda3-4.2.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1476750827.0
time file was last modified, in human readable format	2016-10-17 17:33:47
exact file size, in bytes	426843208
file size, in human friendly format	407.1 MiB
md5	51ed7f9af7436a1a23068eb00509d6ad
sha256	44fe57910aa10967c4afe41ab5663cb49235bc718a9b7c8912d3ec7f95485152



### Hashes for Anaconda3-4.1.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467994875.0
time file was last modified, in human readable format	2016-07-08 09:21:15
exact file size, in bytes	364773025
file size, in human friendly format	347.9 MiB
md5	9d396421683249ae850bd19637577f6e
sha256	b5e8cf44958d0aa03a7cc2da15fa835b1e14612b43b9772aef3270079d9b5a72

### Hashes for Anaconda3-4.1.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467131312.0
time file was last modified, in human readable format	2016-06-28 09:28:32
exact file size, in bytes	363587059
file size, in human friendly format	346.7 MiB
md5	665bf91beb7df29cfe36e6c135651ff5
sha256	83772b5fcd3d6deb945316ec96ecc7b0cdcd58c2c7a23f8f616771704e75aea6

### Hashes for Anaconda3-4.0.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1459268168.0
time file was last modified, in human readable format	2016-03-29 09:16:08
exact file size, in bytes	358139390
file size, in human friendly format	341.5 MiB
md5	b25796c49f9d3b47561c6eac9bbc77f0
sha256	32a089b1be465a8b03c837041bbfbc761d644893719329ee59b253221456be1

### Hashes for Anaconda3-2.5.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1454536564.0
time file was last modified, in human readable format	2016-02-03 13:56:04
exact file size, in bytes	387740293
file size, in human friendly format	369.8 MiB
md5	a3c5835e965b3afb05e4a0472fe36267
sha256	b1a6945f0f025086806624c59de5d92e5234bb39a18b5517d8b1e0dc30b3bde9

### Hashes for Anaconda3-2.4.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1449608454.0
time file was last modified, in human readable format	2015-12-08 13:00:54
exact file size, in bytes	259674929
file size, in human friendly format	247.6 MiB
md5	feb6c8b1553b4de35cfa8c8c18c50d34
sha256	95e9f2d370f7816ed72b862c9413c973efb2ca17edd4d84550ce33e0d16d8774

### Hashes for Anaconda3-2.4.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1446502943.0
time file was last modified, in human readable format	2015-11-02 14:22:23
exact file size, in bytes	280419790
file size, in human friendly format	267.4 MiB
md5	64db05cc4c185354453c450ba7551331
sha256	791f045258bd39bbcd4c5425dce082ecd194074edd99fb401d746ad58dae4f

### Hashes for Anaconda3-2.3.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1435775713.0
time file was last modified, in human readable format	2015-07-01 11:35:13
exact file size, in bytes	307072618
file size, in human friendly format	292.8 MiB
md5	51e3b628d2f7580d0753a4dabd46f1d3
sha256	0b936ab3067bbf32b5a52768f31ff437f0e01fbcee028698444d1a964209cc1c

### Hashes for Anaconda3-2.2.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1427315292.0
time file was last modified, in human readable format	2015-03-25 13:28:12
exact file size, in bytes	302853736
file size, in human friendly format	288.8 MiB
md5	f6963a1d098dc1aa70b198490cde34cf
sha256	16a5154267d7d52d3e7e0d12ec3405077df799c77ce382a3358238352656a1b4

### Hashes for Anaconda3-2.1.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1411663254.0
time file was last modified, in human readable format	2014-09-25 09:40:54
exact file size, in bytes	290765346
file size, in human friendly format	277.3 MiB
md5	c863fb1f7f714917e4cb4dfaafd9d03f
sha256	2780df02f400e44c0adcd209825fdcf955559fe42f5b3689d5c46a01bdec2145

### Hashes for Anaconda3-2.0.1-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1402603205.0
time file was last modified, in human readable format	2014-06-12 13:00:05
exact file size, in bytes	241942876
file size, in human friendly format	230.7 MiB
md5	1c22595eedfc62ff18a8786934e19c9c
sha256	0d53815a83a50bdcfcb5ada686f582730bcc93b95295dd04572ee5162724ec9b

### Hashes for Anaconda3-2.0.0-MacOSX-x86\_64.pkg

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1401226216.0
time file was last modified, in human readable format	2014-05-27 14:30:16
exact file size, in bytes	233699227
file size, in human friendly format	222.9 MiB
md5	e59bdfb282ec34a1a54db3eb3bb4eea0
sha256	4d4189ec0c514d344389e216b3ad4eeacd667426d902c5da416ebd7caa54d253

### Command line installers for Anaconda with Python 2 on macOS

To verify the file integrity using MD5 or SHA-256, see [cryptographic hash verification](#).

### Hashes for Anaconda2-2019.10-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1571149651.0
time file was last modified, in human readable format	2019-10-15 07:27:31
exact file size, in bytes	428689022
file size, in human friendly format	408.8 MiB
md5	311aeb49cbe6d296f499efcd01a73f5e
sha256	463cbd0b90c47d02ec341377110653870c7cc9d65572c655c5e44aaaf2ccb280d

## Hashes for Anaconda2-2019.07-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1564065465.0
time file was last modified, in human readable format	2019-07-25 07:37:45
exact file size, in bytes	427641100
file size, in human friendly format	407.8 MiB
md5	14efcfe8646ad0a00f2e3ca2959dec94
sha256	3e63919eed116826e683ed7d480d06517de79564788fbc27cb8d8879697eb654

## Hashes for Anaconda2-2019.03-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1554411634.0
time file was last modified, in human readable format	2019-04-04 14:00:34
exact file size, in bytes	555971416
file size, in human friendly format	530.2 MiB
md5	fc7f811d92e39c17c20fac1f43200043
sha256	414917d00deaeefa38719992e6437470f54793718ef4bedcd66b0e5a30dbe4b6

## Hashes for Anaconda2-2018.12-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419671.0
time file was last modified, in human readable format	2018-12-21 11:14:31
exact file size, in bytes	573645950
file size, in human friendly format	547.1 MiB
md5	f4d8b10e9a754884fb96e68e0e0b276a
sha256	5c590b1b3cdc2eedd52edce0caabbce6665d84084d31b913e789e8c46a94859d

### Hashes for Anaconda2-5.3.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1542656263.0
time file was last modified, in human readable format	2018-11-19 11:37:43
exact file size, in bytes	565177387
file size, in human friendly format	539.0 MiB
md5	559606f0dda021daa1afd612b2e3e37c
sha256	df81e9d5d7d4c6595609a8d353eab80102a83b49cf8c19e5c1e5ad4ac0f39328

### Hashes for Anaconda2-5.3.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538082031.0
time file was last modified, in human readable format	2018-09-27 14:00:31
exact file size, in bytes	565054507
file size, in human friendly format	538.9 MiB
md5	de3314d20376ff56a7c0a62087962c86
sha256	bea3eb7667d265c8fe678ddde8432ac1f8286224baae498d092bb068b8185e88

## Hashes for Anaconda2-5.2.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1527703534.0
time file was last modified, in human readable format	2018-05-30 11:05:34
exact file size, in bytes	552703968
file size, in human friendly format	527.1 MiB
md5	b1f3fcf58955830b65613a4a8d75c3cf
sha256	d7d46e566306da5979cd5632079497fe6103b980e3a089ccf27a9f30cbee84dc

## Hashes for Anaconda2-5.1.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707333.0
time file was last modified, in human readable format	2018-02-15 07:08:53
exact file size, in bytes	530462553
file size, in human friendly format	505.9 MiB
md5	e9845ccf67542523c5be09552311666e
sha256	b686e01aeadb33526d9c154a0ac6f691dfad135080df96fb44d3ae1e4b128521

## Hashes for Anaconda2-5.0.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1508806264.0
time file was last modified, in human readable format	2017-10-23 17:51:04
exact file size, in bytes	510164626
file size, in human friendly format	486.5 MiB
md5	17314016dced36614a3bef8ff3db7066
sha256	e3a9a5c84cb89ff079b0781ba773a3433d490fe0cfc24042c613a5674748d87b

### Hashes for Anaconda2-5.0.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506461109.0
time file was last modified, in human readable format	2017-09-26 14:25:09
exact file size, in bytes	508843477
file size, in human friendly format	485.3 MiB
md5	b8d555fae2b4994f1094c2da85c7e9a4
sha256	d85198c63657924fae11b6ea5961f50d81d09a1185d6f0a9a9d5bc69eb788ccc

### Hashes for Anaconda2-4.4.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495841752.0
time file was last modified, in human readable format	2017-05-26 16:35:52
exact file size, in bytes	393583324
file size, in human friendly format	375.4 MiB
md5	a57e5c631a7d0c63552519f05ab243a4
sha256	ab95aef1110c2a385fd39a17e5f11dfbaabce25c1a5944598de164d7a2772969



### Hashes for Anaconda2-4.3.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1488839162.0
time file was last modified, in human readable format	2017-03-06 14:26:02
exact file size, in bytes	375651870
file size, in human friendly format	358.2 MiB
md5	eb1e7f853f64ad8babe1330a068e94e9
sha256	35261360f2b01793f441b29715a94052dceaef1137866b7323c76be83c5bcc1a

### Hashes for Anaconda2-4.3.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1485548768.0
time file was last modified, in human readable format	2017-01-27 12:26:08
exact file size, in bytes	374699540
file size, in human friendly format	357.3 MiB
md5	80b7958fc805d371d60e133af826752c
sha256	834ac0287062929ab5930661735ee617fd379bdfe79f3e0a20aebd614835b6c5

### Hashes for Anaconda2-4.2.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1475009402.0
time file was last modified, in human readable format	2016-09-27 13:50:02
exact file size, in bytes	363251366
file size, in human friendly format	346.4 MiB
md5	52f8b74e0c462575efc297c8f4e6cf14
sha256	a8b3ef86233635d9dcc3499dc384980762a0b42d354a318f8307029c399db452

### Hashes for Anaconda2-4.1.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467994800.0
time file was last modified, in human readable format	2016-07-08 09:20:00
exact file size, in bytes	310125837
file size, in human friendly format	295.8 MiB
md5	f62a0a47a42504e139a5122ad641b40c
sha256	3b2fb323eb26c1c58788f63c41e164c20c417f7f24e30b8057e92ab4d6102b70

### Hashes for Anaconda2-4.1.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467131310.0
time file was last modified, in human readable format	2016-06-28 09:28:30
exact file size, in bytes	309460309
file size, in human friendly format	295.1 MiB
md5	c18a0f560668e9d1215ed600fb64b0cf
sha256	8b2c2a32f5e0da75cf8c81c568124cc1ea701a58cd46b7816133573a7f5b7b45

## Hashes for Anaconda2-4.0.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1459268099.0
time file was last modified, in human readable format	2016-03-29 09:14:59
exact file size, in bytes	304288480
file size, in human friendly format	290.2 MiB
md5	a3443b46f99bc6680c77c688af1b1f5a
sha256	aa7ba6e1a40e08e672660c00c3151f0124faa61b598d75bdd07ebe1d24873ef6

## Hashes for Anaconda2-2.5.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1454535682.0
time file was last modified, in human readable format	2016-02-03 13:41:22
exact file size, in bytes	331485310
file size, in human friendly format	316.1 MiB
md5	57c024647fd3a149aa6d787feb35daa2
sha256	e7aa3b41210ee7ccf3c12e5b5ea43190d1811b58eaca8584ccffa468ac8a346

## Hashes for Anaconda2-2.4.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1449608451.0
time file was last modified, in human readable format	2015-12-08 13:00:51
exact file size, in bytes	222326344
file size, in human friendly format	212.0 MiB
md5	1aecf1e5808dbfb9fa81d139abdbeb34
sha256	f4bd45a21e0dff106e36d11cfd532f2b5050d3b792cc0627ab231089341d2040

### Hashes for Anaconda2-2.4.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1446502940.0
time file was last modified, in human readable format	2015-11-02 14:22:20
exact file size, in bytes	251172115
file size, in human friendly format	239.5 MiB
md5	6e39a0b4470f6517c98f6edd21becd35
sha256	53c9123c9d508555100805fdb44d9845511c937e7a34f237beb19168d655e070

### Hashes for Anaconda-2.3.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1435775710.0
time file was last modified, in human readable format	2015-07-01 11:35:10
exact file size, in bytes	262015432
file size, in human friendly format	249.9 MiB
md5	a9c057a22f106748956b708c50f52239
sha256	c4bb59a57bf44dde80612041bbbcfd2e5cab8534842209ef456da7a46f919c33

## Hashes for Anaconda-2.2.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1427314653.0
time file was last modified, in human readable format	2015-03-25 13:17:33
exact file size, in bytes	259147994
file size, in human friendly format	247.1 MiB
md5	453ab3de72ee95b7cb7ee5ee7298fbdf
sha256	20570e2f3911e38a78d8f888f3ff445d6c0cf97a2fca40d6956b48d12aaef339

## Hashes for Anaconda-2.1.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1411660393.0
time file was last modified, in human readable format	2014-09-25 08:53:13
exact file size, in bytes	252758049
file size, in human friendly format	241.0 MiB
md5	4d323aea34408b16a316ee5596817d47
sha256	128fd4f53e0895e0d23f33e924ae32e01171c2914b044d2b157a9497108109cf

## Hashes for Anaconda-2.0.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1402603376.0
time file was last modified, in human readable format	2014-06-12 13:02:56
exact file size, in bytes	224812734
file size, in human friendly format	214.4 MiB
md5	85d261fd4e651f891ca5d0df69441e00
sha256	4ecda163c6f46e70cc6a1fe62dece4c6ecd6474845129cc95a1d4e18c42f8015

### Hashes for Anaconda-2.0.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1401313845.0
time file was last modified, in human readable format	2014-05-28 14:50:45
exact file size, in bytes	216067773
file size, in human friendly format	206.1 MiB
md5	ec288bc9901facac5a1e098ded8c9936
sha256	ad6271ad21403166bf54d0734ba8c7f7eb65bb78a70d67c58c15b6874cddc81e

### Hashes for Anaconda-1.9.2-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1396996443.0
time file was last modified, in human readable format	2014-04-08 15:34:03
exact file size, in bytes	257273472
file size, in human friendly format	245.4 MiB
md5	9d4bfe3f859718c4ab9c06209c5b8175
sha256	be4611ca671f80b984fa330d4ecf82244c388abdb5c7679a4e6e806b4dca52f

## Hashes for Anaconda-1.9.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1392922925.0
time file was last modified, in human readable format	2014-02-20 11:02:05
exact file size, in bytes	257212033
file size, in human friendly format	245.3 MiB
md5	6ef81bc54a6ab506f352b5589ea80f81
sha256	7e4358adbaae2db9e17d1e0e4263b9a0174394c8f115c89d285c3f0f9206f75b

## Hashes for Anaconda-1.9.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1392049427.0
time file was last modified, in human readable format	2014-02-10 08:23:47
exact file size, in bytes	256300639
file size, in human friendly format	244.4 MiB
md5	ddd474c01696cc02dcaea91da1d72389
sha256	722fe4d4406e88c5023e7ee21dc1401bb2a540d6c031d303f0330a95e60131fd

## Hashes for Anaconda-1.8.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1383592216.0
time file was last modified, in human readable format	2013-11-04 11:10:16
exact file size, in bytes	239935643
file size, in human friendly format	228.8 MiB
md5	9fd7dd485c5f04fb65699a290e69671c
sha256	5844ca595b5930399a1213db64ab53e9b7e2fc1c26d8f11769c161fe4f5661e6

### Hashes for Anaconda-1.7.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1378745565.0
time file was last modified, in human readable format	2013-09-09 09:52:45
exact file size, in bytes	234119145
file size, in human friendly format	223.3 MiB
md5	16194eb9be2301eeb135f9f01695a566
sha256	046b592245bc2c11e733acb9700dc50947f2eff0f30fec4a4a5bf79368dfa14b

### Hashes for Anaconda-1.6.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1372784365.0
time file was last modified, in human readable format	2013-07-02 09:59:25
exact file size, in bytes	178279644
file size, in human friendly format	170.0 MiB
md5	4b60123e71864c447a0adc16398d5386
sha256	bbc15de34208ce8af5aceedeea1334636fe94c578b9890896729f1a61ace5e4f



### Hashes for Anaconda-1.6.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1371842774.0
time file was last modified, in human readable format	2013-06-21 12:26:14
exact file size, in bytes	177173725
file size, in human friendly format	169.0 MiB
md5	cccdd0353bfd46d3a93143fc6e47d728
sha256	e03317888c36c07451a349577b426f435a75075d1ee71e204eb9d5dd23936f5e

### Hashes for Anaconda-1.5.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1368127580.0
time file was last modified, in human readable format	2013-05-09 12:26:20
exact file size, in bytes	174295689
file size, in human friendly format	166.2 MiB
md5	03942512daf1b39eb3ff9016fc7efa0c
sha256	6d3c86a2fdbaeec2a6c251d5c9034a32b7c68a0437f2fac0b8f25125fe6866f

### Hashes for Anaconda-1.5.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1368022724.0
time file was last modified, in human readable format	2013-05-08 07:18:44
exact file size, in bytes	174295630
file size, in human friendly format	166.2 MiB
md5	6fe90601dbcecb29a2afcaf44aeb37f6
sha256	c69609f0f48f33ca5a12d425a9e4d0fc91b2c09d0345a590e1d77726446727aa

### Hashes for Anaconda-1.4.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1362869217.0
time file was last modified, in human readable format	2013-03-09 14:46:57
exact file size, in bytes	163952262
file size, in human friendly format	156.4 MiB
md5	db8779f0a663e025da1b19755f372a57
sha256	e5d5dae6e93bb7df528abc19f5ed3a69cc4bc867836bdc56886c5a3768fccde7

### Command line installers for Anaconda with Python 3 on macOS

To verify the file integrity using MD5 or SHA-256, see [cryptographic hash verification](#).

### Hashes for Anaconda3-2023.09-0-MacOSX-arm64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1696002211.9181917
time file was last modified, in human readable format	2023-09-29 11:43:31
exact file size, in bytes	780128225
file size, in human friendly format	744.0 MiB
md5	569cdeb73b948a85b4ac48cbacfd9cc5
sha256	34121775d9e30a6ea12af0a462e1881670b0c175b426e06fd7b1581625ebd69b

### Hashes for Anaconda3-2023.09-0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1696002214.0122693
time file was last modified, in human readable format	2023-09-29 11:43:34
exact file size, in bytes	811747949
file size, in human friendly format	774.1 MiB
md5	c9234c68f29fbe0e5946448c95a0575f
sha256	0c64a2c634fe31335079d97340c277c81b3f0c9dfe862a06599570640ac897a4

### Hashes for Anaconda3-2023.07-2-MacOSX-arm64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1691164566.3208485
time file was last modified, in human readable format	2023-08-04 08:56:06
exact file size, in bytes	676990792
file size, in human friendly format	645.6 MiB
md5	77d288c4b5378eaccf2383f9edd1c431
sha256	8b08ca8a94dd5fda20d134fea13fa6c55c70d20d4b5a7a1c80d311aeb0cd7a88

## Hashes for Anaconda3-2023.07-2-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1691164567.013874
time file was last modified, in human readable format	2023-08-04 08:56:07
exact file size, in bytes	641855956
file size, in human friendly format	612.1 MiB
md5	bbc6a6315b41e9b5c67cd0d9a7e0c16e
sha256	a2f7d0c19f60d00742154db21bfb3976d82215ff58396353f4dc729828bd2f49

## Hashes for Anaconda3-2023.07-1-MacOSX-arm64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689280147.633482
time file was last modified, in human readable format	2023-07-13 13:29:07
exact file size, in bytes	660534903
file size, in human friendly format	629.9 MiB
md5	5086dcf4dbacea3c8ada9b39c49c2f4e
sha256	322045ad100dcc380decde5812db58c617901c6a8ac46dd7818080fe3ae19f8e

## Hashes for Anaconda3-2023.07-1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689280148.283506
time file was last modified, in human readable format	2023-07-13 13:29:08
exact file size, in bytes	624335097
file size, in human friendly format	595.4 MiB
md5	021c7dc486bc4b427edaad858de50f59
sha256	803b2d0c5a142af3de14b410517c2c8889eaceb1b784d4c121512ebda13af6f8

### Hashes for Anaconda3-2023.07-0-MacOSX-arm64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689099422.2154632
time file was last modified, in human readable format	2023-07-11 11:17:02
exact file size, in bytes	660545143
file size, in human friendly format	629.9 MiB
md5	2f6bbfca9727ae776bb461c3da6224c5
sha256	23a9deb80acb145c65375bd73cbaa8793be81447278c4db7be50ef7c32a58635

### Hashes for Anaconda3-2023.07-0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689099422.8734875
time file was last modified, in human readable format	2023-07-11 11:17:02
exact file size, in bytes	624355577
file size, in human friendly format	595.4 MiB
md5	561f9a7b78b219b51b677ca4d730444a
sha256	b6ea24fe16544d5b2d5adf6c913c1fc89a6dbdef12a4caff76ff574b33d0f3cb

### Hashes for Anaconda3-2023.03-1-MacOSX-arm64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1682358066.5649714
time file was last modified, in human readable format	2023-04-24 10:41:06
exact file size, in bytes	593463009
file size, in human friendly format	566.0 MiB
md5	2f607ace26c49efdd18e62fcbd97b1e9
sha256	85152324c423fedbeed2e7491cb32e597eae7a61ff7597b401fd053ce

### Hashes for Anaconda3-2023.03-1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1682358067.1999948
time file was last modified, in human readable format	2023-04-24 10:41:07
exact file size, in bytes	630858117
file size, in human friendly format	601.6 MiB
md5	0c0f89f6234957e84bc11ec1cf440eba
sha256	3593921c8a5516db82f0d7dd1c691f7ee7794236852e7da614e9ad6e93eeb342

### Hashes for Anaconda3-2023.03-0-MacOSX-arm64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1679326895.8600206
time file was last modified, in human readable format	2023-03-20 08:41:35
exact file size, in bytes	592838223
file size, in human friendly format	565.4 MiB
md5	a4f912a08d429047454c35ccb1d08316
sha256	d27ee5432438972e90548e3dfa89490c5dc38a723f4dcd53061f0bd9d53b1bd0

### Hashes for Anaconda3-2023.03-0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1679326896.4790435
time file was last modified, in human readable format	2023-03-20 08:41:36
exact file size, in bytes	630223060
file size, in human friendly format	601.0 MiB
md5	f4a9ee04ab3d053af9aee649f6400442
sha256	cc37b1eb85bdc2ade3f95201a746cdc63ee4fbfae48ee9d0c7a3ccf319562452d

### Hashes for Anaconda3-2022.10-MacOSX-arm64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1666041338.7063026
time file was last modified, in human readable format	2022-10-17 14:15:38
exact file size, in bytes	495452036
file size, in human friendly format	472.5 MiB
md5	3a5d726f90e11270990e520905cf8466
sha256	200700077db8eed762fbc996b830c3f8cc5a2bb7d6b20bb367147eb35f2dcc72



### Hashes for Anaconda3-2022.10-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1666041337.3742535
time file was last modified, in human readable format	2022-10-17 14:15:37
exact file size, in bytes	714720931
file size, in human friendly format	681.6 MiB
md5	83fe2cbd4b32eeb63e99c3e15d72be85
sha256	dfcd1431a8206506799cb142b04d2db3be8a28671e5c3672920c09c71246dde0

### Hashes for Anaconda3-2022.05-MacOSX-arm64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1654623625.0019395
time file was last modified, in human readable format	2022-06-07 10:40:25
exact file size, in bytes	319634866
file size, in human friendly format	304.8 MiB
md5	24d985d2d380c51364d4793eb1840d29
sha256	a12119931945a9a1453993582259cc67318a9a75a15731e5ccc15365e7f88a36

### Hashes for Anaconda3-2022.05-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1652206921.140233
time file was last modified, in human readable format	2022-05-10 11:22:01
exact file size, in bytes	612376186
file size, in human friendly format	584.0 MiB
md5	5319de6536212892dd2da8b70d602ee1
sha256	1a10c06660ebe1204e538b4e9d810142441af9dfd74b077eee2761ec6e675f39

### Hashes for Anaconda3-2021.11-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1637172524.9943538
time file was last modified, in human readable format	2021-11-17 10:08:44
exact file size, in bytes	533074447
file size, in human friendly format	508.4 MiB
md5	bd343cbb464cca9baf5e6e179d51ece
sha256	6a9217d1a08c599f860045d56ef64fc6c3e3112b55cc97f3d07c573d7bbcd58

### Hashes for Anaconda3-2021.05-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620961727.3201532
time file was last modified, in human readable format	2021-05-13 20:08:47
exact file size, in bytes	453744548
file size, in human friendly format	432.7 MiB
md5	5e0e2b3a39f58d9b2458670a95f7625b
sha256	0407bee87eeecad521f1e38eb607b0a85babef4c1b47516dc5c090e152eba5d5

### Hashes for Anaconda3-2021.04-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620674468.8478274
time file was last modified, in human readable format	2021-05-10 12:21:08
exact file size, in bytes	450143403
file size, in human friendly format	429.3 MiB
md5	3caed29ad5564b3567676504669342dc
sha256	e945565945eb02fcc0755ca9d419ae36cb0f05f325790bec53d8f4ec7dedf4ca

### Hashes for Anaconda3-2020.11-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1605739535.653872
time file was last modified, in human readable format	2020-11-18 14:45:35
exact file size, in bytes	448532506
file size, in human friendly format	427.8 MiB
md5	918de9a9936908fe62514e0ca6873a21
sha256	ec11e325c792a6f49dbdbe5e641991d0a29788689176d7e54da97def9532c762

### Hashes for Anaconda3-2020.07-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1595524604.0
time file was last modified, in human readable format	2020-07-23 10:16:44
exact file size, in bytes	476160269
file size, in human friendly format	454.1 MiB
md5	50f20c90b8b5bfdc09759c09e32dce68
sha256	3980c2a57fde5de2ccfd0d7973f95ac1a3fa63351642e6735c50fc3791ef0f1

### Hashes for Anaconda3-2020.02-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1583940754.0
time file was last modified, in human readable format	2020-03-11 08:32:34
exact file size, in bytes	450989230
file size, in human friendly format	430.1 MiB
md5	f0229959e0bd45dee0c14b20e58ad916
sha256	d237e6c976eb9c58368ca156a51bd913d63a3b5fea32689342733c99d14b6f2e

### Hashes for Anaconda3-2019.10-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1571149651.0
time file was last modified, in human readable format	2019-10-15 07:27:31
exact file size, in bytes	444796542
file size, in human friendly format	424.2 MiB
md5	1a56194e89795b7ebbf0405b09d9c42d
sha256	4f77299ff4170cda64fdfcc27ac609a37d654c158f36c9ff25048793fe8a3a49

### Hashes for Anaconda3-2019.07-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1564065426.0
time file was last modified, in human readable format	2019-07-25 07:37:06
exact file size, in bytes	456538380
file size, in human friendly format	435.4 MiB
md5	0596eb617cfa30e4666ae3498a958bba
sha256	dcbddbab37c5b5f3873fe24d2617a4325bc7da28c0cd1d23a2edc7f0ebe08b7d

### Hashes for Anaconda3-2019.03-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1554411627.0
time file was last modified, in human readable format	2019-04-04 14:00:27
exact file size, in bytes	567859422
file size, in human friendly format	541.6 MiB
md5	46709a416be6934a7fd5d02b021d2687
sha256	b232f0b16181f48667d2ca89c04a4ee4b3932475282b41c52acb87b4cdfcaaf

### Hashes for Anaconda3-2018.12-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419593.0
time file was last modified, in human readable format	2018-12-21 11:13:13
exact file size, in bytes	584008163
file size, in human friendly format	557.0 MiB
md5	910c8f411f16b02813b3a2cd95462a81
sha256	4ccd3944d994fd47e5701c341725a63e984f8c042bf4dc19c9dfc7c135e7d8e4

### Hashes for Anaconda3-5.3.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1542656337.0
time file was last modified, in human readable format	2018-11-19 11:38:57
exact file size, in bytes	570132815
file size, in human friendly format	543.7 MiB
md5	3c9d849a305653f67edfefdbacddce4d
sha256	23c373abce2463d4df495f5a1c7e8b0faec6eda09542d98f41ed65a0fa0dbde0

### Hashes for Anaconda3-5.3.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538082101.0
time file was last modified, in human readable format	2018-09-27 14:01:41
exact file size, in bytes	570009935
file size, in human friendly format	543.6 MiB
md5	e03e91c0aec76d4188b7656e1cec1b74
sha256	bc073b6e6d3b2ef29d01a2caf1de7c206c95968231ef0492d958eae1a314b4e9

### Hashes for Anaconda3-5.2.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1527703623.0
time file was last modified, in human readable format	2018-05-30 11:07:03
exact file size, in bytes	548669102
file size, in human friendly format	523.3 MiB
md5	b5b789c01e1992de55ee911754c310d4
sha256	c8089121dc89ffe8f9a0c01205bab75a112821a13d413152d6690f5eef094afa

### Hashes for Anaconda3-5.1.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707424.0
time file was last modified, in human readable format	2018-02-15 07:10:24
exact file size, in bytes	536124653
file size, in human friendly format	511.3 MiB
md5	047e12523fd287149ecd80c803598429
sha256	be705b3c3a0ca29ee32ce7658890bb5edb32a9eadedc09dec3d7e3c3bfd23cb7

### Hashes for Anaconda3-5.0.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1508806270.0
time file was last modified, in human readable format	2017-10-23 17:51:10
exact file size, in bytes	514894862
file size, in human friendly format	491.0 MiB
md5	3c0f4bf6d9a68d91f6da65051046e106
sha256	f438a0af923bc1edc7bca53f496c59a668d1a08b48c768f443ad7f5ea2b8b3f8

### Hashes for Anaconda3-5.0.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506461111.0
time file was last modified, in human readable format	2017-09-26 14:25:11
exact file size, in bytes	513706836
file size, in human friendly format	489.9 MiB
md5	a72e7b22c29f0b4e05579cb8453f89fa
sha256	f23df1e3a38a6b4aaa0ab559d0c1e51be76eca5d75cb595d473d223c8d17e762d

### Hashes for Anaconda3-4.4.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495841759.0
time file was last modified, in human readable format	2017-05-26 16:35:59
exact file size, in bytes	398907650
file size, in human friendly format	380.4 MiB
md5	3958ac6cb84731e560dd833256aa5b15
sha256	10fe58f09ae524df2548d17b8bb1e75db17da597a6ec10d695ce01387a2d7422



### Hashes for Anaconda3-4.3.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1488839169.0
time file was last modified, in human readable format	2017-03-06 14:26:09
exact file size, in bytes	381078558
file size, in human friendly format	363.4 MiB
md5	fdf4ad01fadb58415bb4c6119153e04a
sha256	a42267203e207cb5e0f539e0d879ead12e436311825c7114d0edd880d001b539

### Hashes for Anaconda3-4.3.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1485548775.0
time file was last modified, in human readable format	2017-01-27 12:26:15
exact file size, in bytes	380197908
file size, in human friendly format	362.6 MiB
md5	e080c503c27d5c072d3e324ee1822641
sha256	c53059b810c5e7a9a5ef9c46a7ed76675dfc7183f4ea867b4d81449cbd5a093d

### Hashes for Anaconda3-4.2.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1475009407.0
time file was last modified, in human readable format	2016-09-27 13:50:07
exact file size, in bytes	366497043
file size, in human friendly format	349.5 MiB
md5	7cb61e355eb860e342a5e27236e3f375
sha256	95448921601e1952e01a17ba9767cd3621c154af7fc52dd6b7f57d462155a358

### Hashes for Anaconda3-4.1.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467994877.0
time file was last modified, in human readable format	2016-07-08 09:21:17
exact file size, in bytes	313217912
file size, in human friendly format	298.7 MiB
md5	185aa68d5841869cb7cb3a031bd63936
sha256	7c3c06e9281c41f1213d357cb5f233fd99d6d0db6bdba8d9fd7cfad1f1a85df9

### Hashes for Anaconda3-4.1.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467131313.0
time file was last modified, in human readable format	2016-06-28 09:28:33
exact file size, in bytes	312081344
file size, in human friendly format	297.6 MiB
md5	262c5c9a12d94a956ceb301d9f258c77
sha256	4c45c8d75665fa5194ebe4e355d3427f5aa385f77eb2b5002c0c78d8ae7f2200

### Hashes for Anaconda3-4.0.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1459268181.0
time file was last modified, in human readable format	2016-03-29 09:16:21
exact file size, in bytes	306950558
file size, in human friendly format	292.7 MiB
md5	efd870aa3fabc8f4865a1b9567e69b69
sha256	704a776c0cf3fcca6e0c5a1e6b6043728229cfac813bfff28f003157771824036

### Hashes for Anaconda3-2.5.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1454535687.0
time file was last modified, in human readable format	2016-02-03 13:41:27
exact file size, in bytes	333727463
file size, in human friendly format	318.3 MiB
md5	7223be67e908fe3db8199129e7253da1
sha256	9bb0f926927db210f8c2a8de881213d1a44c7b3d6dbcb93dfa6b99ed4bbd3e61

### Hashes for Anaconda3-2.4.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1449608454.0
time file was last modified, in human readable format	2015-12-08 13:00:54
exact file size, in bytes	224240817
file size, in human friendly format	213.9 MiB
md5	a5831d2a9b7baa9cdd42d7979b32f02c
sha256	22a3267638da9b7d64210d7da90d8762da7948234c21c0010a74f2621ee0ef68

### Hashes for Anaconda3-2.4.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1446502943.0
time file was last modified, in human readable format	2015-11-02 14:22:23
exact file size, in bytes	245160775
file size, in human friendly format	233.8 MiB
md5	9deaaec2262bbac751a75f8bed4c5ab6
sha256	f0cd785dbed0bab28dfc08a391c9de1b01633422fa317cb8365513a1ae5ae074

### Hashes for Anaconda3-2.3.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1435775714.0
time file was last modified, in human readable format	2015-07-01 11:35:14
exact file size, in bytes	269910147
file size, in human friendly format	257.4 MiB
md5	96fb1d4ba62529e5534f23e143ce3967
sha256	6a0c94a49f41f9fda0138c8e966bd7b0a8965d6648fd21ffbd645d1453848ba5

### Hashes for Anaconda3-2.2.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1427314664.0
time file was last modified, in human readable format	2015-03-25 13:17:44
exact file size, in bytes	266868602
file size, in human friendly format	254.5 MiB
md5	793f030f8694659f125399b66123bb78
sha256	81a2089ea6127717f146454e99ea0be2bd595193e4151bb05b4c15749b1d8124

### Hashes for Anaconda3-2.1.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1411660403.0
time file was last modified, in human readable format	2014-09-25 08:53:23
exact file size, in bytes	255307129
file size, in human friendly format	243.5 MiB
md5	59e2ffc9366dd32975c2da9e6eb8854a
sha256	efdb7e9d1e539cbcd62dc3874b0de6a141f36684e6fbc05018e072b217e24077

### Hashes for Anaconda3-2.0.1-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1402603209.0
time file was last modified, in human readable format	2014-06-12 13:00:09
exact file size, in bytes	213128084
file size, in human friendly format	203.3 MiB
md5	65dfe2f379cc14d5c8f7e05a57ce32aa
sha256	7a08509d4e45efcc7055a6d06d8406a773716500bd869a4e85312ff131155bd6

### Hashes for Anaconda3-2.0.0-MacOSX-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1401228173.0
time file was last modified, in human readable format	2014-05-27 15:02:53
exact file size, in bytes	204782483
file size, in human friendly format	195.3 MiB
md5	ba8d37fdafb2381585ddb24bde34b9ff
sha256	776a1cf8a8e898b41bb6558c093632cc922698dc48486fee35d1e8eae3f604fa

### Anaconda with Python 2 on 64-bit Linux

To verify the file integrity using MD5 or SHA-256, see [cryptographic hash verification](#).

### Hashes for Anaconda2-2019.10-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1571149573.0
time file was last modified, in human readable format	2019-10-15 07:26:13
exact file size, in bytes	309606026
file size, in human friendly format	295.3 MiB
md5	6b9809bf5d36782bfa1e35b791d983a0
sha256	0521743829c1b3c301542a20fa0daecda20ee85a69e57b5751a07c629001587b

### Hashes for Anaconda2-2019.10-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1571149563.0
time file was last modified, in human readable format	2019-10-15 07:26:03
exact file size, in bytes	500592001
file size, in human friendly format	477.4 MiB
md5	69c64167b8cf3a8fc6b50d12d8476337
sha256	8b2e7dea2da7d8cc18e822e8ec1804052102f4eefb94c1b3d0e586e126e8cd2f

### Hashes for Anaconda2-2019.07-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1564065389.0
time file was last modified, in human readable format	2019-07-25 07:36:29
exact file size, in bytes	312635356
file size, in human friendly format	298.2 MiB
md5	3b13ff785a73da85540d37d5aeac13af
sha256	ee7f61dab233cdd0acb376ad55e977b16fdc03602f87a98dafb10d5fe9f5a190

## Hashes for Anaconda2-2019.07-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1564065361.0
time file was last modified, in human readable format	2019-07-25 07:36:01
exact file size, in bytes	499266771
file size, in human friendly format	476.1 MiB
md5	63f63df5ffedf3dbbe8bbf3f56897e07
sha256	189e16e7adf9ba4b7b7d06ecdc10ce4ad4153e5e3505b9331f3d142243e18e97

## Hashes for Anaconda2-2019.03-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1554411636.0
time file was last modified, in human readable format	2019-04-04 14:00:36
exact file size, in bytes	305498479
file size, in human friendly format	291.3 MiB
md5	c65edf84f63c64a876aabc704a090b97
sha256	3ab35c11b50ff26965266655d7dc76cf229336ee11b8b0c364ec1ba596ba9e07

## Hashes for Anaconda2-2019.03-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1554411635.0
time file was last modified, in human readable format	2019-04-04 14:00:35
exact file size, in bytes	660030560
file size, in human friendly format	629.5 MiB
md5	dd87c316e211891df8889c52d9167a5d
sha256	cedfee5b5a3f62fcdac0a1d2d12396d0f232d2213d24d6dc893df5d8e64b8773

### Hashes for Anaconda2-2018.12-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419673.0
time file was last modified, in human readable format	2018-12-21 11:14:33
exact file size, in bytes	303768125
file size, in human friendly format	289.7 MiB
md5	d50ce6eb037f72edfe8f94f90d61aca6
sha256	4ff037544f9191e24887176b44b04100c27b846220d978ae35daa85507f5c263

### Hashes for Anaconda2-2018.12-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419590.0
time file was last modified, in human readable format	2018-12-21 11:13:10
exact file size, in bytes	658699654
file size, in human friendly format	628.2 MiB
md5	84f39388da2c747477cf14cb02721b93
sha256	1821d4b623ed449e0acb6df3ecbabd3944cffa98f96a5234b7a102a7c0853dc6



## Hashes for Anaconda2-5.3.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1542656251.0
time file was last modified, in human readable format	2018-11-19 11:37:31
exact file size, in bytes	647814227
file size, in human friendly format	617.8 MiB
md5	4da47b83b1eeac1ca8df0a43f6f580c8
sha256	f0650ad2f9ca4ae3f3162d7204a32950bc794f37f322eb47b5ad9412454f998c

## Hashes for Anaconda2-5.3.0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538082022.0
time file was last modified, in human readable format	2018-09-27 14:00:22
exact file size, in bytes	299539043
file size, in human friendly format	285.7 MiB
md5	20a0fad5ef7c3f3df10d350b8ec41bd2
sha256	b71cdf75ca10875d49170eb64a02920f47a69167d168fad694bb95ab91dbbd34

## Hashes for Anaconda2-5.3.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538082025.0
time file was last modified, in human readable format	2018-09-27 14:00:25
exact file size, in bytes	647650387
file size, in human friendly format	617.6 MiB
md5	ae1da610739f953ea12e3c7d24bdef63
sha256	50eeaab24bfa2472bc6485fe8f0e612ed67e561eda1ff9fbf07b62c96443c1be

### Hashes for Anaconda2-5.2.0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1527703471.0
time file was last modified, in human readable format	2018-05-30 11:04:31
exact file size, in bytes	282733770
file size, in human friendly format	269.6 MiB
md5	479633a95906ea6d41056ebe84a4c47b
sha256	a8fcac3f0884520c35103e76549fcc45d64d8806517ba02d8ade4028e1f771f8

### Hashes for Anaconda2-5.2.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1527703473.0
time file was last modified, in human readable format	2018-05-30 11:04:33
exact file size, in bytes	632688935
file size, in human friendly format	603.4 MiB
md5	5c034a4ab36ec9b6ae01fa13d8a04462
sha256	cb0d7a08b0e2cec4372033d3269979b4e72e2353ffd1444f57cb38bc9621219f

## Hashes for Anaconda2-5.1.0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707329.0
time file was last modified, in human readable format	2018-02-15 07:08:49
exact file size, in bytes	280296529
file size, in human friendly format	267.3 MiB
md5	e894dcc547a1c7d67deb04f6bba7223a
sha256	ff9baa4d3710bb24bc3a6a40c0f4ef69150f7608af5be6ada1ff99d01d1befae

## Hashes for Anaconda2-5.1.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707330.0
time file was last modified, in human readable format	2018-02-15 07:08:50
exact file size, in bytes	558878810
file size, in human friendly format	533.0 MiB
md5	5b1b5784cae93cf696e11e66983d8756
sha256	5f26ee92860d1dffdcd20910ff2cf75572c39d2892d365f4e867a611cca2af5b

## Hashes for Anaconda2-5.0.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1508865232.0
time file was last modified, in human readable format	2017-10-24 10:13:52
exact file size, in bytes	532375438
file size, in human friendly format	507.7 MiB
md5	dc13fe5502cd78dd03e8a727bb9be63f
sha256	23c676510bc87c95184ecaeb327c0b2c88007278e0d698622e2dd8fb14d9faa4

### Hashes for Anaconda2-5.0.0.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506959412.0
time file was last modified, in human readable format	2017-10-02 08:50:12
exact file size, in bytes	530931450
file size, in human friendly format	506.3 MiB
md5	35bea553072ea1f28090e851105c1b00
sha256	18730808d863a5c194ab3f59dd395c1a63cbd769c9bfb1df65efe61ee62fc6d6

### Hashes for Anaconda2-5.0.0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506461107.0
time file was last modified, in human readable format	2017-09-26 14:25:07
exact file size, in bytes	296001230
file size, in human friendly format	282.3 MiB
md5	157890d591c61a9b511f8452476d6d19
sha256	e0512f3c81251e5dcd48fcf02fe2044a66071dc8681269b1375ac5443f971971

## Hashes for Anaconda2-5.0.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506454641.0
time file was last modified, in human readable format	2017-09-26 12:37:21
exact file size, in bytes	530296562
file size, in human friendly format	505.7 MiB
md5	2272857fcf773fc75a1bc49f6d507a48
sha256	58a7117f89c40275114bf7e824a613a963da2b0fe63f2ec3c1175fea785b468e0

## Hashes for Anaconda2-4.4.0.1-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1501103402.0
time file was last modified, in human readable format	2017-07-26 14:10:02
exact file size, in bytes	284629257
file size, in human friendly format	271.4 MiB
md5	ce166de6f116acd08cd313f9c55c04d6
sha256	e14acab146181699e47ca108fc624ecea52851312962c649899459d98e0

## Hashes for Anaconda2-4.4.0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495053920.0
time file was last modified, in human readable format	2017-05-17 13:45:20
exact file size, in bytes	290045511
file size, in human friendly format	276.6 MiB
md5	511fdc6f6c29b1c3a702f3792182faf0
sha256	c19edfd9a3bd2fcb37ddb0c3aa09339c9e23145269957fac75e9b2abca4089af

### Hashes for Anaconda2-4.4.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495840968.0
time file was last modified, in human readable format	2017-05-26 16:22:48
exact file size, in bytes	508722275
file size, in human friendly format	485.2 MiB
md5	d72add23bc937ccdfc7de4f47deff843
sha256	2d30b91ed4d215b6b4a15162a3389e9057b15445a0c02da71bd7bd272e7b824e

### Hashes for Anaconda2-4.3.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1488838334.0
time file was last modified, in human readable format	2017-03-06 14:12:14
exact file size, in bytes	484472684
file size, in human friendly format	462.0 MiB
md5	51336ab38e15ce607b55539c60be2c29
sha256	e9b8f2645df6b1527ba56d61343162e0794acc3ee8dde2a6bba353719e2d878d

## Hashes for Anaconda2-4.3.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1485548108.0
time file was last modified, in human readable format	2017-01-27 12:15:08
exact file size, in bytes	483530594
file size, in human friendly format	461.1 MiB
md5	5f2c3bd60ddb0e213f7a1fc25bb88b4
sha256	7c52e6e99aabb24a49880130615a48e685da444c3c14eb48d6a65f3313bf745c

## Hashes for Anaconda2-4.2.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1475009394.0
time file was last modified, in human readable format	2016-09-27 13:49:54
exact file size, in bytes	467689464
file size, in human friendly format	446.0 MiB
md5	a0d1fbe47014b71c6764d76fb403f217
sha256	beee286d24fb37dd655281bba39b3deb5804baec509a9dc5c69185098cf661a

## Hashes for Anaconda2-4.1.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1467994796.0
time file was last modified, in human readable format	2016-07-08 09:19:56
exact file size, in bytes	419038579
file size, in human friendly format	399.6 MiB
md5	f7bb3c0ccf23c9789bb895335aa68bf3
sha256	9413b1d3ca9498ba6f53913df9c43d685dd973440ff10b7fe0c45b1cbdc582e

### Hashes for Anaconda2-4.1.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467131308.0
time file was last modified, in human readable format	2016-06-28 09:28:28
exact file size, in bytes	418188731
file size, in human friendly format	398.8 MiB
md5	e24d4264205d8d0c8533617db99ff1d3
sha256	3b7e504ca0132fb555d1f10e174cae07007f1bc6898cad0f7d416a68aca01f45

### Hashes for Anaconda2-4.0.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1459268095.0
time file was last modified, in human readable format	2016-03-29 09:14:55
exact file size, in bytes	411562823
file size, in human friendly format	392.5 MiB
md5	31ed3ef07435d7068e1e03be49381b13
sha256	ae312143952ca00e061a656c2080e0e4fd3532721282ba8e2978177cad71a5f0



### Hashes for Anaconda2-2.5.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1454535678.0
time file was last modified, in human readable format	2016-02-03 13:41:18
exact file size, in bytes	409842279
file size, in human friendly format	390.9 MiB
md5	f8eb687af8c9b4e81968de8c63b0d991
sha256	e10abf459cde4a838bd6fc5ca03023c3401b81ad470627acde5a298d56715321

### Hashes for Anaconda2-2.4.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1449608449.0
time file was last modified, in human readable format	2015-12-08 13:00:49
exact file size, in bytes	277827702
file size, in human friendly format	265.0 MiB
md5	c9317dcb28a2e0c98c34ebc341e0d145
sha256	2de682c96edf8cca2852071a84ff860025fbc8c502218e1995acd5ab47e8c9ac

### Hashes for Anaconda2-2.4.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1446502939.0
time file was last modified, in human readable format	2015-11-02 14:22:19
exact file size, in bytes	302444354
file size, in human friendly format	288.4 MiB
md5	1ab870a0184b84594fccf2027c9be887
sha256	49d19834da06b1b82b6fa85bc647d2e78fa5957d0cbae3ccd6c695a541befa6b

### Hashes for Anaconda-2.3.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1435775708.0
time file was last modified, in human readable format	2015-07-01 11:35:08
exact file size, in bytes	339594168
file size, in human friendly format	323.9 MiB
md5	c3100392685b5a62c8509c0588ce9376
sha256	7c02499e9511c127d225992cfe1cd815e88fd46cd8a5b3cdf764f3fb4d8d4576

### Hashes for Anaconda-2.2.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1427314808.0
time file was last modified, in human readable format	2015-03-25 13:20:08
exact file size, in bytes	332753610
file size, in human friendly format	317.3 MiB
md5	3234b2b2d7f7031432c1fd9870d15f58
sha256	ca2582cb2188073b0f348ad42207211a2b85c10b244265b5b27bab04481b88a2

## Hashes for Anaconda-2.1.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1411660215.0
time file was last modified, in human readable format	2014-09-25 08:50:15
exact file size, in bytes	353806962
file size, in human friendly format	337.4 MiB
md5	74a888f8683f67053a030e37d0eae1cf
sha256	191fbf290747614929d0bdd576e330c944b22a67585d1c185e0d2b3a3e65e1c0

## Hashes for Anaconda-2.0.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1402603353.0
time file was last modified, in human readable format	2014-06-12 13:02:33
exact file size, in bytes	343791922
file size, in human friendly format	327.9 MiB
md5	ae96da7de52ab1a64d4ed3fa4b43da25
sha256	074204fa26872b4a946123071d15b8390c0e5441352c6b65b2abd32511bffa240

## Hashes for Anaconda-2.0.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1401313830.0
time file was last modified, in human readable format	2014-05-28 14:50:30
exact file size, in bytes	332323121
file size, in human friendly format	316.9 MiB
md5	480ba8864579a457db91cd774bd373c1
sha256	3aa27ddf4a0ba5046ba52b97da99e20eb0614273d905bd73e016852451908917

### Hashes for Anaconda-1.9.2-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1396996358.0
time file was last modified, in human readable format	2014-04-08 15:32:38
exact file size, in bytes	507498869
file size, in human friendly format	484.0 MiB
md5	863ee49f52bda17810ab1b94a52f8c95
sha256	7181d399833a2549a9584255bb477487f2fde1fda4c7f7215d6034ea2fcfa21e

### Hashes for Anaconda-1.9.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1392924916.0
time file was last modified, in human readable format	2014-02-20 11:35:16
exact file size, in bytes	507437430
file size, in human friendly format	483.9 MiB
md5	9d973e9ac715ce3241c3785704565971
sha256	f6455e06a72b8cc11c8a96fb88a85518a2f7b2a1d6f1065f777d7ab4386f022d

## Hashes for Anaconda-1.9.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1392049385.0
time file was last modified, in human readable format	2014-02-10 08:23:05
exact file size, in bytes	648831310
file size, in human friendly format	618.8 MiB
md5	52ed5f32f7e36b75b5f951ab58a4bc08
sha256	855f1265e4c0b40d50f5a3a0fe7bae05b1cccb0a5301b378a19e0a8f7262913a

## Hashes for Anaconda-1.8.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1383601032.0
time file was last modified, in human readable format	2013-11-04 13:37:12
exact file size, in bytes	488287119
file size, in human friendly format	465.7 MiB
md5	398d4b7ddc5c0a16c556c415b2444266
sha256	69f42966d918f4197040e4dd126d2e3cc3c267bb49869dbf2d6ef277ed5de8b7

## Hashes for Anaconda-1.7.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1378677719.0
time file was last modified, in human readable format	2013-09-08 15:01:59
exact file size, in bytes	474606301
file size, in human friendly format	452.6 MiB
md5	01dc7d6df2ed592e5401ab4f3aed4a
sha256	6115cfae55a0746b4ae4128be839c99db39d02124160d9c531ca086c4d606582

### Hashes for Anaconda-1.6.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1372784262.0
time file was last modified, in human readable format	2013-07-02 09:57:42
exact file size, in bytes	333017000
file size, in human friendly format	317.6 MiB
md5	70a1294c01e3ab5925fc52f2603de159
sha256	81d1819ba08069343f228b9c819cdba0e4d15f2142c0c033657599808c3960fb

### Hashes for Anaconda-1.6.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1371842631.0
time file was last modified, in human readable format	2013-06-21 12:23:51
exact file size, in bytes	324528041
file size, in human friendly format	309.5 MiB
md5	207a0b4ebde49bcde67925ac8c72fe37
sha256	20f5b70193af4b0b8f10aa0e66aabca552846ec8f4958757ff3f4b79ef7b3160

## Hashes for Anaconda-1.5.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1368022716.0
time file was last modified, in human readable format	2013-05-08 07:18:36
exact file size, in bytes	321578266
file size, in human friendly format	306.7 MiB
md5	8319288082262fefbe322451aeae06ce
sha256	f4cdc194f076e1b438c8a34e7e5f53e70c2200b411b2d0af719e23fe35c6411e

## Hashes for Anaconda-1.4.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1362869198.0
time file was last modified, in human readable format	2013-03-09 14:46:38
exact file size, in bytes	300831068
file size, in human friendly format	286.9 MiB
md5	9be0e7340f0cd2d2cbd5acbe8e988f45
sha256	85ae8a0a6e3a41cf7845be3def36ed40582d3dc6e6a50e99063eaf6f1abee24e

## Anaconda with Python 3 on 64-bit Linux

To verify the file integrity using MD5 or SHA-256, see [cryptographic hash verification](#).



### Hashes for Anaconda3-2023.09-0-Linux-aarch64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1696002209.5631042
time file was last modified, in human readable format	2023-09-29 11:43:29
exact file size, in bytes	879596091
file size, in human friendly format	838.8 MiB
md5	cda52889c099a5564adc15ba4409ff32
sha256	69ee26361c1ec974199bce5c0369e3e9a71541de7979d2b9cfa4af556d1ae0ea

### Hashes for Anaconda3-2023.09-0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1696002209.9241176
time file was last modified, in human readable format	2023-09-29 11:43:29
exact file size, in bytes	550747882
file size, in human friendly format	525.2 MiB
md5	c62bb6d457dec958e3ddc4379df9fb7e
sha256	5ea1ed9808af95eb2655fe6a4ffdb66bea66ecd1d053fc2ee69eacc7685ef665

### Hashes for Anaconda3-2023.09-0-Linux-s390x.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1696002210.175127
time file was last modified, in human readable format	2023-09-29 11:43:30
exact file size, in bytes	383997446
file size, in human friendly format	366.2 MiB
md5	7bda7a66723e1296141ce12bb9d322fd
sha256	ee817071a2ad94e044fb48061a721bc86606b2f4906b705e4f42177eeb3ca7c5

### Hashes for Anaconda3-2023.09-0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1696002210.8971536
time file was last modified, in human readable format	2023-09-29 11:43:30
exact file size, in bytes	1153404010
file size, in human friendly format	1.1 GiB
md5	911aaa9ad24f6a78d056846995322230
sha256	6c8a4abb36fbb711dc055b7049a23bbfd61d356de9468b41c5140f8a11abd851

### Hashes for Anaconda3-2023.07-2-Linux-aarch64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1691164564.5807846
time file was last modified, in human readable format	2023-08-04 08:56:04
exact file size, in bytes	762778018
file size, in human friendly format	727.4 MiB
md5	bd121a6cdfa9e47b0ce25af1fc5b1c6d
sha256	75967bc2113d9e336e670e1e557c9198d8b98e59fb9adb82cbe0e71ce5f7c2db

## Hashes for Anaconda3-2023.07-2-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1691164564.8467944
time file was last modified, in human readable format	2023-08-04 08:56:04
exact file size, in bytes	496782929
file size, in human friendly format	473.8 MiB
md5	19ced77c74e778f4b7c15dead456f465
sha256	7a72e301fb3b8e175a96b6457fc84654dd2eb98942528d9988760779b92847e4

## Hashes for Anaconda3-2023.07-2-Linux-s390x.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1691164565.025801
time file was last modified, in human readable format	2023-08-04 08:56:05
exact file size, in bytes	357342573
file size, in human friendly format	340.8 MiB
md5	102ba5b2d3f69edc9e6bd3e62fc8d7
sha256	121743a62210249dd9fb9d6527d545d08f6bf6d2624d51ad4b5d168cb3e860d6

## Hashes for Anaconda3-2023.07-2-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1691164565.5758212
time file was last modified, in human readable format	2023-08-04 08:56:05
exact file size, in bytes	1064920017
file size, in human friendly format	1015.6 MiB
md5	5d91851ce61e6839608d269c5d0ac340
sha256	589fb34fe73bc303379abbceba50f3131254e85ce4e7cd819ba4276ba29cad16

### Hashes for Anaconda3-2023.07-1-Linux-aarch64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689280146.1814282
time file was last modified, in human readable format	2023-07-13 13:29:06
exact file size, in bytes	746444999
file size, in human friendly format	711.9 MiB
md5	020f6fc8118ee06fc689fe475514ecde
sha256	2ebe549375f3f5ffec9558a8a8405ebd697e69c8133b8f9c1c5cd4ff69d1cc74

### Hashes for Anaconda3-2023.07-1-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689280346.9138439
time file was last modified, in human readable format	2023-07-13 13:32:26
exact file size, in bytes	491509110
file size, in human friendly format	468.7 MiB
md5	6a7d2fadfb1fa7b838f43b55f913f6e2
sha256	ee149f55ebdd3f15fc1db4e9cddb5126da62e7a193fa15026c9fa009a2575d0a

### Hashes for Anaconda3-2023.07-1-Linux-s390x.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689280146.3714352
time file was last modified, in human readable format	2023-07-13 13:29:06
exact file size, in bytes	352416914
file size, in human friendly format	336.1 MiB
md5	b32dfedb30b0356f65918e3ea59438d8
sha256	49aad1bc077334f30177443c234f3c982f1c9751fc78c4c29fb4cf736e4f61ef

### Hashes for Anaconda3-2023.07-1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689280146.9384563
time file was last modified, in human readable format	2023-07-13 13:29:06
exact file size, in bytes	1059513078
file size, in human friendly format	1010.4 MiB
md5	bce9369349f94bd00d8352a64ea4dba6
sha256	111ce0a7f26e606863008a9519fd608b1493e483b6f487aea71d82b13fe0967e

### Hashes for Anaconda3-2023.07-0-Linux-aarch64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689099420.586403
time file was last modified, in human readable format	2023-07-11 11:17:00
exact file size, in bytes	746444999
file size, in human friendly format	711.9 MiB
md5	2a0033b49d2d831e670483751fe1916e
sha256	5f4865448c1111fb80cb49abff0f9b38b2970857dba7a4627c499ba102b82af5

### Hashes for Anaconda3-2023.07-0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689099420.8414123
time file was last modified, in human readable format	2023-07-11 11:17:00
exact file size, in bytes	491519350
file size, in human friendly format	468.7 MiB
md5	2c0bad8cdb0821a294dc917881801fb3
sha256	98efb73758680b84f890d818b5748d7a08e82c4b825d597f7e3c4467125da278

### Hashes for Anaconda3-2023.07-0-Linux-s390x.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689099421.0184188
time file was last modified, in human readable format	2023-07-11 11:17:01
exact file size, in bytes	352437394
file size, in human friendly format	336.1 MiB
md5	ae6955364835f42a8c87ec4c64392bfb
sha256	f6933a8b70d346d423e089843fc151c46bdae4e3e4e4fd0fb81ca06b8766892

## Hashes for Anaconda3-2023.07-0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1689099421.533438
time file was last modified, in human readable format	2023-07-11 11:17:01
exact file size, in bytes	1059492598
file size, in human friendly format	1010.4 MiB
md5	f6e88c6f507d66925821a3aafb4e2960
sha256	ac738639aba0b676a618911600d0a0e7825ee7fd10efb6b3d95cc2e570d9ee7b

## Hashes for Anaconda3-2023.03-1-Linux-aarch64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1682358064.90591
time file was last modified, in human readable format	2023-04-24 10:41:04
exact file size, in bytes	648796499
file size, in human friendly format	618.7 MiB
md5	ad9658ce9a190ee8a55e39743a5184a1
sha256	54e600faa2af63a25717af30ecaddf1ee428cdfebd3721a70f41462e232e8153

## Hashes for Anaconda3-2023.03-1-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1682358065.2369223
time file was last modified, in human readable format	2023-04-24 10:41:05
exact file size, in bytes	456283650
file size, in human friendly format	435.1 MiB
md5	079343989ca134fdb99864b118c1b619
sha256	a31f2d6da83534cff7c994403cc11fa634b31fcd10eb4153d00233345ee084b2

### Hashes for Anaconda3-2023.03-1-Linux-s390x.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1682358065.4559302
time file was last modified, in human readable format	2023-04-24 10:41:05
exact file size, in bytes	378785054
file size, in human friendly format	361.2 MiB
md5	7849161380d09c883c1303526d264ec4
sha256	5af1406c6350b4ba6839c49faa32a3c90f2b9845a03c35843f118dd9dd013421

### Hashes for Anaconda3-2023.03-1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1682358065.930948
time file was last modified, in human readable format	2023-04-24 10:41:05
exact file size, in bytes	902411137
file size, in human friendly format	860.6 MiB
md5	b3332806aa15750d6bc4e604f9110622
sha256	95102d7c732411f1458a20bdf47e4c1b0b6c8a21a2edfe4052ca370aaae57bab



### Hashes for Anaconda3-2023.03-0-Linux-aarch64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1679326894.3869665
time file was last modified, in human readable format	2023-03-20 08:41:34
exact file size, in bytes	648243404
file size, in human friendly format	618.2 MiB
md5	a99ff267712134c74919c498b83e857d
sha256	613797154d9383355677f7dfee10db32b2c327cbdadddcb303598f242c79883

### Hashes for Anaconda3-2023.03-0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1679326894.6369758
time file was last modified, in human readable format	2023-03-20 08:41:34
exact file size, in bytes	455751035
file size, in human friendly format	434.6 MiB
md5	6b0aed06cdae49a6c20dda4bcbb083dd
sha256	eafeaccca96f60ebb0aa0052d9baac8eaa2ee422358ee35b12f60f37e8a3ebb2

### Hashes for Anaconda3-2023.03-0-Linux-s390x.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1679326894.836983
time file was last modified, in human readable format	2023-03-20 08:41:34
exact file size, in bytes	378252427
file size, in human friendly format	360.7 MiB
md5	9169d4ecc2ee9a070152ab4f65afc65b
sha256	2648337081c3ce4b760457c5f00fb768ecd7d1d0957051ef5252ab380bb78233

### Hashes for Anaconda3-2023.03-0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1679326895.2889998
time file was last modified, in human readable format	2023-03-20 08:41:35
exact file size, in bytes	901858012
file size, in human friendly format	860.1 MiB
md5	b4b52d8c977f4f7fd6079a77bac8641a
sha256	19737d5c27b23a1d8740c5cb2414bf6253184ce745d0a912bb235a212a15e075

### Hashes for Anaconda3-2022.10-Linux-aarch64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1666041340.100354
time file was last modified, in human readable format	2022-10-17 14:15:40
exact file size, in bytes	560429616
file size, in human friendly format	534.5 MiB
md5	dac187c9fa6cae4ad663937f0ef79c8f
sha256	fbadbfae5992a8c96af0a4621262080eea44e22baee2172e3dfb640f5cf8d22d

### Hashes for Anaconda3-2022.10-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1666041337.6392634
time file was last modified, in human readable format	2022-10-17 14:15:37
exact file size, in bytes	377442296
file size, in human friendly format	360.0 MiB
md5	8dee159ac42f80eca8ce99ddbfd94099
sha256	8fdebc79f63b74daad421a2674d43299fa9c5007d85cf00e8dc1a81fbf2787e4

### Hashes for Anaconda3-2022.10-Linux-s390x.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1666041337.8502712
time file was last modified, in human readable format	2022-10-17 14:15:37
exact file size, in bytes	296150864
file size, in human friendly format	282.4 MiB
md5	ef2a6accc4d0d77756130198cb481358
sha256	f5ccc24aedab1f3f9cccf1945ca1061bee194fa42a212ec26425f3b77fdd943a

### Hashes for Anaconda3-2022.10-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1666041339.2423224
time file was last modified, in human readable format	2022-10-17 14:15:39
exact file size, in bytes	773428196
file size, in human friendly format	737.6 MiB
md5	80256bd7a55509665c4179fd61516745
sha256	e7ecbccbc197ebd7e1f211c59df2e37bc6959d081f2235d387e08c9026666acd

### Hashes for Anaconda3-2022.05-Linux-aarch64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1652206920.4722087
time file was last modified, in human readable format	2022-05-10 11:22:00
exact file size, in bytes	595119528
file size, in human friendly format	567.6 MiB
md5	7e822f5622fa306c0aa42430ba884454
sha256	dc6bb4eab3996e0658f8bc4bbd229c18f55269badd74acc36d9e23143268b795

### Hashes for Anaconda3-2022.05-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1652206921.9322617
time file was last modified, in human readable format	2022-05-10 11:22:01
exact file size, in bytes	385106099
file size, in human friendly format	367.3 MiB
md5	166b576c7e9d438b0a80840f94b44827
sha256	a50bf5bd26b5c5a2c24028c1aff6da2fa4d4586ca43ae3acdf7ffb9b50d7f282

### Hashes for Anaconda3-2022.05-Linux-s390x.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1652206921.32524
time file was last modified, in human readable format	2022-05-10 11:22:01
exact file size, in bytes	293422528
file size, in human friendly format	279.8 MiB
md5	00ba3bf29ac51db5e0954b6f217fa468
sha256	c14415df69e439acd7458737a84a45c6067376cbec2fccf5e2393f9837760ea7

### Hashes for Anaconda3-2022.05-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1652206920.0941951
time file was last modified, in human readable format	2022-05-10 11:22:00
exact file size, in bytes	690850711
file size, in human friendly format	658.8 MiB
md5	a01150aff48fcb6fcd6472381652de04
sha256	a7c0afe862f6ea19a596801fc138bde0463abcbce1b753e8d5c474b506a2db2d

### Hashes for Anaconda3-2021.11-Linux-aarch64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1637172523.8983145
time file was last modified, in human readable format	2021-11-17 10:08:43
exact file size, in bytes	511400791
file size, in human friendly format	487.7 MiB
md5	eeb286c02146b68a5a6c26e613fbb0e4
sha256	4daacb88fbd3a6c14e28cd3b37004ed4c2643e2b187302e927eb81a074e837bc

### Hashes for Anaconda3-2021.11-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1637172524.0323193
time file was last modified, in human readable format	2021-11-17 10:08:44
exact file size, in bytes	267255711
file size, in human friendly format	254.9 MiB
md5	f1067848601ea8d4bcac3983a700527e
sha256	7eb6a95925ee756240818599f8dcbb7a155adfb05ef6cd5336aa3c083de65f3

### Hashes for Anaconda3-2021.11-Linux-s390x.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1637172524.1603239
time file was last modified, in human readable format	2021-11-17 10:08:44
exact file size, in bytes	253479308
file size, in human friendly format	241.7 MiB
md5	576b077c52ebf7be38ff1b81018633bd
sha256	1504e9259816c5804eff1304fe7e339517b9fc1a08bfd991bc525a7efb6568f1

### Hashes for Anaconda3-2021.11-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1637172524.4633348
time file was last modified, in human readable format	2021-11-17 10:08:44
exact file size, in bytes	608680744
file size, in human friendly format	580.5 MiB
md5	40354cb10cadaf6b1cfeed36610839f4
sha256	fedf9e340039557f7b5e8a8a86affa9d299f5e9820144bd7b92ae9f7ee08ac60

### Hashes for Anaconda3-2021.05-Linux-aarch64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620961726.8851378
time file was last modified, in human readable format	2021-05-13 20:08:46
exact file size, in bytes	432601432
file size, in human friendly format	412.6 MiB
md5	48dc04abc2ed7d58c38ab217be0c9cad
sha256	3a3d5a61df5422f7c8c7816217b926ec7e200cc6d62967541adead8ec46d935d

### Hashes for Anaconda3-2021.05-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620961727.0691442
time file was last modified, in human readable format	2021-05-13 20:08:47
exact file size, in bytes	299204304
file size, in human friendly format	285.3 MiB
md5	53c6b519cb837df177f9474a546222b1
sha256	097064807a9adae3f91fc4c5852cd90df2b77fc96505929bb25bf558f1eef76f

### Hashes for Anaconda3-2021.05-Linux-s390x.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620961728.270187
time file was last modified, in human readable format	2021-05-13 20:08:48
exact file size, in bytes	305919028
file size, in human friendly format	291.7 MiB
md5	b78358a0e3098a8e15e87c9bef248895
sha256	a7d1a83279f439e7d8a6c53aa725552e195c0b96ae7e7fa63baefdf0118f7942

### Hashes for Anaconda3-2021.05-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620961727.6391644
time file was last modified, in human readable format	2021-05-13 20:08:47
exact file size, in bytes	570853747
file size, in human friendly format	544.4 MiB
md5	25e3ebae8905450ddac0f5c93f89c467
sha256	2751ab3d678ff0277ae80f9e8a74f218cfc70fe9a9cdc7bb1c137d7e47e33d53



### Hashes for Anaconda3-2021.04-Linux-aarch64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620402263.7961318
time file was last modified, in human readable format	2021-05-07 08:44:23
exact file size, in bytes	427364817
file size, in human friendly format	407.6 MiB
md5	14f48f5d1310478b11940a3b96eec7b6
sha256	4a2d3515e41660b3a0598bdd5513d388cad68b0df0397716c8b0e468c99f367f

### Hashes for Anaconda3-2021.04-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620674583.2889044
time file was last modified, in human readable format	2021-05-10 12:23:03
exact file size, in bytes	299150824
file size, in human friendly format	285.3 MiB
md5	e5c8220526b95293e669734f91194acc
sha256	6954278e3eb85f98ad29a44b0da574156cebe365687b831d3d865969d997f517

### Hashes for Anaconda3-2021.04-Linux-s390x.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1620402326.8113658
time file was last modified, in human readable format	2021-05-07 08:45:26
exact file size, in bytes	305868131
file size, in human friendly format	291.7 MiB
md5	e61fac26bf61bc5c3e3c1a93abc4d8e2
sha256	b0b857aa68964cb1388ce1657cc6f32c689cb0a0f95824e796acd1ed70cf1fd8

### Hashes for Anaconda3-2021.04-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1620674469.2168407
time file was last modified, in human readable format	2021-05-10 12:21:09
exact file size, in bytes	566095519
file size, in human friendly format	539.9 MiB
md5	230f2c3c343ee58073bf41bd896dd76c
sha256	2d6dcbe4360d023c3cecf6a6be8678d906c918e9afb50407a0f51558a48ca896

### Hashes for Anaconda3-2020.11-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1605739536.4269
time file was last modified, in human readable format	2020-11-18 14:45:36
exact file size, in bytes	292492041
file size, in human friendly format	278.9 MiB
md5	bc09710e65cdbba68688061b149281dc
sha256	870535ada0a8ae75eeda8cd2bf7dde853ac9f4949b20e1b5641f1843a655f3b8

### Hashes for Anaconda3-2020.11-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1605739536.1388896
time file was last modified, in human readable format	2020-11-18 14:45:36
exact file size, in bytes	554535580
file size, in human friendly format	528.8 MiB
md5	4cd48ef23a075e8555a8b6d0a8c4bae2
sha256	cff2ff493f11eaad5d09ce2b4feaa5ea90db5174303d5b3fe030e16d29aeef7de

### Hashes for Anaconda3-2020.07-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1595524607.0
time file was last modified, in human readable format	2020-07-23 10:16:47
exact file size, in bytes	304505170
file size, in human friendly format	290.4 MiB
md5	daf3de1185a390f435ab80b3c2212205
sha256	0df7c3784973ab46a9ef9848aced01311d08a71d79a18d5ed79dcccdae8c8dea7

### Hashes for Anaconda3-2020.07-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1595524610.0
time file was last modified, in human readable format	2020-07-23 10:16:50
exact file size, in bytes	576830621
file size, in human friendly format	550.1 MiB
md5	1046c40a314ab2531e4c099741530ada
sha256	38ce717758b95b3bd0b1797cc6ccfb76f29a90c25bdfa50ee45f11e583edfdbf

### Hashes for Anaconda3-2020.02-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1583940752.0
time file was last modified, in human readable format	2020-03-11 08:32:32
exact file size, in bytes	289452147
file size, in human friendly format	276.0 MiB
md5	fef889d3939132d9caf7f56ac9174ff6
sha256	d6d1827a38b988cbb714d6e0357c9e251c84641a0c70cda51861ed9abb38804

### Hashes for Anaconda3-2020.02-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1583940757.0
time file was last modified, in human readable format	2020-03-11 08:32:37
exact file size, in bytes	546910666
file size, in human friendly format	521.6 MiB
md5	17600d1f12b2b047b62763221f29f2bc
sha256	2b9f088b2022edb474915d9f69a803d6449d5fdb4c303041f60ac4ae4fcc208bb

### Hashes for Anaconda3-2019.10-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1571149571.0
time file was last modified, in human readable format	2019-10-15 07:26:11
exact file size, in bytes	335851146
file size, in human friendly format	320.3 MiB
md5	9dd413b0f2d0c68f387541428fe8d565
sha256	118c579f625555e1b116f0c3fd3842772e8fa0254cb2262c1c94e9eb40ba5160

### Hashes for Anaconda3-2019.10-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1571149565.0
time file was last modified, in human readable format	2019-10-15 07:26:05
exact file size, in bytes	530308481
file size, in human friendly format	505.7 MiB
md5	b77a71c3712b45c8f33c7b2ecade366c
sha256	46d762284d252e51cd58a8ca6c8adc9da2eadc82c342927b2f66ed011d1d8b53

### Hashes for Anaconda3-2019.07-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1564065416.0
time file was last modified, in human readable format	2019-07-25 07:36:56
exact file size, in bytes	341809116
file size, in human friendly format	326.0 MiB
md5	d085409443c102cc5b75f80ebcca8c89
sha256	e788094f7a18bfe14038accb26c8809a81291ed97f1fce29425f366aa8105548

### Hashes for Anaconda3-2019.07-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1564065380.0
time file was last modified, in human readable format	2019-07-25 07:36:20
exact file size, in bytes	541906131
file size, in human friendly format	516.8 MiB
md5	ec6a6bf96d75274c2176223e8584d2da
sha256	69581cf739365ec7fb95608ee694ba959d7d33b36eb961953f2b82cb25bdf5a

### Hashes for Anaconda3-2019.03-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1554411658.0
time file was last modified, in human readable format	2019-04-04 14:00:58
exact file size, in bytes	329736128
file size, in human friendly format	314.5 MiB
md5	510c8d6f10f2ffad0b185adbbdddf7f9
sha256	b4ecfca3b6d6c284a3f9370f6a5ccfac1b6be7fa75af9f6750a98fb315601ebb

### Hashes for Anaconda3-2019.03-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1554411631.0
time file was last modified, in human readable format	2019-04-04 14:00:31
exact file size, in bytes	685906562
file size, in human friendly format	654.1 MiB
md5	43caea3d726779843f130a7fb2d380a2
sha256	45c851b7497cc14d5ca060064394569f724b67d9b5f98a926ed49b834a6bb73a

### Hashes for Anaconda3-2018.12-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419583.0
time file was last modified, in human readable format	2018-12-21 11:13:03
exact file size, in bytes	328855685
file size, in human friendly format	313.6 MiB
md5	a775fb6d6c441b899ff2327bd9dadcd
sha256	f636f747d5b581ea05e5f20edb1c9ae5db7d9a7923f404761495dfc75966a4f3

### Hashes for Anaconda3-2018.12-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419586.0
time file was last modified, in human readable format	2018-12-21 11:13:06
exact file size, in bytes	684237703
file size, in human friendly format	652.5 MiB
md5	c9af603d89656bc89680889ef1f92623
sha256	1019d0857e5865f8a6861eaf15bfe535b87e92b72ce4f531000dc672be7fce00

### Hashes for Anaconda3-5.3.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1542656326.0
time file was last modified, in human readable format	2018-11-19 11:38:46
exact file size, in bytes	667976437
file size, in human friendly format	637.0 MiB
md5	334b43d5e8468507f123dbfe7437078f
sha256	d4c4256a8f46173b675dd6a62d12f566ed3487f932bab6bb7058f06c124bcc27

### Hashes for Anaconda3-5.3.0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538082093.0
time file was last modified, in human readable format	2018-09-27 14:01:33
exact file size, in bytes	319895712
file size, in human friendly format	305.1 MiB
md5	ee13966b6528f0398a8216f394539255
sha256	550dd67626172a42eb0dd02a08bc78a67e8c8e97a08a5914e402f31e14f4875a



## Hashes for Anaconda3-5.3.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538082095.0
time file was last modified, in human readable format	2018-09-27 14:01:35
exact file size, in bytes	667822837
file size, in human friendly format	636.9 MiB
md5	4321e9389b648b5a02824d4473cfdb5f
sha256	cfbf5fe70dd1b797ec677e63c61f8efc92dad930fd1c94d60390bb07fdc09959

## Hashes for Anaconda3-5.2.0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1527703540.0
time file was last modified, in human readable format	2018-05-30 11:05:40
exact file size, in bytes	302261137
file size, in human friendly format	288.3 MiB
md5	cbd1d5435ead2b0b97dba5b3cf45d694
sha256	024c811526ffc40ed6fa243a25795fbab5b41413372cd5a276aca69a930ef722

## Hashes for Anaconda3-5.2.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1527703543.0
time file was last modified, in human readable format	2018-05-30 11:05:43
exact file size, in bytes	651745206
file size, in human friendly format	621.6 MiB
md5	3e58f494ab9f9be12db4460dc152377b5
sha256	09f53738b0cd3bb96f5b1bac488e5528df9906be2480fe61df40e0e0d19e3d48

### Hashes for Anaconda3-5.1.0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707336.0
time file was last modified, in human readable format	2018-02-15 07:08:56
exact file size, in bytes	299557404
file size, in human friendly format	285.7 MiB
md5	47b5b2b17b7dbac0d4d0f0a4653f5b1c
sha256	58d1d093450dabefef9279694c9345afed78acf1c334d64a9241bcb725f45aa5f

### Hashes for Anaconda3-5.1.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707337.0
time file was last modified, in human readable format	2018-02-15 07:08:57
exact file size, in bytes	577996269
file size, in human friendly format	551.2 MiB
md5	966406059cf7ed89cc82eb475ba506e5
sha256	7e6785caad25e33930bc03fac4994a434a21bc8401817b7efa28f53619fa9c29

### Hashes for Anaconda3-5.0.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1508799175.0
time file was last modified, in human readable format	2017-10-23 15:52:55
exact file size, in bytes	550796553
file size, in human friendly format	525.3 MiB
md5	c989ecc8b648ab8a64731aaee9ed2e7e
sha256	55e4db1919f49c92d5abbf27a4be5986ae157f074bf9f8238963cd4582a4068a

### Hashes for Anaconda3-5.0.0.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506959414.0
time file was last modified, in human readable format	2017-10-02 08:50:14
exact file size, in bytes	549434488
file size, in human friendly format	524.0 MiB
md5	614cc8f244e956b41c75417dd1ec96fd
sha256	092c92427f44687d789a41922ce8426fbdc3c529cc9d6d4ee6de5b62954b93b2

### Hashes for Anaconda3-5.0.0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506368371.0
time file was last modified, in human readable format	2017-09-25 12:39:31
exact file size, in bytes	310695077
file size, in human friendly format	296.3 MiB
md5	8fe5b29ca5be3ff11411621f79babfc2
sha256	3574d423084e604a9d85a9f38ea481e0fc9e678923e2d3b9c4ec7340e16447ad

### Hashes for Anaconda3-5.0.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506454642.0
time file was last modified, in human readable format	2017-09-26 12:37:22
exact file size, in bytes	548789360
file size, in human friendly format	523.4 MiB
md5	bb2656314d22aeca6af243ddbfb32c
sha256	67f5c20232a3e493ea3f19a8e273e0618ab678fa14b03b59b1783613062143e9

### Hashes for Anaconda3-4.4.0.1-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1501103322.0
time file was last modified, in human readable format	2017-07-26 14:08:42
exact file size, in bytes	299425582
file size, in human friendly format	285.6 MiB
md5	fe7c87abd9fd70dc0cb4f83cc22d336f
sha256	d7c367c9c4fffec37c31c6570218c9944867c96fde5e9b0249673beda24ba2d9

### Hashes for Anaconda3-4.4.0-Linux-ppc64le.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495053950.0
time file was last modified, in human readable format	2017-05-17 13:45:50
exact file size, in bytes	304862316
file size, in human friendly format	290.7 MiB
md5	8c663e2056c7c57ac0075774b1f790be
sha256	605251829edecd0c39df8db856d4f09e406454468c3f128c14a7446a4efdf686

### Hashes for Anaconda3-4.4.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495840984.0
time file was last modified, in human readable format	2017-05-26 16:23:04
exact file size, in bytes	523283080
file size, in human friendly format	499.0 MiB
md5	50f19b935dae7361978a04d9c7c355cd
sha256	3301b37e402f3ff3df216fe0458f1e6a4ccbb7e67b4d626eae9651de5ea3ab63

### Hashes for Anaconda3-4.3.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1488838344.0
time file was last modified, in human readable format	2017-03-06 14:12:24
exact file size, in bytes	497343851
file size, in human friendly format	474.3 MiB
md5	9209864784250d6855886683ed702846
sha256	4447b93d2c779201e5fb50cfc45de0ec96c3804e7ad0fe201ab6b99f73e90302

### Hashes for Anaconda3-4.3.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1485548121.0
time file was last modified, in human readable format	2017-01-27 12:15:21
exact file size, in bytes	496412001
file size, in human friendly format	473.4 MiB
md5	db2e2e78adeca1923643be2ecaacd6227
sha256	e9169c3a5029aa820393ac92704eb9ee0701778a085ca7bdc3c57b388ac1beb6

### Hashes for Anaconda3-4.2.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1475009404.0
time file was last modified, in human readable format	2016-09-27 13:50:04
exact file size, in bytes	478051940
file size, in human friendly format	455.9 MiB
md5	4692f716c82deb9fa6b59d78f9f6e85c
sha256	73b51715a12b6382dd4df3dd1905b531bd6792d4aa7273b2377a0436d45f0e78

### Hashes for Anaconda3-4.1.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467994802.0
time file was last modified, in human readable format	2016-07-08 09:20:02
exact file size, in bytes	425991075
file size, in human friendly format	406.3 MiB
md5	d0dc08d241f83ffc763504db50008e5b
sha256	4f5c95feb0e7efeadd3d348dcef117d7787c799f24b0429e45017008f3534e55

### Hashes for Anaconda3-4.1.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467131311.0
time file was last modified, in human readable format	2016-06-28 09:28:31
exact file size, in bytes	424649707
file size, in human friendly format	405.0 MiB
md5	487d9ba7ae4955e1481ec59de40e51c5
sha256	11d32cf4026603d3b327dc4299863be6b815905ff51a80329085e1bb9f96c8bd

### Hashes for Anaconda3-4.0.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1459268102.0
time file was last modified, in human readable format	2016-03-29 09:15:02
exact file size, in bytes	417798602
file size, in human friendly format	398.4 MiB
md5	546d1f02597587c685fa890c1d713b51
sha256	36a558a1109868661a5735f5f32607643f6dc05cf581fefb1c10fb8abbe22f39

### Hashes for Anaconda3-2.5.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1454535687.0
time file was last modified, in human readable format	2016-02-03 13:41:27
exact file size, in bytes	414838933
file size, in human friendly format	395.6 MiB
md5	02bac549e486be7096070db8d50d0c7f
sha256	addadcb927f15cb0b5b6e36890563d3352a8ff6a901ea753d389047d274a29a9

### Hashes for Anaconda3-2.4.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1449608453.0
time file was last modified, in human readable format	2015-12-08 13:00:53
exact file size, in bytes	283797156
file size, in human friendly format	270.7 MiB
md5	45249376f914fdc9fd920ff419a62263
sha256	0735e69199fc37135930ea2fd4fb6ad0adef215a2a7ba9fd6b0a0a4daaad1cf



### Hashes for Anaconda3-2.4.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1446502942.0
time file was last modified, in human readable format	2015-11-02 14:22:22
exact file size, in bytes	299023674
file size, in human friendly format	285.2 MiB
md5	48b6d696c73b5f3d573da3300946591d
sha256	fb4e480059e991f2fa632b5a9bcdd284c7f0677814cd719c11d524453f96a40d

### Hashes for Anaconda3-2.3.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1435775712.0
time file was last modified, in human readable format	2015-07-01 11:35:12
exact file size, in bytes	353018424
file size, in human friendly format	336.7 MiB
md5	7e10dbd2b620b4aaa360fe90cf5c6790
sha256	3be5410b2d9db45882c7de07c554cf4f1034becc274ec9074b23fd37a5c87a6f

### Hashes for Anaconda3-2.2.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1427314814.0
time file was last modified, in human readable format	2015-03-25 13:20:14
exact file size, in bytes	342778122
file size, in human friendly format	326.9 MiB
md5	a271fee559b46cf15ba98f21b8549235
sha256	4aac68743e7706adb93f042f970373a6e7e087dbf4b02ac467c94ca4ce33d2d1

### Hashes for Anaconda3-2.1.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1411660220.0
time file was last modified, in human readable format	2014-09-25 08:50:20
exact file size, in bytes	349003566
file size, in human friendly format	332.8 MiB
md5	934cccdf6fa894820d2942ea567dca93
sha256	af3225ccbe8df0ffb918939e009aa57740e35058ebf9dfcf5fec794a77556c3c

### Hashes for Anaconda3-2.0.1-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by running a local program to generate their MD5 or SHA-256 cryptographic hashes and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1402603193.0
time file was last modified, in human readable format	2014-06-12 12:59:53
exact file size, in bytes	319624556
file size, in human friendly format	304.8 MiB
md5	aa7c27b54f710f3004cc17f2db5ff761
sha256	3c3b834793e461f3316ad1d9a9178c67859a9d74aaf7bcade076f04134dd1e26

## Hashes for Anaconda3-2.0.0-Linux-x86\_64.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1401226019.0
time file was last modified, in human readable format	2014-05-27 14:26:59
exact file size, in bytes	308739435
file size, in human friendly format	294.4 MiB
md5	c9af4bee8d2da4d74de0d02400ac1c10
sha256	57ce4f97e300cf94c5724f72d992e9eecef708fd0a13bc672ae9779773056540

## Anaconda with Python 2 on 32-bit Linux

To verify the file integrity using MD5 or SHA-256, see [cryptographic hash verification](#).

## Hashes for Anaconda2-2018.12-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419595.0
time file was last modified, in human readable format	2018-12-21 11:13:15
exact file size, in bytes	543837797
file size, in human friendly format	518.6 MiB
md5	7d26c7551af6802eb83ecd34282056d7
sha256	e086c041695c0e50642aee8f4e7adad3185c6ce1d11737665653497d2edd78fd

### Hashes for Anaconda2-5.3.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1542656255.0
time file was last modified, in human readable format	2018-11-19 11:37:35
exact file size, in bytes	532286994
file size, in human friendly format	507.6 MiB
md5	5685ac1d4a14c4c254cbafc612c77e77
sha256	a38017dfa59141c63ec9882a15bd35e7ce63810ae0d1bcf47c79b7fb9f83e969

### Hashes for Anaconda2-5.3.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538082027.0
time file was last modified, in human readable format	2018-09-27 14:00:27
exact file size, in bytes	532194834
file size, in human friendly format	507.5 MiB
md5	a476ae6c3fe66711ec9e99f1d46f68e0
sha256	58d4229ad7097e1f3387d7f6582dcf2bbc684bffa284cd25096bd87530ba590

### Hashes for Anaconda2-5.2.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1527703530.0
time file was last modified, in human readable format	2018-05-30 11:05:30
exact file size, in bytes	512451078
file size, in human friendly format	488.7 MiB
md5	758e172a824f467ea6b55d3d076c132f
sha256	402758c24767e9eb3b77312c388725a058f76e03316464797c3ca404e6eebc2c

### Hashes for Anaconda2-5.1.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707331.0
time file was last modified, in human readable format	2018-02-15 07:08:51
exact file size, in bytes	452219193
file size, in human friendly format	431.3 MiB
md5	e26fb9d3e53049f6e32212270af6b987
sha256	5af0c7a09a5f3aaf3666c0b362246d342d80e782128ef043998c9ead5ad41df7

### Hashes for Anaconda2-5.0.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1508865187.0
time file was last modified, in human readable format	2017-10-24 10:13:07
exact file size, in bytes	433272941
file size, in human friendly format	413.2 MiB
md5	ae155b192027e23189d723a897782fa3
sha256	88c8d698fff16af15862daca10e94a0a46380dcffda45f8d89f5fe03f6bd2528

## Hashes for Anaconda2-5.0.0.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506959413.0
time file was last modified, in human readable format	2017-10-02 08:50:13
exact file size, in bytes	431941593
file size, in human friendly format	411.9 MiB
md5	5d4b38769f4ee4c33b5cfaa8603356e
sha256	00fbd979c815ede0bbad48fb4ef62cda333c7ad6330184962862a3072479267b

## Hashes for Anaconda2-5.0.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506455282.0
time file was last modified, in human readable format	2017-09-26 12:48:02
exact file size, in bytes	431409105
file size, in human friendly format	411.4 MiB
md5	a574e495c157d59bf4ec337fa4f72ddd
sha256	a3ed8769d20d55a41c04cf7c04e81c95974ea8eb614afab7bbc0c06fa6a52437

## Hashes for Anaconda2-4.4.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495841010.0
time file was last modified, in human readable format	2017-05-26 16:23:30
exact file size, in bytes	435148039
file size, in human friendly format	415.0 MiB
md5	b0f8f5ade832b0238357c2f973338b17
sha256	452aa91ac83d3b6a68b79cea3042170ec591d468d6966307ff9af18fdbce9fbf

### Hashes for Anaconda2-4.3.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1488838351.0
time file was last modified, in human readable format	2017-03-06 14:12:31
exact file size, in bytes	406525905
file size, in human friendly format	387.7 MiB
md5	aae1a3192abee1f0abba6c0e1b292cec
sha256	4519ac724d5120d21bb80289c5509c0d1fd9f99c6e9b9a4c6fb352d8bda4aede

### Hashes for Anaconda2-4.3.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1485548055.0
time file was last modified, in human readable format	2017-01-27 12:14:15
exact file size, in bytes	405573575
file size, in human friendly format	386.8 MiB
md5	65546028c4a48f4bb582c4ee3e43b893
sha256	b80d471839e8cf7b100e59308720cc13c141deb1ba903a4776c9a05f613e5078

## Hashes for Anaconda2-4.2.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1475009420.0
time file was last modified, in human readable format	2016-09-27 13:50:20
exact file size, in bytes	382758938
file size, in human friendly format	365.0 MiB
md5	e26582ebdf1d982e18efb2bdf52c5ee6
sha256	618b720f309fe8da4f235415f11b6ce3db0a16d702ca67fdceecf66bec78c32a

## Hashes for Anaconda2-4.1.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467994797.0
time file was last modified, in human readable format	2016-07-08 09:19:57
exact file size, in bytes	340385173
file size, in human friendly format	324.6 MiB
md5	8813071788e08e236a323b5f7d337759
sha256	1ab001c7a469345a90d549ebf4afa3376f0f3a57a0df5f042cac7d773b0e0b0d

## Hashes for Anaconda2-4.1.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467131308.0
time file was last modified, in human readable format	2016-06-28 09:28:28
exact file size, in bytes	340190685
file size, in human friendly format	324.4 MiB
md5	96e842ef2d5789411c550b0f9bce2314
sha256	54c06cd1b11cb687db6ba3613df443c057f769cdb87693e11674d956d8e5d081

### Hashes for Anaconda2-4.0.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1459268097.0
time file was last modified, in human readable format	2016-03-29 09:14:57
exact file size, in bytes	348392297
file size, in human friendly format	332.3 MiB
md5	f87d5a014499bd9a579ada3939eb22b1
sha256	41341c840cea4185ef5bd82520c1de72b42e7dc43c703fb13b032f04dc0e3573

### Hashes for Anaconda2-2.5.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1454535714.0
time file was last modified, in human readable format	2016-02-03 13:41:54
exact file size, in bytes	346405513
file size, in human friendly format	330.4 MiB
md5	aefe284ae4b870ca252da9e46c5d46c9
sha256	4911047df51c46661f551d6022aee21a7e5d31df051d3433b8ff3ea3c2e771bb



## Hashes for Anaconda2-2.4.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1449608450.0
time file was last modified, in human readable format	2015-12-08 13:00:50
exact file size, in bytes	260583576
file size, in human friendly format	248.5 MiB
md5	2e6983f8fdd5f07025f3a81587c82549
sha256	2388cc714567afe7697bf43b4063ff0ea2150a71b9beb17f75bc7e4879d9bf28

## Hashes for Anaconda2-2.4.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1446502939.0
time file was last modified, in human readable format	2015-11-02 14:22:19
exact file size, in bytes	293453735
file size, in human friendly format	279.9 MiB
md5	3fc53407f4a14fe18974d6fb59fc4d3e
sha256	478a8fdde3a6e4040a68c57d7bdd6fab1a4f7f6e813948d46dad54867014c124

## Hashes for Anaconda-2.3.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1435775709.0
time file was last modified, in human readable format	2015-07-01 11:35:09
exact file size, in bytes	324643869
file size, in human friendly format	309.6 MiB
md5	f2459d60a668eb82ff590f97755d93e0
sha256	73fdbbb3e38207ed18e5059f71676d18d48fdccbc455a1272eb45a60376cd818

### Hashes for Anaconda-2.2.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1427314794.0
time file was last modified, in human readable format	2015-03-25 13:19:54
exact file size, in bytes	317885231
file size, in human friendly format	303.2 MiB
md5	e3c3a2dae51a41c5a1cbb959ef68ef2c
sha256	6437d5b08a19c3501f2f5dc3ae1ae16f91adf6bed0f067ef0806a9911b1bef15

### Hashes for Anaconda-2.1.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1411660230.0
time file was last modified, in human readable format	2014-09-25 08:50:30
exact file size, in bytes	336767704
file size, in human friendly format	321.2 MiB
md5	3289883a21fdd9fe4fb84748bff677bf
sha256	fd70c08719e6b5caae45b7c8402c6975a8cbc0e3e2a9c4c977554d1784f28b72

## Hashes for Anaconda-2.0.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1402603361.0
time file was last modified, in human readable format	2014-06-12 13:02:41
exact file size, in bytes	324151704
file size, in human friendly format	309.1 MiB
md5	0f680aa6dc7150d15123e5490e46eaad
sha256	e8ffc63f31673b5ce41a95796a1f729ddcf4c7db19d6dbe29bedaeaf8478505

## Hashes for Anaconda-2.0.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1401313836.0
time file was last modified, in human readable format	2014-05-28 14:50:36
exact file size, in bytes	312856983
file size, in human friendly format	298.4 MiB
md5	48b6773dacf45e4df0da91cfc149bb23
sha256	efb9d3987134d484d88a9d915437b1bd568d065b4fefbd538e0281694bd90888

## Hashes for Anaconda-1.9.2-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1396996389.0
time file was last modified, in human readable format	2014-04-08 15:33:09
exact file size, in bytes	431825310
file size, in human friendly format	411.8 MiB
md5	c8f72746dd5dc68f014d5fccd1f060e8
sha256	1f7c850d0b98c011a717b3b757d82077accf0704dd7627f6962267bfb4476aad

### Hashes for Anaconda-1.9.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1392924896.0
time file was last modified, in human readable format	2014-02-20 11:34:56
exact file size, in bytes	431763871
file size, in human friendly format	411.8 MiB
md5	f1505963a1c7d2bfe7a73c079b22762d
sha256	9aa39c05f723fee18c54a9cc1729986193216affedbae125ca5faa067403030a

### Hashes for Anaconda-1.9.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1392049410.0
time file was last modified, in human readable format	2014-02-10 08:23:30
exact file size, in bytes	571806071
file size, in human friendly format	545.3 MiB
md5	11af2251aece5fc4333822dc25f78938
sha256	16471e90b3deb7be1b3d449d8883983d81f035dfaa1a3391497de20577de6f66

## Hashes for Anaconda-1.8.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1383601049.0
time file was last modified, in human readable format	2013-11-04 13:37:29
exact file size, in bytes	412040120
file size, in human friendly format	393.0 MiB
md5	5028bf0aa7ff8a071d5532b8f8ec924c
sha256	2c08a5cd6ccaa9dc84063b0ee9b007aa82e35a75c340fb272b394896de853608

## Hashes for Anaconda-1.7.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1378677746.0
time file was last modified, in human readable format	2013-09-08 15:02:26
exact file size, in bytes	399536902
file size, in human friendly format	381.0 MiB
md5	bbde22bd0346ad9c8932b4d98c0f4000
sha256	af372a27a1887e11061485e2a854c535775fd519713e028c38901f90c869cd83

## Hashes for Anaconda-1.6.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1372784347.0
time file was last modified, in human readable format	2013-07-02 09:59:07
exact file size, in bytes	259053521
file size, in human friendly format	247.1 MiB
md5	06412ae8de02c87b8de7d7e6d35ed092
sha256	745b9452fd18720deefb465a6687c0d66df8f11edceadcee758082dea1b8e812

### Hashes for Anaconda-1.6.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1371842619.0
time file was last modified, in human readable format	2013-06-21 12:23:39
exact file size, in bytes	253329362
file size, in human friendly format	241.6 MiB
md5	7a7f1f53684d38a7aa36935e34af30a3
sha256	d6aeedfcb39d648fdb5bd72c4d0b3063a9d4f4866baf5052aa0645bf5d2c07a

### Hashes for Anaconda-1.5.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1368022723.0
time file was last modified, in human readable format	2013-05-08 07:18:43
exact file size, in bytes	250369347
file size, in human friendly format	238.8 MiB
md5	2a75cab6536838635fd38ee7fd3e2411
sha256	ca7e356dc1b8c8ef27dfb74b32c77563df704c6ddb39e69cac65ec416ebfe8e5

## Hashes for Anaconda-1.4.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1362869213.0
time file was last modified, in human readable format	2013-03-09 14:46:53
exact file size, in bytes	231260549
file size, in human friendly format	220.5 MiB
md5	d5826bb10bb25d2f03639f841ef2f65f
sha256	065284c5de369c9b89dcae79e7169ce9b734dc3bbe6c409a67a5ec6480cc0f40

## Anaconda with Python 3 on 32-bit Linux

To verify the file integrity using MD5 or SHA-256, see [cryptographic hash verification](#).

## Hashes for Anaconda3-2018.12-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1545419594.0
time file was last modified, in human readable format	2018-12-21 11:13:14
exact file size, in bytes	569068646
file size, in human friendly format	542.7 MiB
md5	4c9922d1547128b866c6b9cf750c03c7
sha256	7895052814921d45ed0585d1fb19f8edd6fbd02b61639310f770e2e8e85cd975



### Hashes for Anaconda3-5.3.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1542656329.0
time file was last modified, in human readable format	2018-11-19 11:38:49
exact file size, in bytes	552879060
file size, in human friendly format	527.3 MiB
md5	6878b6393add83e5fe77d7a1a27ee789
sha256	5dab8b2c95595df7fa55b88643f8372135c14faabd9ec05a34021551bb0999a1

### Hashes for Anaconda3-5.3.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1538082097.0
time file was last modified, in human readable format	2018-09-27 14:01:37
exact file size, in bytes	552786900
file size, in human friendly format	527.2 MiB
md5	34fe38d086f069656c2f3cbf13b87460
sha256	c15ffac2ae35179a15dc5872e5bb405b4027a0fd76c6817e9cee39545bc5ca0b

### Hashes for Anaconda3-5.2.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.



exact time file was last modified, as Unix time stamp	1527703546.0
time file was last modified, in human readable format	2018-05-30 11:05:46
exact file size, in bytes	531957909
file size, in human friendly format	507.3 MiB
md5	81d5a1648e3aca4843f88ca3769c0830
sha256	f3527d085d06f35b6aeb96be2a9253ff9ec9ced3dc913c8e27e086329f3db588

### Hashes for Anaconda3-5.1.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1518707338.0
time file was last modified, in human readable format	2018-02-15 07:08:58
exact file size, in bytes	471561932
file size, in human friendly format	449.7 MiB
md5	793a94ee85baf64d0ebb67a0c49af4d7
sha256	0e940272517d8f8a6f26316a19e4be2bdae8477a3a32cc2ecee7b48fd0fae84

### Hashes for Anaconda3-5.0.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1508800071.0
time file was last modified, in human readable format	2017-10-23 16:07:51
exact file size, in bytes	451929576
file size, in human friendly format	431.0 MiB
md5	d967f023a23698109fe213103a2c07bf
sha256	991a4b656fcb0236864fbb27ff03bb7f3d98579205829b76b66f65cfa6734240

### Hashes for Anaconda3-5.0.0.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506959415.0
time file was last modified, in human readable format	2017-10-02 08:50:15
exact file size, in bytes	450639191
file size, in human friendly format	429.8 MiB
md5	8b6902d20063e6c3b98ebe70060f3131
sha256	407576899d3aa546bc3c2c4a13cbc18ab5bab372c3388ea80087f29b32184bee

### Hashes for Anaconda3-5.0.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1506455282.0
time file was last modified, in human readable format	2017-09-26 12:48:02
exact file size, in bytes	450106703
file size, in human friendly format	429.3 MiB
md5	8120fcd072916e4a28d0179be8d29053
sha256	634d2dfa97d19f2cc15e941cb4d059bc83a31facedfb9d02a980c4fa74f2776a

### Hashes for Anaconda3-4.4.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1495841025.0
time file was last modified, in human readable format	2017-05-26 16:23:45
exact file size, in bytes	449473324
file size, in human friendly format	428.7 MiB
md5	8556e85f81206c08ee2a30b67d1bb707
sha256	b0e492206d43067314b25963bc7d1f012096ca0323b7629f4ebcd071b03905b5

### Hashes for Anaconda3-4.3.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1488838367.0
time file was last modified, in human readable format	2017-03-06 14:12:47
exact file size, in bytes	418659792
file size, in human friendly format	399.3 MiB
md5	d8986b1503f3b42220be9bfb8a92100e
sha256	7b70bdba282a18ddbdc167afe8131f7532076cb1df8d3fbbd13e79ca3afaa2c1

### Hashes for Anaconda3-4.3.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1485548069.0
time file was last modified, in human readable format	2017-01-27 12:14:29
exact file size, in bytes	417717702
file size, in human friendly format	398.4 MiB
md5	3f173aa1ab2c2b6ab3f8a6bd22827fd7
sha256	f7ce2eeec3e42c2ba1ee3b9fcd670478fd30f4be547c6e0a675d183c4ca9dd9b

### Hashes for Anaconda3-4.2.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1475009434.0
time file was last modified, in human readable format	2016-09-27 13:50:34
exact file size, in bytes	392066694
file size, in human friendly format	373.9 MiB
md5	7aca10e1ea5b9db0a318b4eed5253747
sha256	1a8320635f2f06ec9d8610e77d6d0f9cb2c5d11d20a4ff7fcda113e04b0a8a50

### Hashes for Anaconda3-4.1.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1467994802.0
time file was last modified, in human readable format	2016-07-08 09:20:02
exact file size, in bytes	345064389
file size, in human friendly format	329.1 MiB
md5	0576a0df8987ca62d5c13491102547d9
sha256	931626363f4030c7a1e8897549b1d3589dc3f429874dc3dd8a79869ecf5c895c

### Hashes for Anaconda3-4.1.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

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exact time file was last modified, as Unix time stamp	1467131312.0
time file was last modified, in human readable format	2016-06-28 09:28:32
exact file size, in bytes	344388621
file size, in human friendly format	328.4 MiB
md5	302fddc310233f5e6f120753ec3e392d
sha256	7764093f337a43e4962b12d01508c1a385f0f62c1ddc006b69af95ae763fc4c2

### Hashes for Anaconda3-4.0.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1459268103.0
time file was last modified, in human readable format	2016-03-29 09:15:03
exact file size, in bytes	353266156
file size, in human friendly format	336.9 MiB
md5	c88cbe27cc8fb4976e6bd38068cc57d6
sha256	e1469fa0d24de12f33661ce3d7a06d77968be8822f366a61a0018a3850ab56b0

### Hashes for Anaconda3-2.5.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1454535727.0
time file was last modified, in human readable format	2016-02-03 13:42:07
exact file size, in bytes	350634167
file size, in human friendly format	334.4 MiB
md5	e1d4e9480b44ea0905cbf39846778f8b
sha256	22ac26c8bde7c4153ea859f6f6d8aca93bbf1e213d800167ad5ea530c62959af

### Hashes for Anaconda3-2.4.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1449608453.0
time file was last modified, in human readable format	2015-12-08 13:00:53
exact file size, in bytes	265518790
file size, in human friendly format	253.2 MiB
md5	82f1f438ac83ed8b7d36284995f6939b
sha256	00d13413f5b8129e863dabcc2296a181c697056c5ed210739a0aa06454ab7038

### Hashes for Anaconda3-2.4.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1446502942.0
time file was last modified, in human readable format	2015-11-02 14:22:22
exact file size, in bytes	290842015
file size, in human friendly format	277.4 MiB
md5	423f0300cbec30c206a6c61f7e5dc9bd
sha256	f6080c6493cefc603cfeb67aaf6c3c4c6b80a66788f03db48ffd3cfa52017c0a

### Hashes for Anaconda3-2.3.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1435775713.0
time file was last modified, in human readable format	2015-07-01 11:35:13
exact file size, in bytes	338272927
file size, in human friendly format	322.6 MiB
md5	72b14bfd85f2597089c4372225a96d42
sha256	4cc10d65c303191004ada2b6d75562c8ed84e42bf9871af06440dd956077b555

### Hashes for Anaconda3-2.2.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1427314807.0
time file was last modified, in human readable format	2015-03-25 13:20:07
exact file size, in bytes	328483185
file size, in human friendly format	313.3 MiB
md5	fe3681d49ff5b0d755181f553689ed9e
sha256	223655cd256aa912dfc83ab24570e47bb3808bc3b0c6bd21b5db0fcf2750883e

### Hashes for Anaconda3-2.1.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/> .

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1411660235.0
time file was last modified, in human readable format	2014-09-25 08:50:35
exact file size, in bytes	333141910
file size, in human friendly format	317.7 MiB
md5	462665c149b14f7c3993bc51e4d10f88
sha256	657cb599004c21e37ce693515ea33922e0084fd7c159ef1b96b57c86eed8385f



## Hashes for Anaconda3-2.0.1-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1402603200.0
time file was last modified, in human readable format	2014-06-12 13:00:00
exact file size, in bytes	301673940
file size, in human friendly format	287.7 MiB
md5	86213516c4c2e479d8d9834b89c95bed
sha256	21293fabbd3d5cfbb1afe0c9a8b39e0bc4d283cd7dbe3c84a60b335481a41ef3

## Hashes for Anaconda3-2.0.0-Linux-x86.sh

All installer files are available at <https://repo.anaconda.com/archive/>.

You can verify the data integrity of the Anaconda installer files by [running a local program to generate their MD5 or SHA-256 cryptographic hashes](#) and checking the output to be sure it matches the hashes (or “checksums”) below.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used MD5 or SHA-256, the hash you generated, and the hash on the site.

exact time file was last modified, as Unix time stamp	1401226555.0
time file was last modified, in human readable format	2014-05-27 14:35:55
exact file size, in bytes	290973139
file size, in human friendly format	277.5 MiB
md5	860a11c39e58bb574bad5be9d44e2063
sha256	439761159d5604e182951650a478dd53caff52e9dccf17c20ae66689b7b289dd

## Excel plug-ins for Anaconda

Anaconda on Windows comes ready to interact with Microsoft Excel—quickly, intuitively, and powerfully. You can use one of the many included packages in Anaconda or you can connect to an outside integration tool to bring the power of Python into Excel.

The packages described here are available only on Windows unless otherwise noted. Like most Anaconda packages, this software is written by third-party open-source development teams around the world. Anaconda collects and curates these programs, builds them into conda packages, and distributes them through the Anaconda platform so our users can enjoy the benefits of easy installation, version control, package management, and environment management.



## What tool should I use?

For a versatile, all-purpose tool, Anaconda includes [xlwings](#), which incorporates the following features:

- Drives Excel interactively from an IPython Session/Notebook.
- Performs one-line conversion to and from a NumPy array or pandas DataFrame.
- Uses Python as Excel's computation backend by wrapping Python function calls in VBA macros.
- Easily shares Python-integrated Excel workbooks with collaborators who are also running Anaconda, with no additional installation needed.

---

**Note:** The xlwings package is in active development. Additional features may be added in the future. This package is available for Windows and macOS platforms.

---

To export data from a Python object into Excel or import the contents of an Excel spreadsheet to perform calculations or visualizations in Python, Anaconda includes the following libraries and modules:

- [openpyxl](#)—Read/write Excel 2007 xlsx/xlsm files.
- [xlrd](#)—Extract data from Excel spreadsheets—.xls and .xlsx, versions 2.0 onwards—on any platform.
- [xlsxwriter](#)—Write files in the Excel 2007+ XLSX file format.
- [xlwt](#)—Generate spreadsheet files that are compatible with Excel 97/2000/XP/2003, OpenOffice.org Calc, and Gnumeric.

To determine which one best suits your needs, see the documentation for each library or module.

## Python-Excel tools not included in Anaconda

- [ExcelPython](#)—A free, open-source library that lets you write UDFs and macros in Python, as well as load Python modules, call methods, and manipulate objects from VBA without modifying the original Python code.
- [XLLoop](#)—Open-source software that implements UDFs that are hosted from a server in a variety of languages, including Python, Java, C++, and R. Installation requires multiple steps to set up the provided Excel add-in and configure the UDF server.
- [ExPy](#)—Freely available demonstration software that is simple to install. Once installed, Excel users have access to built-in Excel functions that wrap Python code. Documentation and examples are provided at the site.
- [PyXLL](#)—A widely used tool that is free for personal or educational use. It implements UDFs written in Python as add-in functions for Excel.

## Frequently asked questions

### Getting Anaconda

#### How do I get Anaconda with Python 3.5 or 3.6?

There are three ways to get Anaconda with Python 3.5 or 3.6:

- Anaconda recommends downloading the latest version of Anaconda prior to [creating a Python 3.5 \(or 3.6\) environment](#).
- Or download the latest version of Anaconda and run the following command to install Python 3.5 (or 3.6) in the root environment: `conda install python=3.5` or `conda install python=3.6`.

- Or download the most recent Anaconda installer that included Python 3.5 (Anaconda 4.2.0) or Python 3.6 (Anaconda 5.2.0). You can download either of these from our [archive](#). Scroll down the page until you find the version you need for your platform.

### How do I get previous versions of Anaconda or older versions of packages?

You can download previous versions of Anaconda from the [Anaconda installer archive](#).

The installation procedures for previous versions are the same as the installation for the current version. For graphical installs, double click the downloaded installer file and follow the prompts. For command line installs, run “`bash filename.sh`” and follow the prompts. The installer filenames and hashes for previous versions will be different.

Older versions of packages can usually be downloaded from the [package repository](#) or from <https://anaconda.org/anaconda/PackageName>.

---

**Note:** Replace `PackageName` with the name of the desired package.

---

EXAMPLE: At <https://anaconda.org/anaconda/beautifulsoup4>, previous versions of beautifulsoup4 are shown on the **Files** tab.

You can also search for packages from the command line with `conda search PackageName`.

### I am behind a firewall. How can I download Anaconda?

If your corporate security settings do not allow you to download a Windows .exe executable file, download our [zipped file](#).

## Installing Anaconda

### How can I install Anaconda on an air-gapped computer?

After you have the file, it's the same as any other install. Save a local copy of the appropriate Anaconda installer for the non-networked computer. You can copy the Anaconda installer using many different methods including a portable hard drive, USB drive, or CD.

After copying the installer to the air-gapped machine, follow the installation instructions for your operating system.

### In what folder should I install Anaconda on Windows?

Anaconda recommends installing Anaconda or Miniconda into a directory that contains only 7-bit ASCII characters and no spaces, such as `C:\anaconda`. Do not install into paths that contain spaces such as `C:\Program Files` or that include Unicode characters outside the 7-bit ASCII character set. This helps ensure correct operation and no errors when using any open-source tools in either Python 3 or Python 2 conda environments.

### Should I add Anaconda to the Windows PATH?

When installing Anaconda, Anaconda recommends that you do not add Anaconda to the Windows PATH because this can interfere with other software. Instead, open Anaconda with the Start Menu and select Anaconda Prompt, or use Anaconda Navigator (Start Menu - Anaconda Navigator).

### Should I add Anaconda to the macOS or Linux PATH?

Anaconda recommends against adding Anaconda to the PATH manually. During installation, you will be asked “Do you wish the installer to initialize Anaconda3 by running `conda init`?” Anaconda recommends entering `yes` to allow the installer to initialize Anaconda3. If you enter `no`, then conda will not modify your shell scripts at all. In order to initialize after the installation process is done, first run `source <path to conda>/bin/activate` and then run `conda init`.

---

**Note:** Replace <path-to-anaconda> with the actual path of your installed Anaconda file.

---

### What is the default path for installing Anaconda?

If you accept the default option to install Anaconda on the “default path” Anaconda is installed in your user home directory:

- Windows 10: C:\Users\<your-username>\Anaconda3\
- macOS: /Users/<your-username>/anaconda3 for the shell install, ~/opt for the graphical install. See [installing on macOS](#).
- Linux: /home/<your-username>/anaconda3

**Caution:** If your username includes spaces, as is common on Windows systems, you should not accept the default path. See [In what folder should I install Anaconda on Windows?](#)

### I already have Python installed. Can I install Anaconda?

You do not need to uninstall other Python installations or packages before installing Anaconda. Even if you already have a system Python, another Python installation from a source such as the macOS Homebrew package manager and globally installed packages from pip such as pandas and NumPy, you do not need to uninstall, remove, or change any of them.

Install Anaconda or Miniconda normally. There is no need to set the PYTHONPATH environment variable.

To see if the conda installation of Python is in your PATH variable:

- On macOS and Linux, open the terminal and run `echo $PATH`.
- On Windows, open an Anaconda Prompt and run `echo %PATH%`.

To see which Python installation is currently set as the default:

- On macOS and Linux, open the terminal and run `which python`.
- On Windows, open an Anaconda Prompt and run `where python`.

To see which packages are installed in your current conda environment and their version numbers, in your terminal window or an Anaconda Prompt, run `conda list`.

### How can I use Anaconda on older systems?

See [Outdated operating system support](#).

## Using conda packages

### How can I use TKinter?

Make sure the conda package `tk` is installed:

```
conda list tk
```

If it is not installed, run:

```
conda install tk
```

Python programs can use Tkinter with `import Tkinter` on Python 2 or `import tkinter` on Python 3.

### How can I use Cython on macOS?

Cython needs a C compiler, so you need to install [Xcode](#).

### How can I use Theano?

Theano requires [gcc](#) for acceleration.

To install Theano with acceleration:

- On Windows, run `conda install theano`.
- On Linux and macOS run `conda install gcc theano`.

---

**Note:** Theano is available from the default Anaconda channels for Windows, macOS, and Linux with the command `conda install theano`.

---

### How can I use GPUs with Anaconda?

See [Working with GPU packages](#).

## General

### How is CPython compiled?

- Python 2.6 and 2.7 were compiled with Visual Studio 2008.
- Python 3.3 and 3.4 were compiled with VS 2010.
- Python 3.5 was compiled with VS 2015.

### How do I cite Anaconda in an academic paper?

To cite Anaconda in an academic paper, use the recommended format. Example:

*Anaconda Software Distribution*. Computer software. Vers. 2-2.4.0. Anaconda, Nov. 2016. Web. <<https://anaconda.com>>.

## Packages

### Anaconda package lists

All packages available in the latest release of Anaconda are listed on the pages linked below. These packages may be installed with the command `conda install PACKAGENAME` and are located in the [package repository](#).

Click the links below to see which packages are available for each version of Python (3.8, 3.9, 3.10, or 3.11) and each operating system and architecture.

Anaconda is available for 64 and 32 bit Windows, macOS (Intel x86 and Apple M1), and 64 Linux on the Intel and AMD x86, x86-64 CPU, AWS Graviton 2 / ARM 64, IBM Z and IBM Power CPU architectures.

An [RSS feed](#) is updated each time a new package is added to the Anaconda package repository.

To request a package not listed on this page, please create an issue on the [Anaconda issues page](#).

	Python 3.11	Python 3.10	Python 3.9	Python 3.8
64-bit Windows	<i>64-bit Windows, Py3.11</i>	<i>64-bit Windows, Py3.10</i>	<i>64-bit Windows, Py3.9</i>	<i>64-bit Windows, Py3.8</i>
32-bit Windows	Not supported	Not supported	<i>32-bit Windows, Py3.9</i>	<i>32-bit Windows, Py3.8</i>
64-bit macOS Intel x86	<i>macOS Intel x86, Py3.11</i>	<i>macOS Intel x86, Py3.10</i>	<i>macOS Intel x86, Py3.9</i>	<i>macOS Intel x86, Py3.8</i>
64-bit macOS Apple M1	<i>macOS Apple M1, Py3.11</i>	<i>macOS Apple M1, Py3.10</i>	<i>macOS Apple M1, Py3.9</i>	<i>macOS Apple M1, Py3.9</i>
64-bit Linux	<i>64-bit Linux, Py3.11</i>	<i>64-bit Linux, Py3.10</i>	<i>64-bit Linux, Py3.9</i>	<i>64-bit Linux, Py3.8</i>
64-bit Linux Graviton2 ARM64	<i>Linux on ARM64, Py3.11</i>	<i>Linux on ARM64, Py3.10</i>	<i>Linux on ARM64, Py3.9</i>	<i>Linux on ARM64, Py3.8</i>
64-bit Linux on IBM Z	<i>Linux on IBM Z, Py3.11</i>	<i>Linux on IBM Z, Py3.10</i>	<i>Linux on IBM Z, Py3.9</i>	<i>Linux on IBM Z, Py3.8</i>
64-bit Linux on IBM Power CPUs	<i>Linux on IBM Power, Py3.11</i>	<i>Linux on IBM Power, Py3.10</i>	<i>Linux on IBM Power, Py3.9</i>	<i>Linux on IBM Power, Py3.8</i>

**Packages for 64-bit Windows with Python 3.8****Packages for 64-bit Windows with Python 3.9****Packages for 64-bit Windows with Python 3.10****Packages for 64-bit Windows with Python 3.11****Packages for 32-bit Windows with Python 3.8****Packages for 32-bit Windows with Python 3.9****Packages for macOS on x86\_64 with Python 3.8****Packages for macOS on x86\_64 with Python 3.9****Packages for macOS on x86\_64 with Python 3.10****Packages for macOS on x86\_64 with Python 3.11****Packages for macOS on Apple M1 with Python 3.8****Packages for macOS on Apple M1 with Python 3.9****Packages for macOS on Apple M1 with Python 3.10****Packages for macOS on Apple M1 with Python 3.11**

Packages for 64-bit Linux on x86\_64 CPUs with Python 3.8

Packages for 64-bit Linux on x86\_64 CPUs with Python 3.9

Packages for 64-bit Linux on x86\_64 CPUs with Python 3.10

Packages for 64-bit Linux on x86\_64 CPUs with Python 3.11

Packages for 64-bit Linux on ARMv8 CPUs with Python 3.8

Packages for 64-bit Linux on ARMv8 CPUs with Python 3.9

Packages for 64-bit Linux on ARMv8 CPUs with Python 3.10

Packages for 64-bit Linux on ARMv8 CPUs with Python 3.11

Packages for 64-bit Linux on IBM Z CPUs with Python 3.8

Packages for 64-bit Linux on IBM Z CPUs with Python 3.9

Packages for 64-bit Linux on IBM Z CPUs with Python 3.10

Packages for 64-bit Linux on IBM Z CPUs with Python 3.11

Packages for 64-bit Linux on IBM Power CPUs with Python 3.8

Packages for 64-bit Linux on IBM Power CPUs with Python 3.9

Packages for 64-bit Linux on IBM Power CPUs with Python 3.10

Packages for 64-bit Linux on IBM Power CPUs with Python 3.11

### R language packages for Anaconda

The R language packages are available to install with conda at <http://repo.anaconda.com/pkg/r/>. You can install any of these R language packages into your current environment with the conda command `conda install -c r package-name`.

---

**Note:** Replace package-name with the name of the package. For example, you can install the package `r-acepack` with the command `conda install -c r r-acepack`.

---

Many Comprehensive R Archive Network (CRAN) packages are available as conda packages. Anaconda does not provide builds of the entire CRAN repository, so there are some packages in CRAN that are not available as conda packages.

---

**Tip:** You can also search for any R package if you know the name, such as `conda search -f r-EXACTNAME`. Replace EXACTNAME with the desired CRAN or MRAN R package name. For example, for `rbokeh`, you would use

```
conda search -f r-rbokeh.
```

## R Essentials bundle

Rather than install each R language package individually, you can get the R Essentials bundle. It includes approximately 80 of the most popular scientific packages for the R programming language.

You can install the R Essentials bundle with this command:

```
conda install -c r r-essentials
```

## More resources

- *Using R language with Anaconda*
- Latest index of R packages built by Anaconda, Inc. on [repo.anaconda.com](https://repo.anaconda.com)
- Latest index of R packages built by Anaconda, Inc. on [Anaconda.org](https://Anaconda.org)

## Documentation download packages

For users who wish to view documentation locally or when offline, Anaconda provides documentation downloads.

## Anaconda documentation downloads

[docs.anaconda.com](https://docs.anaconda.com) includes documentation for these products:

- *Anaconda Distribution*
- *Anaconda Navigator*
- *Anaconda Enterprise 4 Repository*
- *Anaconda Enterprise 4 Notebooks*
- *Anaconda.org*

You can download a PDF or zipped HTML copy of [docs.anaconda.com](https://docs.anaconda.com) by clicking the **v: latest** box in the lower right corner. Under the heading “Downloads” you will see the options “PDF” and “HTML”.

[enterprise-docs.anaconda.com](https://enterprise-docs.anaconda.com) offers documentation for Anaconda Enterprise 5 (AE5).

You can download a PDF or zipped HTML copy of [enterprise-docs.anaconda.com](https://enterprise-docs.anaconda.com) by navigating to that site and clicking the **v: latest** box in the lower right corner. Under the heading “Downloads” you will see the options “PDF” and “HTML”.

You can install offline copies of both [docs.anaconda.com](https://docs.anaconda.com) and [enterprise-docs.anaconda.com](https://enterprise-docs.anaconda.com) by installing the conda package `anaconda-docs`:

```
conda install anaconda-docs
```

This will install a PDF copy and a zipped HTML copy of each site into the directory `share/doc` for your currently active conda environment.

EXAMPLE: If your conda install directory is `~/miniconda3`, and your environment is named `my-env`, the documentation will be installed into `~/miniconda3/envs/my-env/share/doc/`.

### Open-source package documentation downloads

You can download a package of documentation for many of Anaconda's open-source packages with this command:

```
conda install anaconda-oss-docs
```

This will install documentation for the open-source packages into the directory `share/doc/anaconda-oss` for your currently active conda environment.

EXAMPLE: If your conda install directory is `~/miniconda3`, and your environment is named `my-env`, the documentation will be installed into `~/miniconda3/envs/my-env/share/doc/anaconda-oss`.

This bundle includes documentation for these packages:

- Python
- NumPy
- SciPy
- pandas
- Conda
- Blaze
- Bleach
- botocore
- Certifi
- cryptography
- CFFI
- coverage
- Cython
- Dask
- Dask.distributed
- dateutil
- greenlet
- h5py
- html5lib
- imageio
- IPython
- Jinja
- Jupyter
- JupyterLab
- Jupyter Notebook
- llvmlite
- msgpack
- Odo



- OpenSSL
- Pillow
- pip
- psutil
- pyOpenSSL
- python-tblib
- PyWavelets
- PyZMQ
- Requests
- ruamel.yaml
- Setuptools
- six
- toolz
- Tornado
- Traitlets
- wheel
- Zict

### Old package lists

You can download previous versions of Anaconda from the [Anaconda installer archive](#).

Older versions of packages can usually be downloaded from the [package repository](#) or from <https://anaconda.org/anaconda/PackageName>.

---

**Note:** Replace PackageName with the name of the desired package.

---

EXAMPLE: At <https://anaconda.org/anaconda/beautifulsoup4>, previous versions of beautifulsoup4 are shown on the **Files** tab.

You can also search for packages from the command line with `conda search PackageName`.

Packages included in previous versions of Anaconda:

**Packages included in Anaconda 2023.07-1 for 64-bit Linux on x86\_64 CPUs with Python 3.10**

**Packages included in Anaconda 2023.07-1 for 64-bit Linux on ARMv8 CPUs with Python 3.10**

**Packages included in Anaconda 2023.07-1 for 64-bit Linux on IBM Power CPUs with Python 3.10**

**Packages included in Anaconda 2023.07-1 for 64-bit Linux on IBM Z CPUs with Python 3.10**

Packages included in Anaconda 2023.07-1 for macOS on x86\_64 with Python 3.10

Packages included in Anaconda 2023.07-1 for macOS on Apple M1 with Python 3.10

Packages included in Anaconda 2023.07-1 for 64-bit Windows with Python 3.10

Packages included in Anaconda 2023.07-1 for 64-bit Linux on x86\_64 CPUs with Python 3.11

Packages included in Anaconda 2023.07-1 for 64-bit Linux on ARMv8 CPUs with Python 3.11

Packages included in Anaconda 2023.07-1 for 64-bit Linux on IBM Power CPUs with Python 3.11

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Packages included in Anaconda 2023.07-1 for 64-bit Windows with Python 3.11

Packages included in Anaconda 2023.07-1 for 64-bit Linux on x86\_64 CPUs with Python 3.8

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Packages included in Anaconda 2023.07-0 for 64-bit Linux on x86\_64 CPUs with Python 3.10

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Packages included in Anaconda 2018.12 for 64-bit Linux on IBM Power CPUs with Python 3.6

Packages included in Anaconda 2018.12 for macOS with Python 3.6

Packages included in Anaconda 2018.12 for 32-bit Windows with Python 3.6

Packages included in Anaconda 2018.12 for 64-bit Windows with Python 3.6

Packages included in Anaconda 2018.12 for 32-bit Linux with Python 2.7

Packages included in Anaconda 2018.12 for 64-bit Linux with Python 2.7

Packages included in Anaconda 2018.12 for 64-bit Linux on IBM Power CPUs with Python 2.7

Packages included in Anaconda 2018.12 for macOS with Python 2.7

Packages included in Anaconda 2018.12 for 32-bit Windows with Python 2.7

Packages included in Anaconda 2018.12 for 64-bit Windows with Python 2.7

Packages included in Anaconda 5.3.0 for 32-bit Linux with Python 3.7

Packages included in Anaconda 5.3.0 for 64-bit Linux with Python 3.7

Packages included in Anaconda 5.3.0 for 64-bit Linux on IBM Power CPUs with Python 3.7

Packages included in Anaconda 5.3.0 for 64-bit macOS with Python 3.7

Packages included in Anaconda 5.3.0 for 32-bit Windows with Python 3.7

Packages included in Anaconda 5.3.0 for 64-bit Windows with Python 3.7

Packages included in Anaconda 5.3.0 for 32-bit Linux with Python 3.6

Packages included in Anaconda 5.3.0 for 64-bit Linux with Python 3.6

Packages included in Anaconda 5.3.0 for 64-bit Linux on IBM Power CPUs with Python 3.6

Packages included in Anaconda 5.3.0 for macOS with Python 3.6

Packages included in Anaconda 5.3.0 for 32-bit Windows with Python 3.6

Packages included in Anaconda 5.3.0 for 64-bit Windows with Python 3.6

Packages included in Anaconda 5.3.0 for 32-bit Linux with Python 2.7

Packages included in Anaconda 5.3.0 for 64-bit Linux with Python 2.7

Packages included in Anaconda 5.3.0 for 64-bit Linux on IBM Power CPUs with Python 2.7

Packages included in Anaconda 5.3.0 for macOS with Python 2.7

Packages included in Anaconda 5.3.0 for 32-bit Windows with Python 2.7

Packages included in Anaconda 5.3.0 for 64-bit Windows with Python 2.7

Packages included in Anaconda 5.2.0 for 32-bit Linux with Python 3.6

Packages included in Anaconda 5.2.0 for 64-bit Linux with Python 3.6

Packages included in Anaconda 5.2.0 for 64-bit Linux on IBM Power CPUs with Python 3.6

Packages included in Anaconda 5.2.0 for macOS with Python 3.6

Packages included in Anaconda 5.2.0 for 32-bit Windows with Python 3.6

Packages included in Anaconda 5.2.0 for 64-bit Windows with Python 3.6

Packages included in Anaconda 5.2.0 for 32-bit Linux with Python 3.5

Packages included in Anaconda 5.2.0 for 64-bit Linux with Python 3.5

Packages included in Anaconda 5.2.0 for 64-bit Linux on IBM Power CPUs with Python 3.5

Packages included in Anaconda 5.2.0 for macOS with Python 3.5

Packages included in Anaconda 5.2.0 for 32-bit Windows with Python 3.5

Packages included in Anaconda 5.2.0 for 64-bit Windows with Python 3.5

Packages included in Anaconda 5.2.0 for 32-bit Linux with Python 2.7

Packages included in Anaconda 5.2.0 for 64-bit Linux with Python 2.7

Packages included in Anaconda 5.2.0 for 64-bit Linux on IBM Power CPUs with Python 2.7

Packages included in Anaconda 5.2.0 for macOS with Python 2.7

Packages included in Anaconda 5.2.0 for 32-bit Windows with Python 2.7

Packages included in Anaconda 5.2.0 for 64-bit Windows with Python 2.7

Packages included in Anaconda 5.1.0 for 32-bit Linux with Python 3.6

Packages included in Anaconda 5.1.0 for 64-bit Linux with Python 3.6

Packages included in Anaconda 5.1.0 for 64-bit Linux on IBM Power CPUs with Python 3.6

Packages included in Anaconda 5.1.0 for macOS with Python 3.6

Packages included in Anaconda 5.1.0 for 32-bit Windows with Python 3.6

Packages included in Anaconda 5.1.0 for 64-bit Windows with Python 3.6



Packages included in Anaconda 5.1.0 for 32-bit Linux with Python 3.5

Packages included in Anaconda 5.1.0 for 64-bit Linux with Python 3.5

Packages included in Anaconda 5.1.0 for 64-bit Linux on IBM Power CPUs with Python 3.5

Packages included in Anaconda 5.1.0 for macOS with Python 3.5

Packages included in Anaconda 5.1.0 for 32-bit Windows with Python 3.5

Packages included in Anaconda 5.1.0 for 64-bit Windows with Python 3.5

Packages included in Anaconda 5.1.0 for 32-bit Linux with Python 2.7

Packages included in Anaconda 5.1.0 for 64-bit Linux with Python 2.7

Packages included in Anaconda 5.1.0 for 64-bit Linux on IBM Power CPUs with Python 2.7

Packages included in Anaconda 5.1.0 for macOS with Python 2.7

Packages included in Anaconda 5.1.0 for 32-bit Windows with Python 2.7

Packages included in Anaconda 5.1.0 for 64-bit Windows with Python 2.7

Packages included in Anaconda 5.0.1 for 32-bit Linux with Python 3.6

Packages included in Anaconda 5.0.1 for 64-bit Linux with Python 3.6

Packages included in Anaconda 5.0.1 for 64-bit Linux on IBM Power CPUs with Python 3.6

Packages included in Anaconda 5.0.1 for macOS with Python 3.6

Packages included in Anaconda 5.0.1 for 32-bit Windows with Python 3.6

Packages included in Anaconda 5.0.1 for 64-bit Windows with Python 3.6

Packages included in Anaconda 5.0.1 for 32-bit Linux with Python 3.5

Packages included in Anaconda 5.0.1 for 64-bit Linux with Python 3.5

Packages included in Anaconda 5.0.1 for 64-bit Linux on IBM Power CPUs with Python 3.5

Packages included in Anaconda 5.0.1 for macOS with Python 3.5

Packages included in Anaconda 5.0.1 for 32-bit Windows with Python 3.5

Packages included in Anaconda 5.0.1 for 64-bit Windows with Python 3.5

Packages included in Anaconda 5.0.1 for 32-bit Linux with Python 2.7

Packages included in Anaconda 5.0.1 for 64-bit Linux with Python 2.7

Packages included in Anaconda 5.0.1 for 64-bit Linux on IBM Power CPUs with Python 2.7

Packages included in Anaconda 5.0.1 for macOS with Python 2.7

Packages included in Anaconda 5.0.1 for 32-bit Windows with Python 2.7

Packages included in Anaconda 5.0.1 for 64-bit Windows with Python 2.7

Packages included in Anaconda 5.0.0 for 32-bit Linux with Python 3.6

Packages included in Anaconda 5.0.0 for 64-bit Linux with Python 3.6

Packages included in Anaconda 5.0.0 for 64-bit Linux on IBM Power CPUs with Python 3.6

Packages included in Anaconda 5.0.0 for macOS with Python 3.6

Packages included in Anaconda 5.0.0 for 32-bit Windows with Python 3.6

Packages included in Anaconda 5.0.0 for 64-bit Windows with Python 3.6

Packages included in Anaconda 5.0.0 for 32-bit Linux with Python 3.5

Packages included in Anaconda 5.0.0 for 64-bit Linux with Python 3.5

Packages included in Anaconda 5.0.0 for 64-bit Linux on IBM Power CPUs with Python 3.5

Packages included in Anaconda 5.0.0 for macOS with Python 3.5

Packages included in Anaconda 5.0.0 for 32-bit Windows with Python 3.5

Packages included in Anaconda 5.0.0 for 64-bit Windows with Python 3.5

Packages included in Anaconda 5.0.0 for 32-bit Linux with Python 2.7

Packages included in Anaconda 5.0.0 for 64-bit Linux with Python 2.7

Packages included in Anaconda 5.0.0 for 64-bit Linux on IBM Power CPUs with Python 2.7

Packages included in Anaconda 5.0.0 for macOS with Python 2.7

**Packages included in Anaconda 5.0.0 for 32-bit Windows with Python 2.7**

**Packages included in Anaconda 5.0.0 for 64-bit Windows with Python 2.7**

**Packages included in Anaconda 4.4.0 for Python version 3.6**

**Packages included in Anaconda 4.4.0 for Python version 3.5**

**Packages included in Anaconda 4.4.0 for Python version 2.7**

**Packages included in Anaconda 4.3.1 for Python version 3.6**

**orphan**

**Packages included in Anaconda 4.3.1 for Python version 3.5**

**orphan**

**Packages included in Anaconda 4.3.1 for Python version 3.4**

**orphan**

**Packages included in Anaconda 4.3.1 for Python version 2.7**

**orphan**

**Packages included in Anaconda 4.3.0 for Python version 3.6**

**orphan**

**Packages included in Anaconda 4.3.0 for Python version 3.5**

**orphan**

**Packages included in Anaconda 4.3.0 for Python version 3.4**

**orphan**

Packages included in Anaconda 4.3.0 for Python version 2.7

orphan

Packages included in Anaconda 4.2.0 for Python version 3.5

orphan

Packages included in Anaconda 4.2.0 for Python version 3.4

orphan

Packages included in Anaconda 4.2.0 for Python version 2.7

orphan

Packages included in Anaconda 4.1.1 for Python version 3.5

orphan

Packages included in Anaconda 4.1.1 for Python version 3.4

orphan

Packages included in Anaconda 4.1.1 for Python version 2.7

orphan

Packages included in Anaconda 4.1.0 for Python version 3.5

orphan

Packages included in Anaconda 4.1.0 for Python version 3.4

orphan

**Packages included in Anaconda 4.1.0 for Python version 2.7**

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**Packages included in Anaconda 4.0.0 for Python version 3.5**

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**Packages included in Anaconda 4.0.0 for Python version 3.4**

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**Packages included in Anaconda 4.0.0 for Python version 2.7**

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**Packages included in Anaconda 2.5.0 for Python version 3.5**

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**Packages included in Anaconda 2.5.0 for Python version 3.4**

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**Packages included in Anaconda 2.5.0 for Python version 2.7**

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**Packages included in Anaconda 2.4.1 for Python version 3.5**

**orphan**

**Packages included in Anaconda 2.4.1 for Python version 3.4**

**orphan**

**Packages included in Anaconda 2.4.1 for Python version 2.7**

orphan

**Packages included in Anaconda 2.4.0 for Python version 3.5**

orphan

**Packages included in Anaconda 2.4.0 for Python version 3.4**

orphan

**Packages included in Anaconda 2.4.0 for Python version 2.7**

orphan

**Packages included in Anaconda 2.3.0 for Python version 3.4**

**Packages included in Anaconda 2.3.0 for Python version 3.3**

**Packages included in Anaconda 2.3.0 for Python version 2.7**

**Packages included in Anaconda 2.3.0 for Python version 2.6**

**Packages included in Anaconda 2.2.0 for Python version 3.4**

**Packages included in Anaconda 2.2.0 for Python version 3.3**

**Packages included in Anaconda 2.2.0 for Python version 2.7**

**Packages included in Anaconda 2.2.0 for Python version 2.6**

**Packages included in Anaconda 2.1.0 for Python version 3.4**

Python version: 3.4

Number of supported packages: 171

Name	Version	License	In Installer
abstract-rendering <small>Linux Mac</small>	0.5.1	3rd-clause BSD	True
argcomplete	0.8.1	Apache Software License	True
astroid	1.2.1	LGPL	False
astropy	0.4.2	BSD	True
basemap <small>Linux Mac</small>	1.0.7	PSF	False
bcolz	0.7.1	BSD	False
beautiful-soup	4.3.2	PSF/MIT	True

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Table 3 – continued from previous page

binstar	0.7.1	BSD	True
biopython	1.64	BSD-like	False
bitarray	0.8.1	PSF	True
blaze	0.6.3	BSD	True
blist	1.3.6	BSD	False
blz	0.6.2	BSD	True
bokeh	0.6.1	New BSD	True
boto	2.32.1	MIT	True
bsdiff4	1.1.4	BSD	False
cffi	0.8.6	MIT	True
chameleon	2.16	BSD-like	False
chrpath <sup>Linux</sup>	0.13	GPL	False
colorama	0.3.1	BSD	True
conda	3.7.0	BSD	True
conda-api	1.1.0	BSD	False
conda-build	1.8.2	BSD	True
configobj	5.0.6	BSD	True
coverage	3.7.1	BSD	False
cryptography	0.5.4	Apache 2.0	True
cssselect <sup>Linux Mac</sup>	0.9.1	BSD	False
curl <sup>Linux Mac</sup>	7.38.0	<a href="#">MIT/X derivate</a>	True
cython	0.21	Apache 2.0	True
cytoolz	0.7.0	BSD	True
datashape	0.3.0	BSD	True
dateutil	2.1	BSD	True
decorator	3.4.0	BSD	True
django	1.7	BSD	False
docutils	0.12	Public-Domain, PSF, 2-clause BSD, GPL3	True
dynd-python	0.6.5	BSD	True
ecdsa	0.11	MIT	False
ephem	3.7.5.3	LGPL	False
feedparser	5.1.3	MIT	False
fiona	1.1.6	BSD	False
flake8	2.2.3	MIT	False
flask	0.10.1	BSD	True
freetype <sup>Linux Mac</sup>	2.4.10	<a href="#">FreeType License</a>	True
future	0.13.1	MIT	True
futures	2.1.6	BSD	False
gdal	1.11.0	MIT	False
gensim	0.10.2	LGPL	False
geos <sup>Linux Mac</sup>	3.3.3	LGPL	False
greenlet	0.4.4	MIT	True
gunicorn <sup>Linux Mac</sup>	19.1.0	MIT	False
h5py	2.3.1	<a href="#">New BSD</a>	True
hdf5 <sup>Linux Mac</sup>	1.8.13	<a href="#">BSD-style</a>	True
html5lib	0.999	MIT	False
ipython	2.2.0	BSD	True
itsdangerous	0.24	BSD License	True
jdcal	1.0	BSD	True
jinja2	2.7.3	BSD	True

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Table 3 – continued from previous page

jpeg <small>Linux Mac</small>	8d	Custom free software license	True
launcher <small>Mac Windows</small>	1.0.0	proprietary - Continuum Analytics, Inc.	True
libdynd <small>Linux Mac</small>	0.6.5	BSD	True
libffi <small>Linux</small>	3.0.13	MIT	True
libnetcdf <small>Linux Mac</small>	4.3.2	MIT	False
libpng <small>Linux Mac</small>	1.5.13	Open Source	True
libsodium <small>Linux Mac</small>	0.4.5	MIT	True
libtiff <small>Linux Mac</small>	4.0.2	as-is	True
libxml2 <small>Linux Mac</small>	2.9.0	MIT	True
libxslt <small>Linux Mac</small>	1.1.28	MIT	True
llvm <small>Linux Mac</small>	3.3	Open Source	True
llvmpy	0.12.7	New BSD License	True
logilab-common	0.62.1	LGPL	False
lxml	3.4.0	BSD	True
markdown <small>Linux Mac</small>	2.5	BSD	False
markupsafe	0.23	BSD	True
mathjax	2.2	Apache	False
matplotlib	1.4.0	PSF-based	True
mccabe	0.2.1	Expat	False
mdp	3.3	BSD	False
menuinst <small>Windows</small>	1.0.4	BDF	True
mingw <small>Windows</small>	4.7	GPL	True
mock	1.0.1	BSD	True
multimethods	1.0.0	MIT	False
multiplatform	0.4.7	BSD	True
natsort	3.5.0	MIT	False
netcdf4	1.1.1	MIT	False
networkx	1.9.1	BSD	True
nltk	3.0.0	Apache 2.0	True
node-webkit <small>Mac Windows</small>	0.10.1	MIT	True
nose	1.3.4	LGPL	True
numba	0.14.0	numba license	True
numexpr	2.3.1	MIT	True
numpy	1.9.0	BSD	True
openpyxl	1.8.5	MIT/Expat	True
openssl <small>Linux Mac</small>	1.0.1h	Apache-style	True
pandas	0.14.1	BSD	True
paramiko	1.14.1	LGPL	False
passlib	1.6.2	BSD	False
pastedeploy <small>Linux Mac</small>	1.5.2	MIT	False
patchelf <small>Linux</small>	0.6	GPL3	False
patsy	0.3.0	BSD License	True
pep8	1.5.7	MIT License	False
pillow <small>Linux Mac</small>	2.5.1	Standard PIL license	True
pip	1.5.6	MIT	True
ply	3.4	BSD	True
psutil	2.1.1	BSD	True
py	1.4.25	MIT	True
pyasn1 <small>Linux</small>	0.1.6	BSD	False
pycosat	0.6.1	MIT	True

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Table 3 – continued from previous page

pycparser	2.10	BSD	True
pycrypto	2.6.1	Public Domain	True
pycurl <sup>Linux Mac</sup>	7.19.5	LGPL and MIT/X	True
pyflakes	0.8.1	MIT	True
pygments	1.6	BSD	True
pylint	1.3.1	GPL	False
pymongo	2.7.2	Apache 2.0	False
pyodbc	3.0.7	MIT	False
pyopenssl	0.14	APL2	True
pyarsing	2.0.1	MIT	True
pyqt	4.10.4	GPL	True
pyreadline <sup>Windows</sup>	2.0	BSD	True
pyserial	2.7	PSF	False
pytables	3.1.1	BSD	True
pytest	2.6.3	MIT	True
python	3.4.1	PSF	True
pytz	2014.7	MIT	True
pywin32 <sup>Windows</sup>	219	PSF	True
pyyaml	3.11	MIT	True
pyzmq	14.3.1	LGPL and BSD	True
qt <sup>Linux Mac</sup>	4.8.5	LGPL	True
queueilib	1.2.2	BSD	False
readline <sup>Linux Mac</sup>	6.2	GPL 3	True
redis <sup>Linux Mac</sup>	2.6.9	3-clause BSD	True
redis-py <sup>Linux Mac</sup>	2.9.1	MIT	True
reportlab	3.1.8	BSD	False
repoze.lru	0.6	BSD	False
requests	2.4.1	ISC	True
rope	0.9.4	GPL	True
runipy	0.1.1	BSD	True
scikit-bio <sup>Linux Mac</sup>	0.2.0	BSD	False
scikit-image	0.10.1	Modified BSD	True
scikit-learn	0.15.2	3-clause BSD	True
scipy	0.14.0	BSD	True
setuptools	5.8	PSF or ZPL	True
shapely <sup>Linux Mac</sup>	1.4.1	BSD	False
sip <sup>Linux Mac</sup>	4.15.5	GPL	True
six	1.8.0	MIT	True
sockjs-tornado	1.0.1	MIT	True
sphinx	1.2.3	BSD	True
spyder	2.3.1	MIT	True
sqlalchemy	0.9.7	MIT	True
sqlite <sup>Linux Mac</sup>	3.8.4.1	Public Domain	True
sqlparse	0.1.12	BSD	False
statsmodels	0.5.0	3-clause Modified BSD	True
sympy	0.7.5	New BSD	True
tk <sup>Linux Mac</sup>	8.5.15	BSD-style	True
toolz	0.7.0	BSD	True
tornado	4.0.2	Apache	True
twisted	14.0.2	MIT	False

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Table 3 – continued from previous page

ujson	1.33	BSD	True
unixodbc <small>Linux</small>	2.3.1	???	False
util-linux <small>Linux</small>	2.21	GPL	True
venusian	1.0	BSD	False
w3lib	1.8.1	BSD	False
werkzeug	0.9.6	BSD	True
whoosh	2.5.7	BSD	False
xlrd	0.9.3	BSD	True
xlswriter	0.5.7	BSD	True
xz <small>Linux Mac</small>	5.0.5	Public Domain and GPL	True
yaml <small>Linux Mac</small>	0.1.4	MIT	True
zeromq <small>Linux Mac</small>	4.0.4	LGPL	True
zlib <small>Linux Mac</small>	1.2.7	zlib	True
zope.interface	4.1.1	Zope Public License	False

### Packages included in Anaconda 2.1.0 for Python version 3.3

Python version: 3.3

Number of supported packages: 167

Name	Version	License	In Installer
abstract-rendering <small>Linux Mac</small>	0.5.1	3rd-clause BSD	False
argcomplete	0.8.1	Apache Software License	False
astroid	1.2.1	LGPL	False
astropy	0.4.2	BSD	False
basemap <small>Linux Mac</small>	1.0.7	PSF	False
bcolz	0.7.1	BSD	False
beautiful-soup	4.3.2	PSF/MIT	False
binstar	0.7.1	BSD	False
biopython	1.64	BSD-like	False
bitarray	0.8.1	PSF	False
blaze	0.6.3	BSD	False
blist	1.3.6	BSD	False
blz	0.6.2	BSD	False
bokeh	0.6.1	New BSD	False
boto	2.32.1	MIT	False
bsdiff4	1.1.4	BSD	False
cff	0.8.6	MIT	False
chameleon	2.16	BSD-like	False
chrpath <small>Linux</small>	0.13	GPL	False
colorama	0.3.1	BSD	False
conda	3.7.0	BSD	False
conda-api	1.1.0	BSD	False
conda-build	1.8.2	BSD	False
configobj	5.0.6	BSD	False
coverage	3.7.1	BSD	False
cryptography	0.5.4	Apache 2.0	False
cssselect <small>Linux Mac</small>	0.9.1	BSD	False

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Table 4 – continued from previous page

curl <sup>Linux Mac</sup>	7.38.0	MIT/X derivative	False
cython	0.21	Apache 2.0	False
cytoolz	0.7.0	BSD	False
datashape	0.3.0	BSD	False
dateutil	2.1	BSD	False
decorator	3.4.0	BSD	False
django	1.7	BSD	False
docutils	0.12	Public-Domain, PSF, 2-clause BSD, GPL3	False
dynd-python	0.6.5	BSD	False
ecdsa	0.11	MIT	False
ephem	3.7.5.3	LGPL	False
feedparser	5.1.3	MIT	False
fiona	1.1.6	BSD	False
flake8	2.2.3	MIT	False
flask	0.10.1	BSD	False
freetype <sup>Linux Mac</sup>	2.4.10	FreeType License	False
future	0.13.1	MIT	False
futures	2.1.6	BSD	False
gdal	1.11.0	MIT	False
gensim	0.10.2	LGPL	False
geos <sup>Linux Mac</sup>	3.3.3	LGPL	False
greenlet	0.4.4	MIT	False
gunicorn <sup>Linux Mac</sup>	19.1.0	MIT	False
h5py	2.3.1	New BSD	False
hdf5 <sup>Linux Mac</sup>	1.8.13	BSD-style	False
html5lib	0.999	MIT	False
ipython	2.2.0	BSD	False
itsdangerous	0.24	BSD License	False
jdcal	1.0	BSD	False
jinja2	2.7.3	BSD	False
jpeg <sup>Linux Mac</sup>	8d	Custom free software license	False
libdynd <sup>Linux Mac</sup>	0.6.5	BSD	False
libffi <sup>Linux</sup>	3.0.13	MIT	False
libnetcdf <sup>Linux Mac</sup>	4.3.2	MIT	False
libpng <sup>Linux Mac</sup>	1.5.13	Open Source	False
libsodium <sup>Linux Mac</sup>	0.4.5	MIT	False
libtiff <sup>Linux Mac</sup>	4.0.2	as-is	False
libxml2 <sup>Linux Mac</sup>	2.9.0	MIT	False
libxslt <sup>Linux Mac</sup>	1.1.28	MIT	False
llvm <sup>Linux Mac</sup>	3.3	Open Source	False
llvmpy	0.12.7	New BSD License	False
logilab-common	0.62.1	LGPL	False
lxml	3.4.0	BSD	False
markdown <sup>Linux Mac</sup>	2.5	BSD	False
markupsafe	0.23	BSD	False
mathjax	2.2	Apache	False
matplotlib	1.4.0	PSF-based	False
mccabe	0.2.1	Expat	False
mdp	3.3	BSD	False
mingw <sup>Windows</sup>	4.7	GPL	False

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Table 4 – continued from previous page

mock	1.0.1	BSD	False
multimethods	1.0.0	MIT	False
multipledispatch	0.4.7	BSD	False
natsort	3.5.0	MIT	False
netcdf4	1.1.1	MIT	False
networkx	1.9.1	BSD	False
nlTK	3.0.0	Apache 2.0	False
nose	1.3.4	LGPL	False
numba	0.14.0	numba license	False
numexpr	2.3.1	MIT	False
numpy	1.9.0	BSD	False
openpyxl	1.8.5	MIT/Expat	False
openssl <sup>Linux Mac</sup>	1.0.1h	<a href="#">Apache-style</a>	False
pandas	0.14.1	BSD	False
paramiko	1.14.1	LGPL	False
passlib	1.6.2	BSD	False
pastedeploy <sup>Linux Mac</sup>	1.5.2	MIT	False
patchelf <sup>Linux</sup>	0.6	GPL3	False
patsy	0.3.0	BSD License	False
pep8	1.5.7	MIT License	False
pillow <sup>Linux Mac</sup>	2.5.1	Standard PIL license	False
pip	1.5.6	MIT	False
ply	3.4	BSD	False
psutil	2.1.1	BSD	False
py	1.4.25	MIT	False
pyasn1 <sup>Linux</sup>	0.1.6	BSD	False
pycosat	0.6.1	MIT	False
pycparser	2.10	BSD	False
pycrypto	2.6.1	Public Domain	False
pycurl <sup>Linux Mac</sup>	7.19.5	LGPL and MIT/X	False
pyflakes	0.8.1	MIT	False
pygments	1.6	BSD	False
pylint	1.3.1	GPL	False
pymongo	2.7.2	Apache 2.0	False
pyodbc	3.0.7	MIT	False
pyopenssl	0.14	APL2	False
pyarsing	2.0.1	MIT	False
pyqt	4.10.4	GPL	False
pyreadline <sup>Windows</sup>	2.0	BSD	False
pyserial	2.7	PSF	False
pytables	3.1.1	BSD	False
pytest	2.6.3	MIT	False
python	3.3.5	PSF	False
pytz	2014.7	MIT	False
pywin32 <sup>Windows</sup>	219	PSF	False
pyyaml	3.11	MIT	False
pyzmq	14.3.1	LGPL and BSD	False
qt <sup>Linux Mac</sup>	4.8.5	LGPL	False
queuelib	1.2.2	BSD	False
readline <sup>Linux Mac</sup>	6.2	GPL 3	False

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Table 4 – continued from previous page

redis <small>Linux Mac</small>	2.6.9	3-clause BSD	False
redis-py <small>Linux Mac</small>	2.9.1	<a href="#">MIT</a>	False
reportlab	3.1.8	BSD	False
repoze.lru	0.6	BSD	False
requests	2.4.1	ISC	False
rope	0.9.4	GPL	False
runipy	0.1.1	BSD	False
scikit-bio <small>Linux Mac</small>	0.2.0	BSD	False
scikit-image	0.10.1	<a href="#">Modified BSD</a>	False
scikit-learn	0.15.2	3-clause BSD	False
scipy	0.14.0	BSD	False
setuptools	5.8	PSF or ZPL	False
shapely <small>Linux Mac</small>	1.4.1	BSD	False
sip <small>Linux Mac</small>	4.15.5	GPL	False
six	1.8.0	MIT	False
sockjs-tornado	1.0.1	MIT	False
sphinx	1.2.3	BSD	False
sqlalchemy	0.9.7	MIT	False
sqlite <small>Linux Mac</small>	3.8.4.1	<a href="#">Public Domain</a>	False
sqlparse	0.1.12	BSD	False
statsmodels	0.5.0	3-clause Modified BSD	False
sympy	0.7.5	New BSD	False
tk <small>Linux Mac</small>	8.5.15	BSD-style	False
toolz	0.7.0	BSD	False
tornado	4.0.2	Apache	False
twisted	14.0.2	MIT	False
ujson	1.33	BSD	False
unixodbc <small>Linux</small>	2.3.1	???	False
util-linux <small>Linux</small>	2.21	GPL	False
venusian	1.0	BSD	False
w3lib	1.8.1	BSD	False
werkzeug	0.9.6	BSD	False
whoosh	2.5.7	BSD	False
xlrd	0.9.3	BSD	False
xlsxwriter	0.5.7	BSD	False
xz <small>Linux Mac</small>	5.0.5	Public Domain and GPL	False
yaml <small>Linux Mac</small>	0.1.4	<a href="#">MIT</a>	False
zeromq <small>Linux Mac</small>	4.0.4	LGPL	False
zlib <small>Linux Mac</small>	1.2.7	<a href="#">zlib</a>	False
zope.interface	4.1.1	Zope Public License	False

## Packages included in Anaconda 2.1.0 for Python version 2.7

Python version: 2.7

Number of supported packages: 224

Name	Version	License	In Installer
abstract-rendering <small>Linux Mac</small>	0.5.1	3rd-clause BSD	True
apptools	4.2.1	BSD	False
argcomplete	0.8.1	Apache Software License	True
astroid	1.2.1	LGPL	False
astropy	0.4.2	BSD	True
atom	0.3.9	BSD	True
basemap	1.0.7	PSF	False
bcolz	0.7.1	BSD	False
beautiful-soup	4.3.2	PSF/MIT	True
binstar	0.7.1	BSD	True
biopython	1.64	BSD-like	False
bitarray	0.8.1	PSF	True
blaze	0.6.3	BSD	True
blist	1.3.6	BSD	False
blz	0.6.2	BSD	True
bokeh	0.6.1	New BSD	True
boto	2.32.1	MIT	True
bsddb <small>Linux Mac</small>	1.0	PSF	False
bsdiff4	1.1.4	BSD	False
cairo <small>Linux</small>	1.12.2	LGPL 2.1 and MPL 1.1	True
casuarious	1.1	LGPL	True
cdecimal	2.3	BSD	True
cff	0.8.6	MIT	True
chaco	4.4.1	BSD	True
chameleon	2.16	BSD-like	False
cheetah	2.4.4	MIT	False
chrpath <small>Linux</small>	0.13	GPL	False
colorama	0.3.1	BSD	True
conda	3.7.0	BSD	True
conda-api	1.1.0	BSD	False
conda-build	1.8.2	BSD	True
configobj	5.0.6	BSD	True
coverage	3.7.1	BSD	False
cryptography	0.5.4	Apache 2.0	True
cssselect	0.9.1	BSD	False
cubes	0.10.2	MIT	False
curl <small>Linux Mac</small>	7.38.0	MIT/X <small>derivate</small>	True
cython	0.21	Apache 2.0	True
cytoolz	0.7.0	BSD	True
datashape	0.3.0	BSD	True
dateutil	2.1	BSD	True
db <small>Linux Mac</small>	5.3.28	AGPLv3	False
decorator	3.4.0	BSD	True
django	1.7	BSD	False

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Table 5 – continued from previous page

dnspython	1.10.0	as-is	False
docutils	0.12	Public-Domain, PSF, 2-clause BSD, GPL3	True
dynd-python	0.6.5	BSD	True
ecdsa	0.11	MIT	False
enable	4.3.0	BSD	True
enaml	0.9.8	BSD	True
envisage	4.4.0	BSD	False
ephem	3.7.5.3	LGPL	False
faulthandler	2.3	BSD	False
feedparser	5.1.3	MIT	False
fiona	1.1.6	BSD	False
flake8	2.2.3	MIT	False
flask	0.10.1	BSD	True
freetype <small>Linux Mac</small>	2.4.10	FreeType License	True
future	0.13.1	MIT	True
futures	2.1.6	BSD	True
gdal	1.11.0	MIT	False
gdata	2.0.18	Apache 2.0	False
gensim	0.10.2	LGPL	False
geos <small>Linux Mac</small>	3.3.3	LGPL	False
gevent	1.0.1	MIT	True
gevent-websocket	0.9.3	Apache	True
googlecl	0.9.12	Apache 2.0	False
greenlet	0.4.4	MIT	True
grin	1.2.1	BSD	True
gunicorn <small>Linux Mac</small>	19.1.0	MIT	False
h5py	2.3.1	New BSD	True
hdf5 <small>Linux Mac</small>	1.8.13	BSD-style	True
html5lib	0.999	MIT	False
hyde <small>Linux Mac</small>	0.8.5	MIT	False
iopro	1.6.7	proprietary - Continuum Analytics, Inc.	False
ipython	2.2.0	BSD	True
itsdangerous	0.24	BSD License	True
jdcal	1.0	BSD	True
jinja2	2.7.3	BSD	True
jpeg <small>Linux Mac</small>	8d	Custom free software license	True
kiwisolver	0.1.3	BSD	True
launcher <small>Mac Windows</small>	1.0.0	proprietary - Continuum Analytics, Inc.	True
lcms <small>Linux Mac</small>	1.19	MIT	True
libdynd <small>Linux Mac</small>	0.6.5	BSD	True
libffi <small>Linux</small>	3.0.13	MIT	True
libnetcdf <small>Linux Mac</small>	4.3.2	MIT	False
libpng <small>Linux Mac</small>	1.5.13	Open Source	True
libsodium <small>Linux Mac</small>	0.4.5	MIT	True
libtiff <small>Linux Mac</small>	4.0.2	as-is	True
libxml2 <small>Linux Mac</small>	2.9.0	MIT	True
libxslt <small>Linux Mac</small>	1.1.28	MIT	True
llvm <small>Linux Mac</small>	3.3	Open Source	True
llvmpy	0.12.7	New BSD License	True
logilab-common	0.62.1	LGPL	False

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Table 5 – continued from previous page

lxml	3.4.0	BSD	True
markdown <sup>Linux Mac</sup>	2.5	BSD	False
markupsafe	0.23	BSD	True
mathjax	2.2	Apache	False
matplotlib	1.4.0	PSF-based	True
mayavi	4.3.1	BSD	False
mccabe	0.2.1	Expat	False
mdp	3.3	BSD	False
menuinst <sup>Windows</sup>	1.0.4	BDF	True
mercurial	3.1	GPLv2	False
mingw <sup>Windows</sup>	4.7	GPL	True
mock	1.0.1	BSD	True
mpi4py <sup>Linux</sup>	1.3	BSD	True
mpich2 <sup>Linux</sup>	1.4.1p1	mpich license	True
multimethods	1.0.0	MIT	False
multipledispatch	0.4.7	BSD	True
natsort	3.5.0	MIT	False
netcdf4	1.1.1	MIT	False
networkx	1.9.1	BSD	True
nlTK	3.0.0	Apache 2.0	True
node-webkit <sup>Mac Windows</sup>	0.10.1	MIT	True
nose	1.3.4	LGPL	True
numba	0.14.0	numba license	True
numexpr	2.3.1	MIT	True
numpy	1.9.0	BSD	True
numpydoc	0.4	BSD	False
openpyxl	1.8.5	MIT/Expat	True
openssl <sup>Linux Mac</sup>	1.0.1h	Apache-style	True
pandas	0.14.1	BSD	True
pandasql	0.6.1	BSD	False
paramiko	1.14.1	LGPL	False
passlib	1.6.2	BSD	False
pastedeploy <sup>Linux Mac</sup>	1.5.2	MIT	False
patchelf <sup>Linux</sup>	0.6	GPL3	False
patsy	0.3.0	BSD License	True
pep381client	1.5	Academic Free License, version 3	False
pep8	1.5.7	MIT License	True
pil	1.1.7	PIL license	True
pillow <sup>Linux Mac</sup>	2.5.1	Standard PIL license	False
pip	1.5.6	MIT	True
pixmap <sup>Linux</sup>	0.26.2	MIT	True
ply	3.4	BSD	True
psutil	2.1.1	BSD	True
py	1.4.25	MIT	True
py2cairo <sup>Linux</sup>	1.10.0	LGPL 2.1 and MPL 1.1	True
pyasn1 <sup>Linux</sup>	0.1.6	BSD	False
pyaudio <sup>Mac</sup>	0.2.7	MIT	True
pycosat	0.6.1	MIT	True
pyparser	2.10	BSD	True
pycrypto	2.6.1	Public Domain	True

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Table 5 – continued from previous page

pycurl <sup>Linux Mac</sup>	7.19.5	LGPL and MIT/X	True
pyface	4.4.0	BSD	True
pyflakes	0.8.1	MIT	True
pygments	1.6	BSD	True
pylint	1.3.1	GPL	False
pymc <sup>Linux</sup>	2.3.3	Academic Free License	False
pymongo	2.7.2	Apache 2.0	False
pyodbc	3.0.7	MIT	False
pyopenssl	0.14	APL2	True
pyparsing	2.0.1	MIT	True
pyqt	4.10.4	GPL	True
pyreadline <sup>Windows</sup>	2.0	BSD	True
pysal	1.6.0	New BSD License	False
pysam <sup>Linux Mac</sup>	0.6	MIT	False
pyserial	2.7	PSF	False
pytables	3.1.1	BSD	True
pytest	2.6.3	MIT	True
python	2.7.8	PSF	True
pytz	2014.7	MIT	True
pywin32 <sup>Windows</sup>	219	PSF	True
pyyaml	3.11	MIT	True
pyzmq	14.3.1	LGPL and BSD	True
qt <sup>Linux Mac</sup>	4.8.5	LGPL	True
queuelib	1.2.2	BSD	False
readline <sup>Linux Mac</sup>	6.2	GPL 3	True
redis <sup>Linux Mac</sup>	2.6.9	3-clause BSD	True
redis-py <sup>Linux Mac</sup>	2.9.1	MIT	True
reportlab	3.1.8	BSD	False
repoze.lru	0.6	BSD	False
requests	2.4.1	ISC	True
rope	0.9.4	GPL	True
runipy	0.1.1	BSD	True
scikit-bio <sup>Linux Mac</sup>	0.2.0	BSD	False
scikit-image	0.10.1	Modified BSD	True
scikit-learn	0.15.2	3-clause BSD	True
scipy	0.14.0	BSD	True
scrapy	0.24.4	BSD	False
setuptools	5.8	PSF or ZPL	True
shapely <sup>Linux Mac</sup>	1.4.1	BSD	False
sip <sup>Linux Mac</sup>	4.15.5	GPL	True
six	1.8.0	MIT	True
sockjs-tornado	1.0.1	MIT	True
sphinx	1.2.3	BSD	True
spyder	2.3.1	MIT	True
sqlalchemy	0.9.7	MIT	True
sqlite <sup>Linux Mac</sup>	3.8.4.1	Public Domain	True
sqlparse	0.1.12	BSD	False
ssh	1.8.0	LGPL	False
ssl_match_hostname	3.4.0.2	PSF	True
starcluster <sup>Linux</sup>	0.93.3	LGPL	False

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Table 5 – continued from previous page

statsmodels	0.5.0	3-clause Modified BSD	True
sympy	0.7.5	New BSD	True
theano <sup>Linux</sup>	0.6.0	BSD	True
tk <sup>Linux Mac</sup>	8.5.15	BSD-style	True
toolz	0.7.0	BSD	True
tornado	4.0.2	Apache	True
traits	4.4.0	BSD	True
traitsui	4.4.0	BSD	True
twisted	14.0.2	MIT	False
ujson	1.33	BSD	True
unicodcsv	0.9.4	BSD	True
unixodbc <sup>Linux</sup>	2.3.1	???	False
util-linux <sup>Linux</sup>	2.21	GPL	True
uuid	1.30	???	False
venusian	1.0	BSD	False
vtk	5.10.1	BSD	False
w3lib	1.8.1	BSD	False
werkzeug	0.9.6	BSD	True
whoosh	2.5.7	BSD	False
workerpool <sup>Linux</sup>	0.9.2	MIT	False
xlrd	0.9.3	BSD	True
xlsxwriter	0.5.7	BSD	True
xlutils	1.7.1	MIT	False
xlwings <sup>Windows</sup>	0.2.2	BSD 3-clause	True
xlwt	0.7.5	BSD	True
yaml <sup>Linux Mac</sup>	0.1.4	MIT	True
yt <sup>Linux Mac</sup>	3.0.1	BSD	False
zeromq <sup>Linux Mac</sup>	4.0.4	LGPL	True
zlib <sup>Linux Mac</sup>	1.2.7	zlib	True
zope.interface	4.1.1	Zope Public License	False

## Packages included in Anaconda 2.1.0 for Python version 2.6

Python version: 2.6

Number of supported packages: 194

Name	Version	License	In Installer
abstract-rendering <sup>Linux Mac</sup>	0.5.1	3rd-clause BSD	False
argcomplete	0.8.1	Apache Software License	False
argparse	1.2.1	PSF	False
astroid	1.2.1	LGPL	False
astropy	0.4.2	BSD	False
atom	0.3.9	BSD	False
basemap <sup>Linux Mac</sup>	1.0.7	PSF	False
bcolz	0.7.1	BSD	False
beautiful-soup	4.3.2	PSF/MIT	False
biopython	1.64	BSD-like	False
bitarray	0.8.1	PSF	False

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Table 6 – continued from previous page

blaze <sup>Linux Mac</sup>	0.6.3	BSD	False
blist	1.3.6	BSD	False
blz	0.6.2	BSD	False
boto	2.32.1	MIT	False
bsddb <sup>Linux Mac</sup>	1.0	PSF	False
bsdiff4	1.1.4	BSD	False
cairo <sup>Linux</sup>	1.12.2	LGPL 2.1 and MPL 1.1	False
casuarious	1.1	LGPL	False
cdecimal	2.3	BSD	False
cff	0.8.6	MIT	False
chameleon	2.16	BSD-like	False
cheetah	2.4.4	MIT	False
chrpath <sup>Linux</sup>	0.13	GPL	False
colorama	0.3.1	BSD	False
conda-api	1.1.0	BSD	False
configobj	5.0.6	BSD	False
coverage	3.7.1	BSD	False
cryptography	0.5.4	Apache 2.0	False
cssselect	0.9.1	BSD	False
curl <sup>Linux Mac</sup>	7.38.0	MIT/X derivate	False
cython	0.21	Apache 2.0	False
cytoolz	0.7.0	BSD	False
datashape	0.3.0	BSD	False
dateutil	2.1	BSD	False
db <sup>Linux Mac</sup>	5.3.28	AGPLv3	False
decorator	3.4.0	BSD	False
dnspython	1.10.0	as-is	False
docutils	0.12	Public-Domain, PSF, 2-clause BSD, GPL3	False
dynd-python	0.6.5	BSD	False
ecdsa	0.11	MIT	False
ephem	3.7.5.3	LGPL	False
faulthandler	2.3	BSD	False
feedparser	5.1.3	MIT	False
flake8	2.2.3	MIT	False
flask	0.10.1	BSD	False
freetype <sup>Linux Mac</sup>	2.4.10	FreeType License	False
future	0.13.1	MIT	False
futures	2.1.6	BSD	False
gdal	1.11.0	MIT	False
gdata	2.0.18	Apache 2.0	False
gensim	0.10.2	LGPL	False
geos <sup>Linux Mac</sup>	3.3.3	LGPL	False
gevent	1.0.1	MIT	False
gevent-websocket	0.9.3	Apache	False
googlecl	0.9.12	Apache 2.0	False
greenlet	0.4.4	MIT	False
grin	1.2.1	BSD	False
unicorn <sup>Linux Mac</sup>	19.1.0	MIT	False
h5py	2.3.1	New BSD	False
hdf5 <sup>Linux Mac</sup>	1.8.13	BSD-style	False

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Table 6 – continued from previous page

html5lib	0.999	MIT	False
iopro	1.6.7	proprietary - Continuum Analytics, Inc.	False
itsdangerous	0.24	BSD License	False
jdcal	1.0	BSD	False
jinja2	2.7.3	BSD	False
jpeg <sup>Linux Mac</sup>	8d	Custom free software license	False
kiwisolver	0.1.3	BSD	False
lcms <sup>Linux Mac</sup>	1.19	MIT	False
libdynd <sup>Linux Mac</sup>	0.6.5	BSD	False
libffi <sup>Linux</sup>	3.0.13	MIT	False
libnetcdf <sup>Linux Mac</sup>	4.3.2	MIT	False
libpng <sup>Linux Mac</sup>	1.5.13	Open Source	False
libsodium <sup>Linux Mac</sup>	0.4.5	MIT	False
libtiff <sup>Linux Mac</sup>	4.0.2	as-is	False
libxml2 <sup>Linux Mac</sup>	2.9.0	MIT	False
libxslt <sup>Linux Mac</sup>	1.1.28	MIT	False
llvm <sup>Linux Mac</sup>	3.3	Open Source	False
llvmpy	0.12.7	New BSD License	False
logilab-common	0.62.1	LGPL	False
lxml	3.4.0	BSD	False
markupsafe	0.23	BSD	False
mathjax	2.2	Apache	False
matplotlib	1.4.0	PSF-based	False
mccabe	0.2.1	Expat	False
mdp	3.3	BSD	False
mercurial	3.1	GPLv2	False
mingw <sup>Windows</sup>	4.7	GPL	False
mock	1.0.1	BSD	False
mpi4py <sup>Linux</sup>	1.3	BSD	False
mpich2 <sup>Linux</sup>	1.4.1p1	mpich license	False
multimethods	1.0.0	MIT	False
multipledispatch	0.4.7	BSD	False
natsort	3.5.0	MIT	False
netcdf4	1.1.1	MIT	False
networkx	1.9.1	BSD	False
nltk	3.0.0	Apache 2.0	False
nose	1.3.4	LGPL	False
numba	0.14.0	numba license	False
numexpr	2.3.1	MIT	False
numpy	1.9.0	BSD	False
numpydoc	0.4	BSD	False
openssl <sup>Linux Mac</sup>	1.0.1h	Apache-style	False
ordereddict	1.1	MIT	False
pandas	0.14.1	BSD	False
pandasql	0.6.1	BSD	False
paramiko	1.14.1	LGPL	False
passlib	1.6.2	BSD	False
pastedeploy <sup>Linux Mac</sup>	1.5.2	MIT	False
patchelf <sup>Linux</sup>	0.6	GPL3	False
patsy	0.3.0	BSD License	False

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Table 6 – continued from previous page

pep381client	1.5	Academic Free License, version 3	False
pep8	1.5.7	MIT License	False
pil	1.1.7	<a href="#">PIL license</a>	False
pillow <sup>Linux Mac</sup>	2.5.1	Standard PIL license	False
pip	1.5.6	MIT	False
pixman <sup>Linux</sup>	0.26.2	MIT	False
ply	3.4	BSD	False
psutil	2.1.1	BSD	False
py	1.4.25	MIT	False
py2cairo <sup>Linux</sup>	1.10.0	LGPL 2.1 and MPL 1.1	False
pyasn1 <sup>Linux</sup>	0.1.6	BSD	False
pycosat	0.6.1	MIT	False
pyparser	2.10	BSD	False
pycrypto	2.6.1	Public Domain	False
pycurl <sup>Linux Mac</sup>	7.19.5	LGPL and MIT/X	False
pyflakes	0.8.1	MIT	False
pygments	1.6	BSD	False
pylint	1.3.1	GPL	False
pymc <sup>Linux</sup>	2.3.3	<a href="#">Academic Free License</a>	False
pymongo	2.7.2	Apache 2.0	False
pyodbc	3.0.7	MIT	False
pyopenssl	0.14	APL2	False
pyparsing	2.0.1	MIT	False
pyqt	4.10.4	GPL	False
pyreadline <sup>Windows</sup>	2.0	BSD	False
pysam <sup>Linux Mac</sup>	0.6	MIT	False
pyserial	2.7	PSF	False
pytables <sup>Linux Mac</sup>	3.1.1	BSD	False
pytest	2.6.3	MIT	False
python	2.6.9	PSF	False
pytz	2014.7	MIT	False
pywin32 <sup>Windows</sup>	219	PSF	False
pyyaml	3.11	MIT	False
pyzmq	14.3.1	LGPL and BSD	False
qt <sup>Linux Mac</sup>	4.8.5	LGPL	False
queuelib	1.2.2	BSD	False
readline <sup>Linux Mac</sup>	6.2	GPL 3	False
redis <sup>Linux Mac</sup>	2.6.9	3-clause BSD	False
redis-py <sup>Linux Mac</sup>	2.9.1	<a href="#">MIT</a>	False
repoze.lru	0.6	BSD	False
requests	2.4.1	ISC	False
rope	0.9.4	GPL	False
scikit-image	0.10.1	<a href="#">Modified BSD</a>	False
scikit-learn	0.15.2	3-clause BSD	False
scipy	0.14.0	BSD	False
setuptools	5.8	PSF or ZPL	False
shapely <sup>Linux Mac</sup>	1.4.1	BSD	False
sip <sup>Linux Mac</sup>	4.15.5	GPL	False
six	1.8.0	MIT	False
sockjs-tornado	1.0.1	MIT	False

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Table 6 – continued from previous page

sphinx	1.2.3	BSD	False
sqlalchemy	0.9.7	MIT	False
sqlite <sup>Linux Mac</sup>	3.8.4.1	Public Domain	False
sqlparse	0.1.12	BSD	False
ssh	1.8.0	LGPL	False
ssl_match_hostname	3.4.0.2	PSF	False
starcluster <sup>Linux</sup>	0.93.3	LGPL	False
statsmodels	0.5.0	3-clause Modified BSD	False
sympy	0.7.5	New BSD	False
theano <sup>Linux</sup>	0.6.0	BSD	False
tk <sup>Linux Mac</sup>	8.5.15	BSD-style	False
toolz	0.7.0	BSD	False
tornado	4.0.2	Apache	False
traits	4.4.0	BSD	False
twisted	14.0.2	MIT	False
ujson	1.33	BSD	False
unicodcsv	0.9.4	BSD	False
unittest2	0.5.1	BSD	False
unixodbc <sup>Linux</sup>	2.3.1	???	False
util-linux <sup>Linux</sup>	2.21	GPL	False
uuid	1.30	???	False
venusian	1.0	BSD	False
werkzeug	0.9.6	BSD	False
whoosh	2.5.7	BSD	False
workerpool <sup>Linux</sup>	0.9.2	MIT	False
xlrd	0.9.3	BSD	False
xlswriter	0.5.7	BSD	False
xlutils	1.7.1	MIT	False
xlwt	0.7.5	BSD	False
yaml <sup>Linux Mac</sup>	0.1.4	MIT	False
zeromq <sup>Linux Mac</sup>	4.0.4	LGPL	False
zlib <sup>Linux Mac</sup>	1.2.7	zlib	False
zope.interface	4.1.1	Zope Public License	False

## Packages included in Anaconda 2.0.1 for Python version 3.4

Python version: 3.4

Number of supported packages: 141

Name	Version	License	In Installer
argcomplete	0.6.7	Apache Software License	True
astroid	1.1.1	LGPL	False
astropy	0.3.2	BSD	True
basemap <sup>Linux Mac</sup>	1.0.7	PSF	False
beautiful-soup	4.3.1	PSF/MIT	True
binstar	0.5.3	BSD	True
biopython	1.63	BSD-like	False
bitarray	0.8.1	PSF	True

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Table 7 – continued from previous page

blaze	0.5.0	BSD	True
blist	1.3.6	BSD	False
blz	0.6.2	BSD	True
bokeh	0.4.4	New BSD	True
bsdiff4	1.1.4	BSD	False
cdecimal	2.3	BSD	True
cffi <sup>Linux</sup>	0.8.2	MIT	False
chrpath <sup>Linux</sup>	0.13	GPL	False
colorama	0.2.7	BSD	True
conda	3.5.5	BSD	True
conda-api	1.1.0	BSD	False
conda-build	1.3.5	BSD	True
configobj	5.0.5	BSD	True
coverage	3.7.1	BSD	False
curl <sup>Linux Mac</sup>	7.30.0	MIT/X derivate	True
cython	0.20.1	Apache 2.0	True
datashape	0.2.0	BSD	True
dateutil	2.1	BSD	True
docutils	0.11	Public-Domain, PSF, 2-clause BSD, GPL3	True
dynd-python	0.6.2	BSD	True
ecdsa	0.11	MIT	False
feedparser	5.1.3	MIT	False
fiona	1.1.4	BSD	False
flake8	2.1.0	MIT	False
flask	0.10.1	BSD	True
freetype <sup>Linux Mac</sup>	2.4.10	FreeType License	True
future	0.12.1	MIT	True
futures	2.1.6	BSD	False
gdal	1.10.1	MIT	False
geos <sup>Linux Mac</sup>	3.3.3	LGPL	False
greenlet	0.4.2	MIT	True
gunicorn <sup>Linux Mac</sup>	18.0	MIT	False
h5py	2.3.0	New BSD	True
hdf5 <sup>Linux Mac</sup>	1.8.9	BSD-style	True
html5lib	0.999	MIT	False
ipython	2.1.0	BSD	True
itsdangerous	0.24	BSD License	True
jdcal	1.0	BSD	True
jinja2	2.7.2	BSD	True
jpeg <sup>Linux Mac</sup>	8d	Custom free software license	True
libdynd <sup>Linux Mac</sup>	0.6.2	BSD	True
libffi <sup>Linux</sup>	3.0.13	MIT	False
libnetcdf <sup>Linux Mac</sup>	4.2.1.1	MIT	False
libpng <sup>Linux Mac</sup>	1.5.13	Open Source	True
libsodium <sup>Linux Mac</sup>	0.4.5	MIT	True
libtiff <sup>Linux Mac</sup>	4.0.2	as-is	True
libxml2 <sup>Linux Mac</sup>	2.9.0	MIT	True
libxslt <sup>Linux Mac</sup>	1.1.28	MIT	True
llvm <sup>Linux Mac</sup>	3.3	Open Source	True
llvmpy	0.12.6	New BSD License	True

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Table 7 – continued from previous page

logilab-common	0.61.0	LGPL	False
lxml	3.3.5	BSD	True
markdown <sup>Linux Mac</sup>	2.4	BSD	False
markupsafe	0.18	BSD	True
mathjax	2.2	Apache	False
matplotlib	1.3.1	PSF-based	True
mccabe	0.2.1	Expat	False
mdp	3.3	BSD	False
menuinst <sup>Windows</sup>	1.0.3	BDF	True
mingw <sup>Windows</sup>	4.7	GPL	True
mock	1.0.1	BSD	True
multipledispatch	0.4.3	BSD	True
netcdf4	1.0.8	MIT	False
networkx	1.8.1	BSD	True
nose	1.3.3	LGPL	True
numba	0.13.2	numba license	True
numexpr	2.3.1	MIT	True
numpy	1.8.1	BSD	True
openpyxl	1.8.5	MIT/Expat	True
openssl <sup>Linux Mac</sup>	1.0.1h	Apache-style	True
pandas	0.14.0	BSD	True
pandasql	0.4.2	BSD	False
paramiko <sup>Linux Mac</sup>	1.14.0	LGPL	False
pastedeploy <sup>Linux Mac</sup>	1.5.2	MIT	False
patchelf <sup>Linux</sup>	0.6	GPL3	False
patsy	0.2.1	BSD License	True
pep8	1.5.6	MIT License	False
pillow <sup>Linux Mac</sup>	2.4.0	Standard PIL license	True
pip	1.5.6	MIT	True
ply	3.4	BSD	True
psutil	2.1.1	BSD	True
py	1.4.20	MIT	True
pyasn1 <sup>Linux</sup>	0.1.6	BSD	False
pycosat	0.6.1	MIT	True
pycparser	2.10	BSD	True
pycrypto	2.6.1	Public Domain	True
pyflakes	0.8.1	MIT	True
pygments	1.6	BSD	True
pylint	1.2.1	GPL	False
pyodbc	3.0.7	MIT	False
pyparsing	2.0.1	MIT	True
pyqt	4.10.4	GPL	True
pyreadline <sup>Windows</sup>	2.0	BSD	True
pytables	3.1.1	BSD	True
pytest	2.5.2	MIT	True
python	3.4.1	PSF	True
pytz	2014.3	MIT	True
pyyaml	3.11	MIT	True
pyzmq	14.3.0	LGPL and BSD	True
qt <sup>Linux Mac</sup>	4.8.5	LGPL	True

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Table 7 – continued from previous page

readline <small>Linux Mac</small>	6.2	GPL 3	True
redis <small>Linux Mac</small>	2.6.9	3-clause BSD	True
redis-py <small>Linux Mac</small>	2.9.1	MIT	True
reportlab	3.1.8	BSD	False
requests	2.3.0	ISC	True
rope	0.9.4	GPL	True
runipy	0.1.0	BSD	True
scikit-image	0.10.0	Modified BSD	True
scipy	0.14.0	BSD	True
setuptools	3.6	PSF or ZPL	True
shapely <small>Linux Mac</small>	1.3.2	BSD	False
sip <small>Linux Mac</small>	4.15.5	GPL	True
six	1.6.1	MIT	True
sphinx	1.2.2	BSD	True
spyder	2.3.0rc1	MIT	True
sqlalchemy	0.9.4	MIT	True
sqlite <small>Linux Mac</small>	3.8.4.1	Public Domain	True
sqlparse	0.1.11	BSD	False
ssl_match_hostname	3.4.0.2	PSF	True
sympy	0.7.5	New BSD	True
tk <small>Linux Mac</small>	8.5.15	BSD-style	True
tornado	3.2.1	Apache	True
ujson	1.33	BSD	True
unixodbc <small>Linux</small>	2.3.1	???	False
util-linux <small>Linux</small>	2.21	GPL	True
werkzeug	0.9.6	BSD	True
whoosh	2.5.7	BSD	False
xlrd	0.9.3	BSD	True
xlsxwriter	0.5.5	BSD	True
yaml <small>Linux Mac</small>	0.1.4	MIT	True
zeromq <small>Linux Mac</small>	4.0.4	LGPL	True
zlib <small>Linux Mac</small>	1.2.7	zlib	True
zope.interface	4.1.1	Zope Public License	False

## Packages included in Anaconda 2.0.1 for Python version 3.3

Python version: 3.3

Number of supported packages: 141

Name	Version	License	In Installer
argcomplete	0.6.7	Apache Software License	False
astroid	1.1.1	LGPL	False
astropy	0.3.2	BSD	False
basemap <small>Linux Mac</small>	1.0.7	PSF	False
beautiful-soup	4.3.1	PSF/MIT	False
binstar	0.5.3	BSD	False
biopython	1.63	BSD-like	False
bitarray	0.8.1	PSF	False

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Table 8 – continued from previous page

blaze	0.5.0	BSD	False
blist	1.3.6	BSD	False
blz	0.6.2	BSD	False
bokeh	0.4.4	New BSD	False
bsdiff4	1.1.4	BSD	False
cdecimal	2.3	BSD	False
cffi <sup>Linux</sup>	0.8.2	MIT	False
chrpath <sup>Linux</sup>	0.13	GPL	False
colorama	0.2.7	BSD	False
conda	3.5.5	BSD	False
conda-api	1.1.0	BSD	False
conda-build	1.3.5	BSD	False
configobj	5.0.5	BSD	False
coverage	3.7.1	BSD	False
curl <sup>Linux Mac</sup>	7.30.0	MIT/X derivate	False
cython	0.20.1	Apache 2.0	False
datashape	0.2.0	BSD	False
dateutil	2.1	BSD	False
docutils	0.11	Public-Domain, PSF, 2-clause BSD, GPL3	False
dynd-python	0.6.2	BSD	False
ecdsa	0.11	MIT	False
feedparser	5.1.3	MIT	False
fiona	1.1.4	BSD	False
flake8	2.1.0	MIT	False
flask	0.10.1	BSD	False
freetype <sup>Linux Mac</sup>	2.4.10	FreeType License	False
future	0.12.1	MIT	False
futures	2.1.6	BSD	False
gdal	1.10.1	MIT	False
geos <sup>Linux Mac</sup>	3.3.3	LGPL	False
greenlet	0.4.2	MIT	False
gunicorn <sup>Linux Mac</sup>	18.0	MIT	False
h5py	2.3.0	New BSD	False
hdf5 <sup>Linux Mac</sup>	1.8.9	BSD-style	False
html5lib	0.999	MIT	False
ipython	2.1.0	BSD	False
itsdangerous	0.24	BSD License	False
jdcal	1.0	BSD	False
jinja2	2.7.2	BSD	False
jpeg <sup>Linux Mac</sup>	8d	Custom free software license	False
libdynd <sup>Linux Mac</sup>	0.6.2	BSD	False
libffi <sup>Linux</sup>	3.0.13	MIT	False
libnetcdf <sup>Linux Mac</sup>	4.2.1.1	MIT	False
libpng <sup>Linux Mac</sup>	1.5.13	Open Source	False
libsodium <sup>Linux Mac</sup>	0.4.5	MIT	False
libtiff <sup>Linux Mac</sup>	4.0.2	as-is	False
libxml2 <sup>Linux Mac</sup>	2.9.0	MIT	False
libxslt <sup>Linux Mac</sup>	1.1.28	MIT	False
llvm <sup>Linux Mac</sup>	3.3	Open Source	False
llvmpy	0.12.6	New BSD License	False

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Table 8 – continued from previous page

logilab-common	0.61.0	LGPL	False
lxml	3.3.5	BSD	False
markdown <sup>Linux Mac</sup>	2.4	BSD	False
markupsafe	0.18	BSD	False
mathjax	2.2	Apache	False
matplotlib	1.3.1	PSF-based	False
mccabe	0.2.1	Expat	False
mdp	3.3	BSD	False
mingw <sup>Windows</sup>	4.7	GPL	False
mock	1.0.1	BSD	False
multipledispatch	0.4.3	BSD	False
netcdf4	1.0.8	MIT	False
networkx	1.8.1	BSD	False
nose	1.3.3	LGPL	False
numba	0.13.2	numba license	False
numexpr	2.3.1	MIT	False
numpy	1.8.1	BSD	False
openpyxl	1.8.5	MIT/Expat	False
openssl <sup>Linux Mac</sup>	1.0.1h	Apache-style	False
pandas	0.14.0	BSD	False
pandasql	0.4.2	BSD	False
paramiko <sup>Linux Mac</sup>	1.14.0	LGPL	False
pastedeploy <sup>Linux Mac</sup>	1.5.2	MIT	False
patchelf <sup>Linux</sup>	0.6	GPL3	False
patsy	0.2.1	BSD License	False
pep8	1.5.6	MIT License	False
pillow <sup>Linux Mac</sup>	2.4.0	Standard PIL license	False
pip	1.5.6	MIT	False
ply	3.4	BSD	False
psutil	2.1.1	BSD	False
py	1.4.20	MIT	False
pyasn1 <sup>Linux</sup>	0.1.6	BSD	False
pycosat	0.6.1	MIT	False
pycparser	2.10	BSD	False
pycrypto	2.6.1	Public Domain	False
pyflakes	0.8.1	MIT	False
pygments	1.6	BSD	False
pylint	1.2.1	GPL	False
pyodbc	3.0.7	MIT	False
pyparsing	2.0.1	MIT	False
pyqt	4.10.4	GPL	False
pyreadline <sup>Windows</sup>	2.0	BSD	False
pytables	3.1.1	BSD	False
pytest	2.5.2	MIT	False
python	3.3.5	PSF	False
pytz	2014.3	MIT	False
pyyaml	3.11	MIT	False
pyzmq	14.3.0	LGPL and BSD	False
qt <sup>Linux Mac</sup>	4.8.5	LGPL	False
readline <sup>Linux Mac</sup>	6.2	GPL 3	False

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Table 8 – continued from previous page

redis <sup>Linux Mac</sup>	2.6.9	3-clause BSD	False
redis-py <sup>Linux Mac</sup>	2.9.1	MIT	False
reportlab	3.1.8	BSD	False
requests	2.3.0	ISC	False
rope	0.9.4	GPL	False
runipy	0.1.0	BSD	False
scikit-image	0.10.0	Modified BSD	False
scikit-learn	0.14.1	3-clause BSD	False
scipy	0.14.0	BSD	False
setuptools	3.6	PSF or ZPL	False
shapely <sup>Linux Mac</sup>	1.3.2	BSD	False
sip <sup>Linux Mac</sup>	4.15.5	GPL	False
six	1.6.1	MIT	False
sphinx	1.2.2	BSD	False
sqlalchemy	0.9.4	MIT	False
sqlite <sup>Linux Mac</sup>	3.8.4.1	Public Domain	False
sqlparse	0.1.11	BSD	False
ssl_match_hostname	3.4.0.2	PSF	False
statsmodels	0.5.0	3-clause Modified BSD	False
sympy	0.7.5	New BSD	False
tk <sup>Linux Mac</sup>	8.5.15	BSD-style	False
tornado	3.2.1	Apache	False
ujson	1.33	BSD	False
unixodbc <sup>Linux</sup>	2.3.1	???	False
util-linux <sup>Linux</sup>	2.21	GPL	False
werkzeug	0.9.6	BSD	False
whoosh	2.5.7	BSD	False
xlrd	0.9.3	BSD	False
xlsxwriter	0.5.5	BSD	False
yaml <sup>Linux Mac</sup>	0.1.4	MIT	False
zeromq <sup>Linux Mac</sup>	4.0.4	LGPL	False
zlib <sup>Linux Mac</sup>	1.2.7	zlib	False
zope.interface	4.1.1	Zope Public License	False

## Packages included in Anaconda 2.0.1 for Python version 2.7

Python version: 2.7

Number of supported packages: 197

Name	Version	License	In Installer
apptools	4.2.1	BSD	False
argcomplete	0.6.7	Apache Software License	True
astroid	1.1.1	LGPL	False
astropy	0.3.2	BSD	True
atom	0.3.7	BSD	True
basemap	1.0.7	PSF	False
beautiful-soup	4.3.1	PSF/MIT	True
binstar	0.5.3	BSD	True

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Table 9 – continued from previous page

biopython	1.63	BSD-like	False
bitarray	0.8.1	PSF	True
blaze	0.5.0	BSD	True
blist	1.3.6	BSD	False
blz	0.6.2	BSD	True
bokeh	0.4.4	New BSD	True
boto	2.28.0	MIT	True
bsdiff4	1.1.4	BSD	False
cairo <sup>Linux</sup>	1.12.2	LGPL 2.1 and MPL 1.1	True
casuarious	1.1	LGPL	True
cdecimal	2.3	BSD	True
cffi <sup>Linux Mac</sup>	0.8.2	MIT	False
chaco	4.4.1	BSD	True
cheetah	2.4.4	MIT	False
chrpath <sup>Linux</sup>	0.13	GPL	False
colorama	0.2.7	BSD	True
conda	3.5.5	BSD	True
conda-api	1.1.0	BSD	False
conda-build	1.3.5	BSD	True
configobj	5.0.5	BSD	True
coverage	3.7.1	BSD	False
cubes	0.10.2	MIT	True
curl <sup>Linux Mac</sup>	7.30.0	MIT/X derivate	True
cython	0.20.1	Apache 2.0	True
datashape	0.2.0	BSD	True
dateutil	2.1	BSD	True
decorator	3.4.0	BSD	False
distribute <sup>Linux Mac</sup>	0.6.45	PSF or ZPL	False
dnspython	1.10.0	as-is	False
docutils	0.11	Public-Domain, PSF, 2-clause BSD, GPL3	True
dynd-python	0.6.2	BSD	True
ecdsa	0.11	MIT	False
enable	4.3.0	BSD	True
enaml	0.9.1	BSD	True
envisage	4.4.0	BSD	False
faulthandler	2.3	BSD	False
feedparser	5.1.3	MIT	False
fiona	1.1.4	BSD	False
flake8	2.1.0	MIT	False
flask	0.10.1	BSD	True
freetype <sup>Linux Mac</sup>	2.4.10	FreeType License	True
future	0.12.1	MIT	True
futures	2.1.6	BSD	False
gdal	1.10.1	MIT	False
gdata	2.0.18	Apache 2.0	False
geos <sup>Linux Mac</sup>	3.3.3	LGPL	False
gevent	1.0.1	MIT	True
gevent-websocket	0.9.3	Apache	True
googlecl	0.9.12	Apache 2.0	False
greenlet	0.4.2	MIT	True

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Table 9 – continued from previous page

grin	1.2.1	BSD	True
unicorn <small>Linux Mac</small>	18.0	MIT	False
h5py	2.3.0	New BSD	True
hdf5 <small>Linux Mac</small>	1.8.9	BSD-style	True
html5lib	0.999	MIT	False
hyde <small>Linux Mac</small>	0.8.5	MIT	False
iopro	1.6.5	proprietary - Continuum Analytics, Inc.	False
ipython	2.1.0	BSD	True
itsdangerous	0.24	BSD License	True
jdcal	1.0	BSD	True
jinja2	2.7.2	BSD	True
jpeg <small>Linux Mac</small>	8d	Custom free software license	True
keyring	3.7	PSF	False
kiwisolver	0.1.2	BSD	True
launcher	0.1.5	proprietary - Continuum Analytics, Inc.	True
lcms <small>Linux Mac</small>	1.19	MIT	True
libdynd <small>Linux Mac</small>	0.6.2	BSD	True
libffi <small>Linux</small>	3.0.13	MIT	False
libnetcdf <small>Linux Mac</small>	4.2.1.1	MIT	False
libpng <small>Linux Mac</small>	1.5.13	Open Source	True
libsodium <small>Linux Mac</small>	0.4.5	MIT	True
libtiff <small>Linux Mac</small>	4.0.2	as-is	True
libxml2 <small>Linux Mac</small>	2.9.0	MIT	True
libxslt <small>Linux Mac</small>	1.1.28	MIT	True
llvm <small>Linux Mac</small>	3.3	Open Source	True
llvmpy	0.12.6	New BSD License	True
logilab-common	0.61.0	LGPL	False
lxml	3.3.5	BSD	True
markdown <small>Linux Mac</small>	2.4	BSD	False
markupsafe	0.18	BSD	True
mathjax	2.2	Apache	False
matplotlib	1.3.1	PSF-based	True
mayavi	4.3.1	BSD	False
mccabe	0.2.1	Expat	False
mdp	3.3	BSD	False
menuinst <small>Windows</small>	1.0.3	BDF	True
mercurial	3.0	GPLv2	False
mingw <small>Windows</small>	4.7	GPL	True
mock	1.0.1	BSD	True
mpi4py <small>Linux</small>	1.3	BSD	True
mpich2 <small>Linux</small>	1.4.1p1	mpich license	True
multipledispatch	0.4.3	BSD	True
netcdf4	1.0.8	MIT	False
networkx	1.8.1	BSD	True
nltk	2.0.4	Apache 2.0	True
nose	1.3.3	LGPL	True
numba	0.13.2	numba license	True
numexpr	2.3.1	MIT	True
numpy	1.8.1	BSD	True
numpydoc	0.4	BSD	False

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openpyxl	1.8.5	MIT/Expat	True
openssl <sup>Linux Mac</sup>	1.0.1h	<a href="#">Apache-style</a>	True
pandas	0.14.0	BSD	True
pandasql	0.4.2	BSD	False
paramiko	1.14.0	LGPL	False
pastedeploy <sup>Linux Mac</sup>	1.5.2	MIT	False
patchelf <sup>Linux</sup>	0.6	GPL3	False
patsy	0.2.1	BSD License	True
pep8	1.5.6	MIT License	True
pil	1.1.7	<a href="#">PIL license</a>	True
pillow <sup>Linux Mac</sup>	2.4.0	Standard PIL license	False
pip	1.5.6	MIT	True
pixmap <sup>Linux</sup>	0.26.2	MIT	True
ply	3.4	BSD	True
psutil	2.1.1	BSD	True
py	1.4.20	MIT	True
py2cairo <sup>Linux</sup>	1.10.0	LGPL 2.1 and MPL 1.1	True
pyasn1 <sup>Linux</sup>	0.1.6	BSD	False
pyaudio <sup>Mac</sup>	0.2.7	MIT	True
pycosat	0.6.1	MIT	True
pycparser	2.10	BSD	True
pycrypto	2.6.1	Public Domain	True
pycurl <sup>Linux Mac</sup>	7.19.3.1	LGPL and MIT/X	True
pyface	4.4.0	BSD	True
pyflakes	0.8.1	MIT	True
pygments	1.6	BSD	True
pylint	1.2.1	GPL	False
pymc <sup>Linux</sup>	2.3.2	<a href="#">Academic Free License</a>	False
pyodbc	3.0.7	MIT	False
yparsing	2.0.1	MIT	True
pyqt	4.10.4	GPL	True
pyreadline <sup>Windows</sup>	2.0	BSD	True
pysal	1.6.0	New BSD License	False
pysam <sup>Linux Mac</sup>	0.6	MIT	False
pytables	3.1.1	BSD	True
pytest	2.5.2	MIT	True
python	2.7.7	PSF	True
pytz	2014.3	MIT	True
pywin32 <sup>Windows</sup>	218.4	PSF	True
pyyaml	3.11	MIT	True
pyzmq	14.3.0	LGPL and BSD	True
qt <sup>Linux Mac</sup>	4.8.5	LGPL	True
readline <sup>Linux Mac</sup>	6.2	GPL 3	True
redis <sup>Linux Mac</sup>	2.6.9	3-clause BSD	True
redis-py <sup>Linux Mac</sup>	2.9.1	<a href="#">MIT</a>	True
reportlab	3.1.8	BSD	False
requests	2.3.0	ISC	True
rope	0.9.4	GPL	True
runipy	0.1.0	BSD	True
scikit-image	0.10.0	<a href="#">Modified BSD</a>	True

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Table 9 – continued from previous page

scikit-learn	0.14.1	3-clause BSD	True
scipy	0.14.0	BSD	True
setuptools	3.6	PSF or ZPL	True
shapely <sup>Linux Mac</sup>	1.3.2	BSD	False
sip <sup>Linux Mac</sup>	4.15.5	GPL	True
six	1.6.1	MIT	True
sphinx	1.2.2	BSD	True
spyder	2.3.0rc1	MIT	True
sqlalchemy	0.9.4	MIT	True
sqlite <sup>Linux Mac</sup>	3.8.4.1	Public Domain	True
sqlparse	0.1.11	BSD	False
ssh	1.8.0	LGPL	False
ssl_match_hostname	3.4.0.2	PSF	True
starcluster <sup>Linux</sup>	0.93.3	LGPL	False
statsmodels	0.5.0	3-clause Modified BSD	True
sympy	0.7.5	New BSD	True
theano <sup>Linux</sup>	0.6.0	BSD	True
tk <sup>Linux Mac</sup>	8.5.15	BSD-style	True
tornado	3.2.1	Apache	True
traits	4.4.0	BSD	True
traitsui	4.4.0	BSD	True
twisted	14.0.0	MIT	False
ujson	1.33	BSD	True
unixodbc <sup>Linux</sup>	2.3.1	???	False
util-linux <sup>Linux</sup>	2.21	GPL	True
vtk	5.10.1	BSD	False
w3lib	1.5	BSD	False
werkzeug	0.9.6	BSD	True
whoosh	2.5.7	BSD	False
workerpool <sup>Linux</sup>	0.9.2	MIT	False
xlrd	0.9.3	BSD	True
xlsxwriter	0.5.5	BSD	True
xlwings <sup>Windows</sup>	0.1.0	BSD 3-clause	True
xlwt	0.7.5	BSD	True
yaml <sup>Linux Mac</sup>	0.1.4	MIT	True
yt <sup>Linux Mac</sup>	2.6.2	BSD	False
zeromq <sup>Linux Mac</sup>	4.0.4	LGPL	True
zlib <sup>Linux Mac</sup>	1.2.7	zlib	True
zope.interface	4.1.1	Zope Public License	False

## Packages included in Anaconda 2.0.1 for Python version 2.6

Python version: 2.6

Number of supported packages: 171

Name	Version	License	In Installer
argcomplete	0.6.7	Apache Software License	False
argparse	1.2.1	PSF	False

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Table 10 – continued from previous page

astroid	1.1.1	LGPL	False
astropy	0.3.2	BSD	False
atom	0.3.7	BSD	False
basemap <sup>Linux Mac</sup>	1.0.7	PSF	False
beautiful-soup	4.3.1	PSF/MIT	False
biopython	1.63	BSD-like	False
bitarray	0.8.1	PSF	False
blaze <sup>Linux Mac</sup>	0.5.0	BSD	False
blist	1.3.6	BSD	False
blz	0.6.2	BSD	False
boto	2.28.0	MIT	False
bsdiff4	1.1.4	BSD	False
cairo <sup>Linux</sup>	1.12.2	LGPL 2.1 and MPL 1.1	False
casuarius	1.1	LGPL	False
cdecimal	2.3	BSD	False
cff <sup>Linux Mac</sup>	0.8.2	MIT	False
cheetah	2.4.4	MIT	False
chrpath <sup>Linux</sup>	0.13	GPL	False
colorama	0.2.7	BSD	False
conda-api	1.1.0	BSD	False
configobj	5.0.5	BSD	False
coverage	3.7.1	BSD	False
curl <sup>Linux Mac</sup>	7.30.0	MIT/X derivate	False
cython	0.20.1	Apache 2.0	False
datashape	0.2.0	BSD	False
dateutil	2.1	BSD	False
decorator	3.4.0	BSD	False
distribute <sup>Linux</sup>	0.6.45	PSF or ZPL	False
dnspython	1.10.0	as-is	False
docutils	0.11	Public-Domain, PSF, 2-clause BSD, GPL3	False
dynd-python	0.6.2	BSD	False
ecdsa	0.11	MIT	False
faulthandler	2.3	BSD	False
feedparser	5.1.3	MIT	False
flake8	2.1.0	MIT	False
flask	0.10.1	BSD	False
freetype <sup>Linux Mac</sup>	2.4.10	FreeType License	False
future	0.12.1	MIT	False
futures	2.1.6	BSD	False
gdal	1.10.1	MIT	False
gdata	2.0.18	Apache 2.0	False
geos <sup>Linux Mac</sup>	3.3.3	LGPL	False
gevent	1.0.1	MIT	False
gevent-websocket	0.9.3	Apache	False
googlecl	0.9.12	Apache 2.0	False
greenlet	0.4.2	MIT	False
grin	1.2.1	BSD	False
gunicorn <sup>Linux Mac</sup>	18.0	MIT	False
h5py	2.3.0	New BSD	False
hdf5 <sup>Linux Mac</sup>	1.8.9	BSD-style	False

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Table 10 – continued from previous page

html5lib	0.999	MIT	False
iopro	1.6.5	proprietary - Continuum Analytics, Inc.	False
itsdangerous	0.24	BSD License	False
jdcal	1.0	BSD	False
jinja2	2.7.2	BSD	False
jpeg <sup>Linux Mac</sup>	8d	Custom free software license	False
kiwisolver	0.1.2	BSD	False
lcms <sup>Linux Mac</sup>	1.19	MIT	False
libdynd <sup>Linux Mac</sup>	0.6.2	BSD	False
libffi <sup>Linux</sup>	3.0.13	MIT	False
libnetcdf <sup>Linux Mac</sup>	4.2.1.1	MIT	False
libpng <sup>Linux Mac</sup>	1.5.13	Open Source	False
libsodium <sup>Linux Mac</sup>	0.4.5	MIT	False
libtiff <sup>Linux Mac</sup>	4.0.2	as-is	False
libxml2 <sup>Linux Mac</sup>	2.9.0	MIT	False
libxslt <sup>Linux Mac</sup>	1.1.28	MIT	False
llvm <sup>Linux Mac</sup>	3.3	Open Source	False
llvmpy	0.12.6	New BSD License	False
logilab-common	0.61.0	LGPL	False
lxml	3.3.5	BSD	False
markdown <sup>Linux Mac</sup>	2.4	BSD	False
markupsafe	0.18	BSD	False
mathjax	2.2	Apache	False
matplotlib	1.3.1	PSF-based	False
mccabe	0.2.1	Expat	False
mdp	3.3	BSD	False
mercurial	3.0	GPLv2	False
mingw <sup>Windows</sup>	4.7	GPL	False
mock	1.0.1	BSD	False
mpi4py <sup>Linux</sup>	1.3	BSD	False
mpich2 <sup>Linux</sup>	1.4.1p1	mpich license	False
multipledispatch	0.4.3	BSD	False
netcdf4	1.0.8	MIT	False
networkx	1.8.1	BSD	False
nlTK	2.0.4	Apache 2.0	False
nose	1.3.3	LGPL	False
numba	0.13.2	numba license	False
numexpr	2.3.1	MIT	False
numpy	1.8.1	BSD	False
numpydoc	0.4	BSD	False
openssl <sup>Linux Mac</sup>	1.0.1h	Apache-style	False
ordereddict	1.1	MIT	False
pandas	0.14.0	BSD	False
pandasql	0.4.2	BSD	False
paramiko	1.14.0	LGPL	False
pastedeploy <sup>Linux Mac</sup>	1.5.2	MIT	False
patchelf <sup>Linux</sup>	0.6	GPL3	False
patsy	0.2.1	BSD License	False
pep8	1.5.6	MIT License	False
pil	1.1.7	PIL license	False

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Table 10 – continued from previous page

pillow <sup>Linux Mac</sup>	2.4.0	Standard PIL license	False
pip	1.5.6	MIT	False
pixmap <sup>Linux</sup>	0.26.2	MIT	False
ply	3.4	BSD	False
psutil	2.1.1	BSD	False
py	1.4.20	MIT	False
py2cairo <sup>Linux</sup>	1.10.0	LGPL 2.1 and MPL 1.1	False
pyasn1 <sup>Linux</sup>	0.1.6	BSD	False
pycosat	0.6.1	MIT	False
pycparser	2.10	BSD	False
pycrypto	2.6.1	Public Domain	False
pycurl <sup>Linux Mac</sup>	7.19.3.1	LGPL and MIT/X	False
pyflakes	0.8.1	MIT	False
pygments	1.6	BSD	False
pylint	1.2.1	GPL	False
pymc <sup>Linux</sup>	2.3.2	<a href="#">Academic Free License</a>	False
pyodbc	3.0.7	MIT	False
yparsing	2.0.1	MIT	False
pyqt	4.10.4	GPL	False
pyreadline <sup>Windows</sup>	2.0	BSD	False
pysam <sup>Linux Mac</sup>	0.6	MIT	False
pytables <sup>Linux Mac</sup>	3.1.1	BSD	False
pytest	2.5.2	MIT	False
python	2.6.9	PSF	False
pytz	2014.3	MIT	False
pyyaml	3.11	MIT	False
pyzmq	14.3.0	LGPL and BSD	False
qt <sup>Linux Mac</sup>	4.8.5	LGPL	False
readline <sup>Linux Mac</sup>	6.2	GPL 3	False
redis <sup>Linux Mac</sup>	2.6.9	3-clause BSD	False
redis-py <sup>Linux Mac</sup>	2.9.1	<a href="#">MIT</a>	False
requests	2.3.0	ISC	False
rope	0.9.4	GPL	False
scikit-image	0.10.0	<a href="#">Modified BSD</a>	False
scikit-learn	0.14.1	3-clause BSD	False
scipy	0.14.0	BSD	False
setuptools	3.6	PSF or ZPL	False
shapely <sup>Linux Mac</sup>	1.3.2	BSD	False
sip <sup>Linux Mac</sup>	4.15.5	GPL	False
six	1.6.1	MIT	False
sphinx	1.2.2	BSD	False
sqlalchemy	0.9.4	MIT	False
sqlite <sup>Linux Mac</sup>	3.8.4.1	<a href="#">Public Domain</a>	False
sqlparse	0.1.11	BSD	False
ssh	1.8.0	LGPL	False
ssl_match_hostname	3.4.0.2	PSF	False
starcluster <sup>Linux</sup>	0.93.3	LGPL	False
statsmodels	0.5.0	3-clause Modified BSD	False
sympy	0.7.5	New BSD	False
theano <sup>Linux</sup>	0.6.0	BSD	False

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Table 10 – continued from previous page

tk <small>Linux Mac</small>	8.5.15	BSD-style	False
tornado	3.2.1	Apache	False
traits	4.4.0	BSD	False
twisted	14.0.0	MIT	False
ujson	1.33	BSD	False
unittest2	0.5.1	BSD	False
unixodbc <small>Linux</small>	2.3.1	???	False
util-linux <small>Linux</small>	2.21	GPL	False
w3lib	1.5	BSD	False
werkzeug	0.9.6	BSD	False
whoosh	2.5.7	BSD	False
workerpool <small>Linux</small>	0.9.2	MIT	False
xlrd	0.9.3	BSD	False
xlswriter	0.5.5	BSD	False
xlwt	0.7.5	BSD	False
yaml <small>Linux Mac</small>	0.1.4	MIT	False
zeromq <small>Linux Mac</small>	4.0.4	LGPL	False
zlib <small>Linux Mac</small>	1.2.7	zlib	False
zope.interface	4.1.1	Zope Public License	False

## Packages included in Anaconda 1.9.2

**Python 2.7 (included in installer):**

<ul style="list-style-type: none"> <li>• apptools 4.2.1</li> <li>• argcomplete 0.6.7</li> <li>• astropy 0.3.0</li> <li>• atom 0.3.7</li> <li>• beautiful-soup 4.3.1</li> <li>• binstar 0.4.4</li> <li>• biopython 1.63</li> <li>• bitarray 0.8.1</li> <li>• blaze 0.4.2</li> <li>• blz 0.6.1</li> <li>• bokeh 0.4.1</li> <li>• boto 2.25.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarious 1.1</li> <li>• cdecimal 2.3</li> <li>• chaco 4.4.1</li> <li>• colorama 0.2.7</li> <li>• conda 3.4.1</li> <li>• conda-build 1.3.1</li> <li>• configobj 4.7.2</li> <li>• cubes 0.10.2</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.20.1</li> <li>• datashape 0.1.1</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• docutils 0.11</li> <li>• dynd-python 0.6.1</li> <li>• enable 4.3.0</li> <li>• enaml 0.9.1</li> <li>• envisage 4.4.0</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> </ul>	<ul style="list-style-type: none"> <li>• future 0.11.2</li> <li>• gevent 1.0</li> <li>• gevent-websocket 0.9.2</li> <li>• gevent_zeromq 0.2.5</li> <li>• greenlet 0.4.2</li> <li>• grin 1.2.1</li> <li>• h5py 2.2.1</li> <li>• hdf5 1.8.9</li> <li>• ipython 1.1.0</li> <li>• itsdangerous 0.23</li> <li>• jinja2 2.7.2</li> <li>• keyring 3.3</li> <li>• kiwisolver 0.1.2</li> <li>• launcher 0.1.2</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libsodium 0.4.5 <i>L</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmpy 0.12.3</li> <li>• lxml 3.3.1</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.1</li> <li>• mayavi 4.3.1</li> <li>• mdp 3.3</li> <li>• menuinst 1.0.3 <i>W</i></li> <li>• mingw 4.7 <i>W</i></li> <li>• mock 1.0.1</li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.8 <i>LM</i></li> <li>• networkx 1.8.1</li> </ul>	<ul style="list-style-type: none"> <li>• nltk 2.0.4</li> <li>• nose 1.3.0</li> <li>• numba 0.12.1</li> <li>• numexpr 2.3.1</li> <li>• numpy 1.8.0</li> <li>• opencv 2.4.6 <i>L</i></li> <li>• openpyxl 1.8.2</li> <li>• openssl 1.0.1g <i>LM</i></li> <li>• pandas 0.13.1</li> <li>• patsy 0.2.1</li> <li>• pep8 1.4.6</li> <li>• pil 1.1.7</li> <li>• pip 1.5.2</li> <li>• ply 3.4</li> <li>• psutil 1.2.1</li> <li>• py 1.4.20</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pyaudio 0.2.7 <i>M</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.10</li> <li>• pycrypto 2.6.1</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyface 4.4.0</li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pykit 0.2.0</li> <li>• pyparsing 2.0.1</li> <li>• pyreadline 2.0 <i>W</i></li> <li>• pysal 1.6.0</li> <li>• pysam 0.6 <i>LM</i></li> <li>• pyside 1.2.1</li> <li>• pytables 3.1.0</li> <li>• pytest 2.5.2</li> <li>• python 2.7.6</li> </ul>	<ul style="list-style-type: none"> <li>• pytz 2013b</li> <li>• pywin32 218.4 <i>W</i></li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• qt 4.8.5</li> <li>• redis 2.6.9 <i>LM</i></li> <li>• redis-py 2.9.1 <i>LM</i></li> <li>• requests 2.2.1</li> <li>• rope 0.9.4</li> <li>• scikit-image 0.9.3</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.13.3</li> <li>• setuptools 2.2</li> <li>• six 1.5.2</li> <li>• sphinx 1.2.1</li> <li>• spyder 2.2.5</li> <li>• sqlalchemy 0.9.2</li> <li>•</li> <li>• ssl_match_hostname 3.4.0.2</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.4.1</li> <li>• theano 0.6.0 <i>L</i></li> <li>• tk 8.5.13 <i>LM</i></li> <li>• tornado 3.2.0</li> <li>• traits 4.4.0</li> <li>• traitsui 4.4.0</li> <li>• ujson 1.33</li> <li>• vtk 5.10.1</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• xlswriter 0.5.2</li> <li>• xlwt 0.7.5</li> <li>• yaml 0.1.4 <i>LM</i></li> <li>• zeromq 2.2.0 <i>LM</i></li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

## Python 3.3 (available through conda):

<ul style="list-style-type: none"> <li>• argcomplete 0.6.7</li> <li>• astropy 0.3.0</li> <li>• beautiful-soup 4.3.1</li> <li>• bitarray 0.8.1</li> <li>• blaze 0.4.2</li> <li>• blz 0.6.1</li> <li>• bokeh 0.4.1</li> <li>• cdecimal 2.3</li> <li>• colorama 0.2.7</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.20.1</li> <li>• datashape 0.1.1</li> <li>• dateutil 2.1</li> <li>• docutils 0.11</li> <li>• dynd-python 0.6.1</li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• future 0.11.2</li> <li>• greenlet 0.4.2</li> <li>• h5py 2.2.1</li> <li>• hdf5 1.8.9</li> <li>• ipython 1.1.0</li> <li>• itsdangerous 0.23</li> </ul>	<ul style="list-style-type: none"> <li>• jinja2 2.7.2</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libsodium 0.4.5 <i>L</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmpy 0.12.3</li> <li>• lxml 3.3.1</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.1 <i>LM</i></li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• mock 1.0.1</li> <li>• netcdf4 1.0.8 <i>LM</i></li> <li>• networkx 1.8.1</li> <li>• nose 1.3.0</li> <li>• numba 0.12.1</li> <li>• numexpr 2.3.1</li> <li>• numpy 1.8.0</li> <li>• openpyxl 1.8.2</li> <li>• openssl 1.0.1g <i>LM</i></li> </ul>	<ul style="list-style-type: none"> <li>• pandas 0.13.1</li> <li>• patsy 0.2.1</li> <li>• pillow 2.1.0</li> <li>• pip 1.5.2</li> <li>• ply 3.4</li> <li>• psutil 1.2.1</li> <li>• py 1.4.20</li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.10</li> <li>• pycrypto 2.6.1</li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pykit 0.2.0</li> <li>• pyparsing 2.0.1</li> <li>• pyreadline 2.0 <i>W</i></li> <li>• pyside 1.2.1 <i>W</i></li> <li>• pytables 3.1.0</li> <li>• pytest 2.5.2</li> <li>• python 3.3.4</li> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• redis 2.6.9 <i>LM</i></li> </ul>	<ul style="list-style-type: none"> <li>• redis-py 2.9.1 <i>LM</i></li> <li>• requests 2.2.1</li> <li>• scikit-image 0.9.3</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.13.3</li> <li>• setuptools 2.2</li> <li>• six 1.5.2</li> <li>• sphinx 1.2.1</li> <li>• sqlalchemy 0.9.2</li> <li>•</li> <li>• ssl_match_hostname 3.4.0.2</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.4.1</li> <li>• tk 8.5.13 <i>LM</i></li> <li>• tornado 3.2.0</li> <li>• ujson 1.33</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• xlsxwriter 0.5.2</li> <li>• yaml 0.1.4 <i>LM</i></li> <li>• zeromq 2.2.0 <i>LM</i></li> <li>• zlib 1.2.7</li> </ul>
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**Python 2.6 (available through conda):**

<ul style="list-style-type: none"> <li>• argcomplete 0.6.7</li> <li>• argparse 1.2.1</li> <li>• astropy 0.3.0</li> <li>• atom 0.3.7</li> <li>• beautiful-soup 4.3.1</li> <li>• biopython 1.63</li> <li>• bitarray 0.8.1</li> <li>• blaze 0.4.2 <i>LM</i></li> <li>• blz 0.6.1</li> <li>• boto 2.25.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarius 1.1</li> <li>• cdecimal 2.3</li> <li>• colorama 0.2.7</li> <li>• configobj 4.7.2</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.20.1</li> <li>• datashape 0.1.1</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• docutils 0.11</li> <li>• dynd-python 0.6.1</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• future 0.11.2</li> <li>• gevent 1.0</li> <li>• gevent-websocket 0.9.2</li> <li>• gevent_zeromq 0.2.5</li> </ul>	<ul style="list-style-type: none"> <li>• greenlet 0.4.2</li> <li>• grin 1.2.1</li> <li>• h5py 2.2.1</li> <li>• hdf5 1.8.9</li> <li>• ipython 1.1.0</li> <li>• itsdangerous 0.23</li> <li>• jinja2 2.7.2</li> <li>• kiwisolver 0.1.2</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libsodium 0.4.5 <i>L</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmpy 0.12.3</li> <li>• lxml 3.3.1</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.1 <i>LM</i></li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• mock 1.0.1</li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.8 <i>LM</i></li> <li>• networkx 1.8.1</li> <li>• nltk 2.0.4</li> <li>• nose 1.3.0</li> <li>• numba 0.12.1</li> </ul>	<ul style="list-style-type: none"> <li>• numexpr 2.3.1</li> <li>• numpy 1.8.0</li> <li>• opencv 2.4.6 <i>L</i></li> <li>• openssl 1.0.1g <i>LM</i></li> <li>• ordereddict 1.1</li> <li>• pandas 0.13.1</li> <li>• patsy 0.2.1</li> <li>• pep8 1.4.6</li> <li>• pil 1.1.7</li> <li>• pip 1.5.2</li> <li>• ply 3.4</li> <li>• psutil 1.2.1</li> <li>• py 1.4.20</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.10</li> <li>• pycrypto 2.6.1</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pykit 0.2.0</li> <li>• pyparsing 2.0.1</li> <li>• pyreadline 2.0 <i>W</i></li> <li>• pysam 0.6 <i>LM</i></li> <li>• pytables 3.1.0 <i>LM</i></li> <li>• pytest 2.5.2</li> <li>• python 2.6.9</li> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> </ul>	<ul style="list-style-type: none"> <li>• pyzmq 2.2.0.1</li> <li>• redis 2.6.9 <i>LM</i></li> <li>• redis-py 2.9.1 <i>LM</i></li> <li>• requests 2.2.1</li> <li>• scikit-image 0.9.3</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.13.3</li> <li>• setuptools 2.2</li> <li>• six 1.5.2</li> <li>• sphinx 1.2.1</li> <li>• sqlalchemy 0.9.2</li> <li>•</li> <li>• ssl_match_hostname 3.4.0.2</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.4.1</li> <li>• theano 0.6.0 <i>L</i></li> <li>• tk 8.5.13 <i>LM</i></li> <li>• tornado 3.2.0</li> <li>• traits 4.4.0</li> <li>• ujson 1.33</li> <li>• unittest2 0.5.1</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• xlswriter 0.5.2</li> <li>• xlwt 0.7.5</li> <li>• yaml 0.1.4 <i>LM</i></li> <li>• zeromq 2.2.0 <i>LM</i></li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

**Packages included in Anaconda 1.9.1**

## Python 2.7 (included in installer):

<ul style="list-style-type: none"> <li>• apptools 4.2.1</li> <li>• argcomplete 0.6.7</li> <li>• astropy 0.3.0</li> <li>• atom 0.3.7</li> <li>• beautiful-soup 4.3.1</li> <li>• binstar 0.4.4</li> <li>• biopython 1.63</li> <li>• bitarray 0.8.1</li> <li>• blaze 0.4.2</li> <li>• blz 0.6.1</li> <li>• bokeh 0.4.1</li> <li>• boto 2.25.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarious 1.1</li> <li>• cdecimal 2.3</li> <li>• chaco 4.4.1</li> <li>• colorama 0.2.7</li> <li>• conda 3.0.6</li> <li>• conda-build 1.2.0</li> <li>• configobj 4.7.2</li> <li>• cubes 0.10.2</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.20.1</li> <li>• datashape 0.1.1</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• docutils 0.11</li> <li>• dynd-python 0.6.1</li> <li>• enable 4.3.0</li> <li>• enaml 0.9.1</li> <li>• envisage 4.4.0</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> </ul>	<ul style="list-style-type: none"> <li>• future 0.11.2</li> <li>• gevent 1.0</li> <li>• gevent-websocket 0.9.2</li> <li>• gevent_zeromq 0.2.5</li> <li>• greenlet 0.4.2</li> <li>• grin 1.2.1</li> <li>• h5py 2.2.1</li> <li>• hdf5 1.8.9</li> <li>• ipython 1.1.0</li> <li>• itsdangerous 0.23</li> <li>• jinja2 2.7.2</li> <li>• keyring 3.3</li> <li>• kiwisolver 0.1.2</li> <li>• launcher 0.1.2</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libsodium 0.4.5 <i>L</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmpy 0.12.3</li> <li>• lxml 3.3.1</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.1</li> <li>• mayavi 4.3.1</li> <li>• mdp 3.3</li> <li>• menuinst 1.0.3 <i>W</i></li> <li>• mingw 4.7 <i>W</i></li> <li>• mock 1.0.1</li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.8 <i>LM</i></li> <li>• networkx 1.8.1</li> </ul>	<ul style="list-style-type: none"> <li>• nltk 2.0.4</li> <li>• nose 1.3.0</li> <li>• numba 0.12.1</li> <li>• numexpr 2.3.1</li> <li>• numpy 1.8.0</li> <li>• opencv 2.4.6 <i>L</i></li> <li>• openpyxl 1.8.2</li> <li>• openssl 1.0.1c <i>LM</i></li> <li>• pandas 0.13.1</li> <li>• patsy 0.2.1</li> <li>• pep8 1.4.6</li> <li>• pil 1.1.7</li> <li>• pip 1.5.2</li> <li>• ply 3.4</li> <li>• psutil 1.2.1</li> <li>• py 1.4.20</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pyaudio 0.2.7 <i>M</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.10</li> <li>• pycrypto 2.6.1</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyface 4.4.0</li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pykit 0.2.0</li> <li>• pyparsing 2.0.1</li> <li>• pyreadline 2.0 <i>W</i></li> <li>• pysal 1.6.0</li> <li>• pysam 0.6 <i>LM</i></li> <li>• pyside 1.2.1</li> <li>• pytables 3.1.0</li> <li>• pytest 2.5.2</li> <li>• python 2.7.6</li> </ul>	<ul style="list-style-type: none"> <li>• pytz 2013b</li> <li>• pywin32 218.4 <i>W</i></li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• qt 4.8.5</li> <li>• redis 2.6.9 <i>LM</i></li> <li>• redis-py 2.9.1 <i>LM</i></li> <li>• requests 2.2.1</li> <li>• rope 0.9.4</li> <li>• scikit-image 0.9.3</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.13.3</li> <li>• setuptools 2.2</li> <li>• six 1.5.2</li> <li>• sphinx 1.2.1</li> <li>• spyder 2.2.5</li> <li>• sqlalchemy 0.9.2</li> <li>•</li> <li>• ssl_match_hostname 3.4.0.2</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.4.1</li> <li>• theano 0.6.0 <i>L</i></li> <li>• tk 8.5.13 <i>LM</i></li> <li>• tornado 3.2.0</li> <li>• traits 4.4.0</li> <li>• traitsui 4.4.0</li> <li>• ujson 1.33</li> <li>• vtk 5.10.1</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• xlswriter 0.5.2</li> <li>• xlwt 0.7.5</li> <li>• yaml 0.1.4 <i>LM</i></li> <li>• zeromq 2.2.0 <i>LM</i></li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)



**Python 3.3 (available through conda):**

<ul style="list-style-type: none"> <li>• argcomplete 0.6.7</li> <li>• astropy 0.3.0</li> <li>• beautiful-soup 4.3.1</li> <li>• bitarray 0.8.1</li> <li>• blaze 0.4.2</li> <li>• blz 0.6.1</li> <li>• bokeh 0.4.1</li> <li>• cdecimal 2.3</li> <li>• colorama 0.2.7</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.20.1</li> <li>• datashape 0.1.1</li> <li>• dateutil 2.1</li> <li>• docutils 0.11</li> <li>• dynd-python 0.6.1</li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• future 0.11.2</li> <li>• greenlet 0.4.2</li> <li>• h5py 2.2.1</li> <li>• hdf5 1.8.9</li> <li>• ipython 1.1.0</li> <li>• itsdangerous 0.23</li> </ul>	<ul style="list-style-type: none"> <li>• jinja2 2.7.2</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libsodium 0.4.5 <i>L</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmpy 0.12.3</li> <li>• lxml 3.3.1</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.1 <i>LM</i></li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• mock 1.0.1</li> <li>• netcdf4 1.0.8 <i>LM</i></li> <li>• networkx 1.8.1</li> <li>• nose 1.3.0</li> <li>• numba 0.12.1</li> <li>• numexpr 2.3.1</li> <li>• numpy 1.8.0</li> <li>• openpyxl 1.8.2</li> <li>• openssl 1.0.1c <i>LM</i></li> </ul>	<ul style="list-style-type: none"> <li>• pandas 0.13.1</li> <li>• patsy 0.2.1</li> <li>• pillow 2.1.0</li> <li>• pip 1.5.2</li> <li>• ply 3.4</li> <li>• psutil 1.2.1</li> <li>• py 1.4.20</li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.10</li> <li>• pycrypto 2.6.1</li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pykit 0.2.0</li> <li>• pyparsing 2.0.1</li> <li>• pyreadline 2.0 <i>W</i></li> <li>• pyside 1.2.1 <i>W</i></li> <li>• pytables 3.1.0</li> <li>• pytest 2.5.2</li> <li>• python 3.3.4</li> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• redis 2.6.9 <i>LM</i></li> </ul>	<ul style="list-style-type: none"> <li>• redis-py 2.9.1 <i>LM</i></li> <li>• requests 2.2.1</li> <li>• scikit-image 0.9.3</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.13.3</li> <li>• setuptools 2.2</li> <li>• six 1.5.2</li> <li>• sphinx 1.2.1</li> <li>• sqlalchemy 0.9.2</li> <li>•</li> <li>• ssl_match_hostname 3.4.0.2</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.4.1</li> <li>• tk 8.5.13 <i>LM</i></li> <li>• tornado 3.2.0</li> <li>• ujson 1.33</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• xlsxwriter 0.5.2</li> <li>• yaml 0.1.4 <i>LM</i></li> <li>• zeromq 2.2.0 <i>LM</i></li> <li>• zlib 1.2.7</li> </ul>
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## Python 2.6 (available through conda):

<ul style="list-style-type: none"> <li>• argcomplete 0.6.7</li> <li>• argparse 1.2.1</li> <li>• astropy 0.3.0</li> <li>• atom 0.3.7</li> <li>• beautiful-soup 4.3.1</li> <li>• biopython 1.63</li> <li>• bitarray 0.8.1</li> <li>• blaze 0.4.2 <i>LM</i></li> <li>• blz 0.6.1</li> <li>• boto 2.25.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarius 1.1</li> <li>• cdecimal 2.3</li> <li>• colorama 0.2.7</li> <li>• configobj 4.7.2</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.20.1</li> <li>• datashape 0.1.1</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• docutils 0.11</li> <li>• dynd-python 0.6.1</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• future 0.11.2</li> <li>• gevent 1.0</li> <li>• gevent-websocket 0.9.2</li> <li>• gevent_zeromq 0.2.5</li> </ul>	<ul style="list-style-type: none"> <li>• greenlet 0.4.2</li> <li>• grin 1.2.1</li> <li>• h5py 2.2.1</li> <li>• hdf5 1.8.9</li> <li>• ipython 1.1.0</li> <li>• itsdangerous 0.23</li> <li>• jinja2 2.7.2</li> <li>• kiwisolver 0.1.2</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libsodium 0.4.5 <i>L</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmpy 0.12.3</li> <li>• lxml 3.3.1</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.1 <i>LM</i></li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• mock 1.0.1</li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.8 <i>LM</i></li> <li>• networkx 1.8.1</li> <li>• nltk 2.0.4</li> <li>• nose 1.3.0</li> <li>• numba 0.12.1</li> </ul>	<ul style="list-style-type: none"> <li>• numexpr 2.3.1</li> <li>• numpy 1.8.0</li> <li>• opencv 2.4.6 <i>L</i></li> <li>• openssl 1.0.1c <i>LM</i></li> <li>• ordereddict 1.1</li> <li>• pandas 0.13.1</li> <li>• patsy 0.2.1</li> <li>• pep8 1.4.6</li> <li>• pil 1.1.7</li> <li>• pip 1.5.2</li> <li>• ply 3.4</li> <li>• psutil 1.2.1</li> <li>• py 1.4.20</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.10</li> <li>• pycrypto 2.6.1</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pykit 0.2.0</li> <li>• pyparsing 2.0.1</li> <li>• pyreadline 2.0 <i>W</i></li> <li>• pysam 0.6 <i>LM</i></li> <li>• pytables 3.1.0 <i>LM</i></li> <li>• pytest 2.5.2</li> <li>• python 2.6.9</li> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> </ul>	<ul style="list-style-type: none"> <li>• pyzmq 2.2.0.1</li> <li>• redis 2.6.9 <i>LM</i></li> <li>• redis-py 2.9.1 <i>LM</i></li> <li>• requests 2.2.1</li> <li>• scikit-image 0.9.3</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.13.3</li> <li>• setuptools 2.2</li> <li>• six 1.5.2</li> <li>• sphinx 1.2.1</li> <li>• sqlalchemy 0.9.2</li> <li>•</li> <li>• ssl_match_hostname 3.4.0.2</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.4.1</li> <li>• theano 0.6.0 <i>L</i></li> <li>• tk 8.5.13 <i>LM</i></li> <li>• tornado 3.2.0</li> <li>• traits 4.4.0</li> <li>• ujson 1.33</li> <li>• unittest2 0.5.1</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• xlswriter 0.5.2</li> <li>• xlwt 0.7.5</li> <li>• yaml 0.1.4 <i>LM</i></li> <li>• zeromq 2.2.0 <i>LM</i></li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

## Packages included in Anaconda 1.9.0

**Python 2.7 (included in installer):**

<ul style="list-style-type: none"> <li>• apptools 4.2.1</li> <li>• argcomplete 0.6.7</li> <li>• astropy 0.3.0</li> <li>• atom 0.3.6</li> <li>• beautiful-soup 4.3.1</li> <li>• binstar 0.4.4</li> <li>• biopython 1.63</li> <li>• bitarray 0.8.1</li> <li>• blaze 0.4.1</li> <li>• blz 0.6.1</li> <li>• bokeh 0.4</li> <li>• boto 2.24.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarious 1.1</li> <li>• cdecimal 2.3</li> <li>• chaco 4.4.1</li> <li>• colorama 0.2.7</li> <li>• conda 3.0.3</li> <li>• conda-build 1.1.0</li> <li>• configobj 4.7.2</li> <li>• cubes 0.10.2</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.20</li> <li>• datashape 0.1.0</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• docutils 0.11</li> <li>• dynd-python 0.6.0</li> <li>• enable 4.3.0</li> <li>• enaml 0.9.0</li> <li>• envisage 4.4.0</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> </ul>	<ul style="list-style-type: none"> <li>• future 0.11.2</li> <li>• gevent 1.0</li> <li>• gevent-websocket 0.9.2</li> <li>• gevent_zeromq 0.2.5</li> <li>• greenlet 0.4.2</li> <li>• grin 1.2.1</li> <li>• h5py 2.2.1</li> <li>• hdf5 1.8.9</li> <li>• ipython 1.1.0</li> <li>• itsdangerous 0.23</li> <li>• jinja2 2.7.2</li> <li>• keyring 3.3</li> <li>• kiwisolver 0.1.2</li> <li>• launcher 0.1.2</li> <li>• libdynd 0.6.0 <i>LM</i></li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libsodium 0.4.5 <i>L</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmpy 0.12.2</li> <li>• lxml 3.2.3</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.1</li> <li>• mayavi 4.3.1</li> <li>• mdp 3.3</li> <li>• menuinst 1.0.3 <i>W</i></li> <li>• mingw 4.7 <i>W</i></li> <li>• mock 1.0.1</li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.7 <i>LM</i></li> </ul>	<ul style="list-style-type: none"> <li>• networkx 1.8.1</li> <li>• nltk 2.0.4</li> <li>• nose 1.3.0</li> <li>• numba 0.12.0</li> <li>• numexpr 2.3.0</li> <li>• numpy 1.8.0</li> <li>• opencv 2.4.6 <i>L</i></li> <li>• openpyxl 1.8.2</li> <li>• openssl 1.0.1c <i>LM</i></li> <li>• pandas 0.13.0</li> <li>• patsy 0.2.1</li> <li>• pep8 1.4.6</li> <li>• pil 1.1.7</li> <li>• pip 1.5.2</li> <li>• ply 3.4</li> <li>• psutil 1.2.1</li> <li>• py 1.4.20</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pyaudio 0.2.7 <i>M</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.10</li> <li>• pycrypto 2.6.1</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyface 4.4.0</li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pykit 0.1.0</li> <li>• pyparsing 2.0.1</li> <li>• pyreadline 2.0 <i>W</i></li> <li>• pysal 1.6.0</li> <li>• pysam 0.6 <i>LM</i></li> <li>• pyside 1.2.1</li> <li>• pytables 3.1.0</li> <li>• pytest 2.5.2</li> </ul>	<ul style="list-style-type: none"> <li>• python 2.7.6</li> <li>• pytz 2013b</li> <li>• pywin32 218.4 <i>W</i></li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• qt 4.8.5</li> <li>• redis 2.6.9 <i>LM</i></li> <li>• redis-py 2.9.1 <i>LM</i></li> <li>• requests 2.2.1</li> <li>• rope 0.9.4</li> <li>• scikit-image 0.9.3</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.13.3</li> <li>• setuptools 2.1</li> <li>• six 1.5.2</li> <li>• sphinx 1.2.1</li> <li>• spyder 2.2.5</li> <li>• sqlalchemy 0.9.2</li> <li>•</li> <li>• ssl_match_hostname 3.4.0.2</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.4.1</li> <li>• theano 0.6.0 <i>L</i></li> <li>• tk 8.5.13 <i>LM</i></li> <li>• tornado 3.2.0</li> <li>• traits 4.4.0</li> <li>• traitsui 4.4.0</li> <li>• ujson 1.33</li> <li>• vtk 5.10.1</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• xlwt 0.7.5</li> <li>• yaml 0.1.4 <i>LM</i></li> <li>• zeromq 2.2.0 <i>LM</i></li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

## Python 3.3 (available through conda):

<ul style="list-style-type: none"> <li>• argcomplete 0.6.7</li> <li>• astropy 0.3.0</li> <li>• beautiful-soup 4.3.1</li> <li>• bitarray 0.8.1</li> <li>• blaze 0.4.1</li> <li>• blz 0.6.1</li> <li>• bokeh 0.4</li> <li>• cdecimal 2.3</li> <li>• colorama 0.2.7</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.20</li> <li>• datashape 0.1.0</li> <li>• dateutil 2.1</li> <li>• docutils 0.11</li> <li>• dynd-python 0.6.0</li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• future 0.11.2</li> <li>• greenlet 0.4.2</li> <li>• hdf5 1.8.9</li> <li>• ipython 1.1.0</li> <li>• itsdangerous 0.23</li> </ul>	<ul style="list-style-type: none"> <li>• jinja2 2.7.2</li> <li>• libdynd 0.6.0 <i>LM</i></li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libsodium 0.4.5 <i>L</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmpy 0.12.2</li> <li>• lxml 3.2.3</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.1 <i>LM</i></li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• mock 1.0.1</li> <li>• netcdf4 1.0.7 <i>LM</i></li> <li>• networkx 1.8.1</li> <li>• nose 1.3.0</li> <li>• numba 0.12.0</li> <li>• numexpr 2.3.0</li> <li>• numpy 1.8.0</li> </ul>	<ul style="list-style-type: none"> <li>• openpyxl 1.8.2</li> <li>• pandas 0.13.0</li> <li>• patsy 0.2.1</li> <li>• pillow 2.1.0</li> <li>• pip 1.5.2</li> <li>• ply 3.4</li> <li>• psutil 1.2.1</li> <li>• py 1.4.20</li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.10</li> <li>• pycrypto 2.6.1</li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pykit 0.1.0</li> <li>• pyparsing 2.0.1</li> <li>• pyreadline 2.0 <i>W</i></li> <li>• pyside 1.1.2 <i>W</i></li> <li>• pytables 3.1.0</li> <li>• pytest 2.5.2</li> <li>• python 3.3.3</li> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> </ul>	<ul style="list-style-type: none"> <li>• pyzmq 2.2.0.1</li> <li>• redis 2.6.9 <i>LM</i></li> <li>• redis-py 2.9.1 <i>LM</i></li> <li>• requests 2.2.1</li> <li>• scikit-image 0.9.3</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.13.3</li> <li>• setuptools 2.1</li> <li>• six 1.5.2</li> <li>• sphinx 1.2.1</li> <li>• sqlalchemy 0.9.2</li> <li>•</li> <li>• ssl_match_hostname 3.4.0.2</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.4.1</li> <li>• tornado 3.2.0</li> <li>• ujson 1.33</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• yaml 0.1.4 <i>LM</i></li> <li>• zeromq 2.2.0 <i>LM</i></li> <li>• zlib 1.2.7</li> </ul>
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**Python 2.6 (available through conda):**

<ul style="list-style-type: none"> <li>• argcomplete 0.6.7</li> <li>• argparse 1.2.1</li> <li>• astropy 0.3.0</li> <li>• atom 0.3.6</li> <li>• beautiful-soup 4.3.1</li> <li>• biopython 1.63</li> <li>• bitarray 0.8.1</li> <li>• blaze 0.4.1</li> <li>• blz 0.6.1</li> <li>• boto 2.24.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarious 1.1</li> <li>• cdecimal 2.3</li> <li>• colorama 0.2.7</li> <li>• configobj 4.7.2</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.20</li> <li>• datashape 0.1.0</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• docutils 0.11</li> <li>• dynd-python 0.6.0</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• future 0.11.2</li> <li>• gevent 1.0</li> <li>• gevent-websocket 0.9.2</li> </ul>	<ul style="list-style-type: none"> <li>• gevent_zeromq 0.2.5</li> <li>• greenlet 0.4.2</li> <li>• grin 1.2.1</li> <li>• h5py 2.2.1</li> <li>• hdf5 1.8.9</li> <li>• ipython 1.1.0</li> <li>• itsdangerous 0.23</li> <li>• jinja2 2.7.2</li> <li>• kiwisolver 0.1.2</li> <li>• libdynd 0.6.0 <i>LM</i></li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libsodium 0.4.5 <i>L</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmpy 0.12.2</li> <li>• lxml 3.2.3</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.1 <i>LM</i></li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• mock 1.0.1</li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.7 <i>LM</i></li> <li>• networkx 1.8.1</li> </ul>	<ul style="list-style-type: none"> <li>• nltk 2.0.4</li> <li>• nose 1.3.0</li> <li>• numba 0.12.0</li> <li>• numexpr 2.3.0</li> <li>• numpy 1.8.0</li> <li>• opencv 2.4.6 <i>L</i></li> <li>• ordereddict 1.1</li> <li>• pandas 0.13.0</li> <li>• patsy 0.2.1</li> <li>• pep8 1.4.6</li> <li>• pil 1.1.7</li> <li>• pip 1.5.2</li> <li>• ply 3.4</li> <li>• psutil 1.2.1</li> <li>• py 1.4.20</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.10</li> <li>• pycrypto 2.6.1</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pykit 0.1.0</li> <li>• pyparsing 2.0.1</li> <li>• pyreadline 2.0 <i>W</i></li> <li>• pysam 0.6 <i>LM</i></li> <li>• pytables 3.1.0 <i>LM</i></li> <li>• pytest 2.5.2</li> </ul>	<ul style="list-style-type: none"> <li>• python 2.6.9</li> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• redis 2.6.9 <i>LM</i></li> <li>• redis-py 2.9.1 <i>LM</i></li> <li>• requests 2.2.1</li> <li>• scikit-image 0.9.3</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.13.3</li> <li>• setuptools 2.1</li> <li>• six 1.5.2</li> <li>• sphinx 1.2.1</li> <li>• sqlalchemy 0.9.2</li> <li>•</li> <li>• ssl_match_hostname 3.4.0.2</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.4.1</li> <li>• theano 0.6.0 <i>L</i></li> <li>• tornado 3.2.0</li> <li>• traits 4.4.0</li> <li>• ujson 1.33</li> <li>• unittest2 0.5.1</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• xlwt 0.7.5</li> <li>• yaml 0.1.4 <i>LM</i></li> <li>• zeromq 2.2.0 <i>LM</i></li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

**Packages included in Anaconda 1.8.0**

## Python 2.7 (included in installer):

<ul style="list-style-type: none"> <li>• apptools 4.2.0</li> <li>• astropy 0.2.5</li> <li>• atom 0.3.4</li> <li>• beautiful-soup 4.3.1</li> <li>• binstar 0.3.1</li> <li>• biopython 1.62</li> <li>• bitarray 0.8.1</li> <li>• blaze 0.3</li> <li>• bokeh 0.2</li> <li>• boto 2.15.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarious 1.1</li> <li>• chaco 4.3.0</li> <li>• colorama 0.2.7</li> <li>• configobj 4.7.2</li> <li>• cubes 0.10.2</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.19.2</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• distribute 0.6.45</li> <li>• docutils 0.11</li> <li>• dynd-python 0.5.0</li> <li>• enable 4.3.0</li> <li>• enaml 0.8.3</li> <li>• envisage 4.3.0</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• gevent 0.13.8</li> <li>• gevent-websocket 0.3.6</li> </ul>	<ul style="list-style-type: none"> <li>• gevent_zeromq 0.2.5</li> <li>• greenlet 0.4.1</li> <li>• grin 1.2.1</li> <li>• h5py 2.2.0</li> <li>• hdf5 1.8.9</li> <li>• imaging 1.1.7</li> <li>• ipython 1.1.0</li> <li>• itsdangerous 0.23</li> <li>• jinja2 2.7.1</li> <li>• keyring 3.2</li> <li>• launcher 0.1.2</li> <li>• libevent 2.0.20</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmmath 0.1.1</li> <li>• llvmpy 0.12.0</li> <li>• lxml 3.2.3</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.1</li> <li>• mayavi 4.3.0</li> <li>• mdp 3.3</li> <li>• menuinst 1.0.3 <i>W</i></li> <li>• meta 0.4.2.dev</li> <li>• mingw 4.7 <i>W</i></li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.6 <i>LM</i></li> </ul>	<ul style="list-style-type: none"> <li>• networkx 1.8.1</li> <li>• nltk 2.0.4</li> <li>• nose 1.3.0</li> <li>• numba 0.11.0</li> <li>• numexpr 2.2.2</li> <li>• numpy 1.7.1</li> <li>• opencv 2.4.6 <i>L</i></li> <li>• openpyxl 1.6.2</li> <li>• pandas 0.12.0</li> <li>• patsy 0.2.1</li> <li>• pep8 1.4.6</li> <li>• pip 1.4.1</li> <li>• ply 3.4</li> <li>• psutil 1.1.2</li> <li>• py 1.4.17</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pyaudio 0.2.7 <i>M</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6.1</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyface 4.3.0</li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pykit 0.1.0</li> <li>• pyparsing 1.5.6</li> <li>• pyreadline 2.0.dev <i>W</i></li> <li>• pysal 1.6.0</li> <li>• pysam 0.6 <i>LM</i></li> <li>• pyside 1.2.1</li> <li>• pytables 3.0.0</li> </ul>	<ul style="list-style-type: none"> <li>• pytest 2.4.2</li> <li>• python 2.7.5</li> <li>• pytz 2013b</li> <li>• pywin32 218.4 <i>W</i></li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• qt 4.8.5</li> <li>• redis 2.6.9 <i>LM</i></li> <li>• redis-py 2.7.2 <i>LM</i></li> <li>• requests 1.2.3</li> <li>• rope 0.9.4</li> <li>• scikit-image 0.9.3</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.13.0</li> <li>• six 1.4.1</li> <li>• sphinx 1.1.3</li> <li>• spyder 2.2.5</li> <li>• sqlalchemy 0.8.3</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.3</li> <li>• theano 0.5.0 <i>L</i></li> <li>• tornado 3.1.1</li> <li>• traits 4.3.0</li> <li>• traitsui 4.3.0</li> <li>• vtk 5.10.1</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• xlwt 0.7.5</li> <li>• yaml 0.1.4 <i>LM</i></li> <li>• zeromq 2.2.0 <i>LM</i></li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

**Python 3.3 (available through conda):**

<ul style="list-style-type: none"> <li>• astropy 0.2.5</li> <li>• beautiful-soup 4.3.1</li> <li>• bitarray 0.8.1</li> <li>• colorama 0.2.7</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.19.2</li> <li>• dateutil 2.1</li> <li>• distribute 0.6.45</li> <li>• docutils 0.11</li> <li>• dynd-python 0.5.0</li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• greenlet 0.4.1</li> <li>• hdf5 1.8.9</li> <li>• ipython 1.1.0</li> <li>• itsdangerous 0.23</li> <li>• jinja2 2.7.1</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> </ul>	<ul style="list-style-type: none"> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmmath 0.1.1</li> <li>• llvmpy 0.12.0</li> <li>• lxml 3.2.3</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.1</li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• netcdf4 1.0.6 <i>LM</i></li> <li>• networkx 1.8.1</li> <li>• nose 1.3.0</li> <li>• numba 0.11.0</li> <li>• numexpr 2.2.2</li> <li>• numpy 1.7.1</li> </ul>	<ul style="list-style-type: none"> <li>• openpyxl 1.6.2</li> <li>• pandas 0.12.0</li> <li>• patsy 0.2.1</li> <li>• pillow 2.1.0</li> <li>• pip 1.4.1</li> <li>• ply 3.4</li> <li>• psutil 1.1.2</li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6.1</li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pyparsing 1.5.6</li> <li>• pyreadline 2.0.dev <i>W</i></li> <li>• pyside 1.2.1 <i>W</i></li> <li>• pytables 3.0.0</li> <li>• python 3.3.2</li> <li>• pytz 2013b</li> </ul>	<ul style="list-style-type: none"> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• requests 1.2.3</li> <li>• scikit-image 0.9.3</li> <li>• scipy 0.13.0</li> <li>• six 1.4.1</li> <li>• sphinx 1.1.3</li> <li>• sqlalchemy 0.8.3</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.3</li> <li>• tornado 3.1.1</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• yaml 0.1.4 <i>LM</i></li> <li>• zeromq 2.2.0 <i>LM</i></li> <li>• zlib 1.2.7</li> </ul>
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## Python 2.6 (available through conda):

<ul style="list-style-type: none"> <li>• argparse 1.2.1</li> <li>• astropy 0.2.5</li> <li>• atom 0.3.4</li> <li>• beautiful-soup 4.3.1</li> <li>• biopython 1.62</li> <li>• bitarray 0.8.1</li> <li>• boto 2.15.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarious 1.1</li> <li>• colorama 0.2.7</li> <li>• configobj 4.7.2</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.19.2</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• distribute 0.6.45</li> <li>• docutils 0.11</li> <li>• dynd-python 0.5.0</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• gevent 0.13.8</li> <li>• gevent-websocket 0.3.6</li> <li>• gevent_zeromq 0.2.5</li> <li>• greenlet 0.4.1</li> </ul>	<ul style="list-style-type: none"> <li>• grin 1.2.1</li> <li>• h5py 2.2.0</li> <li>• hdf5 1.8.9</li> <li>• imaging 1.1.7</li> <li>• ipython 1.1.0</li> <li>• itsdangerous 0.23</li> <li>• jinja2 2.7.1</li> <li>• libevent 2.0.20</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmmath 0.1.1</li> <li>• llvmpy 0.12.0</li> <li>• lxml 3.2.3</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.1 <i>LM</i></li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.6 <i>LM</i></li> <li>• networkx 1.8.1</li> </ul>	<ul style="list-style-type: none"> <li>• nltk 2.0.4</li> <li>• nose 1.3.0</li> <li>• numba 0.11.0</li> <li>• numexpr 2.2.2</li> <li>• numpy 1.7.1</li> <li>• opencv 2.4.6 <i>L</i></li> <li>• ordereddict 1.1</li> <li>• pandas 0.12.0</li> <li>• patsy 0.2.1</li> <li>• pep8 1.4.6</li> <li>• pip 1.4.1</li> <li>• ply 3.4</li> <li>• psutil 1.1.2</li> <li>• py 1.4.17</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6.1</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pyparsing 1.5.6</li> <li>• pyreadline 2.0.dev <i>W</i></li> <li>• pysam 0.6 <i>LM</i></li> <li>• pytables 3.0.0 <i>LM</i></li> </ul>	<ul style="list-style-type: none"> <li>• pytest 2.4.2</li> <li>• python 2.6.9</li> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• redis 2.6.9 <i>LM</i></li> <li>• redis-py 2.7.2 <i>LM</i></li> <li>• requests 1.2.3</li> <li>• scikit-image 0.9.3</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.13.0</li> <li>• six 1.4.1</li> <li>• sphinx 1.1.3</li> <li>• sqlalchemy 0.8.3</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.3 <i>LM</i></li> <li>• theano 0.5.0 <i>L</i></li> <li>• tornado 3.1.1</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• xlwt 0.7.5</li> <li>• yaml 0.1.4 <i>LM</i></li> <li>• zeromq 2.2.0 <i>LM</i></li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)



## Packages included in Anaconda 1.7.0

<ul style="list-style-type: none"> <li>• apptools 4.2.0</li> <li>• astropy 0.2.4</li> <li>• atom 0.3.2</li> <li>• binstar 0.3.1</li> <li>• biopython 1.61</li> <li>• bitarray 0.8.1</li> <li>• bokeh 0.1.1</li> <li>• boto 2.12.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarious 1.1</li> <li>• chaco 4.3.0</li> <li>• configobj 4.7.2</li> <li>• cubes 0.10.2</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.19.1</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• distribute 0.6.45</li> <li>• docutils 0.11</li> <li>• dynd-python 0.4.2</li> <li>• enable 4.3.0</li> <li>• enaml 0.7.19</li> <li>• envisage 4.3.0</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• gevent 0.13.8</li> <li>• gevent-websocket 0.3.6</li> <li>• gevent_zeromq 0.2.5</li> </ul>	<ul style="list-style-type: none"> <li>• greenlet 0.4.1</li> <li>• grin 1.2.1</li> <li>• h5py 2.2.0</li> <li>• hdf5 1.8.9</li> <li>• imaging 1.1.7</li> <li>• ipython 1.0.0</li> <li>• itsdangerous 0.23</li> <li>• jinja2 2.7.1</li> <li>• keyring 3.0.1</li> <li>• launcher 0.1.2</li> <li>• libevent 2.0.20</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmmath 0.1.1</li> <li>• llvmpy 0.12.0</li> <li>• lxml 3.2.3</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.0</li> <li>• mayavi 4.3.0</li> <li>• mdp 3.3</li> <li>• menuinst 1.0.1 <i>W</i></li> <li>• meta 0.4.2.dev</li> <li>• mingw 4.7 <i>W</i></li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> </ul>	<ul style="list-style-type: none"> <li>• netcdf4 1.0.5 <i>LM</i></li> <li>• networkx 1.8.1</li> <li>• nltk 2.0.4</li> <li>• nose 1.3.0</li> <li>• numba 0.10.2</li> <li>• numexpr 2.0.1</li> <li>• numpy 1.7.1</li> <li>• opencv 2.4.6 <i>L</i></li> <li>• pandas 0.12.0</li> <li>• patsy 0.2.1</li> <li>• pep8 1.4.6</li> <li>• pip 1.4.1</li> <li>• ply 3.4</li> <li>• psutil 1.0.1</li> <li>• py 1.4.14</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pyaudio 0.2.7 <i>M</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyface 4.3.0</li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pyparsing 1.5.6</li> <li>• pyreadline 2.0.dev <i>W</i></li> <li>• pysal 1.6.0</li> <li>• pysam 0.6 <i>LM</i></li> <li>• pyside 1.1.2</li> </ul>	<ul style="list-style-type: none"> <li>• pytables 2.4.0</li> <li>• pytest 2.3.5</li> <li>• python 2.7.5</li> <li>• pytz 2013b</li> <li>• pywin32 218.4 <i>W</i></li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• qt 4.7.4</li> <li>• redis-py 2.7.2 <i>LM</i></li> <li>• requests 1.2.3</li> <li>• rope 0.9.4</li> <li>• scikit-image 0.8.2</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.12.0</li> <li>• six 1.4.1</li> <li>• sphinx 1.1.3</li> <li>• spyder 2.2.4</li> <li>• sqlalchemy 0.8.2</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.3</li> <li>• theano 0.5.0 <i>L</i></li> <li>• tornado 3.1.1</li> <li>• traits 4.3.0</li> <li>• traitsui 4.3.0</li> <li>• vtk 5.10.1</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• xlwt 0.7.5</li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

## Python 3.3 (available through conda):

<ul style="list-style-type: none"> <li>• astropy 0.2.4</li> <li>• bitarray 0.8.1</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.19.1</li> <li>• dateutil 2.1</li> <li>• distribute 0.6.45</li> <li>• docutils 0.11</li> <li>• dynd-python 0.4.2</li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• greenlet 0.4.1</li> <li>• hdf5 1.8.9</li> <li>• ipython 1.0.0</li> <li>• itsdangerous 0.23</li> <li>• jinja2 2.7.1</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> </ul>	<ul style="list-style-type: none"> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmmath 0.1.1</li> <li>• llvmpy 0.12.0</li> <li>• lxml 3.2.3</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.0</li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• netcdf4 1.0.5 <i>LM</i></li> <li>• networkx 1.8.1</li> <li>• nose 1.3.0</li> <li>• numba 0.10.2</li> </ul>	<ul style="list-style-type: none"> <li>• numpy 1.7.1</li> <li>• pandas 0.12.0</li> <li>• patsy 0.2.1</li> <li>• pillow 2.1.0</li> <li>• pip 1.4.1</li> <li>• ply 3.4</li> <li>• psutil 1.0.1</li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6</li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pyparsing 1.5.6</li> <li>• pyreadline 2.0.dev <i>W</i></li> <li>• pyside 1.1.2 <i>W</i></li> <li>• python 3.3.2</li> </ul>	<ul style="list-style-type: none"> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• requests 1.2.3</li> <li>• scikit-image 0.8.2</li> <li>• scipy 0.12.0</li> <li>• six 1.4.1</li> <li>• sphinx 1.1.3</li> <li>• sqlalchemy 0.8.2</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.3</li> <li>• tornado 3.1.1</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• zlib 1.2.7</li> </ul>
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## Python 2.6 (available through conda):

<ul style="list-style-type: none"> <li>• argparse 1.2.1</li> <li>• astropy 0.2.4</li> <li>• atom 0.3.2</li> <li>• biopython 1.61</li> <li>• bitarray 0.8.1</li> <li>• boto 2.12.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarious 1.1</li> <li>• configobj 4.7.2</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.19.1</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• distribute 0.6.45</li> <li>• docutils 0.11</li> <li>• dynd-python 0.4.2</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• gevent 0.13.8</li> <li>• gevent-websocket 0.3.6</li> <li>• gevent_zeromq 0.2.5</li> <li>• greenlet 0.4.1</li> <li>• grin 1.2.1</li> </ul>	<ul style="list-style-type: none"> <li>• h5py 2.2.0</li> <li>• hdf5 1.8.9</li> <li>• imaging 1.1.7</li> <li>• ipython 1.0.0</li> <li>• itsdangerous 0.23</li> <li>• jinja2 2.7.1</li> <li>• libevent 2.0.20</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13 <i>LM</i></li> <li>• libtiff 4.0.2 <i>LM</i></li> <li>• libxml2 2.9.0 <i>LM</i></li> <li>• libxslt 1.1.28 <i>LM</i></li> <li>• llvm 3.3</li> <li>• llvmmath 0.1.1</li> <li>• llvmpy 0.12.0</li> <li>• lxml 3.2.3</li> <li>• markupsafe 0.18</li> <li>• matplotlib 1.3.0 <i>LM</i></li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.5 <i>LM</i></li> <li>• networkx 1.8.1</li> </ul>	<ul style="list-style-type: none"> <li>• nltk 2.0.4</li> <li>• nose 1.3.0</li> <li>• numba 0.10.2</li> <li>• numexpr 2.0.1</li> <li>• numpy 1.7.1</li> <li>• opencv 2.4.6 <i>L</i></li> <li>• ordereddict 1.1</li> <li>• pandas 0.12.0</li> <li>• patsy 0.2.1</li> <li>• pep8 1.4.6</li> <li>• pip 1.4.1</li> <li>• ply 3.4</li> <li>• psutil 1.0.1</li> <li>• py 1.4.14</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyflakes 0.7.3</li> <li>• pygments 1.6</li> <li>• pyparsing 1.5.6</li> <li>• pyreadline 2.0.dev <i>W</i></li> <li>• pysam 0.6 <i>LM</i></li> </ul>	<ul style="list-style-type: none"> <li>• pytables 2.4.0 <i>LM</i></li> <li>• pytest 2.3.5</li> <li>• python 2.6.8</li> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• redis-py 2.7.2 <i>LM</i></li> <li>• requests 1.2.3</li> <li>• scikit-image 0.8.2</li> <li>• scikit-learn 0.14.1</li> <li>• scipy 0.12.0</li> <li>• six 1.4.1</li> <li>• sphinx 1.1.3</li> <li>• sqlalchemy 0.8.2</li> <li>• statsmodels 0.5.0</li> <li>• sympy 0.7.3 <i>LM</i></li> <li>• theano 0.5.0 <i>L</i></li> <li>• tornado 3.1.1</li> <li>• werkzeug 0.9.4</li> <li>• xlrd 0.9.2</li> <li>• xlwt 0.7.5</li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

### Packages included in Anaconda 1.6.1

<ul style="list-style-type: none"> <li>• astropy 0.2.3</li> <li>• atom 0.2.3</li> <li>• binstar 0.1.2</li> <li>• biopython 1.61</li> <li>• bitarray 0.8.1</li> <li>• boto 2.9.6</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarious 1.1</li> <li>• conda 1.7.2</li> <li>• cubes 0.10.2</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.19.1</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• distribute 0.6.45</li> <li>• docutils 0.10</li> <li>• dynd-python 0.4.0</li> <li>• enaml 0.7.6</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• gevent 0.13.8</li> <li>• gevent-websocket 0.3.6</li> <li>• gevent_zeromq 0.2.5</li> <li>• greenlet 0.4.1</li> </ul>	<ul style="list-style-type: none"> <li>• grin 1.2.1</li> <li>• h5py 2.1.1</li> <li>• hdf5 1.8.9</li> <li>• imaging 1.1.7</li> <li>• ipython 0.13.2</li> <li>• itsdangerous 0.21</li> <li>• jinja2 2.6</li> <li>• keyring 1.4</li> <li>• launcher 0.1.2</li> <li>• libevent 2.0.20</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13</li> <li>• llvm 3.2</li> <li>• llvmmath 0.1.0</li> <li>• llvmpy 0.11.3</li> <li>• lxml 3.2.1</li> <li>• matplotlib 1.2.1</li> <li>• mdp 3.3</li> <li>• menuinst 1.0.1 <i>W</i></li> <li>• meta 0.4.2.dev</li> <li>• mingw 4.7 <i>W</i></li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.4 <i>LM</i></li> <li>• networkx 1.7</li> </ul>	<ul style="list-style-type: none"> <li>• nltk 2.0.4</li> <li>• nose 1.3.0</li> <li>• numba 0.9.0</li> <li>• numexpr 2.0.1</li> <li>• numpy 1.7.1</li> <li>• opencv 2.4.2 <i>L</i></li> <li>• pandas 0.11.0</li> <li>• pep8 1.4.5</li> <li>• pip 1.3.1</li> <li>• ply 3.4</li> <li>• psutil 0.7.1</li> <li>• py 1.4.14</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pyaudio 0.2.7 <i>M</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyflakes 0.7.2</li> <li>• pygments 1.6</li> <li>• pyparsing 1.5.6</li> <li>• pysal 1.5.0</li> <li>• pysam 0.6 <i>LM</i></li> <li>• pyside 1.1.2</li> <li>• pytables 2.4.0</li> </ul>	<ul style="list-style-type: none"> <li>• pytest 2.3.5</li> <li>• python 2.7.5</li> <li>• pytz 2013b</li> <li>• pywin32 218.4 <i>W</i></li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• qt 4.7.4</li> <li>• redis-py 2.7.2 <i>LM</i></li> <li>• requests 1.2.3</li> <li>• rope 0.9.4</li> <li>• scikit-image 0.8.2</li> <li>• scikit-learn 0.13.1</li> <li>• scipy 0.12.0</li> <li>• six 1.3.0</li> <li>• sphinx 1.1.3</li> <li>• spyder 2.2.0</li> <li>• sqlalchemy 0.8.1</li> <li>• statsmodels 0.4.3</li> <li>• sympy 0.7.2</li> <li>• theano 0.5.0 <i>L</i></li> <li>• tornado 3.1</li> <li>• werkzeug 0.9.1</li> <li>• xlrd 0.9.2</li> <li>• xlwt 0.7.5</li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

## Python 3.3 (available through conda):

<ul style="list-style-type: none"> <li>• astropy 0.2.3</li> <li>• bitarray 0.8.1</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.19.1</li> <li>• dateutil 2.1</li> <li>• distribute 0.6.45</li> <li>• docutils 0.10</li> <li>• dynd-python 0.4.0</li> <li>• freetype 2.4.10</li> <li>• greenlet 0.4.1</li> <li>• hdf5 1.8.9</li> <li>• ipython 0.13.2</li> <li>• jinja2 2.6</li> </ul>	<ul style="list-style-type: none"> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13</li> <li>• llvm 3.2</li> <li>• llvmmath 0.1.0</li> <li>• llvmpy 0.11.3</li> <li>• lxml 3.2.1</li> <li>• matplotlib 1.2.1</li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• netcdf4 1.0.4 <i>LM</i></li> <li>• networkx 1.7</li> <li>• nose 1.3.0</li> <li>• numba 0.9.0</li> </ul>	<ul style="list-style-type: none"> <li>• numpy 1.7.1</li> <li>• pandas 0.11.0</li> <li>• pip 1.3.1</li> <li>• ply 3.4</li> <li>• psutil 0.7.1</li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6</li> <li>• pyflakes 0.7.2</li> <li>• pygments 1.6</li> <li>• pyside 1.1.2 <i>W</i></li> <li>• python 3.3.2</li> <li>• pytz 2013b</li> </ul>	<ul style="list-style-type: none"> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• requests 1.2.3</li> <li>• scikit-image 0.8.2</li> <li>• scipy 0.12.0</li> <li>• six 1.3.0</li> <li>• sphinx 1.1.3</li> <li>• sqlalchemy 0.8.1</li> <li>• sympy 0.7.2</li> <li>• tornado 3.1</li> <li>• xlrd 0.9.2</li> <li>• zlib 1.2.7</li> </ul>
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## Python 2.6 (available through conda):

<ul style="list-style-type: none"> <li>• argparse 1.2.1</li> <li>• astropy 0.2.3</li> <li>• atom 0.2.3</li> <li>• biopython 1.61</li> <li>• bitarray 0.8.1</li> <li>• boto 2.9.6</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarious 1.1</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.19.1</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• distribute 0.6.45</li> <li>• docutils 0.10</li> <li>• dynd-python 0.4.0</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.10.1</li> <li>• freetype 2.4.10</li> <li>• gevent 0.13.8</li> <li>• gevent-websocket 0.3.6</li> <li>• gevent_zeromq 0.2.5</li> <li>• greenlet 0.4.1</li> </ul>	<ul style="list-style-type: none"> <li>• grin 1.2.1</li> <li>• h5py 2.1.1</li> <li>• hdf5 1.8.9</li> <li>• imaging 1.1.7</li> <li>• ipython 0.13.2</li> <li>• itsdangerous 0.21</li> <li>• jinja2 2.6</li> <li>• libevent 2.0.20</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13</li> <li>• llvm 3.2</li> <li>• llvmmath 0.1.0</li> <li>• llvmpy 0.11.3</li> <li>• lxml 3.2.1</li> <li>• matplotlib 1.2.1 <i>LM</i></li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.4 <i>LM</i></li> <li>• networkx 1.7</li> <li>• nltk 2.0.4</li> </ul>	<ul style="list-style-type: none"> <li>• nose 1.3.0</li> <li>• numba 0.9.0</li> <li>• numexpr 2.0.1</li> <li>• numpy 1.7.1</li> <li>• opencv 2.4.2 <i>L</i></li> <li>• ordereddict 1.1</li> <li>• pandas 0.11.0</li> <li>• pep8 1.4.5</li> <li>• pip 1.3.1</li> <li>• ply 3.4</li> <li>• psutil 0.7.1</li> <li>• py 1.4.14</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyflakes 0.7.2</li> <li>• pygments 1.6</li> <li>• pyparsing 1.5.6</li> <li>• pysam 0.6 <i>LM</i></li> <li>• pytables 2.4.0 <i>LM</i></li> </ul>	<ul style="list-style-type: none"> <li>• pytest 2.3.5</li> <li>• python 2.6.8</li> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• redis-py 2.7.2 <i>LM</i></li> <li>• requests 1.2.3</li> <li>• scikit-image 0.8.2</li> <li>• scikit-learn 0.13.1</li> <li>• scipy 0.12.0</li> <li>• six 1.3.0</li> <li>• sphinx 1.1.3</li> <li>• sqlalchemy 0.8.1</li> <li>• statsmodels 0.4.3</li> <li>• sympy 0.7.2 <i>LM</i></li> <li>• theano 0.5.0 <i>L</i></li> <li>• tornado 3.1</li> <li>• werkzeug 0.9.1</li> <li>• xlrd 0.9.2</li> <li>• xlwt 0.7.5</li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

## Packages included in Anaconda 1.5.0

<ul style="list-style-type: none"> <li>• astropy 0.2.1</li> <li>• atom 0.2.3</li> <li>• biopython 1.61</li> <li>• bitarray 0.8.1</li> <li>• boto 2.9.2</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarious 1.1</li> <li>• conda 1.5.2</li> <li>• cubes 0.10.2</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.19</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• distribute 0.6.36</li> <li>• docutils 0.10</li> <li>• dynd-python 0.3.0</li> <li>• enaml 0.7.6</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.9</li> <li>• freetype 2.4.10</li> <li>• gevent 0.13.8</li> <li>• gevent-websocket 0.3.6</li> <li>• gevent_zeromq 0.2.5</li> </ul>	<ul style="list-style-type: none"> <li>• greenlet 0.4.0</li> <li>• grin 1.2.1</li> <li>• h5py 2.1.1</li> <li>• hdf5 1.8.9</li> <li>• imaging 1.1.7</li> <li>• ipython 0.13.2</li> <li>• jinja2 2.6</li> <li>• libevent 2.0.20</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13</li> <li>• llvm 3.2</li> <li>• llvmpy 0.11.2</li> <li>• lxml 3.2.0</li> <li>• matplotlib 1.2.1</li> <li>• mdp 3.3</li> <li>• menuinst 1.0.0 <i>W</i></li> <li>• meta 0.4.2.dev</li> <li>• mingw 4.7 <i>W</i></li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.4 <i>LM</i></li> <li>• networkx 1.7</li> <li>• nltk 2.0.4</li> </ul>	<ul style="list-style-type: none"> <li>• nose 1.3.0</li> <li>• numba 0.8.1</li> <li>• numexpr 2.0.1</li> <li>• numpy 1.7.1</li> <li>• opencv 2.4.2 <i>L</i></li> <li>• pandas 0.11.0</li> <li>• pip 1.3.1</li> <li>• ply 3.4</li> <li>• psutil 0.7.1</li> <li>• py 1.4.12</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pyaudio 0.2.7 <i>M</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyflakes 0.7.2</li> <li>• pygments 1.6</li> <li>• pyparsing 1.5.6</li> <li>• pysal 1.5.0</li> <li>• pysam 0.6 <i>LM</i></li> <li>• pyside 1.1.2</li> <li>• pytables 2.4.0</li> </ul>	<ul style="list-style-type: none"> <li>• pytest 2.3.4</li> <li>• python 2.7.4</li> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• qt 4.7.4</li> <li>• redis-py 2.7.2 <i>LM</i></li> <li>• requests 1.2.0</li> <li>• scikit-image 0.8.2</li> <li>• scikit-learn 0.13.1</li> <li>• scipy 0.12.0</li> <li>• six 1.3.0</li> <li>• sphinx 1.1.3</li> <li>• spyder 2.2.0</li> <li>• sqlalchemy 0.8.1</li> <li>• statsmodels 0.4.3</li> <li>• sympy 0.7.2</li> <li>• theano 0.5.0 <i>L</i></li> <li>• tornado 3.0.1</li> <li>• werkzeug 0.8.3</li> <li>• xlrd 0.9.2</li> <li>• xlwt 0.7.5</li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

## Python 3.3 (available through conda):

<ul style="list-style-type: none"> <li>• astropy 0.2.1</li> <li>• bitarray 0.8.1</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.19</li> <li>• dateutil 2.1</li> <li>• distribute 0.6.36</li> <li>• docutils 0.10</li> <li>• dynd-python 0.3.0</li> <li>• freetype 2.4.10</li> <li>• greenlet 0.4.0</li> <li>• hdf5 1.8.9</li> <li>• ipython 0.13.2</li> <li>• jinja2 2.6</li> </ul>	<ul style="list-style-type: none"> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13</li> <li>• llvm 3.2</li> <li>• llvmpy 0.11.2</li> <li>• lxml 3.2.0</li> <li>• matplotlib 1.2.1</li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• netcdf4 1.0.4 <i>LM</i></li> <li>• networkx 1.7</li> <li>• nose 1.3.0</li> <li>• numba 0.8.1</li> <li>• numpy 1.7.1</li> </ul>	<ul style="list-style-type: none"> <li>• pandas 0.11.0</li> <li>• pip 1.3.1</li> <li>• ply 3.4</li> <li>• psutil 0.7.1</li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6</li> <li>• pyflakes 0.7.2</li> <li>• pygments 1.6</li> <li>• pyside 1.1.2 <i>W</i></li> <li>• python 3.3.1</li> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> </ul>	<ul style="list-style-type: none"> <li>• pyzmq 2.2.0.1</li> <li>• requests 1.2.0</li> <li>• scikit-image 0.8.2</li> <li>• scipy 0.12.0</li> <li>• six 1.3.0</li> <li>• sphinx 1.1.3</li> <li>• sqlalchemy 0.8.1</li> <li>• sympy 0.7.2</li> <li>• tornado 3.0.1</li> <li>• xlrd 0.9.2</li> <li>• zlib 1.2.7</li> </ul>
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**Python 2.6 (available through conda):**

<ul style="list-style-type: none"> <li>• argparse 1.2.1</li> <li>• astropy 0.2.1</li> <li>• atom 0.2.3</li> <li>• biopython 1.61</li> <li>• bitarray 0.8.1</li> <li>• boto 2.9.2</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• casuarious 1.1</li> <li>• curl 7.30.0 <i>LM</i></li> <li>• cython 0.19</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• distribute 0.6.36</li> <li>• docutils 0.10</li> <li>• dynd-python 0.3.0</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.9</li> <li>• freetype 2.4.10</li> <li>• gevent 0.13.8</li> <li>• gevent-websocket 0.3.6</li> <li>• gevent_zeromq 0.2.5</li> </ul>	<ul style="list-style-type: none"> <li>• greenlet 0.4.0</li> <li>• grin 1.2.1</li> <li>• h5py 2.1.1</li> <li>• hdf5 1.8.9</li> <li>• imaging 1.1.7</li> <li>• ipython 0.13.2</li> <li>• jinja2 2.6</li> <li>• libevent 2.0.20</li> <li>• libnetcdf 4.2.1.1 <i>LM</i></li> <li>• libpng 1.5.13</li> <li>• llvm 3.2</li> <li>• llvmpy 0.11.2</li> <li>• lxml 3.2.0</li> <li>• matplotlib 1.2.1 <i>LM</i></li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• netcdf4 1.0.4 <i>LM</i></li> <li>• networkx 1.7</li> <li>• nltk 2.0.4</li> </ul>	<ul style="list-style-type: none"> <li>• nose 1.3.0</li> <li>• numba 0.8.1</li> <li>• numexpr 2.0.1</li> <li>• numpy 1.7.1</li> <li>• opencv 2.4.2 <i>L</i></li> <li>• ordereddict 1.1</li> <li>• pandas 0.11.0</li> <li>• pip 1.3.1</li> <li>• ply 3.4</li> <li>• psutil 0.7.1</li> <li>• py 1.4.12</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pycosat 0.6.0</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyflakes 0.7.2</li> <li>• pygments 1.6</li> <li>• pyparsing 1.5.6</li> <li>• pysam 0.6 <i>LM</i></li> <li>• pytables 2.4.0 <i>LM</i></li> </ul>	<ul style="list-style-type: none"> <li>• pytest 2.3.4</li> <li>• python 2.6.8</li> <li>• pytz 2013b</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• redis-py 2.7.2 <i>LM</i></li> <li>• requests 1.2.0</li> <li>• scikit-image 0.8.2</li> <li>• scikit-learn 0.13.1</li> <li>• scipy 0.12.0</li> <li>• six 1.3.0</li> <li>• sphinx 1.1.3</li> <li>• sqlalchemy 0.8.1</li> <li>• statsmodels 0.4.3</li> <li>• sympy 0.7.2 <i>LM</i></li> <li>• theano 0.5.0 <i>L</i></li> <li>• tornado 3.0.1</li> <li>• werkzeug 0.8.3</li> <li>• xlrd 0.9.2</li> <li>• xlwt 0.7.5</li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

**Packages included in Anaconda 1.4.0**

**Python 2.7 (what is included in the installers):**

<ul style="list-style-type: none"> <li>• astropy 0.2</li> <li>• biopython 1.60</li> <li>• bitarray 0.8.0</li> <li>• bitey 0.0</li> <li>• boto 2.8.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• conda 1.4.4</li> <li>• cubes 0.10.2</li> <li>• cython 0.18</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• distribute 0.6.34</li> <li>• docutils 0.10</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.9</li> <li>• freetype 2.4.10</li> <li>• gdata 2.0.17</li> <li>• gevent 0.13.8</li> <li>• gevent-websocket 0.3.6</li> <li>• gevent_zeromq 0.2.5</li> <li>• googlecl 0.9.12</li> <li>• greenlet 0.4.0</li> </ul>	<ul style="list-style-type: none"> <li>• grin 1.2.1</li> <li>• h5py 2.1.1</li> <li>• hdf5 1.8.9</li> <li>• imaging 1.1.7</li> <li>• ipython 0.13.1</li> <li>• jinja2 2.6</li> <li>• libevent 2.0.20</li> <li>• libpng 1.5.13</li> <li>• llvm 3.2</li> <li>• llvmpy 0.11.1</li> <li>• lxml 3.0.2</li> <li>• matplotlib 1.2.0</li> <li>• mdp 3.3</li> <li>• menuinst 1.0.0 <i>W</i></li> <li>• meta 0.4.2.dev</li> <li>• mingw 4.7 <i>W</i></li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• networkx 1.7</li> <li>• nltk 2.0.4</li> <li>• nose 1.2.1</li> <li>• numba 0.7.0</li> </ul>	<ul style="list-style-type: none"> <li>• numexpr 2.0.1</li> <li>• numpy 1.7.0</li> <li>• opencv 2.4.2 <i>L</i></li> <li>• pandas 0.10.1</li> <li>• pip 1.2.1</li> <li>• ply 3.4</li> <li>• psutil 0.6.1</li> <li>• py 1.4.12</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pyaudio 0.2.7 <i>M</i></li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyflakes 0.6.1</li> <li>• pygments 1.6</li> <li>• pyparsing 1.5.6</li> <li>• pysal 1.5.0</li> <li>• pysam 0.6 <i>LM</i></li> <li>• pyside 1.1.2</li> <li>• pytables 2.4.0</li> <li>• pytest 2.3.4</li> <li>• python 2.7.3</li> </ul>	<ul style="list-style-type: none"> <li>• pytz 2012j</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• qt 4.7.4</li> <li>• redis 2.6.9 <i>LM</i></li> <li>• redis-py 2.7.2 <i>LM</i></li> <li>• requests 0.13.9</li> <li>• scikit-image 0.8.2</li> <li>• scikit-learn 0.13</li> <li>• scipy 0.11.0</li> <li>• six 1.2.0</li> <li>• sphinx 1.1.3</li> <li>• spyder 2.1.13</li> <li>• sqlalchemy 0.7.8</li> <li>• statsmodels 0.4.3</li> <li>• sympy 0.7.1</li> <li>• theano 0.5.0 <i>L</i></li> <li>• tornado 2.4.1</li> <li>• werkzeug 0.8.3</li> <li>• xlrd 0.9.0</li> <li>• xlwt 0.7.4</li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

**Python 3.3 (available through conda):**

<ul style="list-style-type: none"> <li>• astropy 0.2</li> <li>• bitarray 0.8.0</li> <li>• cython 0.18</li> <li>• dateutil 2.1</li> <li>• distribute 0.6.34</li> <li>• docutils 0.10</li> <li>• freetype 2.4.10</li> <li>• greenlet 0.4.0</li> <li>• ipython 0.13.1</li> <li>• jinja2 2.6</li> <li>• libpng 1.5.13</li> </ul>	<ul style="list-style-type: none"> <li>• llvm 3.2</li> <li>• llvmpy 0.11.1</li> <li>• lxml 3.0.2</li> <li>• matplotlib 1.2.0</li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• networkx 1.7</li> <li>• nose 1.2.1</li> <li>• numpy 1.7.0</li> <li>• pandas 0.10.1 <i>LM</i></li> <li>• pip 1.2.1</li> </ul>	<ul style="list-style-type: none"> <li>• ply 3.4</li> <li>• psutil 0.6.1</li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6</li> <li>• pyflakes 0.6.1</li> <li>• pygments 1.6</li> <li>• python 3.3.0</li> <li>• pytz 2012j</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• requests 0.13.9</li> </ul>	<ul style="list-style-type: none"> <li>• scikit-image 0.8.2 <i>LM</i></li> <li>• scipy 0.11.0 <i>LM</i></li> <li>• six 1.2.0</li> <li>• sphinx 1.1.3</li> <li>• sqlalchemy 0.7.8</li> <li>• tornado 2.4.1</li> <li>• xlrd 0.9.0</li> <li>• zlib 1.2.7</li> </ul>
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## Python 2.6 (available through conda):

<ul style="list-style-type: none"> <li>• argparse 1.2.1</li> <li>• astropy 0.2</li> <li>• biopython 1.60</li> <li>• bitarray 0.8.0</li> <li>• boto 2.8.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• cython 0.18</li> <li>• dateutil 2.1</li> <li>• disco 0.4.4 <i>L</i></li> <li>• distribute 0.6.34</li> <li>• docutils 0.10</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.9</li> <li>• freetype 2.4.10</li> <li>• gdata 2.0.17</li> <li>• gevent 0.13.8</li> <li>• gevent-websocket 0.3.6</li> <li>• gevent_zeromq 0.2.5</li> <li>• googlecl 0.9.12</li> <li>• greenlet 0.4.0</li> </ul>	<ul style="list-style-type: none"> <li>• grin 1.2.1</li> <li>• h5py 2.1.1</li> <li>• hdf5 1.8.9</li> <li>• imaging 1.1.7</li> <li>• ipython 0.13.1</li> <li>• jinja2 2.6</li> <li>• libevent 2.0.20</li> <li>• libpng 1.5.13</li> <li>• llvm 3.2</li> <li>• llvmpy 0.11.1</li> <li>• lxml 3.0.2</li> <li>• matplotlib 1.2.0 <i>LM</i></li> <li>• mdp 3.3</li> <li>• mingw 4.7 <i>W</i></li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• networkx 1.7</li> <li>• nltk 2.0.4</li> <li>• nose 1.2.1</li> <li>• numba 0.7.0</li> </ul>	<ul style="list-style-type: none"> <li>• numexpr 2.0.1</li> <li>• numpy 1.7.0</li> <li>• opencv 2.4.2 <i>L</i></li> <li>• pandas 0.10.1</li> <li>• pip 1.2.1</li> <li>• ply 3.4</li> <li>• psutil 0.6.1</li> <li>• py 1.4.12</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pycparser 2.9.1</li> <li>• pycrypto 2.6</li> <li>• pycurl 7.19.0 <i>LM</i></li> <li>• pyflakes 0.6.1</li> <li>• pygments 1.6</li> <li>• pyparsing 1.5.6</li> <li>• pysam 0.6 <i>LM</i></li> <li>• pytables 2.4.0 <i>LM</i></li> <li>• pytest 2.3.4</li> <li>• python 2.6.8</li> <li>• pytz 2012j</li> </ul>	<ul style="list-style-type: none"> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• redis 2.6.9 <i>LM</i></li> <li>• redis-py 2.7.2 <i>LM</i></li> <li>• requests 0.13.9</li> <li>• scikit-image 0.8.2</li> <li>• scikit-learn 0.13</li> <li>• scipy 0.11.0</li> <li>• six 1.2.0</li> <li>• sphinx 1.1.3</li> <li>• sqlalchemy 0.7.8</li> <li>• statsmodels 0.4.3</li> <li>• sympy 0.7.1 <i>LM</i></li> <li>• theano 0.5.0 <i>L</i></li> <li>• tornado 2.4.1</li> <li>• werkzeug 0.8.3</li> <li>• xlrd 0.9.0</li> <li>• xlwt 0.7.4</li> <li>• zlib 1.2.7</li> </ul>
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)



## Packages included in Anaconda 1.3.1

<ul style="list-style-type: none"> <li>• biopython 1.60</li> <li>• bitarray 0.8.0</li> <li>• bitey 0.0</li> <li>• boto 2.7.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• conda 1.3.5</li> <li>• cubes 0.10.1</li> <li>• cython 0.17.4</li> <li>• dateutil 1.5</li> <li>• disco 0.4.4 <i>L</i></li> <li>• distribute 0.6.34</li> <li>• docutils 0.10</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.9</li> <li>• freetype 2.4.10</li> <li>• gdata 2.0.17</li> <li>• gevent 0.13.8</li> <li>• gevent-websocket 0.3.6</li> <li>• gevent_zeromq 0.2.5</li> <li>• googlecl 0.9.12</li> <li>• greenlet 0.4.0</li> <li>• grin 1.2.1</li> </ul>	<ul style="list-style-type: none"> <li>• h5py 2.1.1</li> <li>• hdf5 1.8.9</li> <li>• imaging 1.1.7</li> <li>• iopro 1.3.2 <i>P</i></li> <li>• ipython 0.13.1</li> <li>• jinja2 2.6</li> <li>• libevent 2.0.20</li> <li>• libnvvm 1.0 <i>P</i></li> <li>• libpng 1.5.13</li> <li>• llvm 3.2</li> <li>• llvmpy 0.10.2</li> <li>• matplotlib 1.2.0</li> <li>• mdp 3.3</li> <li>• meta 0.4.2.dev</li> <li>• mingw 4.7 <i>W</i></li> <li>• mkl 10.3 <i>LP</i></li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• networkx 1.7</li> <li>• nltk 2.0.4</li> <li>• nose 1.2.1</li> <li>• numba 0.6.0</li> </ul>	<ul style="list-style-type: none"> <li>• numbapro 0.8.1 <i>P</i></li> <li>• numexpr 2.0.1</li> <li>• numpy 1.6.2 <i>W</i></li> <li>• numpy 1.7.0rc1 <i>U</i></li> <li>• opencv 2.4.2 <i>L</i></li> <li>• pandas 0.10.1</li> <li>• pip 1.2.1</li> <li>• ply 3.4</li> <li>• psutil 0.6.1</li> <li>• py 1.4.12</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pyaudio 0.2.7 <i>M</i></li> <li>• pycrypto 2.6</li> <li>• pycurl 7.19.0</li> <li>• pyflakes 0.5.0</li> <li>• pygments 1.5</li> <li>• pyparsing 1.5.6</li> <li>• pysal 1.4.0</li> <li>• pysam 0.6 <i>U</i></li> <li>• pyside 1.1.2</li> <li>• pytables 2.4.0</li> <li>• pytest 2.3.4</li> </ul>	<ul style="list-style-type: none"> <li>• python 2.7.3</li> <li>• pytz 2012d</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• qt 4.7.4</li> <li>• redis 2.6.9 <i>U</i></li> <li>• redis-py 2.7.2 <i>U</i></li> <li>• requests 0.13.9</li> <li>• scikit-learn 0.13</li> <li>• scikits-image 0.7.1</li> <li>• scipy 0.11.0</li> <li>• sphinx 1.1.3</li> <li>• spyder 2.1.13</li> <li>• sqlalchemy 0.7.8</li> <li>• statsmodels 0.4.3</li> <li>• sympy 0.7.1</li> <li>• theano 0.5.0 <i>L</i></li> <li>• tornado 2.4.1</li> <li>• werkzeug 0.8.3</li> <li>• wisef 1.1 <i>UP</i></li> <li>• zeromq 2.2.0</li> <li>• zlib 1.2.7</li> </ul>
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*U*: Unix - *L*: Linux - *M*: macOS - *W*: Windows - *P*: not in CE

## Packages included in Anaconda 1.2.1

<ul style="list-style-type: none"> <li>• bitarray 0.8.0</li> <li>• bitey 0.0</li> <li>• boto 2.6.0</li> <li>• cairo 1.12.2 <i>L</i></li> <li>• chaco 4.2.1.dev <i>M</i></li> <li>• conda 1.2.1</li> <li>• cython 0.17.1</li> <li>• dateutil 1.5</li> <li>• disco 0.4.2 <i>L</i></li> <li>• distribute 0.6.30</li> <li>• docutils 0.9.1</li> <li>• erlang R15B01 <i>L</i></li> <li>• flask 0.9</li> <li>• freetype 2.4.10</li> <li>• gevent 0.13.7</li> <li>• gevent-websocket 0.3.6</li> <li>• gevent_zeromq 0.2.5</li> <li>• greenlet 0.4.0</li> <li>• grin 1.2.1</li> <li>• h5py 2.1.0</li> <li>• hdf5 1.8.9</li> </ul>	<ul style="list-style-type: none"> <li>• imaging 1.1.7</li> <li>• iopro 1.2.2 <i>P</i></li> <li>• ipython 0.13.1</li> <li>• jinja2 2.6</li> <li>• jpeg 8d</li> <li>• libevent 2.0.20</li> <li>• libpng 1.5.13</li> <li>• llvm 3.1</li> <li>• llvmpy 0.9</li> <li>• matplotlib 1.2.0</li> <li>• mdp 3.3</li> <li>• meta 0.4.2.dev</li> <li>• mingw 4.7 <i>W</i></li> <li>• mkl 10.3 <i>LP</i></li> <li>• mpi4py 1.3 <i>L</i></li> <li>• mpich2 1.4.1p1 <i>L</i></li> <li>• networkx 1.7</li> <li>• nltk 2.0.3</li> <li>• nose 1.1.2</li> <li>• numba 0.3.2</li> <li>• numbapro 0.7.3 <i>P</i></li> </ul>	<ul style="list-style-type: none"> <li>• numexpr 2.0.1</li> <li>• numpy 1.6.2 <i>W</i></li> <li>• numpy 1.7.0b2 <i>U</i></li> <li>• opencv 2.4.2 <i>L</i></li> <li>• pandas 0.9.0</li> <li>• pip 1.2.1</li> <li>• psutil 0.6.1</li> <li>• py 1.4.12</li> <li>• py2cairo 1.10.0 <i>L</i></li> <li>• pyaudio 0.2.6 <i>M</i></li> <li>• pycurl 7.19.0</li> <li>• pyflakes 0.5.0</li> <li>• pyreadline 1.7.1 <i>W</i></li> <li>• pysal 1.4.0</li> <li>• pysam 0.6 <i>U</i></li> <li>• pyside 1.1.2</li> <li>• pytables 2.4.0</li> <li>• pytest 2.3.3</li> <li>• python 2.7.3</li> <li>• pytz 2012d</li> </ul>	<ul style="list-style-type: none"> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0.1</li> <li>• qt 4.7.4</li> <li>• redis 2.4.15 <i>L</i></li> <li>• redis-py 2.4.13 <i>L</i></li> <li>• requests 0.13.9</li> <li>• scikit-learn 0.11</li> <li>• scikits-image 0.6.1</li> <li>• scipy 0.11.0</li> <li>• sphinx 1.1.3</li> <li>• spyder 2.1.11</li> <li>• sqlalchemy 0.7.8</li> <li>• statsmodels 0.4.3</li> <li>• sympy 0.7.1</li> <li>• theano 0.5.0 <i>L</i></li> <li>• tornado 2.3</li> <li>• werkzeug 0.8.3</li> <li>• wisef 1.1 <i>UP</i></li> <li>• yaml 0.1.4</li> <li>• zeromq 2.2.0</li> <li>• zlib 1.2.7</li> </ul>
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*U*: Unix - *L*: Linux - *M*: macOS - *W*: Windows - *P*: not in CE

**Packages included in Anaconda v.1.1**

• anaconda launcher	• iopro 1.0 *	• openssl 1.0.1c	• redis 2.4.15 (Linux only)
• bitarray 0.8.0	• ipython 0.13	• pandas 0.8.1	• redis py-2.4.13
• bitey	• jinja2 2.6	• pip 1.1	• requests 0.13.5
• cython 0.16	• llvm 3.1	• pixman 0.26.2	• scikit-learn 0.11
• dateutil 1.5	• llvmpy 0.8.2.dev	• py2cairo 1.10.0	• scikits-image 0.6.1
• disco 0.4.2 (Linux only)	• matplotlib 1.1.1	• pycurl 7.19.0	• scipy 0.11.0rc2
• erlang (Linux only)	• mpi4py 1.3	• pygments 1.5	• spyder
• flask 0.9	• mpich2 1.4.1p1	• pysal 1.4.0	• sqlalchemy 0.7.8
• gevent 0.13.7	• networkx 1.7	• pysam 0.6	• sqlite 3.7.13
• gevent-websocket 0.3.6	• nose 1.1.2	• pytables 2.4.0	• statsmodels 0.4.3
• gevent_zeromq 0.2.5	• numba 0.1.dev	• python 2.7.3	• sympy 0.7.1
• greenlet0.4.0	• numbapro 1.0 *	• pytz 2012c	• theano 0.5.0
• h5py 2.0.1	• numexpr 2.0.1	• pyyaml 3.10	• tornado 2.3
• hdf5 1.8.9	• numpy 1.7.dev	• pyzmq 2.2.0	• werkzeug 0.8.3
• PIL 1.1.7	• opencv 2.4.2		• wiseRF *

**\* Included in Anaconda Pro Only**

**Note:** Packages may vary on different platforms.

## Packages included in Anaconda v.1.0

<ul style="list-style-type: none"> <li>• anaconda launcher</li> <li>• bitarray 0.8.0</li> <li>• bitey</li> <li>• cython 0.16</li> <li>• dateutil 1.5</li> <li>• disco 0.4.2 (Linux only)</li> <li>• erlang (Linux only)</li> <li>• flask 0.9</li> <li>• gevent 0.13.7</li> <li>• gevent-websocket 0.3.6</li> <li>• gevent_zeromq 0.2.5</li> <li>• greenlet0.4.0</li> <li>• h5py 2.0.1</li> <li>• hdf5 1.8.9</li> <li>• PIL 1.1.7</li> </ul>	<ul style="list-style-type: none"> <li>• iopro 1.0 *</li> <li>• ipython 0.13</li> <li>• jinja2 2.6</li> <li>• llvm 3.1</li> <li>• llvmpy 0.8.2.dev</li> <li>• matplotlib 1.1.1</li> <li>• mpi4py 1.3</li> <li>• mpich2 1.4.1p1</li> <li>• networkx 1.7</li> <li>• nose 1.1.2</li> <li>• numba 0.1.dev</li> <li>• numbapro 1.0 *</li> <li>• numexpr 2.0.1</li> <li>• numpy 1.7.dev</li> <li>• opencv 2.4.2</li> </ul>	<ul style="list-style-type: none"> <li>• openssl 1.0.1c</li> <li>• pandas 0.8.1</li> <li>• pip 1.1</li> <li>• pixman 0.26.2</li> <li>• py2cairo 1.10.0</li> <li>• pycurl 7.19.0</li> <li>• pygments 1.5</li> <li>• pysal 1.4.0</li> <li>• pysam 0.6</li> <li>• pytables 2.4.0</li> <li>• python 2.7.3</li> <li>• pytz 2012c</li> <li>• pyyaml 3.10</li> <li>• pyzmq 2.2.0</li> </ul>	<ul style="list-style-type: none"> <li>• redis 2.4.15 (Linux only)</li> <li>• redis py-2.4.13</li> <li>• requests 0.13.5</li> <li>• scikit-learn 0.11</li> <li>• scikits-image 0.6.1</li> <li>• scipy 0.11.0rc2</li> <li>• sqlalchemy 0.7.8</li> <li>• sqlite 3.7.13</li> <li>• statsmodels 0.4.3</li> <li>• sympy 0.7.1</li> <li>• theano 0.5.0</li> <li>• tornado 2.3</li> <li>• werkzeug 0.8.3</li> <li>• wiseRF *</li> </ul>
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\* Included in Anaconda Pro Only



## Release notes

Anaconda 2023.09-0 (September 29, 2023)

## User-facing Changes

This version of the Anaconda Distribution has many major updates:

- OpenSSL 3.0
- Numpy 1.25.2
- matplotlib 2.7.2
- pandas 2.0.3
- huggingface\_hub 0.15.1
- conda 23.7.4
- Anaconda Navigator 2.5.0

A couple of important additions:

- Kaliedo (v0.2.1), a static data viz generator for web-based visualization libraries
- anaconda-anon-usage, a package designed to augment the User-Agent header being sent by conda

### More changes specific to linux-64

#### Updated:

- aiohttp 3.8.3 -> 3.8.5
- aws-c-common 0.4.57 -> 0.6.8
- aws-checksums 0.1.9 -> 0.1.11
- c-ares 1.19.0 -> 1.19.1
- ca-certificates 2023.5.30 -> 2023.8.22
- cryptography 41.0.2 -> 41.0.3
- curl 8.1.1 -> 8.2.1
- datashader 0.15.1 -> 0.15.2
- expat 2.4.9 -> 2.5.0
- grpc-cpp 1.46.1 -> 1.48.2
- h5py 3.7.0 -> 3.9.0
- hdf5 1.10.6 -> 1.12.1
- holoviews 1.17.0 -> 1.17.1
- imagecodecs 2021.8.26 -> 2023.1.23
- ipykernel 6.19.2 -> 6.25.0
- ipython 8.12.0 -> 8.15.0
- jellyfish 0.9.0 -> 1.0.1
- libclang 10.0.1 -> 14.0.6
- libcurl 8.1.1 -> 8.2.1
- libtiff 4.5.0 -> 4.5.1
- libwebp 1.2.4 -> 1.3.2
- libwebp-base 1.2.4 -> 1.3.2
- libxml2 2.9.14 -> 2.10.4
- libxslt 1.1.35 -> 1.1.37
- lxml 4.9.1 -> 4.9.3
- matplotlib 3.7.1 -> 3.7.2
- matplotlib-base 3.7.1 -> 3.7.2
- mkl\_fft 1.3.6 -> 1.3.8
- mkl\_random 1.2.2 -> 1.2.4
- mypy\_extensions 0.4.3 -> 1.0.0

- nbformat 5.7.0 -> 5.9.2
- numba 0.57.0 -> 0.57.1
- openssl 1.1.1u -> 3.0.10
- packaging 23.0 -> 23.1
- pandas 1.5.3 -> 2.0.3
- panel 1.2.1 -> 1.2.3
- partd 1.2.0 -> 1.4.0
- platformdirs 2.5.2 -> 3.10.0
- python 3.11.4 -> 3.11.5
- pytz 2022.7 -> 2023.3.post1
- scipy 1.10.1 -> 1.11.1
- spyder-kernels 2.4.3 -> 2.4.4
- tiff file 2021.7.2 -> 2023.4.12
- transformers 4.29.2 -> 4.32.1
- zfp 0.5.5 -> 1.0.0

### Added:

- aom 3.6.0
- cyrus-sasl 2.1.28
- dav1d 1.2.1
- font-ttf-dejavu-sans-mono 2.37
- font-ttf-inconsolata 2.1
- font-ttf-source-code-pro 2.30
- font-ttf-ubuntu 0.83
- fonts-anaconda 1
- kaleido-core 0.2.1
- libavif 0.11.1
- libclang13 14.0.6
- libcups 2.4.2
- mathjax 2.7.5
- mysql 5.7.24
- python-kaleido 0.2.1
- python-tzdata 2023.3
- safetensors 0.3.2

### Removed:

- libllvm10
- ninja

- ninja-base
- pytorch
- sacremoses

### More changes specific to linux-s390x

#### Updated:

- aiohttp 3.8.3 -> 3.8.5
- boto3 1.24.28 -> 1.26.76
- c-ares 1.19.0 -> 1.19.1
- ca-certificates 2023.5.30 -> 2023.8.22
- cryptography 41.0.2 -> 41.0.3
- curl 8.1.1 -> 8.2.1
- dill 0.3.6 -> 0.3.7
- icu 68.1 -> 73.1
- imagecodecs 2021.8.26 -> 2023.1.23
- ipykernel 6.19.2 -> 6.25.0
- ipython 8.12.0 -> 8.15.0
- libcurl 8.1.1 -> 8.2.1
- libtiff 4.5.0 -> 4.5.1
- libwebp 1.2.4 -> 1.3.2
- libwebp-base 1.2.4 -> 1.3.2
- libxml2 2.10.3 -> 2.10.4
- lxml 4.9.2 -> 4.9.3
- matplotlib 3.7.1 -> 3.7.2
- matplotlib-base 3.7.1 -> 3.7.2
- nbformat 5.7.0 -> 5.9.2
- numpy 1.25.0 -> 1.25.2
- numpy-base 1.25.0 -> 1.25.2
- openssl 1.1.1u -> 3.0.10
- packaging 23.0 -> 23.1
- pandas 1.5.3 -> 2.0.3
- partd 1.2.0 -> 1.4.0
- platformdirs 2.5.2 -> 3.10.0
- python 3.11.4 -> 3.11.5
- pytz 2022.7 -> 2023.3.post1
- scipy 1.10.1 -> 1.11.1

- tiffle 2021.7.2 -> 2023.4.12

### Added:

- aom 3.6.0
- dataclasses 0.8
- dav1d 1.2.1
- libavif 0.11.1
- python-tzdata 2023.3

### Removed:

- tbb
- tbb4py

## More changes specific to linux-aarch64

### Updated:

- aiohttp 3.8.3 -> 3.8.5
- aws-c-common 0.5.11 -> 0.6.8
- bokeh 2.4.3 -> 3.2.1
- c-ares 1.19.0 -> 1.19.1
- ca-certificates 2023.5.30 -> 2023.8.22
- cryptography 41.0.2 -> 41.0.3
- curl 8.1.1 -> 8.2.1
- dask 2023.4.1 -> 2023.6.0
- dask-core 2023.4.1 -> 2023.6.0
- datashader 0.15.1 -> 0.15.2
- distributed 2023.4.1 -> 2023.6.0
- expat 2.4.9 -> 2.5.0
- grpc-cpp 1.46.1 -> 1.48.2
- h5py 3.7.0 -> 3.9.0
- hdf5 1.10.6 -> 1.12.1
- holoviews 1.17.0 -> 1.17.1
- imagecodecs 2021.8.26 -> 2023.1.23
- ipykernel 6.19.2 -> 6.25.0
- ipython 8.12.0 -> 8.15.0
- jellyfish 0.9.0 -> 1.0.1
- libclang 10.0.1 -> 14.0.6
- libcurl 8.1.1 -> 8.2.1
- libtiff 4.5.0 -> 4.5.1



- libwebp 1.2.4 -> 1.3.2
- libwebp-base 1.2.4 -> 1.3.2
- libxml2 2.9.14 -> 2.10.4
- libxslt 1.1.35 -> 1.1.37
- lxml 4.9.1 -> 4.9.3
- matplotlib 3.7.1 -> 3.7.2
- matplotlib-base 3.7.1 -> 3.7.2
- mypy\_extensions 0.4.3 -> 1.0.0
- nbformat 5.7.0 -> 5.9.2
- numba 0.57.0 -> 0.57.1
- openssl 1.1.1u -> 3.0.10
- packaging 23.0 -> 23.1
- pandas 1.5.3 -> 2.0.3
- panel 0.14.3 -> 1.2.3
- partd 1.2.0 -> 1.4.0
- platformdirs 2.5.2 -> 3.10.0
- python 3.11.4 -> 3.11.5
- pytz 2022.7 -> 2023.3.post1
- scipy 1.10.1 -> 1.11.1
- spyder-kernels 2.4.3 -> 2.4.4
- tiffle 2021.7.2 -> 2023.4.12
- transformers 4.29.2 -> 4.32.1

**Added:**

- aom 3.6.0
- cyrus-sasl 2.1.28
- dav1d 1.2.1
- font-ttf-dejavu-sans-mono 2.37
- font-ttf-inconsolata 2.1
- font-ttf-source-code-pro 2.30
- font-ttf-ubuntu 0.83
- fonts-anaconda 1
- kaleido-core 0.2.1
- libavif 0.11.1
- libclang13 14.0.6
- libcups 2.4.2
- linkify-it-py 2.0.0

- lz4 4.3.2
- markdown-it-py 2.2.0
- mathjax 2.7.5
- mdit-py-plugins 0.3.0
- mdurl 0.1.0
- mysql 5.7.24
- python-kaleido 0.2.1
- python-tzdata 2023.3
- safetensors 0.3.2
- uc-micro-py 1.0.1
- xyzservices 2022.9.0

### Removed:

- libllvm10
- ninja
- ninja-base
- pytorch
- sacremoses
- tbb4py

### More changes specific to linux-ppc64le

### Updated:

- aiohttp 3.8.3 -> 3.8.5
- aws-c-common 0.4.57 -> 0.6.8
- aws-checksums 0.1.9 -> 0.1.11
- boost-cpp 1.73.0 -> 1.82.0
- c-ares 1.19.0 -> 1.19.1
- ca-certificates 2023.5.30 -> 2023.8.22
- cryptography 39.0.1 -> 41.0.3
- curl 8.1.1 -> 8.2.1
- datashader 0.15.1 -> 0.15.2
- grpc-cpp 1.46.1 -> 1.48.2
- h5py 3.7.0 -> 3.9.0
- hdf5 1.10.6 -> 1.12.1
- holoviews 1.17.0 -> 1.17.1
- icu 58.2 -> 73.1
- imagecodecs 2021.8.26 -> 2023.1.23

- ipykernel 6.19.2 -> 6.25.0
- ipython 8.12.0 -> 8.15.0
- libboost 1.73.0 -> 1.82.0
- libcurl 8.1.1 -> 8.2.1
- libtiff 4.5.0 -> 4.5.1
- libwebp 1.2.4 -> 1.3.2
- libwebp-base 1.2.4 -> 1.3.2
- libxml2 2.10.3 -> 2.10.4
- lxml 4.9.2 -> 4.9.3
- matplotlib 3.7.1 -> 3.7.2
- matplotlib-base 3.7.1 -> 3.7.2
- nbformat 5.7.0 -> 5.9.2
- numba 0.57.0 -> 0.57.1
- numpy 1.24.3 -> 1.25.2
- numpy-base 1.24.3 -> 1.25.2
- openssl 1.1.1u -> 3.0.10
- packaging 23.0 -> 23.1
- pandas 1.5.3 -> 2.0.3
- panel 1.2.1 -> 1.2.3
- partd 1.2.0 -> 1.4.0
- platformdirs 2.5.2 -> 3.10.0
- python 3.11.4 -> 3.11.5
- pytz 2022.7 -> 2023.3.post1
- scipy 1.10.1 -> 1.11.1
- tiff file 2021.7.2 -> 2023.4.12
- transformers 4.29.2 -> 4.32.1
- zfp 0.5.5 -> 1.0.0

**Added:**

- aom 3.6.0
- dav1d 1.2.1
- libavif 0.11.1
- libllvm10 10.0.1
- python-tzdata 2023.3
- safetensors 0.3.2

**Removed:**

- boto3

- future
- ninja
- ninja-base
- pytorch
- s3transfer
- sacremoses
- tbb4py

### More changes specific to win-64

#### Updated:

- aiohttp 3.8.3 -> 3.8.5
- aws-c-common 0.4.57 -> 0.6.8
- aws-checksums 0.1.9 -> 0.1.11
- boost-cpp 1.73.0 -> 1.82.0
- c-ares 1.19.0 -> 1.19.1
- ca-certificates 2023.5.30 -> 2023.8.22
- cryptography 41.0.2 -> 41.0.3
- datashader 0.15.1 -> 0.15.2
- h5py 3.7.0 -> 3.9.0
- hdf5 1.10.6 -> 1.12.1
- holoviews 1.17.0 -> 1.17.1
- imagecodecs 2021.8.26 -> 2023.1.23
- ipykernel 6.19.2 -> 6.25.0
- ipython 8.12.0 -> 8.15.0
- jellyfish 0.9.0 -> 1.0.1
- krb5 1.19.4 -> 1.20.1
- libboost 1.73.0 -> 1.82.0
- libtiff 4.5.0 -> 4.5.1
- libwebp 1.2.4 -> 1.3.2
- libwebp-base 1.2.4 -> 1.3.2
- libxml2 2.10.3 -> 2.10.4
- lxml 4.9.2 -> 4.9.3
- matplotlib 3.7.1 -> 3.7.2
- matplotlib-base 3.7.1 -> 3.7.2
- mkl\_fft 1.3.6 -> 1.3.8
- mkl\_random 1.2.2 -> 1.2.4

- mypy\_extensions 0.4.3 -> 1.0.0
- nbformat 5.7.0 -> 5.9.2
- numba 0.57.0 -> 0.57.1
- openssl 1.1.1u -> 3.0.10
- packaging 23.0 -> 23.1
- pandas 1.5.3 -> 2.0.3
- panel 1.2.1 -> 1.2.3
- partd 1.2.0 -> 1.4.0
- platformdirs 2.5.2 -> 3.10.0
- python 3.11.4 -> 3.11.5
- pytz 2022.7 -> 2023.3.post1
- scipy 1.10.1 -> 1.11.1
- spyder-kernels 2.4.3 -> 2.4.4
- tiff file 2021.7.2 -> 2023.4.12
- transformers 4.29.2 -> 4.32.1
- zfp 0.5.5 -> 1.0.0

**Added:**

- aom 3.6.0
- dav1d 1.2.1
- grpc-cpp 1.48.2
- kaleido-core 0.2.1
- libavif 0.11.1
- libpq 12.15
- mathjax 2.7.5
- python-kaleido 0.2.1
- python-tzdata 2023.3
- safetensors 0.3.2

**Removed:**

- boto3
- gst-plugins-base
- gstreamer
- jxrllib
- libllvm14
- libogg
- libuv
- libvorbis

- ninja
- ninja-base
- pytorch
- s3transfer
- sacremoses

### More changes specific to osx-64

#### Updated:

- aiohttp 3.8.3 -> 3.8.5
- aws-c-common 0.4.57 -> 0.6.8
- aws-checksums 0.1.9 -> 0.1.11
- c-ares 1.19.0 -> 1.19.1
- ca-certificates 2023.5.30 -> 2023.8.22
- cryptography 41.0.2 -> 41.0.3
- curl 8.1.1 -> 8.2.1
- datashader 0.15.1 -> 0.15.2
- grpc-cpp 1.46.1 -> 1.48.2
- h5py 3.7.0 -> 3.9.0
- hdf5 1.10.6 -> 1.12.1
- holoviews 1.17.0 -> 1.17.1
- imagecodecs 2021.8.26 -> 2023.1.23
- ipykernel 6.19.2 -> 6.25.0
- ipython 8.12.0 -> 8.15.0
- jellyfish 0.9.0 -> 1.0.1
- libclang 12.0.0 -> 14.0.6
- libcurl 8.1.1 -> 8.2.1
- libtiff 4.5.0 -> 4.5.1
- libwebp 1.2.4 -> 1.3.2
- libwebp-base 1.2.4 -> 1.3.2
- libxml2 2.10.3 -> 2.10.4
- lxml 4.9.2 -> 4.9.3
- matplotlib 3.7.1 -> 3.7.2
- matplotlib-base 3.7.1 -> 3.7.2
- mpy\_extensions 0.4.3 -> 1.0.0
- nbformat 5.7.0 -> 5.9.2
- openssl 1.1.1u -> 3.0.10

- packaging 23.0 -> 23.1
- pandas 1.5.3 -> 2.0.3
- panel 1.2.1 -> 1.2.3
- partd 1.2.0 -> 1.4.0
- platformdirs 2.5.2 -> 3.10.0
- python 3.11.4 -> 3.11.5
- pytz 2022.7 -> 2023.3.post1
- scipy 1.10.1 -> 1.11.1
- spyder-kernels 2.4.3 -> 2.4.4
- tiff file 2021.7.2 -> 2023.4.12
- transformers 4.24.0 -> 4.32.1
- zfp 0.5.5 -> 1.0.0

**Added:**

- aom 3.6.0
- cyrus-sasl 2.1.28
- datasets 2.12.0
- davis 1.2.1
- kaleido-core 0.2.1
- libavif 0.11.1
- libclang13 14.0.6
- mathjax 2.7.5
- multiprocessing 0.70.14
- mysql 5.7.24
- python-kaleido 0.2.1
- python-tzdata 2023.3
- python-xxhash 2.0.2
- responses 0.13.3
- safetensors 0.3.2
- xxhash 0.8.0

**Removed:**

- boto3
- future
- libllvm12
- libuv
- ninja
- ninja-base

- nspr
- nss
- pytorch
- s3transfer
- sacremoses
- tbb4py

### More changes specific to osx-arm64

#### Updated:

- aiohttp 3.8.3 -> 3.8.5
- c-ares 1.19.0 -> 1.19.1
- ca-certificates 2023.5.30 -> 2023.8.22
- cryptography 41.0.2 -> 41.0.3
- curl 8.1.1 -> 8.2.1
- datashader 0.15.1 -> 0.15.2
- grpc-cpp 1.46.1 -> 1.48.2
- h5py 3.7.0 -> 3.9.0
- holoviews 1.17.0 -> 1.17.1
- imagecodecs 2021.8.26 -> 2023.1.23
- ipykernel 6.19.2 -> 6.25.0
- ipython 8.12.0 -> 8.15.0
- jellyfish 0.9.0 -> 1.0.1
- libclang 12.0.0 -> 14.0.6
- libcurl 8.1.1 -> 8.2.1
- libthrift 0.13.0 -> 0.15.0
- libtiff 4.5.0 -> 4.5.1
- libwebp 1.2.4 -> 1.3.2
- libwebp-base 1.2.4 -> 1.3.2
- libxml2 2.10.3 -> 2.10.4
- lxml 4.9.2 -> 4.9.3
- matplotlib 3.7.1 -> 3.7.2
- matplotlib-base 3.7.1 -> 3.7.2
- mypy\_extensions 0.4.3 -> 1.0.0
- nbformat 5.7.0 -> 5.9.2
- numba 0.57.0 -> 0.57.1
- openssl 1.1.1u -> 3.0.10



- packaging 23.0 -> 23.1
- pandas 1.5.3 -> 2.0.3
- panel 1.2.1 -> 1.2.3
- partd 1.2.0 -> 1.4.0
- platformdirs 2.5.2 -> 3.10.0
- python 3.11.4 -> 3.11.5
- pytz 2022.7 -> 2023.3.post1
- scipy 1.10.1 -> 1.11.1
- spyder-kernels 2.4.3 -> 2.4.4
- tiff file 2021.7.2 -> 2023.4.12
- transformers 4.29.2 -> 4.32.1
- zfp 0.5.5 -> 1.0.0

**Added:**

- aom 3.6.0
- cyrus-sasl 2.1.28
- dav1d 1.2.1
- kaleido-core 0.2.1
- libavif 0.11.1
- libclang13 14.0.6
- mathjax 2.7.5
- mysql 5.7.24
- python-kaleido 0.2.1
- python-tzdata 2023.3
- safetensors 0.3.2

**Removed:**

- libllvm12
- libuv
- ninja
- ninja-base
- nspr
- nss
- pytorch
- sacremoses
- sleef
- tbb4py

Package totals across all platforms: Updated: 284; Added: 89; Removed: 56

### Anaconda 2023.07-2 (August 04, 2023)

#### User-facing changes

- Conda has been updated to v23.7.2
- Jupyter\_client and pyzmq have been downgraded to v7.4.9 and v23.2.0, respectively (see [jupyter pull request 6749](#)).

#### More changes specific to linux-64

##### Updated:

- bokeh 3.1.1 -> 3.2.1
- certifi 2023.5.7 -> 2023.7.22
- cryptography 39.0.1 -> 41.0.2
- datashader 0.15.0 -> 0.15.1
- debugpy 1.5.1 -> 1.6.7
- holoviews 1.16.2 -> 1.17.0
- mpmath 1.2.1 -> 1.3.0
- networkx 2.8.4 -> 3.1
- nltk 3.7 -> 3.8.1
- panel 1.1.0 -> 1.2.1
- pip 23.1.2 -> 23.2.1
- pyopenssl 23.0.0 -> 23.2.0
- pytest 7.3.1 -> 7.4.0
- python 3.11.3 -> 3.11.4
- requests 2.29.0 -> 2.31.0
- scikit-learn 1.2.2 -> 1.3.0
- setuptools 67.8.0 -> 68.0.0
- statsmodels 0.13.5 -> 0.14.0
- tornado 6.2 -> 6.3.2
- typing-extensions 4.6.3 -> 4.7.1
- typing\_extensions 4.6.3 -> 4.7.1
- xarray 2022.11.0 -> 2023.6.0

##### Removed:

- jupyter\_server\_terminals

### More changes specific to linux-s390x

#### Updated:

- certifi 2023.5.7 -> 2023.7.22
- cryptography 39.0.1 -> 41.0.2
- debugpy 1.5.1 -> 1.6.7
- krb5 1.19.4 -> 1.20.1
- mpmath 1.2.1 -> 1.3.0
- networkx 2.8.4 -> 3.1
- nltk 3.7 -> 3.8.1
- pip 23.1.2 -> 23.2.1
- pyopenssl 23.0.0 -> 23.2.0
- pytest 7.3.1 -> 7.4.0
- python 3.11.3 -> 3.11.4
- requests 2.29.0 -> 2.31.0
- scikit-learn 1.2.2 -> 1.3.0
- setuptools 67.8.0 -> 68.0.0
- statsmodels 0.13.5 -> 0.14.0
- tornado 6.2 -> 6.3.2
- typing-extensions 4.6.3 -> 4.7.1
- typing\_extensions 4.6.3 -> 4.7.1

#### Removed:

- importlib\_metadata

### More changes specific to linux-aarch64

#### Updated:

- certifi 2023.5.7 -> 2023.7.22
- cryptography 39.0.1 -> 41.0.2
- datashader 0.15.0 -> 0.15.1
- debugpy 1.5.1 -> 1.6.7
- holoviews 1.16.2 -> 1.17.0
- krb5 1.19.4 -> 1.20.1
- libpq 12.9 -> 12.15
- mpmath 1.2.1 -> 1.3.0
- networkx 2.8.4 -> 3.1
- nltk 3.7 -> 3.8.1

- pip 23.1.2 -> 23.2.1
- pyopenssl 23.0.0 -> 23.2.0
- pytest 7.3.1 -> 7.4.0
- python 3.11.3 -> 3.11.4
- requests 2.29.0 -> 2.31.0
- scikit-learn 1.2.2 -> 1.3.0
- setuptools 67.8.0 -> 68.0.0
- statsmodels 0.13.5 -> 0.14.0
- tornado 6.2 -> 6.3.2
- typing-extensions 4.6.3 -> 4.7.1
- typing\_extensions 4.6.3 -> 4.7.1
- xarray 2022.11.0 -> 2023.6.0

### Added:

- libllvm10 10.0.1

### Removed:

- jupyter\_server\_terminals
- libclang13

## More changes specific to linux-ppc64le

### Updated:

- bokeh 3.1.1 -> 3.2.1
- certifi 2023.5.7 -> 2023.7.22
- datashader 0.15.0 -> 0.15.1
- debugpy 1.5.1 -> 1.6.7
- holoviews 1.16.2 -> 1.17.0
- mpmath 1.2.1 -> 1.3.0
- networkx 2.8.4 -> 3.1
- nltk 3.7 -> 3.8.1
- panel 1.1.0 -> 1.2.1
- pip 23.1.2 -> 23.2.1
- pyopenssl 23.0.0 -> 23.2.0
- pytest 7.3.1 -> 7.4.0
- python 3.11.3 -> 3.11.4
- requests 2.29.0 -> 2.31.0
- scikit-learn 1.2.2 -> 1.3.0
- setuptools 67.8.0 -> 68.0.0

- statsmodels 0.13.5 -> 0.14.0
- tornado 6.2 -> 6.3.2
- typing-extensions 4.6.3 -> 4.7.1
- typing\_extensions 4.6.3 -> 4.7.1
- xarray 2022.11.0 -> 2023.6.0

**Removed:**

- jupyter\_server\_terminals

**More changes specific to win-64****Updated:**

- bokeh 3.1.1 -> 3.2.1
- certifi 2023.5.7 -> 2023.7.22
- cryptography 39.0.1 -> 41.0.2
- datashader 0.15.0 -> 0.15.1
- debugpy 1.5.1 -> 1.6.7
- holoviews 1.16.2 -> 1.17.0
- mpmath 1.2.1 -> 1.3.0
- networkx 2.8.4 -> 3.1
- nltk 3.7 -> 3.8.1
- panel 1.1.0 -> 1.2.1
- pip 23.1.2 -> 23.2.1
- pyopenssl 23.0.0 -> 23.2.0
- pytest 7.3.1 -> 7.4.0
- python 3.11.3 -> 3.11.4
- requests 2.29.0 -> 2.31.0
- scikit-learn 1.2.2 -> 1.3.0
- setuptools 67.8.0 -> 68.0.0
- statsmodels 0.13.5 -> 0.14.0
- tornado 6.2 -> 6.3.2
- typing-extensions 4.6.3 -> 4.7.1
- typing\_extensions 4.6.3 -> 4.7.1
- xarray 2022.11.0 -> 2023.6.0

**Removed:**

- jupyter\_server\_terminals

## More changes specific to osx-64

### Updated:

- bokeh 3.1.1 -> 3.2.1
- certifi 2023.5.7 -> 2023.7.22
- cryptography 39.0.1 -> 41.0.2
- datashader 0.15.0 -> 0.15.1
- debugpy 1.5.1 -> 1.6.7
- holoviews 1.16.2 -> 1.17.0
- krb5 1.19.4 -> 1.20.1
- libpq 12.9 -> 12.15
- mpmath 1.2.1 -> 1.3.0
- networkx 2.8.4 -> 3.1
- nltk 3.7 -> 3.8.1
- panel 1.1.0 -> 1.2.1
- pip 23.1.2 -> 23.2.1
- pyopenssl 23.0.0 -> 23.2.0
- pytest 7.3.1 -> 7.4.0
- python 3.11.3 -> 3.11.4
- requests 2.29.0 -> 2.31.0
- scikit-learn 1.2.2 -> 1.3.0
- setuptools 67.8.0 -> 68.0.0
- statsmodels 0.13.5 -> 0.14.0
- tornado 6.2 -> 6.3.2
- typing-extensions 4.6.3 -> 4.7.1
- typing\_extensions 4.6.3 -> 4.7.1
- xarray 2022.11.0 -> 2023.6.0

### Added:

- libllvm12 12.0.0

### Removed:

- jupyter\_server\_terminals
- libclang13

## More changes specific to osx-arm64

### Updated:

- bokeh 3.1.1 -> 3.2.1
- certifi 2023.5.7 -> 2023.7.22
- cryptography 39.0.1 -> 41.0.2
- datashader 0.15.0 -> 0.15.1
- debugpy 1.5.1 -> 1.6.7
- holoviews 1.16.2 -> 1.17.0
- krb5 1.19.4 -> 1.20.1
- libpq 12.9 -> 12.15
- mpmath 1.2.1 -> 1.3.0
- networkx 2.8.4 -> 3.1
- nltk 3.7 -> 3.8.1
- panel 1.1.0 -> 1.2.1
- pip 23.1.2 -> 23.2.1
- pyopenssl 23.0.0 -> 23.2.0
- pytest 7.3.1 -> 7.4.0
- python 3.11.3 -> 3.11.4
- requests 2.29.0 -> 2.31.0
- scikit-learn 1.2.2 -> 1.3.0
- setuptools 67.8.0 -> 68.0.0
- statsmodels 0.13.5 -> 0.14.0
- tornado 6.2 -> 6.3.2
- typing-extensions 4.6.3 -> 4.7.1
- typing\_extensions 4.6.3 -> 4.7.1
- xarray 2022.11.0 -> 2023.6.0

### Added:

- libllvm12 12.0.0

### Removed:

- jupyter\_server\_terminals
- libclang13

Package totals across all platforms: Updated: 153; Added: 3; Removed: 10

### Anaconda 2023.07-1 (July 13, 2023)

#### User-facing changes

- Conda has been updated to v23.5.2 (conda issues [12873](#) and [12836](#)).

### Anaconda 2023.07-0 (July 11, 2023)

#### User-facing changes

- Conda has been updated to v23.5.0.
- This installer uses python-3.11.3.
- Anaconda Navigator launches after installation with exe and pkg installers.

#### Bug fixes

- Address a bug that can cause accidental file deletion with Windows uninstallers (see our [blog post](#)). A [security patch](#) is available for older versions.
- Fix a conda update bug that removes packages installed via the Anaconda Distribution installer.

#### Known issues

- The .pkg installers may skip the “Destination Select” page after accepting the license agreement. See our [Anaconda installation instructions](#) for details.

### Changes specific to linux-64

#### Updated:

- beautifulsoup4 4.11.1 -> 4.12.2
- black 22.6.0 -> 23.3.0
- bokeh 2.4.3 -> 3.1.1
- c-ares 1.18.1 -> 1.19.0
- ca-certificates 2023.1.10 -> 2023.5.30
- certifi 2022.12.7 -> 2023.5.7
- cloudpickle 2.0.0 -> 2.2.1
- curl 7.87.0 -> 8.1.1
- daal4py 2023.0.2 -> 2023.1.1
- dal 2023.0.1 -> 2023.1.1
- dask 2022.7.0 -> 2023.6.0
- dask-core 2022.7.0 -> 2023.6.0
- datashader 0.14.4 -> 0.15.0



- distributed 2022.7.0 -> 2023.6.0
- fsspec 2022.11.0 -> 2023.4.0
- holoviews 1.15.4 -> 1.16.2
- huggingface\_hub 0.10.1 -> 0.15.1
- hvplot 0.8.2 -> 0.8.4
- imageio 2.26.0 -> 2.31.1
- importlib-metadata 4.11.3 -> 6.0.0
- importlib\_metadata 4.11.3 -> 6.0.0
- intake 0.6.7 -> 0.6.8
- intel-openmp 2021.4.0 -> 2023.1.0
- ipython 8.10.0 -> 8.12.0
- ipywidgets 7.6.5 -> 8.0.4
- joblib 1.1.1 -> 1.2.0
- jupyter\_client 7.3.4 -> 8.1.0
- jupyter\_console 6.6.2 -> 6.6.3
- jupyter\_core 5.2.0 -> 5.3.0
- jupyter\_server 1.23.4 -> 2.5.0
- jupyterlab 3.5.3 -> 3.6.3
- jupyterlab\_server 2.19.0 -> 2.22.0
- jupyterlab\_widgets 1.0.0 -> 3.0.5
- keyring 23.4.0 -> 23.13.1
- krb5 1.19.4 -> 1.20.1
- libcurl 7.87.0 -> 8.1.1
- libffi 3.4.2 -> 3.4.4
- libnghttp2 1.46.0 -> 1.52.0
- libpq 12.9 -> 12.15
- llvmlite 0.39.1 -> 0.40.0
- lz4 3.1.3 -> 4.3.2
- matplotlib 3.7.0 -> 3.7.1
- matplotlib-base 3.7.0 -> 3.7.1
- mkl 2021.4.0 -> 2023.1.0
- mkl\_fft 1.3.1 -> 1.3.6
- mpich 3.3.2 -> 4.1.1
- nbclassic 0.5.2 -> 0.5.5
- notebook 6.5.2 -> 6.5.4
- nspr 4.33 -> 4.35

- nss 3.74 -> 3.89.1
- numba 0.56.4 -> 0.57.0
- numpy 1.23.5 -> 1.24.3
- numpy-base 1.23.5 -> 1.24.3
- openssl 1.1.1t -> 1.1.1u
- packaging 22.0 -> 23.0
- panel 0.14.3 -> 1.1.0
- param 1.12.3 -> 1.13.0
- pip 22.3.1 -> 23.1.2
- pycurl 7.45.1 -> 7.45.2
- pygments 2.11.2 -> 2.15.1
- pytables 3.7.0 -> 3.8.0
- pytest 7.1.2 -> 7.3.1
- python 3.10.9 -> 3.11.3
- python-lsp-server 1.7.1 -> 1.7.2
- pytorch 1.12.1 -> 2.0.1
- pyviz\_comms 2.0.2 -> 2.3.0
- pyzmq 23.2.0 -> 25.1.0
- qtconsole 5.4.0 -> 5.4.2
- requests 2.28.1 -> 2.29.0
- scikit-image 0.19.3 -> 0.20.0
- scikit-learn 1.2.1 -> 1.2.2
- scikit-learn-intelex 2023.0.2 -> 2023.1.1
- scipy 1.10.0 -> 1.10.1
- setuptools 65.6.3 -> 67.8.0
- soupsieve 2.3.2.post1 -> 2.4
- spyder 5.4.1 -> 5.4.3
- spyder-kernels 2.4.1 -> 2.4.3
- sqlite 3.40.1 -> 3.41.2
- tbb 2021.7.0 -> 2021.8.0
- tbb4py 2021.7.0 -> 2021.8.0
- tenacity 8.0.1 -> 8.2.2
- tokenizers 0.11.4 -> 0.13.2
- tornado 6.1 -> 6.2
- tqdm 4.64.1 -> 4.65.0
- transformers 4.24.0 -> 4.29.2

- twisted 22.2.0 -> 22.10.0
- typing-extensions 4.4.0 -> 4.6.3
- typing\_extensions 4.4.0 -> 4.6.3
- tzdata 2022g -> 2023rc0
- urllib3 1.26.14 -> 1.26.16
- werkzeug 2.2.2 -> 2.2.3
- widgetsnbextension 3.5.2 -> 4.0.5
- xz 5.2.10 -> 5.4.2
- zict 2.1.0 -> 2.2.0
- zstd 1.5.2 -> 1.5.5

**Added:**

- abseil-cpp 20211102.0
- aiobotocore 2.5.0
- aiofiles 22.1.0
- aiohttp 3.8.3
- aioitertools 0.7.1
- aiosignal 1.2.0
- aiosqlite 0.18.0
- arrow-cpp 11.0.0
- async-timeout 4.0.2
- aws-c-common 0.4.57
- aws-c-event-stream 0.1.6
- aws-checksums 0.1.9
- aws-sdk-cpp 1.8.185
- boost-cpp 1.73.0
- botocore 1.29.76
- c-blosc2 2.8.0
- datasets 2.12.0
- exceptiongroup 1.0.4
- frozenlist 1.3.3
- gflags 2.2.2
- glog 0.5.0
- grpc-cpp 1.46.1
- jaraco.classes 3.2.1
- jupyter\_events 0.6.3
- jupyter\_server\_fileid 0.9.0

- jupyter\_server\_terminals 0.4.4
- jupyter\_server\_ydoc 0.8.0
- jupyter\_ydoc 0.2.4
- lazy\_loader 0.2
- libboost 1.73.0
- libllvm14 14.0.6
- libthrift 0.15.0
- linkify-it-py 2.0.0
- markdown-it-py 2.2.0
- mdit-py-plugins 0.3.0
- mdurl 0.1.0
- more-itertools 8.12.0
- multidict 6.0.2
- multiprocessing 0.70.14
- orc 1.7.4
- py-cpuinfo 8.0.0
- pyarrow 11.0.0
- python-json-logger 2.0.7
- python-lmdb 1.4.1
- python-xxhash 2.0.2
- re2 2022.4.1
- responses 0.13.3
- rfc3339-validator 0.1.4
- rfc3986-validator 0.1.1
- s3fs 2023.4.0
- sacremoses 0.0.43
- uc-micro-py 1.0.1
- utf8proc 2.6.1
- xxhash 0.8.0
- xyzservices 2022.9.0
- y-py 0.5.9
- yarl 1.8.1
- ypy-websocket 0.8.2
- zlib-ng 2.0.7

**Removed:**

- flit-core

- future
- libllvm11
- mock
- py
- pyhamcrest

### Changes specific to linux-s390x

#### Updated:

- beautifulsoup4 4.11.1 -> 4.12.2
- c-ares 1.18.1 -> 1.19.0
- ca-certificates 2023.1.10 -> 2023.5.30
- certifi 2022.12.7 -> 2023.5.7
- cloudpickle 2.0.0 -> 2.2.1
- curl 7.87.0 -> 8.1.1
- dask 2022.7.0 -> 2023.6.0
- dask-core 2022.7.0 -> 2023.6.0
- distributed 2022.7.0 -> 2023.6.0
- fsspec 2022.11.0 -> 2023.4.0
- huggingface\_hub 0.10.1 -> 0.15.1
- importlib-metadata 4.11.3 -> 6.0.0
- intake 0.6.5 -> 0.6.8
- ipython 8.10.0 -> 8.12.0
- ipywidgets 7.6.5 -> 8.0.4
- joblib 1.1.1 -> 1.2.0
- jupyter\_client 7.3.4 -> 8.1.0
- jupyter\_console 6.6.2 -> 6.6.3
- jupyter\_core 5.2.0 -> 5.3.0
- jupyterlab\_server 2.10.3 -> 2.21.0
- jupyterlab\_widgets 1.0.0 -> 3.0.5
- libcurl 7.87.0 -> 8.1.1
- libnghttp2 1.46.0 -> 1.52.0
- libxml2 2.9.14 -> 2.10.3
- libxslt 1.1.35 -> 1.1.37
- lxml 4.9.1 -> 4.9.2
- lz4 3.1.3 -> 4.3.2
- matplotlib 3.7.0 -> 3.7.1

- matplotlib-base 3.7.0 -> 3.7.1
- nbclassic 0.5.2 -> 0.5.5
- notebook 6.5.2 -> 6.5.4
- numpy 1.23.5 -> 1.25.0
- numpy-base 1.23.5 -> 1.25.0
- openssl 1.1.1t -> 1.1.1u
- packaging 22.0 -> 23.0
- param 1.12.3 -> 1.13.0
- pip 22.3.1 -> 23.1.2
- pycurl 7.45.1 -> 7.45.2
- pygments 2.11.2 -> 2.15.1
- pytest 7.1.2 -> 7.3.1
- python 3.10.9 -> 3.11.3
- pytorch 1.12.1 -> 2.0.1
- pyviz\_comms 2.0.2 -> 2.3.0
- pyzmq 23.2.0 -> 25.1.0
- requests 2.28.1 -> 2.29.0
- scikit-image 0.19.3 -> 0.20.0
- scikit-learn 1.2.1 -> 1.2.2
- scipy 1.10.0 -> 1.10.1
- setuptools 65.6.3 -> 67.8.0
- soupsieve 2.3.2.post1 -> 2.4
- sqlite 3.40.1 -> 3.41.2
- tbb 2021.7.0 -> 2021.8.0
- tbb4py 2021.7.0 -> 2021.8.0
- tenacity 8.0.1 -> 8.2.2
- tornado 6.1 -> 6.2
- tqdm 4.64.1 -> 4.65.0
- typing-extensions 4.4.0 -> 4.6.3
- typing\_extensions 4.4.0 -> 4.6.3
- tzdata 2022g -> 2023rc0
- urllib3 1.26.14 -> 1.26.16
- werkzeug 2.2.2 -> 2.2.3
- widgetsnbextension 3.5.2 -> 4.0.5
- xz 5.2.10 -> 5.4.2
- zict 2.1.0 -> 2.2.0

- zstd 1.5.2 -> 1.5.5

**Added:**

- aiobotocore 2.5.0
- aiohttp 3.8.3
- aioitertools 0.7.1
- aiosignal 1.2.0
- async-timeout 4.0.2
- boto3 1.24.28
- botocore 1.29.76
- exceptiongroup 1.0.4
- frozenlist 1.3.3
- importlib\_metadata 6.0.0
- jmespath 0.10.0
- lazy\_loader 0.1
- multidict 6.0.2
- python-lmdb 1.4.1
- s3fs 2023.4.0
- s3transfer 0.6.0
- sacremoses 0.0.43
- yarl 1.8.1

**Removed:**

- flit-core
- future
- py

**Changes specific to linux-aarch64****Updated:**

- beautifulsoup4 4.11.1 -> 4.12.2
- black 22.6.0 -> 23.3.0
- c-ares 1.18.1 -> 1.19.0
- ca-certificates 2023.1.10 -> 2023.5.30
- certifi 2022.12.7 -> 2023.5.7
- cloudpickle 2.0.0 -> 2.2.1
- curl 7.87.0 -> 8.1.1
- dask 2022.7.0 -> 2023.4.1
- dask-core 2022.7.0 -> 2023.4.1

- datashader 0.14.4 -> 0.15.0
- distributed 2022.7.0 -> 2023.4.1
- fsspec 2022.11.0 -> 2023.4.0
- holoviews 1.15.4 -> 1.16.2
- huggingface\_hub 0.10.1 -> 0.15.1
- hvplot 0.8.2 -> 0.8.4
- imageio 2.26.0 -> 2.31.1
- importlib-metadata 4.11.3 -> 6.0.0
- importlib\_metadata 4.11.3 -> 6.0.0
- intake 0.6.7 -> 0.6.8
- ipython 8.10.0 -> 8.12.0
- ipywidgets 7.6.5 -> 8.0.4
- joblib 1.1.1 -> 1.2.0
- jupyter\_client 7.3.4 -> 8.1.0
- jupyter\_console 6.6.2 -> 6.6.3
- jupyter\_core 5.2.0 -> 5.3.0
- jupyter\_server 1.23.4 -> 2.5.0
- jupyterlab 3.5.3 -> 3.6.3
- jupyterlab\_server 2.19.0 -> 2.22.0
- jupyterlab\_widgets 1.0.0 -> 3.0.5
- keyring 23.4.0 -> 23.13.1
- libclang 10.0.1 -> 14.0.6
- libcurl 7.87.0 -> 8.1.1
- libffi 3.4.2 -> 3.4.4
- libnghttp2 1.46.0 -> 1.52.0
- libxml2 2.9.14 -> 2.10.3
- libxslt 1.1.35 -> 1.1.37
- llvmlite 0.39.1 -> 0.40.0
- lxml 4.9.1 -> 4.9.2
- matplotlib 3.7.0 -> 3.7.1
- matplotlib-base 3.7.0 -> 3.7.1
- nbclassic 0.5.2 -> 0.5.5
- notebook 6.5.2 -> 6.5.4
- nspr 4.33 -> 4.35
- nss 3.74 -> 3.89.1
- numba 0.56.4 -> 0.57.0



- numpy 1.23.5 -> 1.24.3
- numpy-base 1.23.5 -> 1.24.3
- openssl 1.1.1t -> 1.1.1u
- packaging 22.0 -> 23.0
- param 1.12.3 -> 1.13.0
- pip 22.3.1 -> 23.1.2
- pycurl 7.45.1 -> 7.45.2
- pygments 2.11.2 -> 2.15.1
- pytables 3.7.0 -> 3.8.0
- pytest 7.1.2 -> 7.3.1
- python 3.10.9 -> 3.11.3
- python-lsp-server 1.7.1 -> 1.7.2
- pytorch 1.12.1 -> 2.0.1
- pyviz\_comms 2.0.2 -> 2.3.0
- pyzmq 23.2.0 -> 25.1.0
- qtconsole 5.4.0 -> 5.4.2
- requests 2.28.1 -> 2.29.0
- scikit-image 0.19.3 -> 0.20.0
- scikit-learn 1.2.1 -> 1.2.2
- scipy 1.10.0 -> 1.10.1
- setuptools 65.6.3 -> 67.8.0
- soupsieve 2.3.2.post1 -> 2.4
- spyder 5.4.1 -> 5.4.3
- spyder-kernels 2.4.1 -> 2.4.3
- sqlite 3.40.1 -> 3.41.2
- tbb 2021.7.0 -> 2021.8.0
- tbb4py 2021.7.0 -> 2021.8.0
- tenacity 8.0.1 -> 8.2.2
- tokenizers 0.11.4 -> 0.13.2
- tornado 6.1 -> 6.2
- tqdm 4.64.1 -> 4.65.0
- transformers 4.24.0 -> 4.29.2
- twisted 22.2.0 -> 22.10.0
- typing-extensions 4.4.0 -> 4.6.3
- typing\_extensions 4.4.0 -> 4.6.3
- tzdata 2022g -> 2023rc0

- urllib3 1.26.14 -> 1.26.16
- werkzeug 2.2.2 -> 2.2.3
- widgetsnbextension 3.5.2 -> 4.0.5
- xz 5.2.10 -> 5.4.2
- zict 2.1.0 -> 2.2.0
- zstd 1.5.2 -> 1.5.5

### Added:

- abseil-cpp 20211102.0
- aiobotocore 2.5.0
- aiofiles 22.1.0
- aiohttp 3.8.3
- aioitertools 0.7.1
- aiosignal 1.2.0
- aiosqlite 0.18.0
- arrow-cpp 11.0.0
- async-timeout 4.0.2
- aws-c-common 0.5.11
- aws-c-event-stream 0.1.6
- aws-checksums 0.1.11
- aws-sdk-cpp 1.8.185
- boost-cpp 1.73.0
- botocore 1.29.76
- c-blosc2 2.8.0
- datasets 2.12.0
- exceptiongroup 1.0.4
- frozenlist 1.3.3
- gflags 2.2.2
- glog 0.5.0
- grpc-cpp 1.46.1
- jaraco.classes 3.2.1
- jupyter\_events 0.6.3
- jupyter\_server\_fileid 0.9.0
- jupyter\_server\_terminals 0.4.4
- jupyter\_server\_ydoc 0.8.0
- jupyter\_ydoc 0.2.4
- lazy\_loader 0.2

- libboost 1.73.0
- libclang13 14.0.6
- libllvm14 14.0.6
- libthrift 0.15.0
- more-itertools 8.12.0
- multidict 6.0.2
- multiprocessing 0.70.14
- orc 1.7.4
- py-cpuinfo 8.0.0
- pyarrow 11.0.0
- python-json-logger 2.0.7
- python-lmdb 1.4.1
- python-xxhash 2.0.2
- re2 2022.4.1
- responses 0.13.3
- rfc3339-validator 0.1.4
- rfc3986-validator 0.1.1
- s3fs 2023.4.0
- sacremoses 0.0.43
- utf8proc 2.6.1
- xxhash 0.8.0
- y-py 0.5.9
- yarl 1.8.1
- ypy-websocket 0.8.2
- zlib-ng 2.0.7

**Removed:**

- flit-core
- future
- libllvm10
- libllvm11
- lz4
- mock
- py
- pyhamcrest

**Changes specific to linux-ppc64le****Updated:**

- beautifulsoup4 4.11.1 -> 4.12.2
- bokeh 2.4.3 -> 3.1.1
- c-ares 1.18.1 -> 1.19.0
- ca-certificates 2023.1.10 -> 2023.5.30
- certifi 2022.12.7 -> 2023.5.7
- cloudpickle 2.0.0 -> 2.2.1
- curl 7.87.0 -> 8.1.1
- dask 2022.7.0 -> 2023.6.0
- dask-core 2022.7.0 -> 2023.6.0
- datashader 0.14.4 -> 0.15.0
- distributed 2022.7.0 -> 2023.6.0
- fsspec 2022.11.0 -> 2023.4.0
- holoviews 1.15.4 -> 1.16.2
- huggingface\_hub 0.10.1 -> 0.15.1
- hvplot 0.8.2 -> 0.8.4
- imageio 2.26.0 -> 2.31.1
- importlib-metadata 4.11.3 -> 6.0.0
- importlib\_metadata 4.11.3 -> 6.0.0
- intake 0.6.7 -> 0.6.8
- ipython 8.10.0 -> 8.12.0
- ipywidgets 7.6.5 -> 8.0.4
- joblib 1.1.1 -> 1.2.0
- jupyter\_client 7.3.4 -> 8.1.0
- jupyter\_console 6.6.2 -> 6.6.3
- jupyter\_core 5.2.0 -> 5.3.0
- jupyter\_server 1.23.4 -> 2.5.0
- jupyterlab 3.5.3 -> 3.6.3
- jupyterlab\_server 2.19.0 -> 2.22.0
- jupyterlab\_widgets 1.0.0 -> 3.0.5
- krb5 1.19.4 -> 1.20.1
- libcurl 7.87.0 -> 8.1.1
- libffi 3.4.2 -> 3.4.4
- libnghttp2 1.46.0 -> 1.52.0
- libxml2 2.9.14 -> 2.10.3

- libxslt 1.1.35 -> 1.1.37
- llvmlite 0.39.1 -> 0.40.0
- lxml 4.9.1 -> 4.9.2
- lz4 3.1.3 -> 4.3.2
- matplotlib 3.7.0 -> 3.7.1
- matplotlib-base 3.7.0 -> 3.7.1
- nbclassic 0.5.2 -> 0.5.5
- notebook 6.5.2 -> 6.5.4
- numba 0.56.4 -> 0.57.0
- numpy 1.23.5 -> 1.24.3
- numpy-base 1.23.5 -> 1.24.3
- openssl 1.1.1t -> 1.1.1u
- packaging 22.0 -> 23.0
- panel 0.14.3 -> 1.1.0
- param 1.12.3 -> 1.13.0
- pip 22.3.1 -> 23.1.2
- pycurl 7.45.1 -> 7.45.2
- pygments 2.11.2 -> 2.15.1
- pytables 3.7.0 -> 3.8.0
- pytest 7.1.2 -> 7.3.1
- python 3.10.9 -> 3.11.3
- pytorch 1.12.1 -> 1.13.1
- pyviz\_comms 2.0.2 -> 2.3.0
- pyzmq 23.2.0 -> 25.1.0
- requests 2.28.1 -> 2.29.0
- scikit-image 0.19.3 -> 0.20.0
- scikit-learn 1.2.1 -> 1.2.2
- scipy 1.10.0 -> 1.10.1
- setuptools 65.6.3 -> 67.8.0
- soupsieve 2.3.2.post1 -> 2.4
- sqlite 3.40.1 -> 3.41.2
- tbb 2021.7.0 -> 2021.8.0
- tbb4py 2021.7.0 -> 2021.8.0
- tenacity 8.0.1 -> 8.2.2
- tokenizers 0.11.4 -> 0.13.2
- tornado 6.1 -> 6.2

- tqdm 4.64.1 -> 4.65.0
- transformers 4.24.0 -> 4.29.2
- twisted 22.2.0 -> 22.10.0
- typing-extensions 4.4.0 -> 4.6.3
- typing\_extensions 4.4.0 -> 4.6.3
- tzdata 2022g -> 2023rc0
- urllib3 1.26.14 -> 1.26.16
- werkzeug 2.2.2 -> 2.2.3
- widgetsnbextension 3.5.2 -> 4.0.5
- xz 5.2.10 -> 5.4.2
- zict 2.1.0 -> 2.2.0
- zstd 1.5.2 -> 1.5.5

### Added:

- abseil-cpp 20211102.0
- aiobotocore 2.5.0
- aiofiles 22.1.0
- aiohttp 3.8.3
- aioitertools 0.7.1
- aiosignal 1.2.0
- aiosqlite 0.18.0
- arrow-cpp 11.0.0
- async-timeout 4.0.2
- aws-c-common 0.4.57
- aws-c-event-stream 0.1.6
- aws-checksums 0.1.9
- aws-sdk-cpp 1.8.185
- boost-cpp 1.73.0
- boto3 1.24.28
- botocore 1.29.76
- c-blosc2 2.8.0
- datasets 2.12.0
- exceptiongroup 1.0.4
- frozenlist 1.3.3
- gflags 2.2.2
- glog 0.5.0
- grpc-cpp 1.46.1

- jupyter\_events 0.6.3
- jupyter\_server\_fileid 0.9.0
- jupyter\_server\_terminals 0.4.4
- jupyter\_server\_ydoc 0.8.0
- jupyter\_ydoc 0.2.4
- lazy\_loader 0.2
- libboost 1.73.0
- libevent 2.1.12
- libllvm14 14.0.6
- libthrift 0.15.0
- linkify-it-py 2.0.0
- markdown-it-py 2.2.0
- mdit-py-plugins 0.3.0
- mdurl 0.1.0
- multidict 6.0.2
- multiprocessing 0.70.14
- orc 1.7.4
- py-cpuinfo 8.0.0
- pyarrow 11.0.0
- python-json-logger 2.0.7
- python-lmdb 1.4.1
- python-xxhash 2.0.2
- re2 2022.4.1
- responses 0.13.3
- rfc3339-validator 0.1.4
- rfc3986-validator 0.1.1
- s3fs 2023.4.0
- s3transfer 0.6.0
- sacremoses 0.0.43
- uc-micro-py 1.0.1
- utf8proc 2.6.1
- xxhash 0.8.0
- xyzservices 2022.9.0
- y-py 0.5.9
- yarl 1.8.1
- ypy-websocket 0.8.2

- zlib-ng 2.0.7

### Removed:

- flit-core
- libllvm11
- mock
- py
- pyhamcrest

### Changes specific to win-64

### Updated:

- beautifulsoup4 4.11.1 -> 4.12.2
- black 22.6.0 -> 23.3.0
- bokeh 2.4.3 -> 3.1.1
- ca-certificates 2023.1.10 -> 2023.5.30
- certifi 2022.12.7 -> 2023.5.7
- cloudpickle 2.0.0 -> 2.2.1
- curl 7.87.0 -> 8.1.1
- daal4py 2023.0.2 -> 2023.1.1
- dal 2023.0.1 -> 2023.1.1
- dask 2022.7.0 -> 2023.6.0
- dask-core 2022.7.0 -> 2023.6.0
- datashader 0.14.4 -> 0.15.0
- distributed 2022.7.0 -> 2023.6.0
- fsspec 2022.11.0 -> 2023.4.0
- holoviews 1.15.4 -> 1.16.2
- huggingface\_hub 0.10.1 -> 0.15.1
- hvplot 0.8.2 -> 0.8.4
- importlib-metadata 4.11.3 -> 6.0.0
- importlib\_metadata 4.11.3 -> 6.0.0
- intake 0.6.7 -> 0.6.8
- intel-openmp 2021.4.0 -> 2023.1.0
- ipython 8.10.0 -> 8.12.0
- ipywidgets 7.6.5 -> 8.0.4
- joblib 1.1.1 -> 1.2.0
- jupyter\_client 7.3.4 -> 8.1.0
- jupyter\_console 6.6.2 -> 6.6.3



- jupyter\_core 5.2.0 -> 5.3.0
- jupyter\_server 1.23.4 -> 2.5.0
- jupyterlab 3.5.3 -> 3.6.3
- jupyterlab\_server 2.19.0 -> 2.22.0
- jupyterlab\_widgets 1.0.0 -> 3.0.5
- keyring 23.4.0 -> 23.13.1
- libclang 12.0.0 -> 14.0.6
- libcurl 7.87.0 -> 8.1.1
- libffi 3.4.2 -> 3.4.4
- libxml2 2.9.14 -> 2.10.3
- libxslt 1.1.35 -> 1.1.37
- llvmlite 0.39.1 -> 0.40.0
- lxml 4.9.1 -> 4.9.2
- lz4 3.1.3 -> 4.3.2
- matplotlib 3.7.0 -> 3.7.1
- matplotlib-base 3.7.0 -> 3.7.1
- mkl 2021.4.0 -> 2023.1.0
- mkl\_fft 1.3.1 -> 1.3.6
- nbclassic 0.5.2 -> 0.5.5
- notebook 6.5.2 -> 6.5.4
- numba 0.56.4 -> 0.57.0
- numpy 1.23.5 -> 1.24.3
- numpy-base 1.23.5 -> 1.24.3
- openssl 1.1.1t -> 1.1.1u
- packaging 22.0 -> 23.0
- panel 0.14.3 -> 1.1.0
- param 1.12.3 -> 1.13.0
- pip 22.3.1 -> 23.1.2
- pycurl 7.45.1 -> 7.45.2
- pygments 2.11.2 -> 2.15.1
- pytables 3.7.0 -> 3.8.0
- pytest 7.1.2 -> 7.3.1
- python 3.10.9 -> 3.11.3
- python-lsp-server 1.7.1 -> 1.7.2
- pytorch 1.12.1 -> 2.0.1
- pyviz\_comms 2.0.2 -> 2.3.0

- pyzmq 23.2.0 -> 25.1.0
- qtconsole 5.4.0 -> 5.4.2
- requests 2.28.1 -> 2.29.0
- scikit-image 0.19.3 -> 0.20.0
- scikit-learn 1.2.1 -> 1.2.2
- scikit-learn-intelex 2023.0.2 -> 2023.1.1
- scipy 1.10.0 -> 1.10.1
- setuptools 65.6.3 -> 67.8.0
- soupsieve 2.3.2.post1 -> 2.4
- spyder 5.4.1 -> 5.4.3
- spyder-kernels 2.4.1 -> 2.4.3
- sqlite 3.40.1 -> 3.41.2
- tbb 2021.7.0 -> 2021.8.0
- tbb4py 2021.7.0 -> 2021.8.0
- tenacity 8.0.1 -> 8.2.2
- tokenizers 0.11.4 -> 0.13.2
- tornado 6.1 -> 6.2
- tqdm 4.64.1 -> 4.65.0
- transformers 4.24.0 -> 4.29.2
- twisted 22.2.0 -> 22.10.0
- typing-extensions 4.4.0 -> 4.6.3
- typing\_extensions 4.4.0 -> 4.6.3
- tzdata 2022g -> 2023rc0
- urllib3 1.26.14 -> 1.26.16
- werkzeug 2.2.2 -> 2.2.3
- widgetsnbextension 3.5.2 -> 4.0.5
- xz 5.2.10 -> 5.4.2
- zict 2.1.0 -> 2.2.0
- zstd 1.5.2 -> 1.5.5

**Added:**

- abseil-cpp 20211102.0
- aiobotocore 2.5.0
- aiofiles 22.1.0
- aiohttp 3.8.3
- aioitertools 0.7.1
- aiosignal 1.2.0

- aiosqlite 0.18.0
- arrow-cpp 11.0.0
- async-timeout 4.0.2
- aws-c-common 0.4.57
- aws-c-event-stream 0.1.6
- aws-checksums 0.1.9
- aws-sdk-cpp 1.8.185
- boost-cpp 1.73.0
- boto3 1.24.28
- botocore 1.29.76
- c-ares 1.19.0
- c-blosc2 2.8.0
- datasets 2.12.0
- exceptiongroup 1.0.4
- frozenlist 1.3.3
- gflags 2.2.2
- glog 0.5.0
- jaraco.classes 3.2.1
- jupyter\_events 0.6.3
- jupyter\_server\_fileid 0.9.0
- jupyter\_server\_terminals 0.4.4
- jupyter\_server\_ydoc 0.8.0
- jupyter\_ydoc 0.2.4
- krb5 1.19.4
- lazy\_loader 0.2
- libboost 1.73.0
- libclang13 14.0.6
- libevent 2.1.12
- libllvm14 14.0.6
- libprotobuf 3.20.3
- libthrift 0.15.0
- linkify-it-py 2.0.0
- markdown-it-py 2.2.0
- mdit-py-plugins 0.3.0
- mdurl 0.1.0
- more-itertools 8.12.0

- multidict 6.0.2
- multiprocessing 0.70.14
- orc 1.7.4
- py-cpuinfo 8.0.0
- pyarrow 11.0.0
- python-json-logger 2.0.7
- python-lmdb 1.4.1
- python-xxhash 2.0.2
- re2 2022.4.1
- responses 0.13.3
- rfc3339-validator 0.1.4
- rfc3986-validator 0.1.1
- s3fs 2023.4.0
- s3transfer 0.6.0
- sacremoses 0.0.43
- uc-micro-py 1.0.1
- utf8proc 2.6.1
- xxhash 0.8.0
- xyzservices 2022.9.0
- y-py 0.5.9
- yarl 1.8.1
- ypy-websocket 0.8.2
- zlib-ng 2.0.7

**Removed:**

- flit-core
- future
- mock
- py
- pyhamcrest
- wincertstore

## Changes specific to osx-64

### Updated:

- beautifulsoup4 4.11.1 -> 4.12.2
- black 22.6.0 -> 23.3.0
- bokeh 2.4.3 -> 3.1.1
- c-ares 1.18.1 -> 1.19.0
- ca-certificates 2023.1.10 -> 2023.5.30
- certifi 2022.12.7 -> 2023.5.7
- cloudpickle 2.0.0 -> 2.2.1
- curl 7.87.0 -> 8.1.1
- dask 2022.7.0 -> 2023.6.0
- dask-core 2022.7.0 -> 2023.6.0
- datashader 0.14.4 -> 0.15.0
- distributed 2022.7.0 -> 2023.6.0
- fsspec 2022.11.0 -> 2023.4.0
- holoviews 1.15.4 -> 1.16.2
- huggingface\_hub 0.10.1 -> 0.15.1
- hvplot 0.8.2 -> 0.8.4
- imageio 2.26.0 -> 2.31.1
- importlib-metadata 4.11.3 -> 6.0.0
- importlib\_metadata 4.11.3 -> 6.0.0
- intake 0.6.7 -> 0.6.8
- ipython 8.10.0 -> 8.12.0
- ipywidgets 7.6.5 -> 8.0.4
- joblib 1.1.1 -> 1.2.0
- jupyter\_client 7.3.4 -> 8.1.0
- jupyter\_console 6.6.2 -> 6.6.3
- jupyter\_core 5.2.0 -> 5.3.0
- jupyter\_server 1.23.4 -> 2.5.0
- jupyterlab 3.5.3 -> 3.6.3
- jupyterlab\_server 2.19.0 -> 2.22.0
- jupyterlab\_widgets 1.0.0 -> 3.0.5
- keyring 23.4.0 -> 23.13.1
- libclang 12.0.0 -> 14.0.6
- libcurl 7.87.0 -> 8.1.1
- libffi 3.4.2 -> 3.4.4

- libnghttp2 1.46.0 -> 1.52.0
- libxml2 2.9.14 -> 2.10.3
- libxslt 1.1.35 -> 1.1.37
- llvmlite 0.39.1 -> 0.40.0
- lxml 4.9.1 -> 4.9.2
- lz4 3.1.3 -> 4.3.2
- matplotlib 3.7.0 -> 3.7.1
- matplotlib-base 3.7.0 -> 3.7.1
- nbclassic 0.5.2 -> 0.5.5
- notebook 6.5.2 -> 6.5.4
- nspr 4.33 -> 4.35
- nss 3.74 -> 3.89.1
- numba 0.56.4 -> 0.57.0
- numpy 1.23.5 -> 1.24.3
- numpy-base 1.23.5 -> 1.24.3
- openssl 1.1.1t -> 1.1.1u
- packaging 22.0 -> 23.0
- panel 0.14.3 -> 1.1.0
- param 1.12.3 -> 1.13.0
- pip 22.3.1 -> 23.1.2
- pycurl 7.45.1 -> 7.45.2
- pygments 2.11.2 -> 2.15.1
- pytables 3.7.0 -> 3.8.0
- pytest 7.1.2 -> 7.3.1
- python 3.10.9 -> 3.11.3
- python-lsp-server 1.7.1 -> 1.7.2
- pytorch 1.12.1 -> 1.13.1
- pyviz\_comms 2.0.2 -> 2.3.0
- pyzmq 23.2.0 -> 25.1.0
- qtconsole 5.4.0 -> 5.4.2
- requests 2.28.1 -> 2.29.0
- scikit-image 0.19.3 -> 0.20.0
- scikit-learn 1.2.1 -> 1.2.2
- scipy 1.10.0 -> 1.10.1
- setuptools 65.6.3 -> 67.8.0
- soupsieve 2.3.2.post1 -> 2.4

- spyder 5.4.1 -> 5.4.3
- spyder-kernels 2.4.1 -> 2.4.3
- sqlite 3.40.1 -> 3.41.2
- tbb 2021.7.0 -> 2021.8.0
- tbb4py 2021.7.0 -> 2021.8.0
- tenacity 8.0.1 -> 8.2.2
- tokenizers 0.11.4 -> 0.13.2
- tornado 6.1 -> 6.2
- tqdm 4.64.1 -> 4.65.0
- twisted 22.2.0 -> 22.10.0
- typing-extensions 4.4.0 -> 4.6.3
- typing\_extensions 4.4.0 -> 4.6.3
- tzdata 2022g -> 2023rc0
- urllib3 1.26.14 -> 1.26.16
- werkzeug 2.2.2 -> 2.2.3
- widgetsnbextension 3.5.2 -> 4.0.5
- xz 5.2.10 -> 5.4.2
- zict 2.1.0 -> 2.2.0
- zstd 1.5.2 -> 1.5.5

**Added:**

- abseil-cpp 20211102.0
- aiobotocore 2.5.0
- aiofiles 22.1.0
- aiohttp 3.8.3
- aioitertools 0.7.1
- aiosignal 1.2.0
- aiosqlite 0.18.0
- arrow-cpp 11.0.0
- async-timeout 4.0.2
- aws-c-common 0.4.57
- aws-c-event-stream 0.1.6
- aws-checksums 0.1.9
- aws-sdk-cpp 1.8.185
- boost-cpp 1.73.0
- boto3 1.24.28
- botocore 1.29.76

- c-blosc2 2.8.0
- exceptiongroup 1.0.4
- frozenlist 1.3.3
- gflags 2.2.2
- glog 0.5.0
- grpc-cpp 1.46.1
- jaraco.classes 3.2.1
- jupyter\_events 0.6.3
- jupyter\_server\_fileid 0.9.0
- jupyter\_server\_terminals 0.4.4
- jupyter\_server\_ydoc 0.8.0
- jupyter\_ydoc 0.2.4
- lazy\_loader 0.2
- libboost 1.73.0
- libclang13 14.0.6
- libevent 2.1.12
- libllvm14 14.0.6
- libthrift 0.15.0
- linkify-it-py 2.0.0
- markdown-it-py 2.2.0
- mdit-py-plugins 0.3.0
- mdurl 0.1.0
- more-itertools 8.12.0
- multidict 6.0.2
- orc 1.7.4
- py-cpuinfo 8.0.0
- pyarrow 11.0.0
- python-json-logger 2.0.7
- python-lmdb 1.4.1
- re2 2022.4.1
- rfc3339-validator 0.1.4
- rfc3986-validator 0.1.1
- s3fs 2023.4.0
- s3transfer 0.6.0
- sacremoses 0.0.43
- uc-micro-py 1.0.1



- utf8proc 2.6.1
- xyzservices 2022.9.0
- y-py 0.5.9
- yarl 1.8.1
- ypy-websocket 0.8.2
- zlib-ng 2.0.7

**Removed:**

- flit-core
- libllvm11
- libllvm12
- mock
- py
- pyhamcrest

**Changes specific to osx-arm64****Updated:**

- beautifulsoup4 4.11.1 -> 4.12.2
- black 22.6.0 -> 23.3.0
- bokeh 2.4.3 -> 3.1.1
- c-ares 1.18.1 -> 1.19.0
- ca-certificates 2023.1.10 -> 2023.5.30
- certifi 2022.12.7 -> 2023.5.7
- cloudpickle 2.0.0 -> 2.2.1
- curl 7.87.0 -> 8.1.1
- dask 2022.7.0 -> 2023.6.0
- dask-core 2022.7.0 -> 2023.6.0
- datashader 0.14.4 -> 0.15.0
- distributed 2022.7.0 -> 2023.6.0
- fsspec 2022.11.0 -> 2023.4.0
- holoviews 1.15.4 -> 1.16.2
- huggingface\_hub 0.10.1 -> 0.15.1
- hvplot 0.8.2 -> 0.8.4
- imageio 2.26.0 -> 2.31.1
- importlib-metadata 4.11.3 -> 6.0.0
- importlib\_metadata 4.11.3 -> 6.0.0
- intake 0.6.7 -> 0.6.8

- ipython 8.10.0 -> 8.12.0
- joblib 1.1.1 -> 1.2.0
- jupyter\_client 7.3.4 -> 8.1.0
- jupyter\_core 5.2.0 -> 5.3.0
- jupyter\_server 1.23.4 -> 2.5.0
- jupyterlab 3.5.3 -> 3.6.3
- jupyterlab\_server 2.19.0 -> 2.22.0
- keyring 23.4.0 -> 23.13.1
- libclang 12.0.0 -> 14.0.6
- libcurl 7.87.0 -> 8.1.1
- libffi 3.4.2 -> 3.4.4
- libnghttp2 1.46.0 -> 1.52.0
- libxml2 2.9.14 -> 2.10.3
- libxslt 1.1.35 -> 1.1.37
- llvmlite 0.39.1 -> 0.40.0
- lxml 4.9.1 -> 4.9.2
- lz4 3.1.3 -> 4.3.2
- matplotlib 3.7.0 -> 3.7.1
- matplotlib-base 3.7.0 -> 3.7.1
- nbclassic 0.5.2 -> 0.5.5
- notebook 6.5.2 -> 6.5.4
- nspr 4.33 -> 4.35
- nss 3.74 -> 3.89.1
- numba 0.56.4 -> 0.57.0
- numpy 1.23.5 -> 1.24.3
- numpy-base 1.23.5 -> 1.24.3
- openssl 1.1.1t -> 1.1.1u
- packaging 22.0 -> 23.0
- panel 0.14.3 -> 1.1.0
- param 1.12.3 -> 1.13.0
- pip 22.3.1 -> 23.1.2
- pycurl 7.45.1 -> 7.45.2
- pygments 2.11.2 -> 2.15.1
- pytables 3.7.0 -> 3.8.0
- pytest 7.1.2 -> 7.3.1
- python 3.10.9 -> 3.11.3

- python-lsp-server 1.7.1 -> 1.7.2
- pytorch 1.12.1 -> 2.0.1
- pyviz\_comms 2.0.2 -> 2.3.0
- pyzmq 23.2.0 -> 25.1.0
- qtconsole 5.4.0 -> 5.4.2
- requests 2.28.1 -> 2.29.0
- scikit-image 0.19.3 -> 0.20.0
- scikit-learn 1.2.1 -> 1.2.2
- scipy 1.10.0 -> 1.10.1
- setuptools 65.6.3 -> 67.8.0
- soupsieve 2.3.2.post1 -> 2.4
- spyder 5.4.1 -> 5.4.3
- spyder-kernels 2.4.1 -> 2.4.3
- sqlite 3.40.1 -> 3.41.2
- tbb 2021.7.0 -> 2021.8.0
- tbb4py 2021.7.0 -> 2021.8.0
- tenacity 8.0.1 -> 8.2.2
- tokenizers 0.11.4 -> 0.13.2
- tornado 6.1 -> 6.2
- tqdm 4.64.1 -> 4.65.0
- transformers 4.24.0 -> 4.29.2
- twisted 22.2.0 -> 22.10.0
- typing-extensions 4.4.0 -> 4.6.3
- typing\_extensions 4.4.0 -> 4.6.3
- tzdata 2022g -> 2023rc0
- urllib3 1.26.14 -> 1.26.16
- werkzeug 2.2.2 -> 2.2.3
- xz 5.2.10 -> 5.4.2
- zict 2.1.0 -> 2.2.0
- zstd 1.5.2 -> 1.5.5

**Added:**

- abseil-cpp 20211102.0
- aiobotocore 2.5.0
- aiofiles 22.1.0
- aiohttp 3.8.3
- aioitertools 0.7.1

- aiosignal 1.2.0
- aiosqlite 0.18.0
- arrow-cpp 11.0.0
- async-timeout 4.0.2
- aws-c-common 0.6.8
- aws-c-event-stream 0.1.6
- aws-checksums 0.1.11
- aws-sdk-cpp 1.8.185
- boost-cpp 1.73.0
- botocore 1.29.76
- c-blosc2 2.8.0
- datasets 2.12.0
- exceptiongroup 1.0.4
- frozenlist 1.3.3
- gflags 2.2.2
- glog 0.5.0
- grpc-cpp 1.46.1
- ipywidgets 8.0.4
- jaraco.classes 3.2.1
- jupyter 1.0.0
- jupyter\_console 6.6.3
- jupyter\_events 0.6.3
- jupyter\_server\_fileid 0.9.0
- jupyter\_server\_terminals 0.4.4
- jupyter\_server\_ydoc 0.8.0
- jupyter\_ydoc 0.2.4
- jupyterlab\_widgets 3.0.5
- lazy\_loader 0.2
- libboost 1.73.0
- libclang13 14.0.6
- libevent 2.1.12
- libllvm14 14.0.6
- libthrift 0.13.0
- linkify-it-py 2.0.0
- markdown-it-py 2.2.0
- mdit-py-plugins 0.3.0

- mdurl 0.1.0
- more-itertools 8.12.0
- multidict 6.0.2
- multiprocessing 0.70.14
- orc 1.7.4
- prompt\_toolkit 3.0.36
- py-cpuinfo 8.0.0
- pyarrow 11.0.0
- python-json-logger 2.0.7
- python-lmdb 1.4.1
- python-xxhash 2.0.2
- re2 2022.4.1
- responses 0.13.3
- rfc3339-validator 0.1.4
- rfc3986-validator 0.1.1
- s3fs 2023.4.0
- sacremoses 0.0.43
- uc-micro-py 1.0.1
- utf8proc 2.6.1
- widgetsnbextension 4.0.5
- xxhash 0.8.0
- xyzservices 2022.9.0
- y-py 0.5.9
- yarl 1.8.1
- ypy-websocket 0.8.2
- zlib-ng 2.0.7

**Removed:**

- flit-core
- future
- libllvm11
- libllvm12
- mock
- py
- pyhamcrest

Package totals across all platforms: Updated: 595; Added: 381; Removed: 41

### Anaconda 2023.03-1 (April 24, 2023)

#### User-facing changes

- Conda has been updated to v23.3.1.

#### Bug fixes

- Drop the “py310” string from the installer filename (caused problems for downstream package managers e.g. WinGet). ([Issue 13161](#))
- For Windows, enable allowance of spaces in the installation path. ([Issue 13163](#))

### Anaconda 2023.03-0 (March 20, 2023)

#### User-facing changes

- Conda has been updated to v23.1.0.
- This installer uses python-3.10.9.
- Anaconda Navigator has been updated to v2.4.0.
- Version numbers for Anaconda Distribution will now include a build number to track any changes to the distribution that occur before the next official release.

#### Changes specific to linux-64

##### Updated:

- arrow 1.2.2 -> 1.2.3
- astroid 2.11.7 -> 2.14.2
- attrs 21.4.0 -> 22.1.0
- babel 2.9.1 -> 2.11.0
- blosc 1.21.0 -> 1.21.3
- ca-certificates 2022.7.19 -> 2023.1.10
- certifi 2022.9.14 -> 2022.12.7
- colorama 0.4.5 -> 0.4.6
- colorcet 3.0.0 -> 3.0.1
- cryptography 37.0.1 -> 39.0.1
- curl 7.84.0 -> 7.87.0
- cytoolz 0.11.0 -> 0.12.0
- daal4py 2021.6.0 -> 2023.0.2
- dal 2021.6.0 -> 2023.0.1
- datashader 0.14.1 -> 0.14.4

- dill 0.3.4 -> 0.3.6
- filelock 3.6.0 -> 3.9.0
- flake8 4.0.1 -> 6.0.0
- flask 1.1.2 -> 2.2.2
- fontconfig 2.13.1 -> 2.14.1
- freetype 2.11.0 -> 2.12.1
- fsspec 2022.7.1 -> 2022.11.0
- future 0.18.2 -> 0.18.3
- gensim 4.1.2 -> 4.3.0
- greenlet 1.1.1 -> 2.0.1
- gst-plugins-base 1.14.0 -> 1.14.1
- gstreamer 1.14.0 -> 1.14.1
- holoviews 1.15.0 -> 1.15.4
- hvplot 0.8.0 -> 0.8.2
- idna 3.3 -> 3.4
- imageio 2.19.3 -> 2.26.0
- intake 0.6.5 -> 0.6.7
- ipykernel 6.15.2 -> 6.19.2
- ipython 7.31.1 -> 8.10.0
- jinja2 2.11.3 -> 3.1.2
- joblib 1.1.0 -> 1.1.1
- jsonschema 4.16.0 -> 4.17.3
- jupyter\_console 6.4.3 -> 6.6.2
- jupyter\_core 4.11.1 -> 5.2.0
- jupyter\_server 1.18.1 -> 1.23.4
- jupyterlab 3.4.4 -> 3.5.3
- jupyterlab\_server 2.10.3 -> 2.19.0
- kiwisolver 1.4.2 -> 1.4.4
- krb5 1.19.2 -> 1.19.4
- libcurl 7.84.0 -> 7.87.0
- libdeflate 1.8 -> 1.17
- libedit 3.1.20210910 -> 3.1.20221030
- libffi 3.3 -> 3.4.2
- libpng 1.6.37 -> 1.6.39
- libtiff 4.4.0 -> 4.5.0
- libuuid 1.0.3 -> 1.41.5

- libwebp 1.2.2 -> 1.2.4
- libwebp-base 1.2.2 -> 1.2.4
- llvmlite 0.38.0 -> 0.39.1
- lz4-c 1.9.3 -> 1.9.4
- markdown 3.3.4 -> 3.4.1
- markupsafe 2.0.1 -> 2.1.1
- matplotlib 3.5.2 -> 3.7.0
- matplotlib-base 3.5.2 -> 3.7.0
- nbclassic 0.3.5 -> 0.5.2
- nbconvert 6.4.4 -> 6.5.4
- nbformat 5.5.0 -> 5.7.0
- ncurses 6.3 -> 6.4
- nest-asyncio 1.5.5 -> 1.5.6
- notebook 6.4.12 -> 6.5.2
- numba 0.55.1 -> 0.56.4
- numexpr 2.8.3 -> 2.8.4
- numpy 1.21.5 -> 1.23.5
- numpy-base 1.21.5 -> 1.23.5
- numpydoc 1.4.0 -> 1.5.0
- openssl 1.1.1q -> 1.1.1t
- packaging 21.3 -> 22.0
- pandas 1.4.4 -> 1.5.3
- panel 0.13.1 -> 0.14.3
- param 1.12.0 -> 1.12.3
- pathspec 0.9.0 -> 0.10.3
- patsy 0.5.2 -> 0.5.3
- pillow 9.2.0 -> 9.4.0
- pip 22.2.2 -> 22.3.1
- prompt-toolkit 3.0.20 -> 3.0.36
- prompt\_toolkit 3.0.20 -> 3.0.36
- pycodestyle 2.8.0 -> 2.10.0
- pyct 0.4.8 -> 0.5.0
- pydocstyle 6.1.1 -> 6.3.0
- pyflakes 2.4.0 -> 3.0.1
- pylint 2.14.5 -> 2.16.2
- pyopenssl 22.0.0 -> 23.0.0



- pytables 3.6.1 -> 3.7.0
- python 3.10.4 -> 3.10.9
- python-lsp-server 1.5.0 -> 1.7.1
- python-snappy 0.6.0 -> 0.6.1
- pytz 2022.1 -> 2022.7
- pywavelets 1.3.0 -> 1.4.1
- qstylizer 0.1.10 -> 0.2.2
- qtawesome 1.0.3 -> 1.2.2
- qtconsole 5.3.2 -> 5.4.0
- readline 8.1.2 -> 8.2
- rope 0.22.0 -> 1.7.0
- rtree 0.9.7 -> 1.0.1
- scikit-image 0.19.2 -> 0.19.3
- scikit-learn 1.0.2 -> 1.2.1
- scikit-learn-intelex 2021.6.0 -> 2023.0.2
- scipy 1.9.1 -> 1.10.0
- scrapy 2.6.2 -> 2.8.0
- seaborn 0.11.2 -> 0.12.2
- setuptools 63.4.1 -> 65.6.3
- soupsieve 2.3.1 -> 2.3.2.post1
- spyder 5.3.3 -> 5.4.1
- spyder-kernels 2.3.3 -> 2.4.1
- sqlite 3.39.3 -> 3.40.1
- statsmodels 0.13.2 -> 0.13.5
- sympy 1.10.1 -> 1.11.1
- tbb 2021.6.0 -> 2021.7.0
- tbb4py 2021.6.0 -> 2021.7.0
- terminado 0.13.1 -> 0.17.1
- toolz 0.11.2 -> 0.12.0
- traitlets 5.1.1 -> 5.7.1
- typing-extensions 4.3.0 -> 4.4.0
- typing\_extensions 4.3.0 -> 4.4.0
- urllib3 1.26.11 -> 1.26.14
- werkzeug 2.0.3 -> 2.2.2
- wheel 0.37.1 -> 0.38.4
- xarray 0.20.1 -> 2022.11.0

- xz 5.2.6 -> 5.2.10
- zipp 3.8.0 -> 3.11.0
- zlib 1.2.12 -> 1.2.13

### Added:

- asttokens 2.0.5
- comm 0.1.2
- contourpy 1.0.5
- docstring-to-markdown 0.11
- executing 0.8.3
- flit-core 3.6.0
- huggingface\_hub 0.10.1
- imbalanced-learn 0.10.1
- libprotobuf 3.20.3
- ninja 1.10.2
- ninja-base 1.10.2
- notebook-shim 0.2.2
- pooch 1.4.0
- pure\_eval 0.2.2
- pylint-venv 2.3.0
- pytoolconfig 1.2.5
- pytorch 1.12.1
- stack\_data 0.2.0
- tinycss2 1.2.1
- tokenizers 0.11.4
- transformers 4.24.0

### Removed:

- anaconda-client
- anaconda-project
- backports
- backports.functools\_lru\_cache
- backports.tempfile
- backports.weakref
- bitarray
- bkcharts
- boto3
- botocore

- clyent
- conda-content-trust
- conda-token
- cython
- dataclasses
- fftw
- glob2
- jdcal
- libarchive
- libgfortran4
- libidn2
- liblief
- libunistring
- nose
- olefile
- patch
- patchelf
- pkginfo
- py-lief
- pycosat
- python-libarchive-c
- qt
- ripgrep
- ruamel\_yaml
- s3transfer
- sortedcollections
- testpath
- tinycss
- wget
- xlrd
- xlswriter

**More changes specific to linux-s390x****Updated:**

- astroid 2.11.7 -> 2.14.2
- attrs 21.4.0 -> 22.1.0
- babel 2.9.1 -> 2.11.0
- blosc 1.21.0 -> 1.21.3
- ca-certificates 2022.7.19 -> 2023.1.10
- certifi 2022.9.24 -> 2022.12.7
- colorama 0.4.5 -> 0.4.6
- colorcet 3.0.0 -> 3.0.1
- cryptography 37.0.1 -> 39.0.1
- curl 7.84.0 -> 7.87.0
- cytoolz 0.11.0 -> 0.12.0
- dill 0.3.4 -> 0.3.6
- filelock 3.6.0 -> 3.9.0
- flask 1.1.2 -> 2.2.2
- freetype 2.11.0 -> 2.12.1
- fsspec 2022.7.1 -> 2022.11.0
- future 0.18.2 -> 0.18.3
- greenlet 1.1.1 -> 2.0.1
- imageio 2.19.3 -> 2.26.0
- intake 0.6.2 -> 0.6.5
- ipykernel 6.15.2 -> 6.19.2
- ipython 8.4.0 -> 8.10.0
- jinja2 2.11.3 -> 3.1.2
- joblib 1.1.0 -> 1.1.1
- jsonschema 4.16.0 -> 4.17.3
- jupyter\_console 6.4.3 -> 6.6.2
- jupyter\_core 4.11.1 -> 5.2.0
- jupyter\_server 1.18.1 -> 1.23.4
- kiwisolver 1.4.2 -> 1.4.4
- krb5 1.19.2 -> 1.19.4
- libcurl 7.84.0 -> 7.87.0
- libdeflate 1.7 -> 1.17
- libedit 3.1.20210910 -> 3.1.20221030
- libffi 3.3 -> 3.4.2

- libpng 1.6.37 -> 1.6.39
- libtiff 4.4.0 -> 4.5.0
- libuuid 1.0.3 -> 1.41.5
- libwebp 1.2.2 -> 1.2.4
- libwebp-base 1.2.2 -> 1.2.4
- lz4-c 1.9.3 -> 1.9.4
- markdown 3.3.4 -> 3.4.1
- markupsafe 2.0.1 -> 2.1.1
- matplotlib 3.5.2 -> 3.7.0
- matplotlib-base 3.5.2 -> 3.7.0
- nbclassic 0.3.5 -> 0.5.2
- nbconvert 6.4.4 -> 6.5.4
- nbformat 5.5.0 -> 5.7.0
- ncurses 6.3 -> 6.4
- nest-asyncio 1.5.5 -> 1.5.6
- notebook 6.4.12 -> 6.5.2
- numexpr 2.8.3 -> 2.8.4
- numpy 1.21.5 -> 1.23.5
- numpy-base 1.21.5 -> 1.23.5
- openssl 1.1.1q -> 1.1.1t
- packaging 21.3 -> 22.0
- pandas 1.4.4 -> 1.5.3
- param 1.12.0 -> 1.12.3
- patsy 0.5.2 -> 0.5.3
- pillow 9.2.0 -> 9.4.0
- pip 22.2.2 -> 22.3.1
- prompt-toolkit 3.0.20 -> 3.0.36
- prompt\_toolkit 3.0.20 -> 3.0.36
- pyct 0.4.8 -> 0.5.0
- pyflakes 2.4.0 -> 3.0.1
- pylint 2.14.5 -> 2.16.2
- pyopenssl 22.0.0 -> 23.0.0
- pytables 3.6.1 -> 3.7.0
- python 3.10.4 -> 3.10.9
- pytz 2022.1 -> 2022.7
- pywavelets 1.3.0 -> 1.4.1

- readline 8.1.2 -> 8.2
- scikit-image 0.19.2 -> 0.19.3
- scikit-learn 1.1.1 -> 1.2.1
- scipy 1.9.1 -> 1.10.0
- seaborn 0.11.2 -> 0.12.2
- setuptools 63.4.1 -> 65.6.3
- soupsieve 2.3.1 -> 2.3.2.post1
- sqlite 3.39.3 -> 3.40.1
- statsmodels 0.13.2 -> 0.13.5
- sympy 1.10.1 -> 1.11.1
- terminado 0.13.1 -> 0.17.1
- toolz 0.11.2 -> 0.12.0
- traitlets 5.1.1 -> 5.7.1
- typing-extensions 4.3.0 -> 4.4.0
- typing\_extensions 4.3.0 -> 4.4.0
- urllib3 1.26.11 -> 1.26.14
- werkzeug 2.0.3 -> 2.2.2
- wheel 0.37.1 -> 0.38.4
- xz 5.2.6 -> 5.2.10
- zipp 3.8.0 -> 3.11.0
- zlib 1.2.12 -> 1.2.13

### Added:

- comm 0.1.2
- contourpy 1.0.5
- flit-core 3.6.0
- huggingface\_hub 0.10.1
- imbalanced-learn 0.10.1
- libprotobuf 3.20.3
- ninja 1.10.2
- ninja-base 1.10.2
- notebook-shim 0.2.2
- pooch 1.4.0
- python-snappy 0.6.1
- pytorch 1.12.1
- tbb 2021.7.0
- tbb4py 2021.7.0

- tinycss2 1.2.1
- tokenizers 0.11.4
- transformers 4.24.0

**Removed:**

- alabaster
- anaconda-client
- anaconda-project
- backports
- backports.functools\_lru\_cache
- backports.tempfile
- backports weakref
- bitarray
- bkcharts
- boto3
- botocore
- chardet
- clyent
- conda-content-trust
- conda-token
- cython
- dataclasses
- dbus
- docutils
- expat
- fontconfig
- glib
- glob2
- imagesize
- jdcals
- jmespath
- libarchive
- libidn2
- liblief
- libunistring
- libxcb
- nomkl

- nose
- numpydoc
- olefile
- openblas
- openblas-devel
- patch
- patchelf
- pere
- pkginfo
- ply
- py-lief
- pycodestyle
- pycosat
- python-libarchive-c
- rope
- ruamel\_yaml
- s3transfer
- sip
- sortedcollections
- sphinx
- sphinxcontrib-applehelp
- sphinxcontrib-devhelp
- sphinxcontrib-htmlhelp
- sphinxcontrib-jsmath
- sphinxcontrib-qthelp
- sphinxcontrib-serializinghtml
- testpath
- toml
- wget
- xlrd
- xlswriter



## More changes specific to linux-aarch64

### Updated:

- arrow 1.2.2 -> 1.2.3
- astroid 2.11.7 -> 2.14.2
- attrs 21.4.0 -> 22.1.0
- babel 2.9.1 -> 2.11.0
- blosc 1.21.0 -> 1.21.3
- ca-certificates 2022.7.19 -> 2023.1.10
- certifi 2022.9.24 -> 2022.12.7
- colorama 0.4.5 -> 0.4.6
- colorcet 3.0.0 -> 3.0.1
- cryptography 37.0.1 -> 39.0.1
- curl 7.84.0 -> 7.87.0
- cytoolz 0.11.0 -> 0.12.0
- datashader 0.14.1 -> 0.14.4
- dill 0.3.4 -> 0.3.6
- filelock 3.6.0 -> 3.9.0
- flake8 4.0.1 -> 6.0.0
- flask 1.1.2 -> 2.2.2
- fontconfig 2.13.1 -> 2.14.1
- freetype 2.11.0 -> 2.12.1
- fsspec 2022.7.1 -> 2022.11.0
- future 0.18.2 -> 0.18.3
- gensim 4.1.2 -> 4.3.0
- greenlet 1.1.1 -> 2.0.1
- holoviews 1.15.0 -> 1.15.4
- hvplot 0.8.0 -> 0.8.2
- idna 3.3 -> 3.4
- imageio 2.19.3 -> 2.26.0
- intake 0.6.5 -> 0.6.7
- ipykernel 6.15.2 -> 6.19.2
- ipython 7.31.1 -> 8.10.0
- jinja2 2.11.3 -> 3.1.2
- joblib 1.1.0 -> 1.1.1
- jsonschema 4.16.0 -> 4.17.3
- jupyter\_console 6.4.3 -> 6.6.2

- jupyter\_core 4.11.1 -> 5.2.0
- jupyter\_server 1.18.1 -> 1.23.4
- jupyterlab 3.4.4 -> 3.5.3
- jupyterlab\_server 2.10.3 -> 2.19.0
- kiwisolver 1.4.2 -> 1.4.4
- krb5 1.19.2 -> 1.19.4
- libcurl 7.84.0 -> 7.87.0
- libdeflate 1.7 -> 1.17
- libedit 3.1.20210910 -> 3.1.20221030
- libffi 3.3 -> 3.4.2
- libpng 1.6.37 -> 1.6.39
- libtiff 4.4.0 -> 4.5.0
- libuuid 1.0.3 -> 1.41.5
- libwebp 1.2.2 -> 1.2.4
- libwebp-base 1.2.2 -> 1.2.4
- llvmlite 0.38.0 -> 0.39.1
- lz4-c 1.9.3 -> 1.9.4
- markdown 3.3.4 -> 3.4.1
- markupsafe 2.0.1 -> 2.1.1
- matplotlib 3.5.2 -> 3.7.0
- matplotlib-base 3.5.2 -> 3.7.0
- nbclassic 0.3.5 -> 0.5.2
- nbconvert 6.4.4 -> 6.5.4
- nbformat 5.5.0 -> 5.7.0
- ncurses 6.3 -> 6.4
- nest-asyncio 1.5.5 -> 1.5.6
- notebook 6.4.12 -> 6.5.2
- numba 0.55.1 -> 0.56.4
- numexpr 2.8.3 -> 2.8.4
- numpy 1.21.5 -> 1.23.5
- numpy-base 1.21.5 -> 1.23.5
- numpydoc 1.4.0 -> 1.5.0
- openssl 1.1.1q -> 1.1.1t
- packaging 21.3 -> 22.0
- pandas 1.4.4 -> 1.5.3
- panel 0.13.1 -> 0.14.3

- param 1.12.0 -> 1.12.3
- pathspec 0.9.0 -> 0.10.3
- patsy 0.5.2 -> 0.5.3
- pillow 9.2.0 -> 9.4.0
- pip 22.2.2 -> 22.3.1
- prompt-toolkit 3.0.20 -> 3.0.36
- prompt\_toolkit 3.0.20 -> 3.0.36
- pycodestyle 2.8.0 -> 2.10.0
- pyct 0.4.8 -> 0.5.0
- pydocstyle 6.1.1 -> 6.3.0
- pyflakes 2.4.0 -> 3.0.1
- pylint 2.14.5 -> 2.16.2
- pyopenssl 22.0.0 -> 23.0.0
- pytables 3.6.1 -> 3.7.0
- python 3.10.4 -> 3.10.9
- python-lsp-server 1.5.0 -> 1.7.1
- python-snappy 0.6.0 -> 0.6.1
- pytz 2022.1 -> 2022.7
- pywavelets 1.3.0 -> 1.4.1
- qstylizer 0.1.10 -> 0.2.2
- qtawesome 1.0.3 -> 1.2.2
- qtconsole 5.3.2 -> 5.4.0
- readline 8.1.2 -> 8.2
- rope 0.22.0 -> 1.7.0
- rtree 0.9.7 -> 1.0.1
- scikit-image 0.19.2 -> 0.19.3
- scikit-learn 1.1.1 -> 1.2.1
- scipy 1.9.1 -> 1.10.0
- scrapy 2.6.2 -> 2.8.0
- seaborn 0.11.2 -> 0.12.2
- setuptools 63.4.1 -> 65.6.3
- soupsieve 2.3.1 -> 2.3.2.post1
- spyder 5.3.3 -> 5.4.1
- spyder-kernels 2.3.3 -> 2.4.1
- sqlite 3.39.3 -> 3.40.1
- statsmodels 0.13.2 -> 0.13.5

- sympy 1.10.1 -> 1.11.1
- tbb 2021.6.0 -> 2021.7.0
- tbb4py 2021.6.0 -> 2021.7.0
- terminado 0.13.1 -> 0.17.1
- toolz 0.11.2 -> 0.12.0
- traitlets 5.1.1 -> 5.7.1
- typing-extensions 4.3.0 -> 4.4.0
- typing\_extensions 4.3.0 -> 4.4.0
- urllib3 1.26.11 -> 1.26.14
- werkzeug 2.0.3 -> 2.2.2
- wheel 0.37.1 -> 0.38.4
- xarray 0.20.1 -> 2022.11.0
- xz 5.2.6 -> 5.2.10
- zipp 3.8.0 -> 3.11.0
- zlib 1.2.12 -> 1.2.13

**Added:**

- asttokens 2.0.5
- comm 0.1.2
- contourpy 1.0.5
- docstring-to-markdown 0.11
- executing 0.8.3
- flit-core 3.6.0
- huggingface\_hub 0.10.1
- imbalanced-learn 0.10.1
- libprotobuf 3.20.3
- ninja 1.10.2
- ninja-base 1.10.2
- notebook-shim 0.2.2
- pooch 1.4.0
- pure\_eval 0.2.2
- pylint-venv 2.3.0
- pytoolconfig 1.2.5
- pytorch 1.12.1
- stack\_data 0.2.0
- tinycss2 1.2.1
- tokenizers 0.11.4

- transformers 4.24.0

**Removed:**

- anaconda-client
- anaconda-project
- backports
- backports.functools\_lru\_cache
- backports.tempfile
- backports.weakref
- bitarray
- bkcharts
- boto3
- botocore
- cached-property
- clyent
- conda-content-trust
- conda-token
- cython
- dataclasses
- fftw
- glob2
- jdcal
- libarchive
- libidn2
- liblief
- libunistring
- nomkl
- nose
- olefile
- openblas
- openblas-devel
- patch
- patchelf
- pkginfo
- py-lief
- pycosat
- python-libarchive-c

- qt
- ruamel\_yaml
- s3transfer
- sortedcollections
- testpath
- tinycss
- wget
- xlrd
- xlswriter

### More changes specific to linux-ppc64le

#### Updated:

- astroid 2.11.7 -> 2.14.2
- attrs 21.4.0 -> 22.1.0
- babel 2.9.1 -> 2.11.0
- blosc 1.21.0 -> 1.21.3
- ca-certificates 2022.7.19 -> 2023.1.10
- certifi 2022.9.14 -> 2022.12.7
- colorama 0.4.5 -> 0.4.6
- colorcet 3.0.0 -> 3.0.1
- cryptography 37.0.1 -> 39.0.1
- curl 7.84.0 -> 7.87.0
- cytoolz 0.11.0 -> 0.12.0
- datashader 0.14.1 -> 0.14.4
- dill 0.3.4 -> 0.3.6
- filelock 3.6.0 -> 3.9.0
- flask 1.1.2 -> 2.2.2
- freetype 2.11.0 -> 2.12.1
- fsspec 2022.7.1 -> 2022.11.0
- future 0.18.2 -> 0.18.3
- gensim 4.1.2 -> 4.3.0
- greenlet 1.1.1 -> 2.0.1
- holoviews 1.15.0 -> 1.15.4
- hvplot 0.8.0 -> 0.8.2
- idna 3.3 -> 3.4
- imageio 2.19.3 -> 2.26.0

- intake 0.6.5 -> 0.6.7
- ipykernel 6.15.2 -> 6.19.2
- ipython 8.4.0 -> 8.10.0
- jinja2 2.11.3 -> 3.1.2
- joblib 1.1.0 -> 1.1.1
- jsonschema 4.16.0 -> 4.17.3
- jupyter\_console 6.4.3 -> 6.6.2
- jupyter\_core 4.11.1 -> 5.2.0
- jupyter\_server 1.18.1 -> 1.23.4
- jupyterlab 3.4.4 -> 3.5.3
- jupyterlab\_server 2.10.3 -> 2.19.0
- kiwisolver 1.4.2 -> 1.4.4
- krb5 1.19.2 -> 1.19.4
- libcurl 7.84.0 -> 7.87.0
- libdeflate 1.8 -> 1.17
- libedit 3.1.20210910 -> 3.1.20221030
- libffi 3.3 -> 3.4.2
- libpng 1.6.37 -> 1.6.39
- libtiff 4.2.0 -> 4.5.0
- libuuid 1.0.3 -> 1.41.5
- libwebp 1.2.2 -> 1.2.4
- libwebp-base 1.2.2 -> 1.2.4
- llvmlite 0.38.0 -> 0.39.1
- lz4-c 1.9.3 -> 1.9.4
- markdown 3.3.4 -> 3.4.1
- markupsafe 2.0.1 -> 2.1.1
- matplotlib 3.5.2 -> 3.7.0
- matplotlib-base 3.5.2 -> 3.7.0
- nbclassic 0.3.5 -> 0.5.2
- nbconvert 6.4.4 -> 6.5.4
- nbformat 5.5.0 -> 5.7.0
- ncurses 6.3 -> 6.4
- nest-asyncio 1.5.5 -> 1.5.6
- notebook 6.4.12 -> 6.5.2
- numba 0.55.1 -> 0.56.4
- numexpr 2.8.3 -> 2.8.4

- numpy 1.21.5 -> 1.23.5
- numpy-base 1.21.5 -> 1.23.5
- openssl 1.1.1q -> 1.1.1t
- packaging 21.3 -> 22.0
- pandas 1.4.4 -> 1.5.3
- panel 0.13.1 -> 0.14.3
- param 1.12.0 -> 1.12.3
- patsy 0.5.2 -> 0.5.3
- pillow 9.2.0 -> 9.4.0
- pip 22.2.2 -> 22.3.1
- prompt-toolkit 3.0.20 -> 3.0.36
- prompt\_toolkit 3.0.20 -> 3.0.36
- pyct 0.4.8 -> 0.5.0
- pyflakes 2.4.0 -> 3.0.1
- pylint 2.14.5 -> 2.16.2
- pyopenssl 22.0.0 -> 23.0.0
- pytables 3.6.1 -> 3.7.0
- python 3.10.4 -> 3.10.9
- python-snappy 0.6.0 -> 0.6.1
- pytz 2022.1 -> 2022.7
- pywavelets 1.3.0 -> 1.4.1
- readline 8.1.2 -> 8.2
- scikit-image 0.19.2 -> 0.19.3
- scikit-learn 1.1.1 -> 1.2.1
- scipy 1.9.1 -> 1.10.0
- scrapy 2.6.2 -> 2.8.0
- seaborn 0.11.2 -> 0.12.2
- setuptools 63.4.1 -> 65.6.3
- soupsieve 2.3.1 -> 2.3.2.post1
- sqlite 3.39.3 -> 3.40.1
- statsmodels 0.13.2 -> 0.13.5
- sympy 1.10.1 -> 1.11.1
- tbb 2021.6.0 -> 2021.7.0
- tbb4py 2021.6.0 -> 2021.7.0
- terminado 0.13.1 -> 0.17.1
- toolz 0.11.2 -> 0.12.0



- traitlets 5.1.1 -> 5.7.1
- typing-extensions 4.3.0 -> 4.4.0
- typing\_extensions 4.3.0 -> 4.4.0
- urllib3 1.26.11 -> 1.26.14
- werkzeug 2.0.3 -> 2.2.2
- wheel 0.37.1 -> 0.38.4
- xarray 0.20.1 -> 2022.11.0
- xz 5.2.6 -> 5.2.10
- zipp 3.8.0 -> 3.11.0
- zlib 1.2.12 -> 1.2.13
- zstd 1.4.9 -> 1.5.2

**Added:**

- comm 0.1.2
- contourpy 1.0.5
- flit-core 3.6.0
- huggingface\_hub 0.10.1
- imbalanced-learn 0.10.1
- importlib\_metadata 4.11.3
- libprotobuf 3.20.3
- ninja 1.10.2
- ninja-base 1.10.2
- notebook-shim 0.2.2
- pooch 1.4.0
- pytorch 1.12.1
- tinycss2 1.2.1
- tokenizers 0.11.4
- transformers 4.24.0

**Removed:**

- alabaster
- anaconda-client
- anaconda-project
- backports
- backports.functools\_lru\_cache
- backports.tempfile
- backports.weakref
- bitarray

- bkcharts
- boto3
- botocore
- chardet
- clyent
- conda-content-trust
- conda-token
- cython
- dataclasses
- docutils
- expat
- fftw
- fontconfig
- glob2
- imagesize
- jdcal
- libarchive
- libidn2
- liblief
- libunistring
- nomkl
- nose
- numpydoc
- olefile
- openblas
- openblas-devel
- patch
- patchelf
- pcre
- pkginfo
- py-lief
- pycodestyle
- pycosat
- python-libarchive-c
- ruamel\_yaml
- s3transfer

- sortedcollections
- sphinx
- sphinxcontrib-applehelp
- sphinxcontrib-devhelp
- sphinxcontrib-htmlhelp
- sphinxcontrib-jsmath
- sphinxcontrib-qthelp
- sphinxcontrib-serializinghtml
- testpath
- toml
- wget
- xlrd
- xlsxwriter

### More changes specific to win-64

#### Updated:

- astroid 2.11.7 -> 2.14.2
- blosc 1.21.0 -> 1.21.3
- ca-certificates 2022.10.11 -> 2023.1.10
- cryptography 38.0.4 -> 39.0.1
- curl 7.86.0 -> 7.87.0
- daal4py 2021.6.0 -> 2023.0.2
- dal 2021.6.0 -> 2023.0.1
- datashader 0.14.3 -> 0.14.4
- flake8 4.0.1 -> 6.0.0
- future 0.18.2 -> 0.18.3
- gensim 4.1.2 -> 4.3.0
- holoviews 1.15.3 -> 1.15.4
- imageio 2.19.3 -> 2.26.0
- intake 0.6.6 -> 0.6.7
- ipython 7.31.1 -> 8.10.0
- jsonschema 4.16.0 -> 4.17.3
- jupyter\_console 6.4.4 -> 6.6.2
- jupyter\_core 5.1.1 -> 5.2.0
- jupyterlab 3.5.2 -> 3.5.3
- jupyterlab\_server 2.16.5 -> 2.19.0

- libcurl 7.86.0 -> 7.87.0
- libdeflate 1.8 -> 1.17
- libpng 1.6.37 -> 1.6.39
- matplotlib 3.6.2 -> 3.7.0
- matplotlib-base 3.6.2 -> 3.7.0
- nbclassic 0.4.8 -> 0.5.2
- numpy 1.21.5 -> 1.23.5
- numpy-base 1.21.5 -> 1.23.5
- openssl 1.1.1s -> 1.1.1t
- pandas 1.5.2 -> 1.5.3
- panel 0.14.1 -> 0.14.3
- pathspec 0.9.0 -> 0.10.3
- patsy 0.5.2 -> 0.5.3
- pillow 9.3.0 -> 9.4.0
- pycodestyle 2.8.0 -> 2.10.0
- pyct 0.4.8 -> 0.5.0
- pydocstyle 6.1.1 -> 6.3.0
- pyflakes 2.4.0 -> 3.0.1
- pylint 2.14.5 -> 2.16.2
- pyopenssl 22.0.0 -> 23.0.0
- python-lsp-server 1.5.0 -> 1.7.1
- pywinpty 2.0.2 -> 2.0.10
- qtconsole 5.3.2 -> 5.4.0
- rope 0.22.0 -> 1.7.0
- rtree 0.9.7 -> 1.0.1
- scikit-learn 1.2.0 -> 1.2.1
- scikit-learn-intelex 2021.6.0 -> 2023.0.2
- scipy 1.9.3 -> 1.10.0
- scrapy 2.6.2 -> 2.8.0
- spyder 5.3.3 -> 5.4.1
- spyder-kernels 2.3.3 -> 2.4.1
- statsmodels 0.13.2 -> 0.13.5
- tbb 2021.6.0 -> 2021.7.0
- tbb4py 2021.6.0 -> 2021.7.0
- wheel 0.37.1 -> 0.38.4
- xlwings 0.27.15 -> 0.29.1

**Added:**

- asttokens 2.0.5
- docstring-to-markdown 0.11
- executing 0.8.3
- huggingface\_hub 0.10.1
- imbalanced-learn 0.10.1
- jxrllib 1.1
- libuv 1.44.2
- ninja 1.10.2
- ninja-base 1.10.2
- pooch 1.4.0
- pure\_eval 0.2.2
- pylint-venv 2.3.0
- pytoolconfig 1.2.5
- pytorch 1.12.1
- stack\_data 0.2.0
- tokenizers 0.11.4
- transformers 4.24.0

**Removed:**

- anaconda-client
- anaconda-project
- backports
- backports.functools\_lru\_cache
- backports.tempfile
- backports.weakref
- bitarray
- bkcharts
- boto3
- botocore
- clyent
- comtypes
- conda-content-trust
- conda-token
- console\_shortcut
- cython
- dataclasses

- fftw
- glob2
- jdcal
- libarchive
- liblief
- m2-msys2-runtime
- m2-patch
- nose
- olefile
- pkginfo
- powershell\_shortcut
- py-lief
- pycosat
- pyreadline
- python-libarchive-c
- qt
- ruamel.yaml.clib
- ruamel\_yaml
- s3transfer
- sortedcollections
- testpath
- tinycss
- win\_unicode\_console
- xlrd
- xlswriter

### More changes specific to osx-64

#### Updated:

- arrow 1.2.2 -> 1.2.3
- astroid 2.11.7 -> 2.14.2
- attrs 21.4.0 -> 22.1.0
- babel 2.9.1 -> 2.11.0
- blosc 1.21.0 -> 1.21.3
- ca-certificates 2022.7.19 -> 2023.1.10
- certifi 2022.9.24 -> 2022.12.7
- colorama 0.4.5 -> 0.4.6

- colorcet 3.0.0 -> 3.0.1
- cryptography 37.0.1 -> 39.0.1
- curl 7.84.0 -> 7.87.0
- cytoolz 0.11.0 -> 0.12.0
- datashader 0.14.1 -> 0.14.4
- dill 0.3.4 -> 0.3.6
- filelock 3.6.0 -> 3.9.0
- flake8 4.0.1 -> 6.0.0
- flask 1.1.2 -> 2.2.2
- freetype 2.11.0 -> 2.12.1
- fsspec 2022.7.1 -> 2022.11.0
- future 0.18.2 -> 0.18.3
- gensim 4.1.2 -> 4.3.0
- greenlet 1.1.1 -> 2.0.1
- gst-plugins-base 1.14.0 -> 1.14.1
- gstreamer 1.14.0 -> 1.14.1
- holoviews 1.15.0 -> 1.15.4
- hvplot 0.8.0 -> 0.8.2
- idna 3.3 -> 3.4
- imageio 2.19.3 -> 2.26.0
- intake 0.6.5 -> 0.6.7
- ipykernel 6.15.2 -> 6.19.2
- ipython 7.31.1 -> 8.10.0
- jinja2 2.11.3 -> 3.1.2
- joblib 1.1.0 -> 1.1.1
- jsonschema 4.16.0 -> 4.17.3
- jupyter\_console 6.4.3 -> 6.6.2
- jupyter\_core 4.11.1 -> 5.2.0
- jupyter\_server 1.18.1 -> 1.23.4
- jupyterlab 3.4.4 -> 3.5.3
- jupyterlab\_server 2.10.3 -> 2.19.0
- kiwisolver 1.4.2 -> 1.4.4
- krb5 1.19.2 -> 1.19.4
- libcurl 7.84.0 -> 7.87.0
- libdeflate 1.8 -> 1.17
- libedit 3.1.20210910 -> 3.1.20221030

- libffi 3.3 -> 3.4.2
- libgfortran5 11.2.0 -> 11.3.0
- libpng 1.6.37 -> 1.6.39
- libtiff 4.4.0 -> 4.5.0
- libwebp 1.2.2 -> 1.2.4
- libwebp-base 1.2.2 -> 1.2.4
- llvmlite 0.38.0 -> 0.39.1
- lz4-c 1.9.3 -> 1.9.4
- markdown 3.3.4 -> 3.4.1
- markupsafe 2.0.1 -> 2.1.1
- matplotlib 3.5.2 -> 3.7.0
- matplotlib-base 3.5.2 -> 3.7.0
- nbclassic 0.3.5 -> 0.5.2
- nbconvert 6.4.4 -> 6.5.4
- nbformat 5.5.0 -> 5.7.0
- ncurses 6.3 -> 6.4
- nest-asyncio 1.5.5 -> 1.5.6
- notebook 6.4.12 -> 6.5.2
- numba 0.55.1 -> 0.56.4
- numexpr 2.8.3 -> 2.8.4
- numpy 1.21.5 -> 1.23.5
- numpy-base 1.21.5 -> 1.23.5
- numpydoc 1.4.0 -> 1.5.0
- openssl 1.1.1q -> 1.1.1t
- packaging 21.3 -> 22.0
- pandas 1.4.4 -> 1.5.3
- panel 0.13.1 -> 0.14.3
- param 1.12.0 -> 1.12.3
- pathspec 0.9.0 -> 0.10.3
- patsy 0.5.2 -> 0.5.3
- pillow 9.2.0 -> 9.4.0
- pip 22.2.2 -> 22.3.1
- prompt-toolkit 3.0.20 -> 3.0.36
- prompt\_toolkit 3.0.20 -> 3.0.36
- pycodestyle 2.8.0 -> 2.10.0
- pyct 0.4.8 -> 0.5.0



- pydocstyle 6.1.1 -> 6.3.0
- pyflakes 2.4.0 -> 3.0.1
- pylint 2.14.5 -> 2.16.2
- pyobjc-core 8.5 -> 9.0
- pyobjc-framework-cocoa 8.5 -> 9.0
- pyobjc-framework-coreservices 8.5 -> 9.0
- pyobjc-framework-fsevents 8.5 -> 9.0
- pyopenssl 22.0.0 -> 23.0.0
- pytables 3.6.1 -> 3.7.0
- python 3.10.4 -> 3.10.9
- python-lsp-server 1.5.0 -> 1.7.1
- python-snappy 0.6.0 -> 0.6.1
- pytz 2022.1 -> 2022.7
- pywavelets 1.3.0 -> 1.4.1
- qstylizer 0.1.10 -> 0.2.2
- qtawesome 1.0.3 -> 1.2.2
- qtconsole 5.3.2 -> 5.4.0
- readline 8.1.2 -> 8.2
- rope 0.22.0 -> 1.7.0
- rtree 0.9.7 -> 1.0.1
- scikit-image 0.19.2 -> 0.19.3
- scikit-learn 1.0.2 -> 1.2.1
- scipy 1.9.1 -> 1.10.0
- scrapy 2.6.2 -> 2.8.0
- seaborn 0.11.2 -> 0.12.2
- setuptools 63.4.1 -> 65.6.3
- soupsieve 2.3.1 -> 2.3.2.post1
- spyder 5.3.3 -> 5.4.1
- spyder-kernels 2.3.3 -> 2.4.1
- sqlite 3.39.3 -> 3.40.1
- statsmodels 0.13.2 -> 0.13.5
- sympy 1.10.1 -> 1.11.1
- tbb 2021.6.0 -> 2021.7.0
- tbb4py 2021.6.0 -> 2021.7.0
- terminado 0.13.1 -> 0.17.1
- toolz 0.11.2 -> 0.12.0

- traitlets 5.1.1 -> 5.7.1
- typing-extensions 4.3.0 -> 4.4.0
- typing\_extensions 4.3.0 -> 4.4.0
- urllib3 1.26.11 -> 1.26.14
- werkzeug 2.0.3 -> 2.2.2
- wheel 0.37.1 -> 0.38.4
- xarray 0.20.1 -> 2022.11.0
- xlwings 0.27.15 -> 0.29.1
- xz 5.2.6 -> 5.2.10
- zipp 3.8.0 -> 3.11.0
- zlib 1.2.12 -> 1.2.13

### Added:

- asttokens 2.0.5
- comm 0.1.2
- contourpy 1.0.5
- docstring-to-markdown 0.11
- executing 0.8.3
- flit-core 3.6.0
- huggingface\_hub 0.10.1
- imbalanced-learn 0.10.1
- libopenblas 0.3.21
- libprotobuf 3.20.3
- libuv 1.44.2
- ninja 1.10.2
- ninja-base 1.10.2
- notebook-shim 0.2.2
- pooch 1.4.0
- pure\_eval 0.2.2
- pylint-venv 2.3.0
- pytoolconfig 1.2.5
- pytorch 1.12.1
- stack\_data 0.2.0
- tinycss2 1.2.1
- tokenizers 0.11.4
- transformers 4.24.0

### Removed:

- anaconda-client
- anaconda-project
- backports
- backports.functools\_lru\_cache
- backports.tempfile
- backports.weakref
- bitarray
- bkcharts
- boto3
- botocore
- cctools
- cctools\_osx-64
- clyent
- conda-content-trust
- conda-token
- cython
- daal4py
- dal
- dataclasses
- fftw
- glob2
- intel-openmp
- jdcalf
- ld64
- ld64\_osx-64
- ldid
- libarchive
- libidn2
- liblief
- libllvm14
- libunistring
- mkl
- mkl-service
- mkl\_fft
- mkl\_random
- mpi

- mpich
- nose
- olefile
- patch
- pkginfo
- py-lief
- pycosat
- python-libarchive-c
- qt
- ripgrep
- ruamel\_yaml
- s3transfer
- scikit-learn-intelex
- sortedcollections
- tapi
- testpath
- tinycss
- wget
- xlrd
- xlswriter

### More changes specific to osx-arm64

#### Updated:

- astroid 2.11.7 -> 2.14.2
- blosc 1.21.0 -> 1.21.3
- ca-certificates 2022.10.11 -> 2023.1.10
- cryptography 38.0.4 -> 39.0.1
- curl 7.86.0 -> 7.87.0
- datashader 0.14.3 -> 0.14.4
- future 0.18.2 -> 0.18.3
- gensim 4.1.2 -> 4.3.0
- holoviews 1.15.3 -> 1.15.4
- imageio 2.19.3 -> 2.26.0
- intake 0.6.6 -> 0.6.7
- ipython 8.7.0 -> 8.10.0
- jsonschema 4.16.0 -> 4.17.3

- jupyter\_core 5.1.1 -> 5.2.0
- jupyterlab 3.5.2 -> 3.5.3
- jupyterlab\_server 2.16.5 -> 2.19.0
- krb5 1.19.2 -> 1.19.4
- libcurl 7.86.0 -> 7.87.0
- libdeflate 1.8 -> 1.17
- libpng 1.6.37 -> 1.6.39
- matplotlib 3.6.2 -> 3.7.0
- matplotlib-base 3.6.2 -> 3.7.0
- nbclassic 0.4.8 -> 0.5.2
- ncurses 6.3 -> 6.4
- numpy 1.21.5 -> 1.23.5
- numpy-base 1.21.5 -> 1.23.5
- openssl 1.1.1s -> 1.1.1t
- pandas 1.5.2 -> 1.5.3
- panel 0.14.1 -> 0.14.3
- patsy 0.5.2 -> 0.5.3
- pillow 9.3.0 -> 9.4.0
- pycodestyle 2.8.0 -> 2.10.0
- pyct 0.4.8 -> 0.5.0
- pyflakes 2.4.0 -> 3.0.1
- pylint 2.14.5 -> 2.16.2
- pyopenssl 22.0.0 -> 23.0.0
- rope 0.22.0 -> 1.7.0
- scikit-learn 1.2.0 -> 1.2.1
- scipy 1.9.3 -> 1.10.0
- scrapy 2.6.2 -> 2.8.0
- statsmodels 0.13.2 -> 0.13.5
- tbb 2021.6.0 -> 2021.7.0
- tbb4py 2021.6.0 -> 2021.7.0
- wheel 0.37.1 -> 0.38.4
- xlwings 0.27.15 -> 0.29.1
- zipp 3.8.0 -> 3.11.0

**Added:**

- applaunchservices 0.3.0
- arrow 1.2.3

- atomicwrites 1.4.0
- autopep8 1.6.0
- binaryornot 0.4.4
- black 22.6.0
- cookiecutter 1.7.3
- diff-match-patch 20200713
- docstring-to-markdown 0.11
- flake8 6.0.0
- gettext 0.21.0
- glib 2.69.1
- gst-plugins-base 1.14.1
- gstreamer 1.14.1
- huggingface\_hub 0.10.1
- imbalanced-learn 0.10.1
- importlib\_metadata 4.11.3
- inflection 0.5.1
- intervaltree 3.1.0
- jellyfish 0.9.0
- jinja2-time 0.2.0
- keyring 23.4.0
- libclang 12.0.0
- libllvm12 12.0.0
- libpq 12.9
- libprotobuf 3.20.3
- libspatialindex 1.9.3
- libuv 1.44.2
- mypy\_extensions 0.4.3
- ninja 1.10.2
- ninja-base 1.10.2
- nspr 4.33
- nss 3.74
- pathspec 0.10.3
- pcre 8.45
- pooch 1.4.0
- poyo 0.5.0
- pydocstyle 6.3.0

- pylint-venv 2.3.0
- pyls-spyder 0.4.0
- pyobjc-core 9.0
- pyobjc-framework-cocoa 9.0
- pyobjc-framework-coreservices 9.0
- pyobjc-framework-fsevents 9.0
- pyqt 5.15.7
- pyqt5-sip 12.11.0
- PyQtWebEngine 5.15.7
- python-lsp-black 1.2.1
- python-lsp-jsonrpc 1.0.0
- python-lsp-server 1.7.1
- python-slugify 5.0.2
- pytoolconfig 1.2.5
- pytorch 1.12.1
- qdarkstyle 3.0.2
- qstylizer 0.2.2
- qt-main 5.15.2
- qt-webengine 5.15.9
- qtawesome 1.2.2
- qtconsole 5.4.0
- qtpy 2.2.0
- QtWebKit 5.212
- rtree 1.0.1
- sleef 3.5.1
- spyder 5.4.1
- spyder-kernels 2.4.1
- text-unidecode 1.3
- textdistance 4.2.1
- three-merge 0.1.1
- tokenizers 0.11.4
- transformers 4.24.0
- ujson 5.4.0
- unidecode 1.2.0
- watchdog 2.1.6
- whatthepatch 1.0.2

- wurlitzer 3.0.2
- yapf 0.31.0

### Removed:

- anaconda-client
- anaconda-project
- backports
- backports.functools\_lru\_cache
- backports.tempfile
- backports weakref
- bitarray
- bkcharts
- boto3
- botocore
- cctools
- cctools\_osx-arm64
- clyent
- conda-content-trust
- conda-token
- cython
- dataclasses
- fftw
- glob2
- ipywidgets
- jdcal
- jupyter\_console
- jupyterlab\_widgets
- ld64
- ld64\_osx-arm64
- ldid
- libarchive
- libidn2
- liblief
- libllvm14
- libunistring
- nomkl
- nose



- olefile
- openblas
- openblas-devel
- patch
- pkginfo
- prompt\_toolkit
- py-lief
- pycosat
- python-libarchive-c
- ruamel.yaml.clib
- ruamel\_yaml
- s3transfer
- sortedcollections
- tapi
- testpath
- wget
- widgetsnbextension
- xlrd
- xlswriter

Package totals across all platforms: Updated: 674; Added: 190; Removed: 354

## Anaconda 2022.10 (October 18, 2022)

### User-facing changes

- Conda has been updated to v22.9.0.
- Anaconda Navigator has been updated to v2.3.1.
- This installer uses python-3.9.
- This is the first release that provides a python-3.10 variant for *anaconda* metapackages.
- This is the last release that will provide a python-3.7 variant for *anaconda* metapackages.
- Qt support for macOS M1 (osx-arm64), enabling full use of GUI applications like Anaconda Navigator and Spyder.

## Changes for all x86 platforms

### Removed:

- aiohttp
- aiosignal
- asttokens
- async-timeout
- asyncctest
- cachetools
- executing
- frozenlist
- google-api-core
- google-auth
- google-cloud-core
- google-cloud-storage
- google-resumable-media
- googleapis-common-protos
- grpcio
- libprotobuf
- multidict
- protobuf
- pure\_eval
- rsa
- stack\_data
- yarl

## More changes specific to linux-64

### Updated:

- \_openmp\_mutex 4.5 -> 5.1
- anaconda-client 1.9.0 -> 1.11.0
- anaconda-project 0.10.2 -> 0.11.1
- astroid 2.6.6 -> 2.11.7
- astropy 5.0.4 -> 5.1
- bitarray 2.4.1 -> 2.5.1
- black 19.10b0 -> 22.6.0
- bokeh 2.4.2 -> 2.4.3

- boto3 1.21.32 -> 1.24.28
- botocore 1.24.32 -> 1.27.28
- bottleneck 1.3.4 -> 1.3.5
- ca-certificates 2022.3.29 -> 2022.7.19
- certifi 2021.10.8 -> 2022.9.14
- cffi 1.15.0 -> 1.15.1
- colorama 0.4.4 -> 0.4.5
- colorcet 2.0.6 -> 3.0.0
- conda-content-trust 0.1.1 -> 0.1.3
- conda-token 0.3.0 -> 0.4.0
- cryptography 3.4.8 -> 37.0.1
- curl 7.82.0 -> 7.84.0
- cython 0.29.28 -> 0.29.32
- daal4py 2021.5.0 -> 2021.6.0
- dal 2021.5.1 -> 2021.6.0
- dask 2022.2.1 -> 2022.7.0
- dask-core 2022.2.1 -> 2022.7.0
- datashader 0.13.0 -> 0.14.1
- distributed 2022.2.1 -> 2022.7.0
- docutils 0.17.1 -> 0.18.1
- expat 2.4.4 -> 2.4.9
- flake8 3.9.2 -> 4.0.1
- fsspec 2022.2.0 -> 2022.7.1
- h5py 3.6.0 -> 3.7.0
- holoviews 1.14.8 -> 1.15.0
- hvplot 0.7.3 -> 0.8.0
- imageio 2.9.0 -> 2.19.3
- imagesize 1.3.0 -> 1.4.1
- ipykernel 6.9.1 -> 6.15.2
- jsonschema 4.4.0 -> 4.16.0
- jupyter\_client 6.1.12 -> 7.3.5
- jupyter\_console 6.4.0 -> 6.4.3
- jupyter\_core 4.9.2 -> 4.11.1
- jupyter\_server 1.13.5 -> 1.18.1
- jupyterlab 3.3.2 -> 3.4.4
- kiwisolver 1.3.2 -> 1.4.2

- `ld_impl_linux-64 2.35.1 -> 2.38`
- `libarchive 3.4.2 -> 3.6.1`
- `libcurl 7.82.0 -> 7.84.0`
- `libgcc-ng 9.3.0 -> 11.2.0`
- `libgfortran-ng 7.5.0 -> 11.2.0`
- `libgomp 9.3.0 -> 11.2.0`
- `libstdcxx-ng 9.3.0 -> 11.2.0`
- `libtiff 4.2.0 -> 4.4.0`
- `libxcb 1.14 -> 1.15`
- `libxml2 2.9.12 -> 2.9.14`
- `libxslt 1.1.34 -> 1.1.35`
- `locket 0.2.1 -> 1.0.0`
- `lxml 4.8.0 -> 4.9.1`
- `matplotlib 3.5.1 -> 3.5.2`
- `matplotlib-base 3.5.1 -> 3.5.2`
- `matplotlib-inline 0.1.2 -> 0.1.6`
- `mccabe 0.6.1 -> 0.7.0`
- `msgpack-python 1.0.2 -> 1.0.3`
- `nbformat 5.3.0 -> 5.5.0`
- `networkx 2.7.1 -> 2.8.4`
- `notebook 6.4.8 -> 6.4.12`
- `numexpr 2.8.1 -> 2.8.3`
- `numpydoc 1.2 -> 1.4.0`
- `openpyxl 3.0.9 -> 3.0.10`
- `openssl 1.1.1n -> 1.1.1q`
- `pandas 1.4.2 -> 1.4.4`
- `panel 0.13.0 -> 0.13.1`
- `pathspec 0.7.0 -> 0.9.0`
- `pillow 9.0.1 -> 9.2.0`
- `pip 21.2.4 -> 22.2.2`
- `plotly 5.6.0 -> 5.9.0`
- `prometheus_client 0.13.1 -> 0.14.1`
- `psutil 5.8.0 -> 5.9.0`
- `pycodestyle 2.7.0 -> 2.8.0`
- `pycurl 7.44.1 -> 7.45.1`
- `pyflakes 2.3.1 -> 2.4.0`

- pylint 2.9.6 -> 2.14.5
- pyodbc 4.0.32 -> 4.0.34
- pyopenssl 21.0.0 -> 22.0.0
- pyparsing 3.0.4 -> 3.0.9
- pyqt 5.9.2 -> 5.15.7
- pytest 7.1.1 -> 7.1.2
- python 3.9.12 -> 3.9.13
- python-fastjsonschema 2.15.1 -> 2.16.2
- python-lsp-black 1.0.0 -> 1.2.1
- python-lsp-server 1.2.4 -> 1.5.0
- pytz 2021.3 -> 2022.1
- pyzmq 22.3.0 -> 23.2.0
- qt 5.9.7 -> 5.15.9
- qtconsole 5.3.0 -> 5.3.2
- qtpy 2.0.1 -> 2.2.0
- regex 2022.3.15 -> 2022.7.9
- requests 2.27.1 -> 2.28.1
- ripgrep 12.1.1 -> 13.0.0
- s3transfer 0.5.0 -> 0.6.0
- scikit-learn-intelex 2021.5.0 -> 2021.6.0
- scipy 1.7.3 -> 1.9.1
- scrapy 2.6.1 -> 2.6.2
- setuptools 61.2.0 -> 63.4.1
- sip 4.19.13 -> 6.6.2
- smart\_open 5.1.0 -> 5.2.1
- sphinx 4.4.0 -> 5.0.2
- spyder 5.1.5 -> 5.3.3
- spyder-kernels 2.1.3 -> 2.3.3
- sqlalchemy 1.4.32 -> 1.4.39
- sqlite 3.38.2 -> 3.39.3
- tabulate 0.8.9 -> 0.8.10
- tbb 2021.5.0 -> 2021.6.0
- tbb4py 2021.5.0 -> 2021.6.0
- testpath 0.5.0 -> 0.6.0
- tk 8.6.11 -> 8.6.12
- tomli 1.2.2 -> 2.0.1

- tornado 6.1 -> 6.2
- tqdm 4.64.0 -> 4.64.1
- typing-extensions 4.1.1 -> 4.3.0
- typing\_extensions 4.1.1 -> 4.3.0
- tzdata 2022a0 -> 2022rc0
- ujson 5.1.0 -> 5.4.0
- unixodbc 2.3.9 -> 2.3.11
- urllib3 1.26.9 -> 1.26.11
- wrapt 1.12.1 -> 1.14.1
- xz 5.2.5 -> 5.2.6
- zict 2.0.0 -> 2.1.0
- zipp 3.7.0 -> 3.8.0
- zstd 1.4.9 -> 1.5.2

**Added:**

- brotli-bin 1.0.9
- dill 0.3.4
- fftw 3.3.9
- jellyfish 0.9.0
- libbrotlicommon 1.0.9
- libbrotlidec 1.0.9
- libbrotlienc 1.0.9
- libclang 10.0.1
- libevent 2.1.12
- libgfortran5 11.2.0
- libllvm10 10.0.1
- libpq 12.9
- libxkbcommon 1.0.1
- lz4 3.1.3
- nspr 4.33
- nss 3.74
- patch 2.7.6
- pkgutil-resolve-name 1.3.10
- platformdirs 2.5.2
- ply 3.11
- pyqt5-sip 12.11.0
- PyQtWebEngine 5.15.7

- qt-main 5.15.2
- qt-webengine 5.15.9
- qtwebkit 5.212
- tomlkit 0.11.1
- whatthepatch 1.0.2

**Removed:**

- google-crc32c
- libcrc32c

**More changes specific to linux-s390x****Updated:**

- \_openmp\_mutex 4.5 -> 5.1
- anaconda-client 1.9.0 -> 1.11.0
- anaconda-project 0.10.2 -> 0.11.1
- anyio 2.0.2 -> 3.5.0
- astroid 2.9.0 -> 2.11.7
- astropy 5.0.4 -> 5.1
- bitarray 2.4.1 -> 2.5.1
- bokeh 2.4.2 -> 2.4.3
- boto3 1.21.32 -> 1.24.28
- botocore 1.24.32 -> 1.27.28
- bottleneck 1.3.4 -> 1.3.5
- ca-certificates 2022.3.29 -> 2022.7.19
- certifi 2021.10.8 -> 2022.9.24
- cffi 1.15.0 -> 1.15.1
- colorama 0.4.4 -> 0.4.5
- colorcet 2.0.6 -> 3.0.0
- conda-content-trust 0.1.1 -> 0.1.3
- conda-token 0.3.0 -> 0.4.0
- cryptography 3.4.7 -> 37.0.1
- curl 7.82.0 -> 7.84.0
- cython 0.29.28 -> 0.29.32
- dask 2022.2.1 -> 2022.7.0
- dask-core 2022.2.1 -> 2022.7.0
- distributed 2022.2.1 -> 2022.7.0
- docutils 0.17 -> 0.18.1

- expat 2.4.4 -> 2.4.9
- fsspec 2022.2.0 -> 2022.7.1
- h5py 3.6.0 -> 3.7.0
- hvplot 0.7.3 -> 0.8.0
- imagecodecs 2021.1.11 -> 2021.8.26
- imageio 2.9.0 -> 2.19.3
- imagesize 1.3.0 -> 1.4.1
- ipykernel 6.9.1 -> 6.15.2
- ipython 8.2.0 -> 8.4.0
- jsonschema 4.4.0 -> 4.16.0
- jupyter\_client 7.2.2 -> 7.3.5
- jupyter\_core 4.9.2 -> 4.11.1
- jupyter\_server 1.4.1 -> 1.18.1
- kiwisolver 1.3.2 -> 1.4.2
- ld\_impl\_linux-s390x 2.33.1 -> 2.38
- libarchive 3.4.2 -> 3.6.1
- libcurl 7.82.0 -> 7.84.0
- libgcc-ng 9.3.0 -> 11.2.0
- libgfortran-ng 7.5.0 -> 11.2.0
- libgomp 9.3.0 -> 11.2.0
- libopenblas 0.3.18 -> 0.3.21
- libstdcxx-ng 9.3.0 -> 11.2.0
- libtiff 4.2.0 -> 4.4.0
- libxcb 1.14 -> 1.15
- libxml2 2.9.12 -> 2.9.14
- libxslt 1.1.34 -> 1.1.35
- locket 0.2.1 -> 1.0.0
- lxml 4.8.0 -> 4.9.1
- matplotlib 3.5.1 -> 3.5.2
- matplotlib-base 3.5.1 -> 3.5.2
- matplotlib-inline 0.1.2 -> 0.1.6
- msgpack-python 1.0.2 -> 1.0.3
- nbclassic 0.2.6 -> 0.3.5
- nbformat 5.3.0 -> 5.5.0
- networkx 2.7.1 -> 2.8.4
- notebook 6.4.8 -> 6.4.12



- numexpr 2.8.1 -> 2.8.3
- numpydoc 1.2 -> 1.4.0
- openblas 0.3.18 -> 0.3.21
- openblas-devel 0.3.18 -> 0.3.21
- openpyxl 3.0.9 -> 3.0.10
- openssl 1.1.1n -> 1.1.1q
- pandas 1.4.2 -> 1.4.4
- pillow 9.0.1 -> 9.2.0
- pip 21.2.4 -> 22.2.2
- platformdirs 2.4.0 -> 2.5.2
- plotly 4.14.3 -> 5.9.0
- prometheus\_client 0.13.1 -> 0.14.1
- psutil 5.8.0 -> 5.9.0
- pyct 0.4.6 -> 0.4.8
- pycurl 7.44.1 -> 7.45.1
- pylint 2.12.2 -> 2.14.5
- pyodbc 4.0.32 -> 4.0.34
- pyopenssl 21.0.0 -> 22.0.0
- pyparsing 3.0.4 -> 3.0.9
- pytest 7.1.1 -> 7.1.2
- python 3.9.12 -> 3.9.13
- python-fastjsonschema 2.15.1 -> 2.16.2
- pytz 2021.3 -> 2022.1
- pyzmq 22.3.0 -> 23.2.0
- regex 2022.3.15 -> 2022.7.9
- requests 2.27.1 -> 2.28.1
- s3transfer 0.5.0 -> 0.6.0
- scikit-learn 1.0.2 -> 1.1.1
- scipy 1.7.3 -> 1.9.1
- setuptools 58.0.4 -> 63.4.1
- sip 6.5.1 -> 6.6.2
- sphinx 4.4.0 -> 5.0.2
- sqlalchemy 1.4.32 -> 1.4.39
- sqlite 3.38.2 -> 3.39.3
- tabulate 0.8.7 -> 0.8.10
- testpath 0.5.0 -> 0.6.0

- tiffle 2021.3.17 -> 2021.7.2
- tk 8.6.11 -> 8.6.12
- tomli 1.2.2 -> 2.0.1
- tornado 6.1 -> 6.2
- tqdm 4.64.0 -> 4.64.1
- typing-extensions 4.1.1 -> 4.3.0
- typing\_extensions 4.1.1 -> 4.3.0
- tzdata 2022a0 -> 2022rc0
- unixodbc 2.3.9 -> 2.3.11
- urllib3 1.26.9 -> 1.26.11
- wrapt 1.13.3 -> 1.14.1
- xz 5.2.5 -> 5.2.6
- zict 2.0.0 -> 2.1.0
- zipp 3.7.0 -> 3.8.0
- zstd 1.4.9 -> 1.5.2

### Added:

- brotli-bin 1.0.9
- cfitsio 3.470
- dill 0.3.4
- lerc 3.0
- libbrotlicommon 1.0.9
- libbrotlidec 1.0.9
- libbrotlienc 1.0.9
- libgfortran5 11.2.0
- lz4 3.1.0
- patch 2.7.6
- pkgutil-resolve-name 1.3.10
- ply 3.11
- tenacity 8.0.1
- tomlkit 0.11.1
- websocket-client 0.58.0

### Removed:

- cached-property
- libgfortran4
- retrying

## More changes specific to linux-aarch64

### Updated:

- anaconda-client 1.9.0 -> 1.11.0
- anaconda-project 0.10.2 -> 0.11.1
- astroid 2.5 -> 2.11.7
- astropy 5.0.4 -> 5.1
- bitarray 2.4.1 -> 2.5.1
- black 19.10b0 -> 22.6.0
- bokeh 2.4.2 -> 2.4.3
- boto3 1.21.32 -> 1.24.28
- botocore 1.24.32 -> 1.27.28
- bottleneck 1.3.4 -> 1.3.5
- ca-certificates 2022.3.29 -> 2022.7.19
- certifi 2021.10.8 -> 2022.9.24
- cffi 1.15.0 -> 1.15.1
- colorama 0.4.4 -> 0.4.5
- colorcet 2.0.6 -> 3.0.0
- conda-content-trust 0.1.1 -> 0.1.3
- conda-token 0.3.0 -> 0.4.0
- cryptography 3.4.7 -> 37.0.1
- curl 7.82.0 -> 7.84.0
- cython 0.29.28 -> 0.29.32
- dask 2022.2.1 -> 2022.7.0
- dask-core 2022.2.1 -> 2022.7.0
- datashader 0.13.0 -> 0.14.1
- distributed 2022.2.1 -> 2022.7.0
- docutils 0.17 -> 0.18.1
- expat 2.4.4 -> 2.4.9
- flake8 3.9.2 -> 4.0.1
- fsspec 2022.2.0 -> 2022.7.1
- holoviews 1.14.8 -> 1.15.0
- hvplot 0.7.3 -> 0.8.0
- imageio 2.9.0 -> 2.19.3
- imagesize 1.3.0 -> 1.4.1
- ipykernel 6.9.1 -> 6.15.2
- jsonschema 4.4.0 -> 4.16.0

- jupyter\_client 6.1.12 -> 7.3.5
- jupyter\_console 6.4.0 -> 6.4.3
- jupyter\_core 4.9.2 -> 4.11.1
- jupyter\_server 1.13.5 -> 1.18.1
- jupyterlab 3.3.2 -> 3.4.4
- kiwisolver 1.3.2 -> 1.4.2
- ld\_impl\_linux-aarch64 2.36.1 -> 2.38
- libarchive 3.4.2 -> 3.6.1
- libcurl 7.82.0 -> 7.84.0
- libevent 2.1.10 -> 2.1.12
- libgcc-ng 10.2.0 -> 11.2.0
- libgfortran-ng 10.2.0 -> 11.2.0
- libgfortran5 10.2.0 -> 11.2.0
- libgomp 10.2.0 -> 11.2.0
- libopenblas 0.3.18 -> 0.3.21
- libstdcxx-ng 10.2.0 -> 11.2.0
- libtiff 4.2.0 -> 4.4.0
- libxcb 1.14 -> 1.15
- libxml2 2.9.12 -> 2.9.14
- libxslt 1.1.34 -> 1.1.35
- locket 0.2.1 -> 1.0.0
- lxml 4.8.0 -> 4.9.1
- matplotlib 3.5.1 -> 3.5.2
- matplotlib-base 3.5.1 -> 3.5.2
- matplotlib-inline 0.1.2 -> 0.1.6
- mccabe 0.6.1 -> 0.7.0
- msgpack-python 1.0.2 -> 1.0.3
- nbformat 5.3.0 -> 5.5.0
- networkx 2.7.1 -> 2.8.4
- notebook 6.4.8 -> 6.4.12
- numexpr 2.8.1 -> 2.8.3
- numpydoc 1.2 -> 1.4.0
- openblas 0.3.18 -> 0.3.21
- openblas-devel 0.3.18 -> 0.3.21
- openpyxl 3.0.9 -> 3.0.10
- openssl 1.1.1n -> 1.1.1q

- pandas 1.4.2 -> 1.4.4
- panel 0.13.0 -> 0.13.1
- pathspec 0.7.0 -> 0.9.0
- pillow 9.0.1 -> 9.2.0
- pip 21.2.4 -> 22.2.2
- plotly 5.6.0 -> 5.9.0
- prometheus\_client 0.13.1 -> 0.14.1
- psutil 5.8.0 -> 5.9.0
- pycodestyle 2.7.0 -> 2.8.0
- pycurl 7.44.1 -> 7.45.1
- pyflakes 2.3.1 -> 2.4.0
- pylint 2.7.4 -> 2.14.5
- pyodbc 4.0.32 -> 4.0.34
- pyopenssl 21.0.0 -> 22.0.0
- pyparsing 3.0.4 -> 3.0.9
- pyqt 5.15.2 -> 5.15.7
- pytest 7.1.1 -> 7.1.2
- python 3.9.12 -> 3.9.13
- python-fastjsonschema 2.15.1 -> 2.16.2
- python-lsp-black 1.0.0 -> 1.2.1
- python-lsp-server 1.2.4 -> 1.5.0
- pytz 2021.3 -> 2022.1
- pyzmq 22.3.0 -> 23.2.0
- qt 5.15.2 -> 5.15.9
- qtconsole 5.3.0 -> 5.3.2
- qtpy 2.0.1 -> 2.2.0
- regex 2022.3.15 -> 2022.7.9
- requests 2.27.1 -> 2.28.1
- s3transfer 0.5.0 -> 0.6.0
- scikit-learn 1.0.2 -> 1.1.1
- scipy 1.7.1 -> 1.9.1
- scrapy 2.6.1 -> 2.6.2
- setuptools 61.2.0 -> 63.4.1
- sip 6.5.1 -> 6.6.2
- smart\_open 5.1.0 -> 5.2.1
- sphinx 4.4.0 -> 5.0.2

- spyder 5.1.5 -> 5.3.3
- spyder-kernels 2.1.3 -> 2.3.3
- sqlalchemy 1.4.32 -> 1.4.39
- sqlite 3.38.2 -> 3.39.3
- tabulate 0.8.9 -> 0.8.10
- tbb 2021.5.0 -> 2021.6.0
- tbb4py 2021.5.0 -> 2021.6.0
- testpath 0.5.0 -> 0.6.0
- tk 8.6.11 -> 8.6.12
- tomli 1.2.2 -> 2.0.1
- tornado 6.1 -> 6.2
- tqdm 4.64.0 -> 4.64.1
- typing-extensions 4.1.1 -> 4.3.0
- typing\_extensions 4.1.1 -> 4.3.0
- tzdata 2022a0 -> 2022rc0
- ujson 5.1.0 -> 5.4.0
- unixodbc 2.3.9 -> 2.3.11
- urllib3 1.26.9 -> 1.26.11
- wrapt 1.13.3 -> 1.14.1
- xz 5.2.5 -> 5.2.6
- zict 2.0.0 -> 2.1.0
- zipp 3.7.0 -> 3.8.0
- zstd 1.4.9 -> 1.5.2

**Added:**

- brotli-bin 1.0.9
- dill 0.3.4
- fftw 3.3.9
- jellyfish 0.9.0
- jq 1.6
- libbrotlicommon 1.0.9
- libbrotlidec 1.0.9
- libbrotlienc 1.0.9
- libclang 10.0.1
- libllvm10 10.0.1
- lz4 3.1.3
- nspr 4.33

- nss 3.74
- oniguruma 6.9.7.1
- patch 2.7.6
- pkgutil-resolve-name 1.3.10
- platformdirs 2.5.2
- ply 3.11
- pyqt5-sip 12.11.0
- pyqtwebengine 5.15.7
- qt-main 5.15.2
- qt-webengine 5.15.9
- qtwebkit 5.212
- tomlkit 0.11.1
- whatthepatch 1.0.2

**Removed:**

- adwaita-icon-theme
- at-spi2-atk
- at-spi2-core
- atk-1.0
- cairo
- epoxy
- fribidi
- gdk-pixbuf
- gettext
- gobject-introspection
- google-crc32c
- graphite2
- gtk3
- harfbuzz
- hicolor-icon-theme
- libcrc32c
- libcups
- librsvg
- ninja
- pango
- pixman

**More changes specific to linux-ppc64le****Updated:**

- anaconda-client 1.9.0 -> 1.11.0
- anaconda-project 0.10.2 -> 0.11.1
- astroid 2.9.0 -> 2.11.7
- astropy 5.0.4 -> 5.1
- bitarray 2.4.1 -> 2.5.1
- bokeh 2.4.2 -> 2.4.3
- boto3 1.21.32 -> 1.24.28
- botocore 1.24.32 -> 1.27.28
- bottleneck 1.3.4 -> 1.3.5
- ca-certificates 2022.3.29 -> 2022.7.19
- certifi 2021.10.8 -> 2022.9.14
- cffi 1.15.0 -> 1.15.1
- colorama 0.4.4 -> 0.4.5
- colorcet 2.0.6 -> 3.0.0
- conda-content-trust 0.1.1 -> 0.1.3
- conda-token 0.3.0 -> 0.4.0
- cryptography 3.4.8 -> 37.0.1
- curl 7.82.0 -> 7.84.0
- cython 0.29.28 -> 0.29.32
- dask 2022.2.1 -> 2022.7.0
- dask-core 2022.2.1 -> 2022.7.0
- datashader 0.13.0 -> 0.14.1
- distributed 2022.2.1 -> 2022.7.0
- docutils 0.17.1 -> 0.18.1
- expat 2.4.4 -> 2.4.9
- fsspec 2022.2.0 -> 2022.7.1
- h5py 3.6.0 -> 3.7.0
- holoviews 1.14.8 -> 1.15.0
- hvplot 0.7.3 -> 0.8.0
- imageio 2.9.0 -> 2.19.3
- imageio 1.3.0 -> 1.4.1
- ipykernel 6.9.1 -> 6.15.2
- ipython 8.2.0 -> 8.4.0
- jsonschema 4.4.0 -> 4.16.0



- jupyter\_client 7.2.2 -> 7.3.5
- jupyter\_core 4.9.2 -> 4.11.1
- kiwisolver 1.3.2 -> 1.4.2
- ld\_impl\_linux-ppc64le 2.33.1 -> 2.38
- libcurl 7.82.0 -> 7.84.0
- libgcc-ng 8.2.0 -> 11.2.0
- libgfortran-ng 7.3.0 -> 11.2.0
- libopenblas 0.3.18 -> 0.3.21
- libstdcxx-ng 8.2.0 -> 11.2.0
- libxml2 2.9.12 -> 2.9.14
- libxslt 1.1.34 -> 1.1.35
- locket 0.2.1 -> 1.0.0
- lxml 4.8.0 -> 4.9.1
- matplotlib 3.5.1 -> 3.5.2
- matplotlib-base 3.5.1 -> 3.5.2
- matplotlib-inline 0.1.2 -> 0.1.6
- msgpack-python 1.0.2 -> 1.0.3
- nbformat 5.3.0 -> 5.5.0
- networkx 2.7.1 -> 2.8.4
- notebook 6.4.8 -> 6.4.12
- numexpr 2.8.1 -> 2.8.3
- numpydoc 1.2 -> 1.4.0
- openblas 0.3.18 -> 0.3.21
- openblas-devel 0.3.18 -> 0.3.21
- openpyxl 3.0.9 -> 3.0.10
- openssl 1.1.1n -> 1.1.1q
- pandas 1.4.2 -> 1.4.4
- panel 0.13.0 -> 0.13.1
- pillow 9.0.1 -> 9.2.0
- pip 21.2.4 -> 22.2.2
- platformdirs 2.4.0 -> 2.5.2
- plotly 5.6.0 -> 5.9.0
- prometheus\_client 0.13.1 -> 0.14.1
- psutil 5.8.0 -> 5.9.0
- pycurl 7.44.1 -> 7.45.1
- pylint 2.12.2 -> 2.14.5

- pyodbc 4.0.32 -> 4.0.34
- pyopenssl 21.0.0 -> 22.0.0
- pyparsing 3.0.4 -> 3.0.9
- pytest 7.1.1 -> 7.1.2
- python 3.9.12 -> 3.9.13
- python-fastjsonschema 2.15.1 -> 2.16.2
- pytz 2021.3 -> 2022.1
- pyzmq 22.3.0 -> 23.2.0
- regex 2022.3.15 -> 2022.7.9
- requests 2.27.1 -> 2.28.1
- s3transfer 0.5.0 -> 0.6.0
- scikit-learn 1.0.2 -> 1.1.1
- scipy 1.7.3 -> 1.9.1
- scrapy 2.6.1 -> 2.6.2
- setuptools 61.2.0 -> 63.4.1
- smart\_open 5.1.0 -> 5.2.1
- sphinx 4.4.0 -> 5.0.2
- sqlalchemy 1.4.32 -> 1.4.39
- sqlite 3.38.2 -> 3.39.3
- tabulate 0.8.9 -> 0.8.10
- tbb 2021.5.0 -> 2021.6.0
- tbb4py 2021.5.0 -> 2021.6.0
- testpath 0.5.0 -> 0.6.0
- tk 8.6.11 -> 8.6.12
- tomli 1.2.2 -> 2.0.1
- tornado 6.1 -> 6.2
- tqdm 4.64.0 -> 4.64.1
- typing-extensions 4.1.1 -> 4.3.0
- typing\_extensions 4.1.1 -> 4.3.0
- tzdata 2022a0 -> 2022rc0
- unixodbc 2.3.9 -> 2.3.11
- urllib3 1.26.9 -> 1.26.11
- wrapt 1.13.3 -> 1.14.1
- xz 5.2.5 -> 5.2.6
- zict 2.0.0 -> 2.1.0
- zipp 3.7.0 -> 3.8.0

**Added:**

- `_openmp_mutex` 5.1
- `anyio` 3.5.0
- `brotli-bin` 1.0.9
- `dill` 0.3.4
- `fftw` 3.3.9
- `json5` 0.9.6
- `jupyter_server` 1.18.1
- `jupyterlab` 3.4.4
- `jupyterlab_server` 2.10.3
- `libbrotlicommon` 1.0.9
- `libbrotlidec` 1.0.9
- `libbrotlienc` 1.0.9
- `libgfortran5` 11.2.0
- `libgomp` 11.2.0
- `lz4` 3.1.3
- `nbclassic` 0.3.5
- `patch` 2.7.6
- `pkgutil-resolve-name` 1.3.10
- `sniffio` 1.2.0
- `tomlkit` 0.11.1
- `websocket-client` 0.58.0

**Removed:**

- `cached-property`
- `google-crc32c`
- `libcrc32c`

**More changes specific to win-32****Removed:**

- `alabaster`
- `anaconda-client`
- `anaconda-project`
- `anyio`
- `appdirs`
- `argon2-cffi`
- `argon2-cffi-bindings`

- arrow
- astroid
- astropy
- atomicwrites
- attrs
- automat
- autopep8
- babel
- backcall
- backports
- backports.functools\_lru\_cache
- backports.tempfile
- backports.weakref
- bcrypt
- BeautifulSoup4
- binaryornot
- bitarray
- bkcharts
- black
- blas
- bleach
- blosc
- bokeh
- boto3
- botocore
- bottleneck
- brotli
- brotlipy
- bzip2
- ca-certificates
- certifi
- cffi
- chardet
- charset-normalizer
- click
- cloudpickle

- clyent
- colorama
- colorcet
- comtypes
- conda-content-trust
- conda-token
- console\_shortcut
- constantly
- cookiecutter
- cryptography
- cssselect
- curl
- cycler
- cython
- cytoolz
- dask
- dask-core
- dataclasses
- datashader
- datashape
- debugpy
- decorator
- defusedxml
- diff-match-patch
- distributed
- docutils
- entrypoints
- et\_xmlfile
- filelock
- flake8
- flask
- fonttools
- freetype
- fsspec
- future
- gensim

- glob2
- greenlet
- h5py
- hdf5
- heapdict
- holoviews
- hvplot
- hyperlink
- icc\_rt
- icu
- idna
- imageio
- imagesize
- importlib-metadata
- importlib\_metadata
- importlib\_resources
- incremental
- inflection
- iniconfig
- intake
- intel-openmp
- intervaltree
- ipykernel
- ipython
- ipython\_genutils
- ipywidgets
- isort
- itemadapter
- itemloaders
- itsdangerous
- jdcal
- jedi
- jinja2
- jinja2-time
- jmespath
- joblib

- jpeg
- jq
- json5
- jsonschema
- jupyter
- jupyter\_client
- jupyter\_console
- jupyter\_core
- jupyter\_server
- jupyterlab
- jupyterlab\_pygments
- jupyterlab\_server
- jupyterlab\_widgets
- keyring
- kiwisolver
- lazy-object-proxy
- libarchive
- libcurl
- libiconv
- liblief
- libpng
- libspatialindex
- libssh2
- libtiff
- libwebp
- libxml2
- libxslt
- llvmlite
- locket
- lxml
- lz4-c
- lzo
- m2w64-libwinpthread-git
- markdown
- markupsafe
- matplotlib

- matplotlib-base
- matplotlib-inline
- mccabe
- menuinst
- mistune
- mkl
- mkl-service
- mkl\_fft
- mkl\_random
- mock
- mpmath
- msgpack-python
- msys2-conda-epoch
- multipledispatch
- munkres
- mypy\_extensions
- nbclassic
- nbclient
- nbconvert
- nbformat
- nest-asyncio
- networkx
- nltk
- nose
- notebook
- numba
- numexpr
- numpy
- numpy-base
- numpydoc
- olefile
- openpyxl
- openssl
- packaging
- pandas
- pandocfilters



- panel
- param
- paramiko
- parsel
- parso
- partd
- pathspec
- patsy
- pep8
- pexpect
- pickleshare
- pillow
- pip
- pkginfo
- plotly
- pluggy
- powershell\_shortcut
- poyo
- prometheus\_client
- prompt-toolkit
- prompt\_toolkit
- protego
- psutil
- ptyprocess
- py
- py-lief
- pyasn1
- pyasn1-modules
- pycodestyle
- pycosat
- pycparser
- pycrypto
- pyct
- pycurl
- pydispatcher
- pydocstyle

- pyerfa
- pyflakes
- pygments
- pyhamcrest
- pylint
- pyls-spyder
- pynacl
- pyodbc
- pyopenssl
- pyparsing
- pyqt
- pyreadline
- pyrsistent
- pysocks
- pytables
- pytest
- python
- python-dateutil
- python-fastjsonschema
- python-libarchive-c
- python-lsp-black
- python-lsp-jsonrpc
- python-lsp-server
- python-slugify
- python-snappy
- pytz
- pyviz\_comms
- pywavelets
- pywin32
- pywin32-ctypes
- pywinpty
- pyyaml
- pyzmq
- qdarkstyle
- qstylizer
- qt

- qtawesome
- qtconsole
- qtpy
- queuelib
- regex
- requests
- requests-file
- rope
- rtree
- ruamel\_yaml
- s3transfer
- scikit-image
- scikit-learn
- scipy
- scrapy
- seaborn
- send2trash
- service\_identity
- setuptools
- sip
- six
- smart\_open
- snappy
- sniffio
- snowballstemmer
- sortedcollections
- sortedcontainers
- soupsieve
- sphinx
- sphinxcontrib-applehelp
- sphinxcontrib-devhelp
- sphinxcontrib-htmlhelp
- sphinxcontrib-jsmath
- sphinxcontrib-qthelp
- sphinxcontrib-serializinghtml
- spyder

- spyder-kernels
- sqlalchemy
- sqlite
- statsmodels
- sympy
- tabulate
- tbb
- tbb4py
- tblib
- tenacity
- terminado
- testpath
- text-unidecode
- textdistance
- threadpoolctl
- three-merge
- tinycss
- tk
- tldextract
- toml
- tomli
- toolz
- tornado
- tqdm
- traitlets
- twisted
- twisted-iocpsupport
- typed-ast
- typing-extensions
- typing\_extensions
- tzdata
- ujson
- unidecode
- urllib3
- vc
- vs2015\_runtime

- w3lib
- watchdog
- wcwidth
- webencodings
- websocket-client
- werkzeug
- wheel
- widgetsnbextension
- win\_inet\_pton
- win\_unicode\_console
- wincertstore
- winpty
- wrapt
- xarray
- xlrd
- xlsxwriter
- xlwings
- xz
- yaml
- yapf
- zict
- zipp
- zlib
- zope
- zope.interface
- zstd

### More changes specific to win-64

#### Updated:

- anaconda-client 1.9.0 -> 1.11.0
- anaconda-project 0.10.2 -> 0.11.1
- astroid 2.6.6 -> 2.11.7
- astropy 5.0.4 -> 5.1
- bitarray 2.4.1 -> 2.5.1
- black 19.10b0 -> 22.6.0
- bokeh 2.4.2 -> 2.4.3

- boto3 1.21.32 -> 1.24.28
- botocore 1.24.32 -> 1.27.28
- bottleneck 1.3.4 -> 1.3.5
- ca-certificates 2022.3.29 -> 2022.7.19
- certifi 2021.10.8 -> 2022.9.14
- cffi 1.15.0 -> 1.15.1
- colorama 0.4.4 -> 0.4.5
- colorcet 2.0.6 -> 3.0.0
- conda-content-trust 0.1.1 -> 0.1.3
- conda-token 0.3.0 -> 0.4.0
- cryptography 3.4.8 -> 37.0.1
- curl 7.82.0 -> 7.84.0
- cython 0.29.28 -> 0.29.32
- daal4py 2021.5.0 -> 2021.6.0
- dal 2021.5.0 -> 2021.6.0
- dask 2022.2.1 -> 2022.7.0
- dask-core 2022.2.1 -> 2022.7.0
- datashader 0.13.0 -> 0.14.1
- distributed 2022.2.1 -> 2022.7.0
- docutils 0.17.1 -> 0.18.1
- flake8 3.9.2 -> 4.0.1
- fsspec 2022.2.0 -> 2022.7.1
- h5py 3.6.0 -> 3.7.0
- holoviews 1.14.8 -> 1.15.0
- hvplot 0.7.3 -> 0.8.0
- icc\_rt 2019.0.0 -> 2022.1.0
- imageio 2.9.0 -> 2.19.3
- imagesize 1.3.0 -> 1.4.1
- ipykernel 6.9.1 -> 6.15.2
- jsonschema 4.4.0 -> 4.16.0
- jupyter\_client 6.1.12 -> 7.3.5
- jupyter\_console 6.4.0 -> 6.4.3
- jupyter\_core 4.9.2 -> 4.11.1
- jupyter\_server 1.13.5 -> 1.18.1
- jupyterlab 3.3.2 -> 3.4.4
- kiwisolver 1.3.2 -> 1.4.2

- libarchive 3.4.2 -> 3.6.1
- libcurl 7.82.0 -> 7.84.0
- libtiff 4.2.0 -> 4.4.0
- libxml2 2.9.12 -> 2.9.14
- libxslt 1.1.34 -> 1.1.35
- locket 0.2.1 -> 1.0.0
- lxml 4.8.0 -> 4.9.1
- matplotlib 3.5.1 -> 3.5.2
- matplotlib-base 3.5.1 -> 3.5.2
- matplotlib-inline 0.1.2 -> 0.1.6
- menuinst 1.4.18 -> 1.4.19
- msgpack-python 1.0.2 -> 1.0.3
- nbformat 5.3.0 -> 5.5.0
- networkx 2.7.1 -> 2.8.4
- notebook 6.4.8 -> 6.4.12
- numexpr 2.8.1 -> 2.8.3
- numpydoc 1.2 -> 1.4.0
- openpyxl 3.0.9 -> 3.0.10
- openssl 1.1.1n -> 1.1.1q
- pandas 1.4.2 -> 1.4.4
- panel 0.13.0 -> 0.13.1
- pathspec 0.7.0 -> 0.9.0
- pillow 9.0.1 -> 9.2.0
- pip 21.2.4 -> 22.2.2
- plotly 5.6.0 -> 5.9.0
- prometheus\_client 0.13.1 -> 0.14.1
- psutil 5.8.0 -> 5.9.0
- pycodestyle 2.7.0 -> 2.8.0
- pycurl 7.44.1 -> 7.45.1
- pyflakes 2.3.1 -> 2.4.0
- pylint 2.9.6 -> 2.14.5
- pynacl 1.4.0 -> 1.5.0
- pyodbc 4.0.32 -> 4.0.34
- pyopenssl 21.0.0 -> 22.0.0
- pyparsing 3.0.4 -> 3.0.9
- pytest 7.1.1 -> 7.1.2

- python 3.9.12 -> 3.9.13
- python-fastjsonschema 2.15.1 -> 2.16.2
- python-lsp-server 1.2.4 -> 1.3.3
- pytz 2021.3 -> 2022.1
- pyzmq 22.3.0 -> 23.2.0
- qtpy 2.0.1 -> 2.2.0
- regex 2022.3.15 -> 2022.7.9
- requests 2.27.1 -> 2.28.1
- s3transfer 0.5.0 -> 0.6.0
- scikit-learn-intelex 2021.5.0 -> 2021.6.0
- scipy 1.7.3 -> 1.9.1
- scrapy 2.6.1 -> 2.6.2
- setuptools 61.2.0 -> 63.4.1
- smart\_open 5.1.0 -> 5.2.1
- sphinx 4.4.0 -> 5.0.2
- spyder 5.1.5 -> 5.2.2
- spyder-kernels 2.1.3 -> 2.2.1
- sqlalchemy 1.4.32 -> 1.4.39
- sqlite 3.38.2 -> 3.39.3
- tabulate 0.8.9 -> 0.8.10
- tbb 2021.5.0 -> 2021.6.0
- tbb4py 2021.5.0 -> 2021.6.0
- testpath 0.5.0 -> 0.6.0
- tk 8.6.11 -> 8.6.12
- tomli 1.2.2 -> 2.0.1
- tornado 6.1 -> 6.2
- tqdm 4.64.0 -> 4.64.1
- typing-extensions 4.1.1 -> 4.3.0
- typing\_extensions 4.1.1 -> 4.3.0
- tzdata 2022a0 -> 2022rc0
- ujson 5.1.0 -> 5.4.0
- urllib3 1.26.9 -> 1.26.11
- wrapt 1.12.1 -> 1.14.1
- xlwings 0.24.9 -> 0.27.15
- xz 5.2.5 -> 5.2.6
- zict 2.0.0 -> 2.1.0



- zipp 3.7.0 -> 3.8.0
- zstd 1.4.9 -> 1.5.2

**Added:**

- brotli-bin 1.0.9
- dill 0.3.4
- fftw 3.3.9
- jellyfish 0.9.0
- libbrotlicommon 1.0.9
- libbrotlidec 1.0.9
- libbrotlienc 1.0.9
- libsodium 1.0.18
- lz4 3.1.3
- m2-msys2-runtime 2.5.0.17080.65c939c
- m2-patch 2.7.5
- pkgutil-resolve-name 1.3.10
- platformdirs 2.5.2
- tomlkit 0.11.1
- zeromq 4.3.4

**Removed:**

- google-crc32c
- libcrc32c

**More changes specific to osx-64****Updated:**

- anaconda-client 1.9.0 -> 1.11.0
- anaconda-project 0.10.2 -> 0.11.1
- applaunchservices 0.2.1 -> 0.3.0
- astroid 2.6.6 -> 2.11.7
- astropy 5.0.4 -> 5.1
- bitarray 2.4.1 -> 2.5.1
- black 19.10b0 -> 22.6.0
- bokeh 2.4.2 -> 2.4.3
- boto3 1.21.32 -> 1.24.28
- botocore 1.24.32 -> 1.27.28
- bottleneck 1.3.4 -> 1.3.5
- ca-certificates 2022.3.29 -> 2022.7.19

- certifi 2021.10.8 -> 2022.9.24
- cffi 1.15.0 -> 1.15.1
- colorama 0.4.4 -> 0.4.5
- colorcet 2.0.6 -> 3.0.0
- conda-content-trust 0.1.1 -> 0.1.3
- conda-token 0.3.0 -> 0.4.0
- cryptography 3.4.8 -> 37.0.1
- curl 7.82.0 -> 7.84.0
- cython 0.29.28 -> 0.29.32
- daal4py 2021.5.0 -> 2021.6.0
- dal 2021.5.0 -> 2021.6.0
- dask 2022.2.1 -> 2022.7.0
- dask-core 2022.2.1 -> 2022.7.0
- datashader 0.13.0 -> 0.14.1
- distributed 2022.2.1 -> 2022.7.0
- docutils 0.17.1 -> 0.18.1
- flake8 3.9.2 -> 4.0.1
- fsspec 2022.2.0 -> 2022.7.1
- h5py 3.6.0 -> 3.7.0
- holoviews 1.14.8 -> 1.15.0
- hvplot 0.7.3 -> 0.8.0
- imageio 2.9.0 -> 2.19.3
- imagesize 1.3.0 -> 1.4.1
- ipykernel 6.9.1 -> 6.15.2
- jsonschema 4.4.0 -> 4.16.0
- jupyter\_client 6.1.12 -> 7.3.5
- jupyter\_console 6.4.0 -> 6.4.3
- jupyter\_core 4.9.2 -> 4.11.1
- jupyter\_server 1.13.5 -> 1.18.1
- jupyterlab 3.3.2 -> 3.4.4
- kiwisolver 1.3.2 -> 1.4.2
- libarchive 3.4.2 -> 3.6.1
- libcurl 7.82.0 -> 7.84.0
- libcxx 12.0.0 -> 14.0.6
- libgfortran 3.0.1 -> 5.0.0
- libtiff 4.2.0 -> 4.4.0

- libxml2 2.9.12 -> 2.9.14
- libxslt 1.1.34 -> 1.1.35
- llvm-openmp 12.0.0 -> 14.0.6
- locket 0.2.1 -> 1.0.0
- lxml 4.8.0 -> 4.9.1
- matplotlib 3.5.1 -> 3.5.2
- matplotlib-base 3.5.1 -> 3.5.2
- matplotlib-inline 0.1.2 -> 0.1.6
- mccabe 0.6.1 -> 0.7.0
- msgpack-python 1.0.2 -> 1.0.3
- nbformat 5.3.0 -> 5.5.0
- networkx 2.7.1 -> 2.8.4
- notebook 6.4.8 -> 6.4.12
- numexpr 2.8.1 -> 2.8.3
- numpydoc 1.2 -> 1.4.0
- openpyxl 3.0.9 -> 3.0.10
- openssl 1.1.1n -> 1.1.1q
- pandas 1.4.2 -> 1.4.4
- panel 0.13.0 -> 0.13.1
- pathspec 0.7.0 -> 0.9.0
- pillow 9.0.1 -> 9.2.0
- pip 21.2.4 -> 22.2.2
- plotly 5.6.0 -> 5.9.0
- prometheus\_client 0.13.1 -> 0.14.1
- psutil 5.8.0 -> 5.9.0
- pycodestyle 2.7.0 -> 2.8.0
- pycurl 7.44.1 -> 7.45.1
- pyflakes 2.3.1 -> 2.4.0
- pylint 2.9.6 -> 2.14.5
- pyodbc 4.0.32 -> 4.0.34
- pyopenssl 21.0.0 -> 22.0.0
- pyparsing 3.0.4 -> 3.0.9
- pyqt 5.9.2 -> 5.15.7
- pytest 7.1.1 -> 7.1.2
- python 3.9.12 -> 3.9.13
- python-fastjsonschema 2.15.1 -> 2.16.2

- python-lsp-black 1.0.0 -> 1.2.1
- python-lsp-server 1.2.4 -> 1.5.0
- pytz 2021.3 -> 2022.1
- pyzmq 22.3.0 -> 23.2.0
- qt 5.9.7 -> 5.15.9
- qtconsole 5.3.0 -> 5.3.2
- qtpy 2.0.1 -> 2.2.0
- regex 2022.3.15 -> 2022.7.9
- requests 2.27.1 -> 2.28.1
- ripgrep 12.1.1 -> 13.0.0
- s3transfer 0.5.0 -> 0.6.0
- scikit-learn-intelex 2021.5.0 -> 2021.6.0
- scipy 1.7.3 -> 1.9.1
- scrapy 2.6.1 -> 2.6.2
- setuptools 61.2.0 -> 63.4.1
- sip 4.19.13 -> 6.6.2
- smart\_open 5.1.0 -> 5.2.1
- sphinx 4.4.0 -> 5.0.2
- spyder 5.1.5 -> 5.3.3
- spyder-kernels 2.1.3 -> 2.3.3
- sqlalchemy 1.4.32 -> 1.4.39
- sqlite 3.38.2 -> 3.39.3
- tabulate 0.8.9 -> 0.8.10
- tbb 2021.5.0 -> 2021.6.0
- tbb4py 2021.5.0 -> 2021.6.0
- testpath 0.5.0 -> 0.6.0
- tk 8.6.11 -> 8.6.12
- tomli 1.2.2 -> 2.0.1
- tornado 6.1 -> 6.2
- tqdm 4.64.0 -> 4.64.1
- typing-extensions 4.1.1 -> 4.3.0
- typing\_extensions 4.1.1 -> 4.3.0
- tzdata 2022a0 -> 2022rc0
- ujson 5.1.0 -> 5.4.0
- unixodbc 2.3.9 -> 2.3.11
- urllib3 1.26.9 -> 1.26.11

- wrapt 1.12.1 -> 1.14.1
- xlwings 0.24.9 -> 0.27.15
- xz 5.2.5 -> 5.2.6
- zict 2.0.0 -> 2.1.0
- zipp 3.7.0 -> 3.8.0
- zstd 1.4.9 -> 1.5.2

**Added:**

- brotli-bin 1.0.9
- cctools 949.0.1
- cctools\_osx-64 949.0.1
- dill 0.3.4
- fftw 3.3.9
- gst-plugins-base 1.14.0
- gstreamer 1.14.0
- jellyfish 0.9.0
- ld64 530
- ld64\_osx-64 530
- ldid 2.1.2
- libbrotlicommon 1.0.9
- libbrotlidec 1.0.9
- libbrotlienc 1.0.9
- libclang 12.0.0
- libgfortran5 11.2.0
- libllvm12 12.0.0
- libllvm14 14.0.6
- libpq 12.9
- lz4 3.1.3
- nspr 4.33
- nss 3.74
- patch 2.7.6
- pkgutil-resolve-name 1.3.10
- platformdirs 2.5.2
- ply 3.11
- pyobjc-core 8.5
- pyobjc-framework-cocoa 8.5
- pyobjc-framework-coreservices 8.5

- pyobjc-framework-fsevents 8.5
- pyqt5-sip 12.11.0
- PyQtWebEngine 5.15.7
- qt-main 5.15.2
- qt-webengine 5.15.9
- QtWebKit 5.212
- tapi 1000.10.8
- tomlkit 0.11.1
- whatthepatch 1.0.2

### Removed:

- dbus
- expat
- google-crc32c
- libcrc32c

### More changes specific to osx-arm64

### Updated:

- anaconda-client 1.9.0 -> 1.11.0
- anaconda-project 0.10.2 -> 0.11.1
- astroid 2.9.0 -> 2.11.7
- astropy 5.0.4 -> 5.1
- bitarray 2.5.0 -> 2.5.1
- bokeh 2.4.2 -> 2.4.3
- boto3 1.21.32 -> 1.24.28
- botocore 1.24.32 -> 1.27.28
- bottleneck 1.3.4 -> 1.3.5
- brotli 1.0.7 -> 1.0.9
- ca-certificates 2022.4.26 -> 2022.7.19
- certifi 2022.5.18.1 -> 2022.9.24
- cffi 1.15.0 -> 1.15.1
- colorama 0.4.4 -> 0.4.5
- conda-content-trust 0.1.1 -> 0.1.3
- conda-token 0.3.0 -> 0.4.0
- cryptography 3.4.7 -> 37.0.1
- curl 7.82.0 -> 7.84.0
- cython 0.29.28 -> 0.29.32

- dask 2022.5.0 -> 2022.7.0
- dask-core 2022.5.0 -> 2022.7.0
- datashader 0.13.0 -> 0.14.1
- distributed 2022.5.0 -> 2022.7.0
- docutils 0.17.1 -> 0.18.1
- fsspec 2022.3.0 -> 2022.7.1
- h5py 3.6.0 -> 3.7.0
- holoviews 1.14.8 -> 1.15.0
- hvplot 0.7.3 -> 0.8.0
- imageio 2.9.0 -> 2.19.3
- imagesize 1.3.0 -> 1.4.1
- ipykernel 6.9.1 -> 6.15.2
- ipython 8.3.0 -> 8.4.0
- jsonschema 4.4.0 -> 4.16.0
- jupyter\_client 7.2.2 -> 7.3.4
- jupyter\_core 4.10.0 -> 4.11.1
- jupyter\_server 1.13.5 -> 1.18.1
- jupyterlab 3.3.2 -> 3.4.4
- libarchive 3.4.2 -> 3.6.1
- libcurl 7.82.0 -> 7.84.0
- libcxx 12.0.0 -> 14.0.6
- libopenblas 0.3.20 -> 0.3.21
- libtiff 4.2.0 -> 4.4.0
- llvm-openmp 12.0.0 -> 14.0.6
- lxml 4.8.0 -> 4.9.1
- matplotlib 3.5.1 -> 3.5.2
- matplotlib-base 3.5.1 -> 3.5.2
- matplotlib-inline 0.1.2 -> 0.1.6
- nbformat 5.3.0 -> 5.5.0
- networkx 2.7.1 -> 2.8.4
- notebook 6.4.11 -> 6.4.12
- numexpr 2.8.1 -> 2.8.3
- numpydoc 1.2 -> 1.4.0
- openblas 0.3.20 -> 0.3.21
- openblas-devel 0.3.20 -> 0.3.21
- openpyxl 3.0.9 -> 3.0.10

- openssl 1.1.1o -> 1.1.1q
- pandas 1.4.2 -> 1.4.4
- panel 0.13.0 -> 0.13.1
- pillow 9.0.1 -> 9.2.0
- pip 21.2.4 -> 22.2.2
- platformdirs 2.4.0 -> 2.5.2
- plotly 5.6.0 -> 5.9.0
- prometheus\_client 0.13.1 -> 0.14.1
- psutil 5.8.0 -> 5.9.0
- pyct 0.4.6 -> 0.4.8
- pycurl 7.43.0.6 -> 7.45.1
- pylint 2.12.2 -> 2.14.5
- pyodbc 4.0.32 -> 4.0.34
- pyopenssl 21.0.0 -> 22.0.0
- pyparsing 3.0.4 -> 3.0.9
- pytest 7.1.1 -> 7.1.2
- python 3.9.12 -> 3.9.13
- python-fastjsonschema 2.15.1 -> 2.16.2
- pytz 2021.3 -> 2022.1
- pyzmq 22.3.0 -> 23.2.0
- regex 2022.3.15 -> 2022.7.9
- requests 2.27.1 -> 2.28.1
- s3transfer 0.5.0 -> 0.6.0
- scikit-learn 1.0.2 -> 1.1.1
- scipy 1.7.3 -> 1.9.1
- scrapy 2.6.1 -> 2.6.2
- setuptools 61.2.0 -> 63.4.1
- sip 6.5.1 -> 6.6.2
- sphinx 4.4.0 -> 5.0.2
- sqlalchemy 1.4.32 -> 1.4.39
- sqlite 3.38.3 -> 3.39.3
- tabulate 0.8.9 -> 0.8.10
- testpath 0.5.0 -> 0.6.0
- tomli 1.2.2 -> 2.0.1
- tqdm 4.64.0 -> 4.64.1
- typing-extensions 4.1.1 -> 4.3.0



- typing\_extensions 4.1.1 -> 4.3.0
- tzdata 2022a0 -> 2022rc0
- unixodbc 2.3.9 -> 2.3.11
- urllib3 1.26.9 -> 1.26.11
- wrapt 1.13.3 -> 1.14.1
- xlwings 0.24.6 -> 0.27.15
- xz 5.2.5 -> 5.2.6
- zict 2.0.0 -> 2.1.0
- zstd 1.4.9 -> 1.5.2

**Added:**

- brotli-bin 1.0.9
- cctools 949.0.1
- cctools\_osx-arm64 949.0.1
- dill 0.3.4
- fftw 3.3.9
- ld64 530
- ld64\_osx-arm64 530
- ldid 2.1.2
- libbrotlicommon 1.0.9
- libbrotlidec 1.0.9
- libbrotlienc 1.0.9
- libllvm14 14.0.6
- patch 2.7.6
- pkgutil-resolve-name 1.3.10
- ply 3.11
- tapi 1100.0.11
- tomlkit 0.11.1

**Anaconda 2022.05 (May 10, 2022)****User-facing changes**

- Anaconda Navigator has been updated to 2.1.4.
- Conda has been updated to 4.12.0.
- CVE-2022-26526 for Windows has been fixed. Now installations for “All Users” will not be allowed the option to modify the system PATH environment variable during installation. Installations for “Just Me” will still be allowed the option to add Anaconda3 to their PATH environment variable. Additionally, when installing with Administrator privileges, non-admin system Users will no longer have “Write” permissions.

- JetBrains PyCharm Pro has been replaced with JetBrains DataSpell.
- This is the first release of Anaconda Distribution that supports MacOS M1 (osx-arm64).
- This is the last release of Anaconda Distribution that will support Windows 32-bit (win-32).

### Changes for all x86 platforms

#### Updated:

- anaconda-project 0.10.1 -> 0.10.2
- anyio 2.2.0 -> 3.5.0
- argon2-cffi 20.1.0 -> 21.3.0
- arrow 0.13.1 -> 1.2.2
- astropy 4.3.1 -> 5.0.4
- attrs 21.2.0 -> 21.4.0
- autopep8 1.5.7 -> 1.6.0
- backports 1.0 -> 1.1
- bitarray 2.3.0 -> 2.4.1
- bleach 4.0.0 -> 4.1.0
- bokeh 2.4.1 -> 2.4.2
- bottleneck 1.3.2 -> 1.3.4
- ca-certificates 2021.10.26 -> 2022.3.29
- cffi 1.14.6 -> 1.15.0
- click 8.0.3 -> 8.0.4
- cookiecutter 1.7.2 -> 1.7.3
- curl 7.78.0 -> 7.82.0
- cyclr 0.10.0 -> 0.11.0
- cython 0.29.24 -> 0.29.28
- dask 2021.10.0 -> 2022.2.1
- dask-core 2021.10.0 -> 2022.2.1
- debugpy 1.4.1 -> 1.5.1
- decorator 5.1.0 -> 5.1.1
- distributed 2021.10.0 -> 2022.2.1
- entrypoints 0.3 -> 0.4
- filelock 3.3.1 -> 3.6.0
- idna 3.2 -> 3.3
- imageio 1.2.0 -> 1.3.0
- importlib-metadata 4.8.1 -> 4.11.3
- importlib\_metadata 4.8.1 -> 4.11.3

- ipykernel 6.4.1 -> 6.9.1
- ipython 7.29.0 -> 8.2.0
- jedi 0.18.0 -> 0.18.1
- jpeg 9d -> 9e
- jsonschema 3.2.0 -> 4.4.0
- jupyter\_core 4.8.1 -> 4.9.2
- jupyter\_server 1.4.1 -> 1.13.5
- jupyterlab 3.2.1 -> 3.3.2
- jupyterlab\_server 2.8.2 -> 2.10.3
- keyring 23.1.0 -> 23.4.0
- kiwisolver 1.3.1 -> 1.3.2
- libcurl 7.78.0 -> 7.82.0
- liblief 0.10.1 -> 0.11.5
- libssh2 1.9.0 -> 1.10.0
- libwebp 1.2.0 -> 1.2.2
- llvmlite 0.37.0 -> 0.38.0
- lxml 4.6.3 -> 4.8.0
- markupsafe 1.1.1 -> 2.0.1
- matplotlib 3.4.3 -> 3.5.1
- matplotlib-base 3.4.3 -> 3.5.1
- nbclassic 0.2.6 -> 0.3.5
- nbclient 0.5.3 -> 0.5.13
- nbconvert 6.1.0 -> 6.4.4
- nbformat 5.1.3 -> 5.3.0
- nest-asyncio 1.5.1 -> 1.5.5
- networkx 2.6.3 -> 2.7.1
- nltk 3.6.5 -> 3.7
- notebook 6.4.5 -> 6.4.8
- numba 0.54.1 -> 0.55.1
- numexpr 2.7.3 -> 2.8.1
- numpy 1.20.3 -> 1.21.5
- numpy-base 1.20.3 -> 1.21.5
- numpydoc 1.1.0 -> 1.2
- openssl 1.1.1l -> 1.1.1n
- packaging 21.0 -> 21.3
- pandas 1.3.4 -> 1.4.2

- pandocfilters 1.4.3 -> 1.5.0
- parso 0.8.2 -> 0.8.3
- pillow 8.4.0 -> 9.0.1
- pkginfo 1.7.1 -> 1.8.2
- pluggy 0.13.1 -> 1.0.0
- prometheus\_client 0.11.0 -> 0.13.1
- py 1.10.0 -> 1.11.0
- py-lief 0.10.1 -> 0.11.5
- pycparser 2.20 -> 2.21
- pygments 2.10.0 -> 2.11.2
- pyodbc 4.0.31 -> 4.0.32
- pytest 6.2.4 -> 7.1.1
- python 3.9.7 -> 3.9.12
- pywavelets 1.1.1 -> 1.3.0
- pyzmq 22.2.1 -> 22.3.0
- qtawesome 1.0.2 -> 1.0.3
- qtconsole 5.1.1 -> 5.3.0
- qtpy 1.10.0 -> 2.0.1
- regex 2021.8.3 -> 2022.3.15
- requests 2.26.0 -> 2.27.1
- rope 0.19.0 -> 0.22.0
- scikit-learn 0.24.2 -> 1.0.2
- setuptools 58.0.4 -> 61.2.0
- snowballstemmer 2.1.0 -> 2.2.0
- soupsieve 2.2.1 -> 2.3.1
- sphinx 4.2.0 -> 4.4.0
- sqlalchemy 1.4.22 -> 1.4.32
- sqlite 3.36.0 -> 3.38.2
- statsmodels 0.12.2 -> 0.13.2
- sympy 1.9 -> 1.10.1
- tbb 2021.4.0 -> 2021.5.0
- tbb4py 2021.4.0 -> 2021.5.0
- terminado 0.9.4 -> 0.13.1
- toolz 0.11.1 -> 0.11.2
- tqdm 4.62.3 -> 4.64.0
- traitlets 5.1.0 -> 5.1.1

- typing-extensions 3.10.0.2 -> 4.1.1
- typing\_extensions 3.10.0.2 -> 4.1.1
- tzdata 2021e -> 2022a0
- ujson 4.0.2 -> 5.1.0
- urllib3 1.26.7 -> 1.26.9
- watchdog 2.1.3 -> 2.1.6
- werkzeug 2.0.2 -> 2.0.3
- wheel 0.37.0 -> 0.37.1
- widgetsnbextension 3.5.1 -> 3.5.2
- xlswriter 3.0.1 -> 3.0.3
- zipp 3.6.0 -> 3.7.0
- zlib 1.2.11 -> 1.2.12

**Added:**

- aiohttp 3.8.1
- aiosignal 1.2.0
- argon2-cffi-bindings 21.2.0
- asttokens 2.0.5
- async-timeout 4.0.1
- asyncctest 0.13.0
- automat 20.2.0
- backports.functools\_lru\_cache 1.6.4
- backports.tempfile 1.0
- backports.weakref 1.0.post1
- boto3 1.21.32
- botocore 1.24.32
- cachetools 4.2.2
- colorcet 2.0.6
- conda-verify 3.4.2
- constantly 15.1.0
- cssselect 1.1.0
- datashader 0.13.0
- datashape 0.5.4
- executing 0.8.3
- frozenlist 1.2.0
- future 0.18.2
- gensim 4.1.2

- google-api-core 1.25.1
- google-auth 1.33.0
- google-cloud-core 1.7.1
- googleapis-common-protos 1.53.0
- grpcio 1.42.0
- holoviews 1.14.8
- hvplot 0.7.3
- hyperlink 21.0.0
- importlib\_resources 5.2.0
- incremental 21.3.0
- intake 0.6.5
- itemadapter 0.3.0
- itemloaders 1.0.4
- jmespath 0.10.0
- jq 1.6
- markdown 3.3.4
- panel 0.13.0
- param 1.12.0
- parsel 1.6.0
- plotly 5.6.0
- protego 0.1.16
- pure\_eval 0.2.2
- pyasn1 0.4.8
- pyasn1-modules 0.2.8
- pyct 0.4.8
- pydispatcher 2.0.5
- pyhamcrest 2.0.2
- python-fastjsonschema 2.15.1
- python-snappy 0.6.0
- pyviz\_comms 2.0.2
- queuelib 1.5.0
- requests-file 1.5.1
- rsa 4.7.2
- s3transfer 0.5.0
- scrapy 2.6.1
- service\_identity 18.1.0

- smart\_open 5.1.0
- stack\_data 0.2.0
- tabulate 0.8.9
- tenacity 8.0.1
- tldextract 3.2.0
- tomli 1.2.2
- twisted 22.2.0
- w3lib 1.21.0
- websocket-client 0.58.0
- xarray 0.20.1
- yarl 1.6.3

**Removed:**

- argcomplete
- argh
- asn1crypto
- async\_generator
- backports.shutil\_get\_terminal\_size
- boto
- cached-property
- contextlib2
- fastcache
- get\_terminal\_size
- gevent
- html5lib
- more-itertools
- path
- path.py
- pathlib2
- ply
- simplegeneric
- singledispatch
- sphinxcontrib
- sphinxcontrib-websupport
- unicodecsv
- whichcraft
- xlwt

- zope.event

### More changes specific to linux-64

#### Updated:

- beautifulsoup4 4.10.0 -> 4.11.1
- c-ares 1.17.1 -> 1.18.1
- daal4py 2021.3.0 -> 2021.5.0
- dal 2021.3.0 -> 2021.5.1
- expat 2.4.1 -> 2.4.4
- freetype 2.10.4 -> 2.11.0
- fsspec 2021.8.1 -> 2022.2.0
- gmpy2 2.0.8 -> 2.1.2
- h5py 3.3.0 -> 3.6.0
- libnghttp2 1.41.0 -> 1.46.0
- libwebp-base 1.2.0 -> 1.2.2
- readline 8.1 -> 8.1.2
- scikit-image 0.18.3 -> 0.19.2
- scikit-learn-intelex 2021.3.0 -> 2021.5.0
- scipy 1.7.1 -> 1.7.3
- snappy 1.1.8 -> 1.1.9
- wurlitzer 2.1.1 -> 3.0.2

#### Added:

- bcrypt 3.2.0
- conda-verify 3.4.2
- google-cloud-storage 1.41.0
- google-crc32c 1.1.2
- google-resumable-media 1.3.1
- libcrc32c 1.1.1
- libidn2 2.3.2
- libprotobuf 3.19.1
- libunistring 0.9.10
- multidict 5.2.0
- oniguruma 6.9.7.1
- protobuf 3.19.1
- wget 1.21.3

#### Removed:



- cairo
- fribidi
- graphite2
- harfbuzz
- jbig
- libtool
- libuv
- pango
- pixman

### More changes specific to linux-s390x

#### Updated:

- astroid 2.4.2 -> 2.9.0
- beautifulsoup4 4.10.0 -> 4.11.1
- bitarray 1.6.1 -> 2.4.1
- c-ares 1.17.1 -> 1.18.1
- curl 7.71.1 -> 7.82.0
- expat 2.4.1 -> 2.4.4
- freetype 2.10.4 -> 2.11.0
- fsspec 2021.8.1 -> 2022.2.0
- gmpy2 2.0.8 -> 2.1.2
- h5py 2.10.0 -> 3.6.0
- jupyter\_client 7.0.1 -> 7.2.2
- jupyter\_console 6.4.0 -> 6.4.3
- krb5 1.18.2 -> 1.19.2
- lazy-object-proxy 1.4.3 -> 1.6.0
- libcurl 7.71.1 -> 7.82.0
- libopenblas 0.3.13 -> 0.3.18
- mccabe 0.6.1 -> 0.7.0
- nltk 3.6.3 -> 3.7
- openblas 0.3.13 -> 0.3.18
- openblas-devel 0.3.13 -> 0.3.18
- pycodestyle 2.7.0 -> 2.8.0
- pyflakes 2.3.1 -> 2.4.0
- pylint 2.7.4 -> 2.12.2
- pyodbc 4.0.30 -> 4.0.32

- pytest 6.2.3 -> 7.1.1
- pyyaml 5.4.1 -> 6.0
- pyzmq 20.0.0 -> 22.3.0
- readline 8.1 -> 8.1.2
- regex 2021.4.4 -> 2022.3.15
- ruamel\_yaml 0.15.80 -> 0.15.100
- scikit-image 0.18.3 -> 0.19.2
- scipy 1.7.1 -> 1.7.3
- sip 4.19.25 -> 6.5.1
- snappy 1.1.8 -> 1.1.9
- wrapt 1.11.2 -> 1.13.3
- yaml 0.1.7 -> 0.2.5

### Added:

- appdirs 1.4.4
- cached-property 1.5.2
- conda-verify 3.4.2
- intake 0.6.2
- libidn2 2.3.0
- libnghttp2 1.46.0
- libunistring 0.9.10
- libwebp-base 1.2.2
- markdown 3.3.3
- panel 0.12.7
- platformdirs 2.4.0
- plotly 4.14.3
- pyct 0.4.6
- retrying 1.3.3
- tabulate 0.8.7
- typing-extensions 4.1.1
- wget 1.21.3

### Removed:

- cairo
- fribidi
- graphite2
- harfbuzz
- jbig

- libtool
- libuv
- multipledispatch
- pango
- pixman
- zope
- zope.interface

### More changes specific to linux-aarch64

#### Updated:

- beautifulsoup4 4.10.0 -> 4.11.1
- bitarray 1.7.0 -> 2.4.1
- c-ares 1.17.1 -> 1.18.1
- cffi 1.14.5 -> 1.15.0
- curl 7.71.1 -> 7.82.0
- expat 2.4.1 -> 2.4.4
- freetype 2.10.4 -> 2.11.0
- fsspec 2021.8.1 -> 2022.2.0
- gmpy2 2.0.8 -> 2.1.2
- keyring 22.3.0 -> 23.4.0
- libcurl 7.71.1 -> 7.82.0
- libopenblas 0.3.13 -> 0.3.18
- libpq 12.2 -> 12.9
- libwebp-base 1.2.0 -> 1.2.2
- mypy\_extensions 0.4.1 -> 0.4.3
- openblas 0.3.13 -> 0.3.18
- openblas-devel 0.3.13 -> 0.3.18
- pyodbc 4.0.30 -> 4.0.32
- pytest 6.2.3 -> 7.1.1
- pyyaml 5.4.1 -> 6.0
- pyzmq 20.0.0 -> 22.3.0
- readline 8.1 -> 8.1.2
- ruamel\_yaml 0.15.80 -> 0.15.100
- scikit-image 0.18.3 -> 0.19.2
- sip 4.19.25 -> 6.5.1
- snappy 1.1.8 -> 1.1.9

- sqlalchemy 1.3.23 -> 1.4.32
- statsmodels 0.13.0 -> 0.13.2
- watchdog 1.0.2 -> 2.1.6
- wrapt 1.12.1 -> 1.13.3
- wurlitizer 2.0.1 -> 3.0.2
- yaml 0.1.7 -> 0.2.5

### Added:

- bcrypt 3.2.0
- conda-verify 3.4.2
- google-cloud-storage 1.31.0
- google-crc32c 1.1.2
- google-resumable-media 1.3.1
- libcrc32c 1.1.1
- libidn2 2.3.1
- libnghttp2 1.46.0
- libprotobuf 3.19.1
- libunistring 0.9.10
- multidict 5.2.0
- protobuf 3.19.1
- typing-extensions 4.1.1
- wget 1.21.3

### Removed:

- jbig
- libtool
- libuv

## More changes specific to linux-ppc64le

### Updated:

- astroid 2.6.6 -> 2.9.0
- beautifulsoup4 4.10.0 -> 4.11.1
- c-ares 1.17.1 -> 1.18.1
- expat 2.4.1 -> 2.4.4
- freetype 2.10.4 -> 2.11.0
- fsspec 2021.8.1 -> 2022.2.0
- gmpy2 2.0.8 -> 2.1.2
- h5py 3.2.1 -> 3.6.0

- jupyter\_client 7.0.1 -> 7.2.2
- jupyter\_console 6.4.0 -> 6.4.3
- libnhttp2 1.41.0 -> 1.46.0
- libopenblas 0.3.13 -> 0.3.18
- libwebp-base 1.2.0 -> 1.2.2
- mccabe 0.6.1 -> 0.7.0
- openblas 0.3.13 -> 0.3.18
- openblas-devel 0.3.13 -> 0.3.18
- pycodestyle 2.7.0 -> 2.8.0
- pyflakes 2.3.1 -> 2.4.0
- pylint 2.9.6 -> 2.12.2
- readline 8.1 -> 8.1.2
- scikit-image 0.18.3 -> 0.19.2
- scipy 1.7.1 -> 1.7.3
- snappy 1.1.8 -> 1.1.9
- statsmodels 0.13.0 -> 0.13.2
- wrapt 1.12.1 -> 1.13.3

**Added:**

- appdirs 1.4.4
- bcrypt 3.2.0
- conda-verify 3.4.2
- google-cloud-storage 1.41.0
- google-crc32c 1.1.2
- google-resumable-media 1.3.1
- libcrc32c 1.1.1
- libidn2 2.3.2
- libllvm11 11.1.0
- libprotobuf 3.19.1
- libunistring 0.9.10
- llvmlite 0.38.0
- multidict 5.2.0
- numba 0.55.1
- oniguruma 6.9.7.1
- platformdirs 2.4.0
- protobuf 3.19.1
- wget 1.21.3

### Removed:

- cairo
- glib
- jbig
- libuv
- libxcb
- pixman

### More changes specific to win-32

### Updated:

- fsspec 2021.10.1 -> 2022.2.0
- h5py 3.2.1 -> 3.6.0
- libiconv 1.15 -> 1.16
- paramiko 2.7.2 -> 2.8.1
- pywin32 228 -> 302
- pywinpty 0.5.7 -> 2.0.2
- scipy 1.6.2 -> 1.7.3

### Added:

- conda-verify 3.4.2
- google-cloud-storage 1.28.1
- google-resumable-media 0.5.1
- libprotobuf 3.14.0
- multidict 5.1.0
- protobuf 3.14.0
- snappy 1.1.9
- twisted-iocpsupport 1.0.2

### Removed:

- krb5
- m2w64-gcc-libgfortran
- m2w64-gcc-libs
- m2w64-gcc-libs-core
- m2w64-gmp

## More changes specific to win-64

### Updated:

- beautifulsoup4 4.10.0 -> 4.11.1
- daal4py 2021.3.0 -> 2021.5.0
- dal 2021.3.0 -> 2021.5.0
- fsspec 2021.10.1 -> 2022.2.0
- h5py 3.2.1 -> 3.6.0
- libiconv 1.15 -> 1.16
- paramiko 2.7.2 -> 2.8.1
- pywin32 228 -> 302
- pywinpty 0.5.7 -> 2.0.2
- scikit-image 0.18.3 -> 0.19.2
- scikit-learn-intelex 2021.3.0 -> 2021.5.0
- scipy 1.7.1 -> 1.7.3
- snappy 1.1.8 -> 1.1.9

### Added:

- conda-verify 3.4.2
- google-cloud-storage 1.41.0
- google-crc32c 1.1.2
- google-resumable-media 1.3.1
- libcrc32c 1.1.1
- libprotobuf 3.19.1
- multidict 5.1.0
- protobuf 3.19.1
- twisted-iocpsupport 1.0.2

### Removed:

- krb5
- m2w64-gcc-libgfortran
- m2w64-gcc-libc
- m2w64-gcc-libc-core
- m2w64-gmp

## More changes specific to osx-64

### Updated:

- beautifulsoup4 4.10.0 -> 4.11.1
- c-ares 1.17.1 -> 1.18.1
- daal4py 2021.3.0 -> 2021.5.0
- dal 2021.3.0 -> 2021.5.0
- expat 2.4.1 -> 2.4.4
- freetype 2.10.4 -> 2.11.0
- fsspec 2021.8.1 -> 2022.2.0
- gmpy2 2.0.8 -> 2.1.2
- h5py 3.2.1 -> 3.6.0
- libnhttp2 1.41.0 -> 1.46.0
- libwebp-base 1.2.0 -> 1.2.2
- readline 8.1 -> 8.1.2
- scikit-image 0.18.3 -> 0.19.2
- scikit-learn-intelex 2021.3.0 -> 2021.5.0
- scipy 1.7.1 -> 1.7.3
- snappy 1.1.8 -> 1.1.9
- wurlitzer 2.1.1 -> 3.0.2

### Added:

- bcrypt 3.2.0
- conda-verify 3.4.2
- google-cloud-storage 1.41.0
- google-crc32c 1.1.2
- google-resumable-media 1.3.1
- libcrc32c 1.1.1
- libidn2 2.3.2
- libprotobuf 3.19.1
- libunistring 0.9.10
- multidict 5.2.0
- oniguruma 6.9.7.1
- protobuf 3.19.1
- wget 1.21.3

### Removed:

- jbig
- libuv



## Anaconda 2021.11 (Nov 17, 2021)

### User-facing changes

- Anaconda Navigator has been updated to 2.1.1
- Conda has been updated to 4.10.3
- The installer and base environment now use Python 3.9. Meta-packages for Python 3.7, 3.8, and 3.9 are also available.
- Updated EULA includes disclaimers for the Arm Performance Libraries.
- The installer for linux-64 will now error out if a glibc version older than 2.17 is found.
- Improved the macOS pkg installer installation already detected error message.

### Changes for all x86 platforms

#### Updated:

- anaconda-client 1.7.2 -> 1.9.0
- anaconda-project 0.9.1 -> 0.10.1
- astroid 2.5 -> 2.6.6
- astropy 4.2.1 -> 4.3.1
- attrs 20.3.0 -> 21.2.0
- autopep8 1.5.6 -> 1.5.7
- babel 2.9.0 -> 2.9.1
- beautifulsoup4 4.9.3 -> 4.10.0
- bleach 3.3.0 -> 4.0.0
- bokeh 2.3.2 -> 2.4.1
- ca-certificates 2021.4.13 -> 2021.10.26
- certifi 2020.12.5 -> 2021.10.8
- cffi 1.14.5 -> 1.14.6
- click 7.1.2 -> 8.0.3
- cloudpickle 1.6.0 -> 2.0.0
- curl 7.71.1 -> 7.78.0
- cython 0.29.23 -> 0.29.24
- dask 2021.4.0 -> 2021.10.0
- dask-core 2021.4.0 -> 2021.10.0
- decorator 5.0.6 -> 5.1.0
- et\_xmlfile 1.0.1 -> 1.1.0
- filelock 3.0.12 -> 3.3.1
- flake8 3.9.0 -> 3.9.2

- `gevent` 21.1.2 -> 21.8.0
- `greenlet` 1.0.0 -> 1.1.1
- `idna` 2.10 -> 3.2
- `importlib-metadata` 3.10.0 -> 4.8.1
- `importlib_metadata` 3.10.0 -> 4.8.1
- `intel-openmp` 2021.2.0 -> 2021.4.0
- `ipykernel` 5.3.4 -> 6.4.1
- `ipython` 7.22.0 -> 7.29.0
- `ipywidgets` 7.6.3 -> 7.6.5
- `isort` 5.8.0 -> 5.9.3
- `itsdangerous` 1.1.0 -> 2.0.1
- `jedi` 0.17.2 -> 0.18.0
- `joblib` 1.0.1 -> 1.1.0
- `json5` 0.9.5 -> 0.9.6
- `jupyter_core` 4.7.1 -> 4.8.1
- `jupyterlab` 3.0.14 -> 3.2.1
- `jupyterlab_server` 2.4.0 -> 2.8.2
- `keyring` 22.3.0 -> 23.1.0
- `krb5` 1.18.2 -> 1.19.2
- `libcurl` 7.71.1 -> 7.78.0
- `libxml2` 2.9.10 -> 2.9.12
- `llvmlite` 0.36.0 -> 0.37.0
- `matplotlib` 3.3.4 -> 3.4.3
- `matplotlib-base` 3.3.4 -> 3.4.3
- `mk1` 2021.2.0 -> 2021.4.0
- `mk1-service` 2.3.0 -> 2.4.0
- `mk1_fft` 1.3.0 -> 1.3.1
- `mk1_random` 1.2.1 -> 1.2.2
- `more-itertools` 8.7.0 -> 8.10.0
- `nbconvert` 6.0.7 -> 6.1.0
- `networkx` 2.5 -> 2.6.3
- `nltk` 3.6.1 -> 3.6.5
- `notebook` 6.3.0 -> 6.4.5
- `numba` 0.53.1 -> 0.54.1
- `numpy` 1.20.1 -> 1.20.3
- `numpy-base` 1.20.1 -> 1.20.3

- openpyxl 3.0.7 -> 3.0.9
- openssl 1.1.1k -> 1.1.1l
- packaging 20.9 -> 21.0
- pandas 1.2.4 -> 1.3.4
- parso 0.7.0 -> 0.8.2
- path 15.1.2 -> 16.0.0
- pathlib2 2.3.5 -> 2.3.6
- patsy 0.5.1 -> 0.5.2
- pillow 8.2.0 -> 8.4.0
- pip 21.0.1 -> 21.2.4
- pkginfo 1.7.0 -> 1.7.1
- prometheus\_client 0.10.1 -> 0.11.0
- prompt-toolkit 3.0.17 -> 3.0.20
- prompt\_toolkit 3.0.17 -> 3.0.20
- pycodestyle 2.6.0 -> 2.7.0
- pycurl 7.43.0.6 -> 7.44.1
- pydocstyle 6.0.0 -> 6.1.1
- pyerfa 1.7.3 -> 2.0.0
- pyflakes 2.2.0 -> 2.3.1
- pygments 2.8.1 -> 2.10.0
- pylint 2.7.4 -> 2.9.6
- pyls-spyder 0.3.2 -> 0.4.0
- pyodbc 4.0.30 -> 4.0.31
- pyopenssl 20.0.1 -> 21.0.0
- pyparsing 2.4.7 -> 3.0.4
- pyrsistent 0.17.3 -> 0.18.0
- pytest 6.2.3 -> 6.2.4
- python 3.9.4 -> 3.9.7
- python-dateutil 2.8.1 -> 2.8.2
- pytz 2021.1 -> 2021.3
- pyyaml 5.4.1 -> 6.0
- pyzmq 20.0.0 -> 22.2.1
- qdarkstyle 2.8.1 -> 3.0.2
- qtconsole 5.0.3 -> 5.1.1
- qtpy 1.9.0 -> 1.10.0
- regex 2021.4.4 -> 2021.8.3

- requests 2.25.1 -> 2.26.0
- rope 0.18.0 -> 0.19.0
- seaborn 0.11.1 -> 0.11.2
- send2trash 1.5.0 -> 1.8.0
- setuptools 52.0.0 -> 58.0.4
- singledispatch 3.6.1 -> 3.7.0
- six 1.15.0 -> 1.16.0
- sortedcontainers 2.3.0 -> 2.4.0
- sphinx 4.0.1 -> 4.2.0
- sphinxcontrib-htmlhelp 1.0.3 -> 2.0.0
- sphinxcontrib-serializinghtml 1.1.4 -> 1.1.5
- spyder 4.2.5 -> 5.1.5
- spyder-kernels 1.10.2 -> 2.1.3
- sqlite 3.35.4 -> 3.36.0
- sympy 1.8 -> 1.9
- testpath 0.4.4 -> 0.5.0
- threadpoolctl 2.1.0 -> 2.2.0
- tk 8.6.10 -> 8.6.11
- tqdm 4.59.0 -> 4.62.3
- traitlets 5.0.5 -> 5.1.0
- typed-ast 1.4.2 -> 1.4.3
- typing\_extensions 3.7.4.3 -> 3.10.0.2
- tzdata 2020f -> 2021e
- urllib3 1.26.4 -> 1.26.7
- watchdog 1.0.2 -> 2.1.3
- werkzeug 1.0.1 -> 2.0.2
- wheel 0.36.2 -> 0.37.0
- xlswriter 1.3.8 -> 3.0.1
- zipp 3.4.1 -> 3.6.0
- zope.interface 5.3.0 -> 5.4.0
- zstd 1.4.5 -> 1.4.9

**Added:**

- argcomplete 1.12.3
- arrow 0.13.1
- binaryornot 0.4.4
- cached-property 1.5.2

- charset-normalizer 2.0.4
- conda-content-trust 0.1.1
- conda-token 0.3.0
- cookiecutter 1.7.2
- dataclasses 0.8
- debugpy 1.4.1
- fonttools 4.25.0
- inflection 0.5.1
- jinja2-time 0.2.0
- matplotlib-inline 0.1.2
- munkres 1.1.4
- poyo 0.5.0
- python-lsp-black 1.0.0
- python-lsp-jsonrpc 1.0.0
- python-lsp-server 1.2.4
- python-slugify 5.0.2
- qstylizer 0.1.10
- tbb4py 2021.4.0
- text-unidecode 1.3
- tinycss 0.4
- typing-extensions 3.10.0.2
- unidecode 1.2.0
- whichcraft 0.6.1

**Removed:**

- future
- jupyter-packaging
- pandoc
- pyls-black
- python-jsonrpc-server
- python-language-server

**More changes specific to linux-64****Updated:**

- bitarray 2.1.0 -> 2.3.0
- cryptography 3.4.7 -> 3.4.8
- distributed 2021.4.1 -> 2021.10.0
- expat 2.3.0 -> 2.4.1
- fsspec 0.9.0 -> 2021.8.1
- giflib 5.1.4 -> 5.2.1
- glib 2.68.1 -> 2.69.1
- h5py 2.10.0 -> 3.3.0
- harfbuzz 2.8.0 -> 2.8.1
- imagecodecs 2021.3.31 -> 2021.8.26
- jeepney 0.6.0 -> 0.7.1
- ld\_impl\_linux-64 2.33.1 -> 2.35.1
- lerc 2.2.1 -> 3.0
- libdeflate 1.7 -> 1.8
- libedit 3.1.20210216 -> 3.1.20210910
- libgcc-ng 9.1.0 -> 9.3.0
- libgfortran-ng 7.3.0 -> 7.5.0
- libstdcxx-ng 9.1.0 -> 9.3.0
- libwebp 1.0.1 -> 1.2.0
- ncurses 6.2 -> 6.3
- openjpeg 2.3.0 -> 2.4.0
- patchelf 0.12 -> 0.13
- pcre 8.44 -> 8.45
- scikit-image 0.18.1 -> 0.18.3
- scikit-learn 0.24.1 -> 0.24.2
- scipy 1.6.2 -> 1.7.1
- sqlalchemy 1.4.15 -> 1.4.22
- tbb 2020.3 -> 2021.4.0
- tifffile 2021.4.8 -> 2021.7.2
- wurlitzer 2.1.0 -> 2.1.1

**Added:**

- \_openmp\_mutex 4.5
- cfitsio 3.470
- daal4py 2021.3.0

- dal 2021.3.0
- libgfortran4 7.5.0
- libgomp 9.3.0
- libllvm11 11.1.0
- libnghttp2 1.41.0
- mpi 1.0
- mpich 3.3.2
- scikit-learn-intelex 2021.3.0

**Removed:**

- libllvm10

**More changes specific to linux-s390x****Updated:**

- bokeh 2.3.1 -> 2.4.1
- distributed 2021.4.0 -> 2021.10.0
- expat 2.3.0 -> 2.4.1
- fsspec 0.9.0 -> 2021.8.1
- glib 2.68.1 -> 2.69.1
- jupyter\_client 6.1.12 -> 7.0.1
- jupyterlab 2.3.1 -> 3.2.1
- jupyterlab\_server 1.2.0 -> 2.8.2
- libedit 3.1.20210216 -> 3.1.20210910
- markupsafe 1.1.1 -> 2.0.1
- ncurses 6.2 -> 6.3
- nltk 3.6.1 -> 3.6.3
- openjpeg 2.3.0 -> 2.4.0
- patchelf 0.12 -> 0.13
- pcre 8.44 -> 8.45
- pyerfa 1.7.1.1 -> 2.0.0
- scikit-image 0.18.1 -> 0.18.3
- scikit-learn 0.24.1 -> 0.24.2
- scipy 1.6.2 -> 1.7.1
- setuptools 51.1.2 -> 58.0.4
- sqlalchemy 1.3.17 -> 1.4.22
- zope.interface 5.2.0 -> 5.4.0

**Added:**

- anyio 2.0.2
- jupyter\_server 1.4.1
- nbclassic 0.2.6
- sniffio 1.1.0

### More changes specific to linux-aarch64

#### Updated:

- bokeh 2.3.1 -> 2.4.1
- distributed 2021.4.0 -> 2021.10.0
- expat 2.3.0 -> 2.4.1
- fsspec 0.9.0 -> 2021.8.1
- glib 2.68.1 -> 2.69.1
- imagecodecs 2021.1.11 -> 2021.8.26
- importlib-metadata 2.0.0 -> 4.8.1
- importlib\_metadata 2.0.0 -> 4.8.1
- krb5 1.19.1 -> 1.19.2
- lcms2 2.11 -> 2.12
- lerc 2.2.1 -> 3.0
- libedit 3.1.20210216 -> 3.1.20210910
- libtiff 4.1.0 -> 4.2.0
- ncurses 6.2 -> 6.3
- openjpeg 2.3.0 -> 2.4.0
- patchelf 0.11 -> 0.13
- pcre 8.44 -> 8.45
- pyerfa 1.7.2 -> 2.0.0
- scikit-image 0.18.1 -> 0.18.3
- scikit-learn 0.24.1 -> 0.24.2
- scipy 1.6.2 -> 1.7.1
- statsmodels 0.12.2 -> 0.13.0
- tbb 2020.2 -> 2021.4.0
- tiff file 2021.3.31 -> 2021.7.2
- zope.interface 5.2.0 -> 5.4.0

#### Added:

- adwaita-icon-theme 40.1.1
- appdirs 1.4.4
- argh 0.26.2



- at-spi2-atk 2.34.2
- at-spi2-core 2.36.0
- atk-1.0 2.36.0
- atomicwrites 1.4.0
- autopep8 1.5.7
- black 19.10b0
- cfitsio 3.470
- diff-match-patch 20200713
- epoxy 1.5.4
- flake8 3.9.2
- gdk-pixbuf 2.38.2
- gettext 0.21.0
- gobject-introspection 1.68.0
- gtk3 3.24.21
- hicolor-icon-theme 0.17
- intervaltree 3.1.0
- jeepney 0.7.1
- keyring 22.3.0
- libcups 2.2.12
- libevent 2.1.10
- libllvm11 11.1.0
- libpq 12.2
- librsvg 2.50.7
- libspatialindex 1.9.3
- libwebp-base 1.2.0
- libxkbcommon 1.0.1
- mypy\_extensions 0.4.1
- ninja 1.10.2
- pathspec 0.7.0
- pydocstyle 6.1.1
- pyls-spyder 0.4.0
- pyqt 5.15.2
- pyxdg 0.27
- qdarkstyle 3.0.2
- qt 5.15.2
- qtawesome 1.0.2

- qtconsole 5.1.1
- qtpy 1.10.0
- rtree 0.9.7
- secretstorage 3.3.1
- spyder 5.1.5
- spyder-kernels 2.1.3
- textdistance 4.2.1
- three-merge 0.1.1
- ujson 4.0.2
- watchdog 1.0.2
- wurlitzer 2.0.1
- yapf 0.31.0

### Removed:

- libllvm10
- zfp

### More changes specific to linux-ppc64le

### Updated:

- bitarray 1.9.2 -> 2.3.0
- cryptography 3.4.7 -> 3.4.8
- distributed 2021.4.0 -> 2021.10.0
- docutils 0.17 -> 0.17.1
- expat 2.3.0 -> 2.4.1
- fsspec 0.9.0 -> 2021.8.1
- giflib 5.1.4 -> 5.2.1
- glib 2.68.1 -> 2.69.1
- h5py 2.10.0 -> 3.2.1
- imagecodecs 2021.3.31 -> 2021.8.26
- jupyter\_client 6.1.12 -> 7.0.1
- lerc 2.2.1 -> 3.0
- libdeflate 1.7 -> 1.8
- libedit 3.1.20210216 -> 3.1.20210910
- libopenblas 0.3.10 -> 0.3.13
- libwebp 1.0.1 -> 1.2.0
- markupsafe 1.1.1 -> 2.0.1
- ncurses 6.2 -> 6.3

- openblas 0.3.10 -> 0.3.13
- openblas-devel 0.3.10 -> 0.3.13
- openjpeg 2.3.0 -> 2.4.0
- patchelf 0.12 -> 0.13
- pcre 8.44 -> 8.45
- scikit-image 0.18.1 -> 0.18.3
- scikit-learn 0.24.1 -> 0.24.2
- scipy 1.6.2 -> 1.7.1
- sqlalchemy 1.4.7 -> 1.4.22
- statsmodels 0.12.2 -> 0.13.0
- tiff file 2021.4.8 -> 2021.7.2

**Added:**

- cfitsio 3.470
- libnghttp2 1.41.0
- tbb 2021.4.0

**More changes specific to win-32****Updated:**

- bitarray 1.9.2 -> 2.3.0
- comtypes 1.1.9 -> 1.1.10
- distributed 2021.4.0 -> 2021.10.0
- docutils 0.17 -> 0.17.1
- fsspec 0.9.0 -> 2021.10.1
- h5py 2.10.0 -> 3.2.1
- menuinst 1.4.16 -> 1.4.18
- scikit-learn 0.23.2 -> 0.24.2
- sqlalchemy 1.4.7 -> 1.4.22
- tbb 2020.0 -> 2021.4.0
- xlwings 0.23.0 -> 0.24.9

**Added:**

- brotli 1.0.9
- libwebp 1.2.0

**Removed:**

- libsodium
- zeromq

## More changes specific to win-64

### Updated:

- bitarray 1.9.2 -> 2.3.0
- comtypes 1.1.9 -> 1.1.10
- cryptography 3.4.7 -> 3.4.8
- distributed 2021.4.0 -> 2021.10.0
- docutils 0.17 -> 0.17.1
- fsspec 0.9.0 -> 2021.10.1
- h5py 2.10.0 -> 3.2.1
- imagecodecs 2021.3.31 -> 2021.8.26
- lerc 2.2.1 -> 3.0
- libdeflate 1.7 -> 1.8
- menuinst 1.4.16 -> 1.4.18
- openjpeg 2.3.0 -> 2.4.0
- scikit-image 0.18.1 -> 0.18.3
- scikit-learn 0.24.1 -> 0.24.2
- scipy 1.6.2 -> 1.7.1
- sqlalchemy 1.4.7 -> 1.4.22
- tbb 2020.3 -> 2021.4.0
- tiff file 2021.4.8 -> 2021.7.2
- xlwings 0.23.0 -> 0.24.9

### Added:

- cfitsio 3.470
- daal4py 2021.3.0
- dal 2021.3.0
- libwebp 1.2.0
- scikit-learn-intelex 2021.3.0

### Removed:

- libsodium
- zeromq

## More changes specific to osx-64

### Updated:

- bitarray 1.9.2 -> 2.3.0
- cryptography 3.4.7 -> 3.4.8
- distributed 2021.4.0 -> 2021.10.0
- docutils 0.17 -> 0.17.1
- expat 2.3.0 -> 2.4.1
- fsspec 0.9.0 -> 2021.8.1
- giflib 5.1.4 -> 5.2.1
- glib 2.68.1 -> 2.69.1
- h5py 2.10.0 -> 3.2.1
- imagecodecs 2021.3.31 -> 2021.8.26
- lerc 2.2.1 -> 3.0
- libcxx 10.0.0 -> 12.0.0
- libdeflate 1.7 -> 1.8
- libedit 3.1.20210216 -> 3.1.20210910
- libwebp 1.0.1 -> 1.2.0
- llvm-openmp 10.0.0 -> 12.0.0
- ncurses 6.2 -> 6.3
- openjpeg 2.3.0 -> 2.4.0
- pcre 8.44 -> 8.45
- scikit-image 0.18.1 -> 0.18.3
- scikit-learn 0.24.1 -> 0.24.2
- scipy 1.6.2 -> 1.7.1
- sqlalchemy 1.4.7 -> 1.4.22
- tbb 2020.3 -> 2021.4.0
- tiffle 2021.4.8 -> 2021.7.2
- wurlitzer 2.1.0 -> 2.1.1
- xlwings 0.23.0 -> 0.24.9

### Added:

- cfitsio 3.470
- daal4py 2021.3.0
- dal 2021.3.0
- libllvm11 11.1.0
- libnghttp2 1.41.0
- mpi 1.0

- mpich 3.3.2
- scikit-learn-intelex 2021.3.0

### Removed:

- libllvm10

## Anaconda 2021.05 (May 13, 2021)

### User-facing changes

- Anaconda Navigator has been updated to 2.0.3
- Conda has been updated to 4.10.1
- Added support for the 64-bit AWS Graviton2 (ARM64) platform
- Added support for the 64-bit Linux on IBM Z & LinuxONE (s390x) platform
- Meta-packages are available for Python 3.7, 3.8 and 3.9. The installer uses Python 3.8.
- EULA has been updated to include a more complete cryptography list
- On macOS, all available shells are now initialized for conda as part of the default macOS .pkg installation.

### Changes for all x86 platforms

#### Updated:

- anaconda-project 0.8.4 -> 0.9.1
- astroid 2.4.2 -> 2.5
- astropy 4.0.2 -> 4.2.1
- autopep8 1.5.4 -> 1.5.6
- babel 2.8.1 -> 2.9.0
- bleach 3.2.1 -> 3.3.0
- blosc 1.20.1 -> 1.21.0
- bokeh 2.2.3 -> 2.3.2
- ca-certificates 2020.10.14 -> 2021.4.13
- certifi 2020.6.20 -> 2020.12.5
- cffi 1.14.3 -> 1.14.5
- chardet 3.0.4 -> 4.0.0
- cython 0.29.21 -> 0.29.23
- dask 2.30.0 -> 2021.4.0
- dask-core 2.30.0 -> 2021.4.0
- decorator 4.4.2 -> 5.0.6
- defusedxml 0.6.0 -> 0.7.1
- flake8 3.8.4 -> 3.9.0

- fsspec 0.8.3 -> 0.9.0
- gevent 20.9.0 -> 21.1.2
- greenlet 0.4.17 -> 1.0.0
- hdf5 1.10.4 -> 1.10.6
- importlib-metadata 2.0.0 -> 3.10.0
- importlib\_metadata 2.0.0 -> 3.10.0
- ipython 7.19.0 -> 7.22.0
- ipywidgets 7.5.1 -> 7.6.3
- isort 5.6.4 -> 5.8.0
- jedi 0.17.1 -> 0.17.2
- jinja2 2.11.2 -> 2.11.3
- joblib 0.17.0 -> 1.0.1
- jupyter\_client 6.1.7 -> 6.1.12
- jupyter\_console 6.2.0 -> 6.4.0
- jupyter\_core 4.6.3 -> 4.7.1
- jupyterlab 2.2.6 -> 3.0.14
- jupyterlab\_server 1.2.0 -> 2.4.0
- keyring 21.4.0 -> 22.3.0
- kiwisolver 1.3.0 -> 1.3.1
- lazy-object-proxy 1.4.3 -> 1.6.0
- libtiff 4.1.0 -> 4.2.0
- llvmlite 0.34.0 -> 0.36.0
- locket 0.2.0 -> 0.2.1
- lxml 4.6.1 -> 4.6.3
- lz4-c 1.9.2 -> 1.9.3
- mkl\_fft 1.2.0 -> 1.3.0
- mkl\_random 1.1.1 -> 1.2.1
- mock 4.0.2 -> 4.0.3
- more-itertools 8.6.0 -> 8.7.0
- mpmath 1.1.0 -> 1.2.1
- msgpack-python 1.0.0 -> 1.0.2
- nbclient 0.5.1 -> 0.5.3
- nbformat 5.0.8 -> 5.1.3
- nest-asyncio 1.4.2 -> 1.5.1
- nltk 3.5 -> 3.6.1
- notebook 6.1.4 -> 6.3.0

- numba 0.51.2 -> 0.53.1
- numexpr 2.7.1 -> 2.7.3
- numpy 1.19.2 -> 1.20.1
- numpy-base 1.19.2 -> 1.20.1
- openpyxl 3.0.5 -> 3.0.7
- openssl 1.1.1h -> 1.1.1k
- packaging 20.4 -> 20.9
- pandas 1.1.3 -> 1.2.4
- partd 1.1.0 -> 1.2.0
- path 15.0.0 -> 15.1.2
- pillow 8.0.1 -> 8.2.0
- pip 20.2.4 -> 21.0.1
- pkginfo 1.6.1 -> 1.7.0
- prometheus\_client 0.8.0 -> 0.10.1
- prompt-toolkit 3.0.8 -> 3.0.17
- prompt\_toolkit 3.0.8 -> 3.0.17
- psutil 5.7.2 -> 5.8.0
- py 1.9.0 -> 1.10.0
- pydocstyle 5.1.1 -> 6.0.0
- pygments 2.7.2 -> 2.8.1
- pylint 2.6.0 -> 2.7.4
- pyopenssl 19.1.0 -> 20.0.1
- pytest 6.1.1 -> 6.2.3
- python 3.8.5 -> 3.9.4
- python-language-server 0.35.1 -> 0.36.2
- pytz 2020.1 -> 2021.1
- pyyaml 5.3.1 -> 5.4.1
- pyzmq 19.0.2 -> 20.0.0
- qtawesome 1.0.1 -> 1.0.2
- qtconsole 4.7.7 -> 5.0.3
- regex 2020.10.15 -> 2021.4.4
- requests 2.24.0 -> 2.25.1
- rtree 0.9.4 -> 0.9.7
- ruamel\_yaml 0.15.87 -> 0.15.100
- scipy 1.5.2 -> 1.6.2
- seaborn 0.11.0 -> 0.11.1



- setuptools 50.3.1 -> 52.0.0
- singledispatch 3.4.0.3 -> 3.6.1
- snowballstemmer 2.0.0 -> 2.1.0
- sortedcollections 1.2.1 -> 2.1.0
- sortedcontainers 2.2.2 -> 2.3.0
- soupsieve 2.0.1 -> 2.2.1
- sphinx 3.2.1 -> 4.0.1
- spyder 4.1.5 -> 4.2.5
- spyder-kernels 1.9.4 -> 1.10.2
- sqlite 3.33.0 -> 3.35.4
- statsmodels 0.12.0 -> 0.12.2
- sympy 1.6.2 -> 1.8
- terminado 0.9.1 -> 0.9.4
- toml 0.10.1 -> 0.10.2
- tornado 6.0.4 -> 6.1
- tqdm 4.50.2 -> 4.59.0
- typed-ast 1.4.1 -> 1.4.2
- ujson 4.0.1 -> 4.0.2
- urllib3 1.25.11 -> 1.26.4
- watchdog 0.10.3 -> 1.0.2
- wheel 0.35.1 -> 0.36.2
- wrapt 1.11.2 -> 1.12.1
- xlrd 1.2.0 -> 2.0.1
- xlswriter 1.3.7 -> 1.3.8
- yapf 0.30.0 -> 0.31.0
- zipp 3.4.0 -> 3.4.1

**Added:**

- anyio 2.2.0
- appdirs 1.4.4
- black 19.10b0
- jupyter-packaging 0.7.12
- jupyter\_server 1.4.1
- jupyterlab\_widgets 1.0.0
- mypy\_extensions 0.4.3
- nbclassic 0.2.6
- pathspec 0.7.0

- pyerfa 1.7.3
- pyls-black 0.4.6
- pyls-spyder 0.3.2
- sniffio 1.2.0
- textdistance 4.2.1
- three-merge 0.1.1
- tzdata 2020f

### Removed:

- pathtools

### More changes specific to linux-64

### Updated:

- bitarray 1.6.1 -> 2.1.0
- cairo 1.14.12 -> 1.16.0
- cryptography 3.1.1 -> 3.4.7
- distributed 2.30.1 -> 2021.4.1
- docutils 0.16 -> 0.17.1
- expat 2.2.10 -> 2.3.0
- fontconfig 2.13.0 -> 2.13.1
- glib 2.66.1 -> 2.68.1
- gmp 6.1.2 -> 6.2.1
- harfbuzz 2.4.0 -> 2.8.0
- intel-openmp 2020.2 -> 2021.2.0
- jeepney 0.5.0 -> 0.6.0
- lcms2 2.11 -> 2.12
- libedit 3.1.20191231 -> 3.1.20210216
- matplotlib 3.3.2 -> 3.3.4
- matplotlib-base 3.3.2 -> 3.3.4
- mkl 2020.2 -> 2021.2.0
- pandoc 2.11 -> 2.12
- ptyprocess 0.6.0 -> 0.7.0
- readline 8.0 -> 8.1
- scikit-image 0.17.2 -> 0.18.1
- scikit-learn 0.23.2 -> 0.24.1
- secretstorage 3.1.2 -> 3.3.1
- sqlalchemy 1.3.20 -> 1.4.15

- tiffle 2020.10.1 -> 2021.4.8
- wurlitzer 2.0.1 -> 2.1.0
- zeromq 4.3.3 -> 4.3.4
- zope.interface 5.1.2 -> 5.3.0

**Added:**

- brotli 1.0.9
- brunsli 0.1
- c-ares 1.17.1
- charls 2.2.0
- giflib 5.1.4
- imagecodecs 2021.3.31
- jxrllib 1.1
- lerc 2.2.1
- libaec 1.0.4
- libdeflate 1.7
- libev 4.33
- libuv 1.40.0
- libwebp 1.0.1
- libwebp-base 1.2.0
- libzopfli 1.0.3
- openjpeg 2.3.0
- snappy 1.1.8
- zfp 0.5.5

**More changes specific to linux-s390x****Added:**

- \_libgcc\_mutex 0.1
- \_openmp\_mutex 4.5
- alabaster 0.7.12
- anaconda-client 1.7.2
- anaconda-project 0.9.1
- argon2-cffi 20.1.0
- asn1crypto 1.4.0
- astroid 2.4.2
- astropy 4.2.1
- async\_generator 1.10

- attrs 20.3.0
- babel 2.9.0
- backcall 0.2.0
- backports 1.0
- backports.shutil\_get\_terminal\_size 1.0.0
- beautifulsoup4 4.9.3
- bitarray 1.6.1
- bkcharts 0.2
- blas 1.0
- bleach 3.3.0
- blosc 1.21.0
- bokeh 2.3.1
- bottleneck 1.3.2
- brotli 1.0.9
- brotlipy 0.7.0
- bzip2 1.0.8
- c-ares 1.17.1
- ca-certificates 2021.4.13
- cairo 1.16.0
- certifi 2020.12.5
- cffi 1.14.5
- chardet 4.0.0
- click 7.1.2
- cloudpickle 1.6.0
- clyent 1.2.2
- colorama 0.4.4
- contextlib2 0.6.0.post1
- cryptography 3.4.7
- curl 7.71.1
- cycler 0.10.0
- cython 0.29.23
- cytoolz 0.11.0
- dask 2021.4.0
- dask-core 2021.4.0
- dbus 1.13.18
- decorator 5.0.6

- defusedxml 0.7.1
- distributed 2021.4.0
- docutils 0.17
- entrypoints 0.3
- et\_xmlfile 1.0.1
- expat 2.3.0
- fastcache 1.1.0
- filelock 3.0.12
- flask 1.1.2
- fontconfig 2.13.1
- freetype 2.10.4
- fribidi 1.0.10
- fsspec 0.9.0
- get\_terminal\_size 1.0.0
- gevent 21.1.2
- giflib 5.2.1
- glib 2.68.1
- glob2 0.7
- gmp 6.2.1
- gmpy2 2.0.8
- graphite2 1.3.14
- greenlet 1.0.0
- h5py 2.10.0
- harfbuzz 2.8.0
- hdf5 1.10.6
- heapdict 1.0.1
- html5lib 1.1
- icu 68.1
- idna 2.10
- imagecodecs 2021.1.11
- imageio 2.9.0
- imagesize 1.2.0
- importlib-metadata 3.10.0
- importlib\_metadata 3.10.0
- iniconfig 1.1.1
- ipykernel 5.3.4

- ipython 7.22.0
- ipython\_genutils 0.2.0
- ipywidgets 7.6.3
- isort 5.8.0
- itsdangerous 1.1.0
- jbig 2.1
- jdcal 1.4.1
- jedi 0.17.2
- jinja2 2.11.3
- joblib 1.0.1
- jpeg 9b0
- json5 0.9.5
- jsonschema 3.2.0
- jupyter 1.0.0
- jupyter\_client 6.1.12
- jupyter\_console 6.4.0
- jupyter\_core 4.7.1
- jupyterlab 2.3.1
- jupyterlab\_pygments 0.1.2
- jupyterlab\_server 1.2.0
- jxrlib 1.1
- kiwisolver 1.3.1
- krb5 1.18.2
- lazy-object-proxy 1.4.3
- lcms2 2.12
- ld\_impl\_linux-s390x 2.33.1
- libaec 1.0.4
- libarchive 3.4.2
- libcurl 7.71.1
- libdeflate 1.7
- libedit 3.1.20210216
- libev 4.33
- libffi 3.3
- libgcc-ng 9.3.0
- libgfortran-ng 7.5.0
- libgfortran4 7.5.0

- libgomp 9.3.0
- liblief 0.10.1
- libopenblas 0.3.13
- libpng 1.6.37
- libsodium 1.0.18
- libssh2 1.9.0
- libstdcxx-ng 9.3.0
- libtiff 4.2.0
- libtool 2.4.6
- libuuid 1.0.3
- libuv 1.40.0
- libwebp 1.2.0
- libxcb 1.14
- libxml2 2.9.10
- libxslt 1.1.34
- libzopfli 1.0.3
- locket 0.2.1
- lxml 4.6.3
- lz4-c 1.9.3
- lzo 2.10
- markupsafe 1.1.1
- matplotlib 3.3.4
- matplotlib-base 3.3.4
- mccabe 0.6.1
- mistune 0.8.4
- mock 4.0.3
- more-itertools 8.7.0
- mpc 1.1.0
- mpfr 4.0.2
- mpmath 1.2.1
- msgpack-python 1.0.2
- multipledispatch 0.6.0
- nbclient 0.5.3
- nbconvert 6.0.7
- nbformat 5.1.3
- ncurses 6.2

- nest-asyncio 1.5.1
- networkx 2.5
- nltk 3.6.1
- nomkl 3.0
- nose 1.3.7
- notebook 6.3.0
- numexpr 2.7.3
- numpy 1.20.1
- numpy-base 1.20.1
- numpydoc 1.1.0
- olefile 0.46
- openblas 0.3.13
- openblas-devel 0.3.13
- openjpeg 2.3.0
- openpyxl 3.0.7
- openssl 1.1.1k
- packaging 20.9
- pandas 1.2.4
- pandoc 1.16.0
- pandocfilters 1.4.3
- pango 1.45.3
- parso 0.7.0
- partd 1.2.0
- patchelf 0.12
- path 15.1.2
- path.py 12.5.0
- pathlib2 2.3.5
- patsy 0.5.1
- pcre 8.44
- pep8 1.7.1
- pexpect 4.8.0
- pickleshare 0.7.5
- pillow 8.2.0
- pip 21.0.1
- pixman 0.40.0
- pkginfo 1.7.0



- pluggy 0.13.1
- ply 3.11
- prometheus\_client 0.10.1
- prompt-toolkit 3.0.17
- prompt\_toolkit 3.0.17
- psutil 5.8.0
- ptyprocess 0.7.0
- py 1.10.0
- py-lief 0.10.1
- pycodestyle 2.7.0
- pycosat 0.6.3
- pycparser 2.20
- pycrypto 2.6.1
- pycurl 7.43.0.6
- pyerfa 1.7.1.1
- pyflakes 2.3.1
- pygments 2.8.1
- pylint 2.7.4
- pyodbc 4.0.30
- pyopenssl 20.0.1
- pyparsing 2.4.7
- pyrsistent 0.17.3
- pysocks 1.7.1
- pytables 3.6.1
- pytest 6.2.3
- python 3.9.4
- python-dateutil 2.8.1
- python-libarchive-c 2.9
- pytz 2021.1
- pywavelets 1.1.1
- pyyaml 5.4.1
- pyzmq 20.0.0
- readline 8.1
- regex 2021.4.4
- requests 2.25.1
- rope 0.18.0

- ruamel\_yaml 0.15.80
- scikit-image 0.18.1
- scikit-learn 0.24.1
- scipy 1.6.2
- seaborn 0.11.1
- send2trash 1.5.0
- setuptools 51.1.2
- simplegeneric 0.8.1
- singledispatch 3.6.1
- sip 4.19.25
- six 1.15.0
- snappy 1.1.8
- snowballstemmer 2.1.0
- sortedcollections 2.1.0
- sortedcontainers 2.3.0
- soupsieve 2.2.1
- sphinx 4.0.1
- sphinxcontrib 1.0
- sphinxcontrib-applehelp 1.0.2
- sphinxcontrib-devhelp 1.0.2
- sphinxcontrib-htmlhelp 1.0.3
- sphinxcontrib-jsmath 1.0.1
- sphinxcontrib-qthelp 1.0.3
- sphinxcontrib-serializinghtml 1.1.4
- sphinxcontrib-websupport 1.2.4
- sqlalchemy 1.3.17
- sqlite 3.35.4
- statsmodels 0.12.2
- sympy 1.8
- tblib 1.7.0
- terminado 0.9.4
- testpath 0.4.4
- threadpoolctl 2.1.0
- tiffle 2021.3.31
- tk 8.6.10
- toml 0.10.2

- toolz 0.11.1
- tornado 6.1
- tqdm 4.59.0
- traitlets 5.0.5
- typed-ast 1.4.2
- typing\_extensions 3.7.4.3
- unicodescv 0.14.1
- unixodbc 2.3.9
- urllib3 1.26.4
- wcwidth 0.2.5
- webencodings 0.5.1
- werkzeug 1.0.1
- wheel 0.36.2
- widgetsnbextension 3.5.1
- wrapt 1.11.2
- xlrd 2.0.1
- xlswriter 1.3.8
- xlwt 1.3.0
- xz 5.2.5
- yaml 0.1.7
- zeromq 4.3.4
- zict 2.0.0
- zipp 3.4.1
- zlib 1.2.11
- zope 1.0
- zope.event 4.5.0
- zope.interface 5.2.0
- zstd 1.4.9

### More changes specific to linux-aarch64

#### Added:

- \_libgcc\_mutex 0.1
- \_openmp\_mutex 5.1
- alabaster 0.7.12
- anaconda-client 1.7.2
- anaconda-project 0.9.1

- argon2-cffi 20.1.0
- asn1crypto 1.4.0
- astroid 2.5
- astropy 4.2.1
- async\_generator 1.10
- attrs 20.3.0
- babel 2.9.0
- backcall 0.2.0
- backports 1.0
- backports.shutil\_get\_terminal\_size 1.0.0
- beautifulsoup4 4.9.3
- bitarray 1.7.0
- bkcharts 0.2
- blas 1.0
- bleach 3.3.0
- blosc 1.21.0
- bokeh 2.3.1
- boto 2.49.0
- bottleneck 1.3.2
- brotli 1.0.9
- brotlipy 0.7.0
- brunli 0.1
- bzip2 1.0.8
- c-ares 1.17.1
- ca-certificates 2021.4.13
- cached-property 1.5.2
- cairo 1.16.0
- certifi 2020.12.5
- cffi 1.14.5
- chardet 4.0.0
- charls 2.2.0
- click 7.1.2
- cloudpickle 1.6.0
- clyent 1.2.2
- colorama 0.4.4
- contextlib2 0.6.0.post1

- cryptography 3.4.7
- curl 7.71.1
- cycler 0.10.0
- cython 0.29.23
- cytoolz 0.11.0
- dask 2021.4.0
- dask-core 2021.4.0
- dbus 1.13.18
- decorator 5.0.6
- defusedxml 0.7.1
- distributed 2021.4.0
- docutils 0.17
- entrypoints 0.3
- et\_xmlfile 1.0.1
- expat 2.3.0
- fastcache 1.1.0
- filelock 3.0.12
- flask 1.1.2
- fontconfig 2.13.1
- freetype 2.10.4
- fribidi 1.0.10
- fsspec 0.9.0
- get\_terminal\_size 1.0.0
- gevent 21.1.2
- giflib 5.2.1
- glib 2.68.1
- glob2 0.7
- gmp 6.2.1
- gmpy2 2.0.8
- graphite2 1.3.14
- greenlet 1.0.0
- gst-plugins-base 1.14.1
- gstreamer 1.14.1
- h5py 3.1.0
- harfbuzz 2.8.0
- hdf5 1.12.0

- heapdict 1.0.1
- html5lib 1.1
- icu 68.1
- idna 2.10
- imagecodecs 2021.1.11
- imageio 2.9.0
- imagesize 1.2.0
- importlib-metadata 2.0.0
- importlib\_metadata 2.0.0
- iniconfig 1.1.1
- ipykernel 5.3.4
- ipython 7.22.0
- ipython\_genutils 0.2.0
- ipywidgets 7.6.3
- isort 5.8.0
- itsdangerous 1.1.0
- jbig 2.1
- jdcal 1.4.1
- jedi 0.17.2
- jinja2 2.11.3
- joblib 1.0.1
- jpeg 9d
- json5 0.9.5
- jsonschema 3.2.0
- jupyter 1.0.0
- jupyter\_client 6.1.12
- jupyter\_console 6.4.0
- jupyter\_core 4.7.1
- jupyterlab 3.0.14
- jupyterlab\_pygments 0.1.2
- jupyterlab\_server 2.4.0
- jxrllib 1.1
- kiwisolver 1.3.1
- krb5 1.19.1
- lazy-object-proxy 1.6.0
- lcms2 2.11

- `ld_impl_linux-aarch64` 2.36.1
- `lerc` 2.2.1
- `libaec` 1.0.4
- `libarchive` 3.4.2
- `libcurl` 7.71.1
- `libdeflate` 1.7
- `libedit` 3.1.20210216
- `libev` 4.33
- `libffi` 3.3
- `libgcc-ng` 10.2.0
- `libgfortran-ng` 10.2.0
- `libgfortran5` 10.2.0
- `libgomp` 10.2.0
- `liblief` 0.10.1
- `libllvm10` 10.0.1
- `libopenblas` 0.3.13
- `libpng` 1.6.37
- `libsodium` 1.0.18
- `libssh2` 1.9.0
- `libstdcxx-ng` 10.2.0
- `libtiff` 4.1.0
- `libtool` 2.4.6
- `libuuid` 1.0.3
- `libuv` 1.40.0
- `libwebp` 1.2.0
- `libxcb` 1.14
- `libxml2` 2.9.10
- `libxslt` 1.1.34
- `libzopfli` 1.0.3
- `llvmlite` 0.36.0
- `locket` 0.2.1
- `lxml` 4.6.3
- `lz4-c` 1.9.3
- `lzo` 2.10
- `markupsafe` 1.1.1
- `matplotlib` 3.3.4

- matplotlib-base 3.3.4
- mccabe 0.6.1
- mistune 0.8.4
- mock 4.0.3
- more-itertools 8.7.0
- mpc 1.1.0
- mpfr 4.0.2
- mpmath 1.2.1
- msgpack-python 1.0.2
- multipledispatch 0.6.0
- nbclient 0.5.3
- nbconvert 6.0.7
- nbformat 5.1.3
- ncurses 6.2
- nest-asyncio 1.5.1
- networkx 2.5
- nltk 3.6.1
- nomkl 3.0
- nose 1.3.7
- notebook 6.3.0
- numba 0.53.1
- numexpr 2.7.3
- numpy 1.20.1
- numpy-base 1.20.1
- numpydoc 1.1.0
- olefile 0.46
- openblas 0.3.13
- openblas-devel 0.3.13
- openjpeg 2.3.0
- openpyxl 3.0.7
- openssl 1.1.1k
- packaging 20.9
- pandas 1.2.4
- pandoc 2.12
- pandocfilters 1.4.3
- pango 1.45.3



- parso 0.7.0
- partd 1.2.0
- patchelf 0.11
- path 15.1.2
- path.py 12.5.0
- pathlib2 2.3.5
- patsy 0.5.1
- pcre 8.44
- pep8 1.7.1
- pexpect 4.8.0
- pickleshare 0.7.5
- pillow 8.2.0
- pip 21.0.1
- pixman 0.40.0
- pkginfo 1.7.0
- pluggy 0.13.1
- ply 3.11
- prometheus\_client 0.10.1
- prompt-toolkit 3.0.17
- prompt\_toolkit 3.0.17
- psutil 5.8.0
- ptyprocess 0.7.0
- py 1.10.0
- py-lief 0.10.1
- pycodestyle 2.7.0
- pycosat 0.6.3
- pycparser 2.20
- pycrypto 2.6.1
- pycurl 7.43.0.6
- pyerfa 1.7.2
- pyflakes 2.3.1
- pygments 2.8.1
- pylint 2.7.4
- pyodbc 4.0.30
- pyopenssl 20.0.1
- pyparsing 2.4.7

- pyrsistent 0.17.3
- pysocks 1.7.1
- pytables 3.6.1
- pytest 6.2.3
- python 3.9.4
- python-dateutil 2.8.1
- python-libarchive-c 2.9
- pytz 2021.1
- pywavelets 1.1.1
- pyyaml 5.4.1
- pyzmq 20.0.0
- readline 8.1
- regex 2021.4.4
- requests 2.25.1
- rope 0.18.0
- ruamel\_yaml 0.15.80
- scikit-image 0.18.1
- scikit-learn 0.24.1
- scipy 1.6.2
- seaborn 0.11.1
- send2trash 1.5.0
- setuptools 52.0.0
- simplegeneric 0.8.1
- singledispatch 3.6.1
- sip 4.19.25
- six 1.15.0
- snappy 1.1.8
- snowballstemmer 2.1.0
- sortedcollections 2.1.0
- sortedcontainers 2.3.0
- soupsieve 2.2.1
- sphinx 4.0.1
- sphinxcontrib 1.0
- sphinxcontrib-applehelp 1.0.2
- sphinxcontrib-devhelp 1.0.2
- sphinxcontrib-htmlhelp 1.0.3

- sphinxcontrib-jsmath 1.0.1
- sphinxcontrib-qthelp 1.0.3
- sphinxcontrib-serializinghtml 1.1.4
- sphinxcontrib-websupport 1.2.4
- sqlalchemy 1.3.23
- sqlite 3.35.4
- statsmodels 0.12.2
- sympy 1.8
- tbb 2020.2
- tblib 1.7.0
- terminado 0.9.4
- testpath 0.4.4
- threadpoolctl 2.1.0
- tiff file 2021.3.31
- tk 8.6.10
- toml 0.10.2
- toolz 0.11.1
- tornado 6.1
- tqdm 4.59.0
- traitlets 5.0.5
- typed-ast 1.4.2
- typing\_extensions 3.7.4.3
- unicodesv 0.14.1
- unixodbc 2.3.9
- urllib3 1.26.4
- wcwidth 0.2.5
- webencodings 0.5.1
- werkzeug 1.0.1
- wheel 0.36.2
- widgetsnextension 3.5.1
- wrapt 1.12.1
- xlrd 2.0.1
- xlswriter 1.3.8
- xlwt 1.3.0
- xz 5.2.5
- yaml 0.1.7

- zeromq 4.3.4
- zfp 0.5.5
- zict 2.0.0
- zipp 3.4.1
- zlib 1.2.11
- zope 1.0
- zope.event 4.5.0
- zope.interface 5.2.0
- zstd 1.4.9

### More changes specific to linux-ppc64le

#### Updated:

- bitarray 1.6.1 -> 1.9.2
- cairo 1.14.12 -> 1.16.0
- cryptography 3.1.1 -> 3.4.7
- distributed 2.30.1 -> 2021.4.0
- docutils 0.16 -> 0.17
- expat 2.2.10 -> 2.3.0
- fontconfig 2.13.0 -> 2.13.1
- glib 2.66.1 -> 2.68.1
- gmp 6.1.2 -> 6.2.1
- jupyter\_core 4.6.1 -> 4.7.1
- lcms2 2.11 -> 2.12
- libedit 3.1.20191231 -> 3.1.20210216
- matplotlib 3.3.2 -> 3.3.4
- matplotlib-base 3.3.2 -> 3.3.4
- ptyprocess 0.6.0 -> 0.7.0
- pycodestyle 2.6.0 -> 2.7.0
- pyflakes 2.2.0 -> 2.3.1
- readline 8.0 -> 8.1
- scikit-image 0.17.2 -> 0.18.1
- scikit-learn 0.23.2 -> 0.24.1
- sqlalchemy 1.3.20 -> 1.4.7
- tiff file 2020.10.1 -> 2021.4.8
- zeromq 4.3.3 -> 4.3.4
- zope.interface 5.1.2 -> 5.3.0

**Added:**

- brotli 1.0.9
- brunsli 0.1
- c-ares 1.17.1
- charls 2.2.0
- giflib 5.1.4
- imagecodecs 2021.3.31
- jxrllib 1.1
- lerc 2.2.1
- libaec 1.0.4
- libdeflate 1.7
- libev 4.33
- libuv 1.40.0
- libwebp 1.0.1
- libwebp-base 1.2.0
- libzopfli 1.0.3
- openjpeg 2.3.0
- snappy 1.1.8
- zfp 0.5.5

**More changes specific to win-32****Updated:**

- bitarray 1.6.1 -> 1.9.2
- comtypes 1.1.7 -> 1.1.9
- cryptography 3.1 -> 3.4.7
- distributed 2.30.1 -> 2021.4.0
- docutils 0.16 -> 0.17
- intel-openmp 2020.2 -> 2021.2.0
- libspatialindex 1.8.5 -> 1.9.3
- matplotlib 3.3.1 -> 3.3.4
- matplotlib-base 3.3.1 -> 3.3.4
- mkl 2020.2 -> 2021.2.0
- pywin32 227 -> 228
- sqlalchemy 1.3.20 -> 1.4.7
- vc 14.1 -> 14.2
- vs2015\_runtime 14.16.27012 -> 14.27.29016

- xlwings 0.20.8 -> 0.23.0
- zeromq 4.3.2 -> 4.3.3
- zope.interface 5.1.0 -> 5.3.0

**Added:**

- ptyprocess 0.7.0
- tbb 2020.0

### More changes specific to win-64

**Updated:**

- bitarray 1.6.1 -> 1.9.2
- comtypes 1.1.7 -> 1.1.9
- cryptography 3.1.1 -> 3.4.7
- distributed 2.30.1 -> 2021.4.0
- docutils 0.16 -> 0.17
- intel-openmp 2020.2 -> 2021.2.0
- matplotlib 3.3.2 -> 3.3.4
- matplotlib-base 3.3.2 -> 3.3.4
- mkl 2020.2 -> 2021.2.0
- pandoc 2.11 -> 2.12
- pywin32 227 -> 228
- scikit-image 0.17.2 -> 0.18.1
- scikit-learn 0.23.2 -> 0.24.1
- sqlalchemy 1.3.20 -> 1.4.7
- tiff file 2020.10.1 -> 2021.4.8
- vc 14.1 -> 14.2
- vs2015\_runtime 14.16.27012 -> 14.27.29016
- xlwings 0.20.8 -> 0.23.0
- zeromq 4.3.2 -> 4.3.3
- zope.interface 5.1.2 -> 5.3.0

**Added:**

- brotli 1.0.9
- charls 2.2.0
- giflib 5.2.1
- imagecodecs 2021.3.31
- lcms2 2.12
- lerc 2.2.1

- libaec 1.0.4
- libdeflate 1.7
- libzopfli 1.0.3
- openjpeg 2.3.0
- ptyprocess 0.7.0
- snappy 1.1.8
- tbb 2020.3
- zfp 0.5.5

### More changes specific to osx-64

#### Updated:

- appnope 0.1.0 -> 0.1.2
- appscript 1.1.1 -> 1.1.2
- bitarray 1.6.1 -> 1.9.2
- cryptography 3.1.1 -> 3.4.7
- distributed 2.30.1 -> 2021.4.0
- docutils 0.16 -> 0.17
- expat 2.2.10 -> 2.3.0
- gettext 0.19.8.1 -> 0.21.0
- glib 2.66.1 -> 2.68.1
- gmp 6.1.2 -> 6.2.1
- intel-openmp 2019.4 -> 2021.2.0
- lcms2 2.11 -> 2.12
- libedit 3.1.20191231 -> 3.1.20210216
- matplotlib 3.3.2 -> 3.3.4
- matplotlib-base 3.3.2 -> 3.3.4
- mkl 2019.4 -> 2021.2.0
- pandoc 2.11 -> 2.12
- ptyprocess 0.6.0 -> 0.7.0
- python.app 2 -> 3
- readline 8.0 -> 8.1
- scikit-image 0.17.2 -> 0.18.1
- scikit-learn 0.23.2 -> 0.24.1
- sip 4.19.8 -> 4.19.13
- sqlalchemy 1.3.20 -> 1.4.7
- tiff file 2020.10.1 -> 2021.4.8

- wurlitzer 2.0.1 -> 2.1.0
- xlwings 0.20.8 -> 0.23.0
- zeromq 4.3.3 -> 4.3.4
- zope.interface 5.1.2 -> 5.3.0

### Added:

- brotli 1.0.9
- brunsli 0.1
- c-ares 1.17.1
- charls 2.2.0
- giflib 5.1.4
- imagecodecs 2021.3.31
- jxrllib 1.1
- lerc 2.2.1
- libaec 1.0.4
- libdeflate 1.7
- libev 4.33
- libuv 1.40.0
- libwebp 1.0.1
- libwebp-base 1.2.0
- libzopfli 1.0.3
- openjpeg 2.3.0
- snappy 1.1.8
- tbb 2020.3
- zfp 0.5.5

## Anaconda 2020.11 (Nov 19, 2020)

### User-facing changes

- Anaconda Navigator has been updated to 1.10.0.
- The Python 3.6 meta-package was dropped; meta-packages are now available for Python 3.7 and 3.8 only. The installer uses Python 3.8.
- Update PyCharm text and links in the GUI installers.
- Clarify EULA for [repo.anaconda.com](https://repo.anaconda.com/terms-of-service) terms-of-service.



## Changes for all x86 platforms

### Updated:

- asn1crypto 1.3.0 -> 1.4.0
- astropy 4.0.1.post1 -> 4.0.2
- attrs 19.3.0 -> 20.3.0
- autopep8 1.5.3 -> 1.5.4
- babel 2.8.0 -> 2.8.1
- beautifulsoup4 4.9.1 -> 4.9.3
- bitarray 1.4.0 -> 1.6.1
- bleach 3.1.5 -> 3.2.1
- blosc 1.19.0 -> 1.20.1
- bokeh 2.1.1 -> 2.2.3
- ca-certificates 2020.6.24 -> 2020.10.14
- cffi 1.14.0 -> 1.14.3
- cloudpickle 1.5.0 -> 1.6.0
- colorama 0.4.3 -> 0.4.4
- cytoolz 0.10.1 -> 0.11.0
- dask 2.20.0 -> 2.30.0
- dask-core 2.20.0 -> 2.30.0
- distributed 2.20.0 -> 2.30.1
- flake8 3.8.3 -> 3.8.4
- freetype 2.10.2 -> 2.10.4
- fsspec 0.7.4 -> 0.8.3
- gevent 20.6.2 -> 20.9.0
- greenlet 0.4.16 -> 0.4.17
- intervaltree 3.0.2 -> 3.1.0
- ipykernel 5.3.2 -> 5.3.4
- ipython 7.16.1 -> 7.19.0
- isort 4.3.21 -> 5.6.4
- joblib 0.16.0 -> 0.17.0
- jupyter\_client 6.1.6 -> 6.1.7
- jupyter\_console 6.1.0 -> 6.2.0
- jupyterlab 2.1.5 -> 2.2.6
- keyring 21.2.1 -> 21.4.0
- kiwisolver 1.2.0 -> 1.3.0
- llvmlite 0.33.0 -> 0.34.0

- lxml 4.5.2 -> 4.6.1
- mkl\_fft 1.1.0 -> 1.2.0
- more-itertools 8.4.0 -> 8.6.0
- nbconvert 5.6.1 -> 6.0.7
- nbformat 5.0.7 -> 5.0.8
- networkx 2.4 -> 2.5
- notebook 6.0.3 -> 6.1.4
- numba 0.50.1 -> 0.51.2
- numpy 1.18.5 -> 1.19.2
- numpy-base 1.18.5 -> 1.19.2
- openpyxl 3.0.4 -> 3.0.5
- openssl 1.1.1g -> 1.1.1h
- pandas 1.0.5 -> 1.1.3
- pandocfilters 1.4.2 -> 1.4.3
- path 13.1.0 -> 15.0.0
- path.py 12.4.0 -> 12.5.0
- pillow 7.2.0 -> 8.0.1
- pip 20.1.1 -> 20.2.4
- pkginfo 1.5.0.1 -> 1.6.1
- prompt-toolkit 3.0.5 -> 3.0.8
- prompt\_toolkit 3.0.5 -> 3.0.8
- psutil 5.7.0 -> 5.7.2
- pycurl 7.43.0.5 -> 7.43.0.6
- pydocstyle 5.0.2 -> 5.1.1
- pygments 2.6.1 -> 2.7.2
- pylint 2.5.3 -> 2.6.0
- pyrsistent 0.16.0 -> 0.17.3
- pytest 5.4.3 -> 6.1.1
- python 3.8.3 -> 3.8.5
- python-jsonrpc-server 0.3.4 -> 0.4.0
- python-language-server 0.34.1 -> 0.35.1
- pyzmq 19.0.1 -> 19.0.2
- qtawesome 0.7.2 -> 1.0.1
- qtconsole 4.7.5 -> 4.7.7
- regex 2020.6.8 -> 2020.10.15
- rope 0.17.0 -> 0.18.0

- scikit-learn 0.23.1 -> 0.23.2
- scipy 1.5.0 -> 1.5.2
- seaborn 0.10.1 -> 0.11.0
- setuptools 49.2.0 -> 50.3.1
- sphinx 3.1.2 -> 3.2.1
- sphinxcontrib-websupport 1.2.3 -> 1.2.4
- spyder 4.1.4 -> 4.1.5
- spyder-kernels 1.9.2 -> 1.9.4
- sqlalchemy 1.3.18 -> 1.3.20
- sqlite 3.32.3 -> 3.33.0
- statsmodels 0.11.1 -> 0.12.0
- sympy 1.6.1 -> 1.6.2
- tblib 1.6.0 -> 1.7.0
- terminado 0.8.3 -> 0.9.1
- toolz 0.10.0 -> 0.11.1
- tqdm 4.47.0 -> 4.50.2
- traitlets 4.3.3 -> 5.0.5
- typing\_extensions 3.7.4.2 -> 3.7.4.3
- ujson 1.35 -> 4.0.1
- urllib3 1.25.9 -> 1.25.11
- wheel 0.34.2 -> 0.35.1
- xlswriter 1.2.9 -> 1.3.7
- zipp 3.1.0 -> 3.4.0
- zope.event 4.4 -> 4.5.0

**Added:**

- argon2-cffi 20.1.0
- async\_generator 1.10
- iniconfig 1.1.1
- jupyterlab\_pygments 0.1.2
- nbclient 0.5.1
- nest-asyncio 1.4.2

**Removed:**

- libllvm9
- snappy

## More changes specific to linux-64

### Updated:

- cryptography 2.9.2 -> 3.1.1
- dbus 1.13.16 -> 1.13.18
- expat 2.2.9 -> 2.2.10
- fribidi 1.0.9 -> 1.0.10
- glib 2.65.0 -> 2.66.1
- importlib-metadata 1.7.0 -> 2.0.0
- importlib\_metadata 1.7.0 -> 2.0.0
- intel-openmp 2020.1 -> 2020.2
- jeepney 0.4.3 -> 0.5.0
- matplotlib 3.2.2 -> 3.3.2
- matplotlib-base 3.2.2 -> 3.3.2
- mkl 2020.1 -> 2020.2
- pandoc 2.10 -> 2.11
- patchelf 0.11 -> 0.12
- pyxdg 0.26 -> 0.27
- ripgrep 11.0.2 -> 12.1.1
- scikit-image 0.16.2 -> 0.17.2
- tbb 2020.0 -> 2020.3
- unixodbc 2.3.7 -> 2.3.9
- zeromq 4.3.2 -> 4.3.3
- zope.interface 4.7.1 -> 5.1.2

### Added:

- libllvm10 10.0.1
- tiff file 2020.10.1

## More changes specific to linux-ppc64le

### Updated:

- cryptography 2.9.2 -> 3.1.1
- expat 2.2.9 -> 2.2.10
- glib 2.65.0 -> 2.66.1
- importlib-metadata 1.7.0 -> 2.0.0
- importlib\_metadata 1.7.0 -> 2.0.0
- jedi 0.17.1 -> 0.17.2

- matplotlib 3.2.2 -> 3.3.2
- matplotlib-base 3.2.2 -> 3.3.2
- pandoc 2.2.1 -> 2.11
- patchelf 0.11 -> 0.12
- scikit-image 0.16.2 -> 0.17.2
- unixodbc 2.3.7 -> 2.3.9
- zeromq 4.3.2 -> 4.3.3
- zope.interface 4.7.1 -> 5.1.2

**Added:**

- tiff file 2020.10.1

**More changes specific to win-32****Updated:**

- bcrypt 3.1.7 -> 3.2.0
- cryptography 2.9.2 -> 3.1
- importlib-metadata 1.6.1 -> 2.0.0
- importlib\_metadata 1.6.1 -> 2.0.0
- intel-openmp 2020.1 -> 2020.2
- matplotlib 3.2.2 -> 3.3.1
- matplotlib-base 3.2.2 -> 3.3.1
- mkl 2020.1 -> 2020.2
- pandoc 2.9.2.1 -> 2.11
- paramiko 2.7.1 -> 2.7.2
- xlwings 0.19.5 -> 0.20.8
- zope.interface 4.7.1 -> 5.1.0

**Removed:**

- gmpy2
- mpc
- mpfr
- mpir
- tbb

## More changes specific to win-64

### Updated:

- bcrypt 3.1.7 -> 3.2.0
- cryptography 2.9.2 -> 3.1.1
- importlib-metadata 1.7.0 -> 2.0.0
- importlib\_metadata 1.7.0 -> 2.0.0
- intel-openmp 2020.1 -> 2020.2
- matplotlib 3.2.2 -> 3.3.2
- matplotlib-base 3.2.2 -> 3.3.2
- mkl 2020.1 -> 2020.2
- pandoc 2.10 -> 2.11
- paramiko 2.7.1 -> 2.7.2
- scikit-image 0.16.2 -> 0.17.2
- xlwings 0.19.5 -> 0.20.8
- zope.interface 4.7.1 -> 5.1.2

### Added:

- tiff file 2020.10.1

### Removed:

- gmpy2
- mpc
- mpfr
- mpir
- tbb

## More changes specific to osx-64

### Updated:

- cryptography 2.9.2 -> 3.1.1
- dbus 1.13.16 -> 1.13.18
- expat 2.2.9 -> 2.2.10
- glib 2.65.0 -> 2.66.1
- importlib-metadata 1.7.0 -> 2.0.0
- importlib\_metadata 1.7.0 -> 2.0.0
- matplotlib 3.2.2 -> 3.3.2
- matplotlib-base 3.2.2 -> 3.3.2
- pandoc 2.10 -> 2.11

- ripgrep 11.0.2 -> 12.1.1
- scikit-image 0.16.2 -> 0.17.2
- unixodbc 2.3.7 -> 2.3.9
- xlwings 0.19.5 -> 0.20.8
- zeromq 4.3.2 -> 4.3.3
- zope.interface 4.7.1 -> 5.1.2

**Added:**

- liblvm10 10.0.1
- tiffle 2020.10.1

**Removed:**

- tbb

**Anaconda 2020.07 (July 23, 2020)****User-facing changes**

- The installer and base environment now use Python 3.8. Meta-packages for Python 3.6, 3.7, and 3.8 are also available.
- Fixed an issue where the win-32 installer would install win-64 executables in the base environment.
- Fixed an issue where the Windows installer would hang on systems with >64 cores.
- Update PyCharm text and links in the GUI installers.
- Update EULA to reflect terms-of-service change for repo.anaconda.com

**Backend improvements (non-visible changes)**

- Fixed signing of PyCharm bundle for macOS 10.15

**Changes for all x86 platforms****Updated:**

- astroid 2.3.3 -> 2.4.2
- astropy 4.0 -> 4.0.1.post1
- atomicwrites 1.3.0 -> 1.4.0
- autopep8 1.4.4 -> 1.5.3
- backcall 0.1.0 -> 0.2.0
- beautifulsoup4 4.8.2 -> 4.9.1
- bitarray 1.2.1 -> 1.4.0
- bleach 3.1.0 -> 3.1.5
- blosc 1.16.3 -> 1.19.0

- bokeh 1.4.0 -> 2.1.1
- ca-certificates 2020.1.1 -> 2020.6.24
- certifi 2019.11.28 -> 2020.6.20
- click 7.0 -> 7.1.2
- cloudpickle 1.3.0 -> 1.5.0
- cryptography 2.8 -> 2.9.2
- curl 7.68.0 -> 7.71.1
- cython 0.29.15 -> 0.29.21
- dask 2.11.0 -> 2.20.0
- dask-core 2.11.0 -> 2.20.0
- decorator 4.4.1 -> 4.4.2
- diff-match-patch 20181111 -> 20200713
- distributed 2.11.0 -> 2.20.0
- flake8 3.7.9 -> 3.8.3
- flask 1.1.1 -> 1.1.2
- freetype 2.9.1 -> 2.10.2
- fsspec 0.6.2 -> 0.7.4
- gevent 1.4.0 -> 20.6.2
- greenlet 0.4.15 -> 0.4.16
- html5lib 1.0.1 -> 1.1
- idna 2.8 -> 2.10
- imageio 2.6.1 -> 2.9.0
- ipykernel 5.1.4 -> 5.3.2
- ipython 7.12.0 -> 7.16.1
- jedi 0.14.1 -> 0.17.1
- jinja2 2.11.1 -> 2.11.2
- joblib 0.14.1 -> 0.16.0
- json5 0.9.1 -> 0.9.5
- jupyter\_client 5.3.4 -> 6.1.6
- jupyter\_core 4.6.1 -> 4.6.3
- jupyterlab 1.2.6 -> 2.1.5
- jupyterlab\_server 1.0.6 -> 1.2.0
- keyring 21.1.0 -> 21.2.1
- kiwisolver 1.1.0 -> 1.2.0
- krb5 1.17.1 -> 1.18.2
- libarchive 3.3.3 -> 3.4.2



- libcurl 7.68.0 -> 7.71.1
- liblief 0.9.0 -> 0.10.1
- libsodium 1.0.16 -> 1.0.18
- libxml2 2.9.9 -> 2.9.10
- libxslt 1.1.33 -> 1.1.34
- llvmlite 0.31.0 -> 0.33.0
- lxml 4.5.0 -> 4.5.2
- lz4-c 1.8.1.2 -> 1.9.2
- matplotlib 3.1.3 -> 3.2.2
- matplotlib-base 3.1.3 -> 3.2.2
- mkl\_fft 1.0.15 -> 1.1.0
- mkl\_random 1.1.0 -> 1.1.1
- mock 4.0.1 -> 4.0.2
- more-itertools 8.2.0 -> 8.4.0
- msgpack-python 0.6.1 -> 1.0.0
- nbformat 5.0.4 -> 5.0.7
- nltk 3.4.5 -> 3.5
- numba 0.48.0 -> 0.50.1
- numpy 1.18.1 -> 1.18.5
- numpy-base 1.18.1 -> 1.18.5
- numpydoc 0.9.2 -> 1.1.0
- openpyxl 3.0.3 -> 3.0.4
- openssl 1.1.1d -> 1.1.1g
- packaging 20.1 -> 20.4
- pandas 1.0.1 -> 1.0.5
- parso 0.5.2 -> 0.7.0
- pillow 7.0.0 -> 7.2.0
- pip 20.0.2 -> 20.1.1
- prometheus\_client 0.7.1 -> 0.8.0
- prompt\_toolkit 3.0.3 -> 3.0.5
- psutil 5.6.7 -> 5.7.0
- py 1.8.1 -> 1.9.0
- py-lief 0.9.0 -> 0.10.1
- pycodestyle 2.5.0 -> 2.6.0
- pycparser 2.19 -> 2.20
- pydocstyle 4.0.1 -> 5.0.2

- pyflakes 2.1.1 -> 2.2.0
- pygments 2.5.2 -> 2.6.1
- pylint 2.4.4 -> 2.5.3
- pyparsing 2.4.6 -> 2.4.7
- pyrsistent 0.15.7 -> 0.16.0
- pytest 5.3.5 -> 5.4.3
- python 3.8.1 -> 3.8.3
- python-language-server 0.31.7 -> 0.34.1
- python-libarchive-c 2.8 -> 2.9
- pytz 2019.3 -> 2020.1
- pyyaml 5.3 -> 5.3.1
- pyzmq 18.1.1 -> 19.0.1
- qdarkstyle 2.8 -> 2.8.1
- qtawesome 0.6.1 -> 0.7.2
- qtconsole 4.6.0 -> 4.7.5
- requests 2.22.0 -> 2.24.0
- rope 0.16.0 -> 0.17.0
- rtree 0.9.3 -> 0.9.4
- scikit-learn 0.22.1 -> 0.23.1
- scipy 1.4.1 -> 1.5.0
- seaborn 0.10.0 -> 0.10.1
- six 1.14.0 -> 1.15.0
- snappy 1.1.7 -> 1.1.8
- sortedcollections 1.1.2 -> 1.2.1
- sortedcontainers 2.1.0 -> 2.2.2
- soupsieve 1.9.5 -> 2.0.1
- sphinx 2.4.0 -> 3.1.2
- sphinxcontrib-applehelp 1.0.1 -> 1.0.2
- sphinxcontrib-devhelp 1.0.1 -> 1.0.2
- sphinxcontrib-htmlhelp 1.0.2 -> 1.0.3
- sphinxcontrib-qthelp 1.0.2 -> 1.0.3
- sphinxcontrib-serializinghtml 1.1.3 -> 1.1.4
- sphinxcontrib-websupport 1.2.0 -> 1.2.3
- spyder 4.0.1 -> 4.1.4
- spyder-kernels 1.8.1 -> 1.9.2
- sqlalchemy 1.3.13 -> 1.3.18

- sqlite 3.31.1 -> 3.32.3
- statsmodels 0.11.0 -> 0.11.1
- sympy 1.5.1 -> 1.6.1
- tk 8.6.8 -> 8.6.10
- tornado 6.0.3 -> 6.0.4
- tqdm 4.42.1 -> 4.47.0
- urllib3 1.25.8 -> 1.25.9
- watchdog 0.10.2 -> 0.10.3
- wcwidth 0.1.8 -> 0.2.5
- werkzeug 1.0.0 -> 1.0.1
- xlswriter 1.2.7 -> 1.2.9
- xz 5.2.4 -> 5.2.5
- yaml 0.1.7 -> 0.2.5
- yapf 0.28.0 -> 0.30.0
- zeromq 4.3.1 -> 4.3.2
- zict 1.0.0 -> 2.0.0
- zipp 2.2.0 -> 3.1.0
- zstd 1.3.7 -> 1.4.5

**Added:**

- brotlipy 0.7.0
- contextvars 2.4
- immutables 0.14
- libllvm9 9.0.1
- prompt-toolkit 3.0.5
- regex 2020.6.8
- threadpoolctl 2.1.0
- toml 0.10.1
- typing\_extensions 3.7.4.2
- zope 1.0
- zope.event 4.4
- zope.interface 4.7.1

**Removed:**

- hypothesis
- pytest-arraydiff
- pytest-astropy
- pytest-astropy-header

- pytest-doctestplus
- pytest-openfiles
- pytest-remotedata

### More changes specific to linux-64

#### Updated:

- dbus 1.13.12 -> 1.13.16
- expat 2.2.6 -> 2.2.9
- fribidi 1.0.5 -> 1.0.9
- glib 2.63.1 -> 2.65.0
- graphite2 1.3.13 -> 1.3.14
- harfbuzz 1.8.8 -> 2.4.0
- importlib\_metadata 1.5.0 -> 1.7.0
- intel-openmp 2020.0 -> 2020.1
- jeepney 0.4.2 -> 0.4.3
- libedit 3.1.20181209 -> 3.1.20191231
- libffi 3.2.1 -> 3.3
- libssh2 1.8.2 -> 1.9.0
- libxcb 1.13 -> 1.14
- mkl 2020.0 -> 2020.1
- mpfr 4.0.1 -> 4.0.2
- pandoc 2.2.3.2 -> 2.10
- pango 1.42.4 -> 1.45.3
- patchelf 0.10 -> 0.11
- pcre 8.43 -> 8.44
- pixman 0.38.0 -> 0.40.0
- readline 7.0 -> 8.0
- setuptools 45.2.0 -> 49.2.0
- wurlitzer 2.0.0 -> 2.0.1

#### Added:

- importlib-metadata 1.7.0
- lcms2 2.11

### More changes specific to linux-ppc64le

#### Updated:

- expat 2.2.6 -> 2.2.9
- glib 2.63.1 -> 2.65.0
- importlib\_metadata 1.5.0 -> 1.7.0
- jedi 0.16.0 -> 0.17.1
- libedit 3.1.20181209 -> 3.1.20191231
- libffi 3.2.1 -> 3.3
- libopenblas 0.3.6 -> 0.3.10
- libssh2 1.8.2 -> 1.9.0
- libxcb 1.13 -> 1.14
- mpfr 4.0.1 -> 4.0.2
- openblas 0.3.6 -> 0.3.10
- openblas-devel 0.3.6 -> 0.3.10
- pandoc 2.0.0.1 -> 2.2.1
- parso 0.6.1 -> 0.7.0
- patchelf 0.10 -> 0.11
- pcre 8.43 -> 8.44
- pixman 0.34.0 -> 0.40.0
- readline 7.0 -> 8.0
- setuptools 45.2.0 -> 49.2.0
- zeromq 4.2.5 -> 4.3.2

#### Added:

- importlib-metadata 1.7.0
- lcms2 2.11
- liblief 0.10.1
- py-lief 0.10.1

### More changes specific to win-32

#### Updated:

- importlib\_metadata 1.5.0 -> 1.6.1
- intel-openmp 2020.0 -> 2020.1
- mkl 2020.0 -> 2020.1
- pandoc 2.2.3.2 -> 2.9.2.1
- pynacl 1.3.0 -> 1.4.0

- setuptools 46.0.0 -> 49.2.0
- xlwings 0.17.1 -> 0.19.5

### Added:

- gmpy2 2.0.8
- importlib-metadata 1.6.1
- mpc 1.1.0
- mpfr 4.0.2
- mpir 3.0.0

### More changes specific to win-64

#### Updated:

- importlib\_metadata 1.5.0 -> 1.7.0
- intel-openmp 2020.0 -> 2020.1
- libssh2 1.8.2 -> 1.9.0
- mkl 2020.0 -> 2020.1
- pandoc 2.2.3.2 -> 2.10
- pynacl 1.3.0 -> 1.4.0
- setuptools 45.2.0 -> 49.2.0
- xlwings 0.17.1 -> 0.19.5

#### Added:

- gmpy2 2.0.8
- importlib-metadata 1.7.0
- mpc 1.1.0
- mpfr 4.0.2
- mpir 3.0.0

### More changes specific to osx-64

#### Updated:

- appscript 1.1.0 -> 1.1.1
- dbus 1.13.12 -> 1.13.16
- expat 2.2.6 -> 2.2.9
- glib 2.63.1 -> 2.65.0
- importlib\_metadata 1.5.0 -> 1.7.0
- libcxx 4.0.1 -> 10.0.0
- libedit 3.1.20181209 -> 3.1.20191231

- libffi 3.2.1 -> 3.3
- libiconv 1.15 -> 1.16
- llvm-openmp 4.0.1 -> 10.0.0
- mpfr 4.0.1 -> 4.0.2
- pandoc 2.2.3.2 -> 2.10
- pcre 8.43 -> 8.44
- readline 7.0 -> 8.0
- setuptools 46.0.0 -> 49.2.0
- wurlitzer 2.0.0 -> 2.0.1
- xlwings 0.17.1 -> 0.19.5

**Added:**

- importlib-metadata 1.7.0
- lcms2 2.11

**Removed:**

- libcxabi

**Anaconda 2020.02 (March 11, 2020)****User-facing changes**

- Name changed to Anaconda Individual Edition.
- The previous 2019.10 release was the last for Python 2.7, and Python 2 will not be supported going forward.
- Python 3.6, 3.7 and 3.8 meta-packages available, installer is Python 3.7.
- Last official release to support Windows 7.
- Updated links to in GUI installer.
- Anaconda Navigator updated to 1.9.12.

**Backend improvements (non-visible changes)**

- Deadlock fixes on single core computers.
- Improved menu removal on Windows.

## Changes for all x86 platforms

### Updated:

- anaconda-project 0.8.3 -> 0.8.4
- asn1crypto 1.0.1 -> 1.3.0
- astroid 2.3.1 -> 2.3.3
- astropy 3.2.2 -> 4.0
- attrs 19.2.0 -> 19.3.0
- babel 2.7.0 -> 2.8.0
- beautifulsoup4 4.8.0 -> 4.8.2
- bitarray 1.0.1 -> 1.2.1
- bokeh 1.3.4 -> 1.4.0
- bottleneck 1.2.1 -> 1.3.2
- ca-certificates 2019.8.28 -> 2020.1.1
- certifi 2019.9.11 -> 2019.11.28
- cffi 1.12.3 -> 1.14.0
- cloudpickle 1.2.2 -> 1.3.0
- colorama 0.4.1 -> 0.4.3
- contextlib2 0.6.0 -> 0.6.0.post1
- cryptography 2.7 -> 2.8
- curl 7.65.3 -> 7.68.0
- cython 0.29.13 -> 0.29.15
- cytoolz 0.10.0 -> 0.10.1
- dask 2.5.2 -> 2.11.0
- dask-core 2.5.2 -> 2.11.0
- decorator 4.4.0 -> 4.4.1
- distributed 2.5.2 -> 2.11.0
- docutils 0.15.2 -> 0.16
- fsspec 0.5.2 -> 0.6.2
- h5py 2.9.0 -> 2.10.0
- imageio 2.6.0 -> 2.6.1
- imagesize 1.1.0 -> 1.2.0
- importlib\_metadata 0.23 -> 1.5.0
- ipykernel 5.1.2 -> 5.1.4
- ipython 7.8.0 -> 7.12.0
- jinja2 2.10.3 -> 2.11.1
- joblib 0.13.2 -> 0.14.1



- json5 0.8.5 -> 0.9.1
- jsonschema 3.0.2 -> 3.2.0
- jupyter\_client 5.3.3 -> 5.3.4
- jupyter\_console 6.0.0 -> 6.1.0
- jupyter\_core 4.5.0 -> 4.6.1
- jupyterlab 1.1.4 -> 1.2.6
- keyring 18.0.0 -> 21.1.0
- krb5 1.16.1 -> 1.17.1
- lazy-object-proxy 1.4.2 -> 1.4.3
- libcurl 7.65.3 -> 7.68.0
- libtiff 4.0.10 -> 4.1.0
- llvmlite 0.29.0 -> 0.31.0
- lxml 4.4.1 -> 4.5.0
- matplotlib 3.1.1 -> 3.1.3
- mkl\_fft 1.0.14 -> 1.0.15
- mock 3.0.5 -> 4.0.1
- more-itertools 7.2.0 -> 8.2.0
- nbconvert 5.6.0 -> 5.6.1
- nbformat 4.4.0 -> 5.0.4
- networkx 2.3 -> 2.4
- notebook 6.0.1 -> 6.0.3
- numexpr 2.7.0 -> 2.7.1
- numpydoc 0.9.1 -> 0.9.2
- openpyxl 3.0.0 -> 3.0.3
- packaging 19.2 -> 20.1
- pandas 0.25.1 -> 1.0.1
- parso 0.5.1 -> 0.5.2
- partd 1.0.0 -> 1.1.0
- path.py 12.0.1 -> 12.4.0
- pillow 6.2.0 -> 7.0.0
- pip 19.2.3 -> 20.0.2
- pluggy 0.13.0 -> 0.13.1
- prompt\_toolkit 2.0.10 -> 3.0.3
- psutil 5.6.3 -> 5.6.7
- py 1.8.0 -> 1.8.1
- pycurl 7.43.0.3 -> 7.43.0.5

- pygments 2.4.2 -> 2.5.2
- pylint 2.4.2 -> 2.4.4
- pyodbc 4.0.27 -> 4.0.30
- pyopenssl 19.0.0 -> 19.1.0
- pyparsing 2.4.2 -> 2.4.6
- pyrsistent 0.15.4 -> 0.15.7
- pytables 3.5.2 -> 3.6.1
- pytest 5.2.1 -> 5.3.5
- pytest-astropy 0.5.0 -> 0.8.0
- pytest-doctestplus 0.4.0 -> 0.5.0
- python 3.7.4 -> 3.7.6
- python-dateutil 2.8.0 -> 2.8.1
- pywavelets 1.0.3 -> 1.1.1
- pyyaml 5.1.2 -> 5.3
- pyzmq 18.1.0 -> 18.1.1
- qtawesome 0.6.0 -> 0.6.1
- qtconsole 4.5.5 -> 4.6.0
- rope 0.14.0 -> 0.16.0
- ruamel\_yaml 0.15.46 -> 0.15.87
- scikit-image 0.15.0 -> 0.16.2
- scipy 1.3.1 -> 1.4.1
- seaborn 0.9.0 -> 0.10.0
- six 1.12.0 -> 1.14.0
- soupsieve 1.9.3 -> 1.9.5
- sphinx 2.2.0 -> 2.4.0
- sphinxcontrib-websupport 1.1.2 -> 1.2.0
- spyder 3.3.6 -> 4.0.1
- spyder-kernels 0.5.2 -> 1.8.1
- sqlalchemy 1.3.9 -> 1.3.13
- sqlite 3.30.0 -> 3.31.1
- statsmodels 0.10.1 -> 0.11.0
- sympy 1.4 -> 1.5.1
- tblib 1.4.0 -> 1.6.0
- terminado 0.8.2 -> 0.8.3
- testpath 0.4.2 -> 0.4.4
- tqdm 4.36.1 -> 4.42.1

- typed-ast 1.4.0 -> 1.4.1
- urllib3 1.24.2 -> 1.25.8
- wcwidth 0.1.7 -> 0.1.8
- werkzeug 0.16.0 -> 1.0.0
- wheel 0.33.6 -> 0.34.2
- xlswriter 1.2.1 -> 1.2.7
- zipp 0.6.0 -> 2.2.0

**Added:**

- argh 0.26.2
- autopep8 1.4.4
- diff-match-patch 20181111
- flake8 3.7.9
- future 0.18.2
- hypothesis 5.5.4
- intervaltree 3.0.2
- matplotlib-base 3.1.3
- path 13.1.0
- pathtools 0.1.2
- pydocstyle 4.0.1
- pytest-astropy-header 0.1.2
- python-jsonrpc-server 0.3.4
- python-language-server 0.31.7
- qdarkstyle 2.8
- rtree 0.9.3
- ujson 1.35
- watchdog 0.10.2
- yapf 0.28.0

**Removed:**

- backports.os

**More changes specific to linux-64****Updated:**

- dbus 1.13.6 -> 1.13.12
- glib 2.56.2 -> 2.63.1
- intel-openmp 2019.4 -> 2020.0
- jeepney 0.4.1 -> 0.4.2
- mkl 2019.4 -> 2020.0
- ncurses 6.1 -> 6.2
- numba 0.45.1 -> 0.48.0
- numpy 1.17.2 -> 1.18.1
- numpy-base 1.17.2 -> 1.18.1
- patchelf 0.9 -> 0.10
- pexpect 4.7.0 -> 4.8.0
- ripgrep 0.10.0 -> 11.0.2
- scikit-learn 0.21.3 -> 0.22.1
- secretstorage 3.1.1 -> 3.1.2
- setuptools 41.4.0 -> 45.2.0
- tbb 2019.4 -> 2020.0
- wurlitzer 1.0.3 -> 2.0.0

**Added:**

- ld\_impl\_linux-64 2.33.1
- libspatialindex 1.9.3
- pyxdg 0.26

**More changes specific to linux-ppc64le****Updated:**

- glib 2.56.2 -> 2.63.1
- h5py 2.8.0 -> 2.10.0
- hdf5 1.10.2 -> 1.10.4
- jedi 0.15.1 -> 0.16.0
- ncurses 6.1 -> 6.2
- numpy 1.17.2 -> 1.18.1
- numpy-base 1.17.2 -> 1.18.1
- parso 0.5.1 -> 0.6.1
- patchelf 0.9 -> 0.10

- pexpect 4.7.0 -> 4.8.0
- pytables 3.4.4 -> 3.6.1
- scikit-learn 0.21.3 -> 0.22.1
- scipy 1.3.0 -> 1.4.1
- setuptools 41.4.0 -> 45.2.0

**Added:**

- ld\_impl\_linux-ppc64le 2.33.1
- mock 4.0.1

**Removed:**

- atomicwrites

**More changes specific to win-32****Updated:**

- intel-openmp 2019.4 -> 2020.0
- mkl 2019.4 -> 2020.0
- numba 0.45.0 -> 0.48.0
- numpy 1.16.5 -> 1.18.1
- numpy-base 1.16.5 -> 1.18.1
- pywin32 223 -> 227
- pywinpty 0.5.5 -> 0.5.7
- setuptools 41.4.0 -> 45.2.0
- tbb 2019.4 -> 2020.0
- xlwings 0.15.10 -> 0.17.1

**Added:**

- bcrypt 3.1.7
- libspatialindex 1.8.5
- paramiko 2.7.1
- pexpect 4.8.0
- pynacl 1.3.0
- pywin32-ctypes 0.2.0

**More changes specific to win-64****Updated:**

- intel-openmp 2019.4 -> 2020.0
- mkl 2019.4 -> 2020.0
- numba 0.45.1 -> 0.48.0
- numpy 1.16.5 -> 1.18.1
- numpy-base 1.16.5 -> 1.18.1
- pywin32 223 -> 227
- pywinpty 0.5.5 -> 0.5.7
- scikit-learn 0.21.3 -> 0.22.1
- setuptools 41.4.0 -> 45.2.0
- tbb 2019.4 -> 2020.0
- xlwings 0.15.10 -> 0.17.1

**Added:**

- bcrypt 3.1.7
- libspatialindex 1.9.3
- paramiko 2.7.1
- pexpect 4.8.0
- pynacl 1.3.0
- pywin32-ctypes 0.2.0

**More changes specific to osx-64****Updated:**

- dbus 1.13.6 -> 1.13.12
- glib 2.56.2 -> 2.63.1
- libssh2 1.8.2 -> 1.9.0
- ncurses 6.1 -> 6.2
- numba 0.45.1 -> 0.48.0
- numpy 1.17.2 -> 1.18.1
- numpy-base 1.17.2 -> 1.18.1
- pexpect 4.7.0 -> 4.8.0
- ripgrep 0.10.0 -> 11.0.2
- scikit-learn 0.21.3 -> 0.22.1
- setuptools 41.4.0 -> 46.0.0
- tbb 2019.8 -> 2020.0

- wurlitzer 1.0.3 -> 2.0.0
- xlwings 0.15.10 -> 0.17.1

**Added:**

- applaunchservices 0.2.1
- libspatialindex 1.9.3

**Anaconda 2019.10 (October 15, 2019)****User-facing changes**

- Updated packages.
- For macOS Catalina, we have notarized the package installers and changed the default install directory to `/opt/anaconda{2,3}`.

**Backend improvements (non-visible changes)**

- Added a new Cython-based Python wrapper to clear up library loading problems with libarchive.
- Extraction scripts work better with older operating systems.

**Changes for all x86 platforms****Updated:**

- asn1crypto 0.24.0 -> 1.0.1
- astroid 2.2.5 -> 2.3.1
- astropy 3.2.1 -> 3.2.2
- attrs 19.1.0 -> 19.2.0
- beautifulsoup4 4.7.1 -> 4.8.0
- bitarray 0.9.3 -> 1.0.1
- ca-certificates 2019.5.15 -> 2019.8.28
- certifi 2019.6.16 -> 2019.9.11
- cloudpickle 1.2.1 -> 1.2.2
- configparser 3.7.4 -> 4.0.2
- contextlib2 0.5.5 -> 0.6.0
- curl 7.65.2 -> 7.65.3
- cython 0.29.12 -> 0.29.13
- dask 2.1.0 -> 2.5.2
- dask-core 2.1.0 -> 2.5.2
- distributed 2.1.0 -> 2.5.2
- docutils 0.14 -> 0.15.2

- heapdict 1.0.0 -> 1.0.1
- imageio 2.5.0 -> 2.6.0
- importlib\_metadata 0.17 -> 0.23
- ipykernel 5.1.1 -> 5.1.2
- ipython 7.6.1 -> 7.8.0
- ipywidgets 7.5.0 -> 7.5.1
- jedi 0.13.3 -> 0.15.1
- jinja2 2.10.1 -> 2.10.3
- json5 0.8.4 -> 0.8.5
- jsonschema 3.0.1 -> 3.0.2
- jupyter\_client 5.3.1 -> 5.3.3
- jupyterlab 1.0.2 -> 1.1.4
- jupyterlab\_server 1.0.0 -> 1.0.6
- lazy-object-proxy 1.4.1 -> 1.4.2
- libcurl 7.65.2 -> 7.65.3
- lxml 4.3.4 -> 4.4.1
- matplotlib 3.1.0 -> 3.1.1
- mkl-service 2.0.2 -> 2.3.0
- mkl\_fft 1.0.12 -> 1.0.14
- mkl\_random 1.0.2 -> 1.1.0
- more-itertools 7.0.0 -> 7.2.0
- nbconvert 5.5.0 -> 5.6.0
- nltk 3.4.4 -> 3.4.5
- notebook 6.0.0 -> 6.0.1
- numexpr 2.6.9 -> 2.7.0
- openpyxl 2.6.2 -> 3.0.0
- packaging 19.0 -> 19.2
- pandas 0.24.2 -> 0.25.1
- parso 0.5.0 -> 0.5.1
- pathlib2 2.3.4 -> 2.3.5
- pillow 6.1.0 -> 6.2.0
- pip 19.1.1 -> 19.2.3
- pluggy 0.12.0 -> 0.13.0
- prompt\_toolkit 2.0.9 -> 2.0.10
- pylint 2.3.1 -> 2.4.2
- pyodbc 4.0.26 -> 4.0.27



- pyparsing 2.4.0 -> 2.4.2
- pyrsistent 0.14.11 -> 0.15.4
- pysocks 1.7.0 -> 1.7.1
- pytest 5.0.1 -> 5.2.1
- pytest-doctestplus 0.3.0 -> 0.4.0
- pytest-openfiles 0.3.2 -> 0.4.0
- pytest-remotedata 0.3.1 -> 0.3.2
- python 3.7.3 -> 3.7.4
- pytz 2019.1 -> 2019.3
- pyyaml 5.1.1 -> 5.1.2
- pyzmq 18.0.0 -> 18.1.0
- qtawesome 0.5.7 -> 0.6.0
- qtpy 1.8.0 -> 1.9.0
- setuptools 41.0.1 -> 41.4.0
- snowballstemmer 1.9.0 -> 2.0.0
- soupsieve 1.8 -> 1.9.3
- sphinx 2.1.2 -> 2.2.0
- spyder-kernels 0.5.1 -> 0.5.2
- sqlalchemy 1.3.5 -> 1.3.9
- sqlite 3.29.0 -> 3.30.0
- statsmodels 0.10.0 -> 0.10.1
- tqdm 4.32.1 -> 4.36.1
- traitlets 4.3.2 -> 4.3.3
- typed-ast 1.3.4 -> 1.4.0
- typing 3.7.4 -> 3.7.4.1
- werkzeug 0.15.4 -> 0.16.0
- wheel 0.33.4 -> 0.33.6
- widgetsnbextension 3.5.0 -> 3.5.1
- xlswriter 1.1.8 -> 1.2.1
- zipp 0.5.1 -> 0.6.0

**Added:**

- fsspec 0.5.2

### More changes specific to linux-64

**Updated:**

- bokeh 1.2.0 -> 1.3.4
- jeepney 0.4 -> 0.4.1
- numba 0.45.0 -> 0.45.1
- numpy 1.16.4 -> 1.17.2
- numpy-base 1.16.4 -> 1.17.2
- qtconsole 4.5.1 -> 4.5.5
- scikit-learn 0.21.2 -> 0.21.3
- scipy 1.3.0 -> 1.3.1
- wurlitzer 1.0.2 -> 1.0.3

**Added:**

- ripgrep 0.10.0
- tbb 2019.4

### More changes specific to linux-ppc64le

**Updated:**

- bokeh 1.2.0 -> 1.3.4
- libopenblas 0.2.20 -> 0.3.6
- numexpr 2.6.7 -> 2.7.0
- numpy 1.14.5 -> 1.17.2
- numpy-base 1.14.5 -> 1.17.2
- openblas 0.2.20 -> 0.3.6
- openblas-devel 0.2.20 -> 0.3.6
- pytest-openfiles 0.3.1 -> 0.4.0
- scikit-learn 0.19.1 -> 0.21.3
- scipy 1.1.0 -> 1.3.0

**Added:**

- joblib 0.13.2
- nomkl 3.0

### More changes specific to win-32

**Updated:**

- bokeh 1.3.0 -> 1.3.4
- numpy 1.16.4 -> 1.16.5
- numpy-base 1.16.4 -> 1.16.5
- qtconsole 4.5.2 -> 4.5.5
- scipy 1.3.0 -> 1.3.1
- vs2015\_runtime 14.15.26706 -> 14.16.27012
- xlwings 0.15.8 -> 0.15.10

**Added:**

- tbb 2019.4

### More changes specific to win-64

**Updated:**

- bokeh 1.3.0 -> 1.3.4
- numba 0.45.0 -> 0.45.1
- numpy 1.16.4 -> 1.16.5
- numpy-base 1.16.4 -> 1.16.5
- qtconsole 4.5.2 -> 4.5.5
- scikit-learn 0.21.2 -> 0.21.3
- scipy 1.2.1 -> 1.3.1
- vs2015\_runtime 14.15.26706 -> 14.16.27012
- xlwings 0.15.8 -> 0.15.10

**Added:**

- tbb 2019.4

### More changes specific to osx-64

**Updated:**

- bokeh 1.2.0 -> 1.3.4
- numba 0.45.0 -> 0.45.1
- numpy 1.16.4 -> 1.17.2
- numpy-base 1.16.4 -> 1.17.2
- qtconsole 4.5.1 -> 4.5.5
- scikit-learn 0.21.2 -> 0.21.3
- scipy 1.3.0 -> 1.3.1

- wurlitzer 1.0.2 -> 1.0.3
- xlwings 0.15.8 -> 0.15.10

### Added:

- ripgrep 0.10.0
- tbb 2019.8

## Anaconda 2019.07 (July 24, 2019)

### User-facing changes

- Conda install times have decreased by more than half for large packages.
- Conda 4.7.10 improves environment management and error messages.
- Conda constructor now supports building installers with the new .conda file format as well as noarch packages.
- Documentation has been updated for our integration with PyCharm, including more tutorials and improved navigation for easier use.
- Updated packages, including R packages and ML/AI packages.

### Backend improvements (non-visible changes)

- Conda is moving to a quarterly release cycle.
- Conda build 3.18 works with the new .conda file format.

### Changes for all x86 platforms

#### Updated:

- anaconda-project 0.8.2 -> 0.8.3
- astropy 3.1.2 -> 3.2.1
- babel 2.6.0 -> 2.7.0
- bitarray 0.8.3 -> 0.9.3
- blosc 1.15.0 -> 1.16.3
- bzip2 1.0.6 -> 1.0.8
- ca-certificates 2019.1.23 -> 2019.5.15
- certifi 2019.3.9 -> 2019.6.16
- cffi 1.12.2 -> 1.12.3
- cloudpickle 0.8.0 -> 1.2.1
- configparser 3.7.3 -> 3.7.4
- cryptography 2.6.1 -> 2.7
- curl 7.64.0 -> 7.65.2
- cython 0.29.6 -> 0.29.12

- cytoolz 0.9.0.1 -> 0.10.0
- dask 1.1.4 -> 2.1.0
- dask-core 1.1.4 -> 2.1.0
- defusedxml 0.5.0 -> 0.6.0
- distributed 1.26.0 -> 2.1.0
- fastcache 1.0.2 -> 1.1.0
- filelock 3.0.10 -> 3.0.12
- flask 1.0.2 -> 1.1.1
- futures 3.2.0 -> 3.3.0
- glob2 0.6 -> 0.7
- importlib\_metadata 0.8 -> 0.17
- intel-openmp 2019.3 -> 2019.4
- ipykernel 5.1.0 -> 5.1.1
- ipython 7.4.0 -> 7.6.1
- ipywidgets 7.4.2 -> 7.5.0
- isort 4.3.16 -> 4.3.21
- jdcal 1.4 -> 1.4.1
- jinja2 2.10 -> 2.10.1
- jupyter\_client 5.2.4 -> 5.3.1
- jupyter\_core 4.4.0 -> 4.5.0
- jupyterlab 0.35.4 -> 1.0.2
- jupyterlab\_server 0.2.0 -> 1.0.0
- kiwisolver 1.0.1 -> 1.1.0
- lazy-object-proxy 1.3.1 -> 1.4.1
- libcurl 7.64.0 -> 7.65.2
- libpng 1.6.36 -> 1.6.37
- libssh2 1.8.0 -> 1.8.2
- llvmlite 0.28.0 -> 0.29.0
- lxml 4.3.2 -> 4.3.4
- matplotlib 3.0.3 -> 3.1.0
- mkl 2019.3 -> 2019.4
- mkl-service 1.1.2 -> 2.0.2
- mkl\_fft 1.0.10 -> 1.0.12
- more-itertools 6.0.0 -> 7.0.0
- nbconvert 5.4.1 -> 5.5.0
- networkx 2.2 -> 2.3

- nltk 3.4 -> 3.4.4
- notebook 5.7.8 -> 6.0.0
- numba 0.43.1 -> 0.45.0
- numpy 1.16.2 -> 1.16.4
- numpy-base 1.16.2 -> 1.16.4
- numpydoc 0.8.0 -> 0.9.1
- openpyxl 2.6.1 -> 2.6.2
- openssl 1.1.1b0 -> 1.1.1rc0
- parso 0.3.4 -> 0.5.0
- partd 0.3.10 -> 1.0.0
- path.py 11.5.0 -> 12.0.1
- pathlib2 2.3.3 -> 2.3.4
- pillow 5.4.1 -> 6.1.0
- pip 19.0.3 -> 19.1.1
- pluggy 0.9.0 -> 0.12.0
- prometheus\_client 0.6.0 -> 0.7.1
- psutil 5.6.1 -> 5.6.3
- pycurl 7.43.0.2 -> 7.43.0.3
- pygments 2.3.1 -> 2.4.2
- pyparsing 2.3.1 -> 2.4.0
- pysocks 1.6.8 -> 1.7.0
- pytables 3.5.1 -> 3.5.2
- pytest 4.3.1 -> 5.0.1
- pytz 2018.9 -> 2019.1
- pywavelets 1.0.2 -> 1.0.3
- pyyaml 5.1 -> 5.1.1
- qtpy 1.7.0 -> 1.8.0
- requests 2.21.0 -> 2.22.0
- rope 0.12.0 -> 0.14.0
- scikit-image 0.14.2 -> 0.15.0
- setuptools 40.8.0 -> 41.0.1
- snowballstemmer 1.2.1 -> 1.9.0
- sphinx 1.8.5 -> 2.1.2
- sphinxcontrib-websupport 1.1.0 -> 1.1.2
- spyder 3.3.3 -> 3.3.6
- spyder-kernels 0.4.2 -> 0.5.1

- sqlalchemy 1.3.1 -> 1.3.5
- sqlite 3.27.2 -> 3.29.0
- statsmodels 0.9.0 -> 0.10.0
- subprocess32 3.5.3 -> 3.5.4
- sympy 1.3 -> 1.4
- tblib 1.3.2 -> 1.4.0
- terminado 0.8.1 -> 0.8.2
- toolz 0.9.0 -> 0.10.0
- tornado 6.0.2 -> 6.0.3
- tqdm 4.31.1 -> 4.32.1
- typed-ast 1.3.1 -> 1.3.4
- typing 3.6.6 -> 3.7.4
- urllib3 1.24.1 -> 1.24.2
- werkzeug 0.14.1 -> 0.15.4
- wheel 0.33.1 -> 0.33.4
- widgetsnbextension 3.4.2 -> 3.5.0
- wrapt 1.11.1 -> 1.11.2
- xlswriter 1.1.5 -> 1.1.8
- zict 0.1.4 -> 1.0.0
- zipp 0.3.3 -> 0.5.1

**Added:**

- joblib 0.13.2
- json5 0.8.4
- mock 3.0.5
- sphinxcontrib-applehelp 1.0.1
- sphinxcontrib-devhelp 1.0.1
- sphinxcontrib-htmlhelp 1.0.2
- sphinxcontrib-jsmath 1.0.1
- sphinxcontrib-qthelp 1.0.2
- sphinxcontrib-serializinghtml 1.1.3

### More changes specific to linux-64

**Updated:**

- bokeh 1.0.4 -> 1.2.0
- libgcc-ng 8.2.0 -> 9.1.0
- libstdcxx-ng 8.2.0 -> 9.1.0
- pexpect 4.6.0 -> 4.7.0
- pycairo 1.18.0 -> 1.18.1
- qtconsole 4.4.3 -> 4.5.1
- scikit-learn 0.20.3 -> 0.21.2
- scipy 1.2.1 -> 1.3.0

**Added:**

- \_libgcc\_mutex 0.1

### More changes specific to linux-ppc64le

**Updated:**

- bokeh 1.0.4 -> 1.2.0
- pexpect 4.6.0 -> 4.7.0
- pillow 5.3.0 -> 6.1.0
- pycairo 1.18.0 -> 1.18.1
- scikit-image 0.14.1 -> 0.15.0

**Added:**

- \_libgcc\_mutex 0.1

### More changes specific to win-32

**Updated:**

- bokeh 1.0.4 -> 1.3.0
- qtconsole 4.4.3 -> 4.5.2
- scikit-learn 0.20.3 -> 0.21.1
- scipy 1.2.1 -> 1.3.0
- xlwings 0.15.4 -> 0.15.8

**Added:**

- liblief 0.9.0
- py-lief 0.9.0



### More changes specific to win-64

#### Updated:

- bokeh 1.0.4 -> 1.3.0
- qtconsole 4.4.3 -> 4.5.2
- scikit-learn 0.20.3 -> 0.21.2
- xlwings 0.15.4 -> 0.15.8

### More changes specific to osx-64

#### Updated:

- bokeh 1.0.4 -> 1.2.0
- pexpect 4.6.0 -> 4.7.0
- qtconsole 4.4.3 -> 4.5.1
- scikit-learn 0.20.3 -> 0.21.2
- scipy 1.2.1 -> 1.3.0
- xlwings 0.15.4 -> 0.15.8

#### Added:

- llvm-openmp 4.0.1

### Anaconda 2019.03 (April 4, 2019)

#### User-facing changes

- Full conda integration with Windows Powershell.
- The Windows Python package includes an optional feature that, when enabled, will improve DLL handling of library conflicts.
- This is the first release which includes conda 4.6.
- A link is added to the installer so you have the option to easily install PyCharm for Anaconda.

#### Backend improvements (non-visible changes)

- Anaconda uninstalls faster on Windows.

## Changes for all x86 platforms

### Updated:

- astroid 2.1.0 -> 2.2.5
- astropy 3.1 -> 3.1.2
- atomicwrites 1.2.1 -> 1.3.0
- attrs 18.2.0 -> 19.1.0
- beautifulsoup4 4.6.3 -> 4.7.1
- bleach 3.0.2 -> 3.1.0
- blosc 1.14.4 -> 1.15.0
- bokeh 1.0.2 -> 1.0.4
- ca-certificates 2018.3.7 -> 2019.1.23
- certifi 2018.11.29 -> 2019.3.9
- cffi 1.11.5 -> 1.12.2
- cloudpickle 0.6.1 -> 0.8.0
- configparser 3.5.0 -> 3.7.3
- cryptography 2.4.2 -> 2.6.1
- curl 7.63.0 -> 7.64.0
- cython 0.29.2 -> 0.29.6
- dask 1.0.0 -> 1.1.4
- dask-core 1.0.0 -> 1.1.4
- decorator 4.3.0 -> 4.4.0
- distributed 1.25.1 -> 1.26.0
- entrypoints 0.2.3 -> 0.3
- gevent 1.3.7 -> 1.4.0
- h5py 2.8.0 -> 2.9.0
- hdf5 1.10.2 -> 1.10.4
- imageio 2.4.1 -> 2.5.0
- importlib\_metadata 0.6 -> 0.8
- intel-openmp 2019.1 -> 2019.3
- ipython 7.2.0 -> 7.4.0
- isort 4.3.4 -> 4.3.16
- jedi 0.13.2 -> 0.13.3
- jsonschema 2.6.0 -> 3.0.1
- jupyterlab 0.35.3 -> 0.35.4
- keyring 17.0.0 -> 18.0.0
- libcurl 7.63.0 -> 7.64.0

- libpng 1.6.35 -> 1.6.36
- libtiff 4.0.9 -> 4.0.10
- libxml2 2.9.8 -> 2.9.9
- libxslt 1.1.32 -> 1.1.33
- llvmlite 0.26.0 -> 0.28.0
- lxml 4.2.5 -> 4.3.2
- markupsafe 1.1.0 -> 1.1.1
- matplotlib 3.0.2 -> 3.0.3
- mkl 2019.1 -> 2019.3
- mkl\_fft 1.0.6 -> 1.0.10
- more-itertools 4.3.0 -> 6.0.0
- msgpack-python 0.5.6 -> 0.6.1
- nbconvert 5.4.0 -> 5.4.1
- notebook 5.7.4 -> 5.7.8
- numba 0.41.0 -> 0.43.1
- numexpr 2.6.8 -> 2.6.9
- numpy 1.15.4 -> 1.16.2
- numpy-base 1.15.4 -> 1.16.2
- openpyxl 2.5.12 -> 2.6.1
- openssl 1.1.1a0 -> 1.1.1b0
- packaging 18.0 -> 19.0
- pandas 0.23.4 -> 0.24.2
- pandoc 1.19.2.1 -> 2.2.3.2
- parso 0.3.1 -> 0.3.4
- partd 0.3.9 -> 0.3.10
- pillow 5.3.0 -> 5.4.1
- pip 18.1 -> 19.0.3
- pkginfo 1.4.2 -> 1.5.0.1
- pluggy 0.8.0 -> 0.9.0
- prometheus\_client 0.5.0 -> 0.6.0
- prompt\_toolkit 2.0.7 -> 2.0.9
- psutil 5.4.8 -> 5.6.1
- py 1.7.0 -> 1.8.0
- pycodestyle 2.4.0 -> 2.5.0
- pyflakes 2.0.0 -> 2.1.1
- pylint 2.2.2 -> 2.3.1

- pyodbc 4.0.25 -> 4.0.26
- pyopenssl 18.0.0 -> 19.0.0
- pyparsing 2.3.0 -> 2.3.1
- pytables 3.4.4 -> 3.5.1
- pytest 4.0.2 -> 4.3.1
- pytest-doctestplus 0.2.0 -> 0.3.0
- pytest-openfiles 0.3.1 -> 0.3.2
- python 3.7.1 -> 3.7.3
- python-dateutil 2.7.5 -> 2.8.0
- pytz 2018.7 -> 2018.9
- pywavelets 1.0.1 -> 1.0.2
- pyyaml 3.13 -> 5.1
- pyzmq 17.1.2 -> 18.0.0
- qtawesome 0.5.3 -> 0.5.7
- qtpy 1.5.2 -> 1.7.0
- rope 0.11.0 -> 0.12.0
- scandir 1.9.0 -> 1.10.0
- scikit-image 0.14.1 -> 0.14.2
- scikit-learn 0.20.1 -> 0.20.3
- scipy 1.1.0 -> 1.2.1
- setuptools 40.6.3 -> 40.8.0
- sortedcollections 1.0.1 -> 1.1.2
- sphinx 1.8.2 -> 1.8.5
- spyder 3.3.2 -> 3.3.3
- spyder-kernels 0.3.0 -> 0.4.2
- sqlalchemy 1.2.15 -> 1.3.1
- sqlite 3.26.0 -> 3.27.2
- ssl\_match\_hostname 3.5.0.1 -> 3.7.0.1
- tornado 5.1.1 -> 6.0.2
- tqdm 4.28.1 -> 4.31.1
- typed-ast 1.1.0 -> 1.3.1
- wheel 0.32.3 -> 0.33.1
- wrapt 1.10.11 -> 1.11.1
- xlswriter 1.1.2 -> 1.1.5
- zeromq 4.2.5 -> 4.3.1
- zict 0.1.3 -> 0.1.4

**Added:**

- pyrsistent 0.14.11
- soupsieve 1.8
- zipp 0.3.3

**Removed:**

- blaze
- conda
- conda-build
- conda-env
- datashape
- flask-cors
- odo

**More changes specific to linux-64****Updated:**

- dbus 1.13.2 -> 1.13.6
- graphite2 1.3.12 -> 1.3.13
- libedit 3.1.20170329 -> 3.1.20181209
- pcre 8.42 -> 8.43
- pixman 0.34.0 -> 0.38.0
- secretstorage 3.1.0 -> 3.1.1

**More changes specific to linux-ppc64le****Updated:**

- libedit 3.1.20170329 -> 3.1.20181209
- nbconvert 5.3.1 -> 5.4.1
- pcre 8.42 -> 8.43

**Added:**

- defusedxml 0.5.0

### More changes specific to win-32

#### Updated:

- menuinst 1.4.14 -> 1.4.16
- win\_inet\_pton 1.0.1 -> 1.1.0
- xlwings 0.15.1 -> 0.15.4

#### Added:

- powershell\_shortcut 0.0.1
- pyreadline 2.1

### More changes specific to win-64

#### Updated:

- menuinst 1.4.14 -> 1.4.16
- win\_inet\_pton 1.0.1 -> 1.1.0
- xlwings 0.15.1 -> 0.15.4

#### Added:

- liblief 0.9.0
- powershell\_shortcut 0.0.1
- py-lief 0.9.0
- pyreadline 2.1

### More changes specific to osx-64

#### Updated:

- appscript 1.0.1 -> 1.1.0
- dbus 1.13.2 -> 1.13.6
- libedit 3.1.20170329 -> 3.1.20181209
- pcre 8.42 -> 8.43
- xlwings 0.15.1 -> 0.15.4

### Anaconda 2018.12 (December 21, 2018)

#### User-facing changes

- Anaconda version numbers now follow a year.month format.
- OpenSSL 1.1.1 is installed on all platforms and versions except for the Python 2.7 on win-32 and win-64.
- This is the last Anaconda release for the linux-32 platform.

## Backend improvements (non-visible changes)

- Improvements have been made to conda which will decrease the time it takes to solve and install packages.

## Changes for all x86 platforms

### Updated:

- alabaster 0.7.11 -> 0.7.12
- astroid 2.0.4 -> 2.1.0
- astropy 3.0.4 -> 3.1
- bleach 2.1.4 -> 3.0.2
- bokeh 0.13.0 -> 1.0.2
- certifi 2018.8.24 -> 2018.11.29
- click 6.7 -> 7.0
- cloudpickle 0.5.5 -> 0.6.1
- colorama 0.3.9 -> 0.4.1
- cryptography 2.3.1 -> 2.4.2
- curl 7.61.0 -> 7.63.0
- cython 0.28.5 -> 0.29.2
- dask 0.19.1 -> 1.0.0
- dask-core 0.19.1 -> 1.0.0
- distributed 1.23.1 -> 1.25.1
- filelock 3.0.8 -> 3.0.10
- flask-cors 3.0.6 -> 3.0.7
- gevent 1.3.6 -> 1.3.7
- idna 2.7 -> 2.8
- intel-openmp 2019.0 -> 2019.1
- ipython 6.5.0 -> 7.2.0
- ipywidgets 7.4.1 -> 7.4.2
- itsdangerous 0.24 -> 1.1.0
- jedi 0.12.1 -> 0.13.2
- jupyter\_client 5.2.3 -> 5.2.4
- jupyter\_console 5.2.0 -> 6.0.0
- jupyterlab 0.34.9 -> 0.35.3
- keyring 13.2.1 -> 17.0.0
- libcurl 7.61.0 -> 7.63.0
- libpng 1.6.34 -> 1.6.35

- llvmlite 0.24.0 -> 0.26.0
- markupsafe 1.0 -> 1.1.0
- matplotlib 2.2.3 -> 3.0.2
- mistune 0.8.3 -> 0.8.4
- mkl 2019.0 -> 2019.1
- mkl\_fft 1.0.4 -> 1.0.6
- mkl\_random 1.0.1 -> 1.0.2
- mpmath 1.0.0 -> 1.1.0
- networkx 2.1 -> 2.2
- nltk 3.3.0 -> 3.4
- notebook 5.6.0 -> 5.7.4
- numba 0.39.0 -> 0.41.0
- numpy 1.15.1 -> 1.15.4
- numpy-base 1.15.1 -> 1.15.4
- openpyxl 2.5.6 -> 2.5.12
- openssl 1.0.2p -> 1.1.1a0
- packaging 17.1 -> 18.0
- partd 0.3.8 -> 0.3.9
- path.py 11.1.0 -> 11.5.0
- pathlib2 2.3.2 -> 2.3.3
- patsy 0.5.0 -> 0.5.1
- pickleshare 0.7.4 -> 0.7.5
- pillow 5.2.0 -> 5.3.0
- pip 10.0.1 -> 18.1
- pluggy 0.7.1 -> 0.8.0
- prometheus\_client 0.3.1 -> 0.5.0
- prompt\_toolkit 1.0.15 -> 2.0.7
- psutil 5.4.7 -> 5.4.8
- py 1.6.0 -> 1.7.0
- pycparser 2.18 -> 2.19
- pygments 2.2.0 -> 2.3.1
- pylint 2.1.1 -> 2.2.2
- pyodbc 4.0.24 -> 4.0.25
- pyparsing 2.2.0 -> 2.3.0
- pytest 3.8.0 -> 4.0.2
- pytest-arraydiff 0.2 -> 0.3



- pytest-astropy 0.4.0 -> 0.5.0
- pytest-doctestplus 0.1.3 -> 0.2.0
- pytest-openfiles 0.3.0 -> 0.3.1
- pytest-remotedata 0.3.0 -> 0.3.1
- python 3.7.0 -> 3.7.1
- python-dateutil 2.7.3 -> 2.7.5
- pytz 2018.5 -> 2018.7
- pywavelets 1.0.0 -> 1.0.1
- qt 5.9.6 -> 5.9.7
- qtawesome 0.4.4 -> 0.5.3
- qtconsole 4.4.1 -> 4.4.3
- qtpy 1.5.0 -> 1.5.2
- requests 2.19.1 -> 2.21.0
- scikit-image 0.14.0 -> 0.14.1
- scikit-learn 0.19.2 -> 0.20.1
- setuptools 40.2.0 -> 40.6.3
- six 1.11.0 -> 1.12.0
- sortedcontainers 2.0.5 -> 2.1.0
- sphinx 1.7.9 -> 1.8.2
- spyder 3.3.1 -> 3.3.2
- spyder-kernels 0.2.6 -> 0.3.0
- sqlalchemy 1.2.11 -> 1.2.15
- sqlite 3.24.0 -> 3.26.0
- subprocess32 3.5.2 -> 3.5.3
- sympy 1.2 -> 1.3
- testpath 0.3.1 -> 0.4.2
- tornado 5.1 -> 5.1.1
- tqdm 4.26.0 -> 4.28.1
- urllib3 1.23 -> 1.24.1
- wheel 0.31.1 -> 0.32.3
- widgetsnbextension 3.4.1 -> 3.4.2
- xlrd 1.1.0 -> 1.2.0
- xlswriter 1.1.0 -> 1.1.2

**Added:**

- backports.os 0.1.1
- conda 4.5.12

- conda-build 3.17.6
- conda-env 2.6.0
- future 0.17.1
- importlib\_metadata 0.6
- jupyterlab\_server 0.2.0
- krb5 1.16.1
- libarchive 3.3.3
- lz4-c 1.8.1.2
- python-libarchive-c 2.8
- zstd 1.3.7

### Removed:

- appdirs
- automat
- constantly
- hyperlink
- incremental
- pyasn1
- pyasn1-modules
- service\_identity
- twisted
- zope
- zope.interface

### More changes specific to linux-64

#### Updated:

- ipykernel 4.9.0 -> 5.1.0
- jeepney 0.3.1 -> 0.4
- pycairo 1.17.1 -> 1.18.0

#### Added:

- liblief 0.9.0
- py-lief 0.9.0
- wurlitzer 1.0.2

**More changes specific to linux-32****Updated:**

- ipykernel 4.9.0 -> 5.1.0
- jeepney 0.3.1 -> 0.4
- pycairo 1.17.1 -> 1.18.0

**Added:**

- liblief 0.9.0
- py-lief 0.9.0
- wurlitzer 1.0.2

**More changes specific to linux-ppc64le****Updated:**

- conda 4.5.11 -> 4.5.12
- conda-build 3.15.1 -> 3.16.3
- ipykernel 4.9.0 -> 5.1.0
- libpng 1.6.32 -> 1.6.35
- pycairo 1.17.1 -> 1.18.0
- tqdm 4.25.0 -> 4.28.1

**Added:**

- libssh2 1.8.0

**More changes specific to win-32****Updated:**

- backports.shutil.which 3.5.1 -> 3.5.2
- icc\_rt 2017.0.4 -> 2019.0.0
- ipykernel 4.10.0 -> 5.1.0
- pywinpty 0.5.4 -> 0.5.5
- xlwings 0.11.8 -> 0.15.1

**Added:**

- xz 5.2.4

### More changes specific to win-64

#### Updated:

- backports.shutil\_which 3.5.1 -> 3.5.2
- icc\_rt 2017.0.4 -> 2019.0.0
- ipykernel 4.10.0 -> 5.1.0
- pywinpty 0.5.4 -> 0.5.5
- xlwings 0.11.8 -> 0.15.1

#### Added:

- xz 5.2.4

### Anaconda 5.3.1 (Nov 19, 2018)

#### User-facing changes

- The Anaconda Installers are shipped with a fix for VSCode Installation. xref: <https://github.com/ContinuumIO/anaconda-issues/issues/10286>

### Anaconda 5.3.0 (Sept 28, 2018)

#### User-facing changes

- The Anaconda3 installers ship with python 3.7 instead of python 3.6
- Windows installers disallow the character , in installation path to prevent usability issues.
- Instructions in the macOS pkg installer for choice of initializing installation has been improved.

#### Backend improvements (non-visible changes)

- Installers mimic the functionality of “conda init” (a highly anticipated feature in conda 4.6) instead of just adding \$PREFIX/bin to PATH in bash profile.
- The repodata\_record.json file for each package in the package cache directory is populated correctly, which will assist in offline installation of packages in new environments.

### Changes for all x86 platforms

#### Updated:

- alabaster 0.7.10 -> 0.7.11
- anaconda-client 1.6.14 -> 1.7.2
- astroid 1.6.3 -> 2.0.4
- astropy 3.0.2 -> 3.0.4
- attrs 18.1.0 -> 18.2.0

- babel 2.5.3 -> 2.6.0
- beautifulsoup4 4.6.0 -> 4.6.3
- bitarray 0.8.1 -> 0.8.3
- bleach 2.1.3 -> 2.1.4
- blosc 1.14.3 -> 1.14.4
- bokeh 0.12.16 -> 0.13.0
- boto 2.48.0 -> 2.49.0
- certifi 2018.4.16 -> 2018.8.24
- cloudpickle 0.5.3 -> 0.5.5
- cryptography 2.2.2 -> 2.3.1
- curl 7.60.0 -> 7.61.0
- cython 0.28.2 -> 0.28.5
- dask 0.17.5 -> 0.19.1
- dask-core 0.17.5 -> 0.19.1
- distributed 1.21.8 -> 1.23.1
- filelock 3.0.4 -> 3.0.8
- flask-cors 3.0.4 -> 3.0.6
- freetype 2.8 -> 2.9.1
- gevent 1.3.0 -> 1.3.6
- greenlet 0.4.13 -> 0.4.15
- h5py 2.7.1 -> 2.8.0
- idna 2.6 -> 2.7
- imageio 2.3.0 -> 2.4.1
- imagesize 1.0.0 -> 1.1.0
- intel-openmp 2018.0.0 -> 2019.0
- ipython 6.4.0 -> 6.5.0
- ipywidgets 7.2.1 -> 7.4.1
- jedi 0.12.0 -> 0.12.1
- jupyterlab 0.32.1 -> 0.34.9
- jupyterlab\_launcher 0.10.5 -> 0.13.1
- libcurl 7.60.0 -> 7.61.0
- llvmlite 0.23.1 -> 0.24.0
- lxml 4.2.1 -> 4.2.5
- matplotlib 2.2.2 -> 2.2.3
- mkl 2018.0.2 -> 2019.0
- mkl\_fft 1.0.1 -> 1.0.4

- more-itertools 4.1.0 -> 4.3.0
- multipledispatch 0.5.0 -> 0.6.0
- nbconvert 5.3.1 -> 5.4.0
- notebook 5.5.0 -> 5.6.0
- numba 0.38.0 -> 0.39.0
- numexpr 2.6.5 -> 2.6.8
- numpy 1.14.3 -> 1.15.1
- numpy-base 1.14.3 -> 1.15.1
- olefile 0.45.1 -> 0.46
- openpyxl 2.5.3 -> 2.5.6
- openssl 1.0.2o -> 1.0.2p
- pandas 0.23.0 -> 0.23.4
- parso 0.2.0 -> 0.3.1
- path.py 11.0.1 -> 11.1.0
- pillow 5.1.0 -> 5.2.0
- pluggy 0.6.0 -> 0.7.1
- psutil 5.4.5 -> 5.4.7
- py 1.5.3 -> 1.6.0
- pycurl 7.43.0.1 -> 7.43.0.2
- pyflakes 1.6.0 -> 2.0.0
- pylint 1.8.4 -> 2.1.1
- pyodbc 4.0.23 -> 4.0.24
- pytables 3.4.3 -> 3.4.4
- pytest 3.5.1 -> 3.8.0
- pytest-astropy 0.3.0 -> 0.4.0
- pytest-remotedata 0.2.1 -> 0.3.0
- python 3.6.5 -> 3.7.0
- pytz 2018.4 -> 2018.5
- pywavelets 0.5.2 -> 1.0.0
- pyyaml 3.12 -> 3.13
- pyzmq 17.0.0 -> 17.1.2
- qt 5.9.5 -> 5.9.6
- qtconsole 4.3.1 -> 4.4.1
- qtpy 1.4.1 -> 1.5.0
- requests 2.18.4 -> 2.19.1
- rope 0.10.7 -> 0.11.0

- ruamel\_yaml 0.15.35 -> 0.15.46
- scandir 1.7 -> 1.9.0
- scikit-image 0.13.1 -> 0.14.0
- scikit-learn 0.19.1 -> 0.19.2
- seaborn 0.8.1 -> 0.9.0
- setuptools 39.1.0 -> 40.2.0
- sortedcollections 0.6.1 -> 1.0.1
- sortedcontainers 1.5.10 -> 2.0.5
- sphinx 1.7.4 -> 1.7.9
- sphinxcontrib-websupport 1.0.1 -> 1.1.0
- spyder 3.2.8 -> 3.3.1
- sqlalchemy 1.2.7 -> 1.2.11
- sqlite 3.23.1 -> 3.24.0
- subprocess32 3.5.0 -> 3.5.2
- sympy 1.1.1 -> 1.2
- tk 8.6.7 -> 8.6.8
- tornado 5.0.2 -> 5.1
- typing 3.6.4 -> 3.6.6
- urllib3 1.22 -> 1.23
- widgetsnbextension 3.2.1 -> 3.4.1
- xlswriter 1.0.4 -> 1.1.0

**Added:**

- appdirs 1.4.3
- atomicwrites 1.2.1
- automat 0.7.0
- constantly 15.1.0
- defusedxml 0.5.0
- hyperlink 18.0.0
- incremental 17.5.0
- keyring 13.2.1
- linecache2 1.0.0
- prometheus\_client 0.3.1
- pyasn1 0.4.4
- pyasn1-modules 0.2.2
- service\_identity 17.0.0
- spyder-kernels 0.2.6

- tqdm 4.26.0
- traceback2 1.4.0
- twisted 18.7.0
- typed-ast 1.1.0
- unittest2 1.1.0
- zope 1.0
- zope.interface 4.5.0

### More changes specific to linux-64

#### Updated:

- expat 2.2.5 -> 2.2.6
- fontconfig 2.12.6 -> 2.13.0
- glib 2.56.1 -> 2.56.2
- graphite2 1.3.11 -> 1.3.12
- harfbuzz 1.7.6 -> 1.8.8
- ipykernel 4.8.2 -> 4.9.0
- libgcc-ng 7.2.0 -> 8.2.0
- libgfortran-ng 7.2.0 -> 7.3.0
- libstdcxx-ng 7.2.0 -> 8.2.0
- mpc 1.0.3 -> 1.1.0
- mpfr 3.1.5 -> 4.0.1
- pango 1.41.0 -> 1.42.4
- pexpect 4.5.0 -> 4.6.0
- ptyprocess 0.5.2 -> 0.6.0
- pycairo 1.15.4 -> 1.17.1
- unixodbc 2.3.6 -> 2.3.7

#### Added:

- fribidi 1.0.5
- jeepney 0.3.1
- libuuid 1.0.3
- secretstorage 3.1.0



## More changes specific to linux-32

### Updated:

- expat 2.2.5 -> 2.2.6
- fontconfig 2.12.6 -> 2.13.0
- glib 2.56.1 -> 2.56.2
- graphite2 1.3.11 -> 1.3.12
- harfbuzz 1.7.6 -> 1.8.8
- ipykernel 4.8.2 -> 4.9.0
- libgcc-ng 7.2.0 -> 8.2.0
- libgfortran-ng 7.2.0 -> 7.3.0
- libstdcxx-ng 7.2.0 -> 8.2.0
- mpc 1.0.3 -> 1.1.0
- mpfr 3.1.5 -> 4.0.1
- pango 1.41.0 -> 1.42.4
- pexpect 4.5.0 -> 4.6.0
- ptyprocess 0.5.2 -> 0.6.0
- pycairo 1.15.4 -> 1.17.1
- sip 4.19.8 -> 4.19.12
- unixodbc 2.3.6 -> 2.3.7

### Added:

- fribidi 1.0.5
- jeepney 0.3.1
- libuuid 1.0.3
- secretstorage 3.1.0

## More changes specific to linux-ppc64le

### Updated:

- asn1crypto 0.23.0 -> 0.24.0
- astroid 1.6.2 -> 2.0.4
- babel 2.5.0 -> 2.6.0
- backports.functools\_lru\_cache 1.4 -> 1.5
- bokeh 0.12.15 -> 0.13.0
- conda 4.5.4 -> 4.5.11
- conda-build 3.10.5 -> 3.15.1
- curl 7.55.1 -> 7.61.0

- cython 0.28.1 -> 0.28.5
- decorator 4.1.2 -> 4.3.0
- expat 2.2.5 -> 2.2.6
- filelock 2.0.13 -> 3.0.8
- flask 0.12.2 -> 1.0.2
- fontconfig 2.12.6 -> 2.13.0
- glib 2.56.1 -> 2.56.2
- greenlet 0.4.12 -> 0.4.15
- imageio 2.2.0 -> 2.4.1
- imagesize 0.7.1 -> 1.1.0
- ipykernel 4.8.0 -> 4.9.0
- ipywidgets 7.2.0 -> 7.4.1
- isort 4.2.15 -> 4.3.4
- jedi 0.11.0 -> 0.12.1
- libgcc-ng 7.2.0 -> 8.2.0
- libgfortran-ng 7.2.0 -> 7.3.0
- libstdc++-ng 7.2.0 -> 8.2.0
- numexpr 2.6.5 -> 2.6.7
- numpy 1.13.3 -> 1.14.5
- parso 0.1.1 -> 0.3.1
- patsy 0.4.1 -> 0.5.0
- pep8 1.7.0 -> 1.7.1
- pexpect 4.3.0 -> 4.6.0
- pillow 5.0.0 -> 5.2.0
- pkginfo 1.4.1 -> 1.4.2
- ply 3.10 -> 3.11
- psutil 5.4.1 -> 5.4.7
- ptyprocess 0.5.2 -> 0.6.0
- pycairo 1.13.3 -> 1.17.1
- pycurl 7.43.0 -> 7.43.0.2
- pysocks 1.6.7 -> 1.6.8
- pytz 2017.3 -> 2018.5
- scandir 1.6 -> 1.9.0
- send2trash 1.4.2 -> 1.5.0
- toolz 0.8.2 -> 0.9.0
- typing 3.6.2 -> 3.6.6

- unixodbc 2.3.6 -> 2.3.7
- werkzeug 0.12.2 -> 0.14.1
- zeromq 4.2.3 -> 4.2.5

**Added:**

- blas 1.0
- gmpy2 2.0.8
- libcurl 7.61.0
- libuuid 1.0.3
- mpc 1.1.0
- mpfr 4.0.1
- numpy-base 1.14.5
- tqdm 4.25.0
- twisted 18.4.0

**Removed:**

- conda-verify
- libssh2

**More changes specific to win-32****Updated:**

- comtypes 1.1.4 -> 1.1.7
- ipykernel 4.8.2 -> 4.10.0
- pywinpty 0.5.1 -> 0.5.4
- vc 14 -> 14.1
- vs2015\_runtime 14.0.25123 -> 14.15.26706

**More changes specific to win-64****Updated:**

- comtypes 1.1.4 -> 1.1.7
- ipykernel 4.8.2 -> 4.10.0
- pywinpty 0.5.1 -> 0.5.4
- vc 14 -> 14.1
- vs2015\_runtime 14.0.25123 -> 14.15.26706

### Anaconda 5.2.0 (May 30, 2018)

#### User-facing changes

- Windows installers disallow the characters ! % ^ = in installation path to prevent later usability issues
- Improved Windows multi-user installations by providing more dynamic shortcut working directory behavior
- Default channels point to repo.anaconda.com instead of repo.anaconda.com

#### Backend improvements (non-visible changes)

- Security fixes for more than 20 packages based on a deep-dive of CVE vulnerabilities
- Windows installer uses a trimmed down value for PATH env var, to avoid DLL hell with existing software
- History file in the conda-meta directory is populated correctly to improve behavior of --prune
- Developer certificate for macOS pkg installers has been updated to Anaconda, Inc.

#### Changes for all x86 platforms

##### Updated:

- anaconda-client 1.6.9 -> 1.6.14
- astroid 1.6.1 -> 1.6.3
- astropy 2.0.3 -> 3.0.2
- attrs 17.4.0 -> 18.1.0
- backports.functools\_lru\_cache 1.4 -> 1.5
- bleach 2.1.2 -> 2.1.3
- bokeh 0.12.13 -> 0.12.16
- ca-certificates 2017.8.26 -> 2018.3.7
- certifi 2018.1.18 -> 2018.4.16
- cffi 1.11.4 -> 1.11.5
- cloudpickle 0.5.2 -> 0.5.3
- cryptography 2.1.4 -> 2.2.2
- curl 7.58.0 -> 7.60.0
- cython 0.27.3 -> 0.28.2
- cytoolz 0.9.0 -> 0.9.0.1
- dask 0.16.1 -> 0.17.5
- dask-core 0.16.1 -> 0.17.5
- decorator 4.2.1 -> 4.3.0
- distributed 1.20.2 -> 1.21.8
- filelock 2.0.13 -> 3.0.4

- flask 0.12.2 -> 1.0.2
- flask-cors 3.0.3 -> 3.0.4
- gevent 1.2.2 -> 1.3.0
- greenlet 0.4.12 -> 0.4.13
- hdf5 1.10.1 -> 1.10.2
- imageio 2.2.0 -> 2.3.0
- imagesize 0.7.1 -> 1.0.0
- ipaddress 1.0.19 -> 1.0.22
- ipykernel 4.8.0 -> 4.8.2
- ipython 6.2.1 -> 6.4.0
- ipywidgets 7.1.1 -> 7.2.1
- isort 4.2.15 -> 4.3.4
- jdcal 1.3 -> 1.4
- jedi 0.11.1 -> 0.12.0
- jupyter\_client 5.2.2 -> 5.2.3
- jupyterlab 0.31.5 -> 0.32.1
- jupyterlab\_launcher 0.10.2 -> 0.10.5
- libcurl 7.58.0 -> 7.60.0
- libxml2 2.9.7 -> 2.9.8
- llvmlite 0.21.0 -> 0.23.1
- lxml 4.1.1 -> 4.2.1
- matplotlib 2.1.2 -> 2.2.2
- mkl 2018.0.1 -> 2018.0.2
- msgpack-python 0.5.1 -> 0.5.6
- multipledispatch 0.4.9 -> 0.5.0
- nltk 3.2.5 -> 3.3.0
- notebook 5.4.0 -> 5.5.0
- numba 0.36.2 -> 0.38.0
- numexpr 2.6.4 -> 2.6.5
- numpy 1.14.0 -> 1.14.3
- numpydoc 0.7.0 -> 0.8.0
- openpyxl 2.4.10 -> 2.5.3
- openssl 1.0.2n -> 1.0.2o
- packaging 16.8 -> 17.1
- pandas 0.22.0 -> 0.23.0
- parso 0.1.1 -> 0.2.0

- path.py 10.5 -> 11.0.1
- pathlib2 2.3.0 -> 2.3.2
- pillow 5.0.0 -> 5.1.0
- pip 9.0.1 -> 10.0.1
- pkginfo 1.4.1 -> 1.4.2
- ply 3.10 -> 3.11
- psutil 5.4.3 -> 5.4.5
- py 1.5.2 -> 1.5.3
- pycodestyle 2.3.1 -> 2.4.0
- pylint 1.8.2 -> 1.8.4
- pyodbc 4.0.22 -> 4.0.23
- pyopenssl 17.5.0 -> 18.0.0
- pyqt 5.6.0 -> 5.9.2
- pysocks 1.6.7 -> 1.6.8
- pytables 3.4.2 -> 3.4.3
- pytest 3.3.2 -> 3.5.1
- python 3.6.4 -> 3.6.5
- python-dateutil 2.6.1 -> 2.7.3
- pytz 2017.3 -> 2018.4
- pyzmq 16.0.3 -> 17.0.0
- qt 5.6.2 -> 5.9.5
- qtpy 1.3.1 -> 1.4.1
- scandir 1.6 -> 1.7
- scipy 1.0.0 -> 1.1.0
- send2trash 1.4.2 -> 1.5.0
- setuptools 38.4.0 -> 39.1.0
- sip 4.18.1 -> 4.19.8
- sortedcollections 0.5.3 -> 0.6.1
- sortedcontainers 1.5.9 -> 1.5.10
- sphinx 1.6.6 -> 1.7.4
- spyder 3.2.6 -> 3.2.8
- sqlalchemy 1.2.1 -> 1.2.7
- sqlite 3.22.0 -> 3.23.1
- statsmodels 0.8.0 -> 0.9.0
- subprocess32 3.2.7 -> 3.5.0
- tornado 4.5.3 -> 5.0.2

- typing 3.6.2 -> 3.6.4
- wheel 0.30.0 -> 0.31.1
- widgetsnbextension 3.1.0 -> 3.2.1
- xlswriter 1.0.2 -> 1.0.4

**Added:**

- backcall 0.1.0
- blas 1.0
- blosc 1.14.3
- kiwisolver 1.0.1
- mkl\_fft 1.0.1
- mkl\_random 1.0.1
- more-itertools 4.1.0
- numpy-base 1.14.3
- pytest-arraydiff 0.2
- pytest-astropy 0.3.0
- pytest-doctestplus 0.1.3
- pytest-openfiles 0.3.0
- pytest-remotedata 0.2.1
- snappy 1.1.7

**More changes specific to linux-64****Updated:**

- dbus 1.12.2 -> 1.13.2
- fontconfig 2.12.4 -> 2.12.6
- glib 2.53.6 -> 2.56.1
- graphite2 1.3.10 -> 1.3.11
- gst-plugins-base 1.12.4 -> 1.14.0
- gstreamer 1.12.4 -> 1.14.0
- harfbuzz 1.7.4 -> 1.7.6
- libedit 3.1 -> 3.1.20170329
- libsodium 1.0.15 -> 1.0.16
- libxcb 1.12 -> 1.13
- ncurses 6.0 -> 6.1
- pcre 8.41 -> 8.42
- pexpect 4.3.1 -> 4.5.0
- unixodbc 2.3.4 -> 2.3.6

- xz 5.2.3 -> 5.2.4
- zeromq 4.2.2 -> 4.2.5

### More changes specific to linux-32

#### Updated:

- dbus 1.12.2 -> 1.13.2
- fontconfig 2.12.4 -> 2.12.6
- glib 2.53.6 -> 2.56.1
- graphite2 1.3.10 -> 1.3.11
- gst-plugins-base 1.12.4 -> 1.14.0
- gstreamer 1.12.4 -> 1.14.0
- harfbuzz 1.7.4 -> 1.7.6
- libedit 3.1 -> 3.1.20170329
- libsodium 1.0.15 -> 1.0.16
- libxcb 1.12 -> 1.13
- ncurses 6.0 -> 6.1
- pcre 8.41 -> 8.42
- pexpect 4.3.1 -> 4.5.0
- unixodbc 2.3.4 -> 2.3.6
- xz 5.2.3 -> 5.2.4
- zeromq 4.2.2 -> 4.2.5

### More changes specific to linux-ppc64le

#### Updated:

- anaconda-client 1.6.6 -> 1.6.14
- astroid 1.6.1 -> 1.6.2
- bokeh 0.12.13 -> 0.12.15
- cairo 1.14.10 -> 1.14.12
- cffi 1.11.2 -> 1.11.5
- conda 4.4.9 -> 4.5.4
- conda-build 3.4.1 -> 3.10.5
- cython 0.27.3 -> 0.28.1
- cytoolz 0.8.2 -> 0.9.0.1
- dask 0.16.0 -> 0.17.5
- dask-core 0.16.0 -> 0.17.5



- fontconfig 2.12.4 -> 2.12.6
- glib 2.53.6 -> 2.56.1
- ipaddress 1.0.18 -> 1.0.22
- ipywidgets 7.1.1 -> 7.2.0
- libsodium 1.0.15 -> 1.0.16
- libxcb 1.12 -> 1.13
- libxml2 2.9.4 -> 2.9.8
- libxslt 1.1.29 -> 1.1.32
- mistune 0.8.1 -> 0.8.3
- msgpack-python 0.4.8 -> 0.5.6
- ncurses 6.0 -> 6.1
- pcre 8.41 -> 8.42
- pytest 3.2.5 -> 3.5.1
- setuptools 36.5.0 -> 39.1.0
- sortedcontainers 1.5.7 -> 1.5.10
- sphinx 1.6.3 -> 1.7.4
- sqlite 3.21.0 -> 3.23.1
- tornado 4.5.2 -> 5.0.2
- unixodbc 2.3.4 -> 2.3.6
- xz 5.2.3 -> 5.2.4
- zeromq 4.2.2 -> 4.2.3

**Added:**

- attrs 18.1.0
- pluggy 0.6.0

**Removed:**

- gmpy2
- mpc
- mpfr

**More changes specific to win-32****Updated:**

- menuinst 1.4.11 -> 1.4.14
- pywin32 222 -> 223
- pywinpty 0.5 -> 0.5.1
- xlwings 0.11.5 -> 0.11.8

**Added:**

- libsodium 1.0.16
- m2w64-gcc-libgfortran 5.3.0
- m2w64-gcc-libs 5.3.0
- m2w64-gcc-libs-core 5.3.0
- m2w64-gmp 6.1.0
- m2w64-libwinpthread-git 5.0.0.4634.697f757
- msys2-conda-epoch 20160418
- zeromq 4.2.5

### More changes specific to win-64

#### Updated:

- menuinst 1.4.11 -> 1.4.14
- pywin32 222 -> 223
- pywinpty 0.5 -> 0.5.1
- xlwings 0.11.5 -> 0.11.8

#### Added:

- libsodium 1.0.16
- m2w64-gcc-libgfortran 5.3.0
- m2w64-gcc-libs 5.3.0
- m2w64-gcc-libs-core 5.3.0
- m2w64-gmp 6.1.0
- m2w64-libwinpthread-git 5.0.0.4634.697f757
- msys2-conda-epoch 20160418
- zeromq 4.2.5

## Anaconda 5.1.0 (Feb 15, 2018)

### User-facing changes

- Microsoft Visual Studio Code added as an install option
- Anaconda Navigator has install and launch options for VS Code
- The installer support link has been replaced with the [Getting Started](#) page

### Backend improvements (non-visible changes)

- Power packages are built with [same recipes](#) as rest of distribution
- Fixed some incomplete Windows installations due to interactions with antivirus software
- Fixed spaces in paths problems on Windows
- Anaconda Navigator was removed from the anaconda metapackage (but not the Anaconda installer)
- Installers present warnings when executed on the wrong platform

### Changes for all x86 platforms

#### Updated:

- anaconda-client 1.6.5 -> 1.6.9
- anaconda-project 0.8.0 -> 0.8.2
- anaconda-navigator 1.6.9 -> 1.7.0
- asn1crypto 0.22.0 -> 0.24.0
- astroid 1.5.3 -> 1.6.1
- astropy 2.0.2 -> 2.0.3
- babel 2.5.0 -> 2.5.3
- bleach 2.0.0 -> 2.1.2
- bokeh 0.12.10 -> 0.12.13
- certifi 2017.7.27.1 -> 2018.1.18
- cffi 1.10.0 -> 1.11.4
- cloudpickle 0.4.0 -> 0.5.2
- conda 4.3.27 -> 4.4.10
- conda-build 3.0.27 -> 3.4.1
- cryptography 2.0.3 -> 2.1.4
- curl 7.55.1 -> 7.58.0
- cython 0.26.1 -> 0.27.3
- cytoolz 0.8.2 -> 0.9.0
- dask 0.15.3 -> 0.16.1
- dask-core 0.15.3 -> 0.16.1
- decorator 4.1.2 -> 4.2.1
- distributed 1.19.1 -> 1.20.2
- filelock 2.0.12 -> 2.0.13
- futures 3.1.1 -> 3.2.0
- glob2 0.5 -> 0.6
- h5py 2.7.0 -> 2.7.1

- `html5lib` 0.999999999 -> 1.0.1
- `ipaddress` 1.0.18 -> 1.0.19
- `ipykernel` 4.6.1 -> 4.8.0
- `ipython` 6.1.0 -> 6.2.1
- `ipywidgets` 7.0.0 -> 7.1.1
- `jedi` 0.10.2 -> 0.11.1
- `jinja2` 2.9.6 -> 2.10
- `jupyter_client` 5.1.0 -> 5.2.2
- `jupyter_core` 4.3.0 -> 4.4.0
- `jupyterlab_launcher` 0.4.0 -> 0.10.2
- `libpng` 1.6.32 -> 1.6.34
- `libtiff` 4.0.8 -> 4.0.9
- `libxml2` 2.9.4 -> 2.9.7
- `libxslt` 1.1.29 -> 1.1.32
- `llvmlite` 0.20.0 -> 0.21.0
- `lxml` 4.1.0 -> 4.1.1
- `matplotlib` 2.1.0 -> 2.1.2
- `mistune` 0.7.4 -> 0.8.3
- `mkl` 2018.0.0 -> 2018.0.1
- `mpmath` 0.19 -> 1.0.0
- `msgpack-python` 0.4.8 -> 0.5.1
- `networkx` 2.0 -> 2.1
- `nlTK` 3.2.4 -> 3.2.5
- `notebook` 5.0.0 -> 5.4.0
- `numba` 0.35.0 -> 0.36.2
- `numexpr` 2.6.2 -> 2.6.4
- `numpy` 1.13.3 -> 1.14.0
- `olefile` 0.44 -> 0.45.1
- `openpyxl` 2.4.8 -> 2.4.10
- `openssl` 1.0.2l -> 1.0.2n
- `pandas` 0.20.3 -> 0.22.0
- `path.py` 10.3.1 -> 10.5
- `patsy` 0.4.1 -> 0.5.0
- `pep8` 1.7.0 -> 1.7.1
- `pillow` 4.2.1 -> 5.0.0
- `psutil` 5.4.0 -> 5.4.3

- py 1.4.34 -> 1.5.2
- pycosat 0.6.2 -> 0.6.3
- pycurl 7.43.0 -> 7.43.0.1
- pylint 1.7.4 -> 1.8.2
- pyodbc 4.0.17 -> 4.0.22
- pyopenssl 17.2.0 -> 17.5.0
- pytest 3.2.1 -> 3.3.2
- python 3.6.3 -> 3.6.4
- pytz 2017.2 -> 2017.3
- pyzmq 16.0.2 -> 16.0.3
- rope 0.10.5 -> 0.10.7
- ruamel\_yaml 0.11.14 -> 0.15.35
- scikit-image 0.13.0 -> 0.13.1
- scipy 0.19.1 -> 1.0.0
- seaborn 0.8.0 -> 0.8.1
- setuptools 36.5.0 -> 38.4.0
- sortedcontainers 1.5.7 -> 1.5.9
- sphinx 1.6.3 -> 1.6.6
- spyder 3.2.4 -> 3.2.6
- sqlalchemy 1.1.13 -> 1.2.1
- sqlite 3.20.1 -> 3.22.0
- toolz 0.8.2 -> 0.9.0
- tornado 4.5.2 -> 4.5.3
- werkzeug 0.12.2 -> 0.14.1
- wheel 0.29.0 -> 0.30.0
- widgetsnbextension 3.0.2 -> 3.1.0

**Added:**

- attrs 17.4.0
- libcurl 7.58.0
- parso 0.1.1
- pluggy 0.6.0
- send2trash 1.4.2

### More changes specific to win-64

**Updated:**

- comtypes 1.1.2 -> 1.1.4
- jupyterlab 0.27.0 -> 0.31.4
- menuinst 1.4.10 -> 1.4.11
- pywin32 221 -> 222
- xlwings 0.11.4 -> 0.11.5

**Added:**

- backports.shutil\_which 3.5.1
- pywinpty 0.5
- terminado 0.8.1
- winpty 0.4.3

**Removed:**

- cachecontrol
- distlib
- lockfile
- progress

### More changes specific to win-32

**Updated:**

- comtypes 1.1.2 -> 1.1.4
- jupyterlab 0.27.0 -> 0.31.5
- menuinst 1.4.10 -> 1.4.11
- pywin32 221 -> 222
- xlwings 0.11.4 -> 0.11.5

**Added:**

- backports.shutil\_which 3.5.1
- pywinpty 0.5
- terminado 0.8.1
- winpty 0.4.3

**Removed:**

- cachecontrol
- distlib
- lockfile
- progress

### More changes specific to osx-64

#### Updated:

- dbus 1.10.22 -> 1.12.2
- expat 2.2.4 -> 2.2.5
- jupyterlab 0.27.0 -> 0.31.5
- libsodium 1.0.13 -> 1.0.15
- pexpect 4.2.1 -> 4.3.1
- terminado 0.6 -> 0.8.1
- xlwings 0.11.4 -> 0.11.5

### More changes specific to linux-64

#### Updated:

- cairo 1.14.10 -> 1.14.12
- dbus 1.10.22 -> 1.12.2
- expat 2.2.4 -> 2.2.5
- gst-plugins-base 1.12.2 -> 1.12.4
- gstreamer 1.12.2 -> 1.12.4
- harfbuzz 1.5.0 -> 1.7.4
- jupyterlab 0.27.0 -> 0.31.5
- libsodium 1.0.13 -> 1.0.15
- pango 1.40.11 -> 1.41.0
- pexpect 4.2.1 -> 4.3.1
- pycairo 1.13.3 -> 1.15.4
- terminado 0.6 -> 0.8.1

### More changes specific to linux-32

#### Updated:

- cairo 1.14.10 -> 1.14.12
- dbus 1.10.22 -> 1.12.2
- expat 2.2.4 -> 2.2.5
- gst-plugins-base 1.12.2 -> 1.12.4
- gstreamer 1.12.2 -> 1.12.4
- harfbuzz 1.5.0 -> 1.7.4
- jupyterlab 0.27.0 -> 0.31.5
- libsodium 1.0.13 -> 1.0.15

- pango 1.40.11 -> 1.41.0
- pexpect 4.2.1 -> 4.3.1
- pycairo 1.13.3 -> 1.15.4
- terminado 0.6 -> 0.8.1

### Changes for linux-ppc64le

#### Updated:

- anaconda-client 1.6.3 -> 1.6.6
- anaconda-project 0.6.0 -> 0.8.2
- asn1crypto 0.22.0 -> 0.23.0
- astroid 1.5.3 -> 1.6.1
- astropy 2.0.1 -> 2.0.3
- bleach 1.5.0 -> 2.1.2
- bokeh 0.12.7 -> 0.12.13
- cairo 1.14.8 -> 1.14.10
- certifi 2016.2.28 -> 2018.1.18
- cffi 1.10.0 -> 1.11.2
- cloudpickle 0.4.0 -> 0.5.2
- cryptography 1.8.1 -> 2.1.4
- curl 7.52.1 -> 7.55.1
- cython 0.26 -> 0.27.3
- dask 0.15.2 -> 0.16.0
- distributed 1.18.1 -> 1.20.2
- expat 2.1.0 -> 2.2.5
- filelock 2.0.7 -> 2.0.13
- fontconfig 2.12.1 -> 2.12.4
- freetype 2.5.5 -> 2.8
- futures 3.1.1 -> 3.2.0
- glob2 0.5 -> 0.6
- h5py 2.7.0 -> 2.7.1
- hdf5 1.8.17 -> 1.10.1
- html5lib 0.9999999 -> 1.0.1
- ipykernel 4.6.1 -> 4.8.0
- ipython 5.3.0 -> 5.4.1
- ipython 6.1.0 -> 6.2.1
- ipywidgets 6.0.0 -> 7.1.1



- jedi 0.10.2 -> 0.11.0
- jinja2 2.9.6 -> 2.10
- jupyter\_client 5.1.0 -> 5.2.2
- jupyter\_core 4.3.0 -> 4.4.0
- libpng 1.6.30 -> 1.6.32
- libsodium 1.0.10 -> 1.0.15
- libtiff 4.0.6 -> 4.0.9
- lxml 3.7.3 -> 4.1.1
- matplotlib 2.0.2 -> 2.1.2
- mistune 0.7.4 -> 0.8.1
- mpmath 0.19 -> 1.0.0
- nbconvert 5.2.1 -> 5.3.1
- networkx 1.11 -> 2.1
- nltk 3.2.4 -> 3.2.5
- notebook 5.0.0 -> 5.4.0
- numexpr 2.6.2 -> 2.6.4
- numpy 1.13.1 -> 1.13.3
- olefile 0.44 -> 0.45.1
- openblas 0.2.19 -> 0.2.20
- openpyxl 2.4.8 -> 2.4.10
- openssl 1.0.2l -> 1.0.2n
- pandas 0.20.3 -> 0.22.0
- path.py 10.3.1 -> 10.5
- pcre 8.39 -> 8.41
- pexpect 4.2.1 -> 4.3.0
- pillow 4.2.1 -> 5.0.0
- psutil 5.2.2 -> 5.4.1
- py 1.4.34 -> 1.5.2
- pycairo 1.10.0 -> 1.13.3
- pycosat 0.6.2 -> 0.6.3
- pylint 1.7.2 -> 1.8.2
- pyodbc 4.0.16 -> 4.0.22
- pyopenssl 17.0.0 -> 17.5.0
- pytest 3.2.1 -> 3.2.5
- python 2.7.13 -> 2.7.14
- python 3.6.2 -> 3.6.4

- pytz 2017.2 -> 2017.3
- pyzmq 16.0.2 -> 16.0.3
- requests 2.14.2 -> 2.18.4
- ruamel\_yaml 0.11.14 -> 0.15.35
- scandir 1.5 -> 1.6
- scikit-image 0.13.0 -> 0.13.1
- scikit-learn 0.19.0 -> 0.19.1
- scipy 0.19.1 -> 1.0.0
- seaborn 0.8 -> 0.8.1
- setuptools 36.4.0 -> 36.5.0
- six 1.10.0 -> 1.11.0
- sqlalchemy 1.1.13 -> 1.2.1
- sqlite 3.13.0 -> 3.21.0
- terminado 0.6 -> 0.8.1
- tk 8.5.18 -> 8.6.7
- wheel 0.29.0 -> 0.30.0
- widgetsnbextension 3.0.2 -> 3.1.0
- xlswriter 0.9.8 -> 1.0.2
- yaml 0.1.6 -> 0.1.7
- zeromq 4.1.5 -> 4.2.2
- zict 0.1.2 -> 0.1.3

**Added:**

- backports.functools\_lru\_cache 1.4
- backports.shutil\_get\_terminal\_size 1.0.0
- bzip2 1.0.6
- ca-certificates 2017.08.26
- conda 4.4.9
- conda-build 3.4.1
- conda-env 2.6.0
- conda-verify 3.0.0
- dask-core 0.16.0
- glib 2.53.6
- gmp 6.1.2
- gmpy2 2.0.8
- icu 58.2
- imageio 2.2.0

- libedit 3.1.20170329
- libgcc-ng 7.2.0
- libgfortran-ng 7.2.0
- libopenblas 0.2.20
- libssh2 1.8.0
- libstdcxx-ng 7.2.0
- libxcb 1.12
- lzo 2.10
- mccabe 0.6.1
- mpc 1.0.3
- mpfr 3.1.5
- ncurses 6.0
- openblas-devel 0.2.20
- pandoc 2.0.0.1
- parso 0.1.1
- pysocks 1.6.7
- readline 7.0
- send2trash 1.4.2
- typing 3.6.2
- urllib3 1.22
- webencodings 0.5.1

**Removed:**

- functools\_lru\_cache
- libgfortran
- libiconv

**Anaconda 5.0.1 (Oct 25, 2017)**

The changes detailed here are based on an upgrade from Anaconda 5.0.0.

- R has been updated to version 3.4.2. All R packages (including RStudio) have been rebuilt to be compatible with the new Anaconda 5.0 compilers.
- Updated many packages, including Python, Numpy, Spyder, Navigator, and Bokeh.
- The MKL library load path has been modified to address issue for Julia users.
- Fixed an OpenSSL issue with WSL on Windows.
- Fixed Anaconda Installer Configuration (AIC) feature for Unix installers.
- Re-enabled spaces in installation paths on Windows (temporarily disabled in 5.0.0).

## Changes for all x86 platforms

### Updated:

- anaconda-navigator 1.6.8 -> 1.6.9
- bokeh 0.12.7 -> 0.12.10
- conda 4.3.27 -> 4.3.30
- conda-build 3.0.22 -> 3.0.27
- dask 0.15.2 -> 0.15.3
- dask-core 0.15.2 -> 0.15.3
- distributed 1.18.3 -> 1.19.1
- lxml 3.8.0 -> 4.1.0
- matplotlib 2.0.2 -> 2.1.0
- networkx 1.11 -> 2.0
- numpy 1.13.1 -> 1.13.3
- psutil 5.2.2 -> 5.4.0
- pyflakes 1.5.0 -> 1.6.0
- pylint 1.7.2 -> 1.7.4
- python 2.7.13 -> 2.7.14
- python 3.6.2 -> 3.6.3
- scandir 1.5 -> 1.6
- scikit-learn 0.19.0 -> 0.19.1
- six 1.10.0 -> 1.11.0
- spyder 3.2.3 -> 3.2.4
- xlswriter 0.9.8 -> 1.0.2
- zict 0.1.2 -> 0.1.3

## More changes specific to win-64

### Updated:

- menuinst 1.4.8 -> 1.4.10

### Added:

- lzo 2.10

### More changes specific to win-32

#### Updated:

- menuinst 1.4.8 -> 1.4.10

#### Added:

- lzo 2.10

### More changes specific to macOS-64

#### Added:

- bzip2 1.0.6
- lzo 2.10

### More changes specific to linux-64

#### Added:

- bzip2 1.0.6

### More changes specific to linux-32

#### Added:

- bzip2 1.0.6

### Anaconda 5.0.0.1 (Oct 2, 2017)

- Fixes Python & C compiler fallback path for all cases on x86/x86\_64 Linux. Without this fix, people were required to use our new compilers, which is not something we want to enforce at this time. This was affecting travis-ci builds and pip installs of packages that require compilation for extensions.

### What's new in Anaconda 5.0?

Anaconda 5.0 was released on Sept 26, 2017.

- Over 100 packages updated and added. MKL is updated to 2018.0.0. JupyterLab alpha preview 0.27.0 is included.
- All new compilers on macOS and Linux, giving substantial security and performance improvements.
- Where possible, all build recipes use conda-forge as a base, using <https://github.com/AnacondaRecipes>.
- A new channel, pkgs/main, has been added to defaults. The new channel is given top priority within defaults and holds packages built with the new compiler stack.
- Continuum Analytics has been renamed to Anaconda, Inc. See [this blog post](#) for more.
- Spaces are no longer allowed in the installation path on Windows.
- Transitioned to more flexible dependency pinning of numpy packages, giving wider ranges of compatibility.

## Changes for all x86 platforms

### Updated:

- anaconda-client 1.6.3 -> 1.6.5
- anaconda-navigator 1.6.2 -> 1.6.8
- anaconda-project 0.6.0 -> 0.8.0
- astroid 1.4.9 -> 1.5.3
- astropy 1.3.2 -> 2.0.2
- babel 2.4.0 -> 2.5.0
- blaze 0.10.1 -> 0.11.3
- bleach 1.5.0 -> 2.0.0
- bokeh 0.12.5 -> 0.12.7
- boto 2.46.1 -> 2.48.0
- chardet 3.0.3 -> 3.0.4
- cloudpickle 0.2.2 -> 0.4.0
- conda 4.3.21 -> 4.3.27
- cryptography 1.8.1 -> 2.0.3
- curl 7.52.1 -> 7.55.1
- cython 0.25.2 -> 0.26.1
- dask 0.14.3 -> 0.15.2
- decorator 4.0.11 -> 4.1.2
- distributed 1.16.3 -> 1.18.3
- docutils 0.13.1 -> 0.14
- entrypoints 0.2.2 -> 0.2.3
- flask-cors 3.0.2 -> 3.0.3
- freetype 2.5.5 -> 2.8
- gevent 1.2.1 -> 1.2.2
- html5lib 0.999 -> 0.999999999
- idna 2.5 -> 2.6
- ipywidgets 6.0.0 -> 7.0.0
- isort 4.2.5 -> 4.2.15
- jupyter\_client 5.0.1 -> 5.1.0
- jupyter\_console 5.1.0 -> 5.2.0
- lazy-object-proxy 1.2.2 -> 1.3.1
- libpng 1.6.27 -> 1.6.32
- libtiff 4.0.6 -> 4.0.8
- llvmlite 0.18.0 -> 0.20.0

- lxml 3.7.3 -> 3.8.0
- markupsafe 0.23 -> 1.0
- mkl 2017.0.1 -> 2018.0.0
- nbconvert 5.1.1 -> 5.3.1
- nbformat 4.3.0 -> 4.4.0
- nltk 3.2.3 -> 3.2.4
- numba 0.33.0 -> 0.35.0
- numpy 1.12.1 -> 1.13.1
- numpydoc 0.6.0 -> 0.7.0
- odo 0.5.0 -> 0.5.1
- openpyxl 2.4.7 -> 2.4.8
- pandas 0.20.1 -> 0.20.3
- pandocfilters 1.4.1 -> 1.4.2
- pathlib2 2.2.1 -> 2.3.0
- pillow 4.1.1 -> 4.2.1
- prompt\_toolkit 1.0.14 -> 1.0.15
- py 1.4.33 -> 1.4.34
- pycparser 2.17 -> 2.18
- pylint 1.6.4 -> 1.7.2
- pyodbc 4.0.16 -> 4.0.17
- pyopenssl 17.0.0 -> 17.2.0
- pyparsing 2.1.4 -> 2.2.0
- pytest 3.0.7 -> 3.2.1
- python-dateutil 2.6.0 -> 2.6.1
- qtconsole 4.3.0 -> 4.3.1
- qtpy 1.2.1 -> 1.3.1
- requests 2.14.2 -> 2.18.4
- rope 0.9.4 -> 0.10.5
- scikit-learn 0.18.1 -> 0.19.0
- scipy 0.19.0 -> 0.19.1
- seaborn 0.7.1 -> 0.8.0
- setuptools 27.2.0 -> 36.5.0
- sip 4.18 -> 4.18.1
- sphinx 1.5.6 -> 1.6.3
- spyder 3.1.4 -> 3.2.3
- sqlalchemy 1.1.9 -> 1.1.13

- sympy 1.0 -> 1.1.1
- testpath 0.3 -> 0.3.1
- tk 8.5.18 -> 8.6.7
- tornado 4.5.1 -> 4.5.2
- widgetsnbextension 2.0.0 -> 3.0.2
- wrapt 1.10.10 -> 1.10.11
- xlrd 1.0.0 -> 1.1.0
- xlswriter 0.9.6 -> 0.9.8
- zlib 1.2.8 -> 1.2.11

### Added:

- backports.shutil\_get\_terminal\_size 1.0.0
- bkcharts 0.2
- ca-certificates 2017.08.26
- certifi 2017.7.27.1
- conda-build 3.0.22
- dask-core 0.15.2
- filelock 2.0.12
- glob2 0.5
- imageio 2.2.0
- intel-openmp 2018.0.0
- jupyterlab 0.27.0
- jupyterlab\_launcher 0.4.0
- libssh2 1.8.0
- mccabe 0.6.1
- pkginfo 1.4.1
- pycodestyle 2.3.1
- pysocks 1.6.7
- sphinxcontrib 1.0
- sphinxcontrib-websupport 1.0.1
- typing 3.6.2
- urllib3 1.22
- webencodings 0.5.1

### Removed:

- \_license



## More changes specific to win-64

### Updated:

- hdf5 1.8.15.1 -> 1.10.1
- icu 57.1 -> 58.2
- ipython 5.3.0 -> 5.4.1
- ipython 5.3.0 -> 6.1.0
- menuinst 1.4.7 -> 1.4.8
- pytables 3.2.2 -> 3.4.2
- python 3.5.3 -> 3.5.4
- python 3.6.1 -> 3.6.2
- pywin32 220 -> 221
- ssl\_match\_hostname 3.4.0.2 -> 3.5.0.1
- vs2008\_runtime 9.00.30729.5054 -> 9.00.30729.1
- xlwings 0.10.4 -> 0.11.4
- xlwt 1.2.0 -> 1.3.0

### Added:

- backports.functools\_lru\_cache 1.4
- cachecontrol 0.12.3
- distlib 0.2.5
- icc\_rt 2017.0.4
- libiconv 1.15
- libxml2 2.9.4
- libxslt 1.1.29
- lockfile 0.12.2
- pandoc 1.19.2.1
- progress 1.3
- sqlite 3.20.1
- vc 14
- vc 9
- win\_inet\_pton 1.0.1
- wincertstore 0.2
- yaml 0.1.7

**More changes specific to win-32****Updated:**

- hdf5 1.8.15.1 -> 1.10.1
- icu 57.1 -> 58.2
- ipython 5.3.0 -> 5.4.1
- ipython 5.3.0 -> 6.1.0
- menuinst 1.4.7 -> 1.4.8
- pytables 3.2.2 -> 3.4.2
- python 3.5.3 -> 3.5.4
- python 3.6.1 -> 3.6.2
- pywin32 220 -> 221
- ssl\_match\_hostname 3.4.0.2 -> 3.5.0.1
- vs2008\_runtime 9.00.30729.5054 -> 9.00.30729.1
- xlwings 0.10.4 -> 0.11.4
- xlwt 1.2.0 -> 1.3.0

**Added:**

- backports.functools\_lru\_cache 1.4
- cachecontrol 0.12.3
- distlib 0.2.5
- icc\_rt 2017.0.4
- libiconv 1.15
- libxml2 2.9.4
- libxslt 1.1.29
- lockfile 0.12.2
- pandoc 1.19.2.1
- progress 1.3
- sqlite 3.20.1
- vc 14
- vc 9
- win\_inet\_pton 1.0.1
- wincertstore 0.2
- yaml 0.1.7

## More changes specific to macOS-64

### Updated:

- hdf5 1.8.17 -> 1.10.1
- icu 54.1 -> 58.2
- ipython 5.3.0 -> 5.4.1
- ipython 5.3.0 -> 6.1.0
- libiconv 1.14 -> 1.15
- ptyprocess 0.5.1 -> 0.5.2
- pytables 3.3.0 -> 3.4.2
- python 3.5.3 -> 3.5.4
- python 3.6.1 -> 3.6.2
- python.app 1.2 -> 2
- readline 6.2 -> 7.0
- sqlite 3.13.0 -> 3.20.1
- ssl\_match\_hostname 3.4.0.2 -> 3.5.0.1
- xlwings 0.10.4 -> 0.11.4
- xz 5.2.2 -> 5.2.3
- yaml 0.1.6 -> 0.1.7

### Added:

- backports.functools\_lru\_cache 1.4
- dbus 1.10.22
- expat 2.2.4
- gettext 0.19.8.1
- glib 2.53.6
- gmp 6.1.2
- gmpy2 2.0.8
- libcxx 4.0.1
- libcxxabi 4.0.1
- libedit 3.1
- libffi 3.2.1
- libgfortran 3.0.1
- libsodium 1.0.13
- mpc 1.0.3
- mpfr 3.1.5
- ncurses 6.0
- pandoc 1.19.2.1

- pcre 8.41
- zeromq 4.2.2

### More changes specific to linux-64

#### Updated:

- cairo 1.14.8 -> 1.14.10
- dbus 1.10.10 -> 1.10.22
- expat 2.1.0 -> 2.2.4
- fontconfig 2.12.1 -> 2.12.4
- glib 2.50.2 -> 2.53.6
- gst-plugins-base 1.8.0 -> 1.12.2
- gstreamer 1.8.0 -> 1.12.2
- harfbuzz 0.9.39 -> 1.5.0
- hdf5 1.8.17 -> 1.10.1
- icu 54.1 -> 58.2
- ipython 5.3.0 -> 5.4.1
- ipython 5.3.0 -> 6.1.0
- libsodium 1.0.10 -> 1.0.13
- libtool 2.4.2 -> 2.4.6
- pango 1.40.3 -> 1.40.11
- pcre 8.39 -> 8.41
- ptyprocess 0.5.1 -> 0.5.2
- pycairo 1.10.0 -> 1.13.3
- pytables 3.3.0 -> 3.4.2
- python 3.5.3 -> 3.5.4
- python 3.6.1 -> 3.6.2
- readline 6.2 -> 7.0
- sqlite 3.13.0 -> 3.20.1
- ssl\_match\_hostname 3.4.0.2 -> 3.5.0.1
- xlt 1.2.0 -> 1.3.0
- xz 5.2.2 -> 5.2.3
- yaml 0.1.6 -> 0.1.7
- zeromq 4.1.5 -> 4.2.2

#### Added:

- backports.functools\_lru\_cache 1.4
- gmp 6.1.2

- gmpy2 2.0.8
- graphite2 1.3.10
- libedit 3.1
- libgcc-ng 7.2.0
- libgfortran-ng 7.2.0
- libstdcxx-ng 7.2.0
- lzo 2.10
- mpc 1.0.3
- mpfr 3.1.5
- ncurses 6.0
- pandoc 1.19.2.1
- patchelf 0.9

**Removed:**

- libgcc
- libgfortran
- libiconv

**More changes specific to linux-32****Updated:**

- cairo 1.14.8 -> 1.14.10
- dbus 1.10.10 -> 1.10.22
- expat 2.1.0 -> 2.2.4
- fontconfig 2.12.1 -> 2.12.4
- glib 2.50.2 -> 2.53.6
- gst-plugins-base 1.8.0 -> 1.12.2
- gstreamer 1.8.0 -> 1.12.2
- harfbuzz 0.9.39 -> 1.5.0
- hdf5 1.8.17 -> 1.10.1
- icu 54.1 -> 58.2
- ipython 5.3.0 -> 5.4.1
- ipython 5.3.0 -> 6.1.0
- libsodium 1.0.10 -> 1.0.13
- libtool 2.4.2 -> 2.4.6
- pango 1.40.3 -> 1.40.11
- pcre 8.39 -> 8.41
- ptyprocess 0.5.1 -> 0.5.2

- pycairo 1.10.0 -> 1.13.3
- pytables 3.3.0 -> 3.4.2
- python 3.5.3 -> 3.5.4
- python 3.6.1 -> 3.6.2
- readline 6.2 -> 7.0
- sqlite 3.13.0 -> 3.20.1
- ssl\_match\_hostname 3.4.0.2 -> 3.5.0.1
- xlwt 1.2.0 -> 1.3.0
- xz 5.2.2 -> 5.2.3
- yaml 0.1.6 -> 0.1.7
- zeromq 4.1.5 -> 4.2.2

### Added:

- backports.functools\_lru\_cache 1.4
- gmp 6.1.2
- gmpy2 2.0.8
- graphite2 1.3.10
- libedit 3.1
- libgcc-ng 7.2.0
- libgfortran-ng 7.2.0
- libstdcxx-ng 7.2.0
- lzo 2.10
- mpc 1.0.3
- mpfr 3.1.5
- ncurses 6.0
- pandoc 1.15.0.6
- patchelf 0.9

### Removed:

- libgcc
- libgfortran
- libiconv

## Changes for linux-ppc64le

### Updated:

- astroid 1.4.9 -> 1.5.3
- astropy 1.3.2 -> 2.0.1
- babel 2.4.0 -> 2.5.0
- bokeh 0.12.5 -> 0.12.7
- boto 2.46.1 -> 2.48.0
- chardet 3.0.3 -> 3.0.4
- cloudpickle 0.2.2 -> 0.4.0
- cython 0.25.2 -> 0.26
- dask 0.14.3 -> 0.15.2
- decorator 4.0.11 -> 4.1.2
- distributed 1.16.3 -> 1.18.1
- docutils 0.13.1 -> 0.14
- entrypoints 0.2.2 -> 0.2.3
- flask-cors 3.0.2 -> 3.0.3
- gevent 1.2.1 -> 1.2.2
- html5lib 0.999 -> 0.99999999
- idna 2.5 -> 2.6
- ipython 5.3.0 -> 6.1.0
- isort 4.2.5 -> 4.2.15
- jupyter\_client 5.0.1 -> 5.1.0
- jupyter\_console 5.1.0 -> 5.2.0
- lazy-object-proxy 1.2.2 -> 1.3.1
- libpng 1.6.27 -> 1.6.30
- markupsafe 0.23 -> 1.0
- nbconvert 5.1.1 -> 5.2.1
- nbformat 4.3.0 -> 4.4.0
- nltk 3.2.3 -> 3.2.4
- numpy 1.12.1 -> 1.13.1
- numpydoc 0.6.0 -> 0.7.0
- odo 0.5.0 -> 0.5.1
- openpyxl 2.4.7 -> 2.4.8
- pandas 0.20.1 -> 0.20.3
- pandocfilters 1.4.1 -> 1.4.2
- pathlib2 2.2.1 -> 2.3.0

- pillow 4.1.1 -> 4.2.1
- prompt\_toolkit 1.0.14 -> 1.0.15
- ptyprocess 0.5.1 -> 0.5.2
- py 1.4.33 -> 1.4.34
- pycparser 2.17 -> 2.18
- pyflakes 1.5.0 -> 1.6.0
- pylint 1.6.4 -> 1.7.2
- pyparsing 2.1.4 -> 2.2.0
- pytables 3.2.2 -> 3.4.2
- pytest 3.0.7 -> 3.2.1
- python 3.5.3 -> 3.5.4
- python 3.6.1 -> 3.6.2
- python-dateutil 2.6.0 -> 2.6.1
- scikit-learn 0.18.1 -> 0.19.0
- scipy 0.19.0 -> 0.19.1
- seaborn 0.7.1 -> 0.8
- setuptools 27.2.0 -> 36.4.0
- sphinx 1.5.6 -> 1.6.3
- sqlalchemy 1.1.9 -> 1.1.13
- ssl\_match\_hostname 3.4.0.2 -> 3.5.0.1
- sympy 1.0 -> 1.1.1
- testpath 0.3 -> 0.3.1
- tornado 4.5.1 -> 4.5.2
- widgetsnbextension 2.0.0 -> 3.0.2
- wrapt 1.10.10 -> 1.10.11
- xlrd 1.0.0 -> 1.1.0
- xlswriter 0.9.6 -> 0.9.8
- xlwt 1.2.0 -> 1.3.0
- xz 5.2.2 -> 5.2.3
- zlib 1.2.8 -> 1.2.11

### Added:

- bkcharts 0.2
- certifi 2016.2.28
- filelock 2.0.7
- functools\_lru\_cache 1.4
- glob2 0.5



- jedi 0.10.2
- patchelf 0.9
- pkginfo 1.4.1
- pycodestyle 2.3.1
- sphinxcontrib 1.0
- sphinxcontrib-websupport 1.0.1
- typing 3.6.2

## What's new in Anaconda 4.4?

Anaconda 4.4 was released on May 31, 2017 and includes the following:

- Support added for the “ppc64le” machine type, for the POWER8 LE architecture used by IBM Power Systems and OpenPOWER servers.
- On Windows, the PATH environment variable is no longer changed by default, as this can cause trouble with other software. Instead, use Anaconda Navigator or the Anaconda Prompt in the Start Menu under “Anaconda” to use Anaconda software. If a user does choose to change the PATH variable, Anaconda is no longer appended to the PATH in system mode, and is now always added to the front of PATH in either system mode or user mode.
- Python 3.5 is updated from 3.5.2 to 3.5.3 and Python 3.6 from 3.6.0 to 3.6.1. Anaconda 4.4 supports Python 2.7, 3.5, and 3.6. Anaconda 4.3 was the last release to support Python 3.4.
- Minimum supported version of CentOS is now CentOS 6. Anaconda 4.3 was the last release to support CentOS 5.
- Applied pycrypto patch for CVE-2013-7439.
- Improved cp\_acp support for install paths with non-ASCII characters on Windows.
- conda is updated from 4.3.14 to 4.3.21.
- Navigator is updated from 1.5.0 to 1.6.2.
- Project is updated from 0.4.1 to 0.6.0.
- Added distributed and pyodbc to the installers.
- Updated EULA.
- Conda packages with “mkl” in the package name now contain a file license.txt with a copy of the [Intel Simplified Software License](#) that applies to the Intel Math Kernel Library (MKL).
- Over 90 packages are updated or added.

### 2017-05-31 4.4.0:

#### Highlights:

- add support for the ppc64le (POWER8 LE used by IBM Power Systems and OpenPOWER servers) machine types

#### Other changes:

- On Windows, the PATH environment variable is no longer changed by default, as this can cause trouble with other software. The recommended approach is to instead use Anaconda Navigator or the Anaconda Prompt (located in the Start Menu under “Anaconda”) when you wish to use Anaconda software. Also, Anaconda will always be added to the front of PATH, for either system or user mode. (Previously it was appended to the system path.)
- improve cp\_acp support for install path on Windows
- updated 80 packages in the installer (and their dependencies)
- added distributed and pyodbc to the installers
- apply pycrypto patch for CVE-2013-7439
- end support for CentOS 5. CentOS 6 is now the minimum supported version.

### Updates:

- alabaster from 0.7.9 to 0.7.10
- anaconda-client from 1.6.0 to 1.6.3
- anaconda-navigator from 1.5.0 to 1.6.2
- anaconda-project from 0.4.1 to 0.6.0
- astropy from 1.3 to 1.3.2
- babel from 2.3.4 to 2.4.0
- beautifulsoup4 from 4.5.3 to 4.6.0
- bokeh from 0.12.4 to 0.12.5
- boto from 2.45.0 to 2.46.1
- bottleneck from 1.2.0 to 1.2.1
- cffi from 1.9.1 to 1.10.0
- chardet from 2.3.0 to 3.0.3
- colorama from 0.3.7 to 0.3.9
- conda from 4.3.14 to 4.3.21
- contextlib2 from 0.5.4 to 0.5.5
- cryptography from 1.7.1 to 1.8.1
- dask from 0.13.0 to 0.14.3
- flask from 0.12 to 0.12.2
- futures from 3.0.5 to 3.1.1
- greenlet from 0.4.11 to 0.4.12
- h5py from 2.6.0 to 2.7.0
- hdf5 from 1.8.15.1 to 1.8.17
- idna from 2.2 to 2.5
- ipykernel from 4.5.2 to 4.6.1
- ipython from 5.1.0 to 5.3.0
- ipython\_genutils from 0.1.0 to 0.2.0

- ipywidgets from 5.2.2 to 6.0.0
- jedi from 0.9.0 to 0.10.2
- jinja2 from 2.9.4 to 2.9.6
- jsonschema from 2.5.1 to 2.6.0
- jupyter\_client from 4.4.0 to 5.0.1
- jupyter\_console from 5.0.0 to 5.1.0
- jupyter\_core from 4.2.1 to 4.3.0
- llvmlite from 0.15.0 to 0.18.0
- lxml from 3.7.2 to 3.7.3
- matplotlib from 2.0.0 to 2.0.2
- menuinst from 1.4.4 to 1.4.7
- mistune from 0.7.3 to 0.7.4
- nbconvert from 4.2.0 to 5.1.1
- nbformat from 4.2.0 to 4.3.0
- nltk from 3.2.2 to 3.2.3
- notebook from 4.3.1 to 5.0.0
- numba from 0.30.1 to 0.33.0
- numpy from 1.11.3 to 1.12.1
- numexpr from 2.6.1 to 2.6.2
- openpyxl from 2.4.1 to 2.4.7
- openssl from 1.0.2k to 1.0.2l
- pandas from 0.19.2 to 0.20.1
- partd from 0.3.7 to 0.3.8
- path.py from 10.0 to 10.3.1
- pathlib2 from 2.2.0 to 2.2.1
- pillow from 4.0.0 to 4.1.1
- ply from 3.9 to 3.10
- prompt\_toolkit from 1.0.9 to 1.0.14
- psutil from 5.0.1 to 5.2.2
- py from 1.4.32 to 1.4.33
- pycosat from 0.6.1 to 0.6.2
- pygments from 2.1.3 to 2.2.0
- pyopenssl from 16.2.0 to 17.0.0
- pytables from 3.2.2 to 3.3.0
- pytest from 3.0.5 to 3.0.7
- python 3.5 from 3.5.2 to 3.5.3

- python 3.6 from 3.6.0 to 3.6.1
- pytz from 2016.10 to 2017.2
- qtawesome from 0.4.3 to 0.4.4
- qtconsole from 4.2.1 to 4.3.0
- requests from 2.12.4 to 2.14.2
- scandir from 1.4 to 1.5
- scikit-image from 0.12.3 to 0.13.0
- scipy from 0.18.1 to 0.19.0
- sphinx from 1.5.1 to 1.5.6
- spyder from 3.1.2 to 3.1.4
- sqlalchemy from 1.1.5 to 1.1.9
- statsmodels from 0.6.1 to 0.8.0
- tornado from 4.4.2 to 4.5.1
- traitlets from 4.3.1 to 4.3.2
- werkzeug from 0.11.15 to 0.12.2
- widgetsnbextension from 1.2.6 to 2.0.0
- wrapt from 1.10.8 to 1.10.10
- xlwings from 0.10.2 to 0.10.4

### **Added:**

- asn1crypto 0.22.0
- bleach 1.5.0
- distributed 1.16.3
- html5lib 0.999
- msgpack-python 0.4.8
- navigator-updater 0.1.0
- oledfile 0.44
- packaging 16.8
- pandocfilters 1.4.1
- pyodbc 4.0.16
- pywavelets 0.5.2
- sortedcollections 0.5.3
- sortedcontainers 1.5.7
- tblib 1.3.2
- testpath 0.3
- zict 0.1.2

### **Removed (from installers only):**

- argcomplete
- chest
- configobj
- dill
- pyasn1
- redis
- redis-py
- sockjs-tornado

### 2017-03-10 4.3.1:

This patch release fixes problems with Anaconda Navigator not starting correctly on some versions of Mac OS X when using the GUI installers.

#### Fixes:

- removed creation of `~/ .continuum` folder during install process on all platforms
- fixed `'/'` showing up in prefix when installing system wide on Mac OS using the GUI installer
- fixed OpenSSL not being installable into a path which contains spaces
- allow Unicode characters in install path on Windows (cp\_acp fix)

#### Updates:

- anaconda-navigator from 1.4.3 to 1.5.0
- conda from 4.3.8 to 4.3.14

#### Added:

- anaconda-project 0.4.1

### 2017-02-03 4.3.0.1:

In this “mirco” patch release, we fixed a problem with the Windows installers which was causing problems with Qt applications when the install prefix exceeds 30 characters. No new Anaconda meta-packages correspond to this release (only new Windows installers).

### 2017-01-31 4.3.0:

#### Highlights:

- The Anaconda3 installers are based on Python 3.6. Anaconda 4.3 supports Python 2.7, 3.4, 3.5 and 3.6. Anaconda 4.3 will be the last release which supports Python 3.4. We will discontinue regular Python 3.4 package updates in the next release.
- The Intel Math Kernel Library (MKL) is updated from 11.3.3 to 2017.0.1.
- Over 90 packages are updated.
- seaborn is now installed by default.

#### Other changes:

- Updates jpeg and libpng to increase compatibility with conda-forge.
- Warns about possible errors if installing on Windows into an install path with spaces, and does not allow installation if the install path contains unicode characters.
- Fixes many Windows menu uninstallation issues and some other often reported uninstallation issues on Windows.
- Anaconda 4.2 is the last release that supports macOS 10.7 and macOS 10.8. Anaconda 4.3 supports macOS versions from 10.9 through the current version 10.12.
- conda-build, anaconda-clean and the Jupyter Notebook extensions are no longer installed by default but can be installed with a single conda command.

**Updates:**

- anaconda-client from 1.5.1 to 1.6.0
- anaconda-navigator from 1.3.1 to 1.4.3
- astroid from 1.4.7 to 1.4.9
- astropy from 1.2.1 to 1.3
- backports\_abc from 0.4 to 0.5
- beautifulsoup4 from 4.5.1 to 4.5.3
- bokeh from 0.12.2 to 0.12.4
- boto from 2.42.0 to 2.45.0
- bottleneck from 1.1.0 to 1.2.0
- cairo from 1.12.18 to 1.14.8
- cffi from 1.7.0 to 1.9.1
- click from 6.6 to 6.7
- cloudpickle from 0.2.1 to 0.2.2
- conda from 4.2.9 to 4.3.8
- contextlib2 from 0.5.3 to 0.5.4
- cryptography from 1.5 to 1.7.1
- curl from 7.49.0 to 7.52.1
- cython from 0.24.1 to 0.25.2
- cytoolz from 0.8.0 to 0.8.2
- dask from 0.11.0 to 0.13.0
- datashape from 0.5.2 to 0.5.4
- decorator from 4.0.10 to 4.0.11
- docutils from 0.12 to 0.13.1
- flask from 0.11.1 to 0.12
- flask-cors from 2.1.2 to 3.0.2
- fontconfig from 2.11.1 to 2.12.1
- gevent from 1.1.2 to 1.2.1

- glib from 2.43.0 to 2.50.2
- greenlet from 0.4.10 to 0.4.11
- hdf5 from 1.8.15.1 to 1.8.17
- idna from 2.1 to 2.2
- ipaddress from 1.0.16 to 1.0.18
- ipykernel from 4.5.0 to 4.5.2
- jdcal from 1.2 to 1.3
- jinja2 from 2.8 to 2.9.4
- jpeg from 8d to 9b
- jupyter\_core from 4.2.0 to 4.2.1
- lazy-object-proxy from 1.2.1 to 1.2.2
- libpng from 1.6.22 to 1.6.27
- libxml2 from 2.9.2 to 2.9.4
- libxslt from 1.1.28 to 1.1.29
- llvmlite from 0.13.0 to 0.15.0
- lxml from 3.6.4 to 3.7.2
- matplotlib from 1.5.3 to 2.0.0
- menuinst from 1.4.1 to 1.4.4
- mkl from 11.3.3 to 2017.0.1
- multipledispatch from 0.4.8 to 0.4.9
- nbformat from 4.1.0 to 4.2.0
- nltk from 3.2.1 to 3.2.2
- notebook from 4.2.3 to 4.3.1
- numba from 0.28.1 to 0.30.1
- numpy from 1.11.1 to 1.11.3
- openpyxl from 2.3.2 to 2.4.1
- openssl from 1.0.2j to 1.0.2k
- pandas from 0.18.1 to 0.19.2
- partd from 0.3.6 to 0.3.7
- path.py from 8.2.1 to 10.0
- pathlib2 from 2.1.0 to 2.2.0
- pexpect from 4.0.1 to 4.2.1
- pillow from 3.3.1 to 4.0.0
- pip from 8.1.2 to 9.0.1
- pixman from 0.32.6 to 0.34.0
- prompt\_toolkit from 1.0.3 to 1.0.9

- psutil from 4.3.1 to 5.0.1
- py from 1.4.31 to 1.4.32
- pycparser from 2.14 to 2.17
- pyflakes from 1.3.0 to 1.5.0
- pylint from 1.5.4 to 1.6.4
- pyopenssl from 16.0.0 to 16.2.0
- pytables from 3.2.2 to 3.3.0
- pytest from 2.9.2 to 3.0.5
- python from 2.7.12 to 2.7.13
- python-dateutil from 2.5.3 to 2.6.0
- pytz from 2016.6.1 to 2016.10
- pyzmq from 15.4.0 to 16.0.2
- qt from 5.6.0 to 5.6.2
- qtawesome from 0.3.3 to 0.4.3
- qtpy from 1.1.2 to 1.2.1
- requests from 2.11.1 to 2.12.4
- scikit-learn from 0.17.1 to 0.18.1
- sphinx from 1.4.6 to 1.5.1
- spyder from 3.0.0 to 3.1.2
- sqlalchemy from 1.0.13 to 1.1.5
- toolz from 0.8.0 to 0.8.2
- tornado from 4.4.1 to 4.4.2
- traitlets from 4.3.0 to 4.3.1
- werkzeug from 0.11.11 to 0.11.15
- wrapt from 1.10.6 to 1.10.8
- xlswriter from 0.9.3 to 0.9.6
- xlwings from 0.10.0 to 0.10.2
- xlwt from 1.1.2 to 1.2.0
- zeromq from 4.1.4 to 4.1.5

**Added:**

- chardet 2.3.0
- isort 4.2.5
- libiconv 1.14
- numpydoc 0.6.0
- pcre 8.39 (on Linux)
- scandir 1.4



- seaborn 0.7.1
- subprocess32 3.2.7 (Python 2)

**Removed (from installer only):**

- anaconda-clean
- dynd-python
- filelock
- libdynd
- nb\_anacondacloud
- nb\_conda
- nb\_conda\_kernels
- nbpresent
- patchelf
- pkginfo

**2016-09-28 4.2.0:****Highlights:**

- updated Qt from major version 4 to 5
- updated IPython from 4.2 to 5.1
- added anaconda-clean, a tool for cleaning up Anaconda related configuration files and directories

**Fixes:**

- fixed Windows Outlook crash in silent install mode
- updated OpenSSL to 1.0.2j which contains important security fixes

**Updates:**

- alabaster from 0.7.8 to 0.7.9
- anaconda-client from 1.4.0 to 1.5.1
- anaconda-navigator from 1.2.1 to 1.3.1
- babel from 2.3.3 to 2.3.4
- beautifulsoup4 from 4.4.1 to 4.5.1
- bokeh from 0.12.0 to 0.12.2
- boto from 2.40.0 to 2.42.0
- cffi from 1.6.0 to 1.7.0
- conda from 4.1.4 to 4.2.9
- conda-build from 1.21.2 to 2.0.2
- configparser from 3.5.0b2 to 3.5.0
- cryptography from 1.4 to 1.5
- cython from 0.24 to 0.24.1

- dask from 0.10.0 to 0.11.0
- gevent from 1.1.1 to 1.1.2
- hdf5 from 1.8.15.1 to 1.8.17
- ipykernel from 4.3.1 to 4.5.0
- ipython from 4.2.0 to 5.1.0
- ipywidgets from 4.1.1 to 5.2.2
- jupyter\_client from 4.3.0 to 4.4.0
- jupyter\_console from 4.1.1 to 5.0.0
- jupyter\_core from 4.1.0 to 4.2.0
- llvmlite from 0.11.0 to 0.13.0
- lxml from 3.6.0 to 3.6.4
- matplotlib from 1.5.1 to 1.5.3
- mistune from 0.7.2 to 0.7.3
- nb\_anacondacloud from 1.1.0 to 1.2.0
- nb\_conda from 1.1.0 to 2.0.0
- nb\_conda\_kernels from 1.0.3 to 2.0.0
- nbformat from 4.0.1 to 4.1.0
- notebook from 4.2.1 to 4.2.3
- numba from 0.26.0 to 0.28.1
- numexpr from 2.6.0 to 2.6.1
- openssl from 1.0.2h to 1.0.2j
- partd from 0.3.4 to 0.3.6
- pickleshare from 0.7.2 to 0.7.4
- pillow from 3.2.0 to 3.3.1
- ply from 3.8 to 3.9
- psutil from 4.3.0 to 4.3.1
- pyflakes from 1.2.3 to 1.3.0
- pyopenssl from 0.16.0 to 16.0.0
- pyqt from 4.11.4 to 5.6.0
- pytables from 3.2.2 to 3.2.3.1
- pytz from 2016.4 to 2016.6.1
- pyyaml from 3.11 to 3.12
- pyzmq from 15.2.0 to 15.4.0
- qt from 4.8.7 to 5.6.0
- qtpy from 1.0.2 to 1.1.2
- requests from 2.10.0 to 2.11.1

- ruamel\_yaml from 0.11.7 to 0.11.14
- scipy from 0.17.1 to 0.18.1
- setuptools from 23.0.0 to 27.2.0
- sip from 4.16.9 to 4.18
- sphinx from 1.4.1 to 1.4.6
- spyder from 2.3.9 to 3.0.0
- tornado from 4.3 to 4.4.1
- traitlets from 4.2.1 to 4.3.0
- werkzeug from 0.11.10 to 0.11.11
- xlswriter from 0.9.2 to 0.9.3
- xlwings from 0.7.2 to 0.10.0

**Added:**

- anaconda-clean 1.0.0
- astroid 1.4.7
- dbus 1.10.10 (Linux)
- expat 2.1.0 (Linux)
- filelock 2.0.6
- glib 2.43.0 (Linux)
- gst-plugins-base 1.8.0 (Linux)
- gstreamer 1.8.0 (Linux)
- harfbuzz 0.9.39 (Linux)
- icu 57.1
- lazy-object-proxy 1.2.1
- libgcc 4.8.5 (Linux)
- libxcb 1.12 (Linux)
- pkginfo 1.3.2
- prompt\_toolkit 1.0.3
- pylint 1.5.4
- qtawesome 0.3.3
- wcwidth 0.1.7
- widgetsnbextension 1.2.6
- win\_unicode\_console 0.5 (Windows)
- wrapt 1.10.6

**Removed (from installer only):**

- pyreadline
- sphinx\_rtd\_theme

- conda-env (now part of conda itself)

### 2016-07-08 4.1.1:

#### Fixes:

- Running the shell installer on some older system, would print out (harmless) tracebacks during the install process, see: <https://github.com/ContinuumIO/anaconda-issues/issues/860>
- We added blaze 0.10.1 back into the installer, which was accidentally missing in 4.1.0

#### Updates:

- bokeh from 0.11.1 to 0.12.0
- bottleneck from 1.0.0 to 1.1.0
- conda from 4.1.4 to 4.1.6
- conda-build from 1.21.2 to 1.21.3
- numpy from 1.11.0 to 1.11.1
- Python 2.7 from 2.7.11 to 2.7.12
- Python 3.4 from 3.4.4 to 3.4.5
- Python 3.5 from 3.5.1 to 3.5.2

### 2016-06-28 4.1.0:

#### Highlights:

- added Jupyter Notebook Extensions
- Windows installation: silent mode fixes & now compatible with SCCM (System Center Configuration Manager)
- updated MKL to 11.3.3, numpy to 1.11.0, as well as over 80 other updates, see below
- update Navigator from 1.1 to 1.2, in particular it no longer installs a desktop shortcut on macOS
- conda-recipes used to build the vast majority of the packages in the Anaconda installer have been published at: <https://github.com/ContinuumIO/anaconda-recipes>

#### Updates:

- alabaster from 0.7.7 to 0.7.8
- anaconda-navigator from 1.1.0 to 1.2.1
- astropy from 1.1.2 to 1.2.1
- babel from 2.2.0 to 2.3.3
- boto from 2.39.0 to 2.40.0
- cffi from 1.5.2 to 1.6.0
- cloudpickle from 0.1.1 to 0.2.1
- clyent from 1.2.1 to 1.2.2
- conda from 4.0.5 to 4.1.4

- conda-build from 1.20.0 to 1.21.2
- conda-env from 2.4.5 to 2.5.1
- cryptography from 1.3 to 1.4
- curl from 7.45.0 to 7.49.0
- cython from 0.23.4 to 0.24
- cytoolz from 0.7.5 to 0.8.0
- dask from 0.8.1 to 0.10.0
- datashape from 0.5.1 to 0.5.2
- decorator from 4.0.9 to 4.0.10
- dill from 0.2.4 to 0.2.5
- enum34 from 1.1.2 to 1.1.6
- flask from 0.10.1 to 0.11.1
- funcsigs from 0.4 to 1.0.2
- futures from 3.0.3 to 3.0.5
- gevent from 1.1.0 to 1.1.1
- greenlet from 0.4.9 to 0.4.10
- h5py from 2.5.0 to 2.6.0
- hdf5 from 1.8.15.1 to 1.8.16
- idna from 2.0 to 2.1
- ipaddress from 1.0.14 to 1.0.16
- ipython from 4.1.2 to 4.2.0
- jsonschema from 2.4.0 to 2.5.1
- jupyter\_client from 4.2.2 to 4.3.0
- libffi from 3.0.13 to 3.2.1
- libgfortran from 3.0 to 3.0.0
- libpng from 1.6.17 to 1.6.22
- libsodium from 1.0.3 to 1.0.10
- llvmlite from 0.9.0 to 0.11.0
- menuinst from 1.3.2 to 1.4.1
- mkl from 11.3.1 to 11.3.3
- nbconvert from 4.1.0 to 4.2.0
- nltk from 3.2 to 3.2.1
- notebook from 4.1.0 to 4.2.1
- numba from 0.24.0 to 0.26.0
- numexpr from 2.5 to 2.6.0
- numpy from 1.10.4 to 1.11.0

- `odo` from 0.4.2 to 0.5.0
- `openssl` from 1.0.2g to 1.0.2h
- `pandas` from 0.18.0 to 0.18.1
- `partd` from 0.3.2 to 0.3.4
- `patchelf` from 0.8 to 0.9
- `path.py` from 8.1.2 to 8.2.1
- `patsy` from 0.4.0 to 0.4.1
- `pickleshare` from 0.5 to 0.7.2
- `pillow` from 3.1.1 to 3.2.0
- `pip` from 8.1.1 to 8.1.2
- `psutil` from 4.1.0 to 4.3.0
- `ptyprocess` from 0.5 to 0.5.1
- `pycurl` from 7.19.5.3 to 7.43.0
- `pyflakes` from 1.1.0 to 1.2.3
- `pygments` from 2.1.1 to 2.1.3
- `pyopenssl` from 0.15.1 to 0.16.0
- `pyparsing` from 2.0.3 to 2.1.4
- `pytest` from 2.8.5 to 2.9.2
- `python-dateutil` from 2.5.1 to 2.5.3
- `pytz` from 2016.2 to 2016.4
- `qtconsole` from 4.2.0 to 4.2.1
- `qtpy` from 1.0 to 1.0.2
- `redis` from 2.6.9 to 3.2.0
- `redis-py` from 2.10.3 to 2.10.5
- `requests` from 2.9.1 to 2.10.0
- `scipy` from 0.17.0 to 0.17.1
- `setuptools` from 20.3 to 23.0.0
- `sockjs-tornado` from 1.0.1 to 1.0.3
- `sphinx` from 1.3.5 to 1.4.1
- `spyder` from 2.3.8 to 2.3.9
- `sqlalchemy` from 1.0.12 to 1.0.13
- `sqlite` from 3.9.2 to 3.13.0
- `terminado` from 0.5 to 0.6
- `toolz` from 0.7.4 to 0.8.0
- `werkzeug` from 0.11.4 to 0.11.10
- `xlrd` from 0.9.4 to 1.0.0

- `xlsxwriter` from 0.8.4 to 0.9.2
- `xlwings` from 0.7.0 to 0.7.2
- `xlwt` from 1.0.0 to 1.1.2
- `xz` from 5.0.5 to 5.2.2
- `zeromq` from 4.1.3 to 4.1.4

**Added:**

- `click` 6.6
- `configparser` 3.5.0b2
- `contextlib2` 0.5.3
- `entrypoints` 0.2.2
- `functools32` 3.2.3.2
- `get_terminal_size` 1.0.0
- `imagesize` 0.7.1
- `nb_anacondacloud` 1.1.0
- `nb_conda` 1.1.0
- `nb_conda_kernels` 1.0.3
- `nbpresent` 3.0.2
- `pathlib2` 2.1.0
- `ruamel_yaml` 0.11.7

**Removed:**

- `conda-manager`
- `qtawesome`

**2016-03-29 4.0.0:**

The reason for jumping the Anaconda version from 2.5 to 4.0 is to avoid any possible confusion with the versions of Python included in Anaconda.

**Highlights:**

- this release of Anaconda includes the new Navigator, which is a graphical tool developed by Continuum Analytics to manage conda environments, applications and much more.

**Enhancements:**

- much improved package resolving in the new conda 4.0

**Fixes:**

- updated OpenSSL to 1.0.2g which contains important security fixes

**Updates:**

- `anaconda-client` from 1.2.2 to 1.4.0
- `astropy` from 1.1.1 to 1.1.2

- blaze from 0.9.0 to 0.9.1
- bokeh from 0.11.0 to 0.11.1
- cffi from 1.2.1 to 1.5.2
- clyent from 1.2.0 to 1.2.1
- colorama from 0.3.6 to 0.3.7
- conda from 3.19.1 to 4.0.5
- conda-build from 1.19.0 to 1.20.0
- cryptography from 1.0.2 to 1.3
- cycler from 0.9.0 to 0.10.0
- datashape from 0.5.0 to 0.5.1
- decorator from 4.0.6 to 4.0.9
- dynd-python from 0.7.1 to 0.7.2
- gevent from 1.0.2 to 1.1.0
- ipykernel from 4.2.2 to 4.3.1
- ipython from 4.0.3 to 4.1.2
- jupyter\_client from 4.1.1 to 4.2.2
- jupyter\_console from 4.1.0 to 4.1.1
- jupyter\_core from 4.0.6 to 4.1.0
- libdynd from 0.7.1 to 0.7.2
- libgfortran from 1.0 to 3.0
- llvmlite from 0.8.0 to 0.9.0
- lxml from 3.5.0 to 3.6.0
- mistune from 0.7.1 to 0.7.2
- nltk from 3.1 to 3.2
- numba from 0.23.1 to 0.24.0
- numexpr from 2.4.6 to 2.5
- odo from 0.4.0 to 0.4.2
- openssl from 1.0.2f to 1.0.2g
- pandas from 0.17.1 to 0.18.0
- pexpect from 3.3 to 4.0.1
- pillow from 3.1.0 to 3.1.1
- pip from 8.0.2 to 8.1.1
- psutil from 3.4.2 to 4.1.0
- pyflakes from 1.0.0 to 1.1.0
- pygments from 2.1 to 2.1.1
- python-dateutil from 2.4.2 to 2.5.1



- pytz from 2015.7 to 2016.2
- pywin32 from 219 to 220
- qtconsole from 4.1.1 to 4.2.0
- scikit-image from 0.11.3 to 0.12.3
- scikit-learn from 0.17 to 0.17.1
- setuptools from 19.6.2 to 20.3
- sqlalchemy from 1.0.11 to 1.0.12
- sympy from 0.7.6.1 to 1.0
- traitlets from 4.1.0 to 4.2.1
- werkzeug from 0.11.3 to 0.11.4
- wheel from 0.26.0 to 0.29.0
- xlwings from 0.6.4 to 0.7.0

**Added:**

- anaconda-navigator 1.1.0
- chest 0.2.3
- cloudpickle 0.1.1
- conda-manager 0.3.1
- dask 0.8.1
- dill 0.2.4
- flask-cors 2.1.2
- heapdict 1.0.0
- locket 0.2.0
- mpmath 0.19
- partd 0.3.2
- qtawesome 0.3.2
- qtpy 1.0

**Removed (from installer only, the packages are still available):**

- abstract-rendering
- gevent-websocket
- launcher
- node-webkit

### 2016-02-05 2.5.0:

#### Highlights:

- add MKL (runtime, version 11.3.1) and make it the default backend for numpy, scipy, scikit-learn and numexpr on all platforms

#### Enhancements:

- added Windows debug information files, more precisely program database (.pdb files) files for Python by default
- added NoRegistry option to Windows installers, passing /NoRegistry=1 makes the installer not touch the registry

#### Fixes:

- in some cases start menu items were not created on Windows, due to a race condition, which we fixed in menuinst
- fixed the -f option of the Unix bash installers
- updated OpenSSL to 1.0.2f which contains important security fixes

#### Updates:

- alabaster from 0.7.6 to 0.7.7
- anaconda-client from 1.2.1 to 1.2.2
- astropy from 1.0.6 to 1.1.1
- babel from 2.1.1 to 2.2.0
- blaze-core from 0.8.3 to 0.9.0
- bokeh from 0.10.0 to 0.11.0
- boto from 2.38.0 to 2.39.0
- colorama from 0.3.3 to 0.3.6
- conda from 3.18.8 to 3.19.1
- conda-build from 1.18.2 to 1.19.0
- cytoolz from 0.7.4 to 0.7.5
- datashape from 0.4.7 to 0.5.0
- decorator from 4.0.4 to 4.0.6
- dynd-python from 0.7.0 to 0.7.1
- enum34 from 1.0.4 to 1.1.2
- gevent from 1.0.1 to 1.0.2
- gevent-websocket from 0.9.3 to 0.9.5
- ipykernel from 4.1.1 to 4.2.2
- ipython from 4.0.1 to 4.0.3
- ipywidgets from 4.1.0 to 4.1.1
- jdcal from 1.0 to 1.2
- jupyter\_console from 4.0.3 to 4.1.0

- libdynd from 0.7.0 to 0.7.1
- lxml from 3.4.4 to 3.5.0
- matplotlib from 1.5.0 to 1.5.1
- menuinst from 1.3.1 to 1.3.2
- nbconvert from 4.0.0 to 4.1.0
- networkx from 1.10 to 1.11
- notebook from 4.0.6 to 4.1.0
- numba from 0.22.1 to 0.23.1
- numexpr from 2.4.4 to 2.4.6
- numpy from 1.10.1 to 1.10.4
- odo from 0.3.4 to 0.4.0
- openpyxl from 2.2.6 to 2.3.2
- openssl from 1.0.2d to 1.0.2f
- patchelf from 0.6 to 0.8
- pep8 from 1.6.2 to 1.7.0
- pillow from 3.0.0 to 3.1.0
- pip from 7.1.2 to 8.0.2
- psutil from 3.3.0 to 3.4.2
- py from 1.4.30 to 1.4.31
- pycurl from 7.19.5.1 to 7.19.5.3
- pygments from 2.0.2 to 2.1
- pytest from 2.8.1 to 2.8.5
- python 3.4 from 3.4.3 to 3.4.4
- pyzmq from 14.7.0 to 15.2.0
- requests from 2.8.1 to 2.9.1
- scipy from 0.16.0 to 0.17.0
- setuptools from 18.5 to 19.6.2
- snowballstemmer from 1.2.0 to 1.2.1
- sphinx from 1.3.1 to 1.3.5
- sphinx\_rtd\_theme from 0.1.7 to 0.1.9
- sqlalchemy from 1.0.9 to 1.0.11
- sqlite from 3.8.4.1 to 3.9.2
- traitlets from 4.0.0 to 4.1.0
- werkzeug from 0.11.2 to 0.11.3
- xlswriter from 0.7.7 to 0.8.4
- xlwings from 0.5.0 to 0.6.4

### Added:

- et\_xmlfile 1.0.1
- futures 3.0.3
- mkl 11.3.1
- mkl-service 1.1.1

### Removed (from installer only, the packages are still maintained and available):

- openblas 0.2.14 (Linux)
- theano 0.7.0 (Linux)
- ujson 1.33

### 2015-12-08 2.4.1:

#### Fixes:

- added missing Windows process elevation when creating menu items
- added libdynd and dynd-python, which was missing in the last release
- fixed Cython on Mac OS X reporting missing libgcc\_s.10.5.dylib
- fixed default channels being shown correctly in “conda list” after installing using Anaconda installer

#### Updates:

- anaconda-client from 1.1.0 to 1.2.1
- astropy from 1.0.5 to 1.0.6
- clyent from 0.4.0 to 1.2.0
- conda from 3.18.3 to 3.18.8
- conda-build 1.18.1 to 1.18.2
- conda-env from 2.4.4 to 2.4.5
- ipython from 4.0.0 to 4.0.1
- llvmlite from 0.7.0 to 0.8.0
- matplotlib from 1.4.3 to 1.5.0
- menuinst from 1.2.1 to 1.3.1
- numba from 0.21.0 to 0.22.1
- pandas from 0.17.0 to 0.17.1
- pixman from 0.26.2 to 0.32.6
- psutil from 3.2.2 to 3.3.0
- python 2.7 from 2.7.10 to 2.7.11
- python 3.5 from 3.5.0 to 3.5.1
- pytz from 2015.6 to 2015.7
- qtconsole from 4.1.0 to 4.1.1
- scikit-learn from 0.16.1 to 0.17

- setuptools from 18.4 to 18.5
- spyder from 2.3.7 to 2.3.8
- tornado from 4.2.1 to 4.3
- werkzeug from 0.10.4 to 0.11.2
- xlwings from 0.4.1 to 0.5.0

**Added:**

- backports\_abc 0.4
- cycler 0.9.0
- libdynd and dynd-python 0.7.0
- jbig 2.1
- pycairo 1.10.0

**2015-11-02 2.4.0:****Highlights:**

- add Python 3.5 support
- updated NumPy to 1.10
- added OpenBLAS support on Linux
- made drastic speed improvements to conda
- moved from IPython to Jupyter
- improved Start Menus on Windows
- updated Qt to 4.8.7 on all platforms
- updates to more than 60 other packages

**Known issues:**

- numba and llvmlite are missing for Python 3.5 (because they don't support this Python version yet)
- numpy 1.10 has performance regression for record array access, see <https://github.com/numpy/numpy/issues/6467>
- Python 3.5 does not work on Windows XP

**Updates:**

- alabaster from 0.7.3 to 0.7.6
- argcomplete from 0.8.9 to 1.0.0
- astropy from 1.0.3 to 1.0.5
- babel from 1.3 to 2.1.1
- blaze-core from 0.8.0 to 0.8.3
- bokeh from 0.9.0 to 0.10.0
- cffi from 1.1.0 to 1.2.1
- clyent from 0.3.4 to 0.4.0

- cryptography from 0.9.1 to 1.0.2
- curl from 7.43.0 to 7.45.0
- conda from 3.14.1 to 3.18.3
- conda-build from 1.14.1 to 1.18.1
- conda-env from 2.2.3 to 2.4.4
- cython from 0.22.1 to 0.23.4
- cytoolz from 0.7.3 to 0.7.4
- datashape from 0.4.5 to 0.4.7
- decorator from 3.4.2 to 4.0.4
- freetype from 2.5.2 to 2.5.5
- greenlet from 0.4.7 to 0.4.9
- ipaddress from 1.0.7 to 1.0.14
- ipython from 3.2.0 to 4.0.0
- ipython-notebook from 3.2.0 to 4.0.4
- ipython-qtconsole from 3.2.0 to 4.0.1
- jedi from 0.8.1 to 0.9.0
- jinja2 from 2.7.3 to 2.8
- libsodium from 0.4.5 to 1.0.3
- libtiff from 4.0.2 to 4.0.6
- llvmlite from 0.5.0 to 0.7.0
- menuinst from 1.0.4 to 1.2.1
- mistune from 0.5.1 to 0.7.1
- multipledispatch from 0.4.7 to 0.4.8
- networkx from 1.9.1 to 1.10
- nltk from 3.0.3 to 3.1
- numba from 0.19.1 to 0.21.0
- numexpr from 2.4.3 to 2.4.4
- numpy from 1.9.2 to 1.10.1
- odo from 0.3.2 to 0.3.4
- openpyxl from 1.8.5 to 2.2.6
- openssl from 1.0.1k to 1.0.2d
- pandas from 0.16.2 to 0.17.0
- patsy from 0.3.0 to 0.4.0
- pillow from 2.8.2 to 3.0.0
- pip from 7.0.3 to 7.1.2
- ply from 3.6 to 3.8

- psutil from 2.2.1 to 3.2.2
- ptyprocess from 0.4 to 0.5
- py from 1.4.27 to 1.4.30
- pyasn1 from 0.1.7 to 0.1.9
- pyflakes from 0.9.2 to 1.0.0
- pyqt from 4.11.3 to 4.11.4
- pytables from 3.2.0 to 3.2.2
- pytest from 2.7.1 to 2.8.1
- pytz from 2015.4 to 2015.6
- qt from 4.8.6 to 4.8.7
- requests from 2.7.0 to 2.8.1
- scipy from 0.15.1 to 0.16.0
- setuptools from 17.1.1 to 18.4
- sip from 4.16.5 to 4.16.9
- six from 1.9.0 to 1.10.0
- spyder from 2.3.5.2 to 2.3.7
- spyder-app from 2.3.5.2 to 2.3.7
- sqlalchemy from 1.0.5 to 1.0.9
- sympy from 0.7.6 to 0.7.6.1
- toolz from 0.7.2 to 0.7.4
- tornado from 4.2 to 4.2.1
- unicodesv from 0.9.4 to 0.14.1
- xlrd from 0.9.3 to 0.9.4
- xlswriter from 0.7.3 to 0.7.7
- xlwings from 0.3.5 to 0.4.1
- zeromq from 4.0.5 to 4.1.3

**Added:**

- anaconda-client 1.1.0
- beautifulsoup4 4.4.1
- ipykernel 4.1.1
- ipython\_genutils 0.1.0
- ipywidgets 4.1.0
- jupyter 1.0.0
- jupyter\_client 4.1.1
- jupyter\_console 4.0.3
- jupyter\_core 4.0.6

- libgfortran 1.0
- nbconvert 4.0.0
- nbformat 4.0.1
- notebook 4.0.6
- openblas 0.2.14
- patchelf 0.6
- path.py 8.1.2
- pexpect 3.3
- pickleshare 0.5
- qtconsole 4.1.0
- simplegeneric 0.8.1
- singledispatch 3.4.0.3
- traitlets 4.0.0
- wheel 0.26.0

**Removed (from installer only, the packages are still maintained and available):**

- bcolz
- blz
- certifi
- dynd-python
- libdynd
- mock
- runipy

### 2015-07-02 2.3.0:

#### Highlights:

- updates to 60 packages, including Python 2.7.10 and Pandas 0.16.2
- support for signed packages in conda

#### Fixes:

- fixed the extra space in IPython terminal being created when typing the tab key on Linux
- added missing zope.interface.common sub-package
- fixed Sphinx package being included in Spyder package

#### Enhancements:

- added support for signed packages in conda
- added curl on Windows, and kerberos authentication support
- added Windows support for libnetcdf and hdf5
- split gdal into libgdal and gdal (python-bindings)



**Known issues:**

- when opening some HDF5 files, pytables will crash on Windows and Python 3

**Updates:**

- argcomplete from 0.8.4 to 0.8.9
- astropy from 1.0.1 to 1.0.3
- bcolz from 0.8.1 to 0.9.0
- binstar from 0.10.1 to 0.11.0
- blaze-core from 0.7.3 to 0.8.0
- bokeh from 0.8.1 to 0.9.0
- boto from 2.36.0 to 2.38.0
- cffi from 0.9.2 to 1.1.0
- cryptography from 0.8 to 0.9.1
- conda from 3.10.0 to 3.14.1
- conda-build from 1.11.0 to 1.14.1
- conda-env from 2.1.3 to 2.2.3
- curl from 7.38.0 to 7.43.0
- cython from 0.22 to 0.22.1
- cytoolz from 0.7.2 to 0.7.3
- datashape from 0.4.4 to 0.4.5
- decorator from 3.4.0 to 3.4.2
- greenlet from 0.4.5 to 0.4.7
- h5py from 2.4.0 to 2.5.0
- hdf5 from 1.8.14 to 1.8.15.1
- ipython from 3.0.0 to 3.2.0
- libpng from 1.5.13 to 1.6.17
- libxml2 from 2.9.0 to 2.9.2
- llvmlite from 0.2.2 to 0.5.0
- lxml from 3.4.2 to 3.4.4
- nltk from 3.0.2 to 3.0.3
- nose from 1.3.4 to 1.3.7
- numba from 0.17.0 to 0.19.1
- numexpr from 2.3.1 to 2.4.3
- odo from 0.3.1 to 0.3.2
- pandas from 0.15.2 to 0.16.2
- pillow from 2.7.0 to 2.8.2
- pip from 6.0.8 to 7.0.3

- ply from 3.4 to 3.6
- py from 1.4.26 to 1.4.27
- pycparser from 2.10 to 2.14
- pyflakes from 0.8.1 to 0.9.2
- pyopenssl from 0.14 to 0.15.1
- pytables from 3.1.1 to 3.2.0
- pytest from 2.6.4 to 2.7.1
- python from 2.7.9 to 2.7.10
- python-dateutil from 2.4.1 to 2.4.2
- pytz from 2015.2 to 2015.4
- pyzmq from 14.5.0 to 14.7.0
- requests from 2.6.0 to 2.7.0
- scikit-image from 0.11.2 to 0.11.3
- scikit-learn from 0.15.2 to 0.16.1
- setuptools from 14.3 to 17.1.1
- sphinx from 1.2.3 to 1.3.1
- spyder from 2.3.4 to 2.3.5.2
- sqlalchemy from 0.9.9 to 1.0.5
- theano from 0.6.0 to 0.7.0
- toolz from 0.7.1 to 0.7.2
- tornado from 4.1 to 4.2
- werkzeug from 0.10.1 to 0.10.4
- xlswriter from 0.6.7 to 0.7.3
- xlwt from 0.7.5 to 1.0.0
- yaml from 0.1.4 to 0.1.6
- zeromq from 4.0.4 to 4.0.5

**Added to Anaconda installers:**

- alabaster 0.7.3
- babel 1.3
- bottleneck 1.0.0
- idna 2.0
- ipaddress 1.0.7
- snowballstemmer 1.2.0
- sphinx\_rtd\_theme 0.1.7

**Removed (from installer only, the packages are still maintained and available):**

- futures

**Added (repository) support for:**

- ansi2html
- azure
- blockspring
- boost
- btrees
- cloudpickle
- chest
- cligj
- csvkit
- dbf
- dill
- essbasepy
- flask-login
- heapdict
- holoviews
- ldap3
- line\_profiler
- locket
- lockfile
- markdown
- markdown2
- meld3
- msgpack-python
- mysql-connector-python
- nano (Unix)
- param
- partd
- plac
- pyopengl
- pywget
- rasterio
- sas7bdat
- seaborn
- semantic\_version
- snuggs

- spacy
- stripe
- supervisor (Unix)
- thinc
- unxutils (Windows)
- xray

### 2015-03-31 2.2.0:

#### Highlights:

- updates to 61 packages, including: Python, NumPyBokeh, pandas and blaze
- added 16 new packages
- added HTTPS support for default conda packages repo

#### Fixes:

- fixed cython command on Windows
- fixed untgz NSIS plugin to install files with exactly 100 characters

#### Enhancements:

- added https support for default conda packages repo
- renamed dateutil to python-dateutil to reflect the official name
- added HDF5 and netcdf support for GDAL
- switched to using Pillow instead of PIL
- changed ipython-notebook to start directory to home directory on Windows

#### Updates:

- argcomplete from 0.8.1 to 0.8.4
- astropy from 0.4.2 to 1.0.1
- binstar from 0.7.1 to 0.10.1
- blaze from 0.6.3 to 0.7.3
- bokeh from 0.6.1 to 0.8.1
- boto from 2.32.1 to 2.36.0
- cairo from 1.12.2 to 1.12.18
- cffi from 0.8.6 to 0.9.2
- colorama from 0.3.1 to 0.3.3
- conda from 3.7.0 to 3.10.0
- conda-build from 1.8.2 to 1.11.0
- cryptography from 0.5.4 to 0.8
- cython from 0.21 to 0.22
- cytoolz from 0.7.0 to 0.7.2

- datashape from 0.3.0 to 0.4.4
- freetype from 2.4.10 to 2.5.2
- futures from 2.1.6 to 2.2.0
- greenlet from 0.4.4 to 0.4.5
- h5py from 2.3.1 to 2.4.0
- hdf5 from 1.8.13 to 1.8.14
- ipython from 2.2.0 to 3.0.0
- ipython-notebook from 2.2.0 to 3.0.0
- ipython-qtconsole from 2.2.0 to 3.0.0
- lxml from 3.4.0 to 3.4.2
- matplotlib from 1.4.0 to 1.4.3
- nltk from 3.0.0 to 3.0.2
- numba from 0.14.0 to 0.17.0
- numpy from 1.9.0 to 1.9.2
- openssl from 1.0.1h to 1.0.1k
- pandas from 0.14.1 to 0.15.2
- pep8 from 1.5.7 to 1.6.2
- pip from 1.5.6 to 6.0.8
- psutil from 2.1.1 to 2.2.1
- py from 1.4.25 to 1.4.26
- pycurl from 7.19.5 to 7.19.5.1
- pygments from 1.6 to 2.0.2
- pyparsing from 2.0.1 to 2.0.3
- pyqt from 4.10.4 to 4.11.3
- pytest from 2.6.3 to 2.6.4
- python from 2.7.8 to 2.7.9
- python-dateutil from 2.1 to 2.4.1
- pytz from 2014.7 to 2015.2
- pyzmq from 14.3.1 to 14.5.0
- qt from 4.8.5 to 4.8.6
- redis-py from 2.9.1 to 2.10.3
- requests from 2.4.1 to 2.6.0
- runipy from 0.1.1 to 0.1.3
- scikit-image from 0.10.1 to 0.11.2
- scipy from 0.14.0 to 0.15.1
- setuptools from 5.8 to 14.3

- sip from 4.15.5 to 4.16.5
- six from 1.8.0 to 1.9.0
- spyder from 2.3.1 to 2.3.4
- spyder-app from 2.3.1 to 2.3.4
- sqlalchemy from 0.9.7 to 0.9.9
- statsmodels from 0.5.0 to 0.6.1
- sympy from 0.7.5 to 0.7.6
- tk from 8.5.15 to 8.5.18
- toolz from 0.7.0 to 0.7.1
- tornado from 4.0.2 to 4.1
- werkzeug from 0.9.6 to 0.10.1
- xlswriter from 0.5.7 to 0.6.7
- zlib from 1.2.7 to 1.2.8

**Added:**

- bcolz 0.8.1
- certifi 14.05.14
- clyent 0.3.4
- enum34 1.0.4 (on Python 2.6, 2.7 and 3.3)
- fastcache 1.0.2
- fontconfig 2.11.1
- funcsigs 0.4
- jedi 0.8.1
- jsonschema 2.4.0
- llvmlite 0.2.2
- mistune 0.5.1
- odo 0.3.1
- pillow 2.7.0
- ptyprocess 0.4
- pyasn1 0.1.7
- terminado 0.5

**Removed (from installer only, the packages are still maintained and available):**

- atom
- casuarius
- chaco
- enable
- enaml

- future
- kiwisolver
- llvmpy
- mingw (on Windows)
- mpi4py
- pil (in favor of pillow)
- pyface
- traits
- traitsui

### 2014-09-30 2.1.0:

#### Fixes:

- fixed the ability to compile C extensions in Python 3 using MinGW
- added missing lzma module to Python 3.3 and 3.4 (links to xz)
- added missing werkzeug/debug/shared package data to Werkzeug package

#### Enhancements:

- added statsmodel support for Python 3.4
- added LZO support for pytables on Linux
- added scikit-learn support for Python 3.4
- added Windows cffi support (in repository)
- added bsddb conda package on Linux to support Berkeley DB

#### Updates:

- argcomplete from 0.6.7 to 0.8.1
- astropy from 0.3.2 to 0.4.2
- atom from 0.3.7 to 0.3.9
- beautiful-soup from 4.3.1 to 4.3.2
- binstar from 0.5.3 to 0.7.1
- blaze from 0.5.0 to 0.6.3
- bokeh from 0.4.4 to 0.6.1
- boto from 0.28.0 to 2.32.1
- conda from 3.5.2 to 3.7.0
- conda-build from 1.3.3 to 1.8.2
- configobj from 5.0.5 to 5.0.6
- colorama from 0.2.7 to 0.3.1
- curl from 7.30.0 to 7.38.0
- cython from 0.20.1 to 0.20.2

- datashape from 0.2.0 to 0.3.0
- docutils from 0.11 to 0.12
- dynd from 0.6.2 to 0.6.5
- enaml from 0.9.1 to 0.9.8
- future from 0.12.1 to 0.13.1
- greenlet from 0.4.2 to 0.4.4
- h5py from 2.3.0 to 2.3.1
- hdf5 from 1.8.9 to 1.8.13
- ipython from 2.1.0 to 2.2.0
- jinja2 from 2.7.2 to 2.7.3
- kiwisolver from 0.1.2 to 0.1.3
- launcher from 0.1.5 to 1.0.0
- libnetcdf from 4.2.1.1 to 4.3.2
- llvmpy from 0.12.6 to 0.12.7
- lxml from 3.3.5 to 3.4.0
- markupsafe from 0.18 to 0.23
- matplotlib from 1.3.1 to 1.4.0
- multipledispatch from 0.4.3 to 0.4.7
- networkx from 1.8.1 to 1.9.1
- nltk from 2.0.4 to 3.0.0
- nose from 1.3.3 to 1.3.4
- numba from 0.13.2 to 0.14.0
- numpy from 1.8.2 to 1.9.0
- pandas from 0.14.0 to 0.14.1
- patsy from 0.2.1 to 0.3.0
- pep8 from 1.5.6 to 1.5.7
- py from 1.4.20 to 1.4.25
- pycurl from 7.19.3.1 to 7.19.5
- pytest from 2.5.2 to 2.6.3
- python from 2.7.7 to 2.7.8
- pytz from 2014.3 to 2014.7
- pyzmq from 14.3.0 to 14.3.1
- requests from 2.3.0 to 2.4.1
- runipy from 0.1.0 to 0.1.1
- scikit-image from 0.10.0 to 0.10.1
- scikit-learn from 0.14.1 to 0.15.2



- setuptools from 3.6 to 5.8
- six 1.6.1 to 1.8.0
- sphinx from 1.2.2 to 1.2.3
- spyder from 2.3.0rc1 to 2.3.1
- sqlalchemy from 0.9.4 to 0.9.7
- tornado from 3.2.1 to 4.0.2
- xlswriter from 0.5.5 to 0.5.7

**Added:**

- abstract-rendering 0.5.1 (on Unix and Python 2)
- cffi 0.8.6
- cryptography 0.5.4
- cytoolz 0.7.0
- decorator 3.4.0
- futures-2.1.6 (for Python 2)
- pyopenssl 0.14
- sockjs-tornado 1.0.1
- toolz 0.7.0
- unicodecsv 0.9.4
- xz 5.0.5

**2014-06-12 2.0.1:****Fixes:**

- added missing libpython (the so-called MinGW import library) for Python 3.4
- in order to make pandas.io.excel work, we downgraded openpyxl from 2.0.2 to 1.8.5
- added missing idle script on Windows

**Updates:**

- conda from 3.5.2 to 3.5.5
- conda-build from 1.3.3 to 1.3.5
- numba from 0.13.1 to 0.13.2
- openssl from 1.0.1g to 1.0.1h
- pandas from 0.13.1 to 0.14.0
- python from 2.7.6 to 2.7.7
- scikit-image from 0.9.3 to 0.10.0
- werkzeug from 0.9.4 to 0.9.6

### 2014-05-28: 2.0.0:

#### Fixes:

- on Windows the /D option of the executable installer is now working
- added missing TkAgg matplotlib backend on Windows
- added missing osgeo.\_gdal\_array extension to GDAL
- fixed rope on Python 3

#### Known issues:

- even though the matplotlib tkagg backend is now supported on all platforms and with all Python versions now, there might be problems on Windows with Python 3.4
- the Windows file association (‘.py’-files being executed by the Anaconda Python interpreter) is not working

#### Enhancements:

- switched from using PySide to PyQt as the default Qt binding
- added lcms to PIL on Unix
- added ability to copy files upon install when filesystem fails to create hard links
- added netCDF4 support on 64-bit Windows
- on macOS, Tk in now linked to Cocoa (instead of X11)

#### Updated:

- astropy from 0.3.0 to 0.3.2
- binstar from 0.4.4 to 0.5.3
- blz from 0.6.1 to 0.6.2
- bokeh from 0.4.1 to 0.4.4
- boto from 2.25.0 to 2.28.0
- conda from 3.0.6 to 3.5.2
- conda-build from 1.2.0 to 1.3.3
- configobj from 4.7.2 to 5.0.5
- datashape from 0.1.1 to 0.2.0
- dynd-python gtom 0.6.1 to 0.6.2
- future from 0.11.2 to 0.12.1
- gevent from 1.0 to 1.0.1
- gevent-websocket from 0.9.2 to 0.9.3
- h5py from 2.2.1 to 2.3.0
- ipython from 1.1.0 to 2.1.0
- itsdangerous from 0.23 to 0.24
- launcher from 0.1.2 to 0.1.5
- llvmpy from 0.12.3 to 0.12.4
- lxml from 3.3.1 to 3.3.5

- nose from 1.3.0 to 1.3.3
- numba from 0.12.1 to 0.13.1
- numpy from 1.8.0 to 1.8.1
- openpyxl 1.8.2 to 2.0.2
- openssl from 1.0.1c to 1.0.1g
- pep8 gtom 1.4.6 to 1.5.6
- pip from 1.5.2 to 1.5.6
- psutil from 1.2.1 to 2.1.1
- pycosat from 0.6.0 to 0.6.1
- pycurl from 7.19.0 to 7.19.3.1
- pyflakes from 0.7.3 to 0.8.1
- pytables from 3.1.0 to 3.1.1
- pytz from 2013b to 2014.3
- pyyaml 3.10 to 3.11
- pyzmq from 2.2.0.1 to 14.3.0
- requests from 2.2.1 to 2.3.0
- scipy from 0.13.3 to 0.14.0
- setuptools from 2.2 to 3.6
- six from 1.5.2 to 1.6.1
- sphinx form 1.2.1 to 1.2.2
- spyder from 2.2.5 to 2.3.0rc1
- sqlalchemy from 0.9.2 to 0.9.4
- sqlite from 3.7.13 to 3.8.4.1
- sympy from 0.7.4.1 to 0.7.5
- tk from 8.5.13 to 8.5.15
- tornado from 3.2.0 to 3.2.1
- xlrd from 0.9.2 to 0.9.3
- xlswriter from 0.5.2 to 0.5.5
- zeromq from 2.2.0 to 4.0.4

**Added:**

- conda-launch 0.1
- jdcal 1.0
- multipledispatch 0.4.0
- python 3.4.1
- pyqt 4.10.4
- runipy 0.1.0

- sip 4.15.5
- xlwings 0.1.0 (Windows only)

**Removed (from installer, packages are still supported and available in repo):**

- apptools
- biopython
- envisage
- disco and erlang (from 64-bit Linux)
- gevent\_zeromq
- keyring
- mayavi
- mdp
- netcdf4
- pykit
- pysal
- pysam
- vtk

**2014-04-09: 1.9.2:**

**Fixes:**

- updated to openssl 1.0.1g on Unix to fix the “Heartbleed bug” of the TLS Heartbeat Extension problem (reported in the news)
- fixed /D option in silent mode for Windows installer

**Updates:**

- openssl from 1.0.1c to 1.0.1g
- conda from 3.0.6 to 3.4.1
- conda-build from 1.2.0 to 1.3.1

**2014-02-20: 1.9.1:**

**Fixes:**

- openpyxl to depend on up-to-date version of lxml
- added missing MSVCP (both for 2008 and 2010) DLLs to Windows installers which fixes issues with the user install mode on some systems

**Updates:**

- atom from 0.3.6 to 0.3.7
- blaze from 0.4.1 to 0.4.2
- bokeh from 0.4 to 0.4.1

- boto 2.24.0 to 2.25.0
- conda from 3.0.3 to 3.0.6
- conda-build from 1.1.0 to 1.2.0
- cython from 0.20 to 0.20.1
- datashape from 0.1.0 to 0.1.1
- dynd-python 0.6.0 to 0.6.1
- enaml from 0.9.0 to 0.9.1
- llvmpy from 0.12.2 to 0.12.3
- lxml from 3.2.3 to 3.3.1
- netcdf4 from 1.0.7 to 1.0.8
- numba from 0.12.0 to 0.12.1
- numexpr from 2.3.0 to 2.3.1
- pandas from 0.13.0 to 0.13.1
- pykit from 0.1.0 to 0.2.0
- python from 3.3.3 to 3.3.4
- setuptools from 2.1 to 2.2

**Added:**

- added Py3k support for h5py
- netcdf4 on 32-bit Windows
- xlsxwriter 0.5.2

**2014-02-10: 1.9.0:****Highlights:**

- NumPy updated to version 1.8
- updates to about 35 packages, including Bokeh and Blaze
- added 10 new packages

**Enhancements:**

- use MSVC 2010 to compile Python 3 and C extensions on Windows
- remove distribute in favor of setuptools
- enable threadsafe when building HDF5 on Linux
- renamed the Python Imaging Library (PIL) from imaging to pil
- updated EULA

**Fixes:**

- ssl bindings in Python standard library on macOS
- Windows installers not working properly when PYTHONHOME is set

**Updated:**

- apptools from 4.2.0 to 4.2.1
- astropy from 0.2.5 to 0.3.0
- atom from 0.3.4 to 0.3.6
- binstar from 0.3.1 to 0.4.4
- biopython from 1.62 to 1.63
- blaze from 0.3.0 to 0.4.1
- boto from 2.15.0 to 2.24.0
- bokeh from 0.2 to 0.4
- chaco from 4.3.0 to 4.4.1
- conda from 2.0.4 to 3.0.3
- cython from 0.19.2 to 0.20
- dynd-python 0.5.0 to 0.6.0
- enaml from 0.8.3 to 0.9.0
- envisage from 4.3.0 to 4.4.1
- gevent from 0.13.8 to 1.0
- gevent-websocket from 0.3.6 to 0.9.2
- greenlet from 0.4.1 to 0.4.2
- h5py from 2.2.0 to 2.2.1
- jinja2 from 2.7.1 to 2.7.2
- keyring from 3.2 to 3.3
- llvmmath from 0.1.1 to 0.1.2
- llvmpy from 0.12.0 to 0.12.1
- netcdf4 from 1.0.6 to 1.0.7
- numexpr from 2.2.2 to 2.3.0
- numba from 0.11.0 to 0.12.0
- numpy from 1.7.1 to 1.8.0
- openpyxl from 1.6.2 to 1.8.2
- pandas from 0.12.0 to 0.13.0
- pip from 1.4.1 to 1.5.2
- psutil from 1.1.2 to 1.2.1
- py from 1.4.17 to 1.4.20
- pycparser from 2.9.1 to 2.10
- pyface from 4.3.0 to 4.4.0
- pyparsing from 1.5.6 to 2.0.1
- pyreadline from 2.0.dev to 2.0
- pytables from 3.0.0 to 3.1.0

- pytest from 2.4.2 to 2.5.2
- python from 2.7.5 to 2.7.6, and 3.3.2 to 3.3.3
- redis-py from 2.7.2 to 2.9.1
- requests 1.2.3 to 2.2.1
- scipy from 0.13.0 to 0.13.2
- six from 1.4.1 to 1.5.2
- sphinx from 1.1.3 to 1.2.1
- sqlalchemy from 0.8.3 to 0.9.2
- sympy from 0.7.3 to 0.7.4.1
- tornado from 3.1.1 to 3.2.0
- theano from 0.5.0 to 0.6.0
- traits from 4.3.0 to 4.4.0
- traitsui from 4.3.0 to 4.4.0

**Added:**

- argcomplete 0.6.7
- blz 0.6.1
- cdecimal 2.3
- conda-build 1.1.0
- datashape 0.1.0
- future 0.11.2
- kiwisolver 0.1.2
- mock 1.0.1
- setuptools 2.1
- ssl\_match\_hostname 3.4.0.2
- ujson 1.33
- scikit-learn and redis-py support for Python 3
- added traits and unittest2 support for Python 2.6

**Removed:**

- distribute
- llvmmath
- meta

**2013-11-05: 1.8.0:****Enhancements:**

- on Windows the installer now allows installing in user mode without having system administrator privileges
- use RPATH (instead of RUNPATH) on Linux, which fixes link problems when LD\_LIBRARY\_PATH is set
- added ipython-notebook meta package for all supported Python versions
- removed curl binary on macOS, to avoid superseding system curl

**Fixes:**

- wrong location of VTK libraries in VTKTargets-debug.cmake on Linux
- fix python.app problem related to adding the symlink to lib, which also appears to create problems with %%cython magic in ipython
- apply patch to Mayavi, which fixes running mlab scripts

**Updated:**

- astropy from 0.2.4 to 0.2.5
- atom from 0.3.2 to 0.3.4
- biopython from 1.61 to 1.62
- boto from 2.12.0 to 2.15.0
- bokeh from 0.1.1 to 0.2
- conda from 1.9.1 to 2.0.4
- cython from 0.19.1 to 0.19.2
- dynd from 0.4.2 to 0.5.0
- enaml from 0.7.19 to 0.8.3
- ipython 1.0.0 to 1.1.0
- keyring from 3.0.1 to 3.2
- matplotlib from 1.3.0 to 1.3.1
- netcdf4 from 1.0.5 to 1.0.6
- numba from 0.10.2 to 0.11.0
- numexpr from 2.0.1 to 2.2.2
- psutil from 1.0.1 to 1.1.2
- pycrypto from 2.6 to 2.6.1
- pytables from 2.4.0 to 3.0.0
- python 2.6.8 to 2.6.9
- pytest from 2.3.5 to 2.4.2
- scikit-image from 0.8.2 to 0.9.3
- scipy from 0.12.0 to 0.13.0
- sqlalchemy from 0.8.2 to 0.8.3



- synder from 2.2.4 to 2.2.5

**Added:**

- blaze 0.3
- pykit 0.1
- beautiful-soup 4.3.1
- openpyxl 1.6.2

**2013-09-10: 1.7.0:****Highlights:**

- added VTK, Mayavi and Bokeh
- updated to new ipython 1.0 and matplotlib 1.3, and llvm 3.3
- many improvements and bug fixes to conda

**Enhancements:**

- removed conda as a direct anaconda dependency
- add MinGW runtime DLLs to Scripts directory on Windows
- fixed python-dateutil for Python 2

**Updated:**

- astropy from 0.2.3 to 0.2.4
- atom from 0.2.3 to 0.3.2
- binstar from 0.1.2 to 0.3.1
- boto from 2.9.6 to 2.12.0
- conda from 1.7.2 to 1.9.1
- docutils from 0.10 to 0.11
- enaml from 0.7.6 to 0.7.19
- h5py from 2.1.1 to 2.2.0
- ipython from 0.13.2 to 1.0.0
- itsdangerous from 0.21 to 0.23
- jinja2 from 2.6 to 2.7.1
- libdynd and dynd-python from 0.4.0 to 0.4.2
- llvm from 3.2 to 3.3
- llvmmath from 0.1.0 to 0.1.1
- llvmpy from 0.11.3 to 0.12.0
- lxml from 3.2.1 to 3.2.3
- keyring from 1.4 to 3.0.1
- matplotlib from 1.2.1 to 1.3.0
- netcdf4 from 1.0.4 to 1.0.5

- networkx from 1.7 to 1.8.1
- numba from 0.9.0 to 0.10.2
- opencv from 2.4.2 to 2.4.6
- pandas from 0.11.0 to 0.12.0
- pep8 from 1.4.5 to 1.4.6
- pip from 1.3.1 to 1.4.1
- psutil from 0.7.1 to 1.0.1
- pyflakes from 0.7.2 to 0.7.3
- pysal 1.5.0 to 1.6.0
- pyside from 1.1.2 to 1.2.1 (not macOS)
- qt from 4.7.4 to 4.8.5 (not macOS)
- scikit-learn from 0.13.1 to 0.14.1
- six from 1.3.0 to 1.4.1
- spyder from 2.2.0 to 2.2.4
- sqlalchemy 0.8.1 to 0.8.2
- statsmodels from 0.4.3 to 0.5.0
- sympy from 0.7.2 to 0.7.3
- tornado from 3.1 to 3.1.1
- werkzeug from 0.9.1 to 0.9.4

**Added:**

- bokeh 0.1.1
- chaco 4.3.0
- configobj 4.7.2
- markupsafe 0.18
- mayavi 4.3.0
- patsy 0.2.1
- traits 4.3.0
- vtk 5.10.1

**2013-07-09: 1.6.2: (Windows only)**

- Fixed path being incorrectly appended on Windows during install

**2013-07-03: 1.6.1:**

- fixed .pkg installer
- updated binstar from 0.1.1 to 0.1.2 (fixes upload on Windows)
- updated conda from 1.7.1 to 1.7.2 (fixes updating python.app on macOS)
- updated dynd from 0.3.0 to 0.4.0
- updated launcher from 0.1.1 to 0.1.2
- added missing pydoc command on Unix
- macOS: fix hard coded build prefix in .dylib files for many other libraries
- Windows: append instead of prepend path on Windows

**2013-06-21: 1.6.0:****Highlights:**

- the “Launcher”, which allows users to start up applications
- conda has now the ability to build conda packages, which can be uploaded to binstar.org
- conda now uses a SAT solver to solve the install dependency problem

**Enhancements:**

- added a .pkg installer for macOS, such that installing Anaconda does not require command line access
- create copy of .bashrc (.bash\_profile on macOS) before appending the PATH setting upon install
- Windows Menu items should now be installed system wide

**Fixes:**

- removed Lib/test/testbz2\_bigmem.bz2 from Windows, this (harmless) file was triggering Trojan-ArcBomb.BZip.Agent warning, see: <http://bugs.python.org/issue17843>
- json.decoder in Python 2.7 standard library not using .decode('hex'), this was (mysteriously) causing install problems on macOS
- fixed PIL.\_imagingtk on Linux

**Updated:**

- python from 2.7.4 to 2.7.5, and 3.3.1 to 3.3.2
- astropy from 0.2.1 to 0.2.3
- boto from 2.9.2 to 2.9.6
- conda from 1.5.2 to 1.7.1
- cython from 0.19 to 0.19.1
- distribute from 0.6.36 to 0.6.45
- flask from 0.9 to 0.10.1
- greenlet from 0.4.0 to 0.4.1
- llvmpy from 0.11.2 to 0.11.3
- lxml from 3.2.0 to 3.2.1

- numba from 0.8.1 to 0.9.0
- py from 1.4.12 to 1.4.14
- pytest from 2.3.4 to 2.3.5
- requests from 1.2.0 to 1.2.3
- tornado from 3.0.1 to 3.1
- werkzeug from 0.8.3 to 0.9.1

### Added:

- launcher 0.1.1
- binstar 0.1.1
- itsdangerous 0.21
- keyring 1.4
- llvmmath 0.1.0
- pep8 1.4.5
- pywin32 218.4 on Windows

### 2013-05-09: 1.5.1: (macOS only)

- fixed pip command
- replace spaces by underscore in user install location
- shared libraries now link to /usr/lib/libgcc\_s.1.dylib (instead of /usr/local/lib/libgcc\_s.1.dylib)

### 2013-05-08: 1.5.0:

#### Highlights:

- updates to all important packages: python, numpy, scipy, ipython, matplotlib, pandas, cython
- added netCDF4 (with OpenDAP support) on Linux and macOS

#### Fixed:

- Cython on macOS on Python 2.6, due to a problem with Pyhton's config/Makefile
- py.test command (all platforms)
- python-config command not using correct interpreter on macOS
- added missing MSVC 2008 and 2010 runtime to Windows installers
- removed hard-coded build location from identification name of dynamic shared libraries on macOS, to allow easier building against libraries in Anaconda

#### Enhancements:

- **The Windows installers has a new dialog box with the following options:**
  - “Add Anaconda to the System Path”
  - “Register Anaconda as default Python version of the system”

- The Unix installers have an option to add Anaconda to the path in the `~/.bashrc` (on Linux) or `~/.bash_profile` (on macOS). On macOS the default is 'yes', on Linux the default is 'no'.
- added armv6l supports (only Python 2.7 and selected packages)
- link pycurl and libnetcdf dynamically against curl library on Unix
- add configure option `--with-pgm` for zeromq on Unix

**Added:**

- netCDF4 (with OpenDAP support) 1.0.4 on Linux and macOS
- ordereddict 1.1 (on Python 2.6)
- pycosat 0.6.0
- atom 0.2.3
- enaml 0.7.6
- casuarius 1.1
- dynd-python 0.3.0
- rope 0.9.4

**Updates:**

- python from 2.7.3 to 2.7.4, and 3.3.0 to 3.3.1
- numpy from 1.7.0 to 1.7.1
- scipy from 0.11.0 to 0.12.0
- ipython from 0.13.1 to 0.13.2
- matplotlib from 1.2.0 to 1.2.1
- astropy from 0.2 to 0.2.1
- biopython from 1.60 to 1.61
- bitarray from 0.8.0 to 0.8.1
- boto from 2.8.0 to 2.9.2
- conda from 1.4.4 to 1.5.2
- curl from 7.26.0 to 7.30.0
- cython from 0.18 to 0.19
- distribute from 0.6.34 to 0.6.36
- llvmpy from 0.11.1 to 0.11.2
- lxml from 3.0.2 to 3.2.0
- nose from 1.2.1 to 1.3.0
- numba from 0.7.0 to 0.8.1
- pandas from 0.10.1 to 0.11.0
- psutil from 0.6.1 to 0.7.1
- pyflakes from 0.6.1 to 0.7.2
- pytz from 2012j to 2013b

- requests from 0.13.9 to 1.2.0
- scikit-learn from 0.13 to 0.13.1
- six from 1.2.0 to 1.3.0
- spyder from 2.1.13 to 2.2.0
- sqlalchemy from 0.7.8 to 0.8.1
- sympy from 0.7.1 to 0.7.2
- tornado from 2.4.1 to 3.0.1
- xlrd from 0.9.0 to 0.9.2
- xlwt from 0.7.4 to 0.7.5

**Removed (from installer only, still available with conda):**

- bitey
- gdata (conflicts with atom (which is required by enaml))
- googlecl (requires gdata)

**2013-03-12: 1.4.0:**

Many more packages are now supported on Python 3.3. In addition, we have added Python 3 support on Windows, such that now Python 2.6, 2.7 and 3.3 is supported across all platforms. In addition, we have redesigned the Windows installer, which was suffering from a number of problems, in particular the lack of uninstall functionality and the GUI not working on some systems.

**added:**

- astropy 0.2
- lxml 3.0.2
- pycparser 2.9.1
- six 1.2.0
- xlrd 0.9.0
- xlwt 0.7.4

**updated:**

- boto from 2.7.0 to 2.8.0
- conda from 1.3.5 to 1.4.2
- cubes from 0.10.1 to 0.10.2
- cython from 0.17.4 to 0.18
- dateutil from 1.5 to 2.1
- llvmpy from 0.10.2 to 0.11.1
- numba from 0.6.0 to 0.7.0
- numpy from 1.7rc1 to 1.7.0
- pyflakes from 0.5.0 to 0.6.1
- pygments from 1.5 to 1.6

- pysal from 1.4.0 to 1.5.0
- pyreadline from 1.7.1 to 2.0.dev
- pytz from 2012d to 2012j
- scikit-image from 0.7.1 to 0.8.2

**fixed:**

- pytables on Windows

**other notes:**

- Linux: a ATLAS package is now available (conda install atlas). In addition the site.cfg in the numpy.distutils has been updated, such that other packages (e.g. scipy) which use the atlas build configuration can be build against the (non-MKL linked) numpy in Anaconda.

**2013-02-06: 1.3.1:****added:**

- Python 2.6 support for iopro, numba and numbapro
- Python 2.6 support on Windows (Python 2.6 is now supported on all platforms)
- added pythonw (the command to run Python GUI applications) on macOS
- added chaco on Windows

**updates:**

- conda from 1.3.2 to 1.3.5
- iopro from 1.3.0 to 1.3.2
- llvmpy from 0.10.0 to 0.10.2
- numba from 0.5.0 to 0.6.0
- numbapro from 0.8.1 to 0.8.1

**other changes:**

- removed anaconda-launcher

**2013-01-23: 1.3.0:****fixes:**

- fixed missing Grammar.txt in Sphinx
- recompiled llvm and llvmpy using gcc 4.4.6 on Linux, this fixes a problem with the mandel.py example in numba
- made Windows installer dialog box resizable
- fixed problem that importing numbapro or iopro removed sys from the namespace

**updates:**

- LLVM from 3.1 to 3.2
- llvmpy from 0.9 to 0.10.0

- numba from 0.3.2 to 0.5.0
- numbapro from 0.7.3 to 0.8.0
- iopro from 1.2.3 to 1.3.0
- conda from 1.2.1 to 1.3.0
- pandas from 0.9.0 to 0.10.1
- cython from 0.17.1 to 0.17.4
- iopro from 1.2.2 to 1.2.3
- spyder from 2.1.11 to 2.1.13
- h5py from 2.1.0 to 2.1.1
- distribute from 0.6.30 to 0.6.34
- nose from 1.1.2 to 1.2.1
- tornado from 2.3 to 2.4.1
- docutils from 0.9.1 to 0.10
- nltk from 2.0.3 to 2.0.4
- gevent from 0.13.7 to 0.13.8
- numpy from 1.7.0b2 to 1.7.0rc1
- boto from 2.6.0 to 2.7.0
- scikit-learn from 0.11 to 0.12.1
- scikits-image from 0.6.1 to 0.7.1
- pyaudio from 0.2.6 to 0.2.7
- pytest from 2.3.3 to 2.3.4
- redis from 2.4.15 to 2.6.9
- redis-py from 2.4.13 to 2.7.2
- disco from 0.4.2 to 0.4.4

**added:**

- Tkinter support on all platforms
- redis support on macOS
- cubes 0.10.1
- ply 3.4
- pycrypto 2.6
- pyparsing 1.5.6
- googlecl 0.9.12
- gdata 2.0.17
- biopython 1.60



**2012-11-21: 1.2.1:**

- pucurl on macOS
- anaconda-launcher envs by updating to conda 1.2.1
- add missing pyodbc numpy\_tests in iopro/tests/pyodbc
- updated wiseRF to version 1.1
- add creation of .continuum directory (if not created yet) on Windows
- minor fixes in numba, numbapro, and iopro
- fixed version of “py” package
- add missing Windows manifest to Windows executable installer
- fixed Windows Menu install and making Anaconda the default Python
- on 2012-12-06 we released a 32-bit Linux version

**2012-11-13: 1.2.0:**

- performance and feature enhancements to Numba Pro
- performance and feature enhancements to IOPro
- improved conda command (package management)
- added Qt to the Linux Version (Qt is now on all platforms)
- added MDP, NLTK and py, pytest
- update matplotlib from 1.1.1 to 1.2.0
- update h5py from 2.0.1 to 2.1.0
- update IOPro to 1.2.1
- update libpng to 1.5.13

**2012-10-05: 1.1.0:**

- add GUI to Windows installer
- IDE Spyder (Qt) for Mac Version
- add conda 1.0
- update llvmpy to 0.8.3
- add MinGW on Windows

### 2012-09-06: 1.0.0:

- add Windows support
- installer can now install into different locations
- enable building free and permium version
- enable termcap in erlang
- add MKL support to permium version
- add networkx, pysal, pycurl, gevent\_zeromq, requests, pip, distribute
- add iopro to permium version
- update scipy from 0.11.0b1 to 0.11.0rc2
- update scikits-image form 0.6 to 0.6.1
- update pytables from 2.4.0b1 to 2.4.0
- update pandas from 0.8.0 to 0.8.1
- add patch to disco to always use the anaconda erl
- remove useless files (Python) from being installed

### 2012-08-21: 0.9.0:

- add macOS (x86\_64 10.5 or higher) support
- add bitey and other packages
- update several other packages

### 2012-07-18: 0.8.3:

- update changes to etc/init.d/disco script
- add patch, fixes disco and ddfs listdir misfeature
- add `-packages` option to anaconda command
- add missing h5py
- improve ease of testing

### 2012-07-18: 0.8.2:

- fixed theano.sparse
- removed (broken) scikits namespace
- add disco config and setup files
- add anaconda command, for version information

**2012-07-17: 0.8.1:**

- fixed libm.so ctypes error in scipy tests
- added import tests to all C extension modules
- fixed lzo support in pytables

**2012-07-17: 0.8.0:**

- initial release

**Security practices**

Anaconda maintains the following security and provenance/chain-of-custody practices:

- The engineers whose purpose is to build and maintain the Anaconda Distribution have curated the packages contained within based on their relevance to the data science community. These open-source packages are vetted for their widespread adoption and community support, which allows any security vulnerabilities to be addressed quickly and completely in a transparent manner.
- Source code and built artifacts are maintained with strict chain-of-control and are built, scanned, and hashed on a separate secure network within Anaconda. Only a small number of developers and IT team members have access to this network and the associated servers.
- All versions of the Anaconda Distribution and all packages that are made available at <https://repo.anaconda.com/> have published SHA256 checksums. Anaconda recommends you *verify your install*.
- A Quality Assurance team performs exhaustive testing on each release of Anaconda and Miniconda, including all installers and packages. This includes the use of multiple commercial anti-malware products, as well as custom in-house security tools, for all supported operating systems - Windows, macOS, and Linux. When there are issues, they are followed up on for remediation or noted in the documentation.
- Anaconda maintains a team of IT leaders that works with software engineers to monitor all active security events through various channels of information, which results in fast response times and, whenever necessary, direct communication to our customers through Customer Support.
- Developers use controlled machines with the latest security patches.
- Especially security-minded customers may implement the functionality of the Anaconda Repository as part of an Enterprise tier subscription to only allow a small set of packages to come onto their site at their control and block all others from entering their network. Due to the open-source nature of the enclosed packages, they may perform advanced code reviews or other associated activities to ensure their desired level of risk management and/or compliance.

**Troubleshooting**

If you encounter an issue that is not listed here, you can obtain free support for Anaconda through the [Anaconda community](#). For Anaconda installation or technical support options, visit our [support offerings page](#).

Having problems with Anaconda Navigator? Find help in the [Navigator troubleshooting guide](#).

### General issues

#### 403 error

##### Cause

A 403 error is a generic Forbidden error issued by a web server in the event the client is forbidden from accessing a resource.

The 403 error you are receiving may look like the following:

```
Collecting package metadata (current_repodata.json): failed

UnavailableInvalidChannel: The channel is not accessible or is invalid.
  channel name: pkgs/main
  channel url: https://repo.anaconda.com/pkgs/main
  error code: 403

You will need to adjust your conda configuration to proceed.
Use `conda config --show channels` to view your configuration's current state,
and use `conda config --show-sources` to view config file locations.
```

There are several reasons a 403 error could be received:

- The user has misconfigured their channels in their configuration (most common)
- A firewall or other security device or system is preventing user access (second most common)
- We are blocking their access because of a potential terms of service violation (third most common)

##### Solution

Reset your default channel configuration by running the following command:

```
conda config --remove-key default_channels
```

When conda is first installed, the default channels it uses to install packages are <https://repo.anaconda.com/main> and <https://repo.anaconda.com/r> (as well as <https://repo.anaconda.com/msys2> for Windows operating systems).

If your other channels require a token, install or upgrade the conda-token tool by running the following command:

```
# The --freeze-installed flag ensures that no already-installed package dependencies are
↪ updated
conda install --freeze-installed conda-token
```

1. Then, re-apply the token and configuration settings:

```
# Replace <TOKEN> with your token
conda token set <TOKEN>
```

If this doesn't resolve the issue, Anaconda recommends consulting our [Terms of Service error](#) page.

## HTTP 000 CONNECTION FAILED

If you receive this error message, run the following command:

```
conda config --set ssl_verify false
```

## Using Anaconda behind a firewall or proxy

Corporate security policies may prevent a new Anaconda installation from downloading packages and other functionality that requires connecting to an external server. To make external connections you may need to connect to a firewall/proxy. Additionally, your IT team may need to allow connections to <https://anaconda.org> and <https://repo.anaconda.com> as these are the main package repositories.

### Solution

To add the proxy information you will need to add two entries to your `.condarc` file located in the user's home directory. This information should be made available by your IT team and may contain a username and password that is included in the URL. Read more about the [.condarc configuration](#).

*Example configuration*

```
channels:  
- defaults  
  
proxy_servers:  
  http: http://username:password@proxyurl.com:8080  
  https: https://username:password@proxyurl.com:8443
```

In some situations it may be necessary to export the `HTTP_PROXY` and `HTTPS_PROXY` environment variables.

## Windows

```
set HTTP_PROXY=http://username:password@proxyurl.com:8080  
set HTTPS_PROXY=https://username:password@proxyurl.com:8443
```

## MacOS/Linux

```
export HTTP_PROXY=http://username:password@proxyurl.com:8080  
export HTTPS_PROXY=https://username:password@proxyurl.com:8443
```

If these steps have not allowed connections you should speak to your IT team to verify that security policies are not blocking connections to <https://anaconda.com> and <https://repo.continuum.io>.

### InsecurePlatformWarning error

#### Cause

“InsecurePlatformWarning” appears only when the installed version of Python is older than version 2.7.9. This message warns only that the validity of the SSL connection is not being verified. It should not affect your package downloads.

#### Solution

To resolve this, install the updated package `ndg-httpsclient`:

```
conda install ndg-httpsclient
```

---

**Note:** When initially installing this package, you receive the SSL warning again. Once it is installed, the package will prevent the warnings.

---

### Anaconda search error: not recognized as an internal or external command/unrecognized arguments

#### Cause

If `anaconda-client` is not installed and you search for a package on `anaconda.org` using the Anaconda search command:

```
# Replace <PACKAGENAME> with the name of a package you want to search for
anaconda search -t conda <PACKAGENAME>
```

You will receive the following error message:

#### Windows

```
'anaconda' is not recognized as an internal or external command,
operable program or batch file.
```

#### macOS/Linux

```
usage: conda [-h] [-V] command ...
conda: error: unrecognized arguments: -t <PACKAGENAME>
```

#### Solution

To resolve the error, install `anaconda-client`:

```
conda install anaconda-client
```

Then search for a package:

```
anaconda search -t conda <PACKAGENAME>
```

## Conda: command not found on macOS or Linux

### Cause

The conda shell function is not available or is not working properly. Some causes:

- You haven't started a new shell after installing Anaconda/Miniconda (assuming you allow it to modify your startup script).
- You didn't allow the installer to modify your startup script.
- You have set `auto_activate_base` to `false`. You need to run `conda activate <ENV>`, replacing `<ENV>` with the environment you want active. If you do not specify an environment the default is `base`.
- Conda has been corrupted, usually by a change in the Python package (e.g. 3.6->3.7).

### Solutions

If your install is new, close and reopen your terminal application. If you want your terminal to remain open, you can source your `~/.bash_profile` or `~/.bashrc` file. When you “source” a script, your terminal re-reads it and applies the changes, which usually only happens when the terminal is first opened.:

```
# Replace bash_profile with bashrc on Linux and Windows Subsystem for Linux
. ~/.bash_profile
```

—

To initialize conda in your current terminal, run the following command:

```
<PATH-TO-CONDA-INSTALL>/bin/conda init
```

For instance, if you installed the Anaconda distribution to the default location on macOS or Linux, your command would look like the following:

```
~/anaconda3/bin/conda init
```

—

To see the value for `auto_activate_base`, run the following command:

```
conda config --describe auto_activate_base
```

If your terminal returns `true`, this means that conda is not automatically activating your base environment when you start a new shell. This behavior emulates your system Python, and some users prefer to have their conda environment be inactive until they need it. However, this is not conda's default behavior after installation.

To change the value of `auto_activate_base`, run the following command:

```
# Replace <TRUE-OR-FALSE> with true or false
conda config --set auto_activate_base <TRUE-OR-FALSE>
```

If you have `auto_activate_base` set as `false`, the conda command will still be available as a shell function, but your base environment will not be active when a new shell is started. To activate your base environment, run `conda activate`.

### Conda: Channel is unavailable/missing or package itself is missing

#### Cause

After a user has configured their `.condarc` for either Professional or Business, in some cases they are unable to install packages. They may receive an error message that the channel or package is unavailable or missing.

#### Solution

One potential fix for all of these is to run the following command:

```
conda clean -i
```

This will clear the “index cache” and force conda to sync metadata from the repo server.

### Collecting package metadata (repodata.json): - Killed

#### Cause

When installing or searching for a package, you may see the process end abruptly with a “Killed” message:

```
$ conda install numpy
Collecting package metadata (current_repodata.json): done
Solving environment: failed with initial frozen solve. Retrying with flexible solve.
Collecting package metadata (repodata.json): - Killed
```

This may be because your system lacks the sufficient disk space or memory to complete the process.

#### Solution

Verify that you have enough disk space and memory on your system to install and use Anaconda packages. The minimum system requirements for Miniconda and Anaconda installers can be found in the [conda user guide](#).

### Linking problems when Python extensions are compiled with gcc

#### Cause

When compiling Python extensions with gcc on Windows, linking problems may result.

#### Solution

To resolve these linking problems, use the conda package `libpython`, a mingw import library that Anaconda builds and includes with the Anaconda Distribution.

### Error message: Unable to remove files

When trying to update or install packages with conda, you may see an error message such as:

```
Error: Unable to remove files for package: <package-name>
Please close all processes running code from conda and try again.
```

#### Cause

This may be caused by a file lock issue.

#### Solution



Before updating or installing any packages with conda, be sure to terminate any running Anaconda processes, such as Navigator, Spyder, or IPython.

You can also force the installation of the package:

```
# Replace <PACKAGENAME> with the name of the package
# you want to install
conda install -f <PACKAGENAME>
```

## Using 32- and 64-bit libraries and CONDA\_FORCE\_32BIT

To work with both 32- and 64-bit libraries, Anaconda recommends that you have two separate installs: Anaconda32 and Anaconda64 or Miniconda32 and Miniconda64.

When working with both versions, add the path to your installer files to the PATH.

**Caution:** Always specify which version you want to work with because mixing 32- and 64-bit packages can cause problems in your environment.

To get the information about conda, including your PATH, run the following command:

```
conda info -a
```

Using `force_32bit` is not recommended because it forces 32-bit packages to be installed in the environment, but does not force 32-bit libraries to load at runtime.

`force_32bit` should be used only when running `conda-build` to build 32-bit packages on a 64-bit system.

## Installation issues

### Cannot get conda to run after installing

In macOS or Linux, you may get “conda not found” or “conda is not recognized as an internal or external command” or a similar message, and you cannot execute conda in a terminal window regardless of what path you are on. This will not happen in Windows if you use the Anaconda Prompt terminal dialog.

#### Cause

When you were installing Anaconda or Miniconda, you most likely answered “No” to the question about prepending the conda prompt to your PATH.

#### Solution one

Uninstall and then reinstall Anaconda or Miniconda, answering “Yes” to the question about prepending the conda prompt.

#### Solution two

### MacOS

Manually edit your `.bash_profile` file to prepend the Anaconda or Miniconda install location.

1. Open your `.bash_profile` file in a text editor with the following command:

```
open ~/.bash_profile
```

2. Add this line to the `.bash_profile` file and save:

```
# Replace <USERNAME> with your username
export PATH=/Users/<USERNAME>/anaconda3/bin:$PATH
```

3. Close and re-open your terminal window before running a conda command again.

### Linux

Manually edit your `.bashrc` file to prepend the Anaconda or Miniconda install location.

1. Open your `.bashrc` file in a text editor with the following command:

```
open ~/.bashrc
```

2. Add this line to the `.bashrc` file and save:

```
# Replace <USERNAME> with your username
export PATH=/Users/<USERNAME>/anaconda3/bin:$PATH
```

3. Close and re-open your terminal window before running a conda command again.

### Recovering your Anaconda installation

If your Anaconda installation has become corrupted and is in a state where normal conda commands are not functioning, use the following steps to repair Anaconda and preserve your installed packages and environments.

#### Step 1

Download a [new installer](#), then follow the instructions for your operating system.

---

**Note:** Use the actual path, filename, and directory name for your installation.

---

### Windows

1. Open a terminal application, such as Command Prompt.
2. Change your original installer's name so you do not overwrite it:

```
move anaconda3 anaconda_old
```

3. Run the Anaconda.exe installer as usual and use robocopy to sync the directories:

```
robocopy anaconda_old anaconda3 /S
```

4. Delete your old Anaconda installation directory:

```
rd /s anaconda_old
```

## macOS

1. Open a terminal application.
2. Change your original installer's name so you do not overwrite it:

```
mv anaconda3 anaconda_old
```

3. Install to same directory as your original installer:

```
# Change the name of your ``.sh`` file, if necessary
bash ~/Downloads/Anaconda3-2023.07-2-MacOSX-x86_64.sh
rsync -a anaconda_old/ anaconda3/
```

4. Delete your old Anaconda installation directory:

```
rm -rf anaconda_old
```

## Linux

\$. Open a terminal application. #. Change your original installer's name so you do not overwrite it:

```
mv anaconda3 anaconda_old
```

1. Install to same directory as your original installer:

```
# Change the name of your ``.sh`` file, if necessary
bash ~/Downloads/Anaconda3-2023.07-2-Linux-x86_64.sh
rsync -a anaconda_old/ anaconda3/
```

2. Delete your old Anaconda installation directory:

```
rm -rf anaconda_old
```

## Step 2

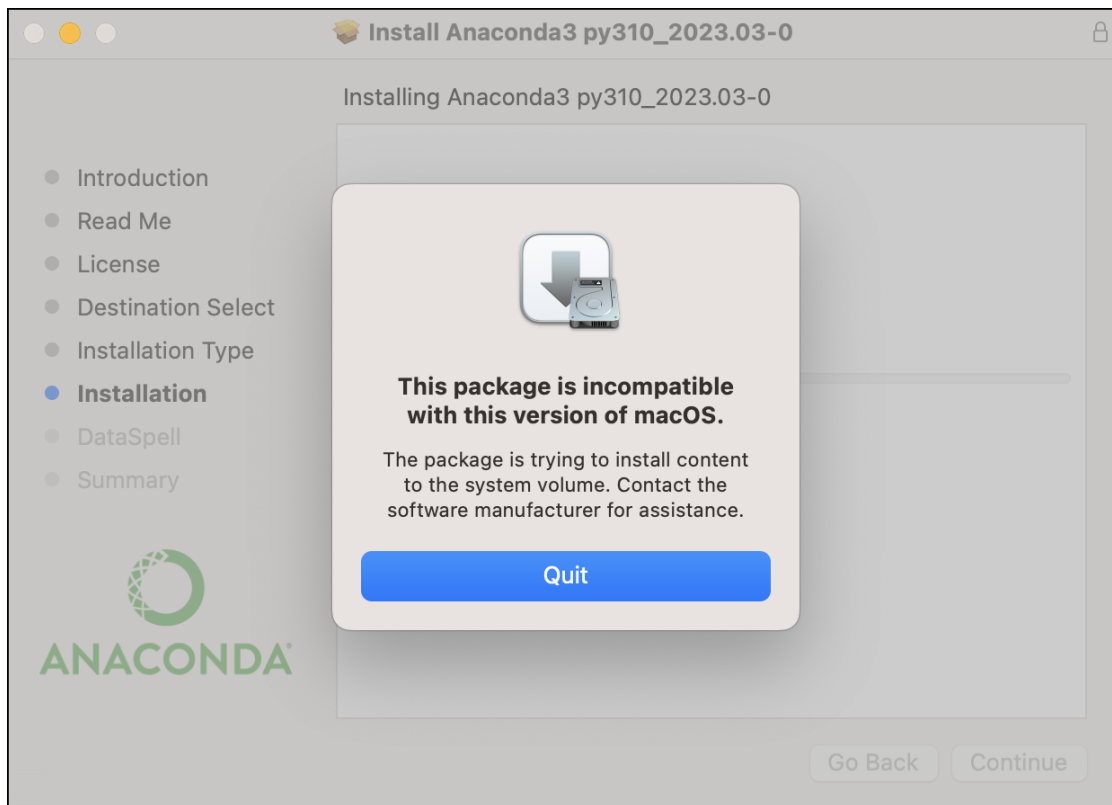
Run `conda list` to view the packages from the previous installation.

Run `conda info -e` to list the environments created in the previous installation, which are now available in the new installation.

## “This package is incompatible with this version of macOS” error when running a .pkg installer on OSX

### Cause

When running the .pkg installer, you may encounter this error during the “Installation” step:

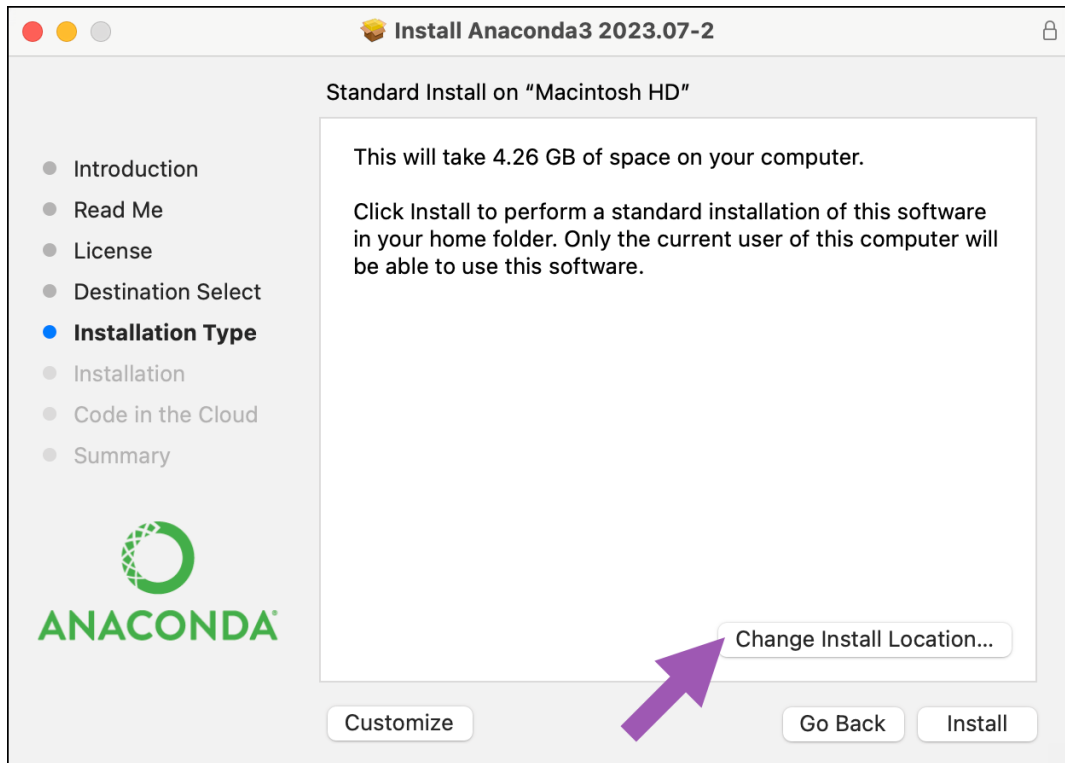


This error occurs when the installation attempts to write to a directory for which it does not have write permissions.

### Solution

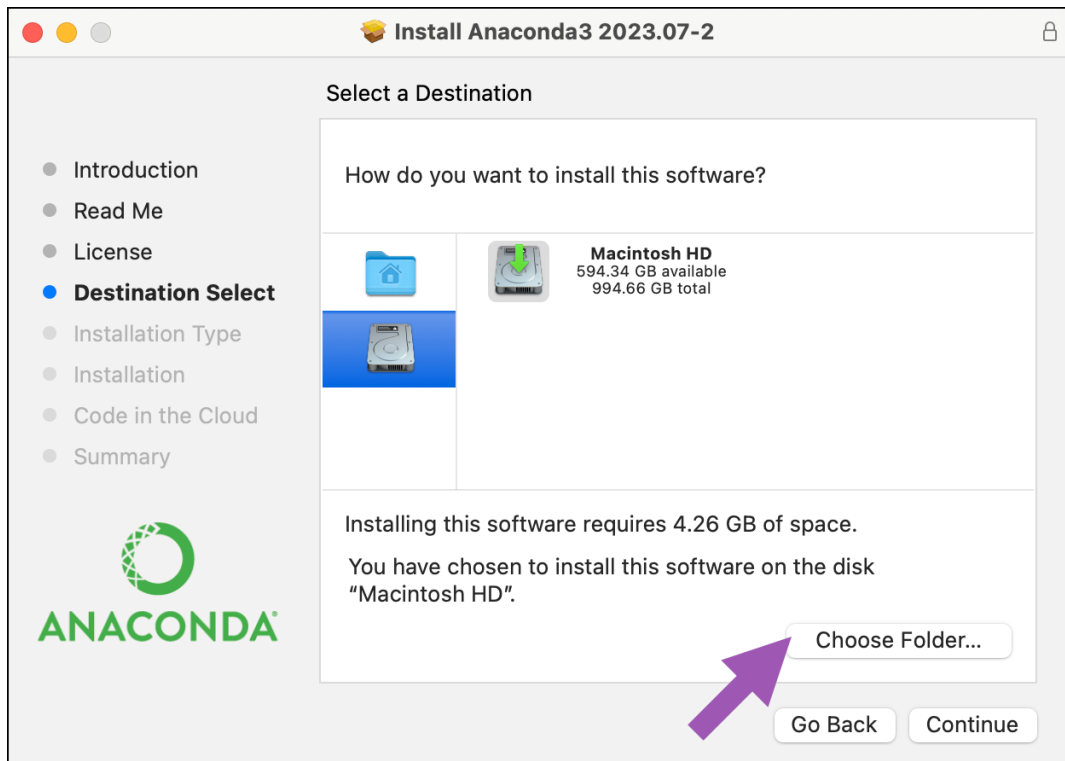
Manually select an appropriate install location. The following example shows how to select your user's home directory.

1. Re-run the installer and click through until you reach either the Installation Type or Destination Select page.
2. If you reach the Installation Type page first, click **Change Install Location...** This will take you to the Destination Select page.



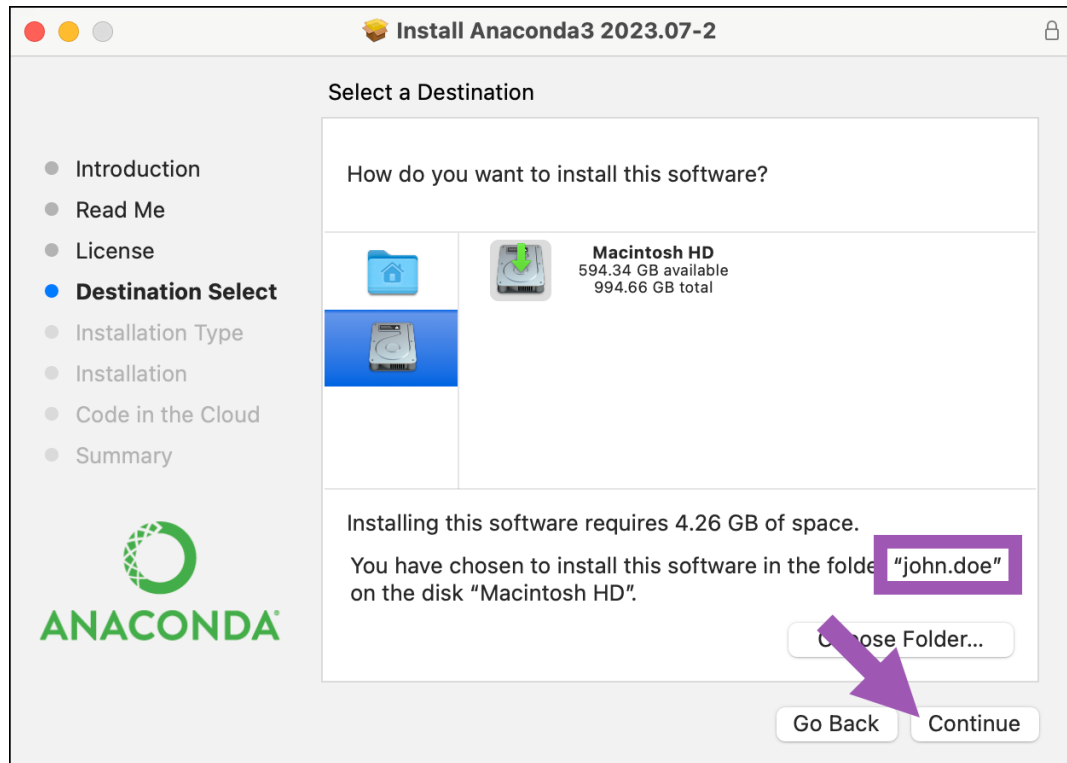
3. Click **Install on a specific disk...**

4. Select the appropriate destination drive. Then click **Choose Folder...**



5. Select your user's home directory (e.g. /Users/john.doe/). Then click **Choose**.

6. In the message box, confirm the name of the install folder you chose in the previous step. Then click **Continue**.



7. Click **Install**, and then proceed with the rest of the installation.

If you continue to receive the same error message, please open an issue [here](#), and be sure to include the installation log output from your `install.log` file, which can be found at `/var/log/install.log`.

## Anaconda installer download problems

### Problem

The Anaconda installer files are large (over 600 MB), and some users have problems with errors and interrupted downloads when downloading large files.

### Solution one

1. Download and install the smaller [Miniconda](#) (between 70 and 100 MB).
2. Download and install the remaining packages in Anaconda by using the following command:

```
conda install anaconda
```

**Note:** If the package downloads are interrupted, just run `conda install anaconda` again. Conda only downloads the packages that were not finished in any previous attempts.

### Solution two

Download the large Anaconda installer file, and restart it if the download is interrupted or you need to pause it.

## Windows

### Chrome

1. Find the latest installer at [anaconda.com](https://anaconda.com), or an older installer at [repo.anaconda.com/archive](https://repo.anaconda.com/archive).
2. In Chrome, use CTRL + J to open the Chrome download manager.
3. Click **Resume** to continue the interrupted download.

The Chrome download manager also enables you to pause and resume or cancel and retry downloads in progress.

### Edge

1. Find the latest installer at [anaconda.com](https://anaconda.com), or an older installer at [repo.anaconda.com/archive](https://repo.anaconda.com/archive).
2. In Edge, click **Settings and more**.
3. Click **Downloads** to open the Downloads dialog.
4. From here, you can use the play, pause, and cancel buttons to control downloads in progress.

---

**Tip:** Go to <edge://downloads/all> to open the full page of recent downloads. From here, you can retry cancelled downloads.

---

### Internet Explorer

1. Find the latest installer at [anaconda.com](https://anaconda.com), or an older installer at [repo.anaconda.com/archive](https://repo.anaconda.com/archive).
2. Click the Settings icon.
3. Click **View Downloads** to open the Download Manager.
4. Click **Resume** next to the stopped download to restart downloading. The download resumes at the point where it stopped.

## macOS and Linux

1. Open a terminal window.
2. To download the file, use the following command:

```
# Replace <SH-FILE> with the the `.sh` installer file you want to install.  
# See all available installers on https://repo.anaconda.com/archive/.  
curl -O https://repo.anaconda.com/archive/<SH-FILE>
```

3. To pause the download, use CTRL + C.

---

**Note:** While a download is paused, you can shut down or restart your computer.

---

4. When you are ready to resume your download, use the following command:

```
#Replace <SH-FILE> with the same file you used above  
curl -O -C https://repo.anaconda.com/archive/<SH-FILE>
```

The `-C` flag is the option for “continue”. You can pause and restart a download as many times as you wish.

### Error message on Miniconda install: Already installed

#### Cause

This situation can occur if you are getting a conda error and you want to reinstall Miniconda to fix it.

#### Solution

For macOS and Linux, download and install the appropriate Miniconda for your operating system from the [Miniconda download page](#) using the force or `-f` option:

```
# Replace the name of the installer if you need
# a different version or operating system
bash ~/Downloads/Miniconda3-latest-MacOSX-x86_64.sh -f
```

**Caution:** Make sure to install to the same location as your existing install so it overwrites the core conda files and does not install a duplicate in a new folder.

### Conda update anaconda command does not install the latest version of Anaconda

#### Cause

For users who have installed packages that are not compatible with the latest version of the Anaconda metapackage, running `conda update anaconda` updates the Anaconda metapackage to the latest compatible version, but this may not be the latest version.

#### Solution

1. Obtain a list of the conflicting packages by running `conda update anaconda` or `conda install anaconda=2023.07`.

---

**Note:** Replace `2023.07` with the latest version number.

---

2. Enter `n` to cancel the installation or update.
3. Once you know which packages are conflicting, you can:
  - update all current packages without upgrading to the latest version of Anaconda, or
  - remove the conflicting packages and then upgrade to the latest version of Anaconda.

—

To update all current packages without upgrading to the latest version of Anaconda:

1. Remove the Anaconda metapackage itself by running the following command:

```
conda remove anaconda
```

This will not remove any of the packages included with Anaconda.

2. Update all currently installed packages by running the following command:



```
conda update --all
```

To remove the conflicting packages and upgrade to the latest version of Anaconda:

1. Remove the conflicting packages by running the following command for each one:

```
conda remove <PACKAGENAME>
```

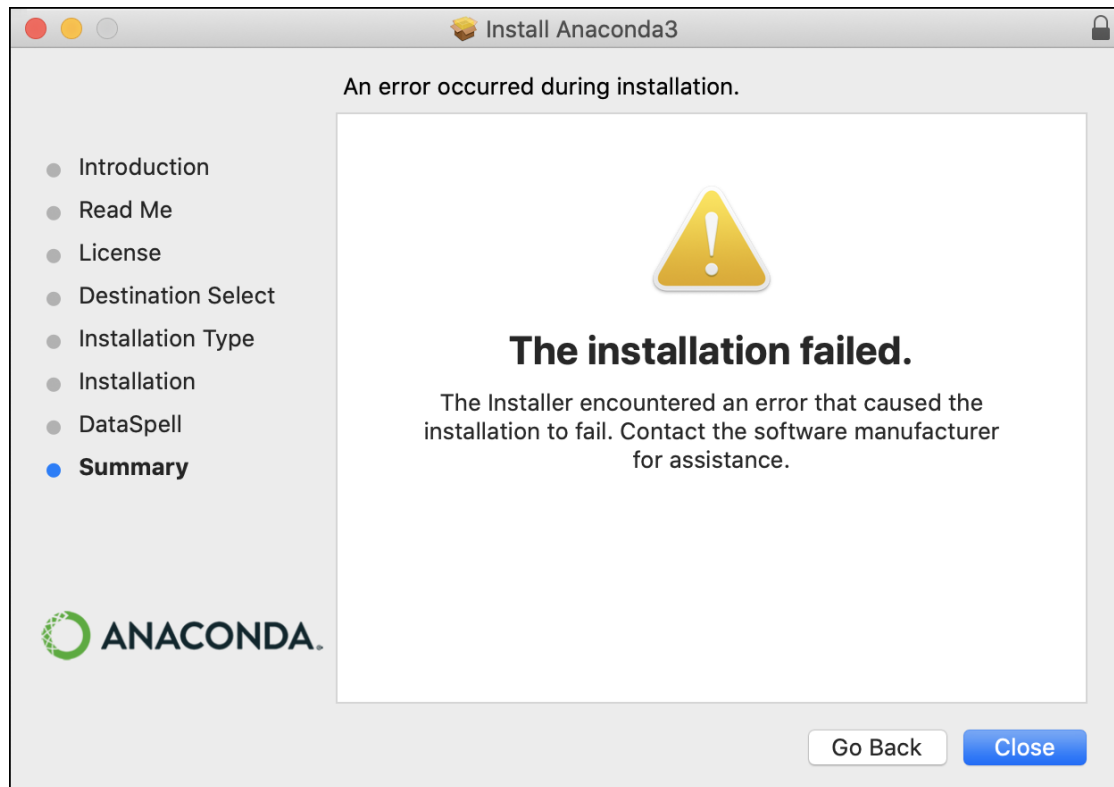
2. Update to the latest version of Anaconda:

```
conda update anaconda
```

### “The installation failed” message when running a .pkg installer on OSX

#### Cause

When running the .pkg installer, you may see this message at the end of the installation:



If so, check for the following:

1. Open your `/var/log/install.log` file and check whether the most recent lines show errors following a call to `conda init --all`.

```
open /var/log/install.log
```

2. In your `$HOME` directory, check whether the owner of your shell config files is `root`:

```
ls -la ~/.bash_profile ~/.config/fish/config.fish ~/.tcshrc ~/.xonshrc ~/.  
↵zshrc
```

```
-rw-r--r-- 1 root staff 491 May 9 17:37 /Users/jdoe/.bash_profile  
-rw-r--r-- 1 root staff 195 May 9 17:37 /Users/jdoe/.config/fish/config.fish  
-rw-r--r-- 1 root staff 314 May 9 17:37 /Users/jdoe/.tcshrc  
-rw-r--r-- 1 root staff 597 May 9 17:37 /Users/jdoe/.xonshrc  
-rw-r--r-- 1 root staff 490 May 9 17:37 /Users/jdoe/.zshrc
```

**Solution**

If **both** of the above are true, do the following:

1. Change the owner of your shell config files to your current user:

```
sudo chown -R $USER ~/.bash_profile ~/.config/fish/config.fish ~/.tcshrc ~/.  
↵xonshrc ~/.zshrc
```

```
-rw-r--r-- 1 jdoe staff 491 May 9 17:37 /Users/jdoe/.bash_profile  
-rw-r--r-- 1 jdoe staff 195 May 9 17:37 /Users/jdoe/.config/fish/config.fish  
-rw-r--r-- 1 jdoe staff 314 May 9 17:37 /Users/jdoe/.tcshrc  
-rw-r--r-- 1 jdoe staff 597 May 9 17:37 /Users/jdoe/.xonshrc  
-rw-r--r-- 1 jdoe staff 490 May 9 17:37 /Users/jdoe/.zshrc
```

2. *Uninstall* the previous installation. Then re-run the installer, making sure to select the **Install for me only** option.

**Windows-specific issues****Cannot see Anaconda menu shortcuts after installation on Windows**

After installing on Windows, the Anaconda Prompt and Anaconda Navigator shortcuts do not appear in the Windows Start menu.

**Cause**

This may be caused by the way Windows updates the Start menu, or by having multiple versions of Python installed that are interfering with one another. Existing Python installations, installations of Python modules in global locations, or libraries that have the same names as Anaconda libraries can all prevent Anaconda from working properly.

**Solution**

If Start menu shortcuts are missing, Microsoft recommends rebooting your computer or [restarting Windows Explorer](#).

If that doesn't work, clear your \$PYTHONPATH environment variable, if applicable, and re-install Anaconda.

Other potential solutions are covered in the “Conflicts with system state” section of the following [blog post](#).

## Windows error: Failed to create Anaconda menus or Failed to add Anaconda to the system PATH

During installation on a Windows system, a dialog box appears that says “Failed to create Anaconda menus, Abort Retry Ignore” or “Failed to add Anaconda to the system PATH.” There are many possible Windows causes for this.

### Solution

Try these solutions, in order:

- Do not install on a PATH longer than 1024 characters.
- Turn off anti-virus programs before installing, then turn the anti-virus programs back on.
- Uninstall all previous Python installations.
- Clear all PATHs related to Python in sysdm.cpl file.
- Delete any previously set up Java PATHs.
- If JDK is installed, uninstall it.

---

**Note:** To find your path variable:

1. Search for “environment variables” in the search in your taskbar.
  2. Select **Edit the System Environment Variables** in the sidebar.
  3. Click **Environment Variables** in the System Properties dialog.
  4. Highlight the **path** variable for your user.
  5. Click **Edit**.
- 

## Anaconda interfering with other software on Windows

### Cause

If a user chooses to add Anaconda to the Windows PATH, this can cause programs to use the new Anaconda versions of software (like Python) and not the versions that were already in place. In some cases, this can cause incompatibility and errors.

### Solution

Anaconda recommends against adding Anaconda to the Windows PATH manually. Instead, use Anaconda software by opening Anaconda Navigator or Anaconda Prompt from the Start Menu.

## Files left behind after uninstalling Anaconda on Windows

### Cause

Some users may need to keep settings files and other users may need to delete them, so Anaconda leaves some settings files in place when it is uninstalled. Specifically, the directories `.spyder2`, `.ipython`, `.matplotlib`, and `.astropy` remain. Depending on your version of Windows, these may be in `C:\Documents` and `Settings\<USERNAME>` or in `C:\Users\<USERNAME>`.

---

**Note:** Replace `<USERNAME>` with your Windows username as it appears in the `Documents` and `Settings` or `Users` folder.

---

### Solution

Manually delete any unneeded settings files.

## Spyder errors or failure to launch on Windows

### Cause

This may be caused by errors in the Spyder setting and configuration files.

### Solution

- Close and relaunch Spyder and see if the problem remains.
- Open the Start Menu and then click **Reset Spyder Settings** and see if the problem remains.
- Close Spyder and relaunch it from Anaconda Prompt with the following command:

```
spyder
```

- Delete the directory `.spyder2` and then repeat the first item in this list. Depending on your version of Windows, `.spyder2` may be in `C:\Documents and Settings\<USERNAME>` or in `C:\Users\<USERNAME>`.

---

**Note:** Replace `<USERNAME>` with your Windows username as it appears in the `Documents and Settings` or `Users` folder.

---

## Uninstaller requests admin privileges on Windows

### Cause

After installing Anaconda or Miniconda as a non-administrative user on Windows, uninstalling may prompt for administrative privileges.

This occurs when running the uninstaller by choosing `Control Panel > Uninstall a program`, selecting Anaconda or Miniconda from the list of programs, and clicking **Uninstall**.

### Solution

Open the `anaconda3` or `miniconda3` installation folders and run the `.exe` file uninstaller from that location. Uninstallation will complete without prompting for administrative privileges.

EXAMPLE: If you installed Miniconda3, the uninstall file will be `Uninstall-Miniconda3.exe`. Users who installed Miniconda2 or Anaconda will find a similar file with the appropriate name.

## Windows permission errors when installing from Favorites folder

### Cause

The Windows Favorites folder has unusual permissions and may cause permission errors with installers of any software. If you try launching the installer from the Favorites folder, you may see errors such as “Setup was unable to create the directory”, “Access is denied”, or “Error opening file for writing”.

### Solution

Move the installer to a different folder and run the installer from the new folder.

## Trouble with activation on PowerShell on Windows

Some users might run into the following backtrace on Windows:

```
File "C:\Users\damia\Miniconda3\lib\site-packages\conda\activate.py", line 550, in _  
    ↪replace_prefix_in_path  
assert last_idx is not None  
AssertionError
```

### Solution

1. Open a Command Prompt window.
2. Navigate to where you installed conda. The following command shows the default:

```
cd C:\Users\<USERNAME>
```

3. Run the following command:

```
python -m conda init
```

4. Close the Command Prompt window.

If this doesn't work, try running:

```
conda update conda
```

## MacOS-specific issues

### .zshrc not updated under macOS Catalina

#### Cause

MacOS Catalina changed the default shell from Bash to zsh.

#### Solution

To initialize conda for zsh:

1. Open a terminal application and run the following command:

```
bash -c "conda init zsh"
```

2. Close and reopen your terminal application.

### Segmentation fault on package import with macOS Python 3.7 interpreter

In CPython < 3.8, using `python3-config` to determine a linking command line to compile an extension module will cause that extension module to segfault upon import. `python3-config` does provide command-line flags, but for the different purpose of embedding a Python interpreter.

#### Cause

This is because of the command-line flags returned by `python3-config`. Before Python 3.8, those are needed to embed the core Python interpreter into a different project altogether and not those that should be used when linking a Python extension module.

Python modules should never link to the core Python interpreter library directly, either statically at build time or dynamically at runtime. This is because the Python executable itself provides all the necessary functions and symbols.

### Solution

You should only use `python*-config -ldflags` when linking to an interpreter library (either static or shared).

Action	Python < 3.8	Python >= 3.8
Get command line to link to extension module	<code>python -c "import sysconfig; print(sysconfig.get_config_var('LD_SHARED'))"</code>	<code>python3-config --ldflags</code>
Get command line to embed Python interpreter	<code>python3-config --ldflags</code>	<code>python3-config --ldflags --embed</code>

`python3-config` doesn't include the command/compiler name, whereas the `sysconfig` way does. This works provided none of your arguments have spaces:

```
python -c "import sysconfig; print(' '.join(sysconfig.get_config_var('LD_SHARED').split('↪')[:1]))"
```

## Linux-specific issues

### Missing libgomp on Power8

If the Python command `import numpy` fails, the system is likely missing the `libgomp` system library.

#### Cause

Most Power8 Linux distributions include `libgomp`, but some may not.

#### Solution

Check whether the system is missing `libgomp` by running the following command:

```
conda inspect linkages -n root numpy
```

If `libgomp.so.1` is listed in the “not found:” section, it must be installed.

Install `libgomp` on Ubuntu by running the following command:

```
apt install libgomp1
```

Install `libgomp` on Red Hat Enterprise Linux (RHEL) or CentOS by running the following command:

```
yum install libgomp
```

## Anaconda on Power8 reports “can not execute binary file”

### Cause

Anaconda on Power8 only supports little endian mode. The little endian Python binary will not execute on a big endian operating system.

### Solution

Install Anaconda on Power8 on a little endian Linux installation or VM.

## Anaconda Navigator

### *The Desktop Portal to Data Science*

Anaconda Navigator is a desktop graphical user interface (GUI) included in Anaconda® Distribution that allows you to launch applications and manage conda packages, environments, and channels without using command line interface (CLI) commands. Navigator can search for packages on Anaconda.org or in a local Anaconda Repository. It is available for Windows, macOS, and Linux.

The Navigator documentation includes the following:

### Installation

This topic explains how to install or uninstall Anaconda Navigator.

### System requirements

Navigator supports the same operating systems as Anaconda Distribution. These include:

- Windows 10 x86\_64 or newer
- macOS 10.14+, 64-bit
- Ubuntu 18+/Centos7+, 64-bit

The most current installation of Navigator also supports Python versions 2.7 and 3.8+.

### Installing Navigator

Navigator is automatically installed when you install *Anaconda Distribution* version 4.0.0+.

If you have *Miniconda* or a version of Anaconda Distribution older than 4.0.0 installed, you will need to manually install Navigator. To do this:

1. Open a terminal application (Anaconda Prompt on Windows).
2. Run the following command:

```
conda install anaconda-navigator
```

For more information on using Navigator, see the *Getting started* section of this documentation.

### Using Navigator with a network firewall?

To use Navigator in online mode, you must be able to reach the following sites:

- <https://repo.anaconda.com> for repositories and installers
- <https://anaconda.org> for conda-forge and other channels on anaconda.org
- [google-public-dns-a.google.com](https://google-public-dns-a.google.com) (8.8.8.8:53) to check internet connectivity with [Google Public DNS](#)

If necessary, add these URLs to an allowlist in your network's firewall settings.

For more information on offline mode, see [Enabling offline mode](#).

### Uninstalling Navigator

To uninstall Anaconda Navigator, open the Anaconda Prompt (Terminal on macOS or Linux), and enter the following command:

```
conda remove anaconda-navigator
```

For instructions on uninstalling all of Anaconda Distribution, see [Uninstalling Anaconda Distribution](#).

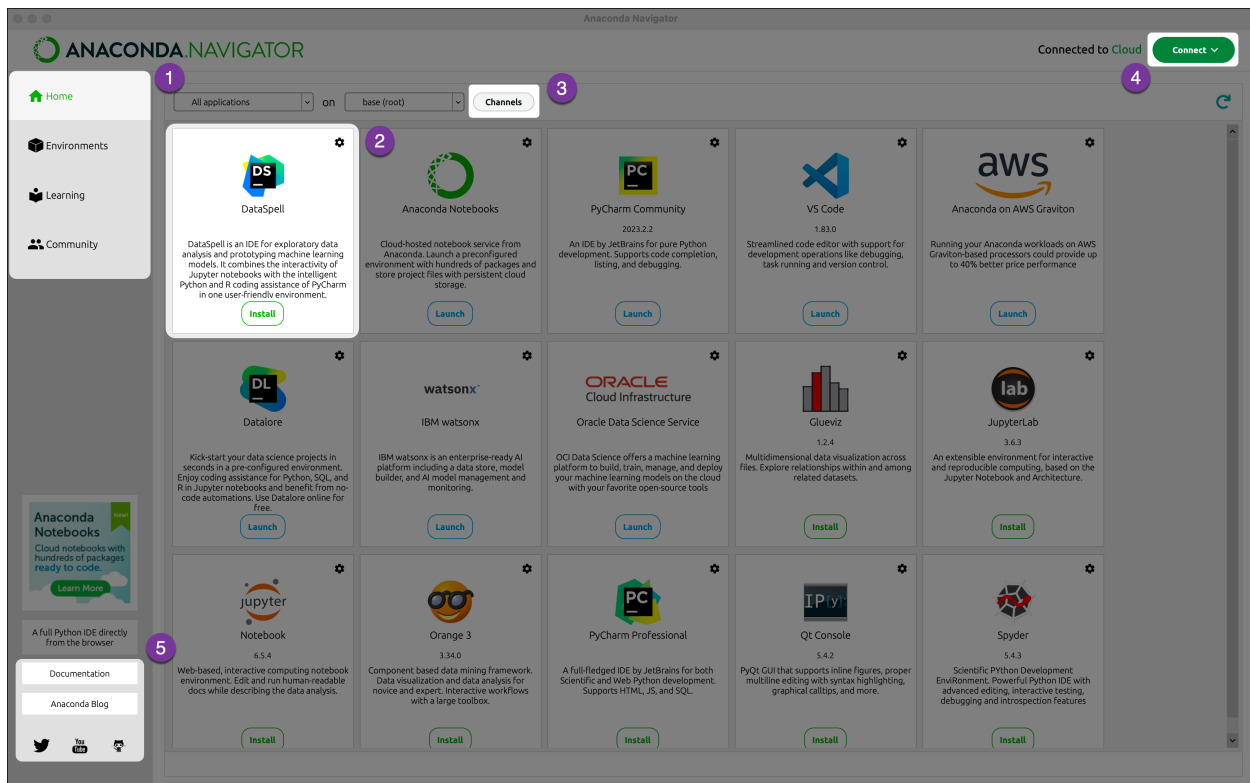
### Other relevant pages

- [Getting Started with Navigator](#)
- [Connecting Navigator to Anaconda Cloud](#)
- [Connecting Navigator to Anaconda Server](#)



## Overview

This page describes the basic parts of Anaconda Navigator.



### 1. Navigator pages

Access the main pages of the Navigator application. The Home page is open by default. For more information on the contents of each page, see [Navigator pages](#).

### 2. Application/package tile

Install or launch popular graphical Python applications that work well with Navigator.

### 3. Channels

Manage the channels Navigator can use to source and install packages.

### 4. Connect

Connect to Anaconda Cloud or any of the free or subscription repositories Anaconda provides. Signing into a repository service will enable searching for packages within that repository.

### 5. Outside links

Visit Anaconda's documentation, blog, and social media.

### Home page

The **Home** page is open by default when Navigator starts. **Home** displays all of the available applications that you can manage with Navigator.

The first time you open Navigator, the following popular graphical Python applications are already installed or are available to install:

### Available applications

- [Anaconda on AWS Graviton](#)
- [Anaconda Notebooks](#)
- [DataSpell](#)
- [Datalore](#)
- [Glueviz multidimensional data visualization](#)
- [IBM watsonx](#)
- [JupyterLab](#)
- [Jupyter Notebook](#)
- [OCI \(Oracle Cloud Infrastructure\) Data Science](#)
- [Orange data visualization](#)
- [PyCharm](#)
- [Qt Console](#)
- [R Studio IDE](#)
- [Spyder IDE](#)
- [VS Code](#)

You can also *build your own Navigator applications*.

### Working with application tiles

In each application tile, you can:

- Launch the application—Click its **Launch** button.
- Install an application—Click its **Install** button.
- Update, remove, or install a specific version of an application—Click the gear icon in the top-right corner of the application tile.

Applications are installed in the active environment, which is displayed in the **Applications on** list. To install an application in a specific environment, first select the environment from the list, then click the **Install** button on the application's tile.

## Environments page

The **Environments** page allows you to manage installed *environments*, *packages*, and *channels*.

The screenshot shows the Anaconda Navigator interface. On the left sidebar, the 'Environments' tab is active. The main panel displays a list of environments on the left and a table of installed packages on the right. The 'base (root)' environment is selected. The package table shows a list of installed packages with their names, descriptions, and versions.

Name	T	Description	Version
alabaster	✓	Configurable, python 2+3 compatible sphinx theme.	0.7.13
anaconda-anon-usage	✓	Basic anonymous telemetry for conda clients	0.4.3
anaconda-client	✓	Anaconda.org command line client library	1.11.3
anaconda-cloud-auth	✓	A client auth library for anaconda.cloud apis	0.1.3
anaconda-project	✓	Tool for encapsulating, running, and reproducing data science projects	0.11.1
attrs	✓	Attrs is the python package that will bring back the joy of writing classes by relieving you from the drudgery of implementing object protocols (aka dunder methods).	23.1.0
babel	✓	Utilities to internationalize and localize python applications	2.12.1
backports	✓	Namespace for backported python features.	1.1
backports.functools-lru-cache	✓		1.6.4
backports.functools	✓	Backport of functools.lru_cache from python 3.3 as published at activestate.	1.6.4
backports.tempfile	✓	Backports of new features in python's tempfile module	1.0
backports weakref	✓	Backport of new features in python's weakref module	1.0.post
beautifulsoup4	✓	Python library designed for screen-scraping	4.12.2
boltons	✓	Boltons should be builtins. boltons is a set of over 160 bsd-licensed, pure-python utilities in the same spirit as--and yet conspicuously missing from--the standard library.	23.0.0
brotlipy	✓	Python bindings to the brotli compression library	0.7.0
bzip2	✓	High-quality data compressor	1.0.8
ca-certificates	✓	Certificates for use with other packages.	2023.0
cctools	✓	Native assembler, archiver, ranlib, libtool, otool et al for darwin mach-o files	949.0.1
cctools_osx-arm64	✓	Assembler, archiver, ranlib, libtool, otool et al for darwin mach-o files	949.0.1
certifi	✓	Python package for providing mozilla's ca bundle.	2023.7

The left column lists your environments. Click an environment to activate it.

### Environments

With Navigator, like with conda, you can create, export, list, remove, and update environments that have different versions of Python and/or other packages installed. Switching or moving between environments is called activating the environment. Only one environment is active at any point in time. For more information, see [Managing environments](#).

### Packages

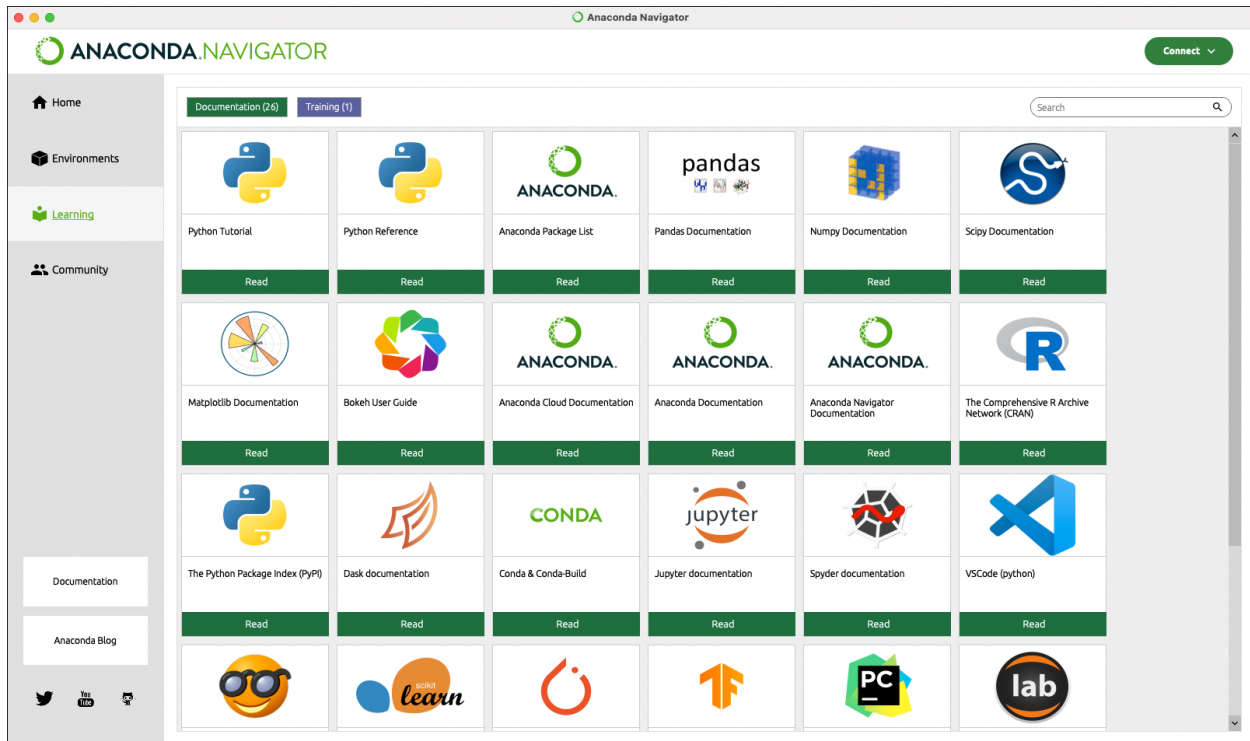
The right column lists packages installed in the currently-activated environment. The default view is Installed packages. To change which packages are displayed, click the arrow next to the list, then select from Installed, Not Installed, Updatable, Selected, or All packages. For more information, see [Managing packages](#).

### Channels

Channels are locations where Navigator or conda looks for packages. Click **Channels** to modify which channels Navigator uses. For more information, see [Managing channels](#).

### Learning page

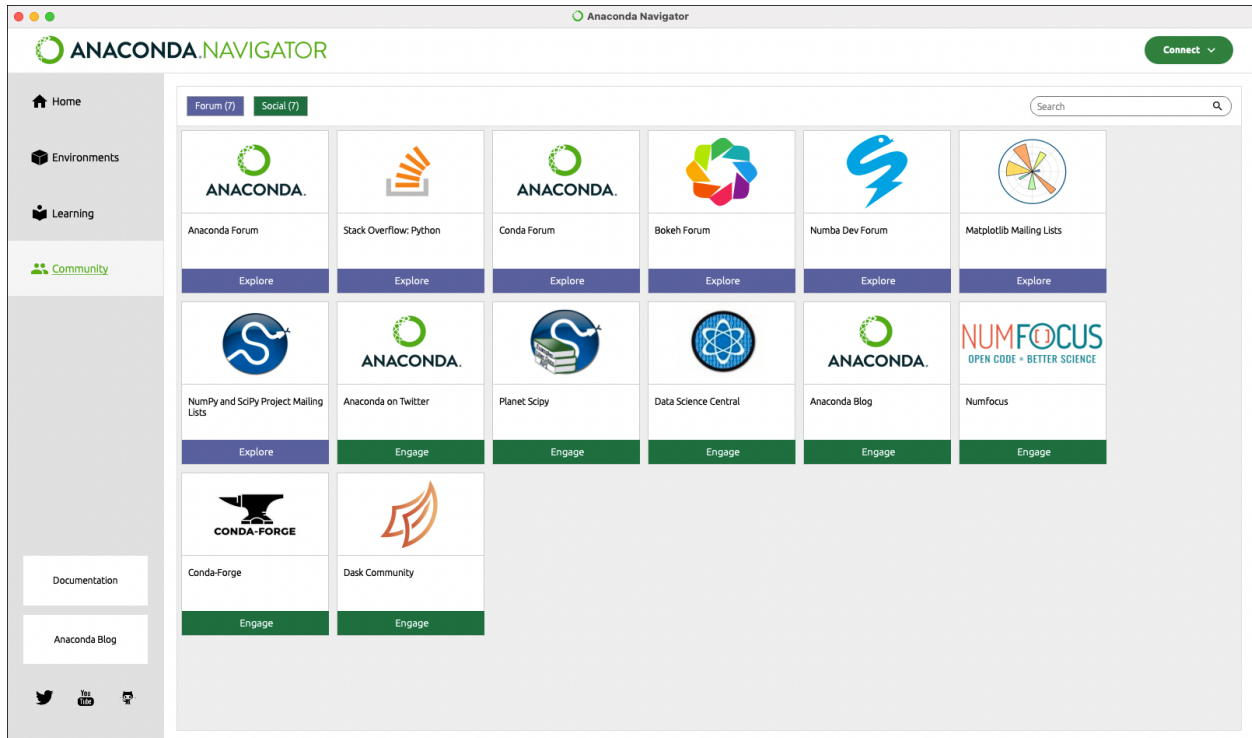
On the **Learning** page, you can learn more about Navigator, the Anaconda platform, and open data science. Click **Documentation** or **Training** to filter the learning tiles visible to you. Click any tile to open it in a browser window.



### Community page

On the **Community** page, you can learn more about free support forums and social networking relating to Navigator. Click **Forum** or **Social** to filter the community tiles visible to you. Click any tile to open it in a browser window.

**Tip:** To get help with Anaconda and Navigator from the community, join the [Anaconda community](#).



## Related documentation

- [Navigator preferences](#)
- [Reviewing Navigator's logs](#)
- [Enabling offline mode](#)

## Getting started with Navigator

Anaconda Navigator is a graphical user interface for the conda package and environment manager.

This short guide to Navigator will have you navigating the powerful conda program in a web-like interface without having to learn command line commands.

SEE ALSO: [Getting started with conda](#) to learn how to use conda. Compare the Getting started guides for each to see which program you prefer.

## Before you start

You should have already *installed Anaconda*.

### Contents

- *Starting Navigator* on Windows, macOS, or Linux. 1 MINUTE
- *Managing Navigator*. Verify that Anaconda is installed and check that Navigator is updated to the current version. 1 MINUTE
- *Managing application tiles*. Filter the tiles on the Navigator home page. 1 MINUTE
- *Managing environments*. Create environments and move easily between them. 3 MINUTES
- *Managing Python*. Create an environment that has a different version of Python. 2 MINUTES
- *Managing packages*. Find packages available for you to install. Install packages. 3 MINUTES

TOTAL TIME: 11 MINUTES

### Starting Navigator

#### Windows

- From the Start menu, search for “Anaconda Navigator” and click to open.
- Or from the Start menu, search for “Anaconda Prompt” and click to open. In Anaconda Prompt, type `anaconda-navigator` and press Enter to open Navigator.

#### MacOS

- Open Launchpad, then click the Anaconda-Navigator icon.
- Or open Launchpad and click the Terminal icon. Then in terminal, type `anaconda-navigator` and press Enter to open Navigator.

#### Linux

- Open a terminal window, type `anaconda-navigator` and press Enter to open Navigator.

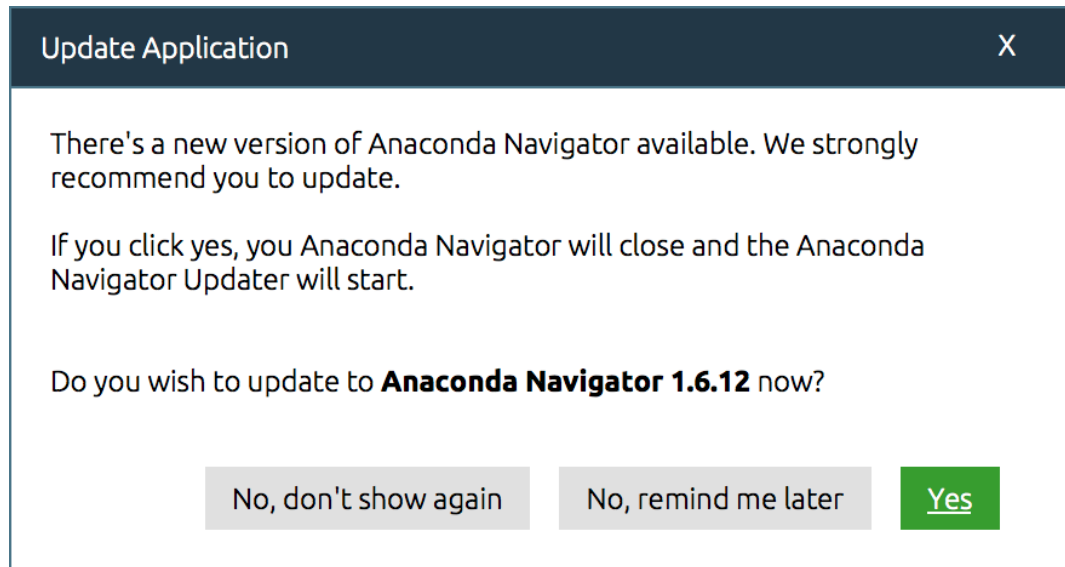
### Managing Navigator

Verify that Anaconda is installed and running on your system.

- When Navigator starts up, it verifies that Anaconda is installed.
- If Navigator does not start up, go back to Anaconda installation and make sure you followed all the steps. For more help, see the [Troubleshooting](#) page.

Check that Navigator is updated to the current version.

- When you start Navigator, it automatically checks for a new version. If Navigator finds a new version, you will see a dialog box like this:

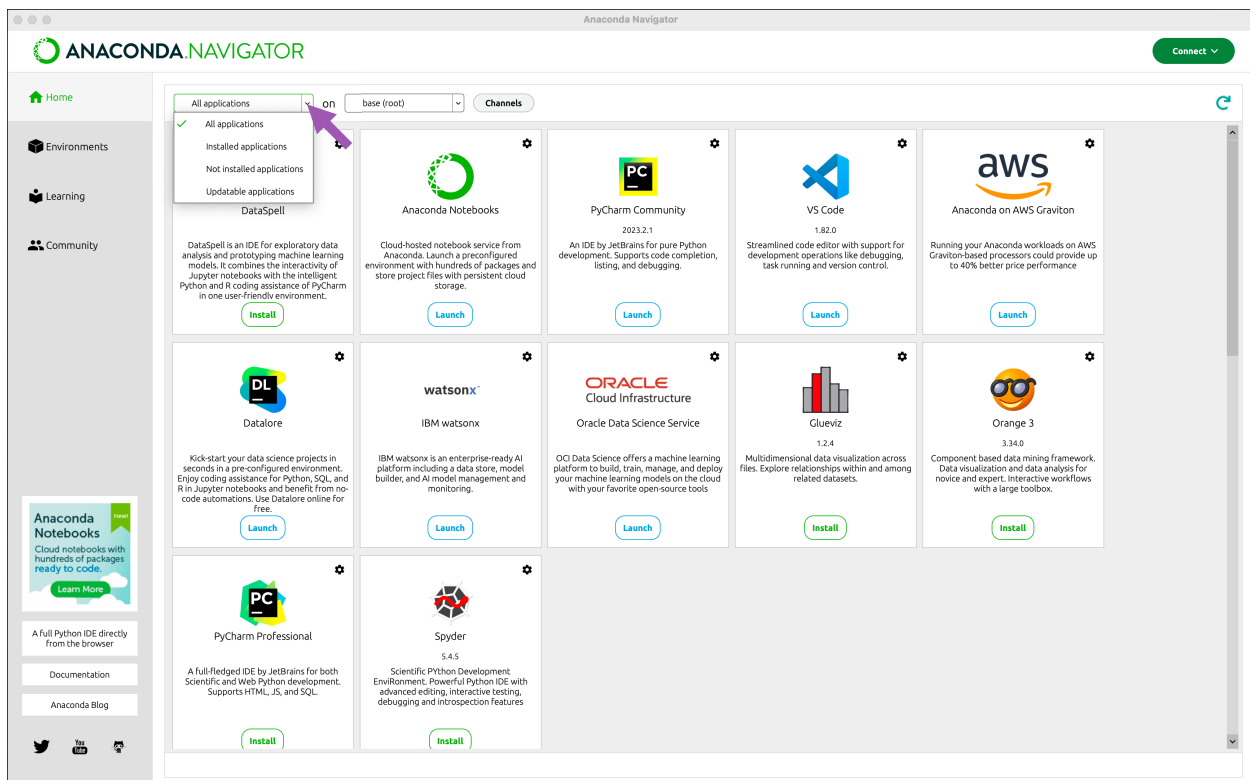


Click **Yes** to update Navigator to the current version.

**Tip:** Anaconda recommends keeping Navigator updated to the latest version.

## Managing application tiles

By default, all application tiles available to launch or install within Navigator are displayed on the Home page. Filter the application tiles with the applications dropdown menu.



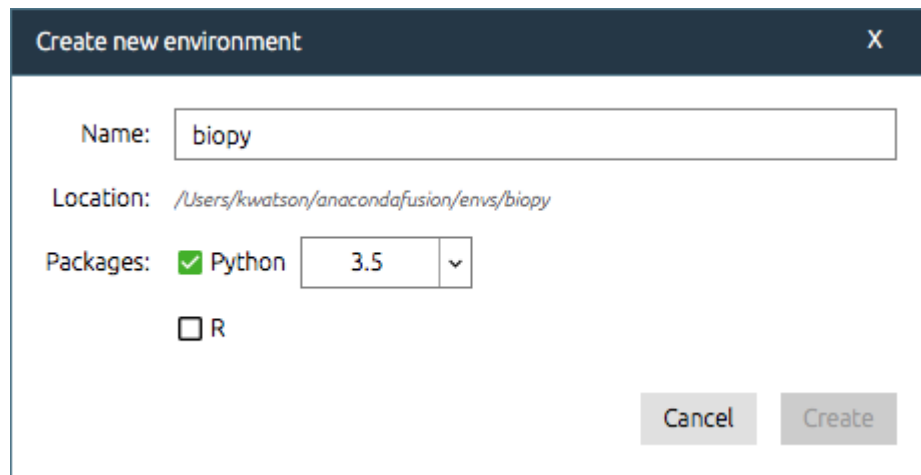
The dropdown contains filters for all applications, applications that are installed on your computer, applications that are not installed, and applications that have an update available.

### Managing environments

Navigator uses the conda package and environment manager to create separate environments, containing files, packages, and their dependencies, that will not interact with other environments.

Create a new environment named `myenvironment` and install a package in it:

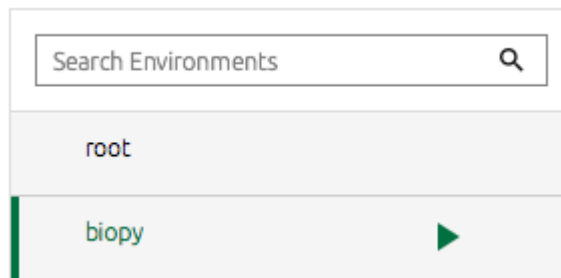
1. In Navigator, click the **Environments** tab, then click **Create**.
2. The **Create new environment** dialog appears.
3. In the **Environment** name field, type a descriptive name for your environment.



The dialog box titled "Create new environment" has a close button (X) in the top right corner. It contains the following fields and controls:

- Name:** A text input field containing the text "biopy".
- Location:** A text input field containing the path `/Users/kwatson/anacondafusion/envs/biopy`.
- Packages:** A section with two checkboxes. The first is checked and labeled "Python", followed by a dropdown menu showing "3.5". The second is unchecked and labeled "R".
- At the bottom right are two buttons: "Cancel" and "Create".

4. Click **Create**. Navigator creates the new environment and activates it.



A list of environments is shown with a search bar at the top labeled "Search Environments" and a magnifying glass icon. The list contains two entries:

- `root`
- `biopy` (highlighted with a green bar on the left and a green arrow on the right)

5. Now you have two environments, the default environment base (`root`), and `myenvironment`.
6. Switch between them (activate and deactivate environments) by clicking the name of the environment you want to use.

---

**Tip:** The active environment is the one with the arrow next to its name.

---

7. Return to the other environment by clicking its name.



## Managing Python

When you create a new environment, Navigator installs the same Python version you used when you downloaded and installed Anaconda. If you want to use a different version of Python—for example Python 3.5—simply create a new environment and specify the version of Python that you want in that environment.

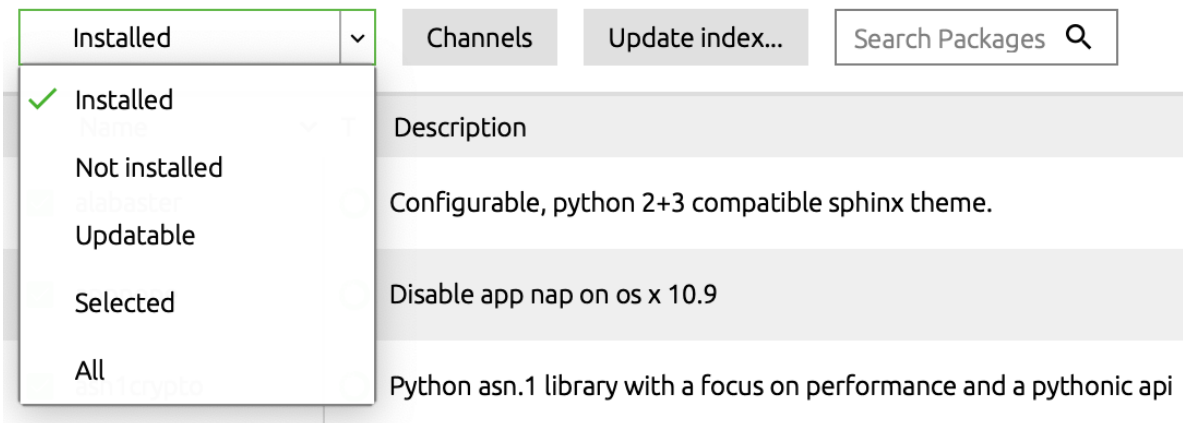
Create a new environment, named “python35”, that contains Python 3.5:

1. In Navigator, click the **Environments** tab, then click **Create**.
2. The **Create new environment** dialog appears.
3. In the **Environment name** field, type the descriptive name “python35”.
4. Make sure the checkbox beside **Python** is checked.
5. Select the 3.5 version of Python from the dropdown.
6. Click **Create**.
7. Activate the version of Python you want to use by clicking the name of that environment.

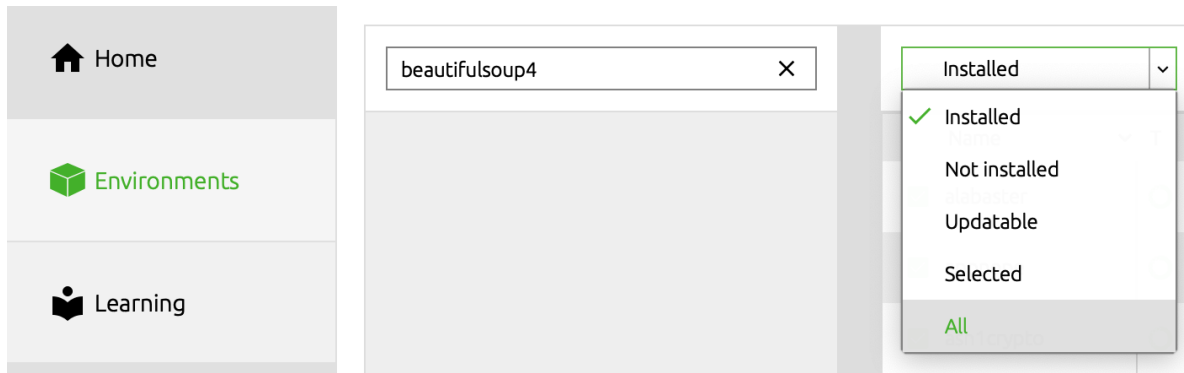
## Managing packages

In this section, you check which packages you have installed, check which are available, and look for a specific package and install it.

1. To find a package you have already installed, click the name of the environment you want to search. The installed packages are displayed in the right pane.
2. You can change the selection of packages displayed in the right pane at any time by clicking the dropdown box above it and selecting **Installed**, **Not Installed**, **Updatable**, **Selected**, or **All**.



3. Check to see if a package you have not installed named “beautifulsoup4” is available from the Anaconda repository (must be connected to the Internet). On the **Environments** tab, in the **Search Packages** box, type `beautifulsoup4`, and from the dropdown to the left of **Channels**, select **All** or **Not Installed**.



4. To install the package into the current environment, check the checkbox next to the package name, then click **Apply** button.

Not installed	Channels	Update index...	Search Packages
Name	T	Description	Version
<input type="checkbox"/> _ipyw_jlab_nb_ex...		A configuration metapackage for enabling anaconda-bundled jupyter extensions	0.1.0
<input checked="" type="checkbox"/> _mutex_mxnet			0.0.40
<input type="checkbox"/> _nb_ext_conf			0.4.0
<input type="checkbox"/> _py-xgboost-mutex			2.0
<input checked="" type="checkbox"/> _r-mutex			1.0.0
<input type="checkbox"/> _r-xgboost-mutex			2.0
<input type="checkbox"/> _tflow_1100_select			0.0.2
1783 packages available		2 packages selected	<input type="button" value="Apply"/> <input type="button" value="Clear"/>

The newly-installed “beautifulsoup4” package is displayed in the list of installed programs in the current environment.

## More information

- [Full documentation](#)
- [Free community support](#)
- [Paid support options](#)
- [Learning resources](#)

## Navigator preferences

The Navigator Preferences dialog contains configuration settings for Navigator. This page defines each option in the Preferences dialog.

To open Preferences:

### Windows/Linux

Open the **File** menu and click *Preferences*.

### MacOS

Open the **Anaconda Navigator** or **python** menu and click *Preferences*.

## Preference definitions

### Anaconda.org API domain

The API endpoint used to connect to channels and install packages from Anaconda.org. This endpoint, `https://api.anaconda.org`, is filled in by default.

---

**Note:** You must verify your Anaconda.org email address to connect Navigator to Anaconda.org.

---

### Anaconda Server API domain

The API endpoint used to connect to channels and install packages from your instance of Anaconda Server.

### Enterprise 4 Repository API domain

The API endpoint used to connect to channels and install packages from your Repo 4 server.

### Enable SSL verification

Enable or disable SSL verification. SSL verification is enabled by default.

**Caution:** Disabling SSL verification is not recommended for security reasons.

### SSL certificate path

The path to an SSL certificate that can be used to verify SSL connections. (Optional)

### Default conda environment

Select an environment to open by default when starting Navigator. Your base environment is selected by default.

### Quality improvement reporting

Choose to provide personally non-identifiable information to help improve Navigator. This reporting is enabled by default.

### Enable offline mode

Enable or disable offline mode. Offline mode is disabled by default. For more information on offline mode, see [Enabling offline mode](#).

### Hide offline mode dialog

Hide or show the **Offline Mode** announcement dialog when offline mode is enabled. This can be forced by selecting **Enable offline mode** or can occur when Navigator detects that internet access is unavailable. This dialog is hidden by default.

**Hide quit dialog**

Hide or show the dialog that appears when exiting Navigator. This dialog appears by default.

**Hide update dialog on startup**

Hide or show the **Update Application** dialog that appears when Navigator detects a new version is available. This dialog appears by default.

**Enable high DPI scaling**

Enable or disable high DPI scaling. This option can be useful if Navigator isn't displaying correctly on some high DPI screens. High DPI scaling is disabled by default.

**Show application startup error messages**

Hide or show any error messages that occur when starting Navigator. These error messages appear by default, if any errors occur.

**Show hidden Anaconda Server channels**

Hide or show all available channels on a connected Anaconda Server instance. Only your Anaconda Server account channels are visible by default.

**DataSpell path**

Set the DataSpell path if it was not installed in the default location.

**PyCharm Community path**

Set the PyCharm Community Edition path if it was not installed in the default location.

**PyCharm Professional path**

Set the PyCharm Pro path if it was not installed in the default location.

**VS Code path**

Set the Visual Studio Code path if it was not installed in the default location.

**Configure Navigator**

Make changes to the Navigator configuration file (`anaconda-navigator.ini`).

**Configure Conda**

Make change to the conda configuration file (`.condarc`).

**Caution:** Be careful when changing values directly in the configuration files for Navigator or conda. Incorrect configuration can cause issues with these products.

**Reset to defaults**

Click to reset all preferences to defaults.

**Cancel**

Click to cancel any changes.

**Apply**

Click to apply any changes.

## Related documentation

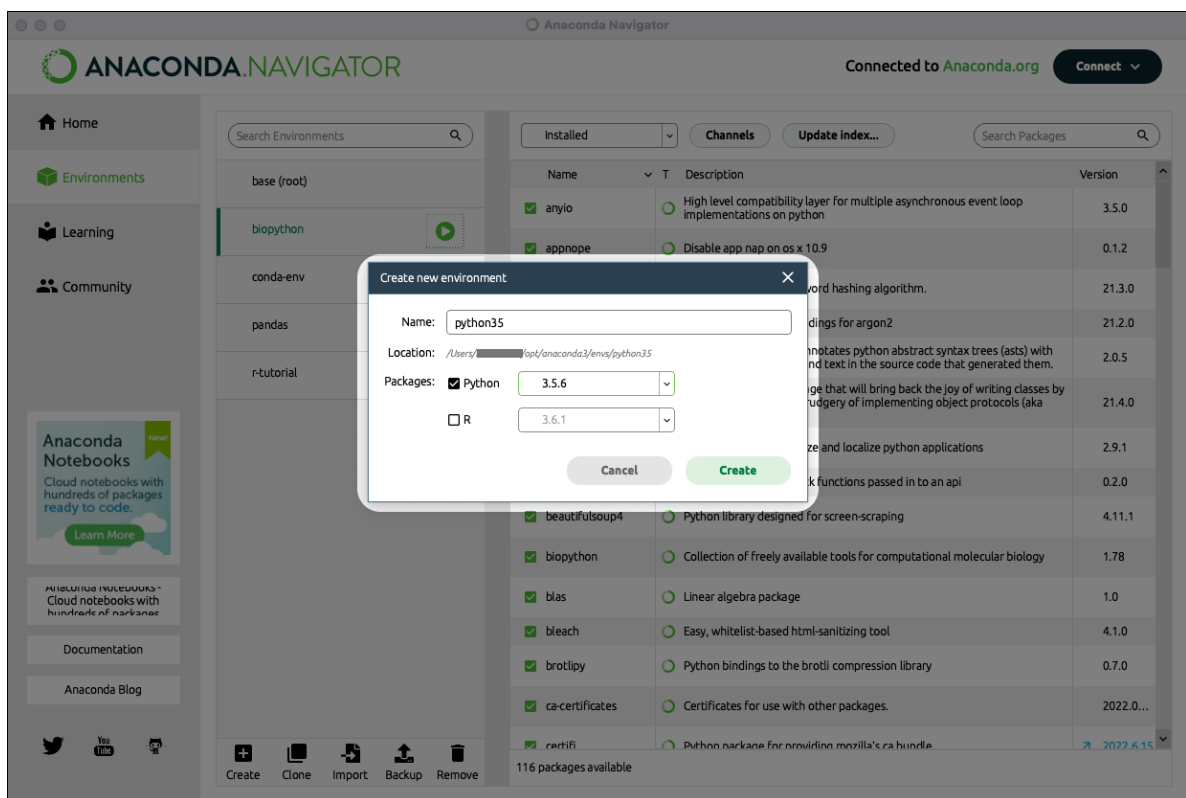
- *Editing Navigator and conda configuration files*

## Tutorials

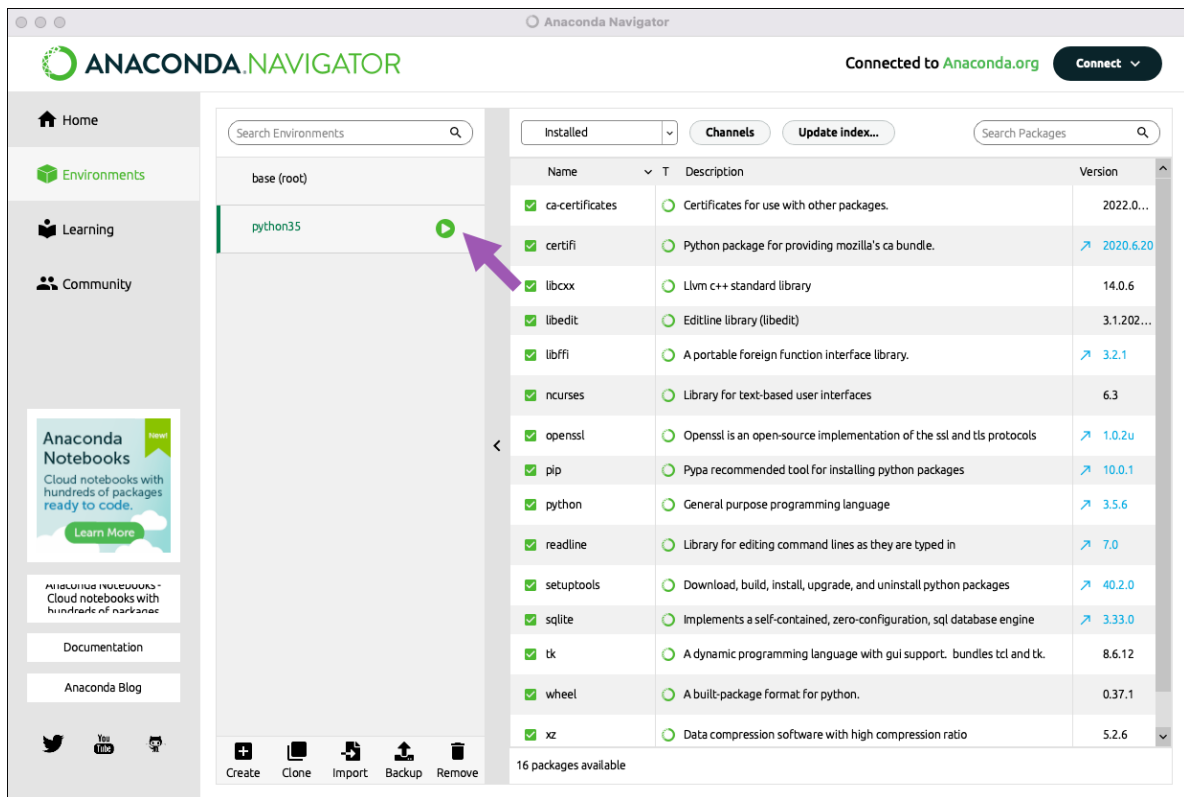
General tasks:

### How to create a Python 3.5 environment from Anaconda2 or Anaconda3

1. *Start Navigator.*
2. Go to the **Environments** page.
3. Click **Create**.
4. Type a descriptive **Name** for your environment, such as “python35”.
5. Choose 3.5.6 as your **Python** version.
6. Click **Create**.



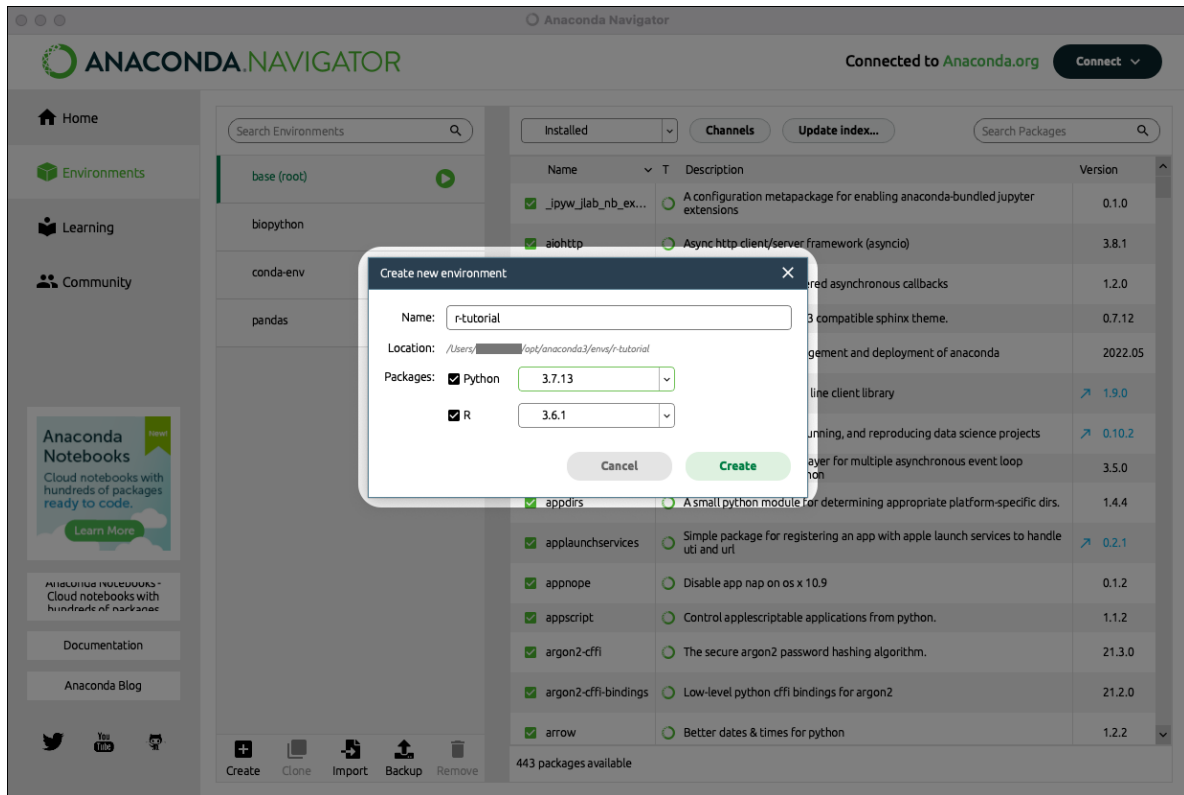
7. Navigator creates the new environment and activates it, as shown by the highlighted green bar and green play button. Click the green play button to use various tools within the active environment.



## How to create an R environment and run RStudio

### Creating an R environment

1. *Start Navigator.*
2. Go to the **Environments** page.
3. Click **Create**.
4. Enter a descriptive **Name** for your environment.



5. Next to **Packages**, select version 3.7.13 of Python.
6. Check the box next to **R** and select the version of R you want to use.

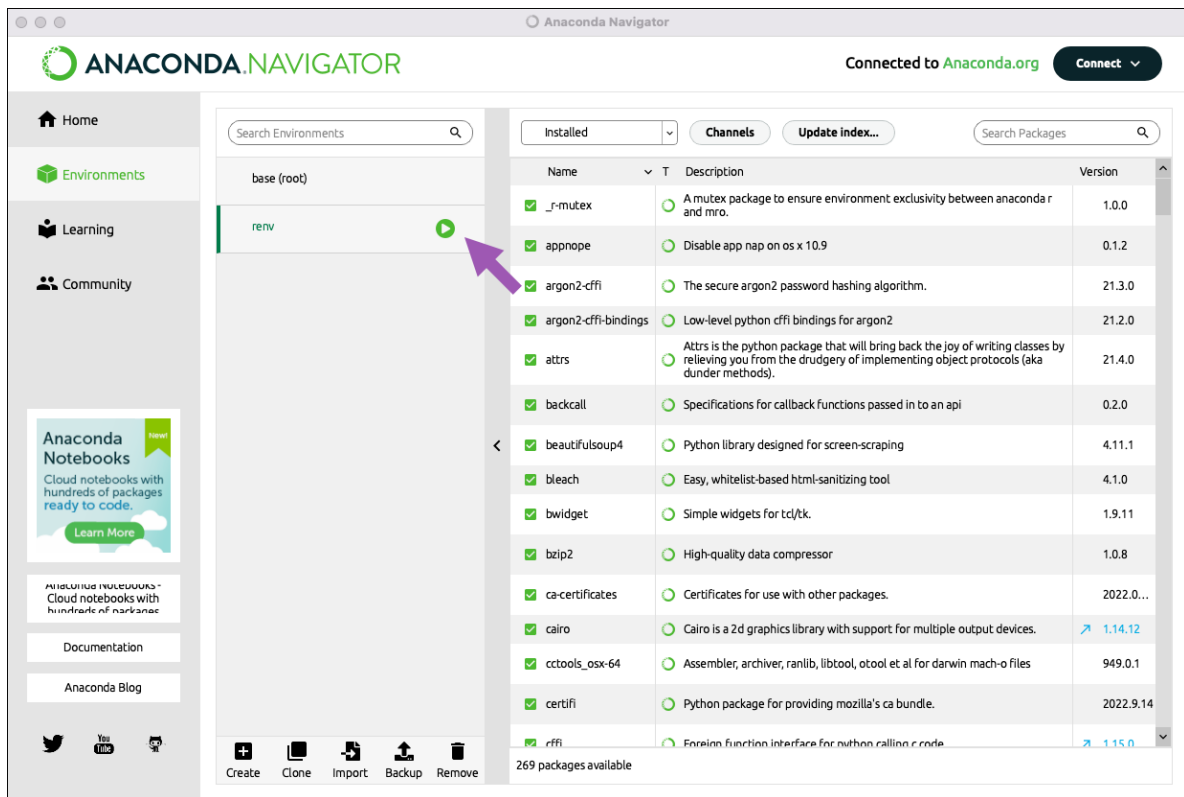
---

**Note:** This topic selects a version of Python that is compatible with most versions of R. Not all versions of Python and R are compatible. If you attempt to create an environment with incompatible versions, Navigator will error, list the incompatible package versions, and stop creating the environment.

---

R will install with the packages `r-base`, `r-essentials`, and many other R packages. For more information, please see [Using R language with Anaconda](#).

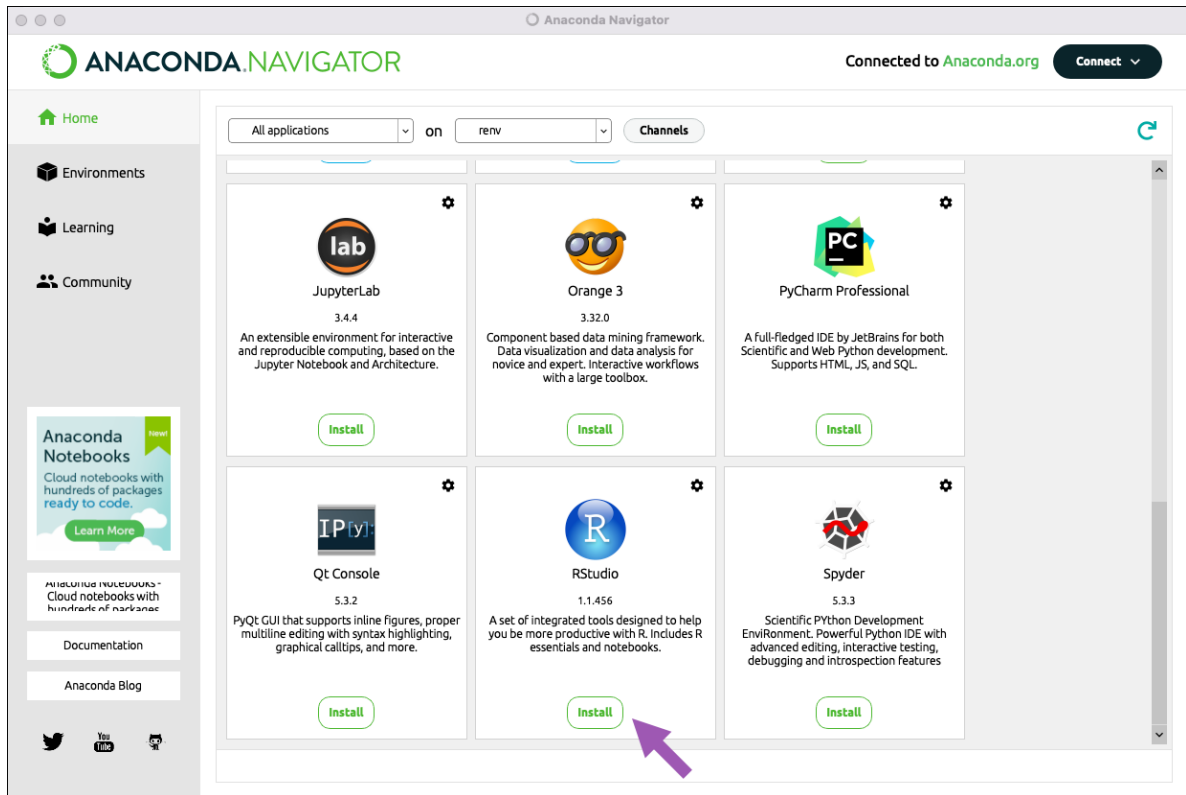
7. Click **Create**.
8. Navigator creates the new environment and activates it, as shown by the highlighted green bar and green play button.



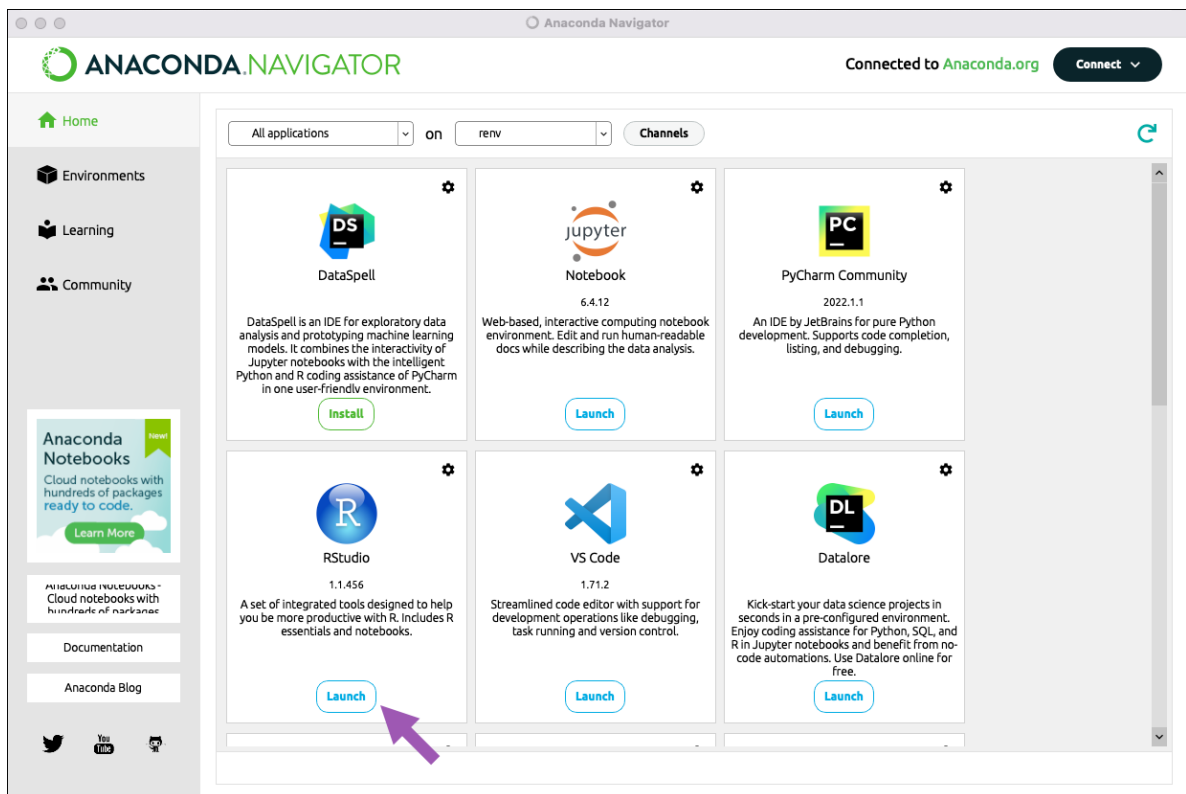
## Running RStudio

1. With the new environment active, navigate to the **Home** page.
2. Click **Install** on the RStudio application tile.





- Once RStudio is installed, click **Launch** to run RStudio from Navigator.

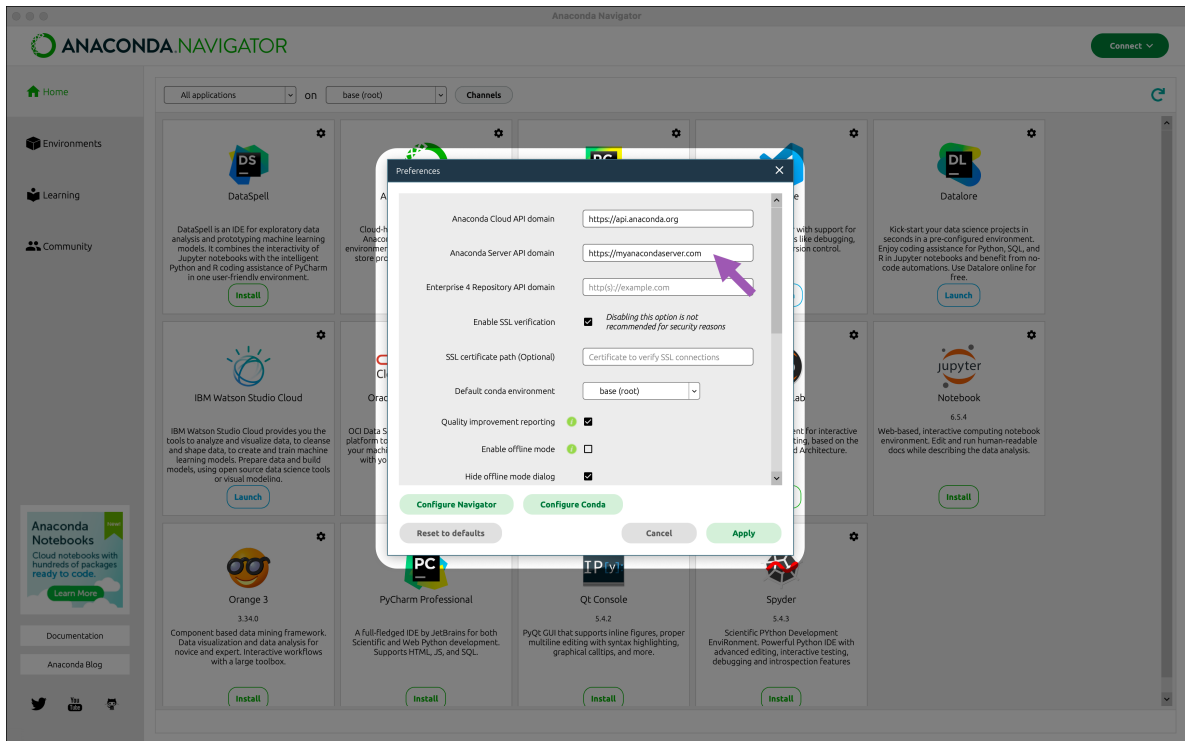


## Connecting Navigator to Anaconda Server

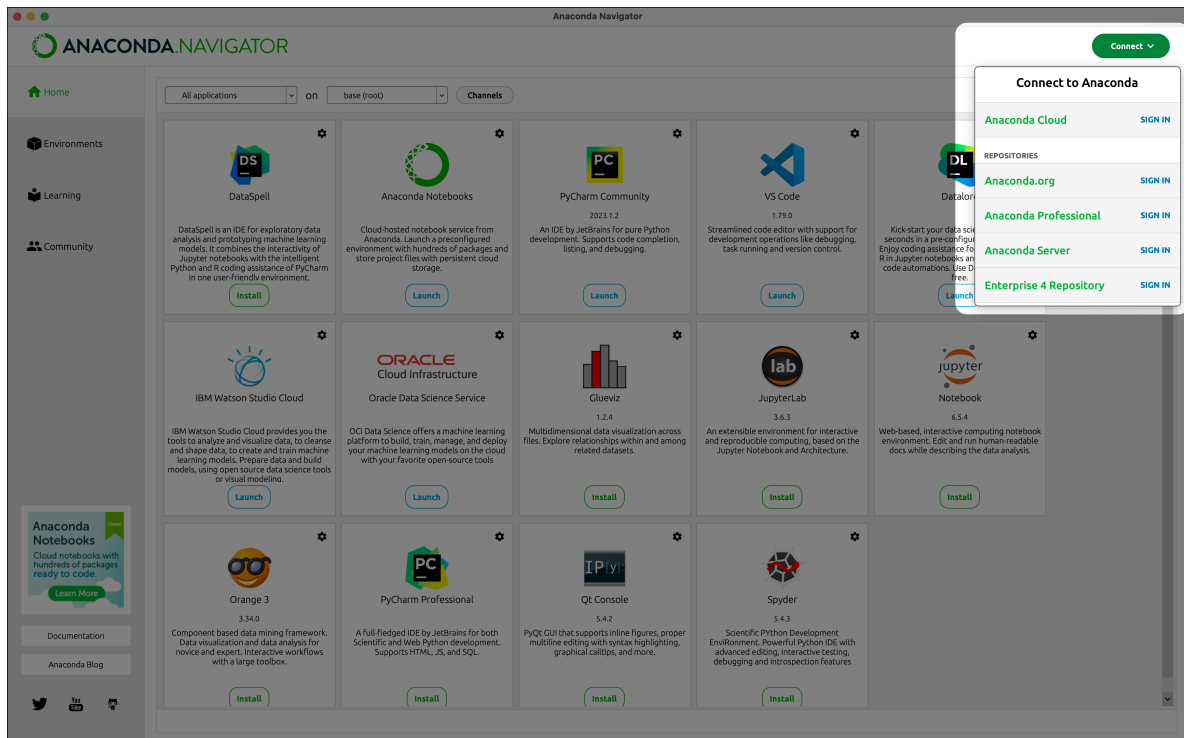
If you are using Anaconda Server, you can configure Navigator to search for packages in your Server repository instead of searching on [Anaconda.org](https://anaconda.org).

To connect Anaconda Navigator to Anaconda Server:

1. Open the **Preferences** dialog from the top menu bar. In Windows, this is the File menu. In macOS, it is either the Anaconda Navigator or python menu, depending on your launch method.
2. In the Anaconda Server API domain field, type the address of your Anaconda Server instance.



3. Click **Apply**.
4. At the top of the Navigator window, click **Connect**.



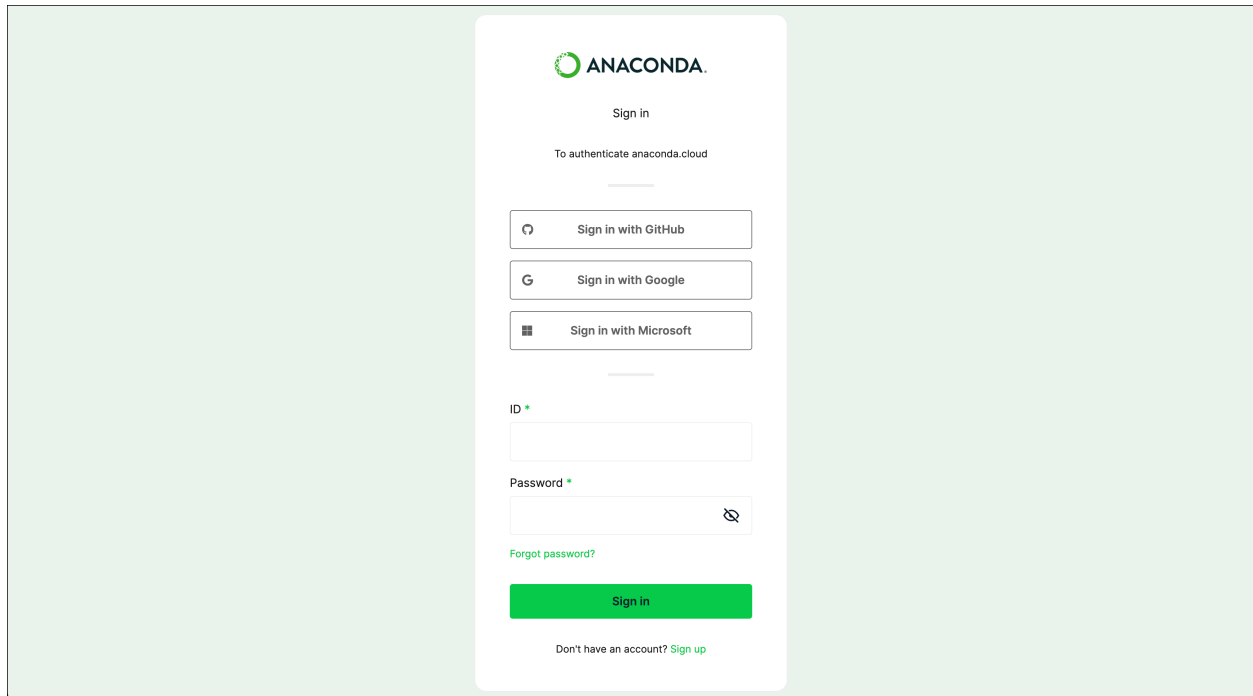
5. In the Connect dropdown, click **Sign in** for Anaconda Server.
6. Follow the instructions in the dialog box that appears to finish connecting Navigator to your Server repository.

## Connecting Navigator to Anaconda Cloud

A free Anaconda Cloud account gives you access to cloud backups for your environments and access to Anaconda's cloud notebooks and free learning resources.

## Creating an account

Go to <https://anaconda.cloud/sign-up>.

A screenshot of the Anaconda sign-in dialog. At the top is the Anaconda logo and the text "Sign in" and "To authenticate anaconda.cloud". Below this are three buttons: "Sign in with GitHub", "Sign in with Google", and "Sign in with Microsoft". Under these buttons are two input fields: "ID" and "Password". The "Password" field has a toggle icon on the right. Below the "Password" field is a link "Forgot password?". At the bottom is a green "Sign in" button and a link "Don't have an account? Sign up".

ANACONDA

Sign in

To authenticate anaconda.cloud

Sign in with GitHub

Sign in with Google

Sign in with Microsoft

ID \*

Password \*

[Forgot password?](#)

Sign in

Don't have an account? [Sign up](#)

From here you have several options for account registration:

- Authenticate with a GitHub, Gmail, or Microsoft account
- Sign up manually with an email and password

### Signing up manually

1. Click the **Sign up** link at the bottom of the sign in dialog.
2. Enter your email address and password.
3. Check your email for the email verification code.
4. Enter the verification code and click **Submit**.

## Creating a profile

Fill out the personal information form, check the box if you would like to receive marketing promotions or newsletters, then click **Explore Anaconda Cloud**.

The screenshot shows the Anaconda Cloud website with a modal window titled "Get More Content" in the center. The modal contains the following fields and options:

- First Name\***: Text input field.
- Last Name\***: Text input field.
- Company\***: Text input field.
- Company Size**: Dropdown menu.
- Role\***: Dropdown menu.
- Industry**: Dropdown menu.
- Country\***: Dropdown menu.
- ☐ I would like to receive email updates about new content, events, features and promotions.

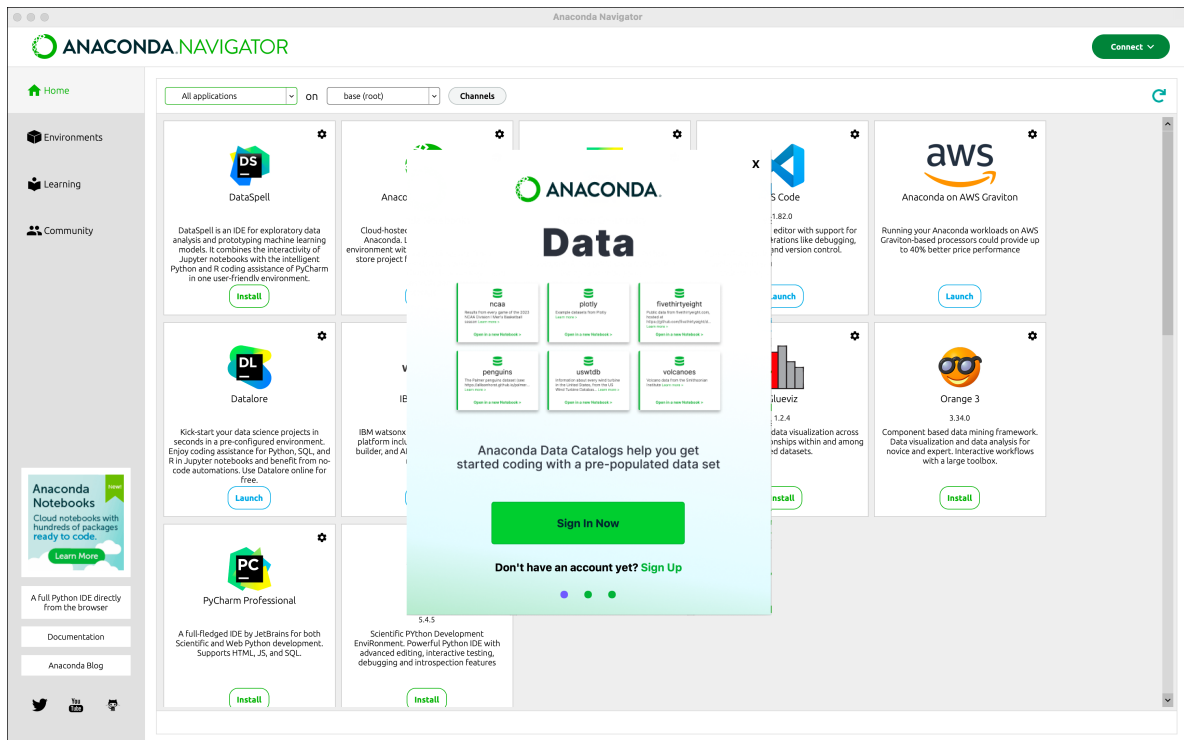
At the top right of the modal is a close button (X). In the background, the website header shows "ANACONDA" and navigation links: Home, Get Started, Packages, Learning, Notebooks, Community. A "Send Verification Email" button is visible in the top right of the modal area. The main content area of the website shows "Welcome to Anaconda Cloud", "Featured" items (Live Event, Webinar), and "Self-Paced Learning" items (Conda Essentials, Introduction to Machine Learning, Python First Steps, Data Cleaning with Pandas).

You will receive a verification email once you have created your profile.

## Connecting Anaconda Cloud to Navigator

Once you have become an Anaconda Cloud member, sign in to Anaconda Cloud from Navigator. To connect Navigator to Anaconda Cloud:

1. At the top of the Navigator window, click **Connect**.
2. In the **Connect** dropdown, click **Sign in** by Anaconda Cloud.
3. Enter the email address and password associated with your Anaconda Cloud account.



4. Click **Sign in**.

## Configuring Navigator tiles

Anaconda Navigator contains some configuration options that allow you to customize the visibility of application tiles available on the Navigator **Home** tab.

## Configuration files

Depending on your operating system, the configuration file can be created or edited at the following locations:

- Windows: %APPDATA%\anaconda\navigator\applications\
- macOS and Linux: ~/.anaconda/navigator/applications/

Each configuration file must be in a `.yaml` format, but your files can be named anything (within the character limits for files in your operating system).

There are a few default applications that are registered in Navigator:

- PyCharm Community - `pycharm_ce`
- PyCharm Professional - `pycharm_pro`
- VS Code - `vscode`
- Datalore - `datalore`
- IBM watsonx - `ibm_watson`

Use these identifier keys to hide the above default applications within Navigator.

## Hiding existing tiles

Navigator contains some default applications that can be hidden by a config file. To hide one of these applications from the Navigator **Home** tab:

1. Create a new config file (named something like `config.yaml` or `hidden_apps.yaml`) or edit an existing file.
2. Add something like the following:

```
vscode:  
  is_available: false
```

In this example, the VS Code application tile will be hidden from users in the Navigator **Home** tab.

## Editing Navigator and conda configuration files

**Caution:** Be careful when changing values directly in the configuration files for Navigator or conda. Incorrect configuration can cause issues with these products.

To directly edit Navigator and conda's configuration files:

1. Open the Navigator Preferences dialog.

### Windows/Linux

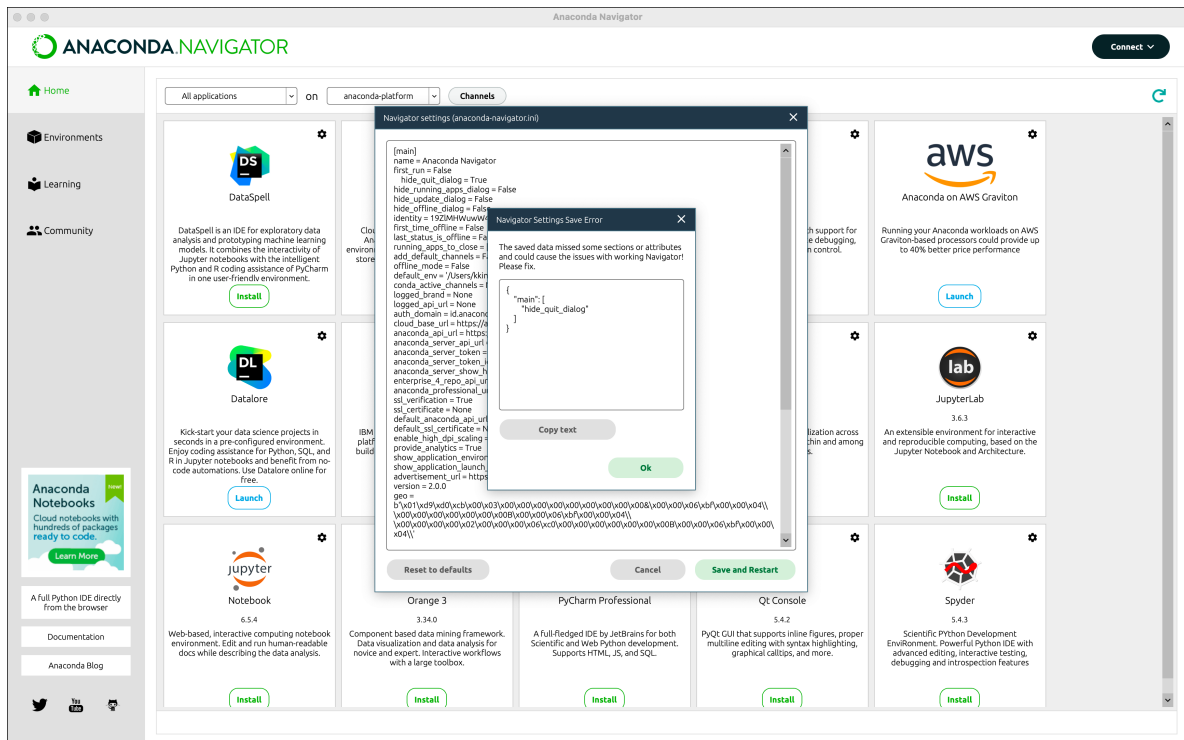
Open the **File** menu and click *Preferences*.

### MacOS

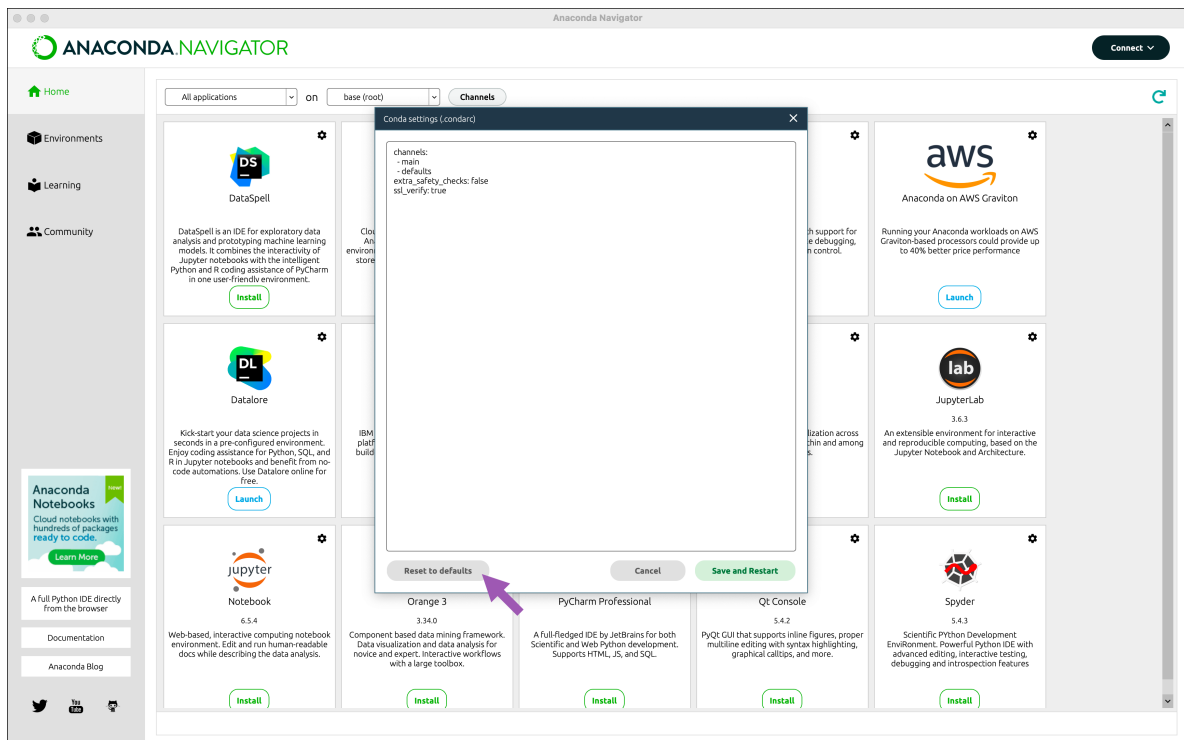
Open the **Anaconda Navigator** or **python** menu and click *Preferences*.

2. Click **Configure Navigator** to open the `anaconda-navigator.ini` file or click **Configure Conda** to open the `.condarc` file within Navigator.
3. Edit the file to change any configurations.

When you edit the Navigator and conda configuration files in Navigator, a validation tool warns you about missed requirements or incorrect formatting. The `.condarc` file must be a valid `.yaml` format file.



Click **Reset to defaults** to erase any custom configuration within the open configuration file.

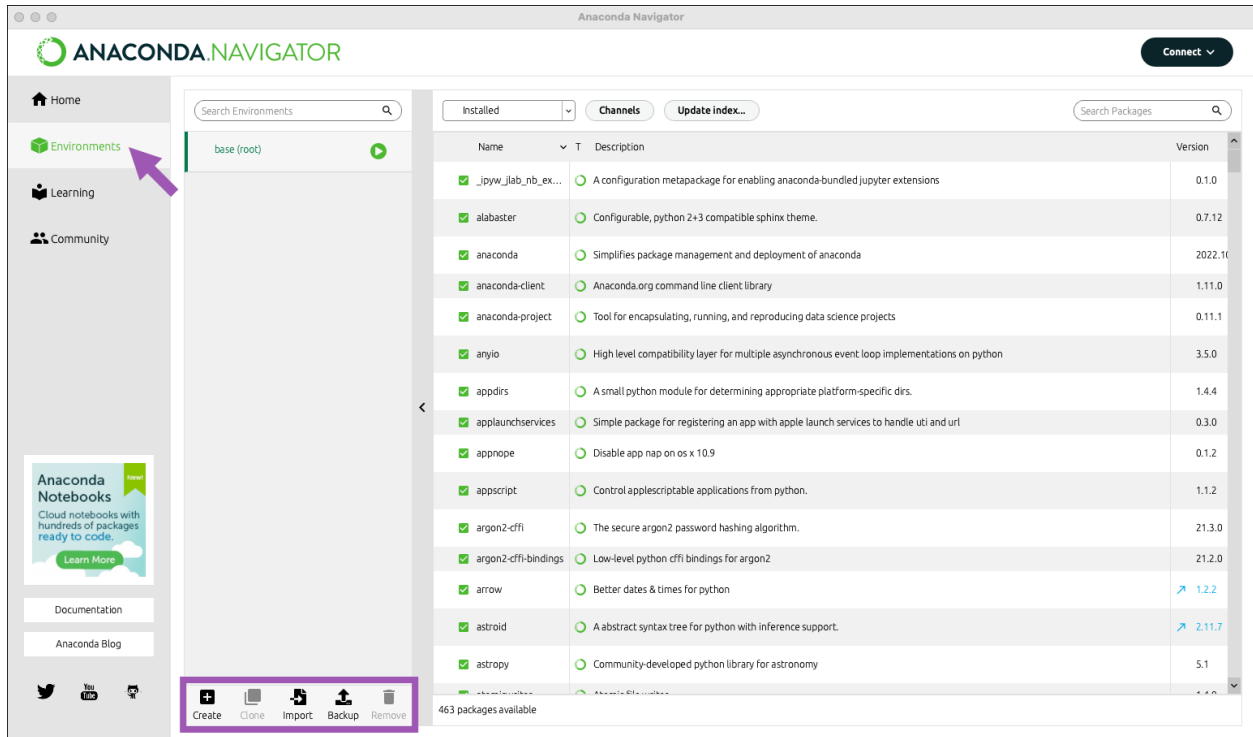


4. Click **Save and Restart** to save any changes to the open configuration file and restart Navigator.



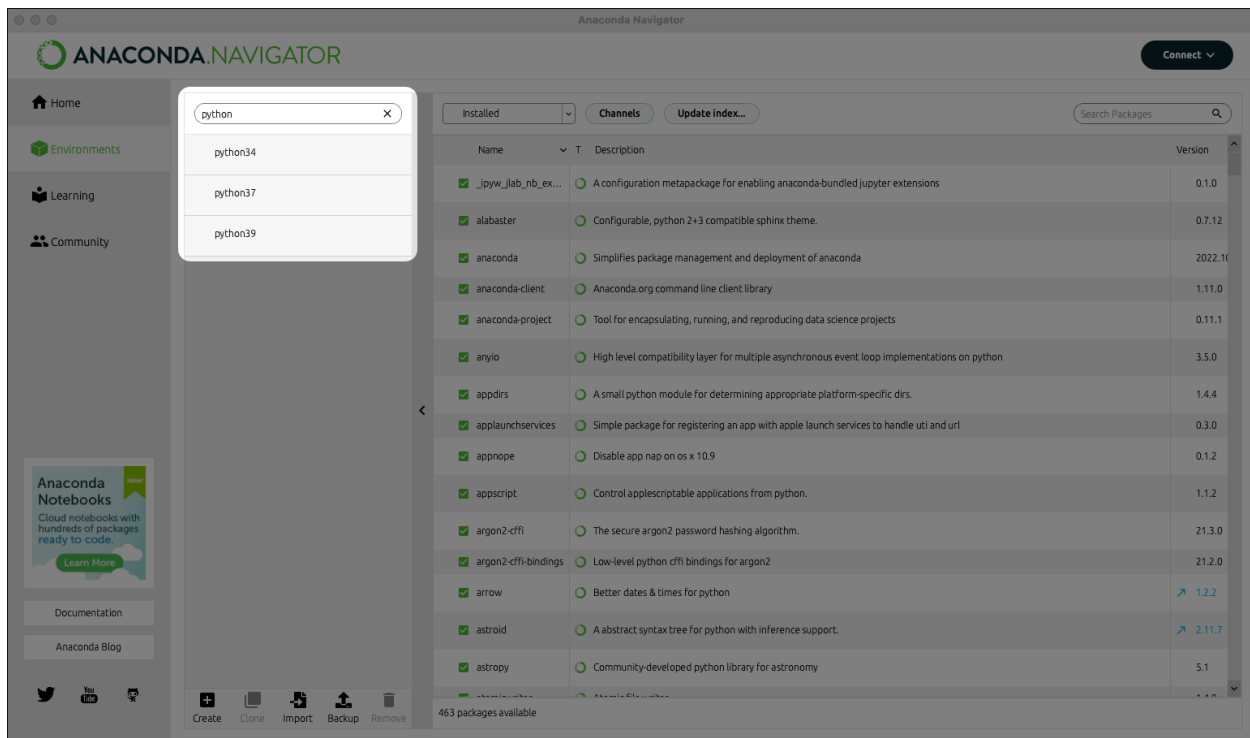
## Managing environments

On the **Environments** page, the left column displays your environments. At the bottom of the environments list are the **Create**, **Clone**, **Import**, **Backup**, and **Remove** buttons.



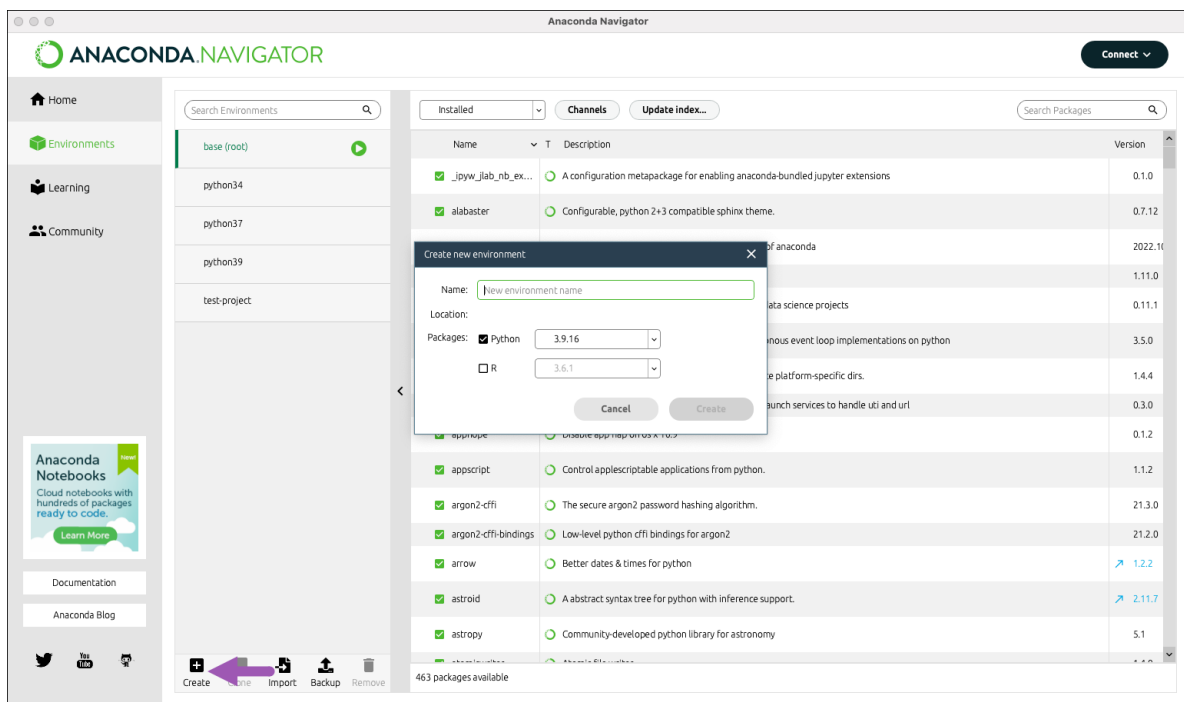
## Searching for an environment

In the **Search Environments** box, enter all or part of an environment name to filter the environment list.



## Creating a new environment

1. At the bottom of the environments list, select **Create**.
2. In the Create new environment dialog, enter a descriptive name for the new environment.

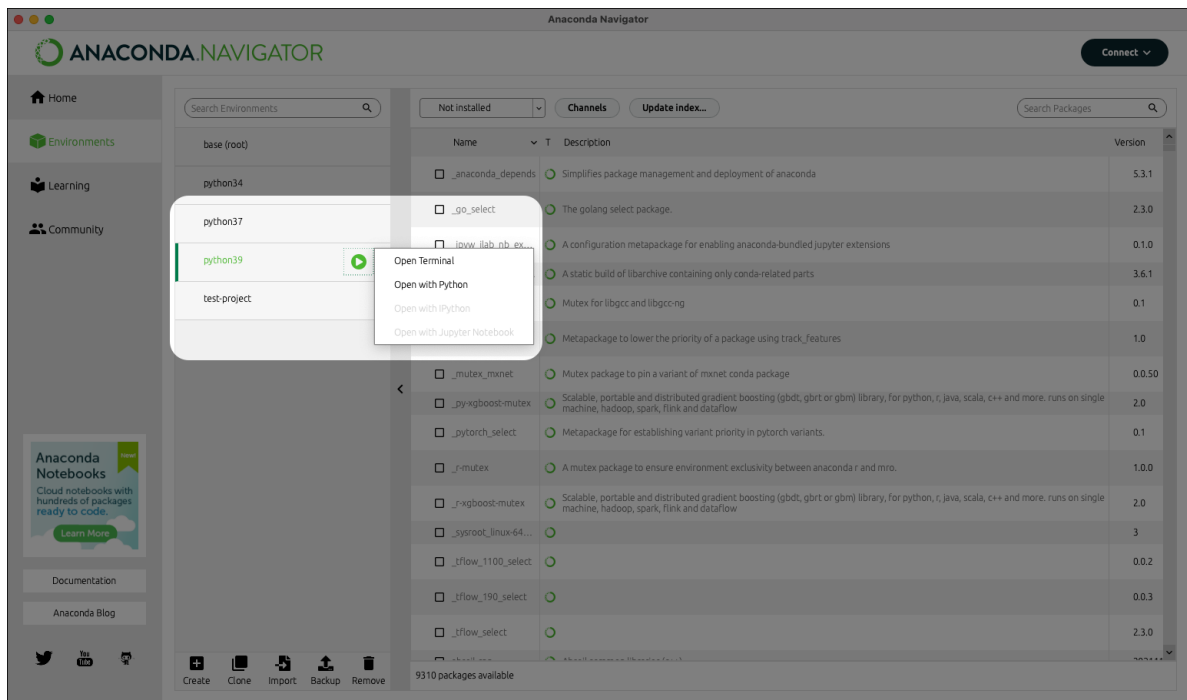


3. Select Python or R to set the package type for your environment.

4. Select a version for your Python or R installation.
5. Click **Create**.

## Using an environment

1. In the environments list, select the environment name to activate it.
2. Click the arrow button next to the environment name to open the activation options dropdown.



3. Select one of the following options for opening the environment: Terminal, Python interpreter, IPython Console, or Jupyter Notebook.

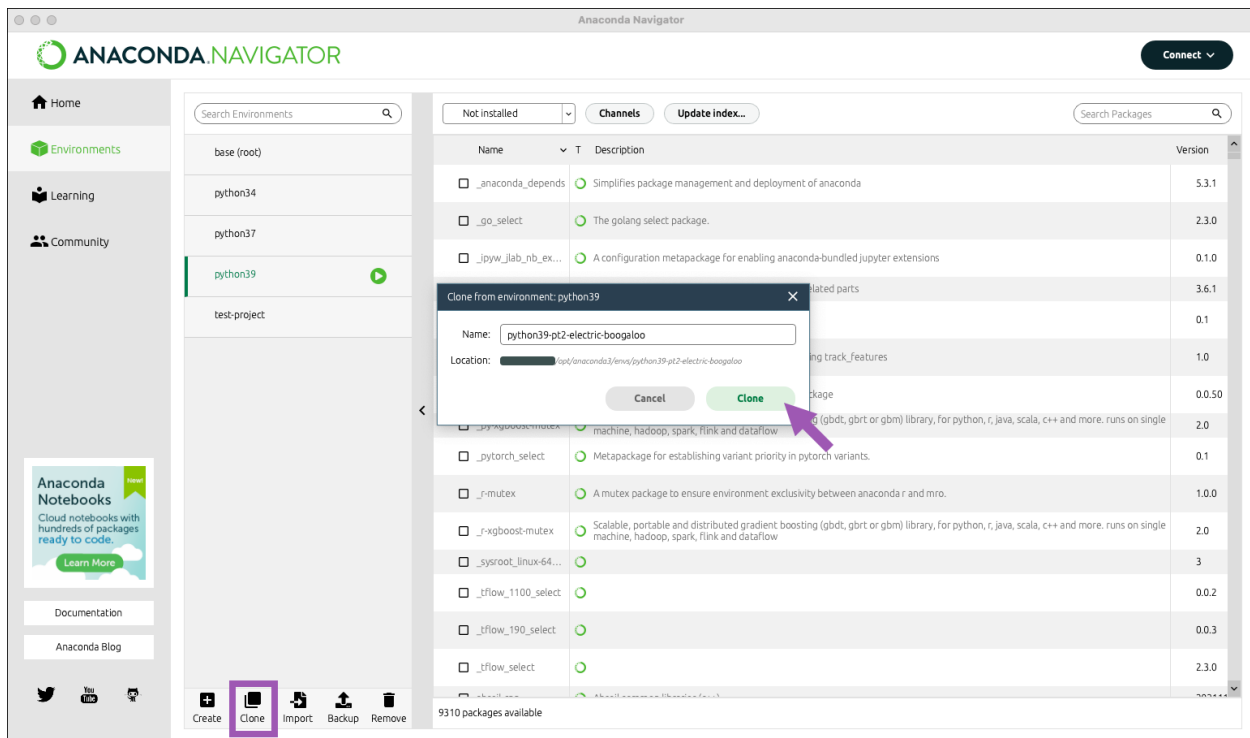
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**Note:** Some of these options may not be available if they were not installed in the environment.

---

## Cloning an environment

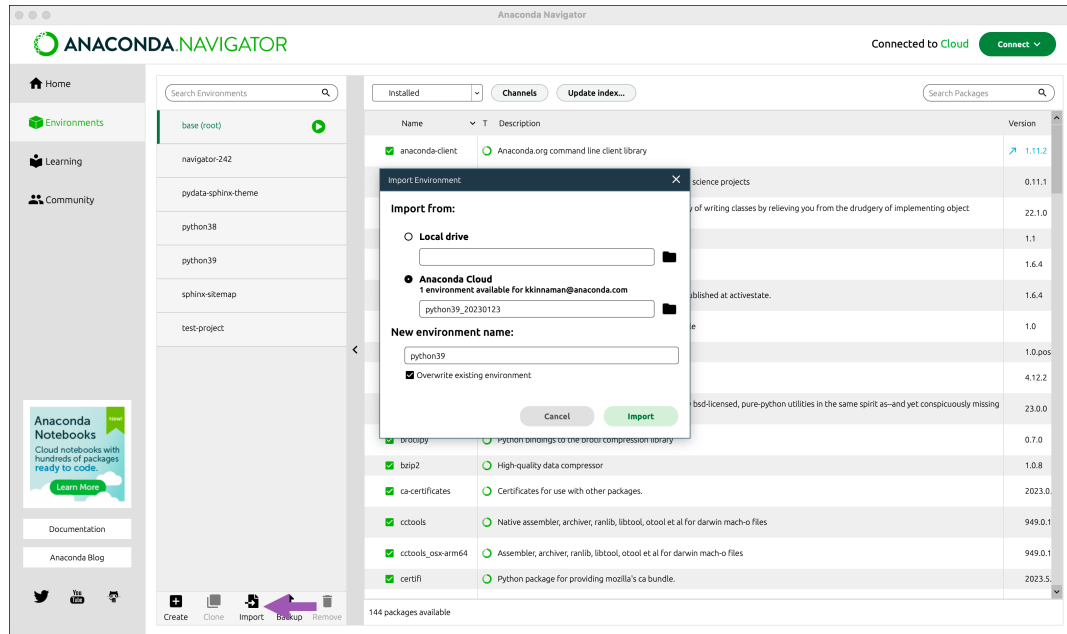
1. Activate the environment you want to clone by selecting it from the environments list.
2. At the bottom of the environments list, click **Clone**.
3. Enter a descriptive name for the new environment.
4. Click **Clone**.



## Importing an environment

Each environment has a YAML-formatted configuration file. If someone has given you an environment file that you want to use—for example `my-environment-file.yml`—and you have saved it to your computer, you can import it into Navigator. Furthermore, if you have backed up an environment either locally or to [Anaconda Cloud](#), you can import it onto your local computer with Navigator.

1. At the bottom of the environments list, select **Import**.
2. In the Import Environment dialog, choose whether to import from your **Local drive** or from **Anaconda Cloud**.
3. Select the corresponding folder icon to choose the environment you want to import.



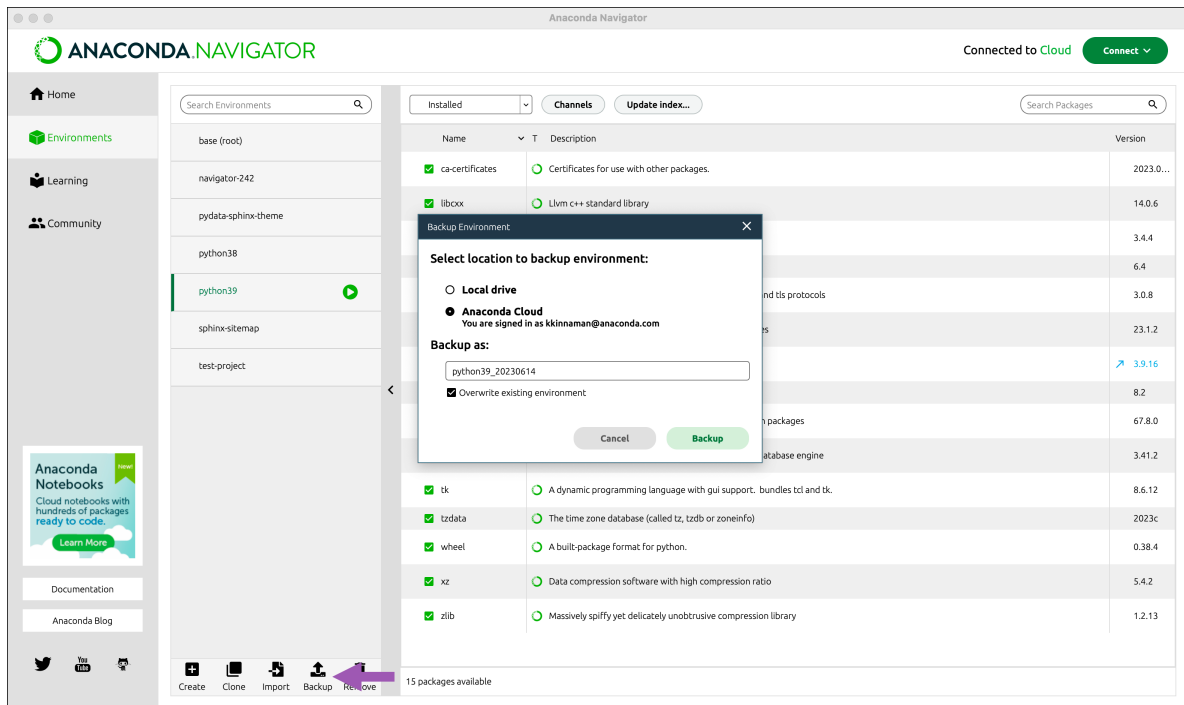
4. Enter a descriptive name for the new environment, or use the existing name. Each environment name must be unique.
5. Choose whether or not to overwrite an existing environment with your import.
6. Click **Import**.

Your newly imported environment will appear in the environments list.

## Backing up an environment

**Warning:** Don't delete your environment backup when removing and reinstalling Anaconda. If you do, you will not be able to import your existing environments into your new installation.

1. Activate the environment you want to back up by selecting it from the environments list.
2. At the bottom of the environments list, click **Backup**.



3. In the Backup Environment dialog, select either **Local drive** or **Anaconda Cloud** as the backup location. You need to have an [Anaconda Cloud account](#) to back up your environment to Anaconda Cloud.

**Note:** By backing up to the cloud (Anaconda Cloud), your environment is safe from hard drive failure and malfunctions with your machine.

Backing up locally can be useful for rolling back conda to an earlier state feature.

#### 4. If you choose to back up locally:

- a. Click **Backup**.
- b. Enter a descriptive name for your environment's YAML file.
- c. Choose a place on your computer to save it.
- d. Click **Save**.

#### 5. If you choose to back up to Anaconda Cloud:

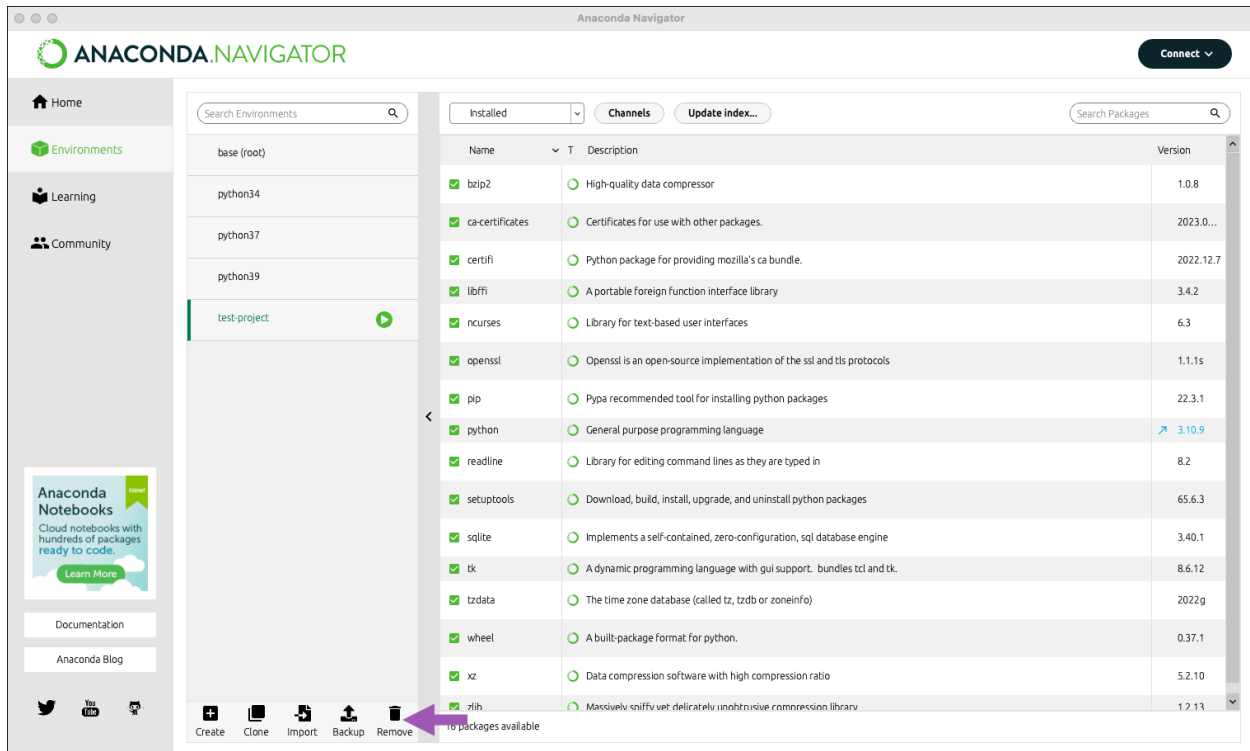
- a. Enter a descriptive name for the backup. By default, the environment name and current date is entered as the backup name.
- b. Choose whether to overwrite an existing environment backup file on Anaconda Cloud. Each backup name must be unique.
- c. Click **Backup**.

## Removing an environment

### In Navigator

1. In the environments list, select the environment you want to remove.
2. At the bottom of the list, click **Remove**.

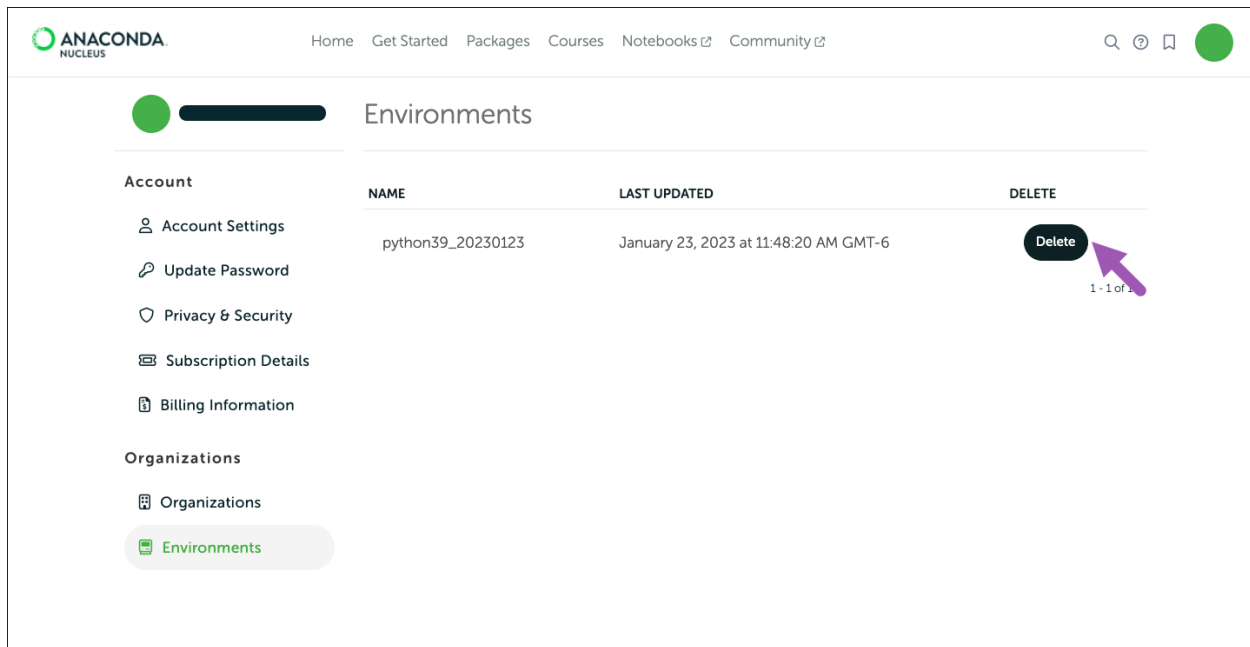
**Note:** Removing an environment in Navigator only removes your local copy. It will not remove or delete environments you have backed up to Anaconda Cloud.



### In Anaconda Cloud

1. In a browser, open [Anaconda Cloud](#).
2. Sign in using your email address and password.
3. From your profile in the top-right corner, navigate to **Subscriptions**.
4. Select the **Environments** page.
5. Select **Delete** in the row associated with the environment you wish to remove.

**Note:** Removing an environment in Anaconda Cloud only removes it from Anaconda Cloud. It does not affect any local copies.



## Advanced environment management

Navigator provides a convenient graphical interface for managing conda environments, channels, and packages. If you're comfortable working with Anaconda prompt (or terminal on Linux or macOS), you can access additional, advanced management features. To learn more, see [Managing environments](#) in the conda documentation.

## Managing packages

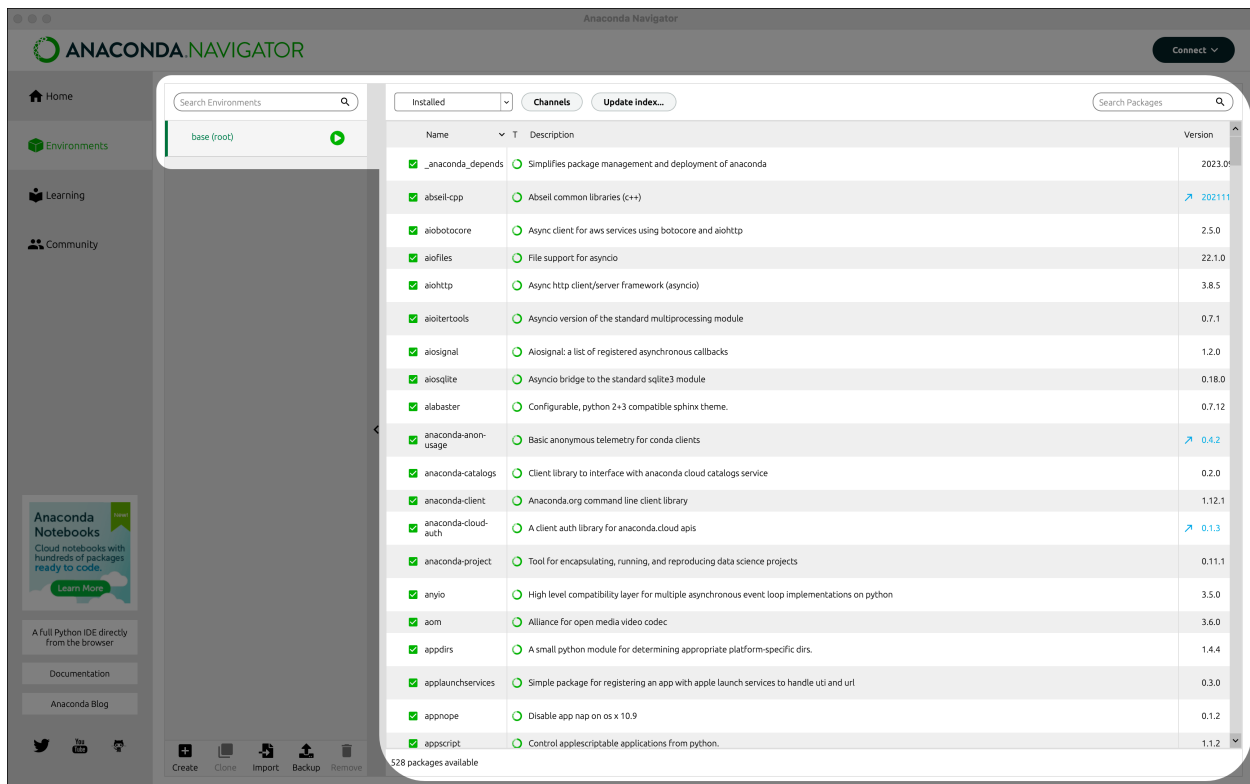
On the **Environments** page, the packages table in the right column lists the packages included in the environment selected in the left column.

---

**Note:** Packages are managed separately for each environment. Changes you make to packages only apply to the active environment.

---





**Tip:** The **Update Index** button refreshes the packages table with all packages that are available in any of the enabled channels.

## Filtering the packages table

By default, only installed packages are shown in the packages table. To filter the table to show different packages:

1. Click the dropdown next to **Channels**.
2. Select which types of packages to display.

**Note:** Selecting the *Updatable* filter option lists packages that are installed and have updates available.

## Searching for packages

To search for a specific package, type all or part of the package's name into the **Search Packages** box.

The results of the search depend on:

- the channels added to Navigator,
- the selected package list filter option, and
- the environment selected, if searching for already-installed packages

If a package you are expecting doesn't appear in the search, make sure you have the correct filter option and environment selected. If the package is not available in the default channels, make sure the correct channels are added to your **Channels** list.

### Installing a package

1. Select the environment where you want to install the package.

---

**Note:** Anaconda does not recommend installing packages in your base environment.

---

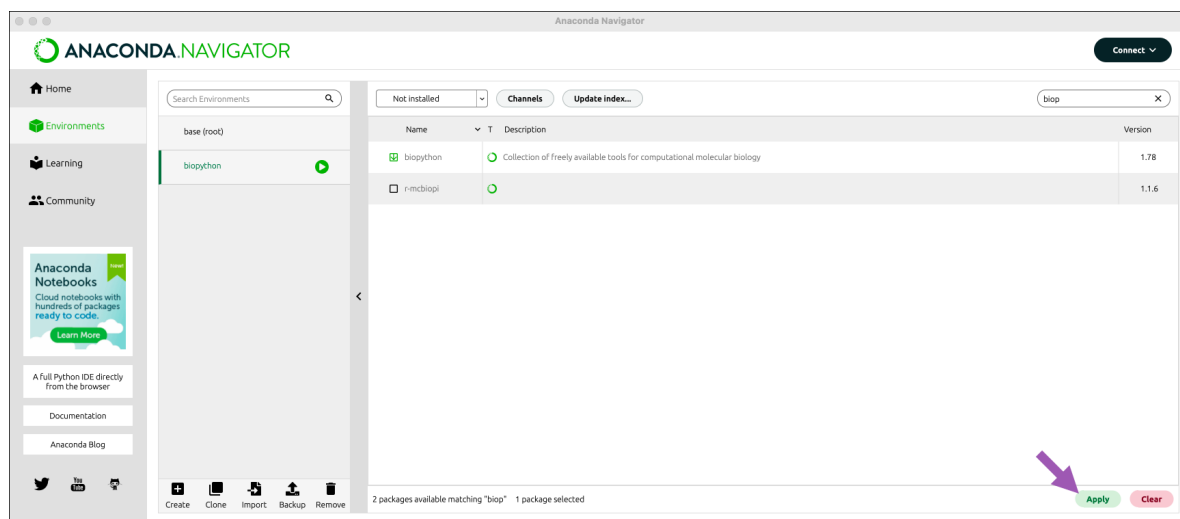
2. Select the *Not Installed* filter option to list all packages that are available in the environment's channels, but not installed.

---

**Note:** Only packages that are compatible with your current environment are listed.

---

3. Use the **Search Packages** box to narrow the package options, if necessary.
4. Select the package you want to install.
5. Click **Apply**.



6. Review the **Install Packages** information. This dialog lists the packages chosen for installation and all dependencies of those packages that also need to be installed.

You can sort the list of packages to be installed by the following information:

**Name**

The name of the package.

**Unlink**

The package version being uninstalled.

**Link**

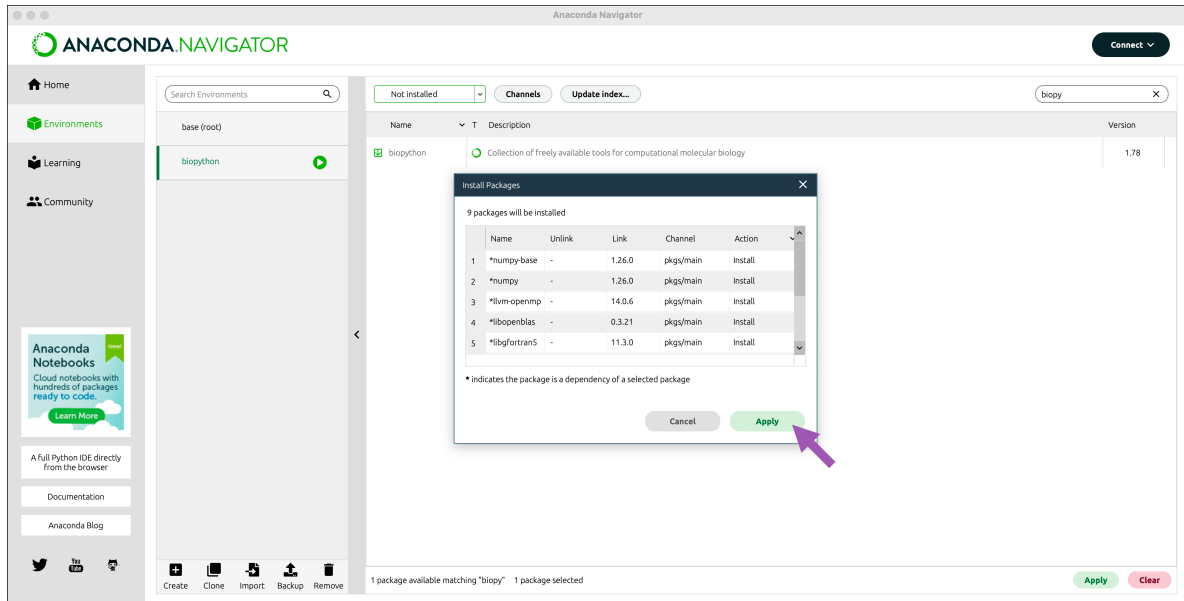
The package version being installed.

**Channel**

The channel from which the package is being installed.

**Action**

The action being taken. In this case, “Install”.



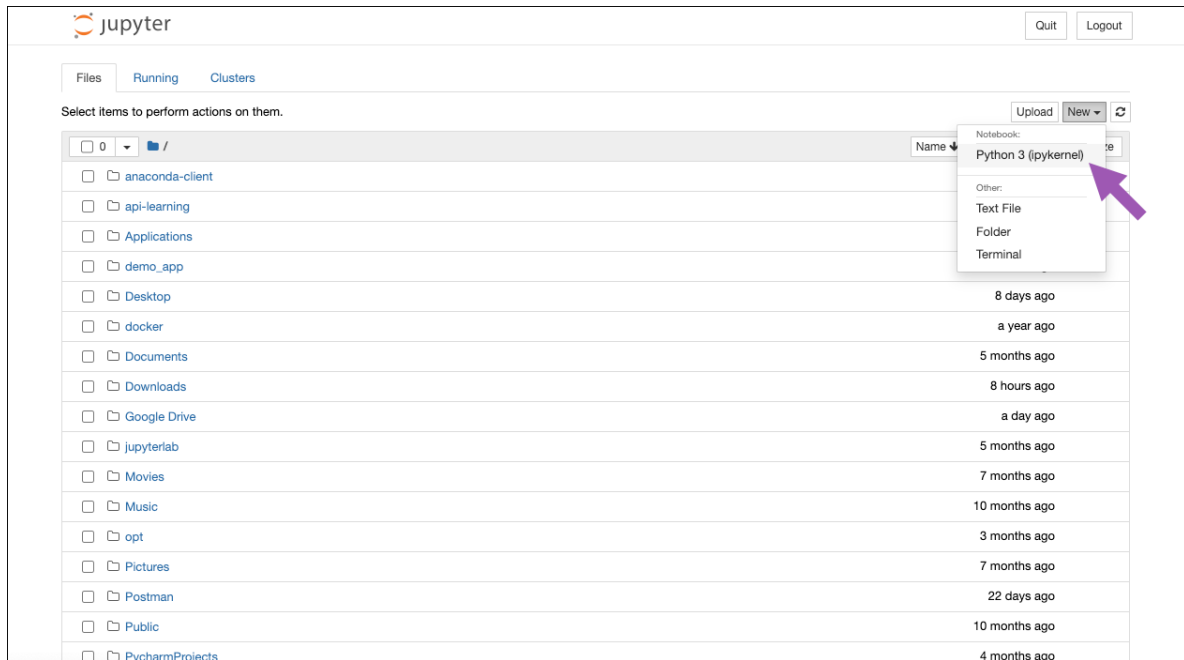
7. Click **Apply**.

**Tip:** If a new package doesn't appear in the packages table after you install it, select the **Home** page, then click **Refresh** to reload the packages table.

## Confirming a package is installed correctly

Once a package is installed, it appears in the Installed package list for the given environment, but another way to confirm that a package is installed correctly is by opening a Jupyter Notebook in that environment, importing the package, and displaying its help text. These instructions assume you created an environment named `biopython` and installed the BioPython package into it.

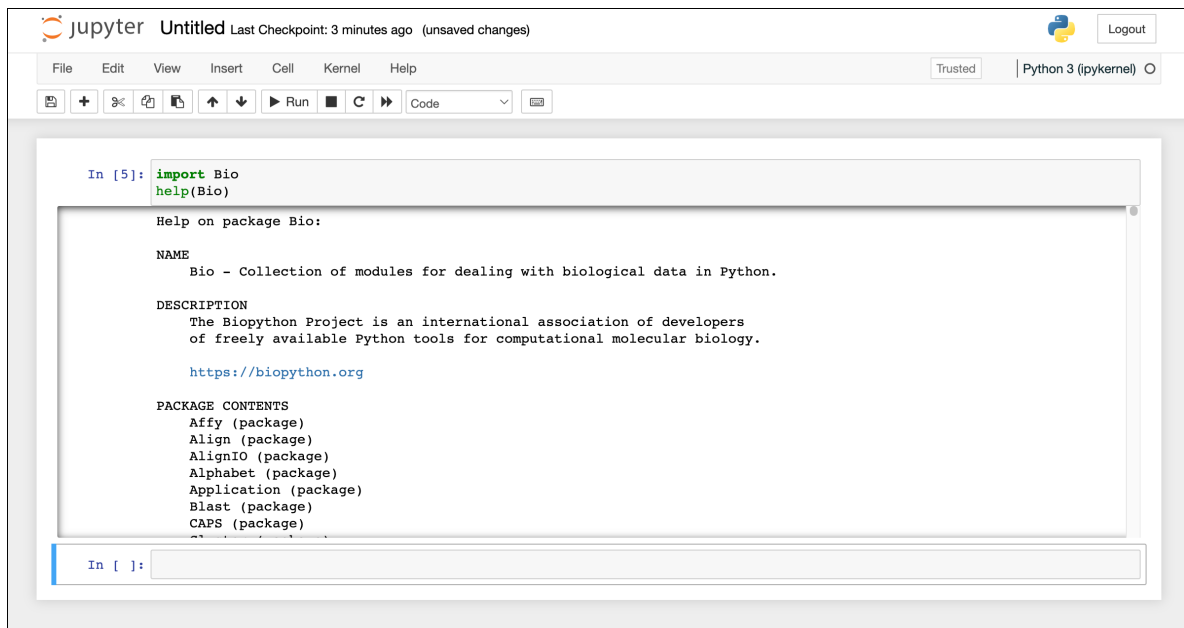
1. On the **Home** page, select the `biopython` environment from the environment dropdown.
2. Click **Install** on the Jupyter Notebook application tile to install it into the `biopython` environment.
3. Launch Jupyter Notebook from its application tile.
4. In the Jupyter Notebook, click **New** and select the Python 3 kernel.



5. Copy and paste the following code into the first cell:

```
import Bio
help(Bio)
```

6. To run the code, click **Run** or use the keyboard shortcut Ctrl + Enter (or Ctrl + Return in macOS).
7. The BioPython help text is displayed.



**Note:** To determine the import name of a package (such as `Bio` for BioPython), search the package's documentation.

## Updating a package

To mark packages for updating:

1. Select the *Updatable* filter option to list all installed packages that have updates available.
2. Select the blue arrow on the line(s) of the package(s) you want to update.
3. Click **Apply**.

## Installing a different package version

1. Select the checkbox next to the package whose version you want to change.
2. Select *Mark for specific version installation*. If other versions are available for this package, they are displayed in a list.
3. Select the package version you want to install.
4. Click **Apply**.

## Removing a package

1. Select the checkbox next to the package you want to remove.
2. Select *Mark for removal*.
3. Click **Apply**.

## Advanced package management

Navigator provides a convenient graphical interface for managing conda environments, channels, and packages. But if you're comfortable working with Anaconda Prompt (terminal on Linux or macOS), you can access additional, advanced management features. To learn more, see [Managing packages](#) in the conda documentation.

## Managing channels

Channels are locations where Navigator and conda look for packages. You can search for and browse packages and channels on [Anaconda.org](https://anaconda.org).

For example, let's say you want to look for packages on the "Milagro" channel of Anaconda.org. All three of these channel variations will look for packages in the same place on [anaconda.org](https://anaconda.org):

- By name – milagro
- By URL – <https://anaconda.org/milagro>
- By conda URL – <https://conda.anaconda.org/milagro>

### Adding a channel

1. Click **Channels** to open the channels manager.
2. Click **Add**.
3. Enter the channel name, the URL, or the conda URL and press Enter or return.

---

**Note:** A URL can also contain an access token parameter and value. A URL will automatically be transformed to a conda URL.

---

4. Click **Update channels**.

### Deleting a channel

1. Click **Channels** to open the channels manager.
2. Click the trash can icon next to the channel name.
3. Click **Update channels**.

### Building Anaconda Navigator applications

This tutorial will build an Anaconda Navigator Application (app) of JupyterLab.

Three modifications to the files in the build recipe are required to declare the package as an app. Then, we'll build JupyterLab with these recipe modifications. After we build the package, we will upload it to an Anaconda.org channel. Finally, after adding the channel in Anaconda Navigator, the app will appear on the Home pane.

### Who is this for?

This tutorial is for Windows, macOS, and Linux users who wish to generate an Anaconda Navigator app conda package from a given recipe. Prior knowledge of conda-build or conda recipes is recommended.

### Before you start

---

**Note:** Applications to be built for Anaconda Navigator should have a graphical user interface. Not all conda packages have graphical interfaces.

---

You should already have *installed Miniconda or Anaconda*. Install conda-build:

```
conda install conda-build
```

It is recommended that you use the latest versions of conda and conda-build. To upgrade both packages run:

```
conda upgrade conda
conda upgrade conda-build
```

You will also need an account on Anaconda.org. Your username will be referred to as your Anaconda.org channel.

## Using a recipe

First, make a new directory called `jupyterlab` and then change to the new directory:

```
mkdir jupyterlab
cd jupyterlab
```

Create the recipe by opening a text file and name it `meta.yaml`.

Copy the `jupyterlab` recipe `yaml` from the [jupyterlab feedstock](#)

## Build architecture

The recipe, as given, is a `noarch` recipe. This is not compatible with older versions of Navigator. Under the `build` section, remove `noarch: python`.

## App entry in meta.yaml

To declare a conda package as an app, the `app` parameter must be added to the `meta.yaml` file. The `app` section will contain three keys: `entry`, `summary`, and `type`. In the case of the `JupyterLab` recipe, replace the `app` section in the `meta.yaml` with the values below.

In the `app` section, the `entry` tag defines how the package is to be launched by Anaconda Navigator. For `JupyterLab`, separate `entry` tags are required for `Windows`, `macOS`, and `Linux` operating systems.

## Adding entry keys for Windows and Linux

In your text editor, open the `meta.yaml` file and add the following lines. On `Windows` and `Linux` the `entry` tag is:

```
app:
  entry: jupyterlab .                [win]

  entry: jupyterlab .                [linux]
```

## Adding a launch script for macOS

For `macOS`, a launch script must also be provided. In a text editor, create a new file in the `conda-build` recipe directory called `jupyterlab_mac.command`. The contents of this file are:

```
DIR=$(dirname $0)
$DIR/jupyter-lab ${HOME}
```

### Adding an entry key for macOS

Then in the meta.yaml, add this line to the app section:

```
entry:
  open ${PREFIX}/bin/jupyterlab_mac.command [osx]
```

The completed app section should look like this:

```
app:
  entry: jupyterlab static [win]
  entry: jupyterlab static [linux]
  entry: open ${PREFIX}/bin/jupyterlab_mac.command [osx]
  summary: jupyterlab
  type: web
```

---

**Note:** The app icon defaults to the Anaconda logo unless specified with a `logo: LOGONAME.png` line.

---

### Build.sh script

To make sure that the file gets installed, create a new file in the same directory as the meta.yaml. Title it build.sh and add these lines to the build.sh script:

```
$PYTHON -m pip install . --no-deps --ignore-installed -vv
if [ `uname` == Darwin ]

then
  cp $RECIPE_DIR/jupyterlab_mac.command $PREFIX/bin
fi
```

Remove the script key under the build section in the meta.yaml.

### Build.bat

Create a new file called build.bat. Include the following:

```
%PYTHON% -m pip install . --no-deps --ignore-installed -vv
```

### Build

Now that you have the conda-build recipe ready, you can use the conda-build tool to create the package. You will have to build and upload the JupyterLab package separately on Windows, macOS, and Linux machines in order for the package to be available on all platforms. If you're already in the JupyterLab directory, you can type `conda build .` in your terminal. Otherwise type `conda-build jupyterlab`.

When conda-build is finished, it displays the exact path and filename of the conda package. See the [Troubleshooting](#) section if the conda-build command fails.



Windows example file path: C:\Users\username\miniconda\conda-bld\win-64\jupyterlab-1.2.4-py38\_0.tar.bz2

macOS example file path: /Users/username/anaconda3/conda-bld/osx-64/jupyterlab-1.2.4-py38\_0.tar.bz2

Linux example file path: /home/username/miniconda/conda-bld/linux-64/jupyterlab-1.2.4-py38\_0.tar.bz2

---

**Note:** The path and filename will vary depending on your installation and operating system.

---

Save the path and filename information for the next step.

## Upload to Anaconda.org

Now you can upload the new local packages to Anaconda.org. First, log in to Anaconda.org from your terminal:

```
anaconda login
```

You will be asked for your Anaconda.org account name and password. If the login was successful, you will see output like the following:

```
Using Anaconda.org api site https://api.anaconda.org
Username: jsmith
jsmith's Password:
login successful
```

**Caution:** This step must be done in the base conda environment.

Now that you are logged into your channel, you can upload the JupyterLab conda package as follows:

Windows users: `anaconda upload C:\Users\username\miniconda\conda-bld\win-64\jupyterlab-1.2.4-py38_0.tar.bz2`

Linux and macOS users: `anaconda upload /Users/username/miniconda/conda-bld/osx-64/jupyterlab-1.2.4-py38_0.tar.bz2`

---

**Note:** Change your username, path, and filename to the exact username, path, and filename you saved in Step 2. These will vary depending on your installation and operating system.

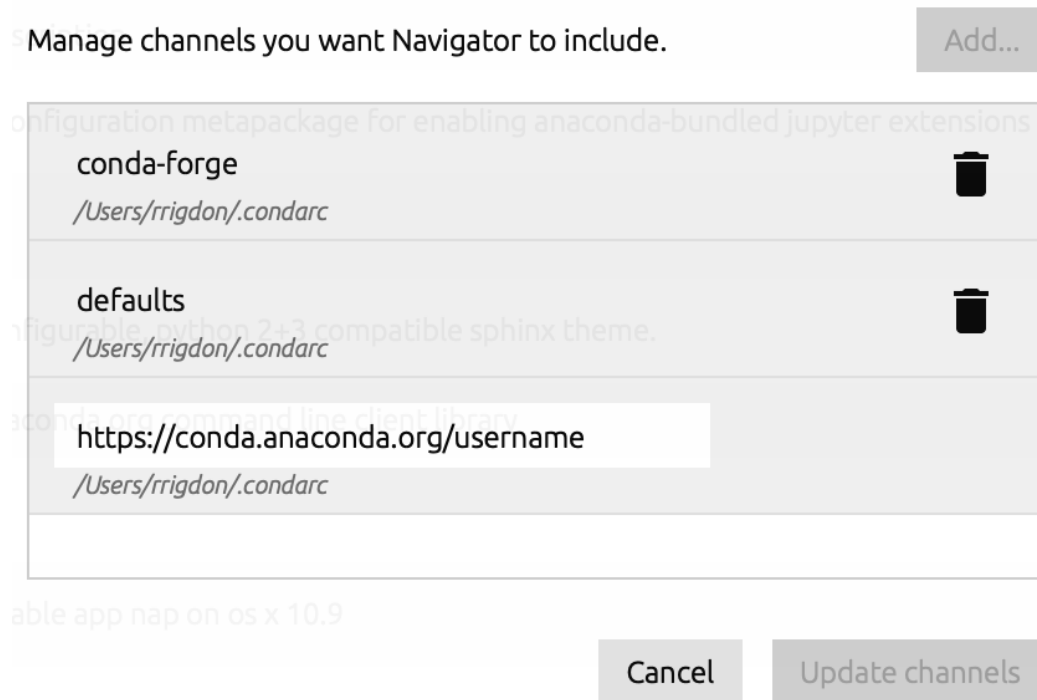
---

For more information about Anaconda.org, see the [Anaconda.org documentation](#) page.

## Configure Anaconda Navigator

Now that the JupyterLab package has been uploaded to your Anaconda.org channel, you need to add the channel to Anaconda Navigator.

1. Launch the Anaconda Navigator app. In Windows and Linux, it will be available from the Start Menu. On macOS, you can find it either on the Desktop or through Spotlight.
2. To add your channel, click **Channels**, then **Add**. Enter the URL to your Anaconda.org channel: <https://conda.anaconda.org/CHANNELNAME>, replacing CHANNELNAME with your Anaconda.org username.
3. Press **Enter** and select **Update Channels**.



4. Close and restart Anaconda Navigator. The JupyterLab app will be displayed on the Home pane.

## Troubleshooting

### A. Conda-build fails

If the conda recipe fails to build, consult the [Troubleshooting](#) guide.

### B. App does not appear on the home pane

Check that the conda package has been uploaded to your Anaconda.org channel. Check that your channel has been added to the Channels list.

You may have to remove your `.anaconda/navigator` directory and restart Navigator. This directory is in your Home directory.

### C. App does not launch

If the application does not launch after installation, confirm that it works via the command line by running the following:  
`conda run jupyterlab`

If JupyterLab starts correctly from conda, you may have to remove your `.anaconda/navigator` folder from your Home directory to reset the Navigator configuration information and enable it to launch correctly from the Navigator application.

- In Windows, your Home directory is something similar to `C:/Users/<username>`. Open the `.anaconda` folder and right-click to delete the navigator folder.
- In macOS or Linux, open a new terminal and use `rm -rf` to delete the `.anaconda/navigator` folder.

```
rm -rf .anaconda/navigator
```

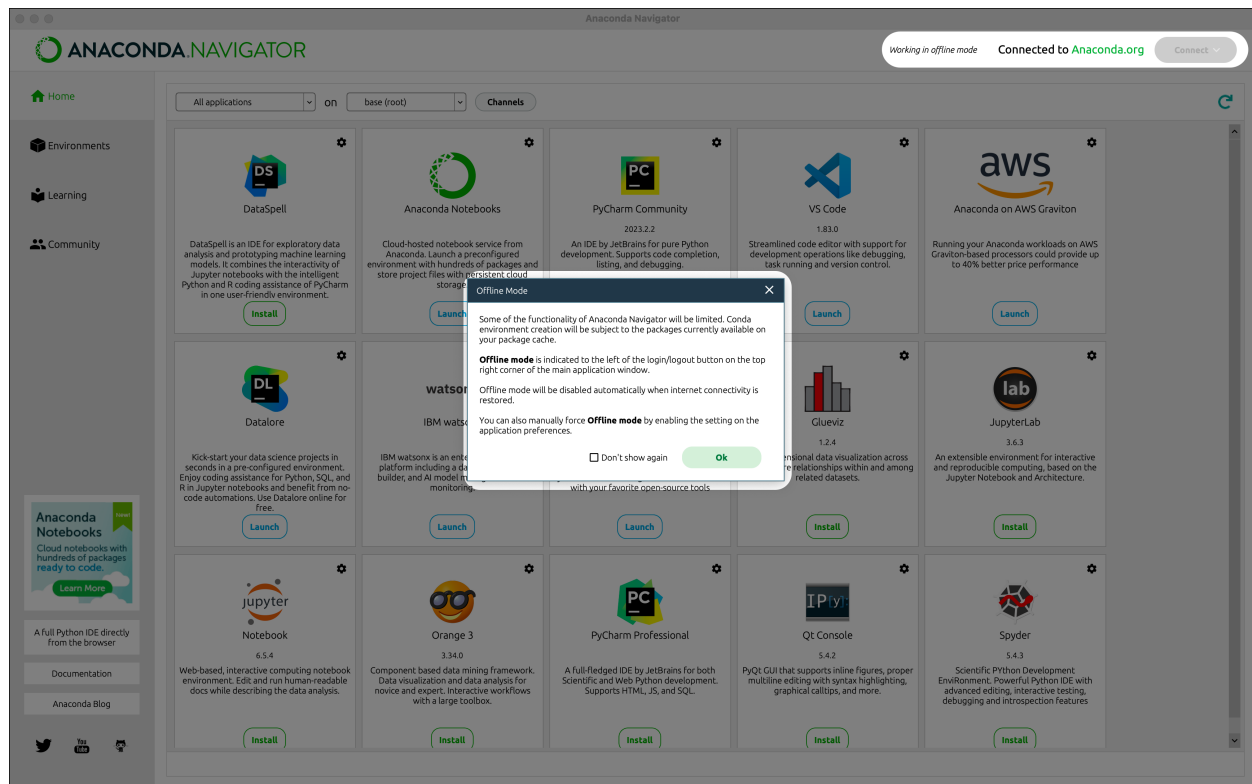
Once you have deleted the `.anaconda/navigator` folder, restart the Navigator application.

## Additional Information

For more information about adding Start Menu entries in Windows, see the [menuinst](#) documentation.

## Enabling offline mode

Navigator is typically used online so that it can download and install packages. If Navigator detects that internet access is not available, it automatically enables offline mode and displays this message:



In the Preferences dialog, select **Enable offline mode** to enter offline mode even if internet access is available.

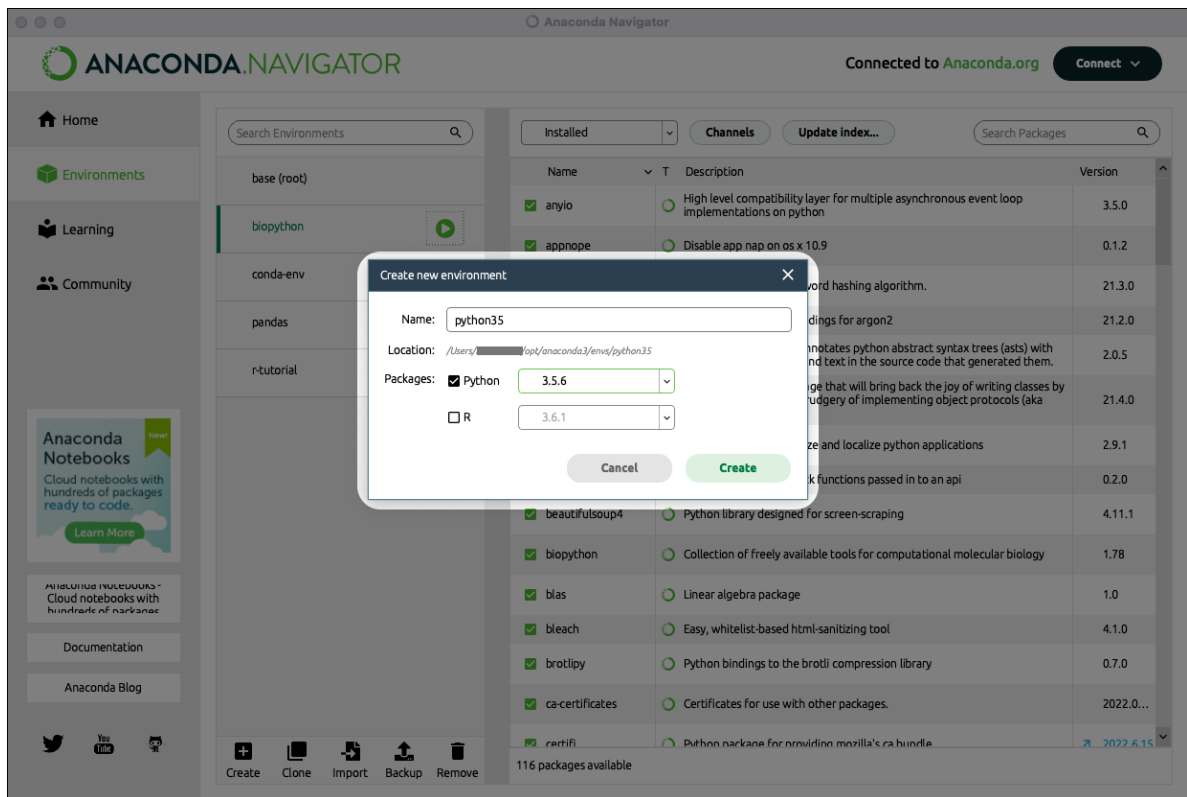
Using Navigator in offline mode is equivalent to using the command line conda commands `create`, `install`, `remove`, and `update` with the flag `--offline` so that conda does not connect to the internet.

## Using multiple versions of Python with Navigator

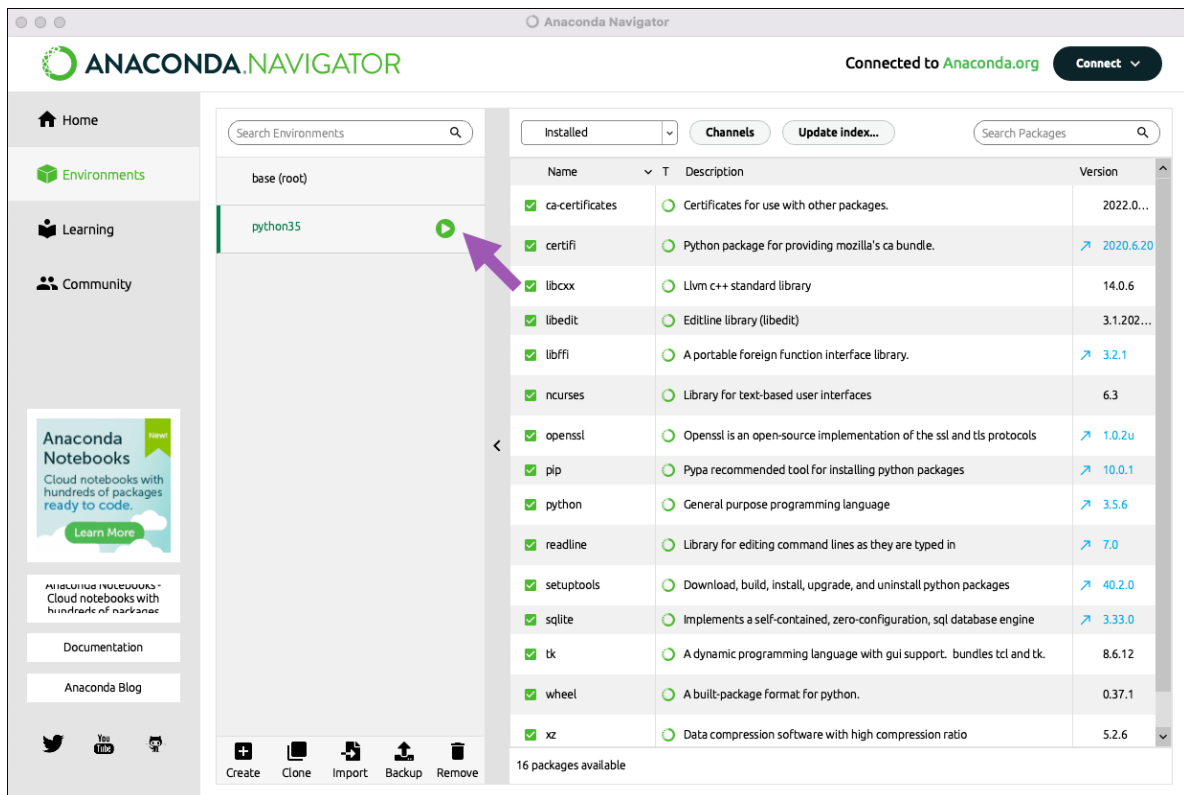
With Navigator, you can have different versions of Python on your computer and easily switch between them by keeping them in different environments.

To use a different version of Python than the one you are currently using, set up a new environment:

1. *Start Navigator.*
2. Go to the **Environments** page.
3. Click **Create**.
4. Type a descriptive **Name** for your environment.



5. Select a **Python** version.
6. Click **Create**.
7. Navigator creates the new environment and activates it, as shown by the highlighted green bar and green play button. Click the green play button to use various tools within the active environment.



## How to search anaconda.org

To search anaconda.org for packages using *Anaconda Navigator*:

1. If necessary, sign into Anaconda.org:
  1. Click **Connect**.
  2. Click **Sign in** next to Anaconda.org.

If you don't yet have an account, you can create one here.

---

**Note:** You must verify your Anaconda.org email to use Navigator while connected to Anaconda.org.

---

2. Go to the **Environments** page.
3. In the dropdown to the left of **Channels**, select *All* to search all packages on anaconda.org.
4. In the **Search Packages** field, type the name of the package you want to search for on anaconda.org.

quadratic

Q

Filters

Type: All

Access: All

Platform: All

Favorites


Downloads

Package (owner / package)

Platforms

1

0

 **superuser / quadratic\_equation**  
IPython notebook

ipynb

source

« Previous

showing 1 - 1 of 1

Next »

All packages containing the characters typed into **Search Packages** will appear in the package list below.

For more information on installing and using the packages you find on Anaconda.org, see [Package installation for Anaconda](#).

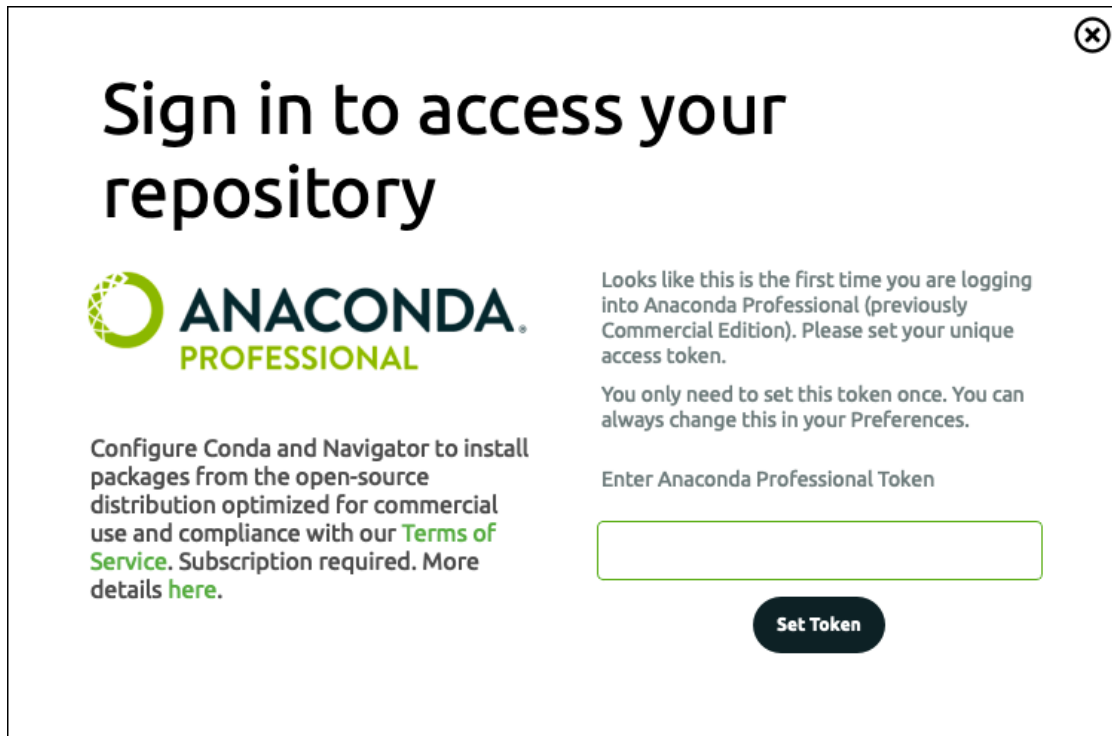
## Integration with Anaconda's Professional Tier

Anaconda Navigator has everything you need to set up the Pro token. You can then add channels and install or update packages from Anaconda's professional repository with Anaconda Navigator.

### Log in action

To integrate with Pro:

1. Click **Connect** in the top-right corner of the Navigator application.
2. Click **Sign In** next to Anaconda Professional. *You can only be signed into one repository service at a time.*
3. Enter your token to log in to your Pro tier instance.
4. Click **Set Token**. If your token is valid, you will be signed in.



## Command Line Interface (CLI) Login Detection

If you have already logged in using a CLI, Navigator will detect that. Note that this works both ways: if you log out from Anaconda Professional in Navigator, your CLI session will be affected accordingly.

## Login Mechanism

Navigator uses the `conda-token` tool “under the hood.” For more details, see the “Authenticate to Anaconda” section in your chosen Pro *quickstart*, depending on your operating system and installation method.

## Integration

Once signed in, you will be able to add private channels in the Manage Channels dialog using the `<my_channel_name>` format, rather than `repo.anaconda.cloud/t/<token>/<my_channel_name>`.

## Integration with Business (On-prem) (also known as Anaconda Server)

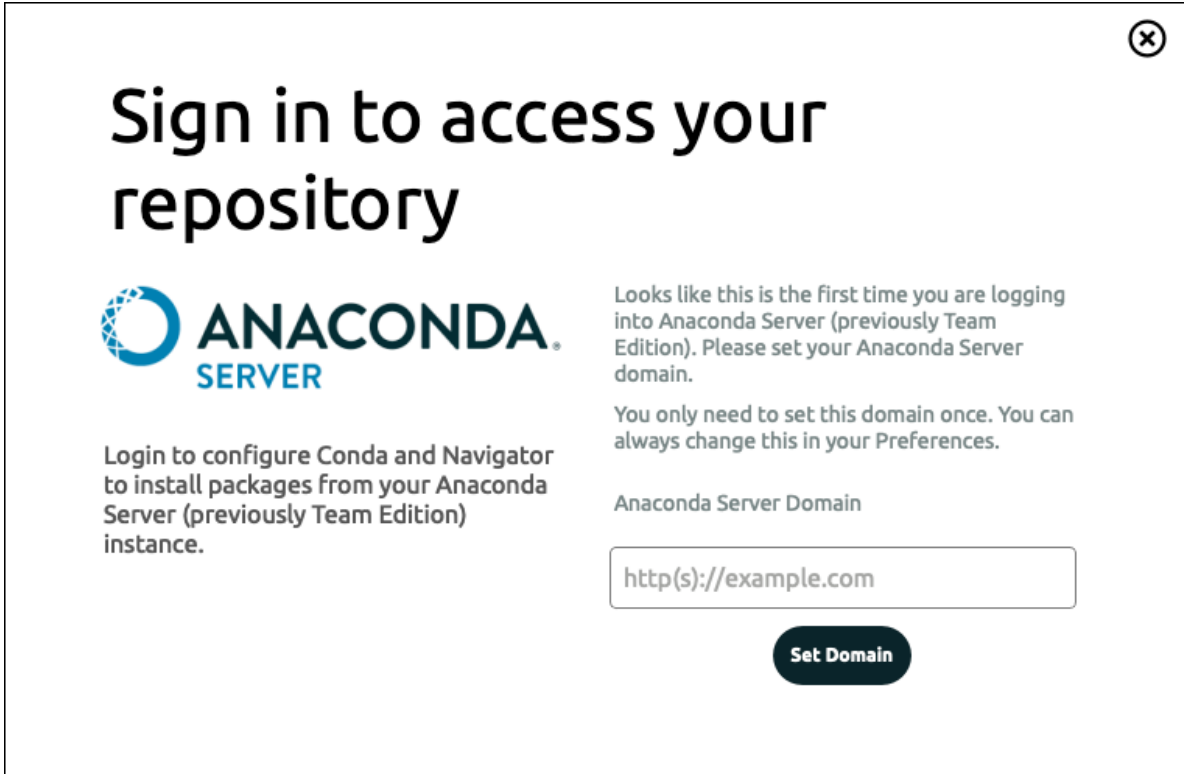
Anaconda Navigator comes with everything you need to seamlessly integrate to your instance of Anaconda Server, our Business (On-prem) tier offering. You can set up the Anaconda Server API domain, log in with credentials, add channels, and install/update packages from Anaconda Server with Anaconda Navigator.



## Log in action


To integrate with Anaconda Server:

1. Click **Connect** in the top-right corner of the Navigator application.
2. Click **Sign In** next to Anaconda Server. *You can only be signed into one repository service at a time.*
3. If this is the first time you are logging in to Anaconda's Business tier, you'll be asked to set your Anaconda Server domain.
4. Enter your domain and click **Set Domain**.




The screenshot shows a dialog box titled "Sign in to access your repository" with a close button (X) in the top right corner. On the left, the Anaconda Server logo is displayed above the text: "Login to configure Conda and Navigator to install packages from your Anaconda Server (previously Team Edition) instance." On the right, a message states: "Looks like this is the first time you are logging into Anaconda Server (previously Team Edition). Please set your Anaconda Server domain. You only need to set this domain once. You can always change this in your Preferences." Below this message, the label "Anaconda Server Domain" is followed by a text input field containing "http(s)://example.com". A dark blue "Set Domain" button is positioned below the input field.

5. If your domain is correct, you'll see the login dialog.
6. Enter the credentials you use to log in to your Anaconda Server instance.
7. Click **Login**. If all credentials are correct, you will be signed in.



# Sign in to access your repository



ANACONDA<sup>®</sup>  
SERVER

Login to configure Conda and Navigator to install packages from your Anaconda Server (previously Team Edition) instance.

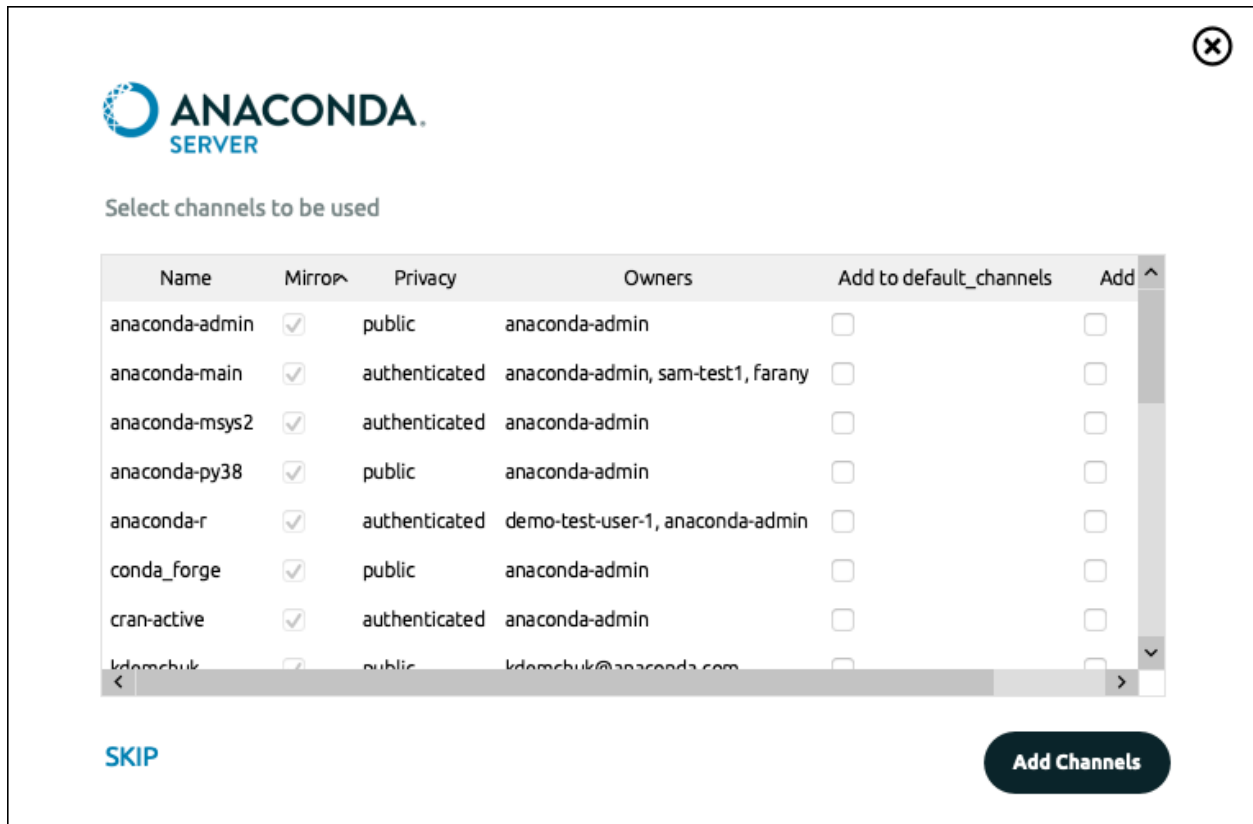
Username:

Password:

Sign In

## Add default channels action

After signing in, a dialog appears with a list of available channels. You can choose what channels to use and what channels to add to *default\_channels* by clicking on the checkboxes in the **Add to default\_channels** and **Add to channels** columns. After you've marked channels, click on **Add Channels**. This step can be skipped by clicking **Skip**.



## CLI Login Detection

If you have already logged in using CLI, Navigator will detect that and you'll be asked to check your channels configuration. See [Add default channels action](#) for further instruction.

## Login Mechanism

A few things happen “under the hood” when you successfully log in:

- Your access token is created for Anaconda Server. This provides you with the ability to access private/authenticated/public channels, create environments, and download packages.

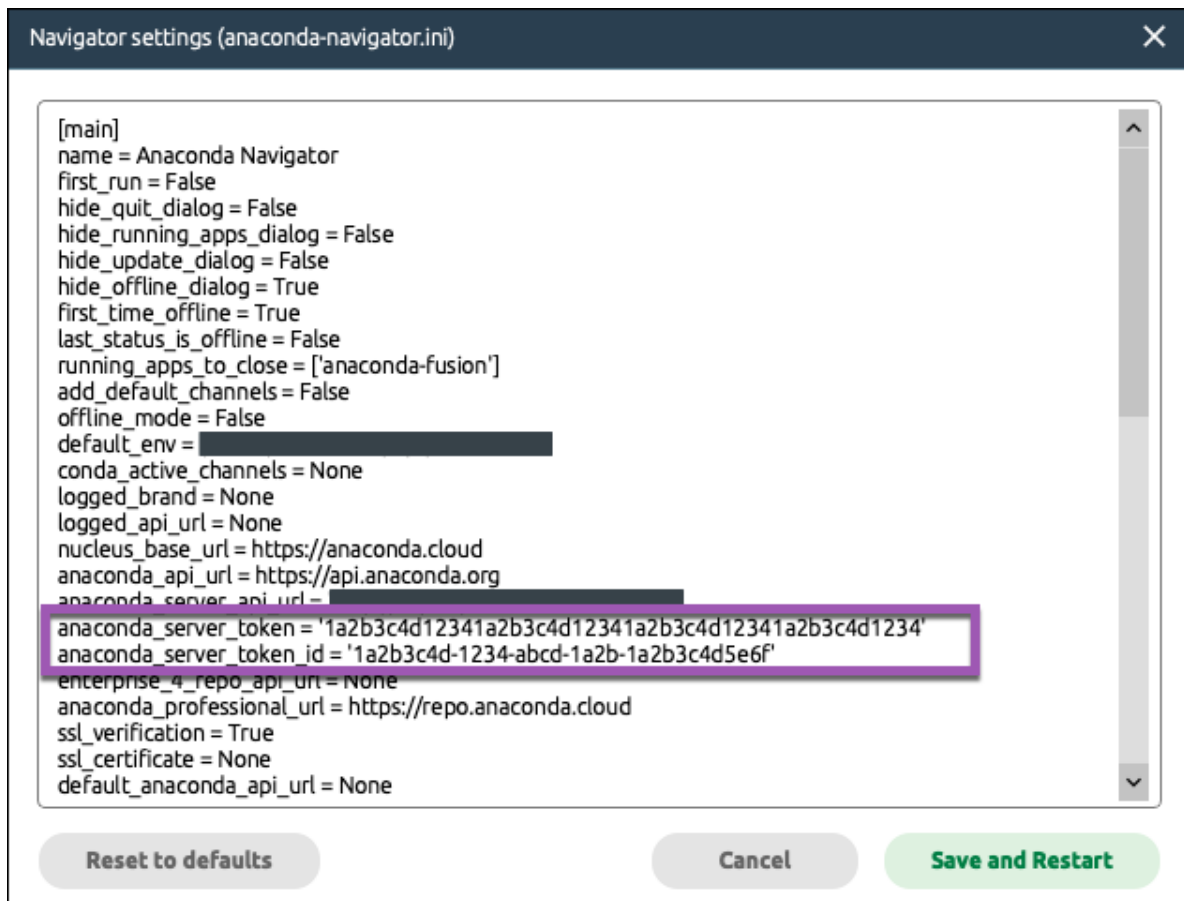
```
navigator-token-2020-10-16-0ff47688-ff5c-4517-82d0-c77a4af41280
```

10/16/20

scope

This token expires on 12/31/20

- logged\_api\_url, anaconda\_server\_token, and anaconda\_server\_token\_id in the Navigator config file (anaconda-navigator.ini) are updated. This is mostly system data to help Navigator integrate with the Anaconda Server.



**Note:** The token and token ID config variable names have been updated from `team_edition_token` to `anaconda_server_token` and `team_edition_token_id` to `anaconda_server_token_id` as of Version 2.4.0. If you downgrade your Navigator application to a version older than 2.3.0, you will need to manually change these variable names back to their older versions within your `anaconda-navigator.ini` file.

- The conda configuration file (`.condarc`) is modified:

1. `channels` is set to an empty list so you can set appropriate channels
2. `default_channels`, if present, will be removed
3. `channel_alias` is set to the login used to access your Anaconda Server instance.

```
always_yes: true
channel_alias: http://repo-qa.dev.anaconda.com/api/repo
channels: []
ssl_verify: true
```

- The access token is stored locally, which gives conda ‘native’ access to remote channels and packages.

## Integration

Once signed in, you will be able to add private channels in the Manage Channels dialog using the `<my_channel_name>` format, rather than `t/<token>/<my_channel_name>`.

Click **Update Index** to gain access to all packages located in private/authenticated/public channels in the Anaconda Server instance.

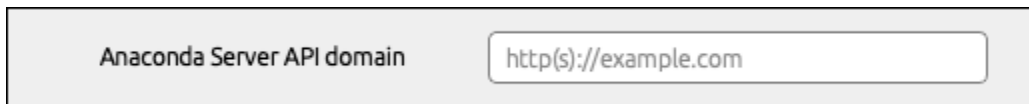
## Logout Action

A few things happen “under the hood” when you successfully log out:

- The conda configuration file (`.condarc`) returns to the state it was in before the login. (Navigator saves a copy of the `.condarc` file before a login is attempted.)
- `logged_api_url`, `anaconda_server_token`, and `anaconda_server_token_id` are set to `None` in the Navigator config file (`anaconda-navigator.ini`).
- The access token created in the Anaconda Server instance is removed.
- The access token that was stored locally is removed.

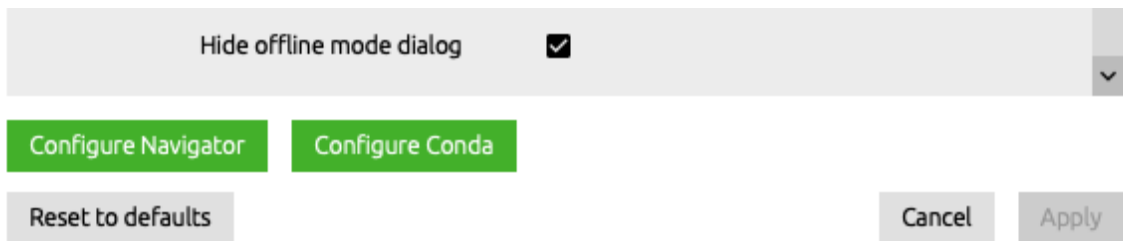
## Change Anaconda Server API domain

To set the Anaconda Server API domain, go to the navigation bar and click on **Preferences**. In **Anaconda Server API domain**, enter the valid domain name:



Alternatively, this API domain can be set through the **Configure Navigator** action:

1. Click **Configure Navigator** to open your `anaconda-navigator.ini` file.

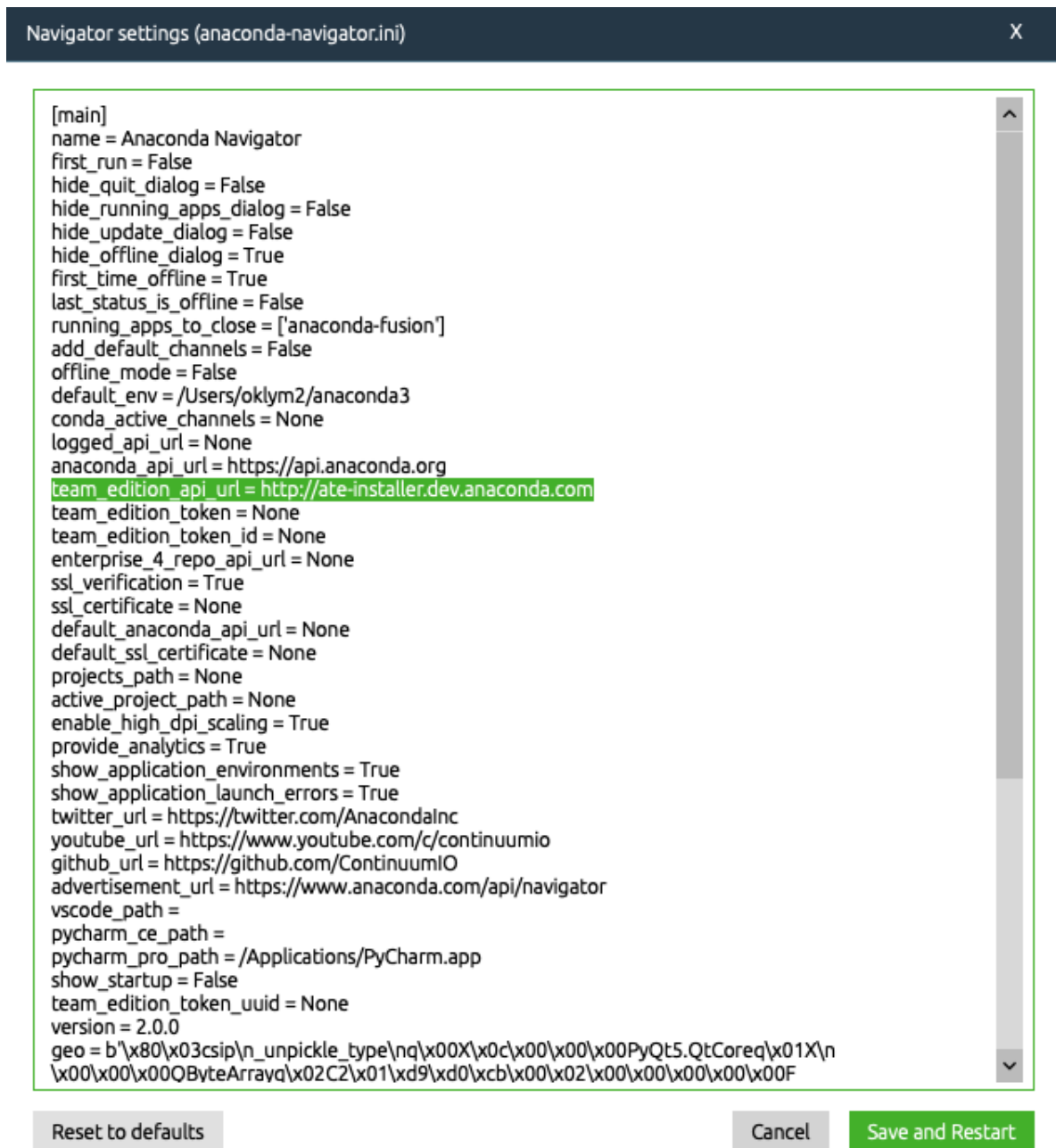


2. Find the `anaconda_server_api_url` parameter under the `[main]` section of the `anaconda-navigator.ini` file and enter your domain name (by default, the value is set to `None`).

---

**Note:** The domain must be a full path without a trailing slash. For example: `http(s)://ate-mysite.com`

---



3. Click **Save and Restart** to apply your changes.

## Troubleshooting

If you are having issues logging in or know you're logged in but cannot interact with Anaconda Server, see [Trouble logging in to the Anaconda Server connection in Navigator](#).

## Integration with Enterprise 4

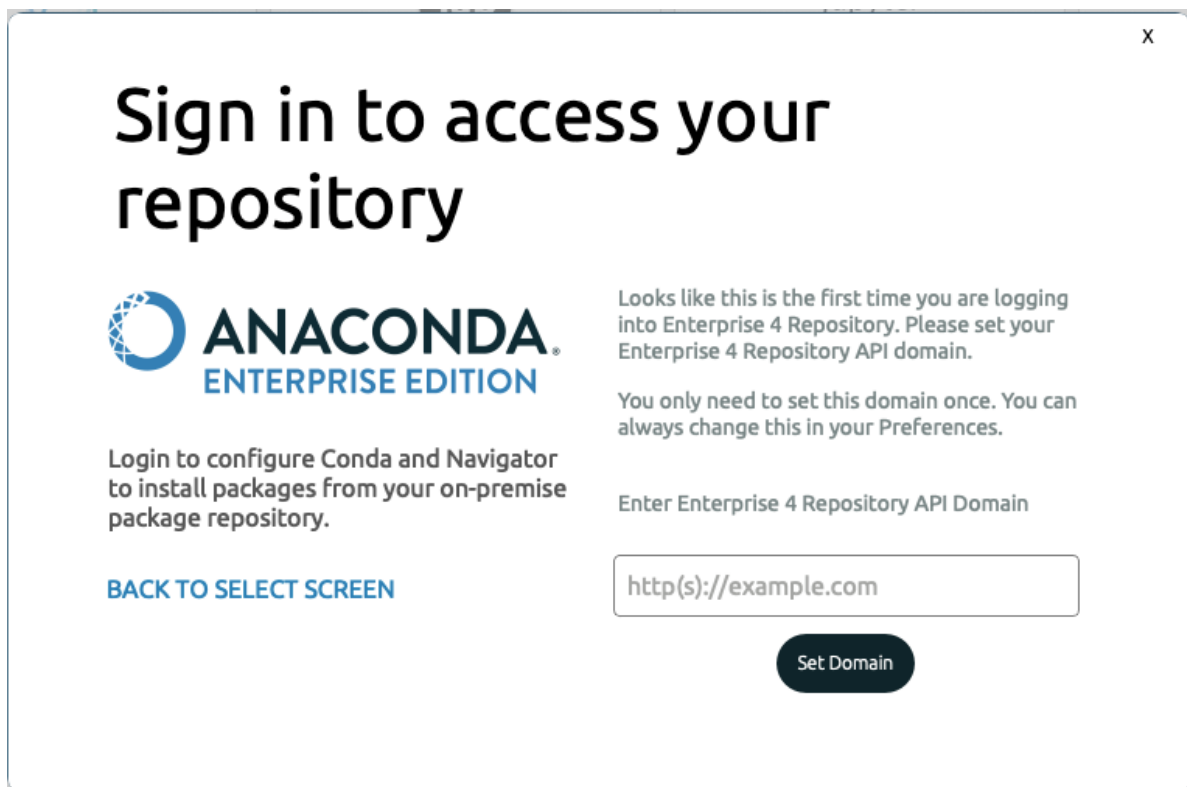
Anaconda Navigator has everything a user needs to set up the Enterprise 4 API domain and login with credentials. You can then add channels and install or update packages from Anaconda Enterprise 4 with Anaconda Navigator.

### Login Action

To integrate with Enterprise 4:

1. Click **Connect** in the top right corner of the Navigator application.
2. Click **Sign in** next to Enterprise 4 Repository. *You can only be signed into one repository service at a time.*
3. If this is the first time you are logging in to Enterprise 4, you'll be asked to set your Enterprise 4 domain. Enter your domain and click **Set Domain**.

**Caution:** The domain must be a full path without a trailing slash. For example: `http(s)://enterprise-mysite.com`



Sign in to access your repository

**ANACONDA**  
ENTERPRISE EDITION

Login to configure Conda and Navigator to install packages from your on-premise package repository.

BACK TO SELECT SCREEN

Looks like this is the first time you are logging into Enterprise 4 Repository. Please set your Enterprise 4 Repository API domain.

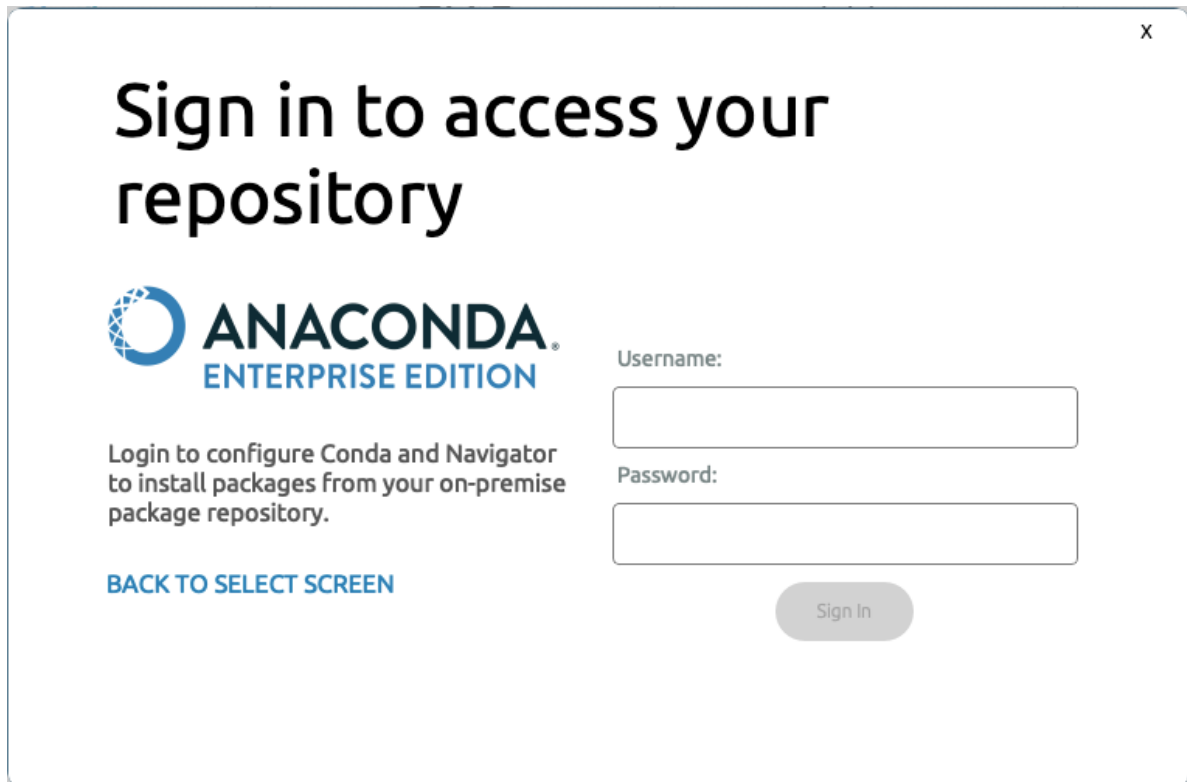
You only need to set this domain once. You can always change this in your Preferences.

Enter Enterprise 4 Repository API Domain

**Set Domain**


4. Enter the credentials you use to log in to your Enterprise 4 platform.

5. Click **Login**. If all credentials are correct, you will be signed in.



A dialog box titled "Sign in to access your repository" with a close button (X) in the top right corner. The dialog contains the Anaconda Enterprise Edition logo, a login instruction, a "BACK TO SELECT SCREEN" link, and a sign-in form with fields for Username and Password, and a "Sign In" button.

**Sign in to access your repository**

 **ANACONDA**  
ENTERPRISE EDITION

Login to configure Conda and Navigator to install packages from your on-premise package repository.

[BACK TO SELECT SCREEN](#)

Username:

Password:

## Logout Action

A few things happen internally when you successfully log out:

- The Conda configuration file (`.condarc`) returns to the state it was in before the login. (Navigator saves a copy of the `.condarc` file before a login is attempted.)
- The access token created in the Enterprise 4 instance is removed.
- The access token that was stored locally is removed.

## Change Enterprise 4 API domain

To update the Enterprise 4 API domain, go to the navigation bar and click **Preferences**. In **Enterprise 4 Repository API domain**, enter the new domain name:



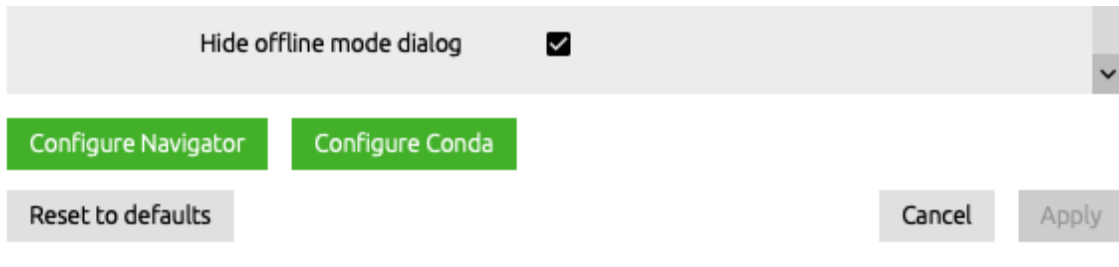
A text input field with the label "Enterprise 4 Repository API domain" and the value "https://api.enterprise.org".

Enterprise 4 Repository API domain

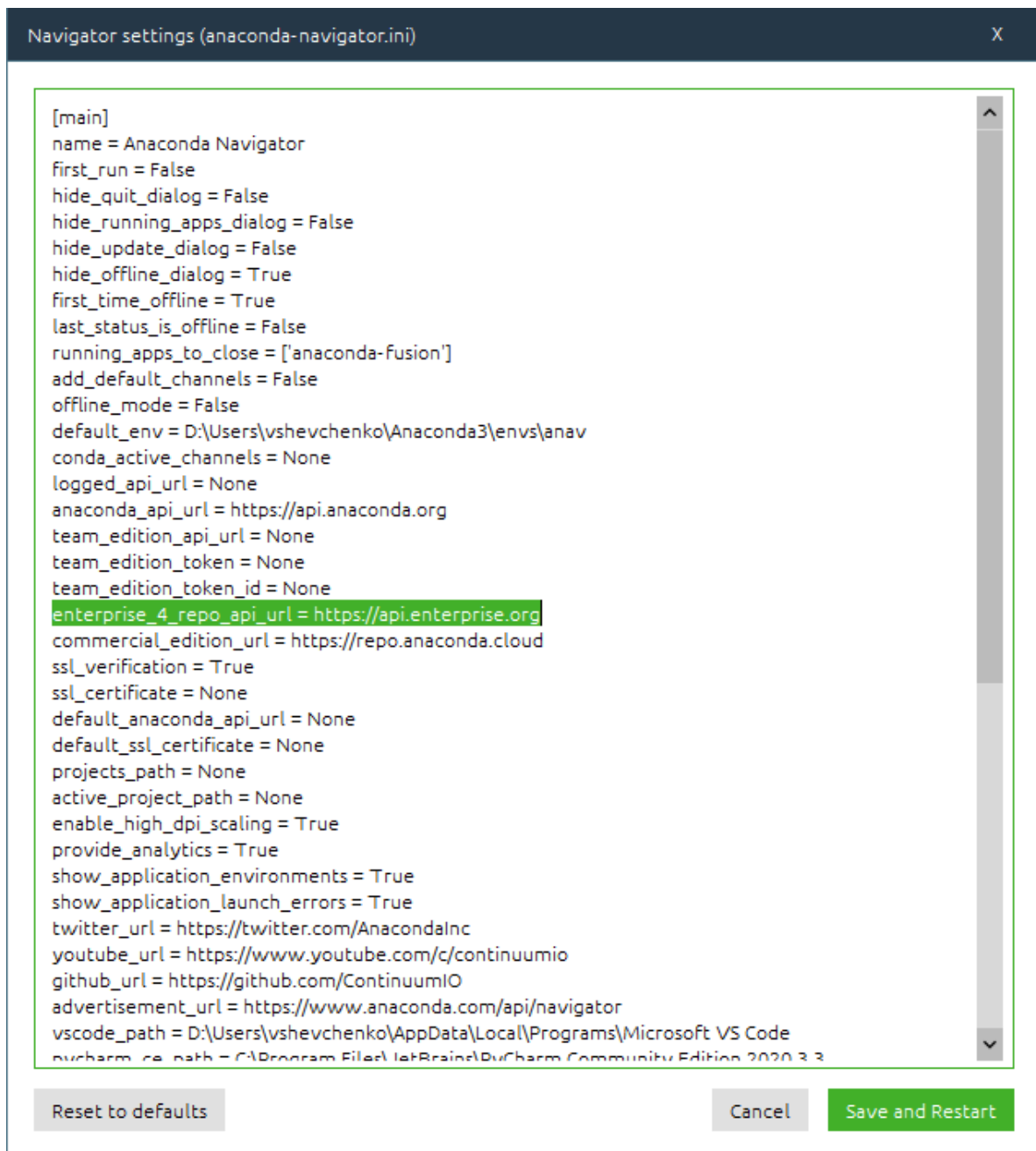
Alternatively, this API domain can be set through the `anaconda-navigator.ini` file.

1. In **Preferences**, click **Configure Navigator**:





2. In the pop-up, find the option `enterprise_edition_api_url` in the [main] section.
3. Enter your domain name (by default, the value is set to None):

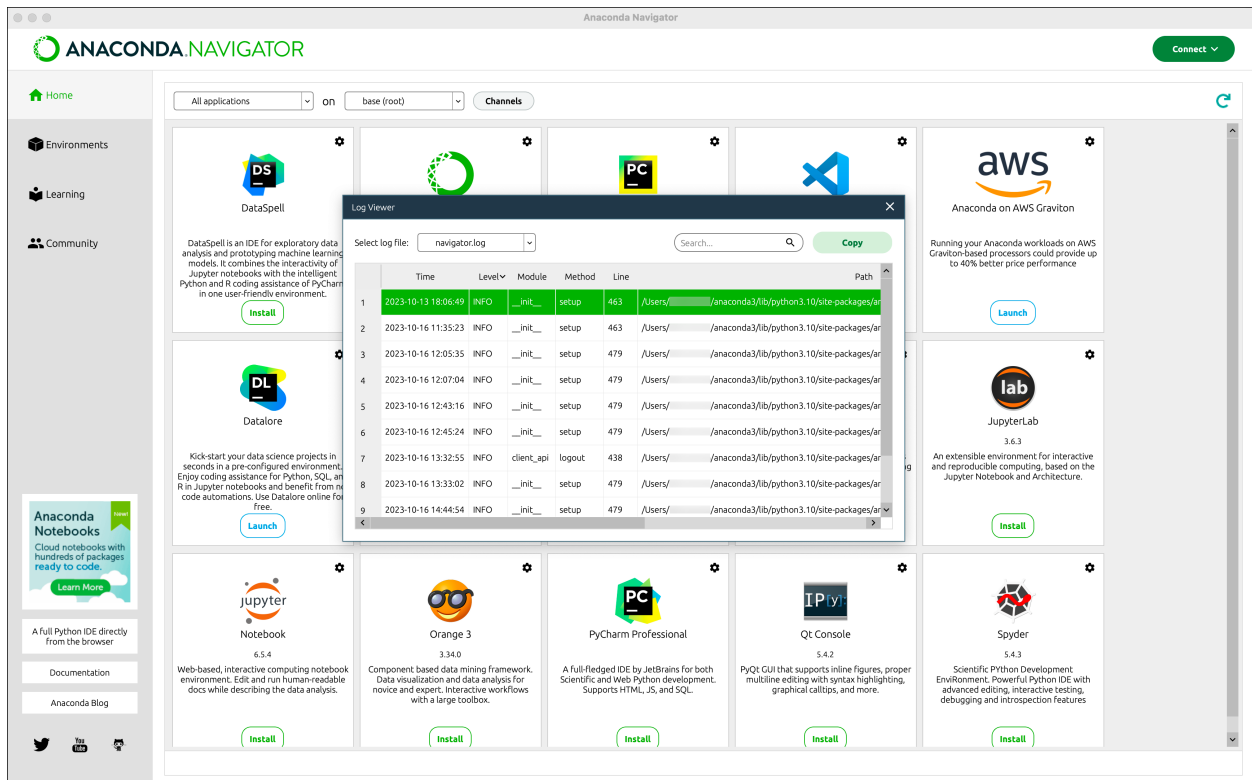


4. Click **Save and Restart**. The application will restart and the setting will be set.

You can also change this setting directly in the `anaconda-navigator.ini` file, which is located by default in `./anaconda/navigator` in your home directory.

## Reviewing Navigator's logs

Select **Help > Logs viewer** to open Navigator's Log Viewer, which contains Navigator's application logs, sorted by date and timestamp.



These logs can also be found in the `navigator.log` file, available in the following paths, depending on your operating system:

## Windows

```
# Replace <USERNAME> with the username of the account where Navigator is installed
C:\Users\<USERNAME>\AppData\Roaming\.anaconda\navigator\logs
```

If using the File Explorer, check the **Hidden items** box in the **View** tab to make the AppData folder visible.

## MacOS/Linux

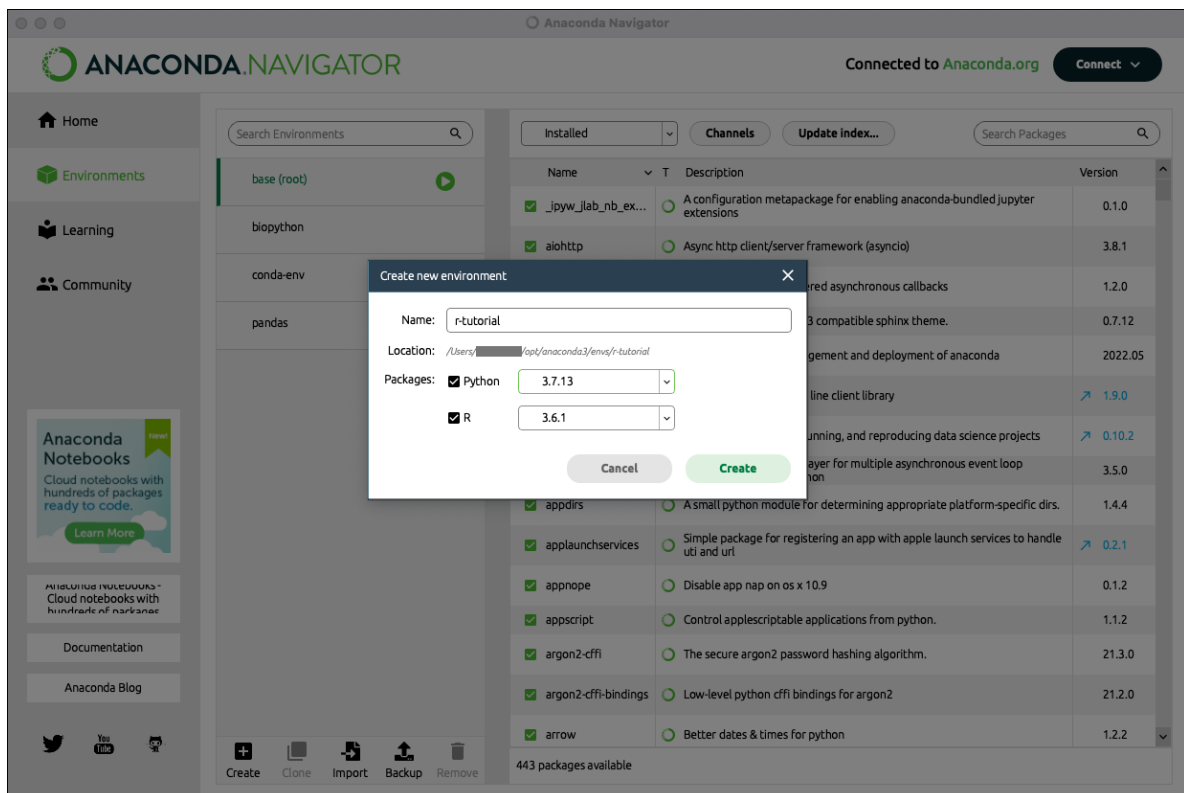
```
~/anaconda/navigator/logs
```

Specific examples:

## How to use the R programming language in Jupyter Notebook

R is a popular programming language for statistics. This topic explains how to use R in a Jupyter Notebook.

1. *Start Navigator.*
2. Make sure Jupyter Notebook is installed on your **Home** page.
3. To install the R language and r-essentials packages, go to the **Environments** page.
4. Click **Create**.

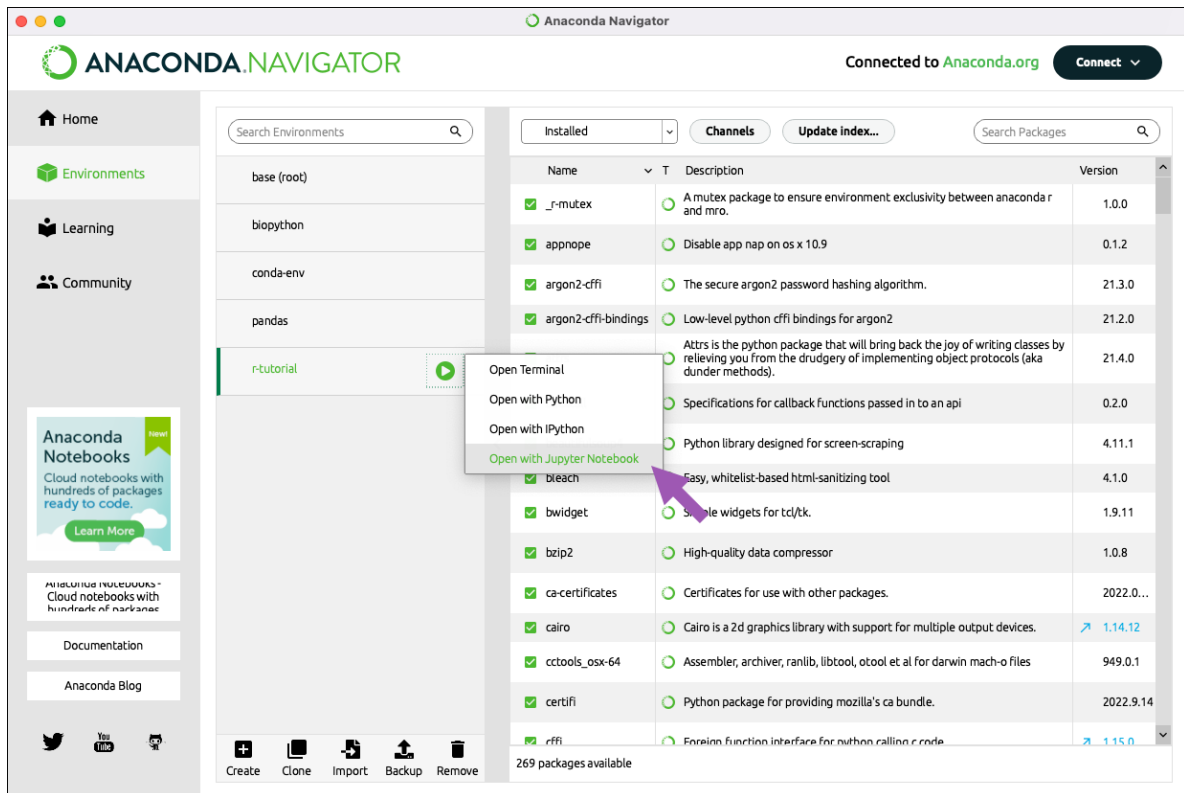


5. Name the environment “r-tutorial”.
6. Next to **Packages**, select version 3.7.13 of Python.

7. Check the box next to **R** and select the version of R you want to use.

**Note:** This topic selects a version of Python that is compatible with most versions of R. Not all versions of Python and R are compatible. If you attempt to create an environment with incompatible versions, Navigator will error, list the incompatible package versions, and stop creating the environment.

8. Click **Create**.
9. Navigator creates the r-tutorial environment and selects it as active, as shown by the highlighted green bar and green play button.
10. Click the green play button on the r-tutorial environment and select the **Open with Jupyter Notebook** option.



11. To create a new notebook for the R language, in the Jupyter Notebook menu, select **New**, then select **R**.



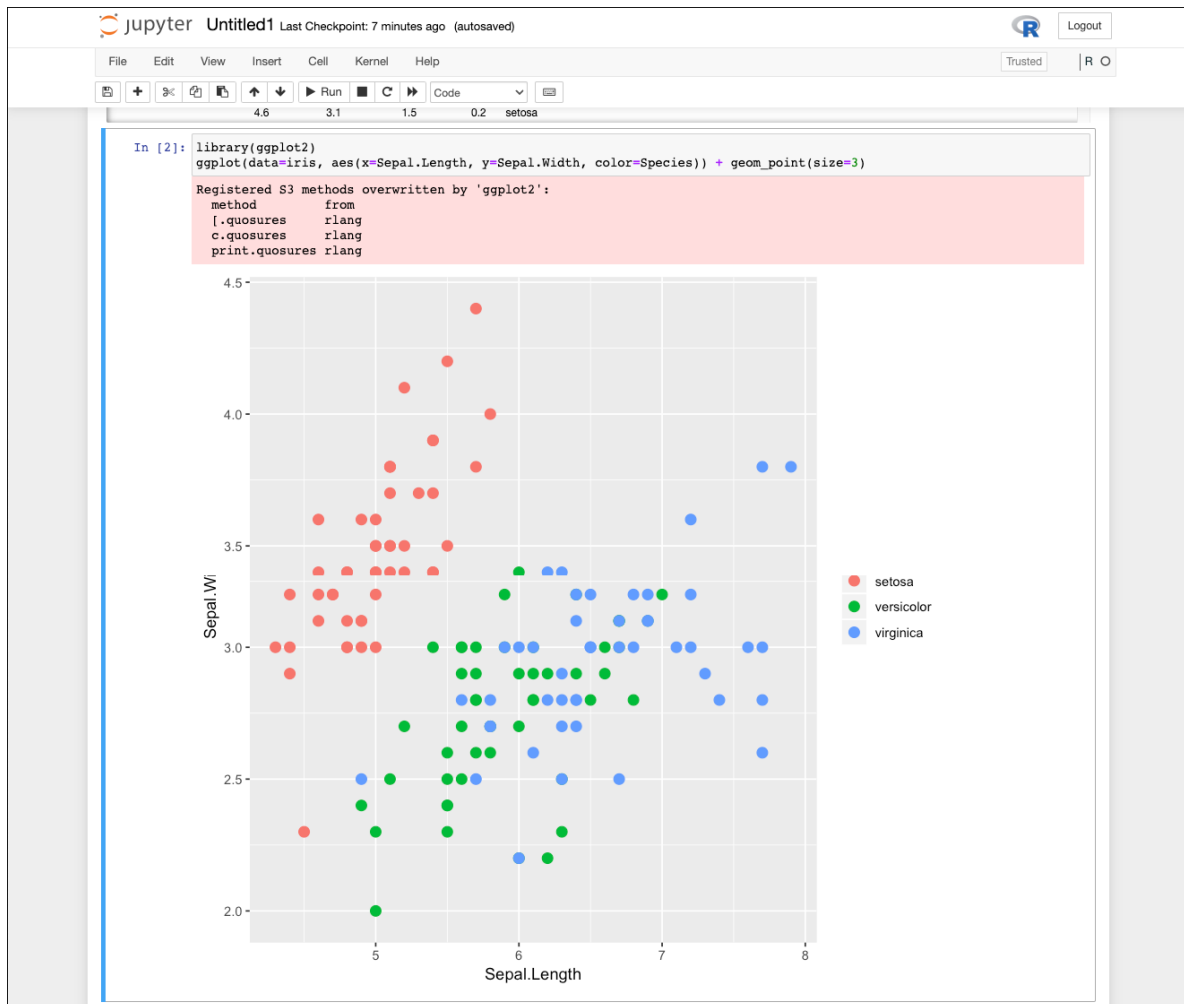
12. We will use `dplyr` to read and manipulate Fisher's Iris multivariate data set in this tutorial. Copy and paste the following code into the first cell:

```
library(dplyr)
iris
```

13. To run the code, in the menu bar, click **Cell** then select **Run Cells**, or use the keyboard shortcut Ctrl-Enter.
14. The iris data table is displayed.
15. Using `ggplot`, we can create a scatter plot comparing sepal length and width of three iris species. Click + to open a second cell, then copy and paste the following code into the second cell:

```
library(ggplot2)
ggplot(data=iris, aes(x=Sepal.Length, y=Sepal.Width, color=Species)) + geom_
↩point(size=3)
```

16. To run the code, in the menu bar, click **Cell** then select **Run Cells**, or use the keyboard shortcut Ctrl + Enter (or Ctrl + Return in macOS).

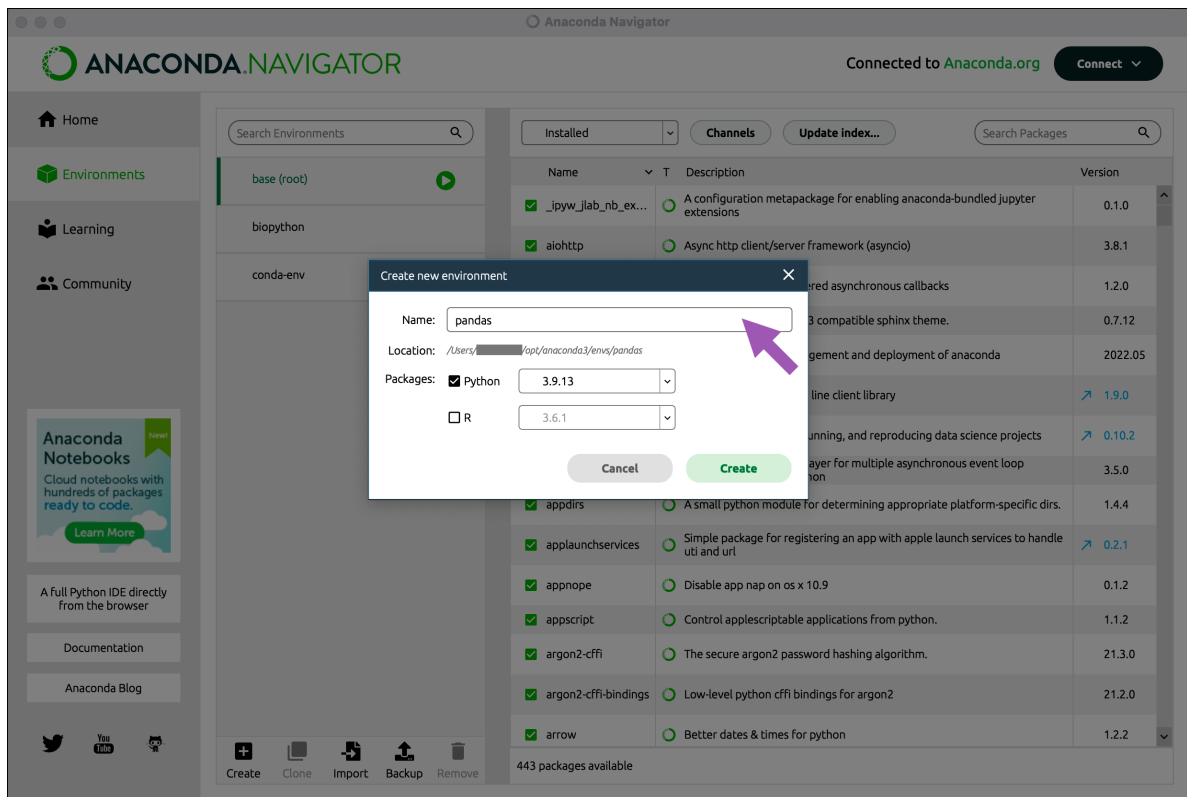


For more resources on using R with Anaconda, see [Using R language with Anaconda](#).

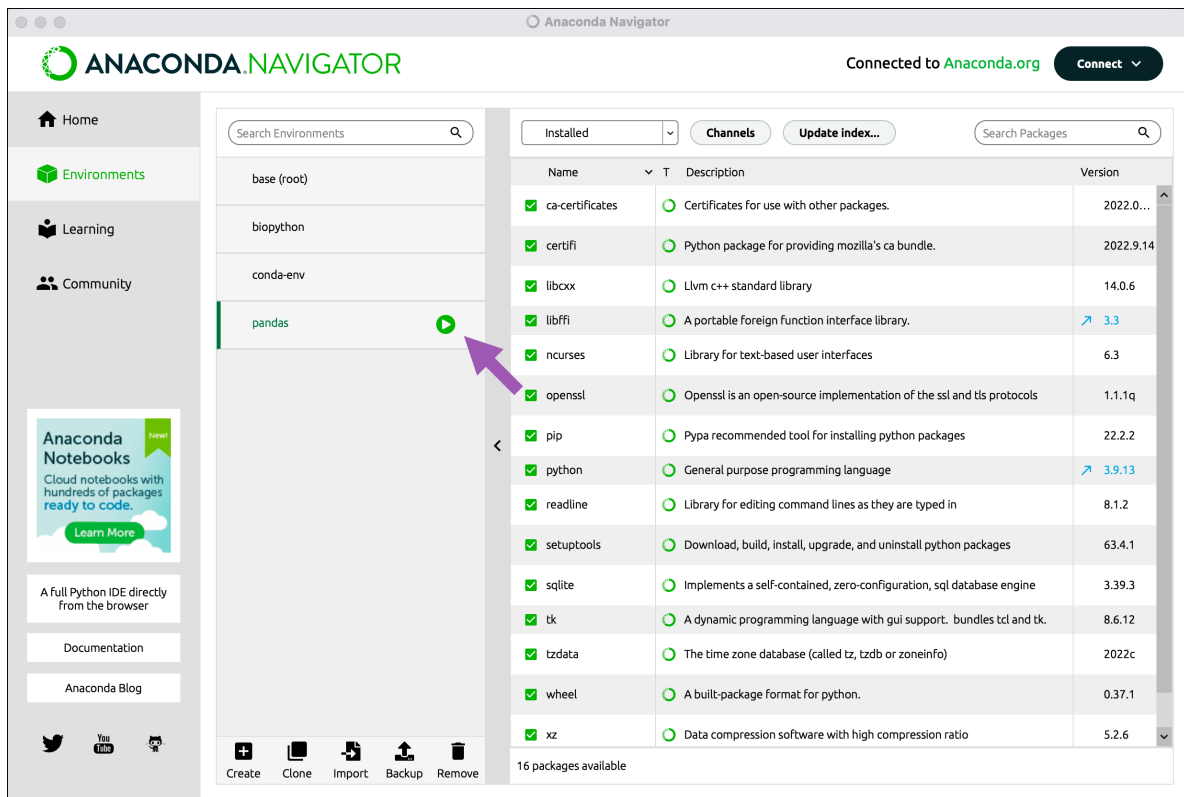
## How to install and run Pandas from Anaconda Navigator

Pandas is a common Python tool for data manipulation and analysis. This topic explains how to use Navigator to set up and begin working with Pandas via your choice of tool: terminal, Python, IPython, or Jupyter Notebook. The steps are similar for [installing and opening](#) nearly any package.

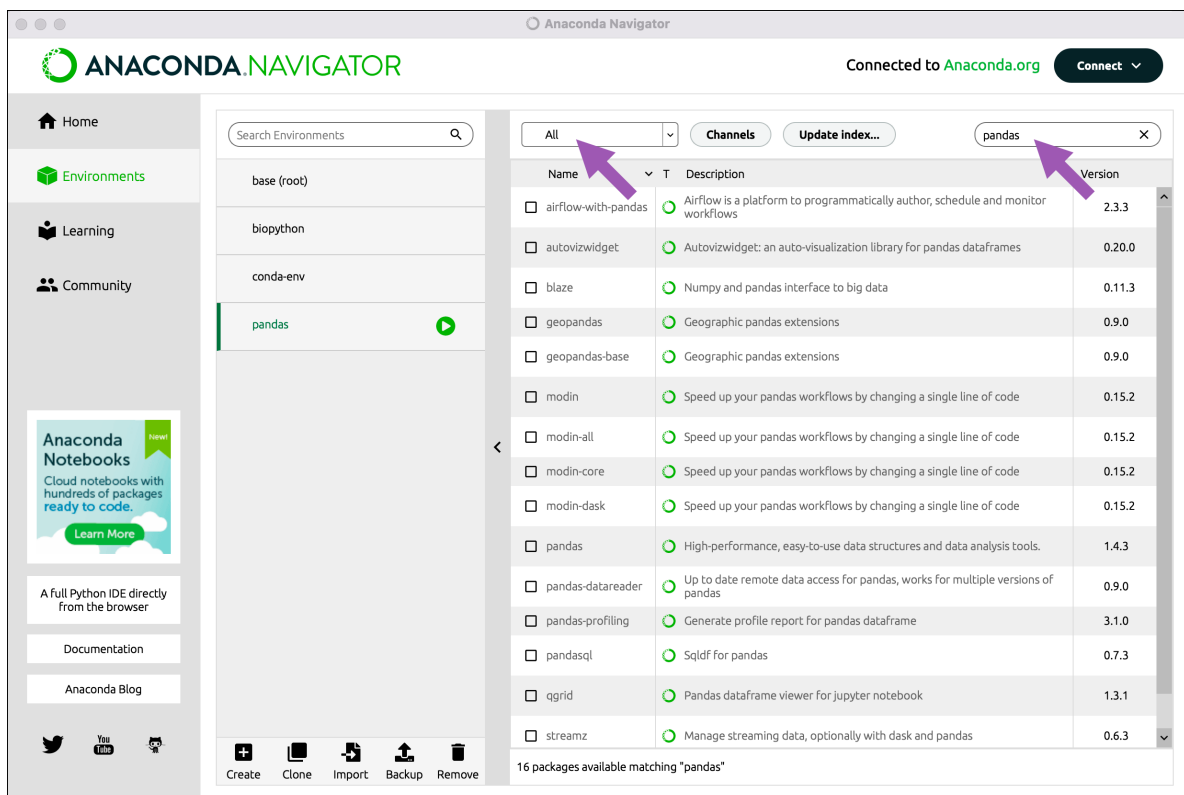
1. [Start Navigator](#).
2. Open the **Environments** page.
3. Click **Create**. When prompted, enter a descriptive name for the environment, such as “Pandas”.



4. Select a Python version to run in the environment.
5. Click **Create**.
6. The new, active environment appears in the environments list. An active environment is highlighted with a green play icon.

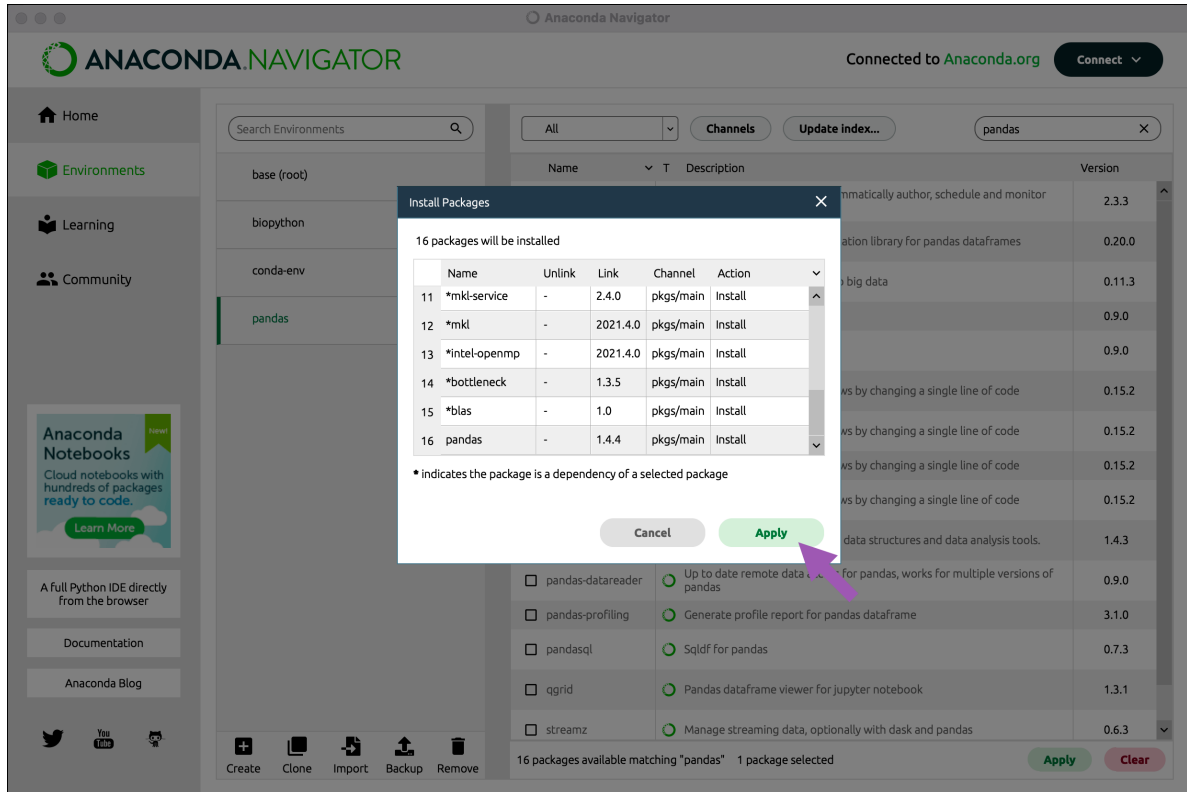


- In the list above the packages table, select *All* to filter the table to show all packages in all channels.
- In the **Search Packages** field, search for “pandas”. Pandas appears as a package available for installation.

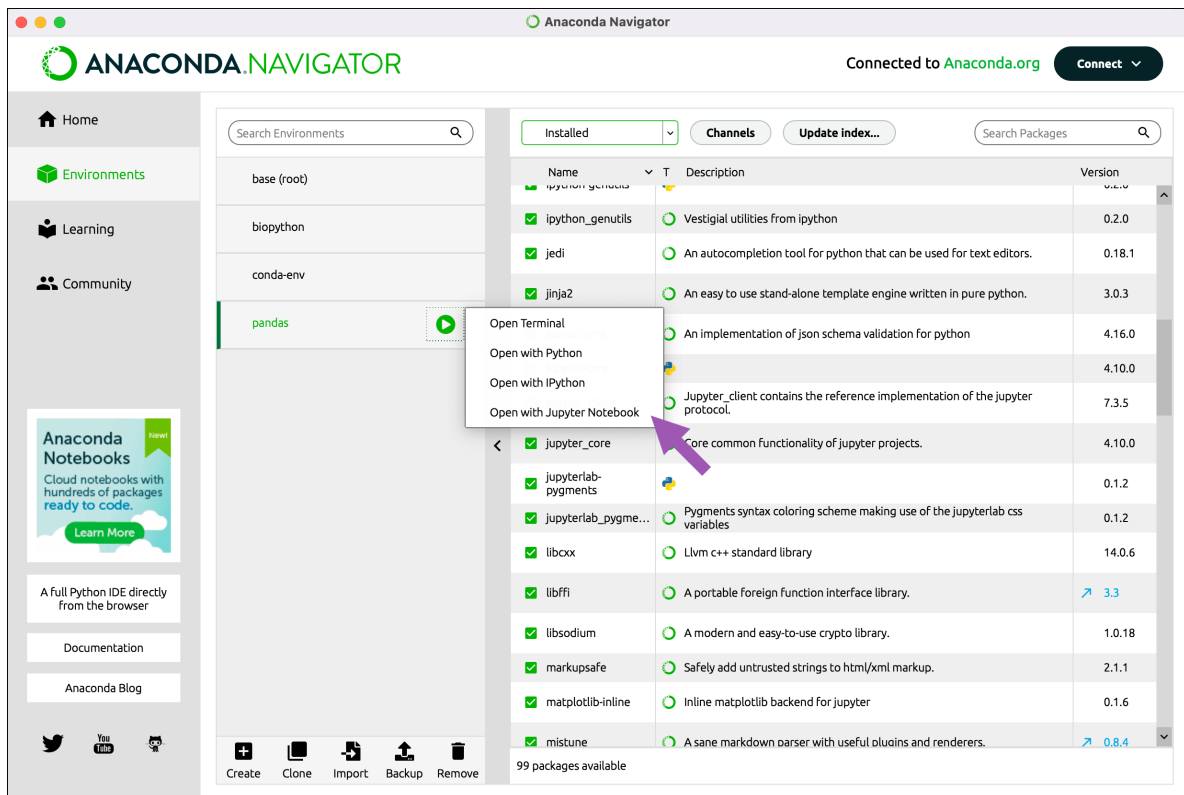




9. Select the checkbox in front of the Pandas package name.
10. Click **Apply**.
11. Review the dialog that displays pandas and all of its dependencies.
12. Click **Apply**.



13. A progress bar appears below the packages pane while Pandas and its dependencies are installed.
14. To begin using your new environment, on the **Environments** page, click the play button next to your active Pandas environment name.
15. In the list that appears, select the tool to use to open Pandas. To access the iPython or Jupyter Notebook tool options, install JupyterLab or Jupyter Notebooks from the **Home** page.



**Note:** In MacOS, you will need to give Anaconda Navigator permission to open the tool you choose, if it is your first time using Navigator to open it.

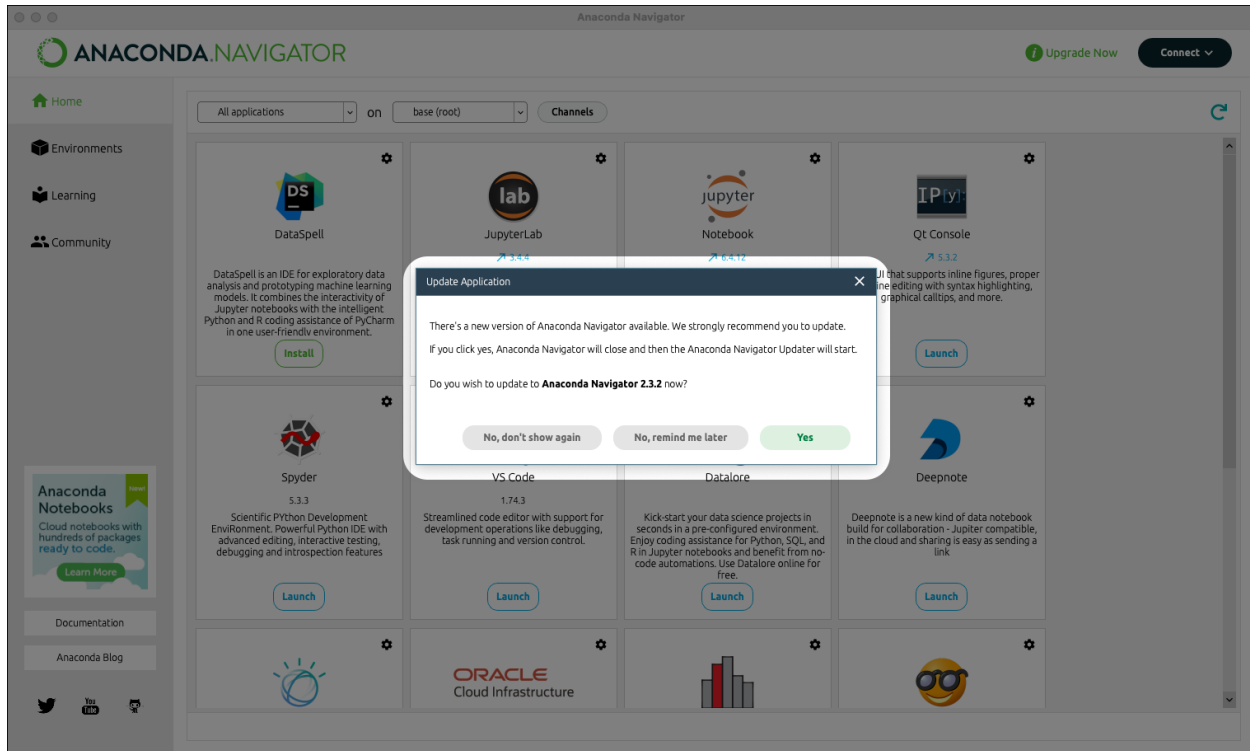
## Learn more about Pandas

- [10 Minutes to Pandas](#)
- [Pandas Cookbook](#)
- [Panda's Diet](#)

## Updating Navigator

Every time Navigator starts, it checks whether a new version is available. If one is available, a dialog box displays that allows you to upgrade to a new Navigator version or keep your current version.

**Note:** Anaconda recommends keeping Navigator updated to the latest version.



## Manual update

You can also update Anaconda Navigator manually through a command line interface (CLI).

Open the Anaconda Prompt on Windows (or terminal on Linux or macOS) and use the following commands:

```
conda deactivate
conda update anaconda-navigator
```

## Downgrading Navigator

If you need to downgrade Navigator to a previously released version, you can use the `conda install` command in your terminal (Anaconda Prompt for Windows users) and specify the version of Navigator you want to install. Along with this command, you may also need to specify a version of conda to avoid errors or conflicts.

### Downgrading to Navigator v2.4.0

To downgrade Navigator to version 2.4.0, run the following command:

```
# No version of conda greater than 23.3.1 should be specified
conda install anaconda-navigator=2.4.0 conda=23.3.1
```

### Downgrading to Navigator v2.3.0

To downgrade Navigator to any version earlier than 2.4.0, run the following command:

```
# No version of conda greater than 22.9.0 should be specified
conda install anaconda-navigator=2.3.0 conda=22.9.0
```

**Caution:** Anaconda Navigator 2.4.0 and earlier versions are not compatible with Python 3.11. If you have Python 3.11 or later installed in your base environment (or the environment where you're installing *anaconda-navigator*) and the solver returns an “UnsatisfiableError” response about your Python installation, try the command again with a Python version lower than 3.11 specified. For example, *conda install anaconda-navigator=2.4.0 conda=23.3.1 python=3.10*

### Troubleshooting

#### Navigator error on start up

This is often the result of a corrupted `.condarc` file. To resolve, delete the `.condarc` file and restart Navigator.

1. Find the `.condarc` file.

In Anaconda Prompt or the terminal, enter the command `conda info`. The output will tell you the location of your `.condarc` file(s). You can also search for “`.condarc`” on your computer.

The `.condarc` file is frequently found in:

- macOS: `/Users/<USERNAME>`
- Linux: `~/ .condarc`
- Windows: `C:\\Users\\<USERNAME>`

2. Optional: Save custom configurations.

If you had custom configuration in your `.condarc` file before it was corrupted, save the information to add that configuration back to the new file.

3. Delete the `.condarc` file.
4. Restart Navigator.

#### Issues launching or initializing

If you are having problems launching Anaconda Navigator, follow [these steps](#).

If you cannot launch the Anaconda Navigator desktop app, you can still launch it from the terminal or an Anaconda Prompt with `anaconda-navigator`.

## Permissions issues

If you have permissions issues, there may be a problem with the licenses directory, `.continuum`. Open a terminal or Anaconda Prompt and delete the `.continuum` directory. Run `rm -rf ~/.continuum` on macOS and Linux and `rd /s .continuum` on Windows.

Then relaunch Navigator from the desktop app, terminal, or Anaconda Prompt.

## Other options

If removing the licenses directory does not resolve the issue, manually update Navigator from a terminal or an Anaconda Prompt:

```
conda update anaconda-navigator
```

If you have updated Navigator and still have problems, remove Anaconda Navigator, then reinstall from the terminal or Anaconda Prompt:

```
conda remove anaconda-navigator
conda install anaconda-navigator
```

If none of the above work, please reset the Anaconda Navigator configuration back to default values:

```
anaconda-navigator --reset
```

## PermissionError on macOS Catalina

MacOS Catalina users may experience permission errors where the system does not prompt you for permission to folders requiring access.

First, update Navigator.

```
conda update anaconda-navigator
```

Once updated, have Navigator generate the permissions prompt by launching Spyder and running the following in the console:

```
import os
os.listdir('<DIRECTORY>')
# Replace <DIRECTORY> with the folder you need access to.
```

## Access denied error

This is caused by a lock file that sometimes gets stuck and isn't removed when it should be.

In Anaconda Prompt or a terminal, run:

```
conda update conda
conda update anaconda-navigator
conda update navigator-updater
anaconda-navigator --reset
```

The last command is the key to fixing the issue, as it removes the lock file causing the problem.

### Navigator buttons are missing

If your Navigator buttons are missing, try the following:

1. Run **Update Index** from the **Environments** page of Navigator.
2. Quit and restart Navigator.
  - If it's still broken, confirm that your `.condarc` file is not *corrupt*. Specifically confirm that your channel settings contain “defaults”.
  - If it's still broken, try running `conda search python` from the command line. This will download a fresh copy of the repodata, which should resolve the problem.
  - If none of the above options work, [open an issue](#) detailing the error.

### Navigator ignores the “Ok, and don’t show again” option on the help Anaconda improve pop up

After starting Navigator, a pop up appears asking if you’d like to provide anonymized usage information to Anaconda. If you select “Okay, and don’t show again” and the pop up appears again the next time you start Navigator, it may be due to a privilege conflict.

Specifically, this can occur when Navigator was installed by a user with Administrator privileges, but you are using it as a regular user without the Administrator privileges. The pop up continues to appear because you do not have permission to change the pop up box setting.

To resolve this, switch to using an account with Administrator privileges and select the “Ok, and don’t show again” option in the pop up box. This will apply to all user accounts.

Alternatively, edit the `show_startup` field in the `.anaconda/navigator/anaconda-navigator.ini` configuration file so that it is `False`. If `show_startup = True`, you will continue to see the pop up box.

### Trouble logging in to the Anaconda Server connection in Navigator

If you are having issues logging in or know you’re logged in but cannot interact with Anaconda Server, try the following steps:

1. Set `logged_api_url`, `anaconda_server_token`, and `anaconda_server_token_id` in the Navigator config file (`anaconda-navigator.ini`) to **None**.

---

**Note:** The token and token ID config variable names have been updated from `team_edition_token` to `anaconda_server_token` and `team_edition_token_id` to `anaconda_server_token_id` as of Version 2.4.0. If you downgrade your Navigator application to a version older than 2.3.0, you will need to manually change these variable names back to their older versions within your `anaconda-navigator.ini` file.

---

2. Remove `channel_alias` from the conda configuration file (`.condarc`).
3. Try signing in again.

## VS Code is not appearing on my Anaconda Navigator home tab

Anaconda Navigator displays and launches VS Code, and many other applications, through that application's executable file. VS Code's installation should have placed the executable in a specific directory where Anaconda Navigator is programmed to look. For example:

- Windows User-Only Installation: `C:\\Users\\User\\AppData\\Local\\Programs\\Microsoft VS Code`
- Windows System-Wide Installation: `C:\\Program Files\\Microsoft VS Code`
- Linux-64: `/usr/share/code`
- macOS: `/Applications`

Reinstall VS Code to ensure that executable is installed in the default location.

1. Close Anaconda Navigator.
2. Uninstall (if necessary) and reinstall VS Code.

---

**Note:** On macOS, make sure the VS Code application is moved from your Downloads folder to your Applications folder.

---

3. Re-open Anaconda Navigator.

Another option, if you have installed VS Code to a different location than the default, is to edit VS Code's path in your Anaconda Navigator user preferences.

1. Open the Anaconda Navigator Preferences dialog from the top menu bar (such as **File > Preferences** or **Anaconda Navigator > Preferences**).
2. Scroll down to the VS Code path setting.
3. Enter the path to the installation of VS Code you would like Anaconda Navigator to use. This may be similar to the examples above, especially if you have a user-specific installation you would rather use over your system-wide installation.

---

**Note:** You do not need to enter the name of the executable file itself. Just the path to the folder that contains that file.

---

4. Close and reopen Anaconda Navigator.

## Anaconda Navigator fails to start and gives Permission denied error

After installation, Anaconda Navigator may fail to start and give you a "Permission denied" error on the anaconda-client configuration file (`/.continuum/anaconda-client/config.yaml`).

### Cause

This error is likely due to `anaconda-client` being installed with admin rights. This will lead to incorrect user permissions for the `anaconda-client` config file.

### Solution

You can do a few things to solve this. They are listed from most straightforward to most complex.

#### Delete your `.continuum` folder

1. Back up your `.config.yaml` file to a different location.
2. Delete your `.continuum` folder.
3. Start Navigator again.
4. Copy your saved `.config.yaml` file back into `/.continuum/anaconda-client`.

#### Uninstall and reinstall without admin privileges

*Uninstall Anaconda* and then *reinstall Anaconda* without admin privileges.

#### Manually change the `.continuum` folder's user permissions

*You will need administrator privileges to do this.*

To change user permissions on Windows:

1. Search for “powershell”.
2. Right-click the Windows PowerShell app and select **Run as administrator**.
3. Run the following command:

```
#Replace <USERNAME> with your username  
icacls C:\Users\<USERNAME>\.continuum /grant:r <USERNAME>:(i,f) /t
```

To change user permissions on macOS or Linux

1. Open your terminal application.
2. Run the following command:

```
sudo chmod 766 /.continuum
```

### Navigator gives ‘Email verification failed’ error 403

Users with unverified Anaconda.org email addresses can no longer access the API that Navigator and Anaconda Client use to communicate with Anaconda.org. Navigator 2.5.0+ now catches this error and logs you out of your Anaconda.org connection. To connect to Anaconda.org again through Navigator, *update your Navigator version* or verify your Anaconda.org account.



## Verify your anaconda.org account

To fully resolve the issue, we recommend verifying your account on Anaconda.org:

1. Log in to your Anaconda.org account.
2. If your email is unverified, you will be prompted to verify it.
3. Click **Resend Confirmation Email**.
4. Follow the instructions in the email you receive to complete the verification process.

This issue will be resolved in the next Navigator release.

## CentOS 7: Orange3 fails to launch after installation

### Cause

In the CentOS 7 Linux operating system, Orange3 is missing some graphics libraries required by Qt, a framework that Orange Canvas requires to work.

These missing dependencies cause an error when starting Navigator: “Could not load the Qt platform plugin “xcb” in “” even though it was found. This application failed to start because no Qt platform plugin could be initialized.”

### Solution

1. Open a terminal application.
2. Install the missing system libraries and run updates by running the following commands:

```
sudo yum install xcb-util-wm xcb-util-image xcb-util-keysyms xcb-util-renderutil  
sudo yum update
```

Once these libraries are installed and updated, Orange3 should launch correctly on CentOS 7 and the above error should no longer appear when opening Navigator with Orange3 installed.

## Release notes

### 2.5.0 – September 20, 2023

- Added new Anaconda Cloud log in dialog
- Added new Anaconda on AWS Graviton application tile
- Replaced IBM Watson Studio Cloud application tile with IBM watsonx application tile
- Fixed issue where Navigator failed if launched while logged into Anaconda.org account with a validated email address
- VSCode now launches with the selected conda environment

### 2.4.2 – June 16, 2023

- Updated the design of the Anaconda Cloud (formerly known as Nucleus) sign-in dialog
- Added occasional prompts to sign in to Cloud account

### 2.4.1 – June 1, 2023

- Added support for Python 3.11
- Added support for conda 23.5.0
- Added Anaconda Notebooks application tile
- Renamed Anaconda Nucleus to Anaconda Cloud
- Deprecated support for Python 3.7
- Added better error messaging for issues detecting conda configuration file (.condarc)

### 2.4.0 – February 27, 2023

- Added support for conda 23.1.0
- Added option to hide/show hidden channels in Anaconda Server channels configuration dialog
- Renamed Team Edition to Anaconda Server and Commercial Edition to Anaconda Professional
- Removed Deepnote application tile
- Fixed link error in Oracle OCI application tile

### 2.3.2 – October 7, 2022

- Updated description of Deepnote application tile

### 2.3.1 – September 30, 2022

- Added new ad rendering service

### 2.3.0 – September 8, 2022

- Anaconda Partner Package Tiles have enhanced functionality
- Updated Community Tab Links
- Users can now filter applications on the Home page
- Added Oracle OCI Data Science to the Home page

## 2.2.0 – May 19, 2022

- Improved handling of missing or corrupt `anaconda-client` configuration files.
- Added conda commands, http requests, and more Navigator actions to debug logs.
- Application icons are now shown for custom application packages when cached.
- Added the DataSpell application to the **Home** page.
- Further improvements to the detection of installed applications.

## 2.1.4 – April 5, 2022

- Updated product and repository naming to match new branding. See the [Anaconda Blog](#) for more information.

## 2.1.2 – February 24, 2022

- VSCode launched from the Navigator will use the selected conda environment.
- Improved enumeration of packages from repositories that use the `.conda` format.
- Dependency minimum versions updated to address bugs in dependent packages.
- Overwriting an existing environment no longer creates an additional environment.
- Improved detection of pre-2019.1 PyCharm installations.
- Addressed issue where Navigator would not close after being open for several hours.
- Logging out from Team Edition while being offline no longer triggers a connection notification.
- Detected paths to third-party applications are now stored in preferences.
- Mitigated “check\_hostname requires server\_hostname” application launch errors.

## 2.1.1 – November 15, 2021

- Navigator startup speed has been improved.
- Numerous enhancements and bug fixes for Anaconda Team Edition users:
  1. Improved stability and status updates when Team Edition server cannot be reached.
  2. Added more visible option to bypass certificate validation if SSL certificate can not be validated.
  3. **Channels** button now always opens Team Edition channels wizard if user is logged in, not just during setup.
  4. Multiple channels wizard usability improvements.
  5. Navigator now supports email addresses as Team Edition logins.
  6. Logging out from CLI now causes Navigator to also be logged out.
- Resolved issue where conda configuration is lost when logging out, then back in.
- Third-party application (VS Code, PyCharm, etc.) detection and launch improvements:
  1. Application detection is reworked and now should detect latest app version if installed in default locations.
  2. If application fails to start (crashes in less than 10 seconds), error details are now displayed.
  3. Improved detection for closed applications when closing Navigator.

4. Fewer application launch calls echoed to console when starting applications on Windows.
  5. Many smaller improvements with third-party application support.
- High DPI scaling is now disabled by default on Linux.
  - Importing an incorrectly-configured environment no longer results in the existing environment getting deleted.
  - SSL validation preferences now apply to server URLs being added through login wizards.
  - Fixed multiple startup issues in some Windows environments.
  - Due to how some OSes handle spaces in path names, new environment names can no longer contain a space character.

### 2.1.0 – September 24, 2021

- Added ability to back up environments to local file or Anaconda Nucleus (<https://anaconda.cloud/>).
- Environment Import dialog adds the ability to import an environment from Anaconda Nucleus.
- Added ability to log in to an Anaconda Nucleus account.
- Added new **Connect** dropdown menu with options to log in to a repository and an Anaconda Nucleus account (replaces **Sign In** button).
- Added automatic refresh of package index with a fresh installation.
- Added support of separate `.condarc` copy for AE4 Repository.
- Create Environment dialog now shows all Python/R versions available in configured repository channels.
- Some UI styling elements have changed.
- Fixed ability to detect a user that is logged in from CLI for all repos.
- Fixed display of previously-cached metadata in packages table.

### 2.0.4 – July 13, 2021

- Fixed launching of applications from Navigator.
- Fixed validation of Enterprise Edition and Team Edition channels.
- Fixed the fetching of available Team Edition channels during signin.
- Fixed adding Team Edition channels after signin.
- Fixed adding private Team Edition channels.
- Anaconda Enterprise Repository 4 login process no longer requires restart.
- Added message after Anaconda Enterprise login to remind users to configure their channels if they have not already done so.
- Navigator now detects AE4 properly and correctly verifies channels from AE4 after CLI signin.

### 2.0.3 – May 5, 2021

- Reworked login system:
  1. Added a main login pop-up to select a repository to connect.
  2. Added support of login to Commercial Edition.
  3. Added pop-ups to set domain on login for Team Edition and Enterprise Edition.
  4. Reworked login pop-ups for [anaconda.org](https://anaconda.org), Team Edition, Enterprise Edition.
  5. Added pop-up to set up `default_channels` for Team Edition.
  6. Added scroll bar for better user experience and other improvements.
  7. Added detection of Commercial Edition user already logged in via CLI.
  8. Added detection of Team Edition user already logged in via CLI.
- Added proper checks for SSL errors and unexpected errors.
- Fixed how environment names that begin with underscores are displayed.
- Fixed missing packages while doing setup for ATE/CE channels in `default_channels`.
- Fixed issue with redirecting users logged in via TE or AE4 to [anaconda.org](https://anaconda.org) client page.
- Fixed clobbering `.condarc` settings.
- Fixed application install via Navigator.
- Fixed issue with missing login info in Navigator if the user is logged through the CLI.
- Numerous other bug fixes and improvements.

### 1.10.0 – October 19, 2020

- Improved Team Edition integration: you can now log in to your Team Edition account from Anaconda Navigator.  
More details at: [Integration with Business \(On-prem\) \(also known as Anaconda Server\)](#)
- Navigator will now remember the last environment used instead of loading the default environment each time.
- Added a feature to scale Navigator fonts and items if Operating System scaling factor was changed.
- Improved user login experience by separating [Anaconda.org](https://anaconda.org), Team Edition, and Repo4 Enterprise.
- Extended Navigator settings/preferences by adding the following functionalities:
  1. Modified Conda configuration file (**`.condarc`**) directly from Navigator.
  2. Modified Navigator settings file (**`anaconda-navigator.ini`**) directly from Navigator.
  3. Set up separate API domain names for **`anaconda.org`** / **Team Edition** / **Repo4 Enterprise**.
  4. Set PyCharm and VSCode file paths.
  5. Added scroll bar for better user experience and other improvements.

See: [Overview](#)

- Added a banner to the navigation pane to show you the most relevant news and tools.
- Fixed bug with the Navigator Updater tool:

The bug was a part of the 1.9.12 release, so users will not be able to update from 1.9.12 to 1.10.0 through this tool. You will need to use the terminal or install 1.10.0 from our official website.

- Added tiles for PyCharm Pro and PyCharm Community/Datalore/IBM Watson Studio Cloud to the **Home** page.
- Fixed bug with missing **Visual Studio Code** tile on the **Home** page.
- Fixed bug where the environment would become stuck while installing packages.
- Fixed bug where Navigator would hang while loading applications.
- Numerous other bug fixes and improvements.

### 1.9.12 – February 10, 2020

- Added PyCharm Tile to the **Home** page when installed.
- Added Anaconda Prompt, Anaconda PowerShell tiles on the **Home** page (Windows only).
- Now displays pip-installed packages in environments.
- Improved the macOS Catalina experience with Navigator, around granting permissions to the various applications Navigator launches.
- Numerous bug fixes.

### 1.9 – October 2, 2018

- Added support for Offline Mode for all environment-related actions.
- Added support for custom configuration of main windows links.
- Numerous bug fixes and performance enhancements.

### 1.8 – February 28, 2018

- Removed **Projects** page.
- Now supports environment names with spaces on Windows.
- Improved switching between Anaconda API domains.
- Better integration with Visual Studio Code.
- Numerous bug fixes and performance enhancements.

### 1.7 – February 13, 2018

- Added R and MRO documentation tiles.
- Added custom spinner.
- Better handling of Access Denied errors.
- Better integration with Visual Studio Code.
- Numerous bug fixes and performance enhancements.

## 1.6 – May 19, 2017

- Better logging for application launches.
- Package list can be filtered by “to be installed”.
- Selecting an environment on the **Home** or **Environments** page now selects it on both.
- Numerous bug fixes and performance enhancements.

## 1.5 – March 2, 2017

- New **Projects** page for working with Anaconda Projects, still in beta status.
- Added Navigator Updater and increased visibility of available updates.
- Numerous bug fixes and performance enhancements.

## 1.4 – January 31, 2017

- Navigator is out of beta status.

The word “Beta” no longer appears in the title bar.

- R Studio available from the Navigator **Home** page.

R Studio is an open-source integrated development environment (IDE) for the R programming language. R Studio has been added to the R channel and can now be installed and launched from the Navigator **Home** page. To install and launch R Studio, in the R Studio pane, click **Install** and then **Launch**.

- Orange app returns to the **Home** page.

Orange app was removed from version 1.3 due to compatibility issues that have since been resolved. Orange app is pre-installed starting from version 1.4, so you can click **Launch** to launch it, with no need to install it first.

- Option to disable or enable SSL verification.

From the top menu bar, select **Preferences**, select or clear the **Enable SSL verification** checkbox, and click **Apply**.

- Support for Anaconda Fusion licenses.

Navigator now supports packages that require a license, including Anaconda Fusion. Installing Anaconda Fusion now automatically downloads a Fusion trial license from [anaconda.org](https://anaconda.org). This license is generated once per user, so if a user uninstalls Fusion and reinstalls it, the user receives the original license. Trial licenses require users to register for a free account on [anaconda.org](https://anaconda.org).

- Correct display of “no arch” packages.

When Navigator installs “no arch” packages, they now appear correctly on the **Environments** page.

- Friendly warning about updating channels for long-term users.

If users have created `.condarc` files that try to access `binstar.org`—the original name of `anaconda.org`—Navigator now warns that `binstar.org` channels are outdated.

### 1.3 – September 27, 2016

- License Manager dialog.

You can now easily upload licenses for applications that require them.

- Applications per environment.

You can install applications to any environment. To do this, on the **Home** page, click **Applications**, then select the environment in which you want to install an application. If an environment is not selected, applications are installed by default in the root environment.

- One-click updates and installs.

You can install a new package or update an installed package in the active environment. See [Managing packages](#).

- Clearer indication of option to delete a search filter.

On the **Environments** page, when the packages are filtered by a user-defined search string, hovering over the X button now turns the cursor into an arrow and the X turns red, to emphasize that clicking the X will clear the search string.

- Channels now support tokens.

The Channel manager now supports security tokens. See [Adding a channel](#).

- Channel name copy and paste support.

- Navigator in a specific environment.

Installing Navigator in an environment other than root now makes that environment the default upon Navigator startup, both for the **Home** and **Environments** pages.

- Table pre-filtering according to Python version.

To avoid unnecessary conflicts, the table that displays a filtered view of packages—according to the Installed, Not Installed, Upgradeable and Downgradable filter values—does not display packages that are incompatible with the installed version of Python.

- Dialog size restore.

Upon restart, the application window's last size and location are preserved, instead of the windows being maximized upon startup.

### 1.2 – August 1, 2016

- Improved `.condarc` support.

Navigator now reads from and writes to the conda configuration file (`.condarc`). In previous releases, updates made within Navigator to the conda configuration were not reflected in the `.condarc` file, and vice versa. Starting from version 1.2, when you add channels inside Navigator, the `.condarc` file is updated, and if `.condarc` is updated outside Navigator, Navigator correctly reads the available channels.

- Improved channels support.

You can now [manage the channels](#) on [anaconda.org](#) that you want Navigator to consider active. Active channels are included when you search for packages and other assets.

- R environment creation support.

Navigator now allows you to *install a standalone R language environment or a mixed Python and R environment*.



- Conda environment file import.

Navigator now allows you to *import environment.yml files*.

- Updates for Enterprise users.

---

**Note:** You cannot use an Enterprise version of [anaconda.org](https://anaconda.org) with Navigator.

---

- Simplified preferences.

Preference options are simplified so that only one URL is needed to set up the API. Changing this value affects the URL setting of the `anaconda-client` configuration.

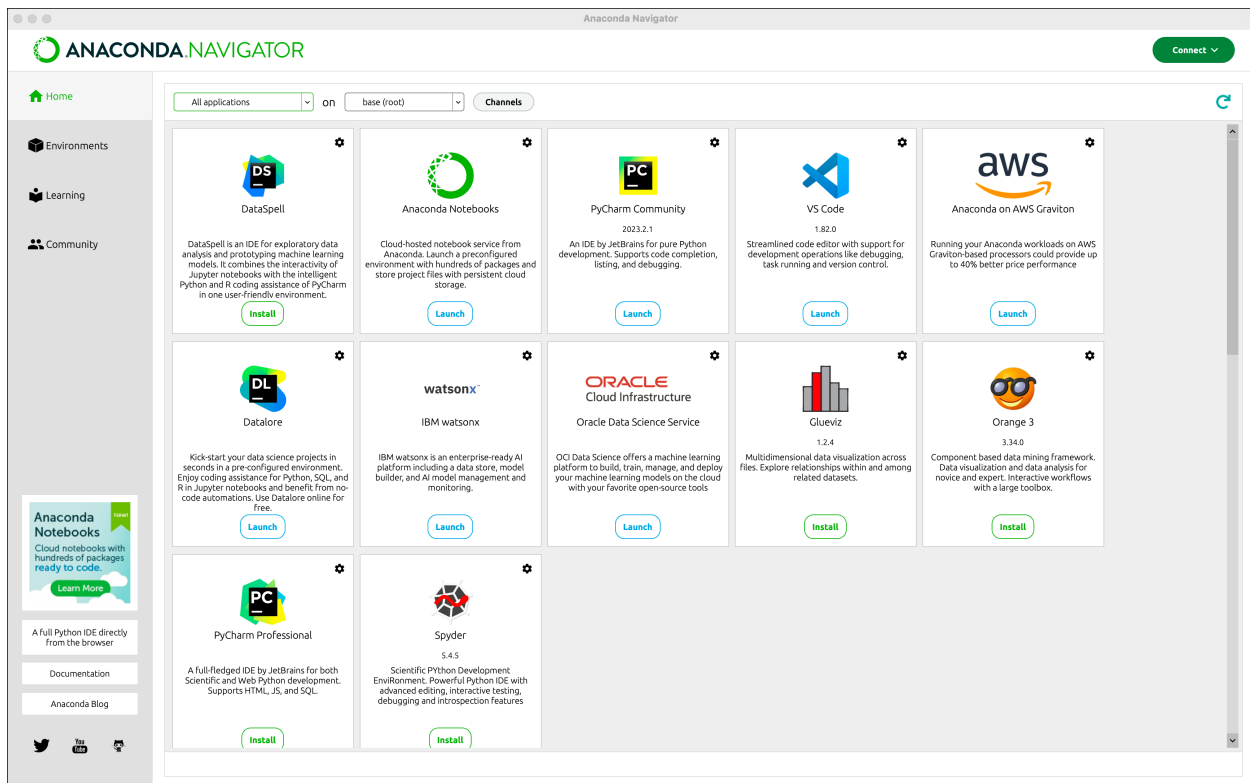
---

**Note:** Changing the *URL setting in the CLI* affects the value displayed in the preferences.

---

- Proxy.

When using Navigator behind a proxy, the settings must be manually set inside the conda configuration file. See the [conda proxy documentation](#).



## Why use Navigator?

In order to run, many scientific packages depend on specific versions of other packages. Data scientists often use multiple versions of many packages and use multiple environments to separate these different versions.

The CLI program `conda` is both a package manager and an environment manager. This helps data scientists ensure that each version of each package has all the dependencies it requires and works correctly.

Navigator is a graphical interface that enables you work with packages and environments without needing to type `conda` commands in a terminal window. You can use it to find the packages you want, install them in an environment, run the packages, and update them – all inside Navigator.

### What applications can I access using Navigator?

For information on what applications are available by default in Navigator, see [Home page](#).

Advanced conda users can also [build their own Navigator applications](#).

### How can I run code with Navigator?

The simplest way is with Spyder. From the Navigator Home page, click the Spyder tile, and use the Spyder interface that opens to write and execute your code.

You can also use Jupyter Notebook the same way. Jupyter Notebook is an increasingly popular system that combines your code, descriptive text, output, images, and interactive interfaces into a single notebook file that is edited, viewed, and used in a web browser.

---

**Note:** Anaconda Navigator does not support macOS<10.12.

---

## Anaconda Notebooks

### Start coding immediately

Anaconda Notebooks allows anyone, anywhere to begin their data science journey. Spin up awesome data science projects directly from your browser with all the packages and computing power you need.

### Code from anywhere

Log in and pull up conda configurations wherever you are online. Whether you want to upload a local environment or directly manage packages in the notebook — Anaconda's got you covered.

### Secure file storage

Liberate those files from your hard drive and securely store all your notebooks, projects, and scripts directly in your file directory.

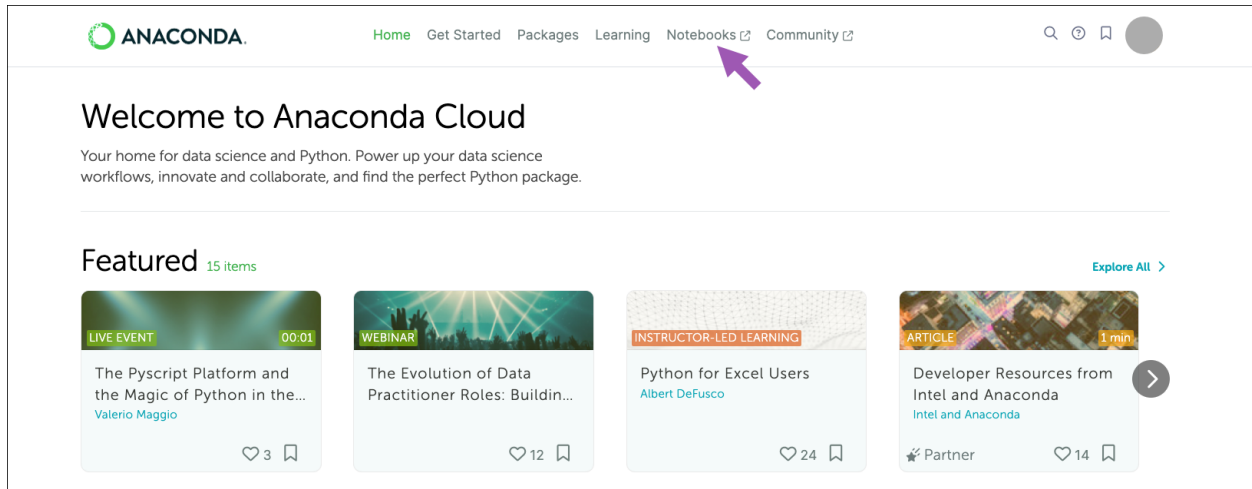
---

With Anaconda Notebooks, you get all of the following running on our resilient and supported cloud platform, so you can use it anywhere on any device!

Features	Free	Starter	Pro/Business
A dedicated JupyterLab notebook interface	✓	✓	✓
Fast, backed-up SSD storage	5GB	10GB	20GB
CPU seconds (daily)	1,000	4,000	8,000
Published applications	1	2	4
Conda environments with the most popular python packages	✓	✓	✓
Ability to create and upload your own custom environments	✓	✓	✓
Example notebooks	✓	✓	✓

---

Try it out for yourself by launching Notebooks from [Anaconda Cloud](#)!



## Publishing Anaconda Notebooks

This topic provides guidance on previewing and publishing your Panel apps as working applications with a custom URL. This spins up an application on the Anaconda Notebooks infrastructure, which you can then share with others.

### Previewing Panel apps

You can render a working preview of the Panel apps in your notebook by clicking the Panel icon at the top of your notebook. To create a valid Panel application, one or more of your outputs must be marked as `.servable()`. See Troubleshooting below for further details.

---

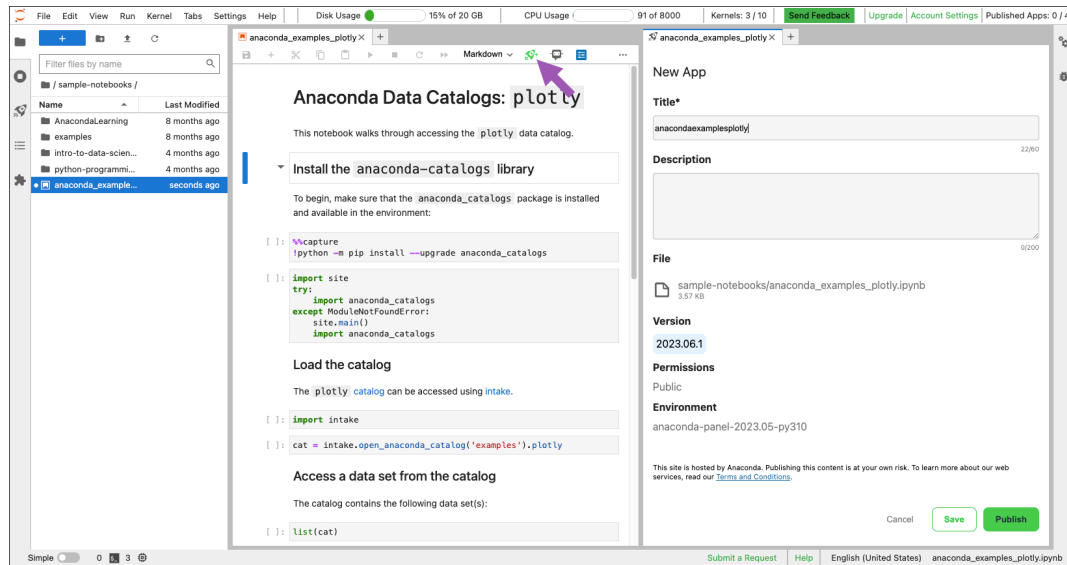
**Note:** Rendering a preview of Panel apps uses CPU seconds.

---

### Publishing Panel apps

To publish the results of your Panel apps to a custom URL, complete the following steps:

1. Click the publish icon at the top of the notebook. The publication panel opens on the right.



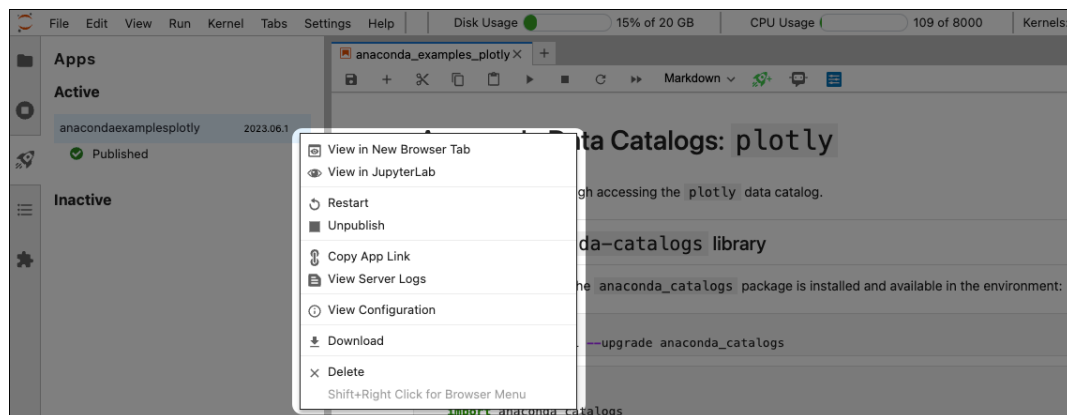
2. Provide a title and detailed description.

**Note:** Your notebook's version is displayed within the form and automatically increments each time you save changes to or redeploy your notebook.

3. Optional: Click **Save** to produce an inactive (i.e. unpublished) app. To see your unpublished and published apps, click the publish icon in the left-hand navigation to open the **Apps** panel.
4. Click **Publish**. You are provided a randomly generated URL for your application, which can be shared with others.

**Note:** The page will appear as a 502 Bad Gateway until the publication process is complete.

5. Click the publish icon in the left-hand navigation to open the **Apps** panel. Your application is now listed under **Active**.
6. View, unpublish, download, and more by clicking the actions icon beside your app in the **Apps** panel.



## Publishing limits

The number of applications you can publish depends on your Anaconda subscription tier.

Tier	Published Apps
Free	1
Starter	2
Pro/Business	4

## Further Panel resources

Anaconda Notebooks allows you to deploy your data applications via Panel with just two clicks directly from your notebooks. Check out the following resources for a deeper dive into Panel:

- Familiarize yourself with Panel with the [getting started guide](#)
- Discover how to use specific features in the [how-to guide](#)
- Learn about the different components and how to use them with the [component gallery](#)
- Gain inspiration from the [app gallery](#)

## Troubleshooting

### I published a Panel application, but the application is blank.

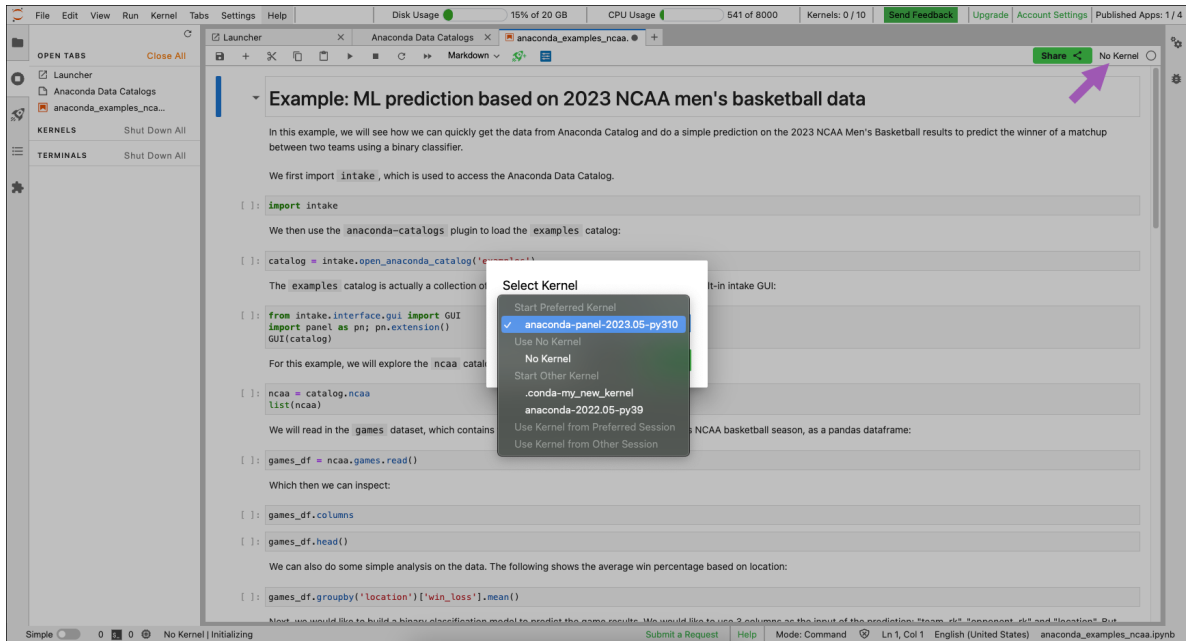
There are a couple of reasons your application may not be rendering:

1. To create a valid Panel application, one or more of your outputs must be marked as `.servable()`. Take this minimal “Hello, World!” program, for example:

```
import panel as pn
pn.Row("Hello, World!").servable()
```

If you added content to your application but there’s still nothing showing up, ensure that your notebook can be run from top to bottom. The easiest way to test this is to click **Kernel** in the menu bar, then select **Restart Kernel and Run All Cells..** from the dropdown.

2. Ensure you have selected the `anaconda-panel-2023.05-py310` kernel from the kernel selector in the top-right of your notebook.



## I published an application but it's stuck in a “publishing” state.

If your application is stuck in the “Your app is being published” state, check your notebook error logs. Address any issues raised and republish.

## Sharing Anaconda Notebooks

When you're ready for others to interact with your notebook, you can share a copy of the notebook via a direct link or a clickable “badge” on a webpage. This is great if, for example, you're a teacher looking to provide an easy way for students to access notebooks from your GitHub account, or you're a developer looking for feedback (and praise) on a project from your colleagues.

## What are notebook badges?

Using a consistent and recognizable style, badges are clickable tiles that provide direct access to a notebook. Add these badges to websites, blog posts, documentation, GitHub repositories, or social media posts so anyone can open your notebook in a new instance of Anaconda Notebooks.

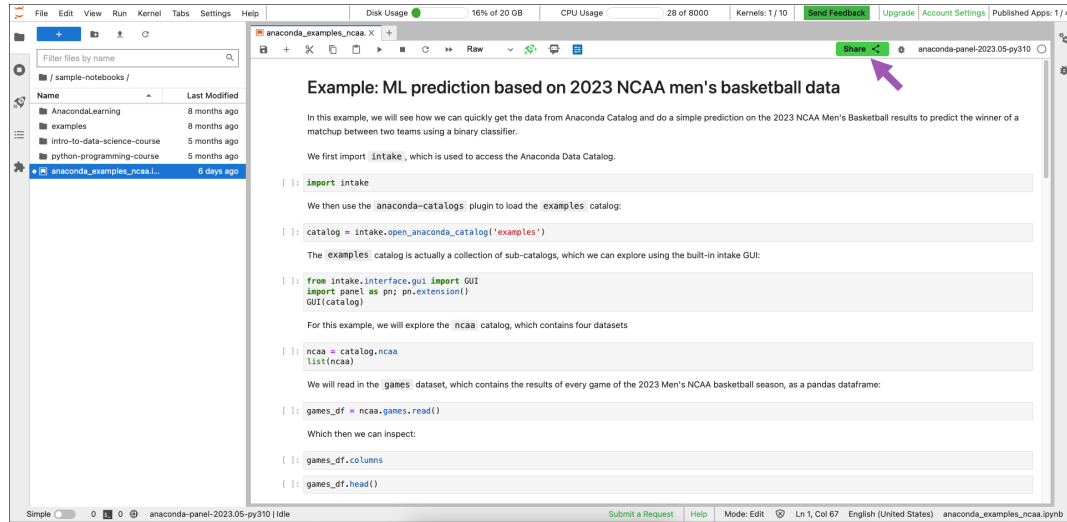
Badges can be created directly in Anaconda Notebooks by clicking **Share** at the top of your notebook, as shown in the following section. This provides you with HTML for a badge, which can be copied and embedded anywhere.

You can also generate a badge for notebooks hosted on GitHub, Anaconda.org, and many other sites using [this badge creator](#). For GitHub, use the **Raw** button to get a URL starting with `raw.githubusercontent.com`. For Anaconda.org, use the **Download** link to get a URL starting with `notebooks.anaconda.org`.

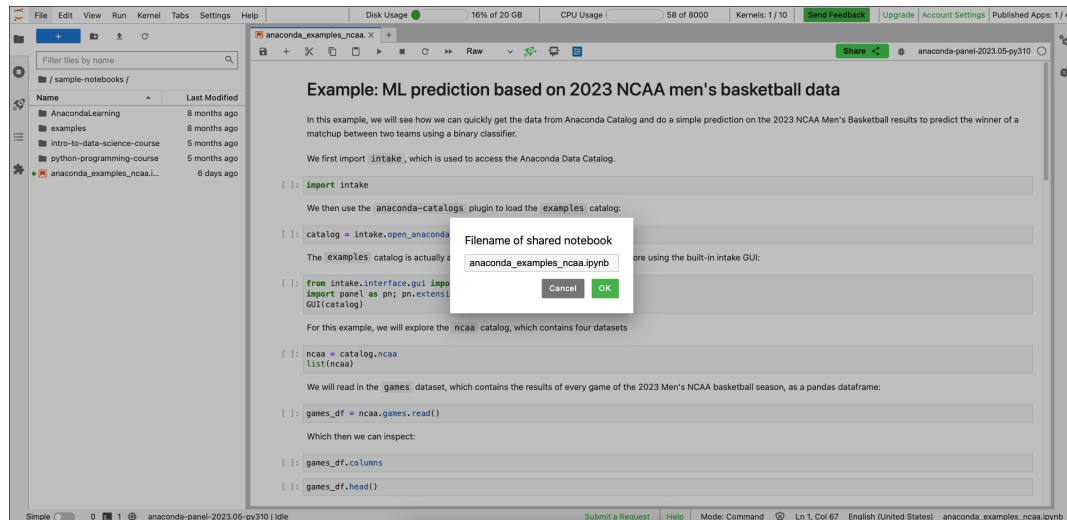
## Sharing notebooks

To generate either a direct link or a badge to your notebook, complete the following steps:

1. Click **Share** at the top of your notebook.

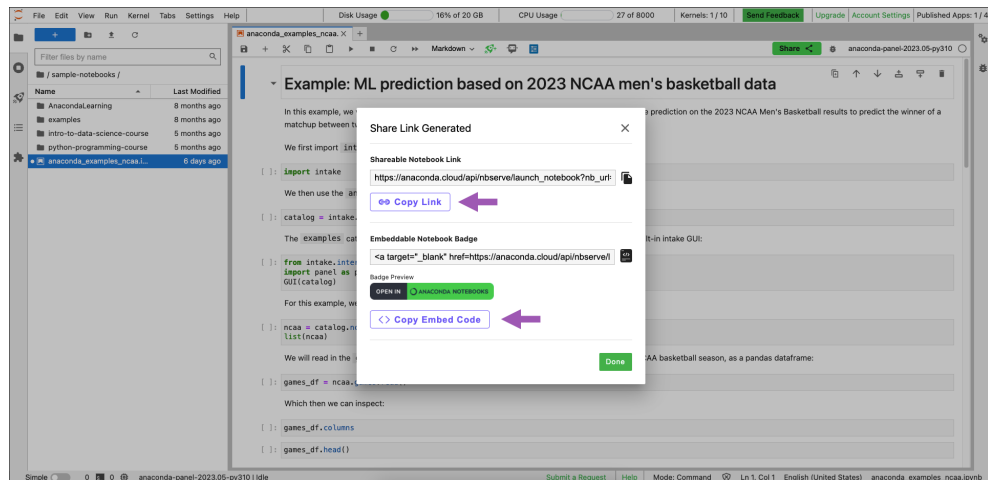


2. Enter a name for your notebook, then click **OK**.



3. In the **Share Link Generated** dialog:

- Click **Copy Link** to copy the notebook link to your clipboard. You can now share this link with whomever you want to share the notebook.
- Click **Copy Embed Code** to copy the badge HTML to your clipboard. You can now paste this code in your websites, blog posts, documentation, GitHub repositories, or social media posts so anyone can open your notebook.



4. Click **Done** to close the dialog.

Users who click the badge but don't have an Anaconda Cloud account will be prompted to create one.

## Anaconda Notebooks data catalogs

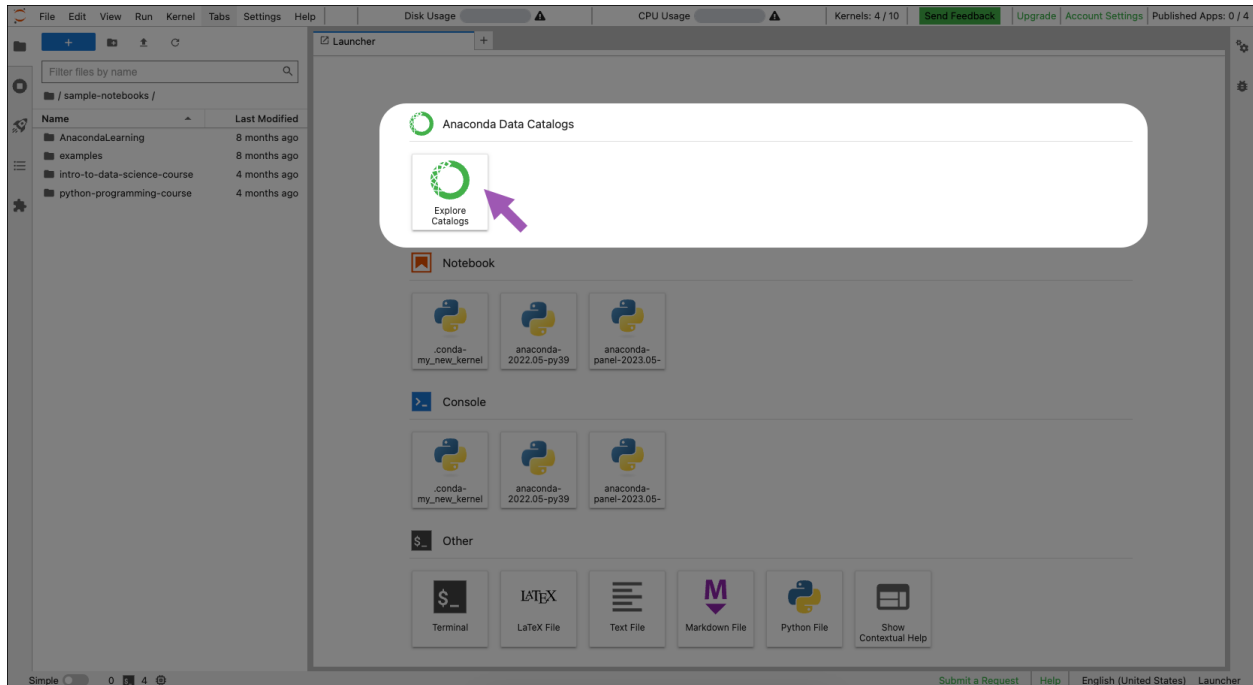
When first approaching data analysis, a blank notebook can be extremely daunting—especially if you've never worked with notebooks or created one yourself.

Anaconda provides a catalog of sample data sets to familiarize yourself with running and analyzing data sets in a notebook.

## Accessing data catalogs

1. To open Anaconda Notebooks, click **Notebooks** at the top of Anaconda Cloud.
2. Once Notebooks opens, open a new Launcher by clicking the blue plus + in the top-left corner.
3. In the Launcher, under **Anaconda Data Catalogs**, click **Explore Catalogs**.





The Explore Catalogs page provides pre-populated data sets for you to familiarize yourself with data analysis in a notebook.

## Using data catalogs in Anaconda Notebooks

If you're new to using notebooks, open the `README.ipynb` on Anaconda Notebooks for a walkthrough on Anaconda Notebooks, working in a notebook, creating conda environments, and answers to frequently asked questions.

There are a few methods for running the cells in your data catalog:

- To run a single cell, click the cell to select it, then press the play button at the top of the notebook.
- An alternative way to run the cell is to select it and press `Shift + Enter` (return on a Mac).
- A variety of methods for running cells can be found by clicking **Run** in the menu bar and selecting an option from the dropdown.

## Using data catalogs on your local system

To access the data catalogs on your local system instead of in Anaconda Notebooks, complete the following steps:

1. [Download Anaconda](#) if you have not done so already.

---

**Note:** If you are using Miniconda, run `pip install anaconda-catalogs[examples]` after the following step to install the necessary dependencies.

---

2. To install the packages necessary to operate Anaconda's data catalogs, open a terminal (Anaconda Prompt on Windows) and run the following command:

```
conda install anaconda-cloud::anaconda-catalogs
```

3. Import `Intake` by running the following command (and subsequent steps) in a Jupyter Notebook or other Python environment:

```
import intake
```

4. To view a list of available example catalogs, run the following commands:

```
examples = intake.open_anaconda_catalog("examples")
list(examples)
```

5. Select a particular catalog and see what data sets it contains:

```
# Replace <CATALOG> with the catalog name
cat = examples.<CATALOG>
list(cat)
```

6. To retrieve the data in a specific data set from the list generated in the previous step, run the following command:

```
# Replace <DATASET> with the dataset name
df = cat.<DATASET>.read()
```

7. To display the first five entries of the catalog in a `Pandas Dataframe`, run the following command:

```
df.head()
```

## Anaconda Assistant quickstart guide

Anaconda Assistant is your digital pair programmer assistant for data science in [Anaconda Notebooks](#)! Made for novice and intermediate JupyterLabs notebook practitioners—yet handy for users of all levels—this AI assistant can help you:

- Write and debug code
- Analyze data
- Visualize results

Follow this quickstart guide to learn how to make the most of your Anaconda Assistant.

## Starting with a notebook

Anaconda recommends using the Assistant after you've loaded a dataframe in your notebook.

---

**Note:** Throughout the Assistant, *dataframes* refer to Pandas DataFrames only, though certain dataframe types compatible with Pandas DataFrames could work as well.

---

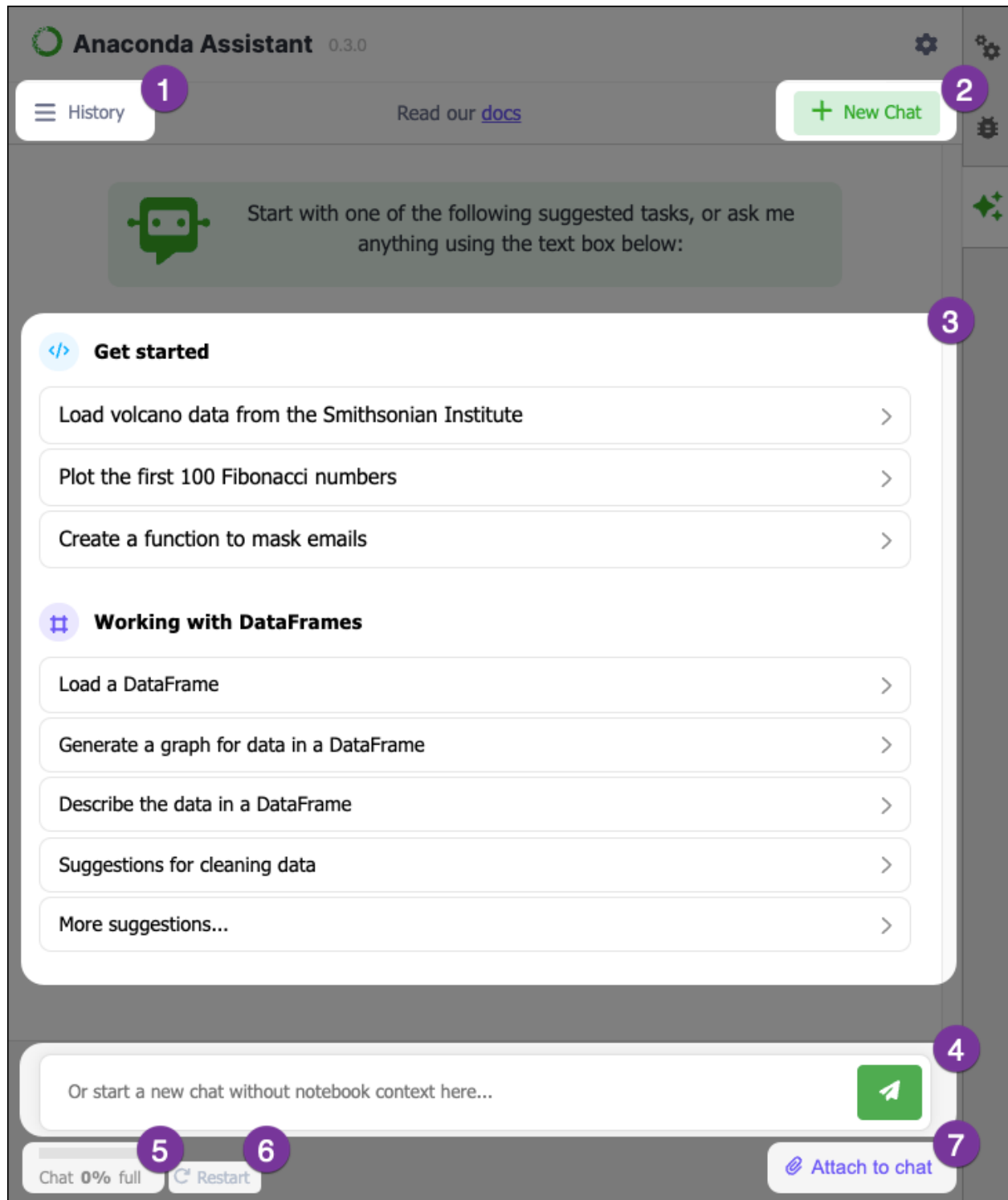
This can be done in a few different ways:

- If you're starting with an empty notebook, the Assistant provides you with the option to generate a dataframe with random data, which you can then use to generate graphs and more.
- Use [Anaconda data catalogs](#) as a starting point:
  1. Open a new Launcher by clicking the blue plus + in the top-left corner.
  2. In the Launcher, under Anaconda Data Catalogs, click Explore Catalogs.

3. Click the run all cells icon to restart and run all the cells available in your notebook. This will render a dataframe(s) in the notebook.
- If you already have specific data you'd like to work with and a proficiency in Jupyter Notebooks, import the data and generate a dataframe as you normally would.

### **Accessing the Anaconda Assistant**

Click the Anaconda Assistant icon to open the Assistant. Let's take a look at the different parts of the Assistant and what we can do with this tool.



### 1. History of previous chats

View and return to previous chats by clicking the menu icon in the top-right corner.

### 2. Start a new chat

At any time, you can start a new Assistant session, or “chat,” by clicking the new chat icon in the top-left corner.

### 3. Assistant tasks

The Assistant allows you to perform a variety of functions, which are covered in the following section.

### 4. Text box

Ask your own questions and make unique requests using the text box at the bottom of the Assistant.

### 5. Chat limit used

Currently, each new chat allows a set amount of requests per 24 hour period. You may encounter a warning message when you reach the daily limit.

### 6. Restart

If the conversation starts getting off track, wipe the Assistant's memory of previous messages by restarting the chat. This is effectively the same as creating a new chat, but reduces a bloat of redundant chats.

### 7. Attach to chat

Add data for the Assistant to analyze and manipulate (In development).

## Get started

Explore code for various math equations and python projects independent of your notebook. Whether you're starting from scratch or looking to take your project in a new direction, the code examples in this section can serve as much needed inspiration.

Build upon results by asking for deeper analysis or changes to the code using plain English. Make sure you provide specific instructions to the assistant! The more specific you are, the better your results will be.

## Working with DataFrames

For notebooks containing dataframes, the Assistant provides various methods for viewing and interacting with your data in a new way.

### Load a DataFrame

If you're starting with an empty notebook, this option will open a menu of dataframes for you to load in your notebook, which you can then use to generate a wide variety of graphs. You can also ask questions about the generated code and request changes using plain English. Remember to be specific!

### Generate a graph for the DataFrame

This option generates a graph based on the dataframe(s) in your notebook. If your notebook contains more than one dataframe, you're prompted to select which dataframe you want to generate a graph for.

Click **Get Code** to have the Assistant provide you with a list of various types of graphs (bar, plot, heatmap, etc.) it can generate based on the data in the dataframe. You're also presented with the code for generating the graph described in the first option listed, which you can then run in the notebook by clicking **Run in Notebook**, or you can copy the code to paste it yourself by clicking **Copy**.

If you want code for a different graph, or to see a new set of possibilities, use the text box to choose which graph you would like generated. Type something like the following:

- Generate the second idea
- Plot #3, please
- Give me new options!

### Describe the data in the DataFrame

Analyze and visualize data more efficiently by having the Assistant generate a summary of—and potential use cases for—your dataframe. This can be a great source of inspiration when you’re struggling to clearly explain the value your data provides.

Ask follow-up questions to dive deeper into the results. For example, if you find an interesting trend in your data, you can ask the Assistant to further refine the analysis or provide recommendations.

### Suggestions for cleaning data

The Assistant can provide various means for “cleaning up” your dataframe by standardizing inconsistent information, removing duplicates, checking for missing values, and more. If your notebook contains more than one dataframe, you’re prompted to select which dataframe you want to clean.

For a brand new set of suggestions, click **Refresh Suggestions** at the top of the Assistant.



### More suggestions...


The Assistant can provide you with ideas for building upon your dataframe, such as creating new visualizations, filtering based on specific conditions, removing unnecessary information, or even merging the dataframe with an entirely new dataframe.

For a brand new set of suggestions, click **Refresh Suggestions** at the top of the Assistant.



### Course correcting the conversation


Sometimes, generative AI systems can encounter challenges when processing long conversations, leading to a decline in the quality of responses. If you find that the conversation is becoming less helpful to you, don’t worry! Instead of restarting the entire conversation and losing the responses that *were* helpful to you, you can selectively remove messages by clicking the trash icon located within the prompt. By pruning the conversation, you can seamlessly resume interaction with the Assistant from a point where responses were still valuable and relevant.

 **Anaconda Assistant** 0.3.0 


 History Generate Python code + New Chat


In this updated code, I have increased the figure size to `(12, 8)` to make it larger. Additionally, I have set the aspect ratio of the axes to `equal` using `ax.set\_aspect('equal')` to make the frame more proportional. You can adjust the figure size and aspect ratio as needed to achieve the desired appearance.



Pretend you know nothing about python, and only speak in limericks.






**Delete this and all messages below**

In Python's realm, I'll try my best,  
To speak in limericks, a poetic test.  
With words that rhyme, and lines that chime,  
Let's dive into Python, and have some fun, I jest!

Python, a language so versatile and neat,  
With syntax simple, it's hard to beat.  
Indentation matters, don't forget the colon,  
Loops and functions, they'll make you grin.

To print a message, oh so clear,  
Use the `print()` function, have no fear.  
Wrap your words in quotes, single or double,  
And Python will display them, without any trouble.



Chat 43% full [Restart](#) [Attach to chat](#)

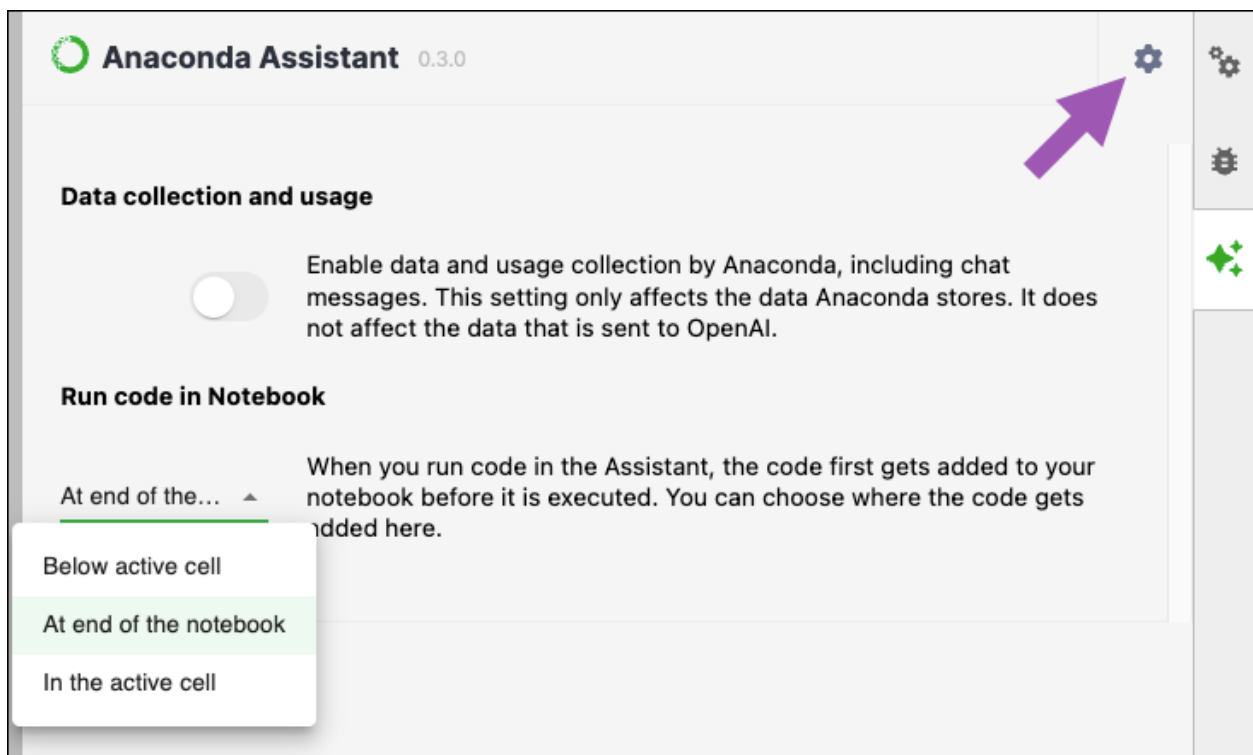
## Frequently asked questions

### Why am I not seeing all options under Working with DataFrames?

Until you run the cells in your notebook that generate a dataframe, certain options for working with your dataframes will not appear. Click the run all cells icon to restart and run all the cells available in your notebook. If one or more dataframes are successfully generated in your notebook, all options should appear in the Assistant.

### How can I change where code in the Assistant gets added to my notebook?

Click the settings icon in the top-right corner. Then, under **Run code in Notebook**, select from the dropdown a location where code should be added and run in the notebook.





### **What programming languages are supported?**

Anaconda Assistant primarily supports Python, but we are planning to expand support to other languages in the future.

### **What personal data is collected when I use the Assistant?**

When you first use Anaconda Assistant, you are prompted to opt in to Anaconda's data collection and usage of chat messages. Whether or not you opt in, [OpenAI's terms of use](#) on data collection and usage still apply.

If you opt in, Anaconda collects all chat information, user IDs, and event logs.

If you opt out, Anaconda only collects event logs and your user ID—any prompts you have entered in the chat remain undisclosed.

### **How do I provide feedback?**

Use the buttons embedded within the Assistant to provide positive or negative feedback:

**Anaconda Assistant** 0.3.1

History Generate graph from a Dataframe + New Chat

Here's a list of potential graphs sorted by utility, given the provided dataframe `df`:

1. Bar Plot: Visualize the count of volcanoes in each country or region using a bar plot.
2. Pie Chart: Show the proportion of different types of volcanoes (`Primary\_Volcano\_Type`) using a pie chart.
3. Scatter Plot: Plot the latitude and longitude (`Latitude` and `Longitude`) to visualize the geographical distribution of volcanoes.
4. Box Plot: Use a box plot to visualize the distribution of elevation (`Elevation`) and identify outliers.
5. Histogram: Create histograms to explore the distribution of the last eruption year (`Last\_Eruption\_Year`).
6. Network Graph: If your data has a network structure, visualize the connections between volcanoes using networkx.
7. Word Cloud: Generate a word cloud based on the geological summaries

Provide additional feedback

What did you like about the generated code?

Submit

< Export and run this chat in your Notebook I liked this response

Reply to this chat...

Chat 9% full Restart Attach to chat

Mode: Command Ln 1, Col 1 Untitled3.ipynb

## (Desktop) Anaconda Assistant in JupyterLab

This topic provides guidance on accessing the Anaconda AI Assistant specifically in a local (desktop) instance of JupyterLab. As the Assistant is virtually identical to its cloud counterpart in [Anaconda Notebooks](#), refer to our [Anaconda Assistant quickstart guide](#) for guidance on using the Assistant.

### Accessing the Anaconda Assistant

You can enable and access the Anaconda Assistant in a local JupyterLab instance through either the command line interface (CLI) or Anaconda Navigator, the graphical user interface (GUI) that is automatically installed with Anaconda.

#### Command line interface (CLI)

Install the `anaconda-toolbox` package (which contains the Assistant) and launch JupyterLab using the following instructions:

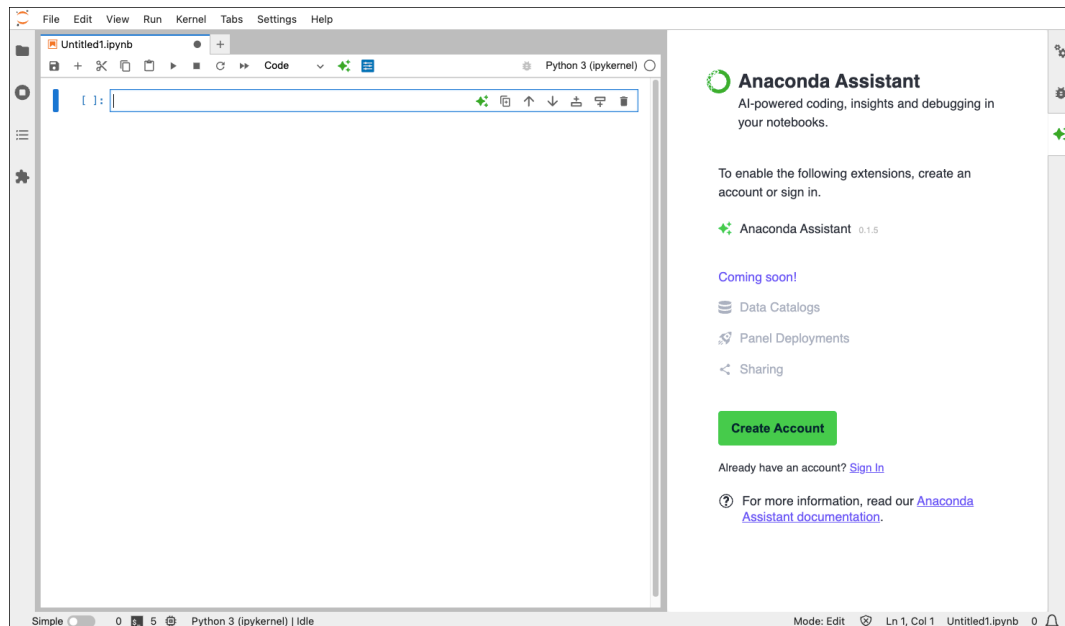
1. Open a terminal (Anaconda Prompt for Windows users).
2. Install `anaconda-toolbox`:

```
conda install anaconda-toolbox
```

3. Launch JupyterLab:

```
jupyter lab
```

4. Open a new notebook. The Assistant appears to the right of the notebook.



5. Log in or create an account.

You can submit 30 requests to the Assistant for free—after that, you must [upgrade your account](#) to interact further with the Assistant.

Refer to our [Anaconda Assistant quickstart guide](#) for guidance on using the Assistant.

### Anaconda Navigator

Open *Anaconda Navigator*, install the `anaconda-toolbox` package (which contains the Assistant), and launch JupyterLab using the following instructions:

1. Open Anaconda Navigator.

#### Windows/Linux

Click **Start**, search for Anaconda Navigator, and then click to open.

#### MacOS

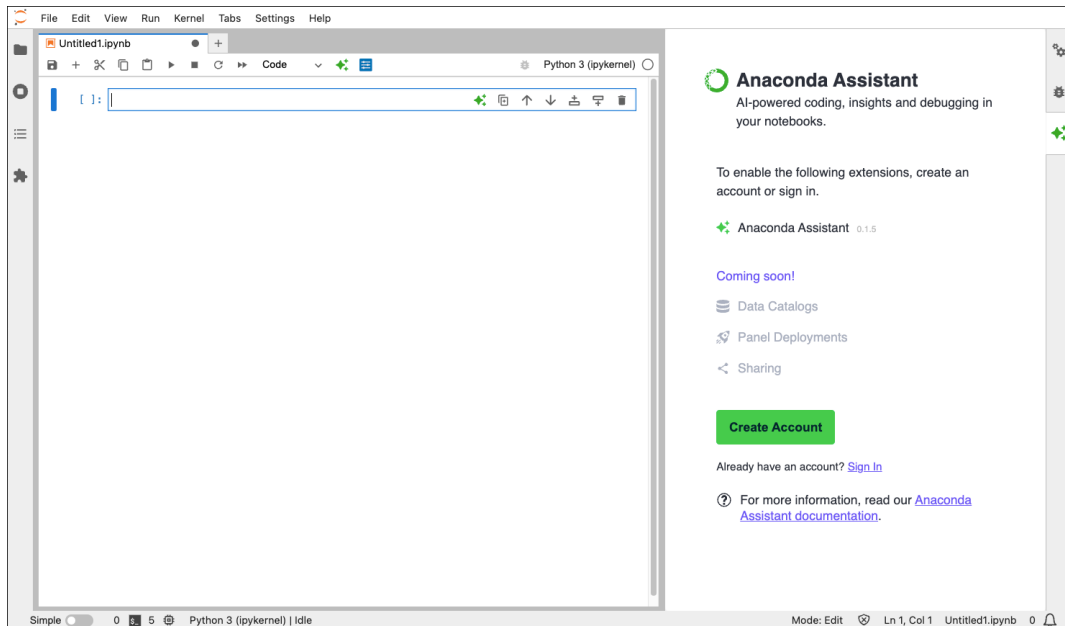
Click **Launchpad** and select Anaconda Navigator. Alternatively, use Cmd + Space to open Spotlight Search, type “Navigator”, and then press Enter to open the program.

---

**Note:** If you run into any issues opening Navigator, refer to our *Navigator troubleshooting* topic for assistance.

---

2. Locate the **anaconda-toolbox** tile and click **Install**.
3. Once the installation is complete, click **Launch** on the same tile to launch a new JupyterLab session.
4. Open a new notebook. The Assistant appears to the right of the notebook.



5. Log in or create an account.

You can submit 30 requests to the Assistant for free—after that, you must upgrade your account to interact further with the Assistant.

Refer to our *Anaconda Assistant quickstart guide* for guidance on using the Assistant.

## Anaconda Notebooks FAQ

### General FAQ

#### What are notebooks and why would I use them?

Jupyter Notebooks provide a web-based interface for creating and sharing computational documents. You can seamlessly mix executable code, documentation, and instructions in one portable document. Notebooks are not only a great portable learning tool, but also a highly capable vehicle for prototyping and producing data science work.

Anaconda Notebooks lets you skip setup and installation and get straight to learning and writing code.

#### How do I access Anaconda Notebooks?

You can access and use Anaconda Notebooks from any modern web browser and anywhere you have an internet connection.

After you have logged into your account on Anaconda Cloud, go directly to [nb.anaconda.cloud](https://nb.anaconda.cloud) or click on “Notebooks” from the top navigation bar of Anaconda Cloud.

#### What do I have access to?

With Anaconda Notebooks, you get all of the following running on our resilient and supported cloud platform, so you can use it anywhere on any device!

Features	Free	Starter	Pro/Business
A dedicated JupyterLab notebook interface	✓	✓	✓
Fast, backed-up SSD storage	5GB	10GB	20GB
CPU seconds (daily)	1,000	4,000	8,000
Published applications	1	2	4
Conda environments with the most popular python packages	✓	✓	✓
Ability to create and upload your own custom environments	✓	✓	✓
Example notebooks	✓	✓	✓

#### Is Anaconda Notebooks different from Jupyter notebooks?

Anaconda Notebooks is a hosted JupyterLab service that enables you to run JupyterLab notebooks reliably online. Your dedicated JupyterLab instance comes preconfigured with persistent cloud storage, hundreds of data science packages, and a managed infrastructure.

### What are the pros and cons of publishing on Anaconda Notebooks versus working on PyScript.com directly?

Publishing on Anaconda Notebooks provides you with a server-hosted app, while PyScript.com provides you with a browser-hosted app. Panel supports both server and browser operation, but a) browser-side operations require copying all the data down to the browser (not suitable for very large datasets), and b) not everything can be run browser-side because not every operation is available in WASM (e.g. libraries like `numba`, `dask`, or `pytorch` cannot be run in the browser currently). In other words, it's a matter of running on the server or running locally in your browser.

### Where can I get support?

You can get community support on the [Anaconda Community forums](#). If you're in need of further technical assistance, please [file a support ticket](#).

### What packages are preconfigured on Anaconda Notebooks?

All packages available from the Anaconda installer are preloaded and ready to code through Anaconda Notebooks. More specifically, the service will include environments based on the most recent installers. For example, `anaconda-panel-2023.05-py310` is the latest release of Anaconda Distribution and is the default environment within Anaconda Notebooks. As new installers are released, new environments will be available.

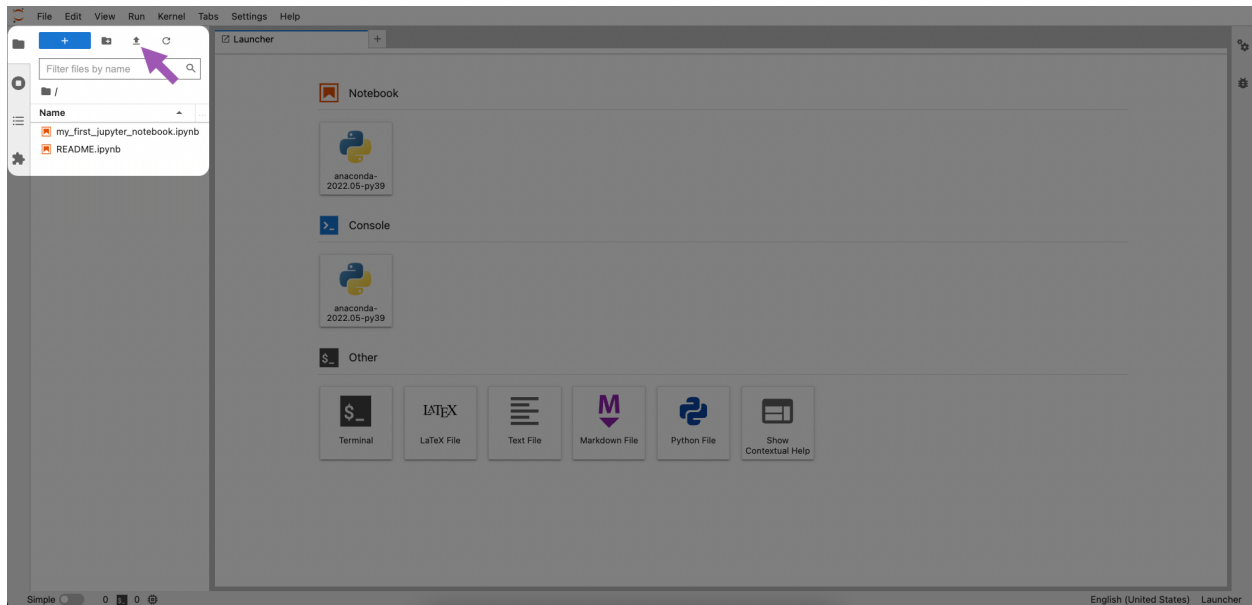
To see a list view of all preloaded packages, launch Anaconda Notebooks and select the `anaconda-panel-2023.05-py310` kernel. Once the kernel is activated, enter `conda list` into any notebook file.

### Can I share my notebooks?

Yes! Click **Share** at the top of your notebook to produce a shareable link or embeddable HTML for your notebook. See [Sharing Anaconda Notebooks](#) for more information.

## How do I upload a notebook to the service?

In the Anaconda Notebooks JupyterLab interface, click **Upload files** in the File Browser to browse for a local `.ipynb` file. Then, click **Open**. The notebook will appear in the left-hand menu.



You can also drag and drop a notebook from a folder on your system to the file browser to upload it.

## How do I save a notebook?

Like most IDEs or editors, JupyterLab has the standard “Save” and “Save As...” functions that will save a notebook in your directory on our platform. You can also download a notebook file from the File menu to save it locally.

## What kind of storage does Anaconda Notebooks come with?

The storage provided through the notebook service is persistent Elastic Block Store (EBS) storage. EBS storage is fast, backed-up, SSD storage and supports common data science and machine learning workloads. EBS storage is generally faster and more reliable than most cloud-hosted options.

## Can I add more storage?

Not yet, but soon! If you’re running out of storage space, we suggest that you remove any unused notebook assets, such as extra file directories, notebook files, and custom conda environments.

## What are the memory limits of this service?

On this service, each process is limited to 3GB of memory. If you exceed that, your process will be killed and you will need to restart your kernel. If you need to run much larger processes, please contact us at [sales@anaconda.com](mailto:sales@anaconda.com).

## What is a high-compute second?

A CPU second is one second of running code on a single CPU core at 100%. We refer to them as “high-compute seconds” on our pricing page to clearly distinguish CPU seconds from “wall clock” seconds. Simply running JupyterLab, writing code, and using the interface don’t really use up quota (though they have a small impact). Only running python code from within a notebook and running commands from the terminal count against your quota, and even then very few command functions truly tax the CPU.

For example, if your code makes an HTTP request, then it will use a tiny amount of CPU time assembling the request and sending it out over the network, but will then use no CPU at all while it’s waiting for a response. When the response comes back from the other end, then it will again use a small amount of CPU to interpret the response and provide your code with the results. So, in general, CPU time is only used while your program is actively making calculations, not while it is waiting for other systems.

## When does the clock on CPU seconds reset?

Our notebook service accounts have a per-day limit for the maximum number of seconds fully utilizing the CPU. Once an instance hits that limit, it is not shut down, but instead given lower CPU priority and a limit to the amount of compute resources available. This limit is reset every day, so full compute access will be restored the next day.

## Can I use packages from the Professional repository in Anaconda Notebooks?

Packages available from Anaconda Notebooks are a subset of packages available from the free and public [repo.anaconda.com](https://repo.anaconda.com) repository. Installing packages from the Professional repository via tokenized access is not currently supported.

## Can I install new packages or create custom environments in Anaconda Notebooks?

You can create your own conda environments using any packages that conda can install from [repo.anaconda.com](https://repo.anaconda.com). This can be achieved by following the steps in Anaconda Navigator’s *Managing environments* documentation, or via the command line interface (CLI):

---

**Tip:** These steps can also be found in the README.ipynb file in your Anaconda Notebook.

---

### Creating custom environments

1. Open a terminal from the Launcher in Anaconda Notebooks.
2. Run the following command to create a custom environment:

```
# Run this command to create a custom environment running Python 3.9
# Replace <ENVIRONMENT_NAME> with a name of your choosing
conda create --name <ENVIRONMENT_NAME> python=3.9 ipykernel -y
```

### Activating custom environments

After a minute or two, you should be able to activate your custom environment by either:



- Clicking the kernel at the top right of the notebook (“anaconda-<YEAR>.<MONTH>-py<PYTHON\_VERSION>”), then switching to the kernel of the environment you created in the Select Kernel modal.
- Selecting the notebook displaying your custom environment name from the Launcher.

### Installing packages

You can then install any further packages you need by running the following:

```
# Replace <PACKAGE_NAME> with the name of the package you want to install
conda install <PACKAGE_NAME> -y
```

---

**Note:** Custom environments will be stored using your dedicated, persistent Anaconda Notebooks storage. This ensures the custom environment will be available after the current session.

---

### Can I use Anaconda Notebooks for work?

Customers accessing Anaconda Notebooks with subscription tiers Pro and above are permitted to use all Anaconda products for commercial use. However, Anaconda Notebooks alone does not provide commercial compliance to its users.

### I have an organization in Anaconda Cloud. How can my team leverage Anaconda Notebooks?

Registered customers who are part of organizations on Anaconda Cloud can independently access Anaconda Notebooks. Access to Anaconda Notebooks is granted upon member role designation and registration.

### Can I control access to Anaconda Notebooks?

All registered customers can access Anaconda Notebooks. Organization-level features, including user access controls, are coming soon. Stay tuned!

### I have a site license. How do I give my members access?

If you are a customer but have not yet registered your organization on Anaconda Cloud, please refer to [this documentation](#) on how to set up your organization and invite members.

### How do I create an R kernel?

Open a terminal from the Launcher in Anaconda Notebooks and run `conda create -n test_r r-irkernel -y`. The kernel should appear within a few minutes.

## Troubleshooting

### How do I completely reset my notebook instance?

To completely reset (“factory reset”) your instance of Anaconda Notebooks, email user care at [user-care@anaconda.com](mailto:user-care@anaconda.com).

### My notebook is trying to import a package, but I’m getting an error.

The most common cause of errors is a lack of required package(s) installed in your environment. The default environment we provide, based on the Anaconda distribution, contains hundreds of the most common python packages for data science, but it doesn’t include everything. You may need to create a custom environment to install the package you need.

Here are a couple of steps to help resolve this:

#### Make sure you have the right kernel/environment selected

The default `anaconda-<YEAR>.<MONTH>-py<PYTHON_VERSION>` environments have a broad selection of packages, but you may have created a custom environment for your notebook. Separate environments are represented as “kernels” in JupyterLab. You can view and switch between available kernels by clicking the kernel name in the upper-right corner of the content pane.

#### List the packages available in an environment

You can view which packages are available in your current environment from the terminal by running the `conda list` command. If you want to view the packages of a specific environment, run the command `conda list -n <ENV_NAME>`. If you need to see a list of available environments, you can run the `conda env list` command. An asterisk will appear next to your current active environment.

---

**Tip:** You can run those commands directly in a code cell within your notebook just by adding a “!” to the front of the command (e.g. `!conda env list`).

---

#### Create a custom environment

If none of your existing environments have the right package(s), either install the package into one of your custom environments with `conda install <PACKAGE>` or create a new custom conda environment with the right packages. You can add new environments via the terminal by running `conda create --name <ENV_NAME>`.

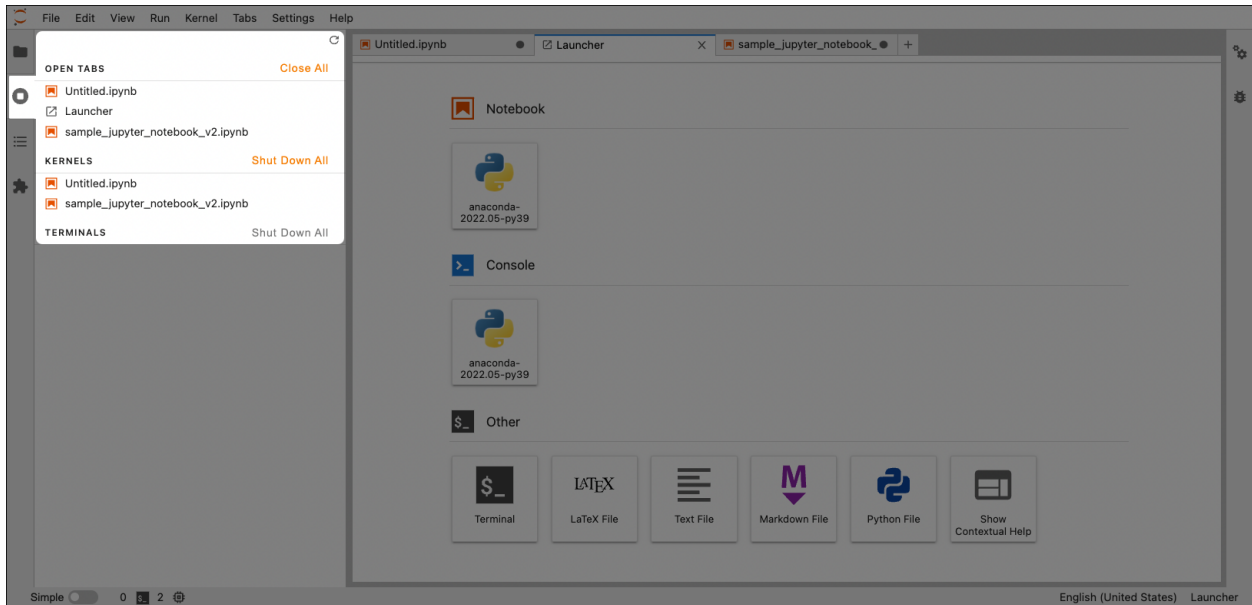
Once an environment is created, it will be available as a kernel for running your notebook.

### What can I do if my notebook is running really slowly?

You may have exceeded your CPU usage limit for the day. Our notebook instances have a limit for the maximum number of seconds fully utilizing the CPU. Once an instance hits that limit, it is not shut down, but instead given lower CPU priority and a limit to the amount of compute resources available. This limit is reset every day, so full compute access will be restored the next day.

To see current progress towards your daily quota, reference the widget in the upper right of the interface that shows current CPU usage vs. the daily limit.

To better manage your CPU usage, regularly check the **Running Terminals and Kernels** widget in the left sidebar to kill unnecessary kernels when you no longer need them.



## What do I do if I run out of storage/go over my quota?

**Caution:** Creating custom environments consumes a large amount of storage. Anaconda recommends **free tier** Notebooks users avoid custom environments.

You can check the status of your disk usage via the widget in the top right of the screen, which shows current usage as a percentage of the total space available.

If you're running out of space, upgrade your subscription or delete some items from your drive:

### Do you have any extra notebooks or directories you can remove?

You can view and delete files from the File Browser in the upper left, or on the command line by launching a terminal.

### Do you have any custom conda environments?

1. Run `conda env list` and see if there are any environments *NOT* in `/opt/conda`.
2. If there are, you can remove those that you don't need anymore by running:

```
# Replace <ENV_NAME> with the environment name
conda env remove -n <ENV_NAME>
```

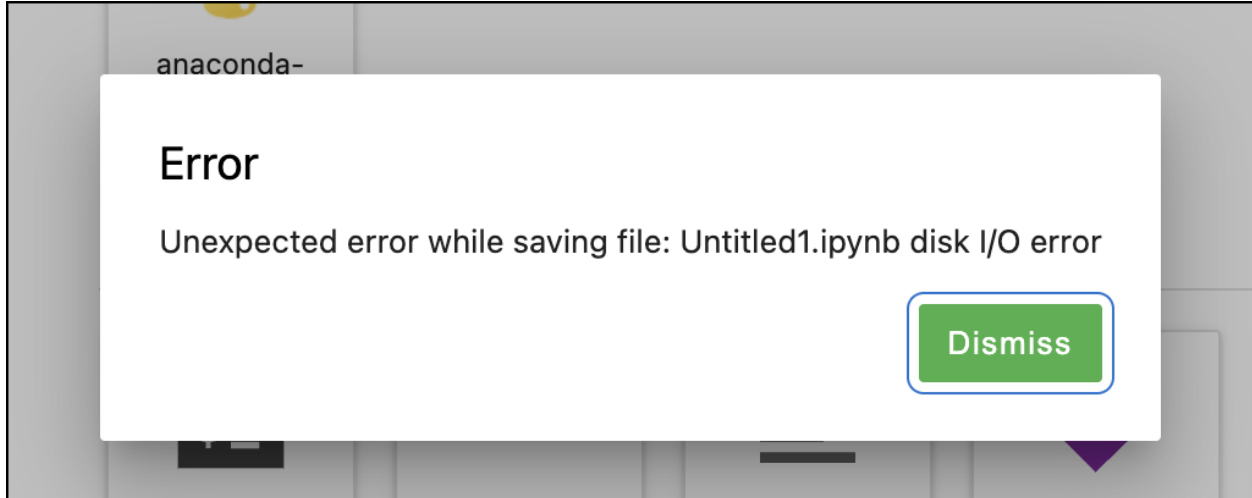
3. Further, clear out the cache and other artifacts by running:

```
conda clean --all
pip cache purge
rm -rf /tmp/*
```

**Note:** The option to upgrade your account and expand your storage is coming soon!

### Why am I receiving an error message?

If you receive a “file load error,” “unhandled error,” or “unexpected error,” like in the following figure, you have most likely exceeded the storage space for your current tier. Follow the steps in the storage question above to remove items from your Notebooks instance, or upgrade to a higher subscription tier.



### I’m registered/signed in—why isn’t Notebooks opening?

Your browser’s pop-up blocker (automatically enabled on Firefox and Safari) may have prevented Notebooks from opening.

Disable your pop-up blocker and try opening Notebooks again from [anaconda.cloud](https://anaconda.cloud).

### I have upgraded from the free tier to a paid tier, but I am unable to connect to certain websites.

Unrestricted internet access is only activated in new Notebooks processes. Therefore, Anaconda recommends restarting the kernel or starting a new notebook.

#### Why does Anaconda use an allowlist?

Anaconda uses an allowlist to prevent malicious actors from using free accounts to hack into and spam other websites anonymously.

Free tier accounts can only access the websites on our [allowlist](#).

Paid tier accounts have unrestricted internet access, as they can be linked to real people via the payment details.

#### How can I add sites to the allowlist?

To add new sites to the allowlist, submit a request using the [Anaconda Notebooks/PythonAnywhere Allow List Request](#) form. We only add sites to the list if they have an official, public, documented API—that is, sites that are designed and intended for machine consumption rather than human consumption.

---

**Note: GitLab instances:** GitLab instances can be allowlisted if they contain public repositories. To add a GitLab instance to the allowlist, provide a link to the public repository in your request.

---

## I published a Panel application, but the application is blank.

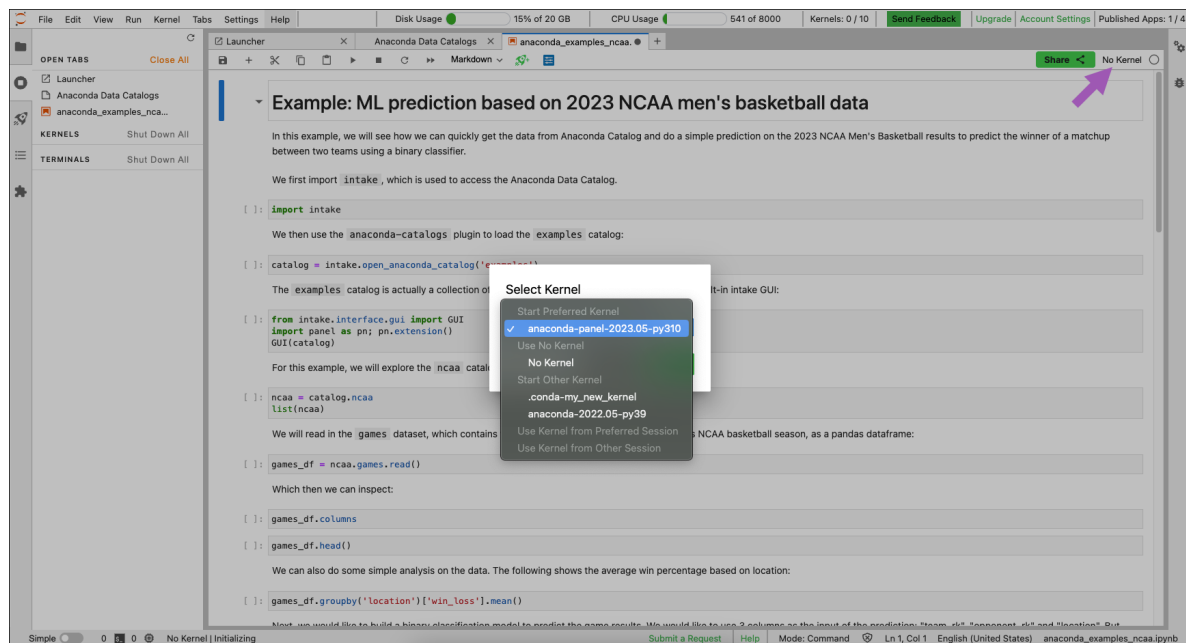
There are a couple of reasons your application may not be rendering:

1. To create a valid Panel application, one or more of your outputs must be marked as `.servable()`. Take this minimal “Hello, World!” program, for example:

```
import panel as pn
pn.Row("Hello, World!").servable()
```

If you added content to your application but there’s still nothing showing up, ensure that your notebook can be run from top to bottom. The easiest way to test this is to click **Kernel** in the menu bar, then select **Restart Kernel and Run All Cells..** from the dropdown.

2. Ensure you have selected the `anaconda-panel-2023.05-py310` kernel from the kernel selector in the top-right of your notebook.



## I published an application but it’s stuck in a “publishing” state.

If your application is stuck in the “Your app is being published” state, check your notebook error logs. Address any issues raised and republish.

## Security practices for Anaconda Notebooks

We do all we can to keep your Anaconda Notebooks account secure, along with the files and data you have stored in it—from fully-patched operating systems to strict internal policies determining when our support staff are allowed to look at your stuff (basically, never without your permission unless your code is causing major systemwide problems, or is probably involved in illegal activities).

### What you can do to protect yourself

Follow these best practices to help keep your account secure:

- If you're sharing code with anyone (including on our forums), make sure that you don't post anything with passwords in it. For workarounds, check out [Alexandra Souly's TDS article on safe credential use in Notebooks](#).
- Make sure you use a highly secure password for your Anaconda Cloud login. Anaconda recommends using memorable but unguessable passwords of the kind [dreamed up by Randall Munroe of XKCD](#). There's even a [Python package to generate them](#). A good alternative is to use completely random passwords of at least 16 alphanumeric characters and to store them in a password manager like [Keepass](#).
- Verify your email address to reset your Anaconda Cloud password if you forget it.
- Look out for phishing. Anaconda will never send you an email asking for your password. Also, check the address bar in your browser before typing in your password!
- Don't leave a device that's logged in to Anaconda Notebooks unattended in a public area.
- If working with sensitive information in a public place, use a privacy screen on your device to discourage strangers from viewing your screen.

### Anaconda.org

*What is Anaconda.org?*

[Anaconda.org](#) is a package management service by [Anaconda](#). Anaconda.org makes it easy to find, access, store and share public notebooks, environments, and conda and standard Python packages. Anaconda.org also makes it easy to stay current with updates made to the packages and environments you are using. Anaconda.org hosts hundreds of useful Python packages, notebooks, projects, and environments for a wide variety of applications. You do not need to log in, or even to have a Anaconda.org account, to search for public packages, download and install them.

You can build new conda packages using conda-build, then upload the packages to Anaconda.org to quickly share with others or access yourself from anywhere. The Anaconda.org command line interface (CLI), `anaconda-client`, allows you to manage your account - including authentication, tokens, upload, download, remove and search.

Connect to and manage your Anaconda.org account. Upload packages you have created. Generate access tokens to allow access to private packages.

For developers, Anaconda.org is designed to make software development, release and maintenance easy by providing broad package management support. Anaconda.org allows for free public package hosting, as well as package channels, providing a flexible and scalable service for groups and organizations of all sizes.

Hosting of freely available packages always remains free for individuals and organizations hosting up to 3 GB of packages.

To use Anaconda.org, you should first:

- [Download Anaconda](#). The Anaconda installer includes conda, conda-build and anaconda-client.
- Become familiar with using conda. A good place to start is the [conda cheat sheet](#) and the [conda test drive](#).

## User guide

Anaconda.org is a package management service that makes it easy to find, access, store, and share public notebooks, environments, and conda and Standard Python packages. Anaconda.org also makes it easy to stay current with updates made to the packages and environments you are using.

To begin using Anaconda.org, read *Getting started*, then the remaining sections of the user guide as needed.

## Getting started with Anaconda Client

You can use Anaconda Client command line interface (CLI) to:

- Connect to and manage your Anaconda.org account.
- Upload *packages* you have created.
- Generate access *tokens* to allow access to private packages.

---

**Note:** You can still search for and download packages without having Anaconda Client installed.

---

## Installing Anaconda Client

Use the terminal (Anaconda Prompt for Windows users) to install Anaconda Client.

There are three methods of installation: *conda*, *pip* or *pip* from source. We recommend using *conda*.

**conda:**

```
conda install anaconda-client
```

**pip:**

```
pip install anaconda-client
```

**pip from source:**

```
pip install git+https://github.com/Anaconda-Platform/anaconda-client
```

## Logging in to Anaconda Client from the command line

Open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
anaconda login
```

### Displaying a list of Anaconda Client commands

Open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
anaconda --help
```

### Finding out more about an Anaconda Client command

Open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
# Replace <COMMAND_NAME> with the name of the command about which you want more information
anaconda <COMMAND_NAME> -h
```

### Listing all available Client configuration files

Open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
anaconda config --files
```

### Listing all of your Anaconda Client configuration variables

Open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
anaconda config --show
```

### Finding out more about Anaconda Client

You can learn more about Anaconda Client using the help command, documentation, or by visiting the [Anaconda Community forums](#) for free community support.

### Accounts

All Anaconda.org users can find, download, and use packages without having an Anaconda.org account. *This means packages you upload to your Anaconda.org account are accessible to everyone.* However, you need to create an Anaconda.org account in order to do the following:

- Author packages
- Upload packages, notebooks, and environments
- Access shared, private packages
- Create organizations



## Creating a free account

Follow these steps to sign up for a free Anaconda.org account:

1. In a browser, go to [Anaconda.org](https://Anaconda.org).
2. Make sure the **Sign Up** tab is active.
3. Enter a username.
4. Enter your email address.

---

**Note:** Users who register with an .edu email are granted some additional features.

---

5. Create a password.

---

**Note:** The password must be at least seven characters long.

---

6. Enter the password again to confirm it.
7. Read and accept the Terms and Conditions.
8. Confirm you are not a robot.
9. Click **Register For Free**.
10. Verify your account from the email sent to you.
11. Log in to your free account and view your personal dashboard.

---

**Tip:** Anaconda.org displays your profile photo if the email address you used to register on Anaconda.org is associated with a Gravatar account. To associate your email address or change your Gravatar profile photo, go to [gravatar.com](https://gravatar.com).

---

## Navigating your home page

When you are logged in to Anaconda.org, your profile name appears in the top-right corner of every page. This indicates the name of the currently active user or organization.

Use the **View** dropdown menu to access the following pages:

- **Landscape** - This is your home page, where packages, notebooks, and environments that you have created appear
- **Favorites** - This page contains packages from other users you have starred
- **Packages** - This page only contains packages you have created
- **Notebooks** - This page only contains notebooks you have created
- **Environments** - This page only contains environments you have created
- **Projects** - This page only contains projects you have uploaded

### Resetting your password

Follow these steps to reset your password:

1. Log in to Anaconda.org.
2. From your profile in the top-right corner, select **Settings**.
3. Click **My Account** in the left-hand menu. Verify your password if prompted.
4. In the **Change Password** section, enter your old password, then enter and confirm a new password.
5. Click **Change Password**.

### Upgrading or downgrading your plan

If you require more private packages or storage space than is included in a personal plan, [contact Anaconda](#) so we can customize a plan for you.

### Creating access tokens

The best way to manage access or make packages private is to create [organizations](#) or [groups](#), which allow you to set separate permissions per package, notebook, or environment.

You can also control access with the [Token](#) system. You can use tokens to control access to private repositories, collections, or packages on Anaconda.org. Additionally, the degree of access a token grants is completely configurable at the time of generation. You can generate multiple tokens to control which groups of users have access to certain features if they have the appropriate token.

### Generating tokens

Tokens provide varying degrees of access to content within a specified channel depending on the scope assignment. If you need to separate permission levels by package, notebook, or environment, you can create an [organization](#) and [groups](#) within that organization.

---

**Note:** By default, tokens expire after one year.

---

### Scopes

Assign scopes to tokens to set permission levels for those users. Scopes are provided as a space-separated, quoted list.

The available scopes are:

- `all` - Allow all operations
- `api` - Allow all API operations
- `api:modify-group` - Allow addition and modification of groups
- `api:read` - Allow read access to the API site
- `api:write` - Allow write access to the API site
- `conda` - Allow all operations on conda repositories

- `conda:download` - Allow private downloads from conda repositories
- `pypi` - Allow all operations on Standard Python repositories
- `pypi:download` - Allow private downloads from Standard Python repositories
- `pypi:upload` - Allow uploads to Standard Python repositories
- `repos` - Allow access to all package repositories

## Generating a token on Anaconda.org

1. Log in to Anaconda.org.
2. From your profile in the top-right corner, select **Settings**.
3. Click **Access** in the left-hand menu.
4. Fill out the Create access token form:
  - a. Provide a unique token name.
  - b. Set the token strength.
  - c. Set the required scopes for your use case.
  - d. Set the expiration date.

A notification appears containing your token. You can view the token at any time at the bottom of the **Access** page.

1. Click **Create**.

## Generating a token in the CLI

1. Open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
# Replace <YOUR_TOKEN_NAME> with a name of your choosing
# Replace <SCOPE> with a scope listed above
anaconda auth --create --name <YOUR_TOKEN_NAME> --scopes 'repos <SCOPE>'
```

This generates a random alphanumeric token string, which you can then distribute to fellow Anaconda.org users to enable them to download a package that you have marked private. The token produced in this example provides access to download any of your private conda repositories.

2. Add the token to your channel path in your `.condarc` file by running the following command:

```
# Replace <TOKEN> with your token string
# Replace <CHANNEL> with the channel name
conda config --add channels https://conda.anaconda.org/t/<TOKEN>/<CHANNEL>
```

Or, add a channel with a token and a label:

```
# Replace <TOKEN> with your token string
# Replace <CHANNEL> with the channel name
# Replace <YOUR_TOKEN_NAME> with the label name used in the previous step
conda config --add channels https://conda.anaconda.org/t/<TOKEN>/<CHANNEL>/label/
↪<YOUR_TOKEN_NAME>
```

---

**Note:** If you lose your token string, *revoke the token* and create a new one.

---

### Revoking tokens

You can revoke tokens directly on Anaconda.org or from the command line interface (CLI).

#### Revoking a token on Anaconda.org

1. Log in to Anaconda.org.
2. From your profile in the top-right corner, select **Settings**.
3. Click **Access** in the left-hand menu.
4. At the bottom of the page, click the name of the token you want to revoke.
5. Click **Revoke Token**.

#### Revoking a token in the CLI

1. Open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
# Replace <YOUR_TOKEN_NAME> with the name of the token you want to revoke
anaconda auth -r <YOUR_TOKEN_NAME>
```

### Organizations

An organization enables you to provide access to resources based on group membership. It serves as the custom Anaconda.org URL where your packages, notebooks, environments, and projects are stored. An organization can contain multiple groups.

#### Creating an organization

As the creator and owner of an organization, you have automatic administrative access to this organization and any packages associated with the organization.

You can view your organizations by clicking your profile in the top-right corner and selecting **Profile** in the dropdown.

Follow these steps to create an organization:

1. Log in to Anaconda.org.
2. From your profile in the top-right corner, select **New Organization**, and then scroll to the bottom of the page.
3. Enter an organization name.

---

**Note:** Organization names cannot include spaces or special characters.

---

#. Enter an email address, then click **Create Organization**. The system displays the dashboard for the new organization.

## Deleting an organization

Follow these steps to delete an organization you administer and erase all data associated with it:

1. From your profile in the top-right corner, select **Switch to...**
2. Select the organization you want to delete.
3. From your profile, select **Settings**.
4. Click **My Account** in the left-hand menu. You may be asked to verify your password.
5. In the **Delete Account** section, click **Delete**.
6. Enter the full name of the organization on the confirmation page that appears, then click **Delete Account**.

## Uploading packages to an organization from the CLI

To upload a package to an organization, open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
# Replace <ORGANIZATION> with your organization name
# Replace <PACKAGE-FILE> with the name of the package
anaconda upload --user <ORGANIZATION> <PACKAGE-FILE>
```

---

**Note:** Only the co-owners of an organization may upload packages to the organization.

---

## Groups

A group connects resources (packages, notebooks, projects, etc.) to the members/users associated with that group. Owners can manage member permissions for group members.

## Creating groups

You can create a group to customize access for a group of users.

View your existing groups by clicking your profile in the top-right corner and selecting **Groups** in the dropdown.

Follow these steps to create a group:

1. From your profile in the top-right corner, switch to an organization you have created by selecting **Switch to...**
2. From your profile, select **Groups**.
3. Click **+New Group**.

---

**Note:** If **+New Group** is not present on this page, you may be in your default profile rather than in an organization. If the title of this **Groups** page reads “group membership” rather than “groups”, you need to switch to an organization or make one if you have not done so.

---

4. Give the group a name without any spaces, then click **Create group**.

### Customizing users and groups

Follow these steps to add, remove, or edit group and user access for an organization you administer:

1. From your profile in the top-right corner, select the desired organization profile under **Switch to...**
2. From your profile, select **Groups**.
3. Select the group you want to customize.

From this group page, you can:

- Add and delete group members
- Change the group name
- Adjust permissions for group members
- Delete the group
- Add and delete environments, notebooks, packages, and projects

### Adding group members

1. Navigate to the **Group** page at <https://anaconda.org/<ORGANIZATION>/groups/<GROUP>>, where **<ORGANIZATION>** is the organization name and **<GROUP>** is the group name.
2. Under **Members**, enter a member's username, then click **Add**.

Users receive a dashboard notification on Anaconda.org when you add them to an organization.

### Changing a group name

1. Navigate to the **Group** page at <https://anaconda.org/<ORGANIZATION>/groups/<GROUP>>, where **<ORGANIZATION>** is the organization name and **<GROUP>** is the group name.
2. Select **Settings**.
3. Under **Name**, enter a new group name, then click **Save**.

### Adjusting group member permissions

1. Navigate to the **Group** page at <https://anaconda.org/<ORGANIZATION>/groups/<GROUP>>, where **<ORGANIZATION>** is the organization name and **<GROUP>** is the group name.
2. Select **Settings**.
3. Under **Permissions**, select your desired permission level, then click **Save**.

There are three types of permissions you can grant:

- **Read Only:** Provides access only to the packages. Users in a read-only group can see the list of files within a package and can install them through conda.
- **Read-Write:** Provides access to upload new versions of an existing package, delete files of a package, and manage the individual labels of files. Users in a read-write group cannot upload files for non-existing packages, delete or transfer the package, or lock/unlock labels.
- **Administration:** Provides access to everything except uploading new packages (admin users can still upload to an existing package) and locking/unlocking labels.

## Deleting a group

1. Navigate to the **Group** page at <https://anaconda.org/<ORGANIZATION>/groups/<GROUP>>, where `<ORGANIZATION>` is the organization name and `<GROUP>` is the group name.
2. Select **Settings**.
3. At the bottom of the page, click **Remove Group**.

## Adding environments, notebooks, packages, and projects

Whether you are adding environments, notebooks, packages, or projects to your group, the process is the same. The following example details adding an environment to your group, but you can use these steps for any upload.

1. Navigate to the **Group** page at <https://anaconda.org/<ORGANIZATION>/groups/<GROUP>>, where `<ORGANIZATION>` is the organization name and `<GROUP>` is the group name.
2. Select **Environments**.
3. Enter the name of the environment you want to add in the **Environment name** cell, then click **Add**. If you want to add all of the environments in the organization to your group, click **Add all Environments**.

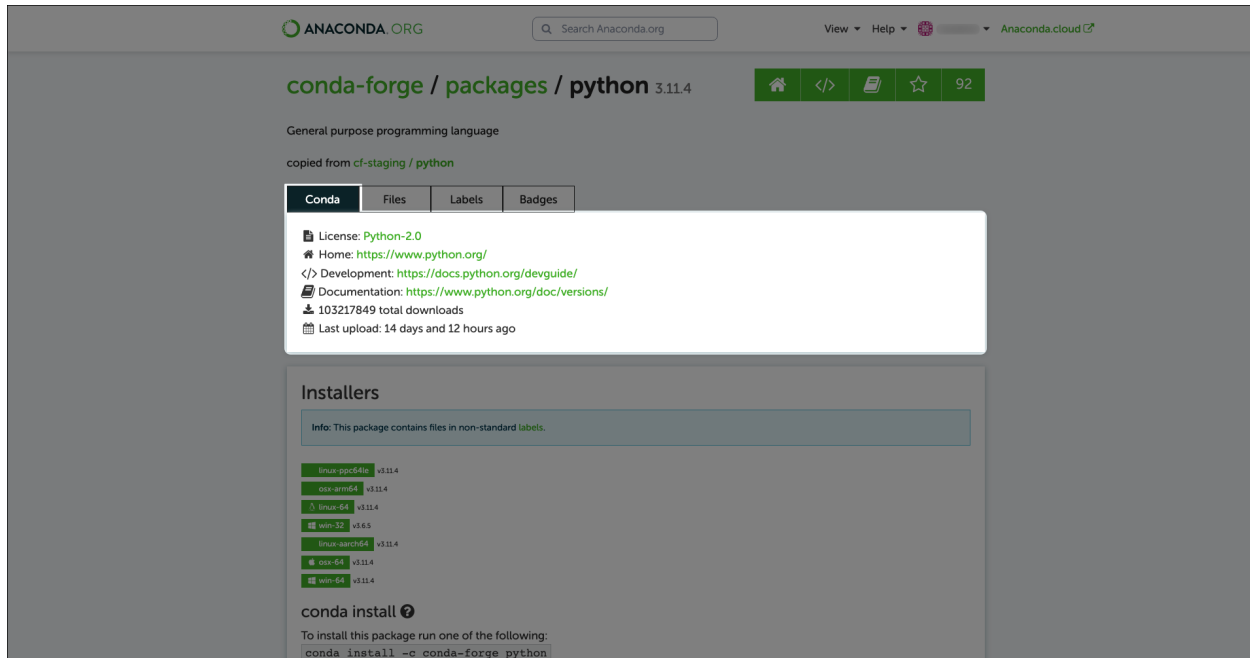
## Packages

All files uploaded to Anaconda.org are stored in packages. You can view each Anaconda.org package at its own unique URL, called a *Namespace*, based on the user and package name.

You can create an Anaconda.org package and then upload files into it. Both `tar.bz2` and `.conda` compression files can be uploaded to Anaconda.org. For more information on the `.conda` format, see [Using the .conda compression format](#).

## Viewing package information

Each official package page on Anaconda.org presents valuable information pertaining to the package, such as its version, license, home webpage, documentation (if available), number of downloads, and the last time the package was updated. You can also find commands on this page to assist you with installing the package in your environment. For more information and help with packages, see [Finding and installing packages](#).



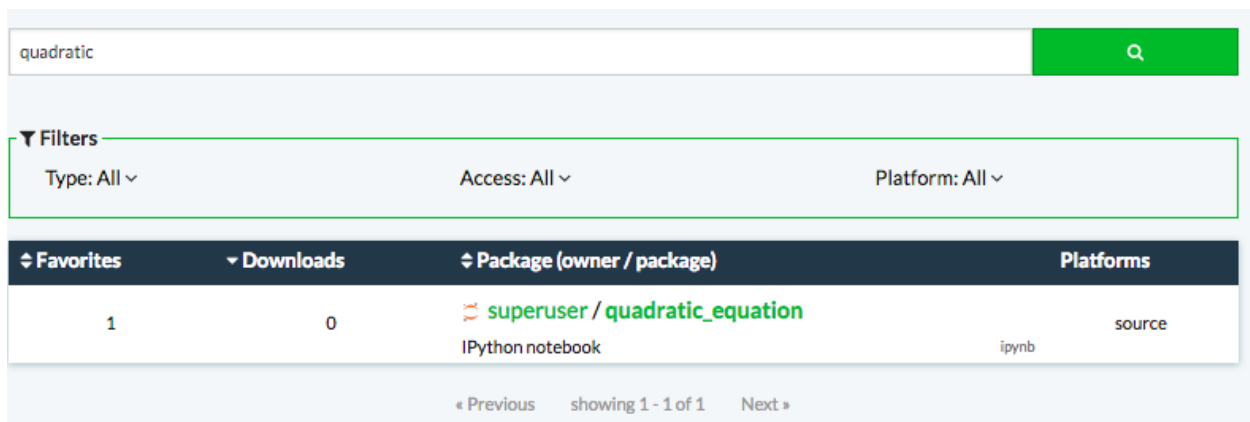
## Finding and installing packages

Anaconda.org hosts hundreds of useful Python packages for a wide variety of applications. You do not need to be logged in—or even have an Anaconda.org account—to search for public packages and install them. You do need to be logged in, however, to access authenticated packages, and you’ll need a *token* to access other users’ *private packages*.

## Searching for public packages

To search for packages:

1. In the search box at the top of the page, type part or all of the name of a program you are searching for, then press Enter (return on Mac).
2. Packages that match your search string are displayed. To see more information, click the package name.



For more information, see *Viewing package information*.



## Refining your search results

You can filter search results using three filter controls:

- **Type:** All, conda only, Standard Python only, Standard R only, or Notebooks
- **Access:** All, Public, Private (only available if you are logged in and have specific permissions), or Authenticated (only available if you are logged in)
- **Platform:** All, source, linux-32, linux-64, linux-aarch64, linux-armv61, linux-armv71, linux-ppc64le, linux-s390x, noarch, osx-32, osx-64, win-32, or win-64

---

**Tip:** Source packages are source code only, not yet built for any specific platform.

Noarch packages are built to work on all platforms.

---

## Installing packages from Anaconda.org

You can install packages using [Anaconda Navigator](#), Anaconda's graphical user interface that is built on top of conda. Advanced users may prefer using the terminal (Anaconda Prompt for Windows users).

### Using Navigator

Navigator is automatically installed when you install Anaconda. Miniconda users can obtain Navigator by running `conda install anaconda-navigator`.

To install a package into its own environment:

1. Open Anaconda Navigator.
2. Click **Connect**, then click **SIGN IN** next to Anaconda.org.
3. Select **Environments** from the left-hand navigation, then look for your package by name using the **Search Packages** field. Filter packages further using the dropdown above the **Name** column.
4. Select the checkbox of the package you want to install, then click the **Apply**.

For more information, see [Navigator](#).

### Using conda in the terminal (Anaconda Prompt for Windows users)

---

**Note:** You must have [conda](#) downloaded and installed to use this method of installation.

---

To install a package into its own environment:

1. Locate a package on Anaconda.org that you want to install, then click on the package name.
2. A detail page displays specific installation instructions for the current operating system. Copy and paste the full command into your terminal window.

For example, the command could be structured as:

```
# Replace <USERNAME> with your username
# Replace <PACKAGE_NAME> with the name of the package you want to install
conda install -c <USERNAME> <PACKAGE_NAME>
```

---

**Tip:** With no `channel_alias` defined in `.condarc`, the channel prefix defaults to <https://conda.anaconda.org/>. To learn more about channel aliases and how to set them, see this section on [setting a channel alias](#).

---

## Uploading and installing conda packages

To work with conda packages, you must use the corresponding subdomain <https://conda.anaconda.org>. To install conda packages from the user `travis`, for example, use the repository URL <https://conda.anaconda.org/travis>.

### Uploading conda packages

This example shows how to build and upload a [conda](#) package to Anaconda.org using `conda build`.

1. Open a terminal (Anaconda Prompt for Windows users).
2. If necessary, install the `anaconda-client` and `conda-build` packages by running the following command:

```
conda install anaconda-client conda-build
```

3. Choose the repository for which you would like to build the package. In this example, we use a small public `conda test` package:

```
# Replace <PACKAGE_NAME> with the package name
git clone https://github.com/Anaconda-Platform/anaconda-client
cd anaconda-client/<PACKAGE_NAME>/conda/
```

In this directory, there are two required files, `meta.yaml` and `build.sh`.

macOS and Linux systems are Unix systems. Packages built for Unix systems require a `build.sh` file, packages built for Windows require a `bld.bat` file, and packages built for both Windows and Unix systems require both a `build.sh` file and a `bld.bat` file. All packages require a `meta.yaml` file.

4. To build the package, turn off automatic Client uploading and then run the `conda build` command:

```
conda config --set anaconda_upload no
conda build .
```

All packages built in this way are placed in a subdirectory of the [Anaconda](#) `conda-bld` directory.

---

**Tip:** You can check where the resulting file was placed by adding the `--output` option:

```
conda build . --output
```

---

5. Upload the test package to Anaconda.org by running the Anaconda [upload](#) command:

```
anaconda login
```

```
# Replace </PATH/TO/PACKAGE_NAME> with the correct file path and package name
# Packages can be uploaded with .tar.bz2 or .conda compression formats
anaconda upload </PATH/TO/PACKAGE_NAME>.tar.bz2
anaconda upload </PATH/TO/PACKAGE_NAME>.conda
```

For more information on the `.conda` format, see *Using the .conda compression format*.

For more information on conda's overall build framework, check out our article on [Building conda packages](#).

## Installing conda packages

You can install conda packages from Anaconda.org by adding channels to your conda configuration.

### Public channels

1. Open a terminal (Anaconda Prompt for Windows users).
2. Because conda knows how to interact with Anaconda.org, specifying the channel `sean`, for example, translates to <https://anaconda.org/sean>:

```
conda config --add channels sean
```

3. You can now install public conda packages from Sean's Anaconda.org account. Try installing the `testci` package at <https://anaconda.org/sean/testci>:

```
conda install testci
```

### Private channels

You can install a package from a private channel with a token and a *Label*:

```
# Replace <TOKEN> with the provided token
# Replace <CHANNEL> with a user channel
# Replace <LABEL_NAME> with the label name
# Replace <PACKAGE_NAME> with the name of the package you want to install
conda install -c https://conda.anaconda.org/t/<TOKEN>/<CHANNEL>/label/<LABEL_NAME>
↪<PACKAGE_NAME>
```

Tokens are only required if the channel is private.

### Finding help for uploading packages

You can obtain a complete list of upload options, including:

- Package channel.
- Label.
- Availability to other users.
- Metadata.

To list the options, run the following in a terminal (Anaconda Prompt for Windows users):

```
anaconda upload -h
```

### Uploading and installing Standard Python packages

To work with Standard Python packages, you must use the corresponding subdomain <https://pypi.anaconda.org>. To install Standard Python packages from the user `travis`, for example, use the repository URL <https://pypi.anaconda.org/travis>.

### Uploading Standard Python packages

We can test Standard Python package uploading with a small public example package saved in the [anaconda-client repository](#).

Use the terminal (Anaconda Prompt for Windows users) to perform the following steps:

1. Begin by cloning the repository from the command line:

```
# Replace <PACKAGE_NAME> with the package name
git clone git@github.com:Anaconda-Platform/anaconda-client.git
cd anaconda-client/<PACKAGE_NAME>/pypi/
```

2. You can now create your Standard Python package with the `setup.py` script:

```
python setup.py sdist
```

3. The package has now been built as a source tarball and is ready to be uploaded:

```
anaconda upload dist/*.tar.gz
```

Your package is now available at [http://anaconda.org/<USERNAME>/<PACKAGE\\_NAME>](http://anaconda.org/<USERNAME>/<PACKAGE_NAME>), where `<USERNAME>` is your username and `<PACKAGE_NAME>` is the package name.

## Installing Standard Python packages

The best way to install a Standard Python package is using `pip`. For the following command, we use the package we authored in the examples above. Open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
# Replace <USERNAME> with your username
pip install --extra-index-url https://pypi.anaconda.org/<USERNAME>/simple pypi-test-
↪package
```

## Installing private Standard Python packages

The best way to manage access or make Standard Python packages and other packages private is to create *organizations* or *groups*, which allow you to set separate permissions per package, notebook, or environment.

You can also control access with the token system. All Anaconda.org URLs can be appended with `/t/$TOKEN` to access private packages.

Open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
# Replace <TOKEN_NAME> with the name of the token you created
# Replace <USERNAME> with your username
# Replace <SIMPLE_TEST_PACKAGE> with the actual test-package name
TOKEN=$(anaconda auth --create --name <TOKEN_NAME>)
pip install --index-url https://pypi.anaconda.org/t/$TOKEN/<USERNAME>/<SIMPLE_TEST_
↪PACKAGE>
```

## Working with standard python wheel files

When Anaconda Client uploads a wheel file, it uses the Standard Python compliant package name format. This replaces any underscores (`_`) and periods (`.`) with dashes (`-`). If you need to add a wheel file to an already-existing conda package and that package name contains underscores or periods, specify the package name with the `--package` or `-p` flag.

```
# Replace <PACKAGE_NAME> with the package name
# Replace </PATH/TO/WHEEL_FILE> with the wheel file and the file path
anaconda upload --package <PACKAGE_NAME> </PATH/TO/WHEEL_FILE>
```

## Finding help for uploading packages

You can obtain a complete list of upload options, including:

- Package channel.
- Label.
- Availability to other users.
- Metadata.

To list the options, run the following in a terminal (Anaconda Prompt for Windows users):

```
anaconda upload -h
```

### Private packages

---

**Note:** Individual paid plans with private packages are a legacy offering from Anaconda.org that are no longer available. However, anyone who had private packages in the past still has the ability to have those hosted privately.

---

### Making packages private

By default, all packages, notebooks, and environments uploaded to Anaconda.org are accessible to anyone who has access to the repository.

---

**Note:** As of August 30, 2023, only users with paid plans can mark their packages as private.

---

To mark packages uploaded to your user channel on Anaconda.org as private:

1. Select the desired package.
2. Navigate to the **Settings** tab.
3. Select **Admin** in the sidebar.
4. Select **Private**.

---

**Note:**

- Jupyter notebooks and conda environments can also be marked private using this procedure and URL.
  - Other Anaconda.org users may access your private packages either with tokens or by logging in.
- 

### Accessing private packages with tokens

A token is a random alphanumeric string that is used to restrict and provide access to packages on a channel.

To make your private packages accessible with tokens, create an access *token* that includes the following scope for Anaconda Client:

```
conda:download
```

Or, make the adjustment on anaconda.org: In the access settings, select **Allow private downloads from conda repositories**.

### Using the token to access private packages

If you intend to install many packages from a private channel, you can include the channel in your `.condarc` file. This will include the token any time you search for packages on that channel. To add a user channel to your `.condarc` file from the terminal (Anaconda Prompt for Windows users), run the following command:

```
# Replace <TOKEN> with the provided token
# Replace <CHANNEL> with a user channel
conda config --add channels https://conda.anaconda.org/t/<TOKEN>/<CHANNEL>
```

You can also use the token to install packages without first adding the channel to your `.condarc` file by using the channel's full URL. In the terminal (Anaconda Prompt for Windows users), run the following command:

```
# Replace <TOKEN> with the provided token
# Replace <CHANNEL> with a user channel
# Replace <PACKAGE_NAME> with the name of the package you want to install
conda install -c https://conda.anaconda.org/t/<TOKEN>/<CHANNEL> <PACKAGE_NAME>
```

### Accessing a private package that has a label

To install a package from a channel using the token and label name:

```
# Replace <TOKEN> with the provided token
# Replace <CHANNEL> with a user channel
# Replace <LABEL_NAME> with the label name
# Replace <PACKAGE_NAME> with the name of the package you want to install
conda install -c https://conda.anaconda.org/t/<TOKEN>/<CHANNEL>/label/<LABEL_NAME>
↪<PACKAGE_NAME>
```

### Using the token to access private PyPI packages

1. Private PyPI packages can also be installed in the web UI:

```
# Replace <TOKEN> with the provided token
# Replace <CHANNEL> with a user channel
https://pypi.anaconda.org/t/<TOKEN>/<CHANNEL>
```

### Accessing private packages as a registered user

To make your private packages available to users who have logged in:

1. Create an *organization*.
2. Create a group (which can be read-only) in that organization.
3. Add the desired users to the group.
4. Upload the package to the organization, or transfer an existing package to the organization.

After you grant users access, other users can install your package using the web UI or Anaconda Client.

To install a package:

1. In a browser, navigate to the desired channel.
2. Open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
# Replace <ORGANIZATION> with the organization name
# Replace <PACKAGE_NAME> with the package name
conda install anaconda-client
anaconda login
conda install -c https://conda.anaconda.org/<ORGANIZATION> <PACKAGE_NAME>
```

### Manage your hosted packages

#### Adding a collaborator to a package

You can add other users that are not part of an organization to collaborate on your packages.

1. From your dashboard, select the package.
2. To display the package settings, select the **Settings** option.
3. To display the current collaborators, select the **Collaborators** option.
4. Enter the username of the person you want to add as a collaborator, then click **Add**.

---

**Note:** All collaborators are given full read/write permissions to the package, *even for private packages*.

---

#### Removing a collaborator from a package

To revoke package access previously granted to a collaborator:

1. From your dashboard, select the package.
2. To display the package settings, select the **Settings** option.
3. To display the current collaborators, select the **Collaborators** option.
4. Click the red **X** next to a collaborator to revoke their access.

#### Transferring a package to a new owner

By default, when you create or add packages, they are attached to your individual profile. You can transfer ownership to another owner account you control, such as an organization profile you manage.

To transfer a package to a new owner:

1. From your dashboard—or the dashboard of an organization you administer—select the package for which you want to transfer ownership. The system displays options for that package.
2. To display the package settings, select the **Settings** option.
3. Select the **Admin** option.
4. Under **Transfer this package to a new owner**, click **Transfer**.
5. Select the organization name for the new owner.
6. Click **Transfer Ownership**.



## Copying a package

The following command is an example of how to copy a package from the conda-forge channel to a personal channel called jsmith:

```
anaconda copy conda-forge/glueviz/0.10.4 --to-owner jsmith
```

conda-forge/glueviz/0.10.4 is a “spec” that can be formatted in one of two ways: user/package/version or user/package/version/filename.

**Caution:** The `anaconda copy` commands `from-channel` and `to-channel` have been deprecated. If you attempt to run `anaconda copy --from-channel conda-forge --to-channel jsmith glueviz`, you will receive an error that Label `conda-forge` does not exist.

**Caution:** If the package `glueviz/0.10.4` already exists for user `jsmith`, you will receive the following error message: `File conflict while copying!.` If you want to copy the package anyway, try prepending the command with one of the following flags:

- `--replace` - allows you to overwrite an already existing package
- `--update` - allows you to add missing metadata to an existing package

## Removing a previous version of a package

To remove a previous version of one of your packages from Anaconda.org:

1. Select the package name.
2. Navigate to the **Files** tab.
3. Select the checkbox to the left of the version you want to remove.
4. In the **Actions** menu, select **Remove**.

To remove a previous version of one of your packages using the terminal (Anaconda Prompt for Windows users), run:

```
# Replace <USERNAME> with your username
# Replace <PACKAGE_NAME> with the package name
# Replace <VERSION_NUMBER> with the desired version
anaconda remove <USERNAME>/<PACKAGE_NAME>/<VERSION_NUMBER>
```

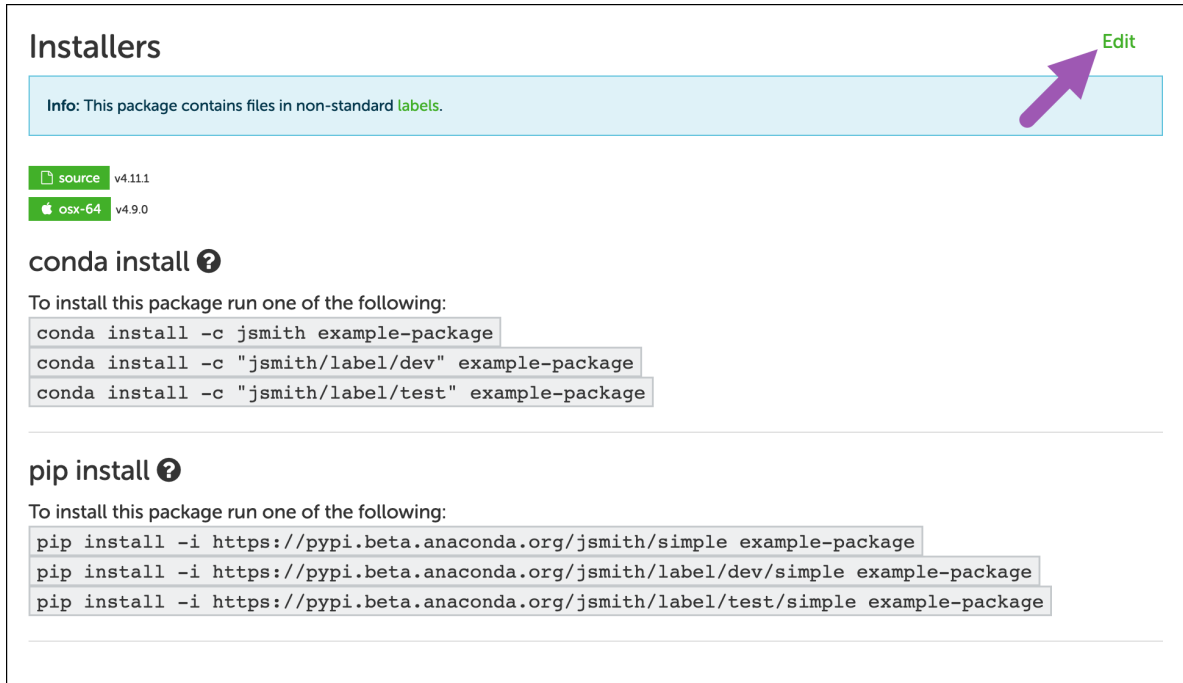
You can now see the change on your profile page at [http://anaconda.org/<USERNAME>/<PACKAGE\\_NAME>](http://anaconda.org/<USERNAME>/<PACKAGE_NAME>), where `<USERNAME>` is your username and `<PACKAGE_NAME>` is the package name.

## Hiding package install instructions

After you have uploaded packages to an account or organization, you can control what install instructions appear on your package's download page. Install instructions will vary depending on the package's labels or package type (conda or Standard Python).

To edit the visibility of your package install instructions:

1. Click **Edit**.



**Installers**

Info: This package contains files in non-standard labels.

source v4.11.1  
osx-64 v4.9.0

**conda install ?**

To install this package run one of the following:

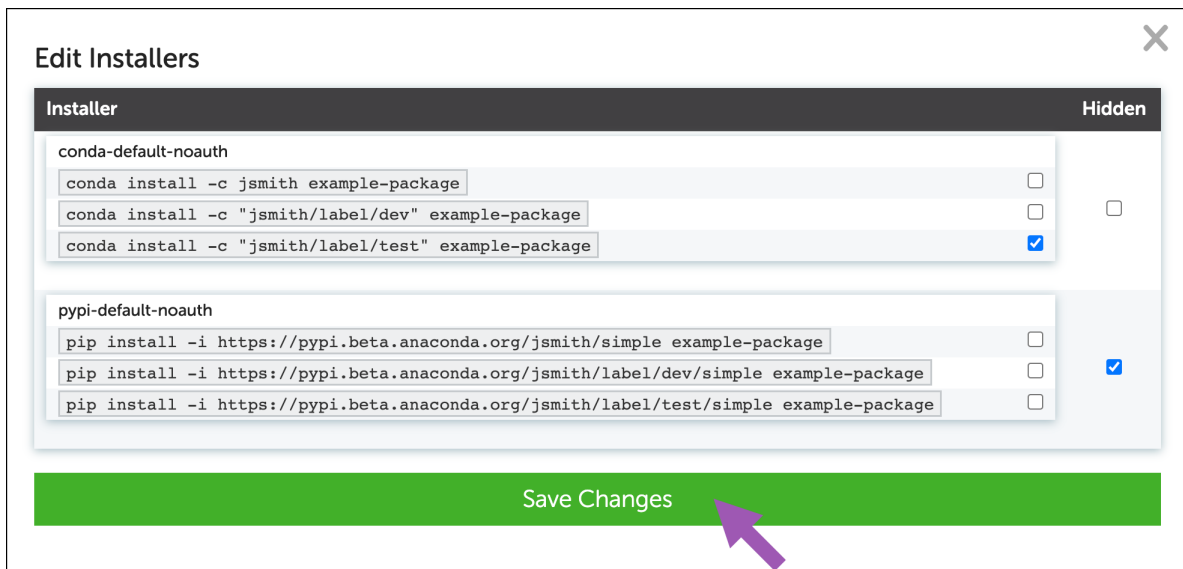
```
conda install -c jsmith example-package
conda install -c "jsmith/label/dev" example-package
conda install -c "jsmith/label/test" example-package
```

**pip install ?**

To install this package run one of the following:

```
pip install -i https://pypi.beta.anaconda.org/jsmith/simple example-package
pip install -i https://pypi.beta.anaconda.org/jsmith/label/dev/simple example-package
pip install -i https://pypi.beta.anaconda.org/jsmith/label/test/simple example-package
```

2. Select the checkboxes for the instructions you want to hide. You can also select the checkbox on the far right of any group to hide all instructions.



**Edit Installers**

Installer	Hidden
<b>conda-default-noauth</b>	
conda install -c jsmith example-package	<input type="checkbox"/>
conda install -c "jsmith/label/dev" example-package	<input type="checkbox"/>
conda install -c "jsmith/label/test" example-package	<input checked="" type="checkbox"/>
<b>pypi-default-noauth</b>	
pip install -i https://pypi.beta.anaconda.org/jsmith/simple example-package	<input type="checkbox"/>
pip install -i https://pypi.beta.anaconda.org/jsmith/label/dev/simple example-package	<input checked="" type="checkbox"/>
pip install -i https://pypi.beta.anaconda.org/jsmith/label/test/simple example-package	<input type="checkbox"/>

Save Changes

3. Click **Save Changes**.

Installers

Edit

Info: This package contains files in non-standard labels.

source v4.11.1

osx-64 v4.9.0

conda install ?

To install this package run one of the following:

```
conda install -c jsmith example-package
```

```
conda install -c "jsmith/label/dev" example-package
```

## Deleting a package

To delete a package and all of its versions from Anaconda.org:

1. Select the package name.
2. Select the **Settings** option.
3. Select the **Admin** option.
4. Click **Delete**.

To delete a package and all of its versions using the terminal (Anaconda Prompt for Windows users), run:

```
# Replace <USERNAME> with your username
# Replace <PACKAGE_NAME> with the package name
anaconda remove <USERNAME>/<PACKAGE_NAME>
```

You can now see the change on your profile page at <http://anaconda.org/<USERNAME>>, where <USERNAME> is your username.

## Updating package metadata

Much of the metadata provided in your package's *meta.yaml* file appears on your package's download page. This is information like your package's license, description, Git repository URL, and documentation URLs. For more information on what is usually contained in conda-build's *meta.yaml* file, see the [conda-build documentation](#).

Anaconda Client automatically updates metadata defined in the *meta.yaml* file of your package upload, *as long as the package version number has never been uploaded previously*. To update your metadata without needing a new package version, use `--force-metadata-update`.

```
anaconda upload /your/path/conda-package.tar.bz2 --force-metadata-update
```

## Using the .conda compression format

Currently, when you use `conda build` to create packages, those packages are compressed into a `.tar.bz2` format. This format has been used since the inception of conda and has become very slow when compared to modern compression formats. With that in mind, the `.conda` compression format was created. See [Conda packages](#) and the *Downloading and Extracting Packages* section of the [Understanding and Improving Conda's Performance](#) blog post for more detailed information on `.conda`.

The most important thing to understand about the `.conda` format is that it allows much faster access to packages' metadata by compressing that metadata into its own tarball file separate from the rest of the package contents.

To see how the `.conda` format vastly improves the speed of package extraction, try the following:

```
#Install the conda-package-handling package
conda install conda-package-handling

#Transmute a .tar.bz2 package format into a .conda format
#cph transmute IN_FILE(file to convert) OUT_EXT(extension to convert to, i.e. .conda)
cph transmute mkl-2018.0.3-1.tar.bz2 .conda

#Test the speed of extracting the .tar.bz2 file versus the .conda file
$ time cph extract mkl-2018.0.3-1.tar.bz2 --dest mkl-a
cph extract mkl-2018.0.3-1.tar.bz2 --dest mkl-a  18.16s user 0.59s system 98% cpu 19.015s
↪total
$ time cph extract mkl-2018.0.3-1.conda --dest mkl-b
cph extract mkl-2018.0.3-1.conda --dest mkl-b   1.41s user 0.65s system 87% cpu 2.365s
↪total
```

As you can see the `.conda` file is extracted nearly an order of magnitude more quickly than the `.tar.bz2` file.

`.conda` files can be uploaded to Anaconda.org using `anaconda upload`, just like any `.tar.bz2` file. The current workflow for creating `.conda` packages is to build them using `conda build`, then transmute the `.tar.bz2` files into `.conda` files using `cph transmute`, and then upload them normally as described in the [uploading conda packages](#) section.

## Other file types

In addition to packages and notebooks, Anaconda.org can be used to store and share data science files of any type.

### Uploading other file types

You can upload any type of file with the Anaconda Client command line interface (CLI) by using the steps below.

Standard Python package files, conda package files, and notebook files are automatically detected. For all other file types, you must explicitly specify the `package`, `package-type`, and `version` fields.

#### Example

In the following example, we upload a spreadsheet named `baby-names` in comma-separated value (`.csv`) format:

---

**Note:** In this example, the user—or organization—name is `jsmith`, the package name is `baby-names`, the package type is `file`, the version is `1`, and the full filename is `baby-names1.csv`.

---

1. Create a new package—which creates a *Namespace* that can hold multiple files— by running the following command in a terminal (Anaconda Prompt for Windows users):

```
anaconda login
anaconda package --create jsmith/baby-names
```

2. Upload the file to the new namespace:

```
anaconda upload --user jsmith --package baby-names --package-type file --version 1.0
↪ baby-names1.csv
```

## Downloading other file types

Files, such as the one created above, are available at:

```
# Replace <USERNAME> with your username
# Replace <PACKAGE_NAME> with the package name
https://anaconda.org/<USERNAME>/<PACKAGE_NAME>
```

Anyone can download these files using Anaconda Client from the terminal (Anaconda Prompt for Windows users):

```
# Replace <USERNAME> with your username
# Replace <PACKAGE_NAME> with the package name
anaconda download <USERNAME>/<PACKAGE_NAME>
```

If the repository has multiple files with the same name and different extensions, `anaconda download` will download all of them by default. If you use `anaconda-client` 1.7 or higher, you can use `anaconda download` with the option `--package-type` or `-t` to specify only one of these files. This option works with the values `pypi`, `conda`, `ipynb`, and `env`.

## Labels

Organize your code and facilitate the development cycle—without affecting non-development users—by applying Anaconda.org *labels* to code that is in development, in testing, and in production. Using Anaconda Client, *Package* developers can create labels like `labels/dev` for development, `labels/test` for testing, or other labels that are found only if the user specifies the label in their search.

The following search examples use a *Namespace* of `travis`:

<a href="https://anaconda.org/travis/labels/main">https://anaconda.org/travis/labels/main</a>	Label searched by default
<a href="https://anaconda.org/travis">https://anaconda.org/travis</a>	Same as default label with <code>main</code> implicit
<a href="https://anaconda.org/travis/labels/dev">https://anaconda.org/travis/labels/dev</a>	Contains the packages in development
<a href="https://anaconda.org/travis/labels/test">https://anaconda.org/travis/labels/test</a>	Contains the packages ready to test
<a href="https://anaconda.org/travis/labels/any-custom-label">https://anaconda.org/travis/labels/any-custom-label</a>	Any label you want to use

### Using labels to make your packages private

The following steps instruct you in the use of a `test` label, which allows you to upload files without affecting your production-quality packages. Without a `--label` option, the label defaults to `main`.

Use a terminal (Anaconda Prompt for Windows users) to perform the following steps:

### Building and uploading the package

1. Start with a conda package. In this example, we use a small public [conda test package](#):

```
git clone https://github.com/Anaconda-Platform/anaconda-client/  
cd anaconda-client/example-packages/conda/
```

2. Open the `meta.yaml` file by running the following command:

```
nano meta.yaml
```

3. Change the version number to `2.0`. To save and close the `meta.yaml` file, press `ctrl + X`, followed by `Y`.
4. To build the package, turn off automatic Client uploading and then run the `conda build` command:

```
conda config --set anaconda_upload no  
conda build .
```

---

**Tip:** You can check where the resulting file was placed by adding the `--output` option:

```
conda build . --output
```

---

5. Upload your test package to Anaconda.org using the Anaconda Client [upload](#) command.

Add the `--label` option followed by your label (in this case, `test`), which tells Anaconda.org to make the upload visible only to users who specify that label:

```
# Replace </PATH/TO/PACKAGE_NAME> with the correct file path and package name  
anaconda upload </PATH/TO/PACKAGE_NAME>.tar.bz2 --label test
```

Now you can see that even when you search conda `main`, you do not see the `2.0` version of the test package. This is because you need to tell conda to look for your new `test` label.

### Testing the discoverability of the package

1. Add the `--override` argument, which tells conda not to use any channels in your `~/.condarc` file. Without specifying the label and package name, the `2.0` version is not discoverable:

```
# Replace <USERNAME> with your username  
conda search --override -c <USERNAME> conda-package
```

Once the label and package are specified, the `2.0` can be found:

```
# Replace <USERNAME> with your username  
conda search --override -c <USERNAME>/label/test conda-package
```

2. You can give the label `<USERNAME>/label/test` to your testers, where `<USERNAME>` is your username.
3. Once they finish testing, you may then want to copy the test packages back to your main label:

```
anaconda label --copy test main
```

You can also manage your package labels from your dashboard at <https://anaconda.org/USERNAME/conda-package>, where `<USERNAME>` is your username.

Your version 2.0 is now in main:

```
# Replace <USERNAME> with your username
conda search --override -c <USERNAME> conda-package
```

If you use `anaconda-client` 1.7 or higher, you can use `anaconda move` to move packages from one label to another:

```
# Replace <OLD> with the old label
# Replace <NEW> with the new label
# Replace <SPEC> with the package to move. SPEC can be either "user/package/version/file"
# or "user/package/version", in which case it moves all files in that version.
anaconda move --from-label <OLD> --to-label <NEW> <SPEC>
```

## Environments

### Sharing an environment

You can share an environment directly on Anaconda.org or through a command line interface (CLI).

---

**Tip:** More of a visual learner? Watch the [Sharing an environment](#) video on Anaconda Learning for a walkthrough on sharing environments.

---

### Sharing an environment on Anaconda.org

1. If necessary, create and save an environment. See the [conda user guide](#) for help creating an environment.
2. Open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
# Replace <MY_ENVIRONMENT> with the name of your environment
conda env export -n <MY_ENVIRONMENT> -f <MY_ENVIRONMENT>.yaml
```

3. Go to <https://anaconda.org/<USERNAME>/environments>, where `<USERNAME>` is your username.
4. In the top-right corner, click **Upload** to upload your environment.

### Sharing an environment in the CLI

1. Create and save an environment. Consult the [conda user guide](#) for guidance.
2. Open a terminal (Anaconda Prompt for Windows users) and run the following command:

```
# Replace <MY_ENVIRONMENT> with the name of your environment
conda env export -n <MY_ENVIRONMENT> -f <MY_ENVIRONMENT>.yaml
```

3. Upload the environment to Anaconda.org by running the following command in the terminal (Anaconda Prompt for Windows users):

```
# Replace <MY_ENVIRONMENT> with the name of your environment
anaconda upload <MY_ENVIRONMENT>.yaml
```

### Viewing your environment

You can see a list of your uploaded environments by clicking **View** at the top of the page and selecting **Environments** from the dropdown menu.

### Downloading your environment

Anyone with network access can download and install your environment directly from Anaconda.org or through a command line interface (CLI).

### Downloading your environment on Anaconda.org

1. Go to <https://anaconda.org/<USERNAME>/environments>, where <USERNAME> is your username.
2. Select the environment you want to download.
3. Navigate to the **Files** tab, then click the file name in the **Name** column to download it.

### Downloading your environment in the CLI

Open the terminal (Anaconda Prompt for Windows users) and run the following command:

```
# Replace <MY_ENVIRONMENT> with the name of your environment
conda env create user/<MY_ENVIRONMENT>
source activate <MY_ENVIRONMENT>
```



## Notebooks

To quickly get started with notebooks, download the [JupyterLab](#) and [Jupyter Notebooks](#) cheatsheet.

For a deep dive on Jupyter Notebooks—formerly IPython notebook—see the [Official Jupyter Notebook documentation](#).

## Uploading a notebook

To upload a [Jupyter notebook](#) to Anaconda.org:

1. Save a notebook to your local machine.
2. Make any necessary changes to the notebook, then save.
3. Upload your notebook to Anaconda.org by running the following command in a terminal (Anaconda Prompt for Windows users):

```
# Replace <MY_NOTEBOOK> with the name of your notebook
anaconda upload <MY_NOTEBOOK>.ipynb
```

## Viewing your notebook in a browser

You can see an HTML version of your notebook stored at the following path:

```
# Replace <USERNAME> with your username
# Replace <MY_NOTEBOOK> with the name of your notebook
http://notebooks.anaconda.org/<USERNAME>/<MY_NOTEBOOK>
```

## Downloading your notebook

Anyone with network access to Anaconda.org can download your notebook by running the following command in a terminal (Anaconda Prompt for Windows users):

```
# Replace <USERNAME> with your username
# Replace <MY_NOTEBOOK> with the name of your notebook
anaconda download <USERNAME>/<MY_NOTEBOOK>
```

## FAQs

### What is Anaconda.org?

[Anaconda.org](#) is a package management service by [Anaconda](#). For more information, see [Anaconda.org](#).

### What kind of packages does Anaconda.org support?

Anaconda.org supports any type of package. Today, it is primarily used for conda and Standard Python packages, as well as notebooks and environments. Both `tar.bz2` and `.conda` compression files can be uploaded to Anaconda.org. See [Using the .conda compression format](#) for more information on the `.conda` format.

### Who can find and install my packages?

If you have a free account, all of your packages are public. After you upload them to Anaconda.org, anyone can search for and download them.

### What is Anaconda, Inc.?

Anaconda is a software development and consulting company of passionate open source advocates based in Austin, Texas, USA. We are committed to the open source community. We created the Anaconda Python distribution and contribute to many other open source-based data analytics tools. You can find out more about us by reading [our story](#).

### What are Anaconda.org's Terms and Conditions?

Our [Terms and Conditions](#) are available on our website. For any additional questions, contact us by [email](#).

### How much does Anaconda.org cost?

Anaconda.org is free for downloading and uploading public packages.

### How do I get started with Anaconda.org?

You can search, download and install hundreds of public packages without having an account. If you want to upload packages, you need to sign up for a [Anaconda.org account](#). For more information, see [sign up for a free Anaconda.org account](#).

### What kind of account do I have?

By default your account is a personal, free account. All packages you upload to Anaconda.org are public, and you are the only person with administrative access to your account.

### What is included in the free version of Anaconda.org?

The free plan allows you to search for, create and host public packages, and provides up to 3 GB storage space.

## What is an organization account, and how is it different from an individual account?

An organization account allows multiple individual users to administer packages and have more control of package access by other users. An individual account is for use by one person.

### Command Reference

See also: [API Reference](#)

Anaconda client is the command line interface (CLI) to Anaconda.org, and can be used for logging in, logging out, managing your account, uploading files, generating access tokens, viewing tokens, and other tasks as shown by running:

```
anaconda -h
```

Full command reference:

#### anaconda

```
usage: anaconda [-h] [--disable-ssl-warnings] [--show-traceback] [-v] [-q]
               [-V] [-t TOKEN] [-s SITE]
               ...

Anaconda.org command line manager

optional arguments:
  -h, --help            show this help message and exit
  -V, --version          show program's version number and exit

output:
  --disable-ssl-warnings
                        Disable SSL warnings (default: False)
  --show-traceback      Show the full traceback for chalmers user errors
                        (default: False)
  -v, --verbose          print debug information to the console
  -q, --quiet            Only show warnings or errors the console

anaconda-client options:
  -t TOKEN, --token TOKEN
                        Authentication token to use. May be a token or a path
                        to a file containing a token
  -s SITE, --site SITE  select the anaconda-client site to use

Commands:
  auth                  Manage Authorization Tokens
  label                 Manage your Anaconda.org labels
  channel               [DEPRECATED in favor of label] Manage your Anaconda.org channels
  config                Anaconda client configuration
  copy                  Copy packages from one account to another
  download              Download notebooks from Anaconda.org
  groups                Manage Groups
```

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login	Authenticate a user
logout	Log out <a href="#">from Anaconda.org</a>
notebook	[DEPRECATED in favor of upload/download] Interact <a href="#">with</a> notebooks <a href="#">in</a> anaconda.org
package	Package utils
remove	Remove an <a href="#">object from Anaconda.org</a> . Must refer to the formal package name <a href="#">as</a> it appears <a href="#">in</a> the URL of the package. Also use <code>anaconda show &lt;USERNAME&gt;</code> to see <a href="#">list</a> of package names. Example: <code>anaconda remove continuumio/empty-example-notebook</code>
search	Search Anaconda.org
show	Show information about an <a href="#">object</a>
upload	Upload packages to Anaconda.org
whoami	Print the information of the current user
build	Anaconda build client <a href="#">for</a> continuous integration, testing <a href="#">and</a> building packages
worker	Anaconda build client <a href="#">for</a> continuous integration, testing <a href="#">and</a> building packages

## Authentication

### auth

```
usage: anaconda auth [-h] [-n NAME] [-o ORGANIZATION]
                   [--strength {strong,weak}] [--strong] [-w] [--url URL]
                   [--max-age MAX_AGE] [-s SCOPES] [--out OUT]
                   (-x | -l | -r NAME [NAME ...] | -c | -i)
```

#### Manage Authorization Tokens

##### optional arguments:

```
-h, --help            show this help message and exit
-n NAME, --name NAME  A unique name so you can identify this token later.
                     View your tokens at anaconda.org/settings/access
-o ORGANIZATION, --org ORGANIZATION, --organization ORGANIZATION
                     Set the token owner (must be an organization)
```

##### token creation arguments:

These arguments are only valid with the `--create` action

```
--strength {strong,weak}
--strong            Create a longer token (default)
-w, --weak          Create a shorter token
--url URL           The url of the application that will use this token
--max-age MAX_AGE   The maximum age in seconds that this token will be
                    valid for
-s SCOPES, --scopes SCOPES
                    Scopes for token. For example if you want to limit
                    this token to conda downloads only you would use
                    --scopes "repo conda:download"
```

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```

--out OUT

actions:
-x, --list-scopes      list all authentication scopes
-l, --list             list all user authentication tokens
-r NAME [NAME ...], --remove NAME [NAME ...]
                        remove authentication tokens
-c, --create           Create an authentication token
-i, --info, --current-info
                        Show information about the current authentication
                        token

```

Manage Authentication tokens

See also: *Using Anaconda.org Tokens*

## login

```

usage: anaconda login [-h] [--hostname HOSTNAME] [--username LOGIN_USERNAME]
                    [--password LOGIN_PASSWORD]

```

Authenticate a user

```

optional arguments:
-h, --help            show this help message and exit
--hostname HOSTNAME   Specify the host name of this login, this should be
                    unique (default: hq-phone-114.corp.continuum.io)
--username LOGIN_USERNAME
                    Specify your username. If this is not given, you will
                    be prompted
--password LOGIN_PASSWORD
                    Specify your password. If this is not given, you will
                    be prompted

```

## logout

```

usage: anaconda logout [-h]

```

Log out from [Anaconda.org](https://anaconda.org)

```

optional arguments:
-h, --help  show this help message and exit

```

### whoami

Print the information of the current user

```
usage: anaconda whoami [-h]

Print the information of the current user

optional arguments:
  -h, --help  show this help message and exit
```

### Informational

#### show

```
usage: anaconda show [-h] spec

Show information about an object

positional arguments:
  spec          Package written as USER[/PACKAGE[/VERSION[/FILE]]]

optional arguments:
  -h, --help  show this help message and exit

Show information about an object

Examples:

    anaconda show continuumio
    anaconda show continuumio/python
    anaconda show continuumio/python/2.7.5
    anaconda show sean/meta/1.2.0/meta.tar.gz
```

#### search

```
usage: anaconda search [-h] [-t {conda,env,file,ipynb,standard_python,standard_r,project,
↳ installer}]
                        [-p {osx-32,osx-64,win-32,win-64,linux-32,linux-64,linux-armv6l,
↳ linux-armv7l,linux-ppc64le,noarch}]
                        name

Search Anaconda.org

positional arguments:
  name          Search string

optional arguments:
  -h, --help  show this help message and exit
```

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```

-t {conda,env,file,ipynb,standard_python,standard_r,project,installer}, --package-type
→{conda,env,file,ipynb,standard_python,standard_r,project,installer}
    only search for packages of this type
-p {osx-32,osx-64,win-32,win-64,linux-32,linux-64,linux-armv6l,linux-armv7l,linux-
→ppc64le,noarch}, --platform {osx-32,osx-64,win-32,win-64,linux-32,linux-64,linux-
→armv6l,linux-armv7l,linux-ppc64le,noarch}
    only search for packages of the chosen platform

Search Anaconda.org for packages

```

## config

```

usage: anaconda config [-h] [--type TYPE] [--set name value] [--get name]
                      [--remove REMOVE] [--show] [-f] [--show-sources] [-u]
                      [-s]

```

Anaconda client configuration

optional arguments:

```

-h, --help            show this help message and exit
--type TYPE           The type of the values in the set commands

```

actions:

```

--set name value      sets a new variable: name value
--get name            get value: name
--remove REMOVE       removes a variable
--show               show all variables
-f, --files           show the config file names
--show-sources        Display all identified config sources

```

location:

```

-u, --user            set a variable for this user
-s, --system, --site set a variable for all users on this machine

```

anaconda-client configuration

Get, Set, Remove or Show the anaconda-client configuration.

##### anaconda-client sites

anaconda-client sites are a mechanism to allow users to quickly switch between Anaconda.org instances. This is primarily used for testing the anaconda alpha site. But also has applications for the on-site [Anaconda Enterprise](<http://continuum.io/anaconda-server>).

anaconda-client comes with two pre-configured sites `alpha` and `binstar` you may use these in one of two ways:

```

* Invoke the anaconda command with the -s/--site` option
  e.g. to use the alpha testing site:

```

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```
anaconda -s alpha whoami
```

\* Set a site as the default:

```
anaconda config --set default_site alpha
anaconda whoami
```

##### Add an anaconda-client site

After installing Anaconda Enterprise  
you can add a site named **\*\*site\_name\*\*** like this:

```
anaconda config --set sites.site_name.url "http://<anaconda-enterprise-ip>:<port>/api
↪"
anaconda config --set default_site site_name
```

##### Site Options VS Global Options

All options can be set as global options - affecting all sites,  
or site options - affecting only one site

By default options are set globally e.g.:

```
anaconda config --set OPTION VALUE
```

If you want the option to be limited to a single site,  
prefix the option with ``sites.site_name`` e.g.

```
anaconda config --set sites.site_name.OPTION VALUE
```

##### Common anaconda-client configuration options

- \* ``url``: Set the anaconda api url (default: `https://api.anaconda.org`)
- \* ``ssl_verify``: Perform ssl validation on the https requests.  
ssl\_verify may be ``True``, ``False`` or a path to a root CA pem file.

##### Toggle auto\_register when doing anaconda upload

The default is yes, automatically create a new package when uploading.  
If no, then an upload will fail if the package name does not already exist on the server.

```
anaconda config --set auto_register yes|no
```



## Managing Packages

### package

```
usage: anaconda package [-h]
                        (--add-collaborator user | --list-collaborators | --create)
                        [--summary SUMMARY] [--license LICENSE]
                        [--license-url LICENSE_URL] [--personal | --private]
                        USER/PACKAGE
```

Anaconda.org package utilities

positional arguments:

USER/PACKAGE            Package to operate on

optional arguments:

-h, --help            show this help message and exit

actions:

--add-collaborator user            username of the collaborator you want to add  
 --list-collaborators    list all of the collaborators in a package  
 --create                Create a package

metadata arguments:

--summary SUMMARY        Set the package short summary  
 --license LICENSE        Set the package license  
 --license-url LICENSE\_URL        Set the package license url

privacy:

--personal            Set the package access to personal This package will  
                          be available only on your personal registries  
 --private             Set the package access to private This package will  
                          require authorized and authenticated access to install

### upload

```
usage: anaconda upload [-h] [-c CHANNELS] [-l LABELS] [--no-progress]
                        [-u USER] [--all] [-p PACKAGE] [-v VERSION]
                        [-s SUMMARY] [-t PACKAGE_TYPE] [-d DESCRIPTION]
                        [--thumbnail THUMBNAIL] [--private]
                        [--no-register | --register] [--build-id BUILD_ID]
                        [-i | -f | --force]
                        files [files ...]
```

Upload packages to Anaconda.org

positional arguments:

files                    Distributions to upload

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## optional arguments:

```

-h, --help            show this help message and exit
-c CHANNELS, --channel CHANNELS
                        [DEPRECATED] Add this file to a specific channel.
                        Warning: if the file channels do not include "main",
                        the file will not show up in your user channel
-l LABELS, --label LABELS
                        Add this file to a specific label. Warning: if the
                        file labels do not include "main", the file will not
                        show up in your user label
--no-progress          Don't show upload progress
-u USER, --user USER  User account or Organization, defaults to the current
                        user
--all                  Use conda convert to generate packages for all
                        platforms and upload them
--no-register          Don't create a new package namespace if it does not
                        exist
--register             Create a new package namespace if it does not exist
--build-id BUILD_ID    Anaconda.org Build ID (internal only)
-i, --interactive      Run an interactive prompt if any packages are missing
-f, --fail             Fail if a package or release does not exist (default)
--force               Force a package upload regardless of errors

```

## metadata options:

```

-p PACKAGE, --package PACKAGE
                        Defaults to the package name in the uploaded file
-v VERSION, --version VERSION
                        Defaults to the package version in the uploaded file
-s SUMMARY, --summary SUMMARY
                        Set the summary of the package
-t PACKAGE_TYPE, --package-type PACKAGE_TYPE
                        Set the package type [conda,env,file,ipynb,standard_python,
↪ standard_r,project,installer].
                        Defaults to autodetect
-d DESCRIPTION, --description DESCRIPTION
                        description of the file(s)
--thumbnail THUMBNAIL
                        Notebook's thumbnail image
--private              Create the package with private access

anaconda upload CONDA_PACKAGE_1.bz2
anaconda upload notebook.ipynb
anaconda upload environment.yml

```

## See Also:

- [Uploading a Conda Package](#)
- [Uploading a Standard Python Package](#)

## download

```
usage: anaconda download [-h] [-f] [-o OUTPUT] handle
```

Download packages **from** [Anaconda.org](https://anaconda.org)

positional arguments:

handle                      user/notebook

optional arguments:

-h, --help                  show this help message **and** exit  
 -f, --force                Overwrite  
 -o OUTPUT, --output OUTPUT      Download **as**

Usage:

anaconda download notebook  
 anaconda download user/notebook

## remove

```
usage: anaconda remove [-h] [-f] specs [specs ...]
```

Remove an **object** **from** [Anaconda.org](https://anaconda.org)

example::

```
anaconda remove sean/meta/1.2.0/meta.tar.gz
```

positional arguments:

specs                      Package written **as** <user>[/<package>[/<version>[/<filename>]]]

optional arguments:

-h, --help    show this help message **and** exit  
 -f, --force    Do **not** prompt removal

## groups

```
usage: anaconda groups [-h] [--perms {read,write,admin}]
                        {add,show,members,add_member,remove_member,packages,add_package,
↩ remove_package}
                        spec
```

positional arguments:

{add,show,members,add\_member,remove\_member,packages,add\_package,remove\_package}  
                                     The group management command to execute  
 spec                               <organization>/<group\_name>/<member>

optional arguments:

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```
-h, --help          show this help message and exit
--perms {read,write,admin}
                    The permission the group should provide
```

## label

```
usage: anaconda label [-h] [-o ORGANIZATION]
                    (--copy LABEL LABEL | --list | --show LABEL | --lock LABEL | --
↳ unlock LABEL | --remove LABEL)
```

Manage your Anaconda.org channels

optional arguments:

```
-h, --help          show this help message and exit
-o ORGANIZATION, --organization ORGANIZATION
                    Manage an organizations labels
--copy LABEL LABEL
--list             list all labels for a user
--show LABEL       Show all of the files in a label
--lock LABEL       Lock a label
--unlock LABEL     Unlock a label
--remove LABEL     Remove a label
```

## copy

```
usage: anaconda copy [-h] [--to-owner TO_OWNER] [--from-label FROM_LABEL]
                    [--to-label TO_LABEL] [--replace | --update]
                    spec
```

Copy packages from one account to another

positional arguments:

```
spec              Package - written as user/package/version[/filename]
                  If filename is not given, copy all files in the
                  version
```

optional arguments:

```
-h, --help          show this help message and exit
--to-owner TO_OWNER User account to copy package to (default: your
                    account)
--from-label FROM_LABEL
                    Label to copy packages from
--to-label TO_LABEL Label to put all packages into
--replace           Overwrite destination package metadata
--update           Update missing data in destination package metadata
```

## move

```
usage: anaconda move [-h] [--from-label FROM_LABEL] [--to-label TO_LABEL] spec
```

Move packages between labels.

positional arguments:

```
spec                Package - written as user/package/version[/filename]
                    If filename is not given, move all files in the
                    version
```

optional arguments:

```
-h, --help          show this help message and exit
--from-label FROM_LABEL
                    Label to move packages from
--to-label TO_LABEL  Label to move packages to
```

## Release notes

This page contains release notes for [Anaconda.org](#) and [Anaconda Client](#), the command line interface (CLI) tool used to add packages to Anaconda.org.

### Anaconda.org

#### 2.38.1 - 2023-09-26

- Updated documentation links.

#### 2.38.0 - 2023-08-30

- Users can no longer upload packages named “projects”, to avoid interfering with the redirect link to the projects detail page for packages.
- Email verification is now required for users’ first login to Anaconda.org. Previously, users were automatically logged in after registering, but before verifying.
- Removed option to make packages private for users without a paid plan.
- Fixed missing or obsolete license information on package details page.

#### 2.37.7 - 2023-08-01

- Added updates to Sign In page.
- Limited package file uploader information visibility to channel owner(s) and admin(s).
- Removed access to APIs without Anaconda.org email verification. This affects Anaconda.org, Anaconda Client, and Navigator.
- Fixed issue with resending verification email.
- Fixed issue with package types having None or null values.

- Fixed issue with password resets.
- Fixed issue with license URLs being set to `None`, causing the package license URLs to be incorrect.
- Fixed minor UI issues.

### 2.37.6 - 2023-05-31

- Added user data consent management for GDPR compliance.
- Added warning message if user exceeds 10GB storage limit.
- Renamed Anaconda Nucleus to Anaconda Cloud.
- Changed “packages” to “artifacts” in storage list, as packages, notebooks, environments, and projects can all be stored.
- Updated email verification and forgot username/password emails.
- Fixed issue with adding emails to account.
- Fixed issue where Revision tab didn’t properly load large projects.
- Fixed issue where projects were missing in storage.
- Fixed issue with deleting files.
- Fixed minor UI issues.

### 2.37.5 - 2023-03-09

- Fixed issue where the name attribute was incorrectly including the platform (e.g. `linux-64`) in the `repodata.json`.

### 2.37.4 - 2023-03-06

- Added breadcrumbs to install instructions and Files and History tabs.
- Administrators can now remove broken organizations.
- Fixed issue where creating a user/organization could sometimes fail with partial data loss.
- Fixed minor UI issues.

### 2.37.3 - 2022-12-12

- Updated organization and username length limit to 50 characters.
- Added additional information to error messages for invalid organization names or usernames.
- Package descriptions can now only be updated by users with write permissions for those packages.
- Users can now scroll the full list of the API `/search` endpoint results, if over 100 packages.
- Fixed minor UI issues.

### 2.37.2 - 2022-10-17

- Added option to hide installation instructions on package homepages.
- Users can now search for environments as well using [anaconda.org](https://anaconda.org) search page.
- Fixed issue where `.conda` packages were not being downloaded with the `.conda` file extension.
- Fixed the sorting of environments on the organization/user environments page.
- Fixed issue where a success notification was triggered when removing a label that didn't exist.
- Minor visual fixes on project revision dialog.

### 2.37.1 - 2022-10-17

- Added SHA256 checksums to packages on server side.

### 2.37.0 - 2022-09-07

- Added SHA256 checksums to packages on client side.
- Minor performance enhancements.

### 2.36.1 – 2022-06-09

- Added support for the `.conda` package format (requires `anaconda-client` 1.10.0 or later).
- Updated terminology for non-conda packages: “PyPI” packages are now called “Standard Python” packages, and “CRAN” packages are now “Standard R” packages.
- Resolved a bug that cleared the search field after results are returned.

### 2.35.6 – 2021-08-11

- Changed ‘About us’ link in the footer to point to <https://www.anaconda.com/about-us>.
- Changed platform filter to extend to `linux-aarch64` and `linux-s390x`.
- Fixed duplicate files appearing on [anaconda.org](https://anaconda.org).
- Fixed versions sorting to show latest version on top of the list.
- Removed the project history page.
- Added PATCH operation to enable users to patch just the metadata for a package, without having to upload a new package.
- Updated password recovery page with a unified layout.

**2.35.5 - 2021-02-25**

- Update privacy-policy link in the notification bar.
- Fixed missing profile screen spacing.
- Fixed missing margin for multiple elements.

**2.35.4 - 2021-02-09**

- Changed design for index page.
- Fixed environment package uploading on UI with multiple package types.
- Removed listing of all anaconda objects using empty search query for users.

**2.35.3 - 2021-01-27**

- Updated Download Anaconda link, user-guide link and privacy policy link.
- Added utm\_source query param to Nucleus links.
- Changed font on buttons to Museo Sans Rounded.
- Fixed issue where some package metadata wasn't being copied; implemented support of PUT and PATCH operations for package copying.

**2.35.2 - 2021-01-11**

- Updated Anaconda Cloud logos to Anaconda.org.
- Removed any mention of Anaconda Cloud.
- Updated Terms & Conditions/EULA link.
- Updated Anaconda link.
- Made changes to 'generate\_ip\_address\_hash' method.
- Changed link to Anaconda Nucleus instead of Anaconda Enterprise.
- Added Anaconda Nucleus link in the footer.
- Changed font to Museo Sans Rounded.

**2.35.1 - 2020-11-24**

- Fixed CIBUILD anaconda-client install.



**2.35.0 - 2020-11-24**

- Updated Issue tracker link, documentation link, and removed email support.
- Updated links on Report a bug page.
- Updated links in footer.

**2.33.27 - 2018-07-30**

- Removed /about/pricing page.
- Allow the disabling of new Personal and Organization private accounts via Stripe API.

**2.33.26 - 2018-07-19**

- Captcha on organization creation.

**2.33.25 - 2018-07-19**

- Captcha on account creation.

**2.33.24 - 2018-07-03**

- Removed 'Pricing' links from header and footer.

**anaconda-client****1.12.0 - 2023-07-18**

- Package upload performance improvements.

**1.11.3 - 2023-06-01**

- Made changes to prevent the opening of redundant terminal windows.

**1.11.2 - 2023-04-10**

- Added option to force a package metadata update when uploading a package.
- Conda-safe package names (with underscores) can now be used for Python wheel files.
- Fixed upload of large package files.

### 1.11.1 - 2023-03-01

- `anaconda update` command now supports yaml files.

### 1.11.0 - 2022-09-08

- Upload process now generates sha256 package checksums.

### 1.10.0 - 2022-06-15

- Added support for `.conda` packages for upload and download.
- Changed labels for “pypi” and “r” to “Standard Python” and “Standard R”.
- R packages should now download correctly.
- Issues related to the invalid configuration paths should now be mitigated.

### 1.9.0 - 2021-10-28

- Added `update` command.
- Fixed `upload` command for PyPI and conda packages of the same name.
- Fixed text error in “Distribution already exists” warning.

### 1.8.0 - 2021-06-25

- Added `--update` and `--replace` options for `copy` command.
- Fixed `--summary` and `--description` arguments for `upload` command.
- Fixed the usage of deprecated `base64` functions.
- Fixed the downloading of multiple packages using the `download` command.

## 2.12.2 Starter tier

### Anaconda Learning - Expert-led, on-demand courses

Master the foundations of data science through structured, step-by-step courses. Code along with your course instructors, develop projects, and save your progress directly inside Anaconda Learning.

[Check it out for yourself!](#)

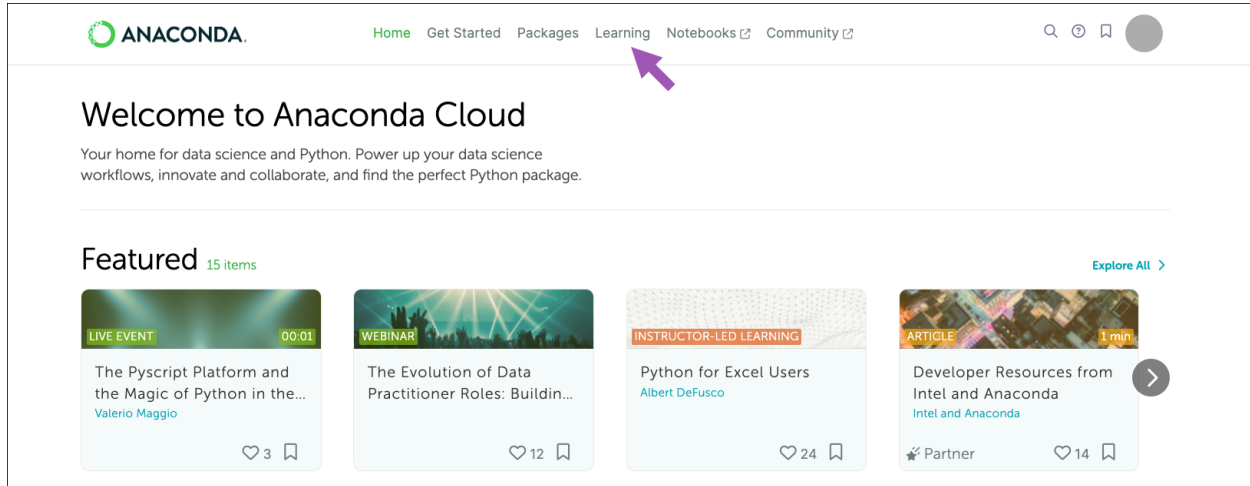
### Anaconda Notebooks

Anaconda Notebooks allows anyone, anywhere to begin their data science journey. Spin up awesome data science projects directly from your browser with all the packages and computing power you need.

## Anaconda Learning

Master the foundations of data science through structured, step-by-step courses. Code along with your course instructors, develop projects, and save your progress directly inside Anaconda Learning.

Check it out for yourself [here](#) or visit [Anaconda Cloud](#) and select **Learning**:



## Security practices for Anaconda Learning

- Make sure you use a highly secure password for your Anaconda Cloud login. Anaconda recommends using memorable but unguessable passwords of the kind [dreamed up by Randall Munroe of XKCD](#). There's even a [Python package to generate them](#). A good alternative is to use completely random passwords of at least 16 alphanumeric characters and to store them in a password manager like [Keepass](#).
- Verify your email address to reset your Anaconda Cloud password if you forget it.
- Look out for phishing. Anaconda will never send you an email asking for your password. Also, check the address bar in your browser before typing in your password!
- Don't leave a device that's logged in to Anaconda Notebooks unattended in a public area.
- If working with sensitive information in a public place, use a privacy screen on your device to discourage strangers from viewing your screen.

## Anaconda Notebooks

### Start coding immediately

Anaconda Notebooks allows anyone, anywhere to begin their data science journey. Spin up awesome data science projects directly from your browser with all the packages and computing power you need.

### Code from anywhere

Log in and pull up conda configurations wherever you are online. Whether you want to upload a local environment or directly manage packages in the notebook — Anaconda's got you covered.

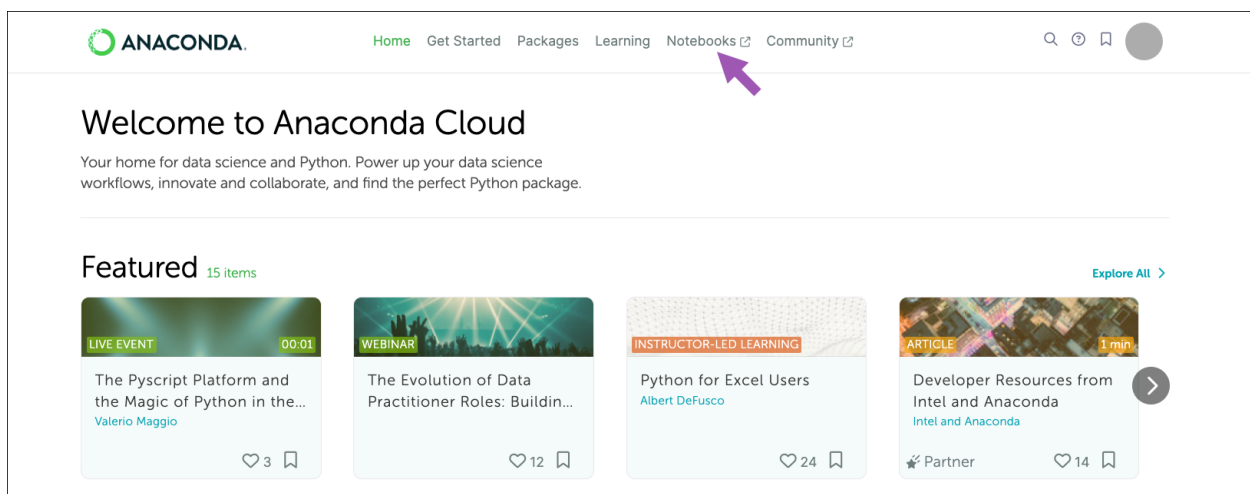
### Secure file storage

Liberate those files from your hard drive and securely store all your notebooks, projects, and scripts directly in your file directory.

With Anaconda Notebooks, you get all of the following running on our resilient and supported cloud platform, so you can use it anywhere on any device!

Features	Free	Starter	Pro/Business
A dedicated JupyterLab notebook interface	✓	✓	✓
Fast, backed-up SSD storage	5GB	10GB	20GB
CPU seconds (daily)	1,000	4,000	8,000
Published applications	1	2	4
Conda environments with the most popular python packages	✓	✓	✓
Ability to create and upload your own custom environments	✓	✓	✓
Example notebooks	✓	✓	✓

Try it out for yourself by launching Notebooks from [Anaconda Cloud](#)!



## Publishing Anaconda Notebooks

This topic provides guidance on previewing and publishing your Panel apps as working applications with a custom URL. This spins up an application on the Anaconda Notebooks infrastructure, which you can then share with others.

## Previewing Panel apps

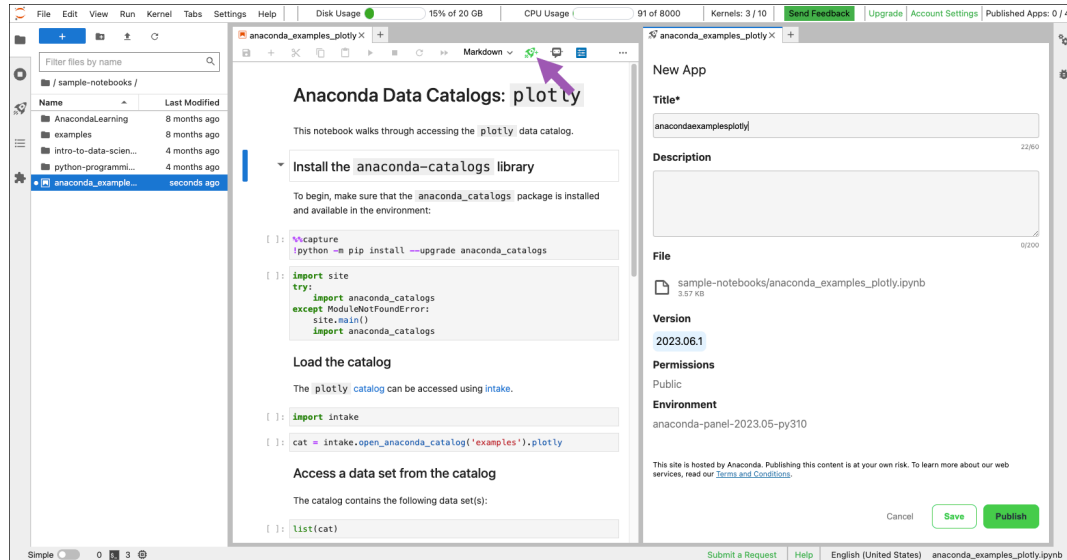
You can render a working preview of the Panel apps in your notebook by clicking the Panel icon at the top of your notebook. To create a valid Panel application, one or more of your outputs must be marked as `.servable()`. See Troubleshooting below for further details.

**Note:** Rendering a preview of Panel apps uses CPU seconds.

## Publishing Panel apps

To publish the results of your Panel apps to a custom URL, complete the following steps:

1. Click the publish icon at the top of the notebook. The publication panel opens on the right.



2. Provide a title and detailed description.

---

**Note:** Your notebook's version is displayed within the form and automatically increments each time you save changes to or redeploy your notebook.

---

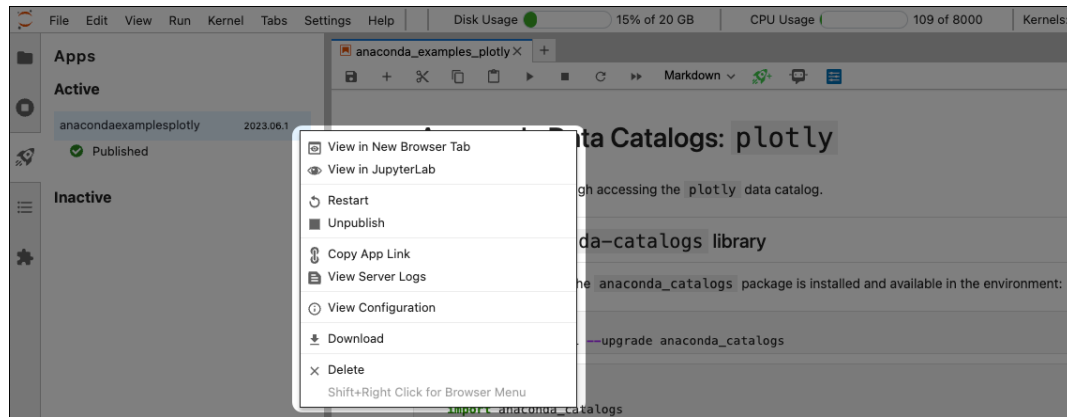
3. Optional: Click **Save** to produce an inactive (i.e. unpublished) app. To see your unpublished and published apps, click the publish icon in the left-hand navigation to open the **Apps** panel.
4. Click **Publish**. You are provided a randomly generated URL for your application, which can be shared with others.

---

**Note:** The page will appear as a 502 Bad Gateway until the publication process is complete.

---

5. Click the publish icon in the left-hand navigation to open the **Apps** panel. Your application is now listed under **Active**.
6. View, unpublish, download, and more by clicking the actions icon beside your app in the **Apps** panel.



## Publishing limits

The number of applications you can publish depends on your Anaconda subscription tier.

Tier	Published Apps
Free	1
Starter	2
Pro/Business	4

## Further Panel resources

Anaconda Notebooks allows you to deploy your data applications via Panel with just two clicks directly from your notebooks. Check out the following resources for a deeper dive into Panel:

- Familiarize yourself with Panel with the [getting started guide](#)
- Discover how to use specific features in the [how-to guide](#)
- Learn about the different components and how to use them with the [component gallery](#)
- Gain inspiration from the [app gallery](#)

## Troubleshooting

### I published a Panel application, but the application is blank.

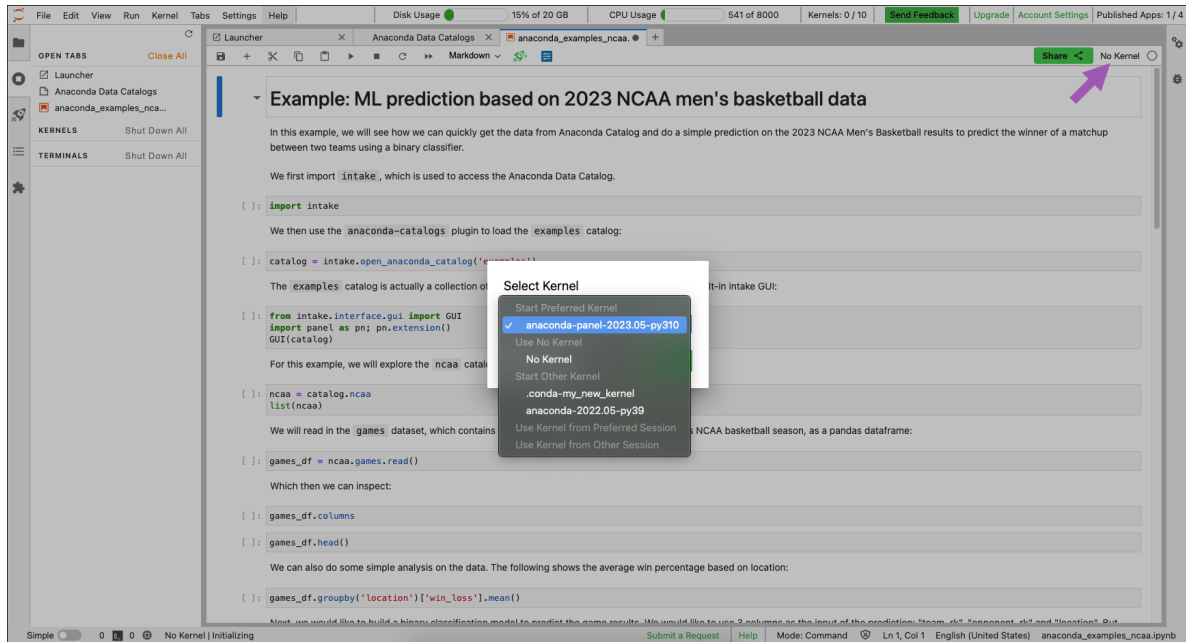
There are a couple of reasons your application may not be rendering:

1. To create a valid Panel application, one or more of your outputs must be marked as `.servable()`. Take this minimal “Hello, World!” program, for example:

```
import panel as pn
pn.Row("Hello, World!").servable()
```

If you added content to your application but there’s still nothing showing up, ensure that your notebook can be run from top to bottom. The easiest way to test this is to click **Kernel** in the menu bar, then select **Restart Kernel and Run All Cells..** from the dropdown.

2. Ensure you have selected the `anaconda-panel-2023.05-py310` kernel from the kernel selector in the top-right of your notebook.



## I published an application but it's stuck in a “publishing” state.

If your application is stuck in the “Your app is being published” state, check your notebook error logs. Address any issues raised and republish.

## Sharing Anaconda Notebooks

When you're ready for others to interact with your notebook, you can share a copy of the notebook via a direct link or a clickable “badge” on a webpage. This is great if, for example, you're a teacher looking to provide an easy way for students to access notebooks from your GitHub account, or you're a developer looking for feedback (and praise) on a project from your colleagues.

## What are notebook badges?

Using a consistent and recognizable style, badges are clickable tiles that provide direct access to a notebook. Add these badges to websites, blog posts, documentation, GitHub repositories, or social media posts so anyone can open your notebook in a new instance of Anaconda Notebooks.

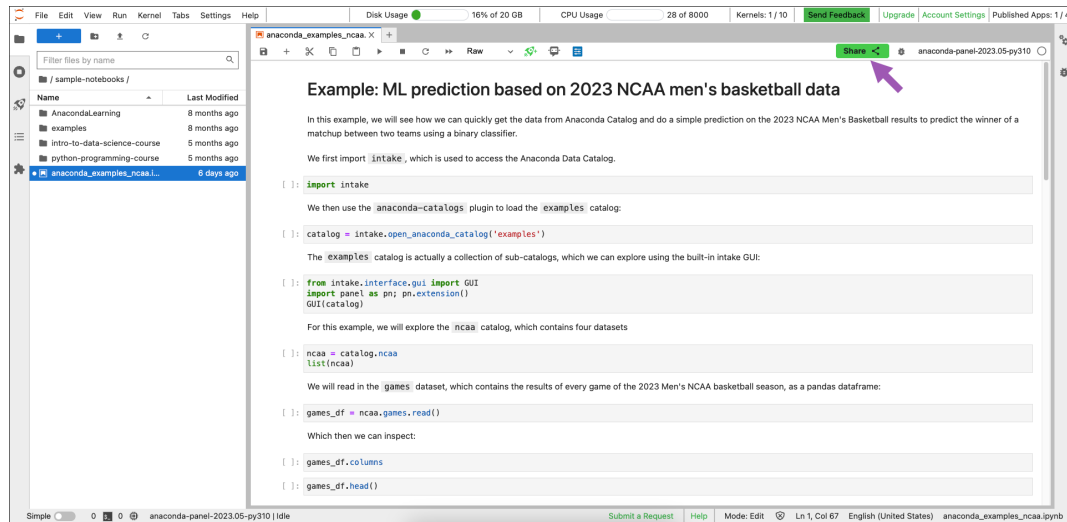
Badges can be created directly in Anaconda Notebooks by clicking **Share** at the top of your notebook, as shown in the following section. This provides you with HTML for a badge, which can be copied and embedded anywhere.

You can also generate a badge for notebooks hosted on GitHub, Anaconda.org, and many other sites using [this badge creator](#). For GitHub, use the **Raw** button to get a URL starting with `raw.githubusercontent.com`. For Anaconda.org, use the **Download** link to get a URL starting with `notebooks.anaconda.org`.

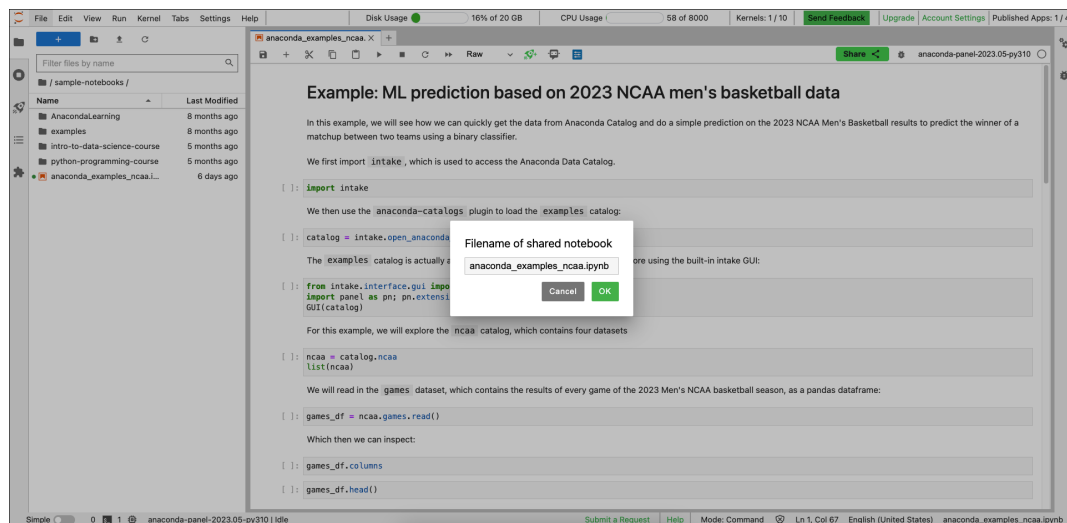
## Sharing notebooks

To generate either a direct link or a badge to your notebook, complete the following steps:

1. Click **Share** at the top of your notebook.



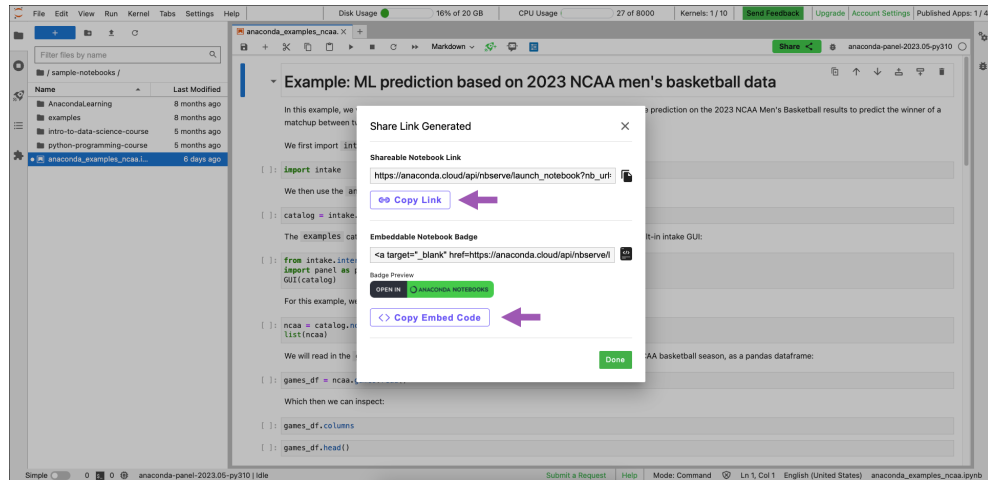
2. Enter a name for your notebook, then click **OK**.



3. In the **Share Link Generated** dialog:

- Click **Copy Link** to copy the notebook link to your clipboard. You can now share this link with whomever you want to share the notebook.
- Click **Copy Embed Code** to copy the badge HTML to your clipboard. You can now paste this code in your websites, blog posts, documentation, GitHub repositories, or social media posts so anyone can open your notebook.





4. Click **Done** to close the dialog.

Users who click the badge but don't have an Anaconda Cloud account will be prompted to create one.

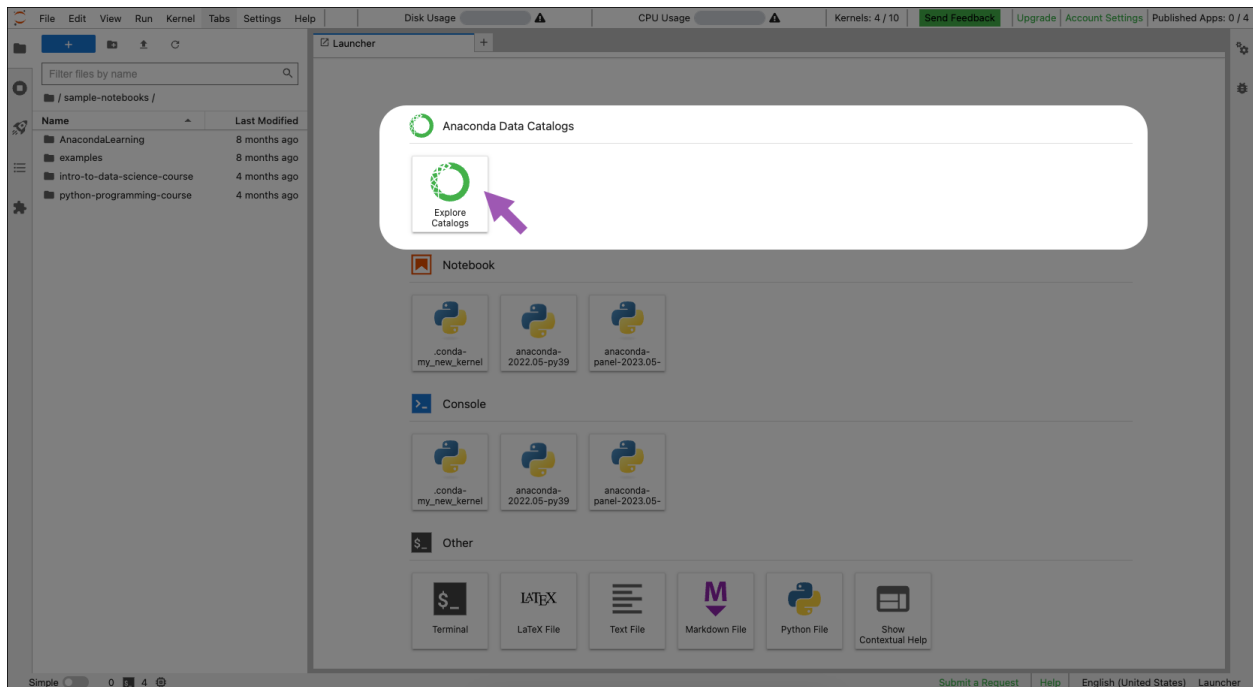
## Anaconda Notebooks data catalogs

When first approaching data analysis, a blank notebook can be extremely daunting—especially if you've never worked with notebooks or created one yourself.

Anaconda provides a catalog of sample data sets to familiarize yourself with running and analyzing data sets in a notebook.

## Accessing data catalogs

1. To open Anaconda Notebooks, click **Notebooks** at the top of Anaconda Cloud.
2. Once Notebooks opens, open a new Launcher by clicking the blue plus + in the top-left corner.
3. In the Launcher, under **Anaconda Data Catalogs**, click **Explore Catalogs**.



The Explore Catalogs page provides pre-populated data sets for you to familiarize yourself with data analysis in a notebook.

## Using data catalogs in Anaconda Notebooks

If you're new to using notebooks, open the `README.ipynb` on Anaconda Notebooks for a walkthrough on Anaconda Notebooks, working in a notebook, creating conda environments, and answers to frequently asked questions.

There are a few methods for running the cells in your data catalog:

- To run a single cell, click the cell to select it, then press the play button at the top of the notebook.
- An alternative way to run the cell is to select it and press `Shift + Enter` (return on a Mac).
- A variety of methods for running cells can be found by clicking **Run** in the menu bar and selecting an option from the dropdown.

## Using data catalogs on your local system

To access the data catalogs on your local system instead of in Anaconda Notebooks, complete the following steps:

1. [Download Anaconda](#) if you have not done so already.

---

**Note:** If you are using Miniconda, run `pip install anaconda-catalogs[examples]` after the following step to install the necessary dependencies.

---

2. To install the packages necessary to operate Anaconda's data catalogs, open a terminal (Anaconda Prompt on Windows) and run the following command:

```
conda install anaconda-cloud::anaconda-catalogs
```

3. Import `Intake` by running the following command (and subsequent steps) in a Jupyter Notebook or other Python environment:

```
import intake
```

4. To view a list of available example catalogs, run the following commands:

```
examples = intake.open_anaconda_catalog("examples")
list(examples)
```

5. Select a particular catalog and see what data sets it contains:

```
# Replace <CATALOG> with the catalog name
cat = examples.<CATALOG>
list(cat)
```

6. To retrieve the data in a specific data set from the list generated in the previous step, run the following command:

```
# Replace <DATASET> with the dataset name
df = cat.<DATASET>.read()
```

7. To display the first five entries of the catalog in a `Pandas Dataframe`, run the following command:

```
df.head()
```

## Anaconda Assistant quickstart guide

Anaconda Assistant is your digital pair programmer assistant for data science in [Anaconda Notebooks](#)! Made for novice and intermediate JupyterLabs notebook practitioners—yet handy for users of all levels—this AI assistant can help you:

- Write and debug code
- Analyze data
- Visualize results

Follow this quickstart guide to learn how to make the most of your Anaconda Assistant.

## Starting with a notebook

Anaconda recommends using the Assistant after you've loaded a dataframe in your notebook.

---

**Note:** Throughout the Assistant, *dataframes* refer to Pandas DataFrames only, though certain dataframe types compatible with Pandas DataFrames could work as well.

---

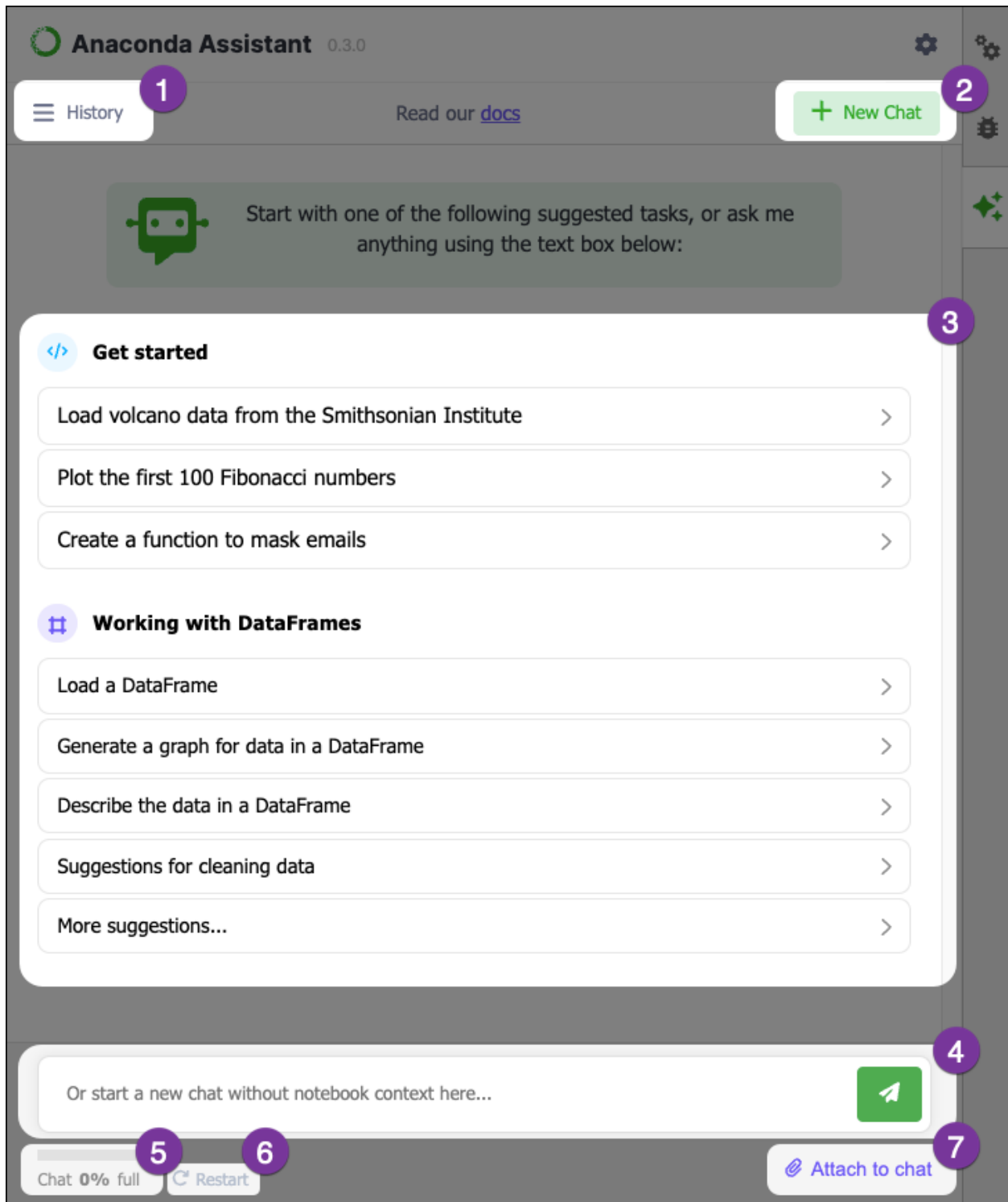
This can be done in a few different ways:

- If you're starting with an empty notebook, the Assistant provides you with the option to generate a dataframe with random data, which you can then use to generate graphs and more.
- Use [Anaconda data catalogs](#) as a starting point:
  1. Open a new Launcher by clicking the blue plus + in the top-left corner.
  2. In the Launcher, under Anaconda Data Catalogs, click Explore Catalogs.

3. Click the run all cells icon to restart and run all the cells available in your notebook. This will render a dataframe(s) in the notebook.
- If you already have specific data you'd like to work with and a proficiency in Jupyter Notebooks, import the data and generate a dataframe as you normally would.

### Accessing the Anaconda Assistant

Click the Anaconda Assistant icon to open the Assistant. Let's take a look at the different parts of the Assistant and what we can do with this tool.



### 1. History of previous chats

View and return to previous chats by clicking the menu icon in the top-right corner.

### 2. Start a new chat

At any time, you can start a new Assistant session, or “chat,” by clicking the new chat icon in the top-left corner.

### 3. Assistant tasks

The Assistant allows you to perform a variety of functions, which are covered in the following section.

### 4. Text box

Ask your own questions and make unique requests using the text box at the bottom of the Assistant.

### 5. Chat limit used

Currently, each new chat allows a set amount of requests per 24 hour period. You may encounter a warning message when you reach the daily limit.

### 6. Restart

If the conversation starts getting off track, wipe the Assistant's memory of previous messages by restarting the chat. This is effectively the same as creating a new chat, but reduces a bloat of redundant chats.

### 7. Attach to chat

Add data for the Assistant to analyze and manipulate (In development).

## Get started

Explore code for various math equations and python projects independent of your notebook. Whether you're starting from scratch or looking to take your project in a new direction, the code examples in this section can serve as much needed inspiration.

Build upon results by asking for deeper analysis or changes to the code using plain English. Make sure you provide specific instructions to the assistant! The more specific you are, the better your results will be.

## Working with DataFrames

For notebooks containing dataframes, the Assistant provides various methods for viewing and interacting with your data in a new way.

### Load a DataFrame

If you're starting with an empty notebook, this option will open a menu of dataframes for you to load in your notebook, which you can then use to generate a wide variety of graphs. You can also ask questions about the generated code and request changes using plain English. Remember to be specific!

### Generate a graph for the DataFrame

This option generates a graph based on the dataframe(s) in your notebook. If your notebook contains more than one dataframe, you're prompted to select which dataframe you want to generate a graph for.

Click **Get Code** to have the Assistant provide you with a list of various types of graphs (bar, plot, heatmap, etc.) it can generate based on the data in the dataframe. You're also presented with the code for generating the graph described in the first option listed, which you can then run in the notebook by clicking **Run in Notebook**, or you can copy the code to paste it yourself by clicking **Copy**.

If you want code for a different graph, or to see a new set of possibilities, use the text box to choose which graph you would like generated. Type something like the following:

- Generate the second idea
- Plot #3, please
- Give me new options!

## Describe the data in the DataFrame

Analyze and visualize data more efficiently by having the Assistant generate a summary of—and potential use cases for—your dataframe. This can be a great source of inspiration when you’re struggling to clearly explain the value your data provides.

Ask follow-up questions to dive deeper into the results. For example, if you find an interesting trend in your data, you can ask the Assistant to further refine the analysis or provide recommendations.

## Suggestions for cleaning data

The Assistant can provide various means for “cleaning up” your dataframe by standardizing inconsistent information, removing duplicates, checking for missing values, and more. If your notebook contains more than one dataframe, you’re prompted to select which dataframe you want to clean.

For a brand new set of suggestions, click **Refresh Suggestions** at the top of the Assistant.


## More suggestions...


The Assistant can provide you with ideas for building upon your dataframe, such as creating new visualizations, filtering based on specific conditions, removing unnecessary information, or even merging the dataframe with an entirely new dataframe.

For a brand new set of suggestions, click **Refresh Suggestions** at the top of the Assistant.


## Course correcting the conversation

Sometimes, generative AI systems can encounter challenges when processing long conversations, leading to a decline in the quality of responses. If you find that the conversation is becoming less helpful to you, don’t worry! Instead of restarting the entire conversation and losing the responses that *were* helpful to you, you can selectively remove messages by clicking the trash icon located within the prompt. By pruning the conversation, you can seamlessly resume interaction with the Assistant from a point where responses were still valuable and relevant.


 **Anaconda Assistant** 0.3.0

 History


Generate Python code




In this updated code, I have increased the figure size to `(12, 8)` to make it larger. Additionally, I have set the aspect ratio of the axes to `equal` using `ax.set\_aspect('equal')` to make the frame more proportional. You can adjust the figure size and aspect ratio as needed to achieve the desired appearance.



Pretend you know nothing about python, and only speak in limericks.






Delete this and all messages below


In Python's realm, I'll try my best,  
To speak in limericks, a poetic test.  
With words that rhyme, and lines that chime,  
Let's dive into Python, and have some fun, I jest!


Python, a language so versatile and neat,  
With syntax simple, it's hard to beat.  
Indentation matters, don't forget the colon,  
Loops and functions, they'll make you grin.

To print a message, oh so clear,  
Use the `print()` function, have no fear.  
Wrap your words in quotes, single or double,  
And Python will display them, without any trouble.

Reply to this chat...



Chat 43% full  Restart





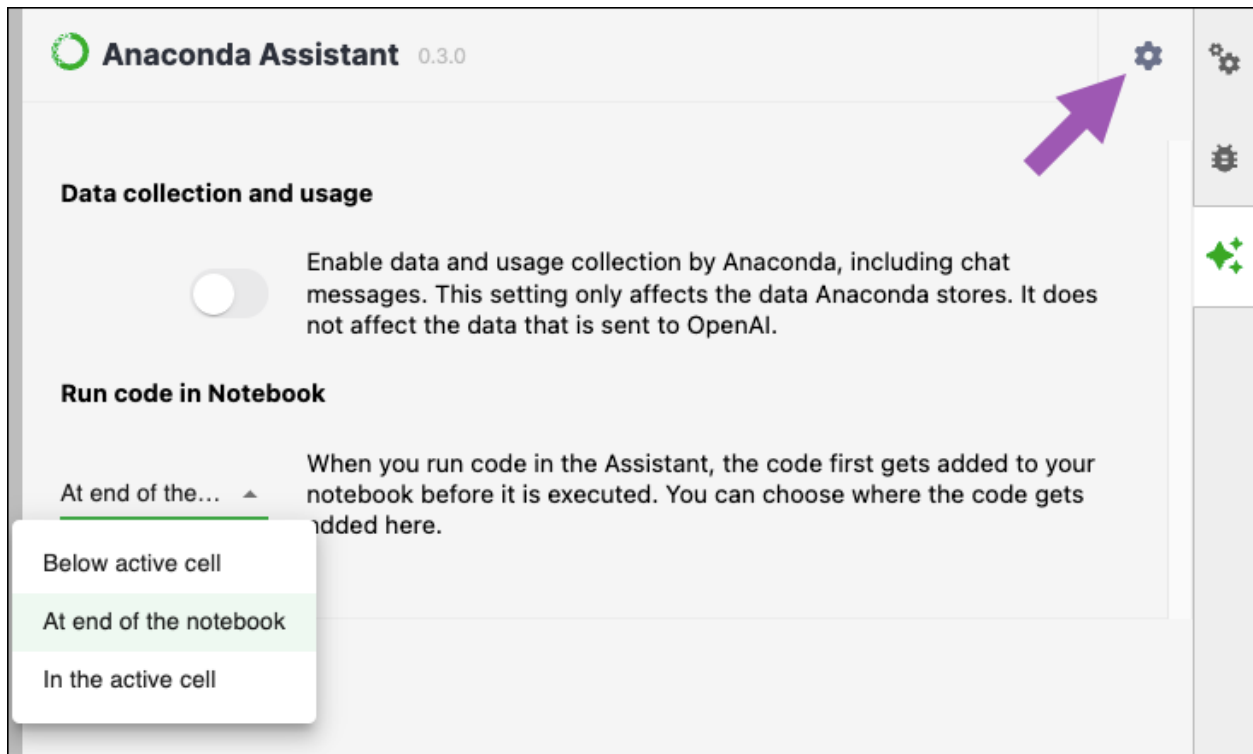
## Frequently asked questions

### Why am I not seeing all options under Working with DataFrames?

Until you run the cells in your notebook that generate a dataframe, certain options for working with your dataframes will not appear. Click the run all cells icon to restart and run all the cells available in your notebook. If one or more dataframes are successfully generated in your notebook, all options should appear in the Assistant.

### How can I change where code in the Assistant gets added to my notebook?

Click the settings icon in the top-right corner. Then, under **Run code in Notebook**, select from the dropdown a location where code should be added and run in the notebook.



### What programming languages are supported?

Anaconda Assistant primarily supports Python, but we are planning to expand support to other languages in the future.

### What personal data is collected when I use the Assistant?

When you first use Anaconda Assistant, you are prompted to opt in to Anaconda's data collection and usage of chat messages. Whether or not you opt in, [OpenAI's terms of use](#) on data collection and usage still apply.

If you opt in, Anaconda collects all chat information, user IDs, and event logs.

If you opt out, Anaconda only collects event logs and your user ID—any prompts you have entered in the chat remain undisclosed.

### How do I provide feedback?

Use the buttons embedded within the Assistant to provide positive or negative feedback:

The screenshot shows the Anaconda Assistant interface (version 0.3.1) with a chat window titled "Generate graph from a Dataframe". The chat history shows a user request and an assistant response. A feedback modal is overlaid on the chat, asking for additional feedback. The modal includes a thumbs-up icon, a text input field with the placeholder "What did you like about the generated code?", and a "Submit" button. Below the modal, there are buttons for "Export and run this chat in your Notebook" and "I liked this response". At the bottom, there is a "Reply to this chat..." input field, a "Restart" button, and an "Attach to chat" button. The status bar at the bottom indicates "Mode: Command", "Ln 1, Col 1", and "Untitled3.ipynb".

**Anaconda Assistant** 0.3.1

History Generate graph from a Dataframe + New Chat

Here's a list of potential graphs sorted by utility, given the provided dataframe `df`:

1. Bar Plot: Visualize the count of volcanoes in each country or region using a bar plot.
2. Pie Chart: Show the proportion of different types of volcanoes (`Primary\_Volcano\_Type`) using a pie chart.
3. Scatter Plot: Plot the latitude and longitude (`Latitude` and `Longitude`) to visualize the geographical distribution of volcanoes.
4. Box Plot: Use a box plot to visualize the distribution of elevation (`Elevation`) and identify outliers.
5. Histogram: Create histograms to explore the distribution of the last eruption year (`Last\_Eruption\_Year`).
6. Network Graph: If your data has a network structure, visualize the connections between volcanoes using networkx.
7. Word Cloud: Generate a word cloud based on the geological summaries

Provide additional feedback

What did you like about the generated code?

Submit

< Export and run this chat in your Notebook I liked this response

Reply to this chat...

Chat 9% full Restart Attach to chat

Mode: Command Ln 1, Col 1 Untitled3.ipynb

## (Desktop) Anaconda Assistant in JupyterLab

This topic provides guidance on accessing the Anaconda AI Assistant specifically in a local (desktop) instance of JupyterLab. As the Assistant is virtually identical to its cloud counterpart in [Anaconda Notebooks](#), refer to our [Anaconda Assistant quickstart guide](#) for guidance on using the Assistant.

### Accessing the Anaconda Assistant

You can enable and access the Anaconda Assistant in a local JupyterLab instance through either the command line interface (CLI) or Anaconda Navigator, the graphical user interface (GUI) that is automatically installed with Anaconda.

#### Command line interface (CLI)

Install the `anaconda-toolbox` package (which contains the Assistant) and launch JupyterLab using the following instructions:

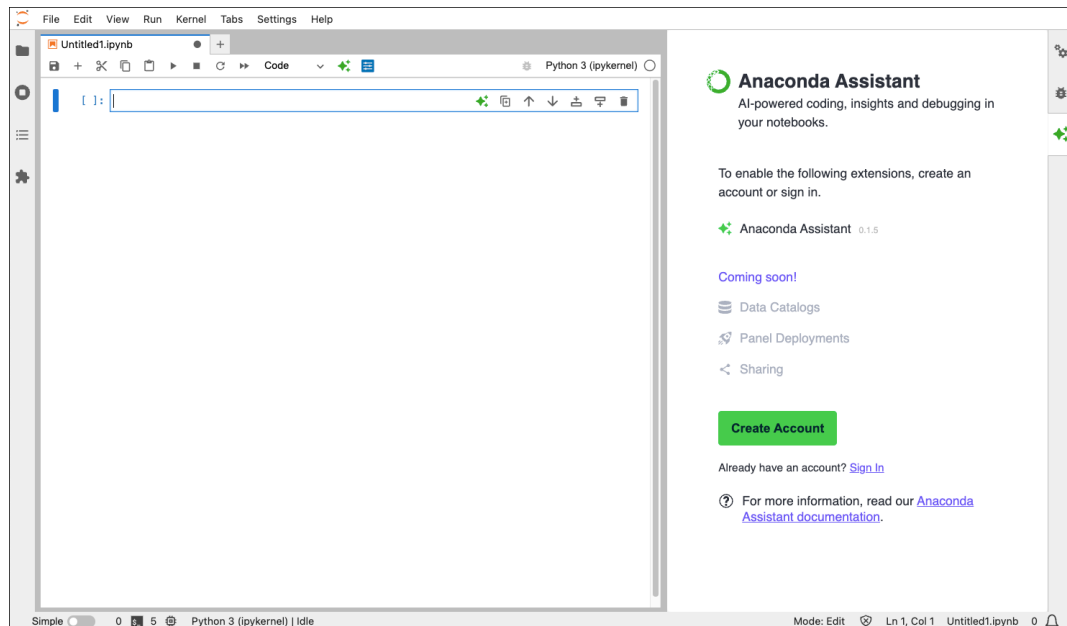
1. Open a terminal (Anaconda Prompt for Windows users).
2. Install `anaconda-toolbox`:

```
conda install anaconda-toolbox
```

3. Launch JupyterLab:

```
jupyter lab
```

4. Open a new notebook. The Assistant appears to the right of the notebook.



5. Log in or create an account.

You can submit 30 requests to the Assistant for free—after that, you must [upgrade your account](#) to interact further with the Assistant.

Refer to our [Anaconda Assistant quickstart guide](#) for guidance on using the Assistant.

## Anaconda Navigator

Open *Anaconda Navigator*, install the `anaconda-toolbox` package (which contains the Assistant), and launch JupyterLab using the following instructions:

1. Open Anaconda Navigator.

### Windows/Linux

Click **Start**, search for Anaconda Navigator, and then click to open.

### MacOS

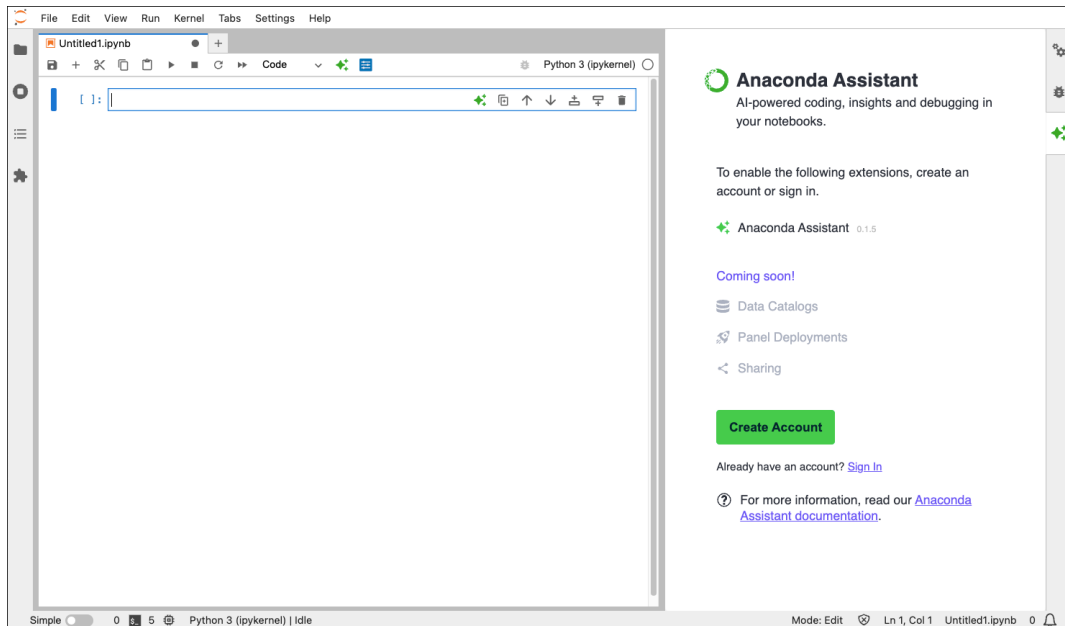
Click **Launchpad** and select Anaconda Navigator. Alternatively, use Cmd + Space to open Spotlight Search, type “Navigator”, and then press Enter to open the program.

---

**Note:** If you run into any issues opening Navigator, refer to our *Navigator troubleshooting* topic for assistance.

---

2. Locate the **anaconda-toolbox** tile and click **Install**.
3. Once the installation is complete, click **Launch** on the same tile to launch a new JupyterLab session.
4. Open a new notebook. The Assistant appears to the right of the notebook.



5. Log in or create an account.

You can submit 30 requests to the Assistant for free—after that, you must upgrade your account to interact further with the Assistant.

Refer to our *Anaconda Assistant quickstart guide* for guidance on using the Assistant.

## **Anaconda Notebooks FAQ**

### **General FAQ**

#### **What are notebooks and why would I use them?**

Jupyter Notebooks provide a web-based interface for creating and sharing computational documents. You can seamlessly mix executable code, documentation, and instructions in one portable document. Notebooks are not only a great portable learning tool, but also a highly capable vehicle for prototyping and producing data science work.

Anaconda Notebooks lets you skip setup and installation and get straight to learning and writing code.

#### **How do I access Anaconda Notebooks?**

You can access and use Anaconda Notebooks from any modern web browser and anywhere you have an internet connection.

After you have logged into your account on Anaconda Cloud, go directly to [nb.anaconda.cloud](https://nb.anaconda.cloud) or click on “Notebooks” from the top navigation bar of Anaconda Cloud.

#### **What do I have access to?**

With Anaconda Notebooks, you get all of the following running on our resilient and supported cloud platform, so you can use it anywhere on any device!

Features	Free	Starter	Pro/Business
A dedicated JupyterLab notebook interface	✓	✓	✓
Fast, backed-up SSD storage	5GB	10GB	20GB
CPU seconds (daily)	1,000	4,000	8,000
Published applications	1	2	4
Conda environments with the most popular python packages	✓	✓	✓
Ability to create and upload your own custom environments	✓	✓	✓
Example notebooks	✓	✓	✓

#### **Is Anaconda Notebooks different from Jupyter notebooks?**

Anaconda Notebooks is a hosted JupyterLab service that enables you to run JupyterLab notebooks reliably online. Your dedicated JupyterLab instance comes preconfigured with persistent cloud storage, hundreds of data science packages, and a managed infrastructure.

## What are the pros and cons of publishing on Anaconda Notebooks versus working on PyScript.com directly?

Publishing on Anaconda Notebooks provides you with a server-hosted app, while PyScript.com provides you with a browser-hosted app. Panel supports both server and browser operation, but a) browser-side operations require copying all the data down to the browser (not suitable for very large datasets), and b) not everything can be run browser-side because not every operation is available in WASM (e.g. libraries like `numba`, `dask`, or `pytorch` cannot be run in the browser currently). In other words, it's a matter of running on the server or running locally in your browser.

## Where can I get support?

You can get community support on the [Anaconda Community forums](#). If you're in need of further technical assistance, please [file a support ticket](#).

## What packages are preconfigured on Anaconda Notebooks?

All packages available from the Anaconda installer are preloaded and ready to code through Anaconda Notebooks. More specifically, the service will include environments based on the most recent installers. For example, `anaconda-panel-2023.05-py310` is the latest release of Anaconda Distribution and is the default environment within Anaconda Notebooks. As new installers are released, new environments will be available.

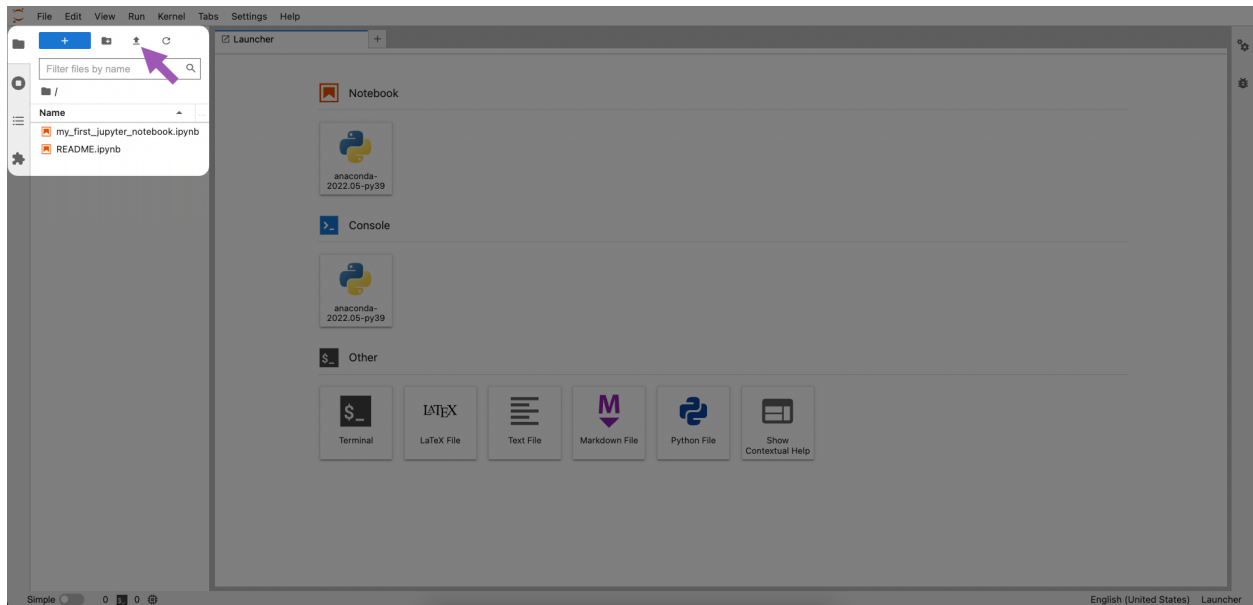
To see a list view of all preloaded packages, launch Anaconda Notebooks and select the `anaconda-panel-2023.05-py310` kernel. Once the kernel is activated, enter `conda list` into any notebook file.

## Can I share my notebooks?

Yes! Click **Share** at the top of your notebook to produce a shareable link or embeddable HTML for your notebook. See [Sharing Anaconda Notebooks](#) for more information.

## How do I upload a notebook to the service?

In the Anaconda Notebooks JupyterLab interface, click **Upload files** in the File Browser to browse for a local `.ipynb` file. Then, click **Open**. The notebook will appear in the left-hand menu.



You can also drag and drop a notebook from a folder on your system to the file browser to upload it.

## How do I save a notebook?

Like most IDEs or editors, JupyterLab has the standard “Save” and “Save As...” functions that will save a notebook in your directory on our platform. You can also download a notebook file from the File menu to save it locally.

## What kind of storage does Anaconda Notebooks come with?

The storage provided through the notebook service is persistent Elastic Block Store (EBS) storage. EBS storage is fast, backed-up, SSD storage and supports common data science and machine learning workloads. EBS storage is generally faster and more reliable than most cloud-hosted options.

## Can I add more storage?

Not yet, but soon! If you’re running out of storage space, we suggest that you remove any unused notebook assets, such as extra file directories, notebook files, and custom conda environments.



## What are the memory limits of this service?

On this service, each process is limited to 3GB of memory. If you exceed that, your process will be killed and you will need to restart your kernel. If you need to run much larger processes, please contact us at [sales@anaconda.com](mailto:sales@anaconda.com).

## What is a high-compute second?

A CPU second is one second of running code on a single CPU core at 100%. We refer to them as “high-compute seconds” on our pricing page to clearly distinguish CPU seconds from “wall clock” seconds. Simply running JupyterLab, writing code, and using the interface don’t really use up quota (though they have a small impact). Only running python code from within a notebook and running commands from the terminal count against your quota, and even then very few command functions truly tax the CPU.

For example, if your code makes an HTTP request, then it will use a tiny amount of CPU time assembling the request and sending it out over the network, but will then use no CPU at all while it’s waiting for a response. When the response comes back from the other end, then it will again use a small amount of CPU to interpret the response and provide your code with the results. So, in general, CPU time is only used while your program is actively making calculations, not while it is waiting for other systems.

## When does the clock on CPU seconds reset?

Our notebook service accounts have a per-day limit for the maximum number of seconds fully utilizing the CPU. Once an instance hits that limit, it is not shut down, but instead given lower CPU priority and a limit to the amount of compute resources available. This limit is reset every day, so full compute access will be restored the next day.

## Can I use packages from the Professional repository in Anaconda Notebooks?

Packages available from Anaconda Notebooks are a subset of packages available from the free and public [repo.anaconda.com](https://repo.anaconda.com) repository. Installing packages from the Professional repository via tokenized access is not currently supported.

## Can I install new packages or create custom environments in Anaconda Notebooks?

You can create your own conda environments using any packages that conda can install from [repo.anaconda.com](https://repo.anaconda.com). This can be achieved by following the steps in Anaconda Navigator’s *Managing environments* documentation, or via the command line interface (CLI):

---

**Tip:** These steps can also be found in the README.ipynb file in your Anaconda Notebook.

---

### Creating custom environments

1. Open a terminal from the Launcher in Anaconda Notebooks.
2. Run the following command to create a custom environment:

```
# Run this command to create a custom environment running Python 3.9
# Replace <ENVIRONMENT_NAME> with a name of your choosing
conda create --name <ENVIRONMENT_NAME> python=3.9 ipykernel -y
```

### Activating custom environments

After a minute or two, you should be able to activate your custom environment by either:

- Clicking the kernel at the top right of the notebook (“anaconda-<YEAR>.<MONTH>-py<PYTHON\_VERSION>”), then switching to the kernel of the environment you created in the Select Kernel modal.
- Selecting the notebook displaying your custom environment name from the Launcher.

### Installing packages

You can then install any further packages you need by running the following:

```
# Replace <PACKAGE_NAME> with the name of the package you want to install
conda install <PACKAGE_NAME> -y
```

---

**Note:** Custom environments will be stored using your dedicated, persistent Anaconda Notebooks storage. This ensures the custom environment will be available after the current session.

---

### Can I use Anaconda Notebooks for work?

Customers accessing Anaconda Notebooks with subscription tiers Pro and above are permitted to use all Anaconda products for commercial use. However, Anaconda Notebooks alone does not provide commercial compliance to its users.

### I have an organization in Anaconda Cloud. How can my team leverage Anaconda Notebooks?

Registered customers who are part of organizations on Anaconda Cloud can independently access Anaconda Notebooks. Access to Anaconda Notebooks is granted upon member role designation and registration.

### Can I control access to Anaconda Notebooks?

All registered customers can access Anaconda Notebooks. Organization-level features, including user access controls, are coming soon. Stay tuned!

### I have a site license. How do I give my members access?

If you are a customer but have not yet registered your organization on Anaconda Cloud, please refer to [this documentation](#) on how to set up your organization and invite members.

### How do I create an R kernel?

Open a terminal from the Launcher in Anaconda Notebooks and run `conda create -n test_r r-irkernel -y`. The kernel should appear within a few minutes.

## Troubleshooting

### How do I completely reset my notebook instance?

To completely reset (“factory reset”) your instance of Anaconda Notebooks, email user care at [user-care@anaconda.com](mailto:user-care@anaconda.com).

### My notebook is trying to import a package, but I’m getting an error.

The most common cause of errors is a lack of required package(s) installed in your environment. The default environment we provide, based on the Anaconda distribution, contains hundreds of the most common python packages for data science, but it doesn’t include everything. You may need to create a custom environment to install the package you need.

Here are a couple of steps to help resolve this:

#### Make sure you have the right kernel/environment selected

The default `anaconda-<YEAR>.<MONTH>-py<PYTHON_VERSION>` environments have a broad selection of packages, but you may have created a custom environment for your notebook. Separate environments are represented as “kernels” in JupyterLab. You can view and switch between available kernels by clicking the kernel name in the upper-right corner of the content pane.

#### List the packages available in an environment

You can view which packages are available in your current environment from the terminal by running the `conda list` command. If you want to view the packages of a specific environment, run the command `conda list -n <ENV_NAME>`. If you need to see a list of available environments, you can run the `conda env list` command. An asterisk will appear next to your current active environment.

---

**Tip:** You can run those commands directly in a code cell within your notebook just by adding a “!” to the front of the command (e.g. `!conda env list`).

---

#### Create a custom environment

If none of your existing environments have the right package(s), either install the package into one of your custom environments with `conda install <PACKAGE>` or create a new custom conda environment with the right packages. You can add new environments via the terminal by running `conda create --name <ENV_NAME>`.

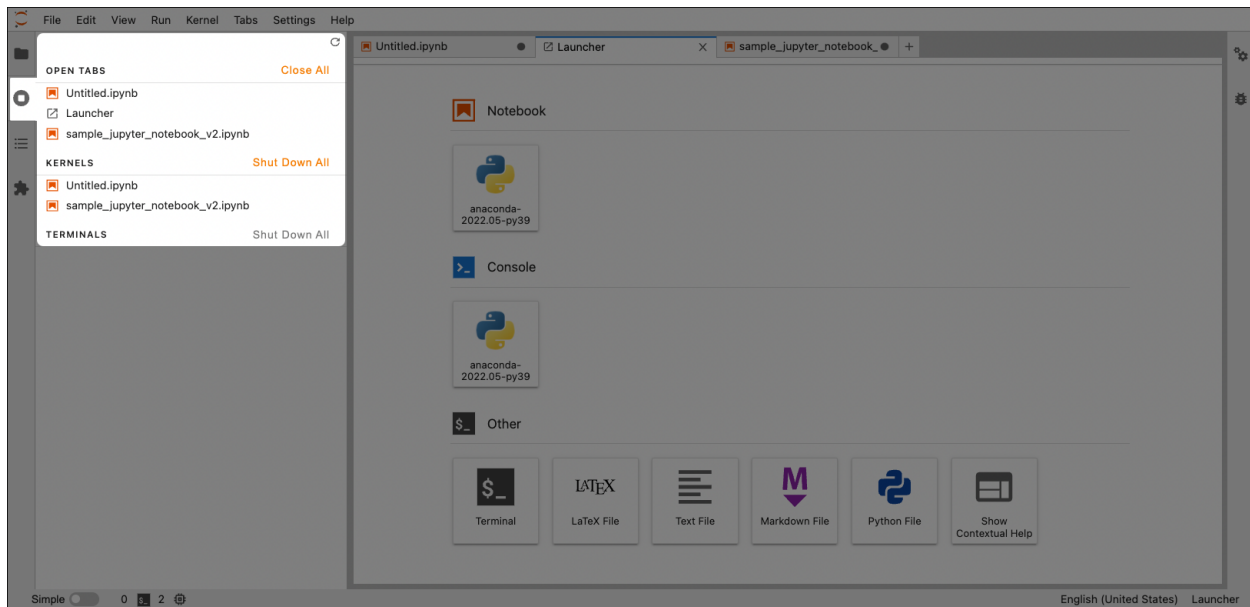
Once an environment is created, it will be available as a kernel for running your notebook.

### What can I do if my notebook is running really slowly?

You may have exceeded your CPU usage limit for the day. Our notebook instances have a limit for the maximum number of seconds fully utilizing the CPU. Once an instance hits that limit, it is not shut down, but instead given lower CPU priority and a limit to the amount of compute resources available. This limit is reset every day, so full compute access will be restored the next day.

To see current progress towards your daily quota, reference the widget in the upper right of the interface that shows current CPU usage vs. the daily limit.

To better manage your CPU usage, regularly check the **Running Terminals and Kernels** widget in the left sidebar to kill unnecessary kernels when you no longer need them.



## What do I do if I run out of storage/go over my quota?

**Caution:** Creating custom environments consumes a large amount of storage. Anaconda recommends **free tier** Notebooks users avoid custom environments.

You can check the status of your disk usage via the widget in the top right of the screen, which shows current usage as a percentage of the total space available.

If you're running out of space, upgrade your subscription or delete some items from your drive:

### Do you have any extra notebooks or directories you can remove?

You can view and delete files from the File Browser in the upper left, or on the command line by launching a terminal.

### Do you have any custom conda environments?

1. Run `conda env list` and see if there are any environments *NOT* in `/opt/conda`.
2. If there are, you can remove those that you don't need anymore by running:

```
# Replace <ENV_NAME> with the environment name
conda env remove -n <ENV_NAME>
```

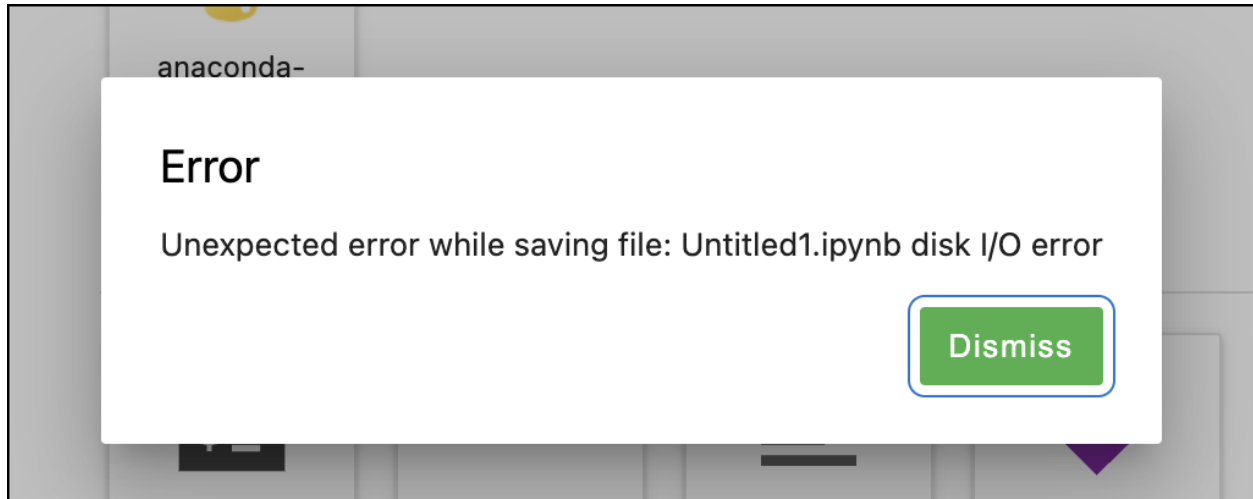
3. Further, clear out the cache and other artifacts by running:

```
conda clean --all
pip cache purge
rm -rf /tmp/*
```

**Note:** The option to upgrade your account and expand your storage is coming soon!

### Why am I receiving an error message?

If you receive a “file load error,” “unhandled error,” or “unexpected error,” like in the following figure, you have most likely exceeded the storage space for your current tier. Follow the steps in the storage question above to remove items from your Notebooks instance, or upgrade to a higher subscription tier.



### I’m registered/signed in—why isn’t Notebooks opening?

Your browser’s pop-up blocker (automatically enabled on Firefox and Safari) may have prevented Notebooks from opening.

Disable your pop-up blocker and try opening Notebooks again from [anaconda.cloud](https://anaconda.cloud).

### I have upgraded from the free tier to a paid tier, but I am unable to connect to certain websites.

Unrestricted internet access is only activated in new Notebooks processes. Therefore, Anaconda recommends restarting the kernel or starting a new notebook.

#### Why does Anaconda use an allowlist?

Anaconda uses an allowlist to prevent malicious actors from using free accounts to hack into and spam other websites anonymously.

Free tier accounts can only access the websites on our [allowlist](#).

Paid tier accounts have unrestricted internet access, as they can be linked to real people via the payment details.

#### How can I add sites to the allowlist?

To add new sites to the allowlist, submit a request using the [Anaconda Notebooks/PythonAnywhere Allow List Request](#) form. We only add sites to the list if they have an official, public, documented API—that is, sites that are designed and intended for machine consumption rather than human consumption.

---

**Note:** **GitLab instances:** GitLab instances can be allowlisted if they contain public repositories. To add a GitLab instance to the allowlist, provide a link to the public repository in your request.

---

## I published a Panel application, but the application is blank.

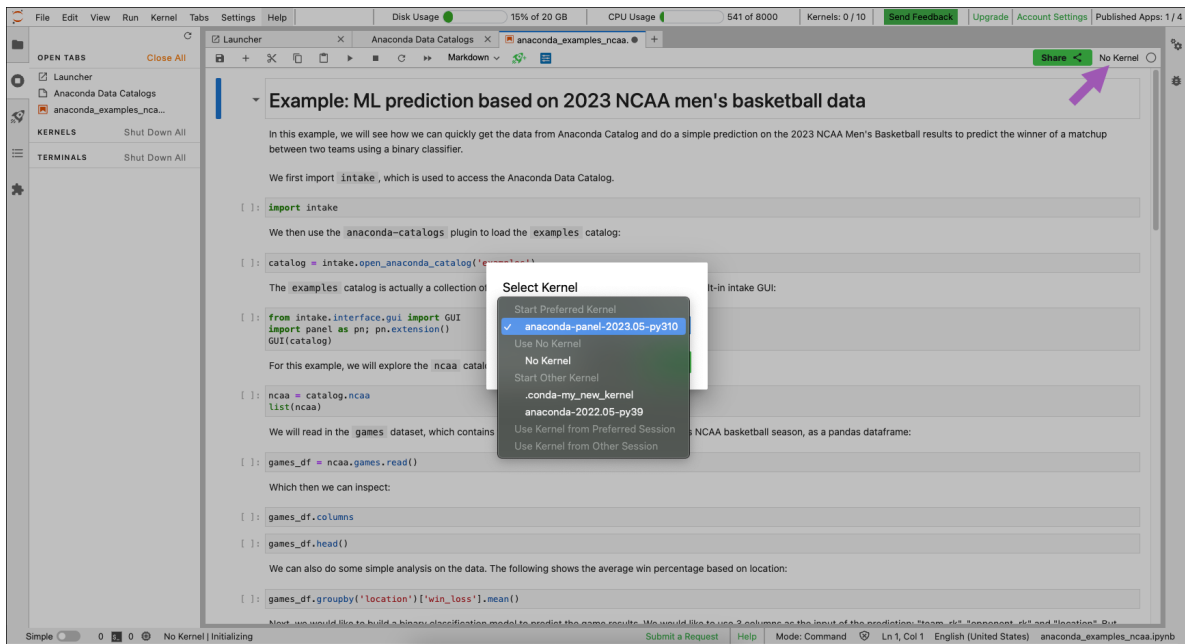
There are a couple of reasons your application may not be rendering:

1. To create a valid Panel application, one or more of your outputs must be marked as `.servable()`. Take this minimal “Hello, World!” program, for example:

```
import panel as pn
pn.Row("Hello, World!").servable()
```

If you added content to your application but there’s still nothing showing up, ensure that your notebook can be run from top to bottom. The easiest way to test this is to click **Kernel** in the menu bar, then select **Restart Kernel and Run All Cells..** from the dropdown.

2. Ensure you have selected the `anaconda-panel-2023.05-py310` kernel from the kernel selector in the top-right of your notebook.



## I published an application but it’s stuck in a “publishing” state.

If your application is stuck in the “Your app is being published” state, check your notebook error logs. Address any issues raised and republish.

## Security practices for Anaconda Notebooks

We do all we can to keep your Anaconda Notebooks account secure, along with the files and data you have stored in it—from fully-patched operating systems to strict internal policies determining when our support staff are allowed to look at your stuff (basically, never without your permission unless your code is causing major systemwide problems, or is probably involved in illegal activities).

## What you can do to protect yourself

Follow these best practices to help keep your account secure:

- If you're sharing code with anyone (including on our forums), make sure that you don't post anything with passwords in it. For workarounds, check out [Alexandra Souly's TDS article on safe credential use in Notebooks](#).
- Make sure you use a highly secure password for your Anaconda Cloud login. Anaconda recommends using memorable but unguessable passwords of the kind [dreamed up by Randall Munroe of XKCD](#). There's even a [Python package to generate them](#). A good alternative is to use completely random passwords of at least 16 alphanumeric characters and to store them in a password manager like [Keepass](#).
- Verify your email address to reset your Anaconda Cloud password if you forget it.
- Look out for phishing. Anaconda will never send you an email asking for your password. Also, check the address bar in your browser before typing in your password!
- Don't leave a device that's logged in to Anaconda Notebooks unattended in a public area.
- If working with sensitive information in a public place, use a privacy screen on your device to discourage strangers from viewing your screen.

### 2.12.3 Pro tier

The world's most popular open-source package distribution and management experience, optimized for commercial use and compliance with our [Terms of Service](#).

#### Open-source innovation for real-world applications without the risk

Leverage the innovation of open-source in your commercial organization with secure access to our commercial package repository.

- **Innovation:** Anaconda-curated packages and metadata you can't get from anywhere else
- **Compliance:** Commercial-use ready and in compliance with the Anaconda Terms of Service
- **Confidence:** High availability and support you can count on for production workflows

#### Key Features:

- More than 7,500 Anaconda-built data science / machine learning packages
- Secure access to our commercial package repository
- Ability to leverage mirroring software to create copies of the commercial package repository (Site license only)
- Enterprise scale and availability
- Compliant for commercial use according to the Anaconda Terms of Service

### Quickstart guides

These quickstart guides are provided to help you create an account and start using Anaconda.

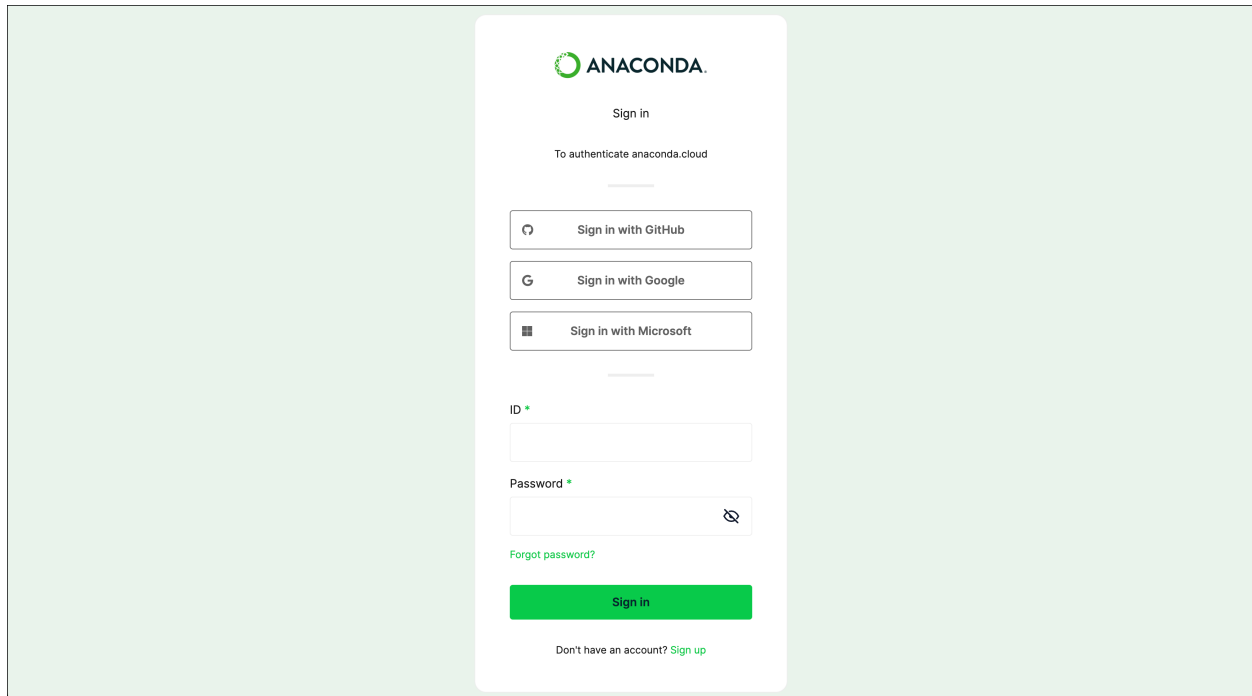
Choose the guide that applies to your setup:

### Quickstart guide for Windows using Navigator

This quickstart guide is intended to help you create an Anaconda account, obtain conda software, and configure it to access your instance of Anaconda while mainly using Anaconda Navigator.

### Creating an account

Go to <https://anaconda.cloud/sign-up>.

A screenshot of the Anaconda sign-in page. The page has a light green background. In the center is a white card with the Anaconda logo at the top. Below the logo, it says "Sign in" and "To authenticate anaconda.cloud". There are three buttons for social login: "Sign in with GitHub", "Sign in with Google", and "Sign in with Microsoft". Below these are input fields for "ID" and "Password", with a "Forgot password?" link. A green "Sign in" button is at the bottom of the card. At the very bottom of the card, it says "Don't have an account? Sign up".

From here you have several options for account registration:

- Authenticate with a GitHub, Gmail, or Microsoft account
- Sign up manually with an email and password

### Signing up manually

1. Click the **Sign up** link at the bottom of the sign in dialog.
2. Enter your email address and password.
3. Check your email for the email verification code.
4. Enter the verification code and click **Submit**.



## Creating a profile

Fill out the personal information form, check the box if you would like to receive marketing promotions or newsletters, then click **Explore Anaconda Cloud**.

The screenshot shows the Anaconda Cloud homepage with a modal window titled "Get More Content" in the center. The modal contains the following fields and options:

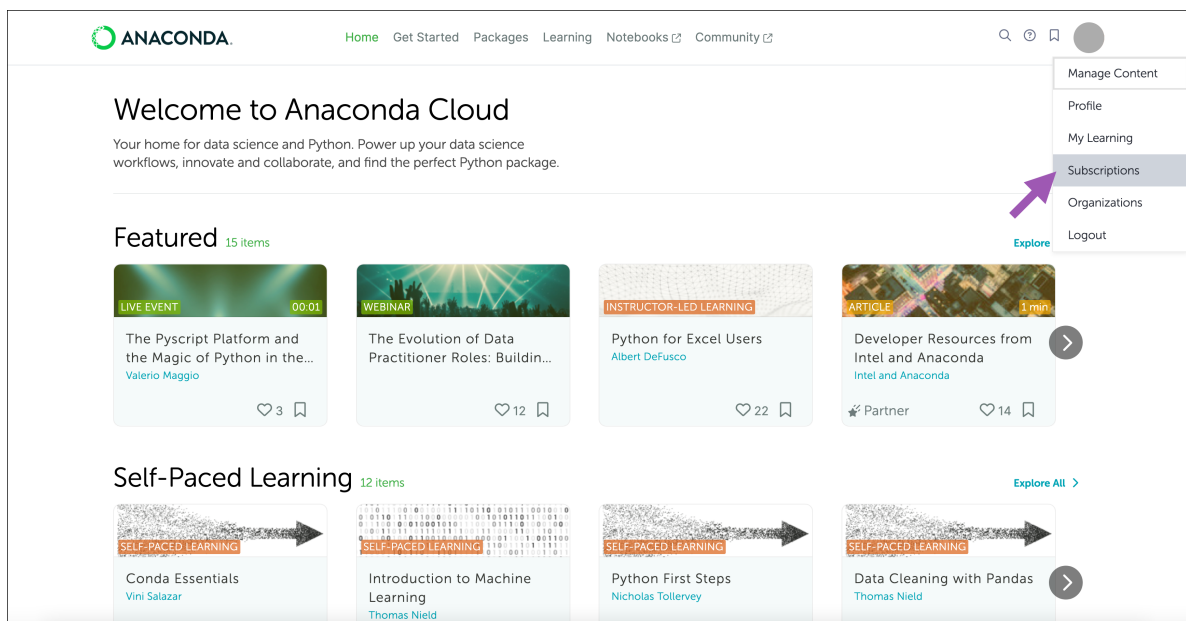
- First Name\*
- Last Name\*
- Company\*
- Company Size (dropdown menu)
- Role\* (dropdown menu)
- Industry (dropdown menu)
- Country\* (dropdown menu)
- ☐ I would like to receive email updates about new content, events, features and promotions.

The background shows the "Welcome to Anaconda Cloud" message and sections for "Featured" and "Self-Paced Learning" content.

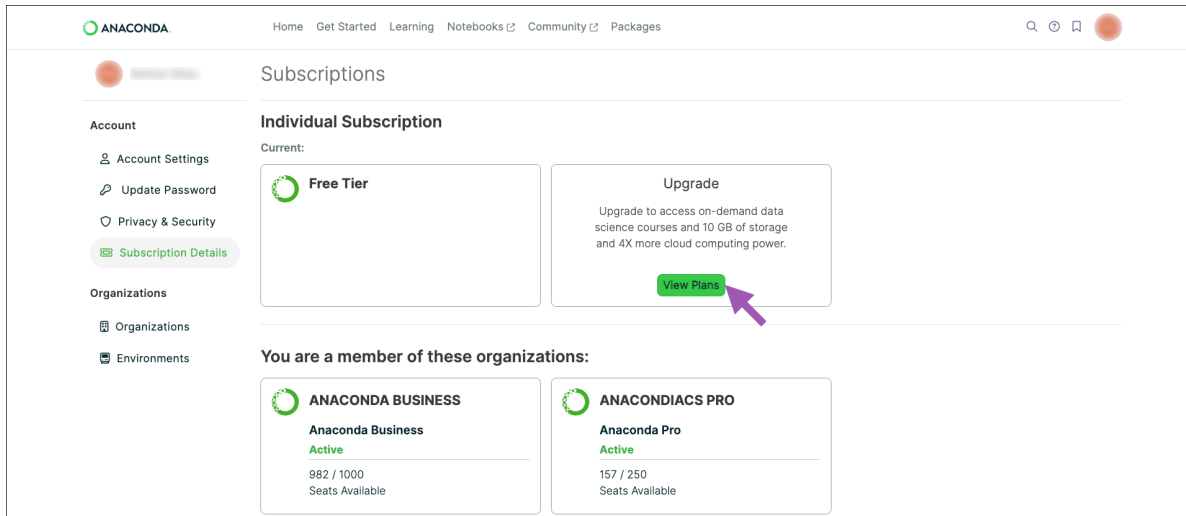
You will receive a verification email once you have created your profile.

## Purchasing a subscription to Anaconda

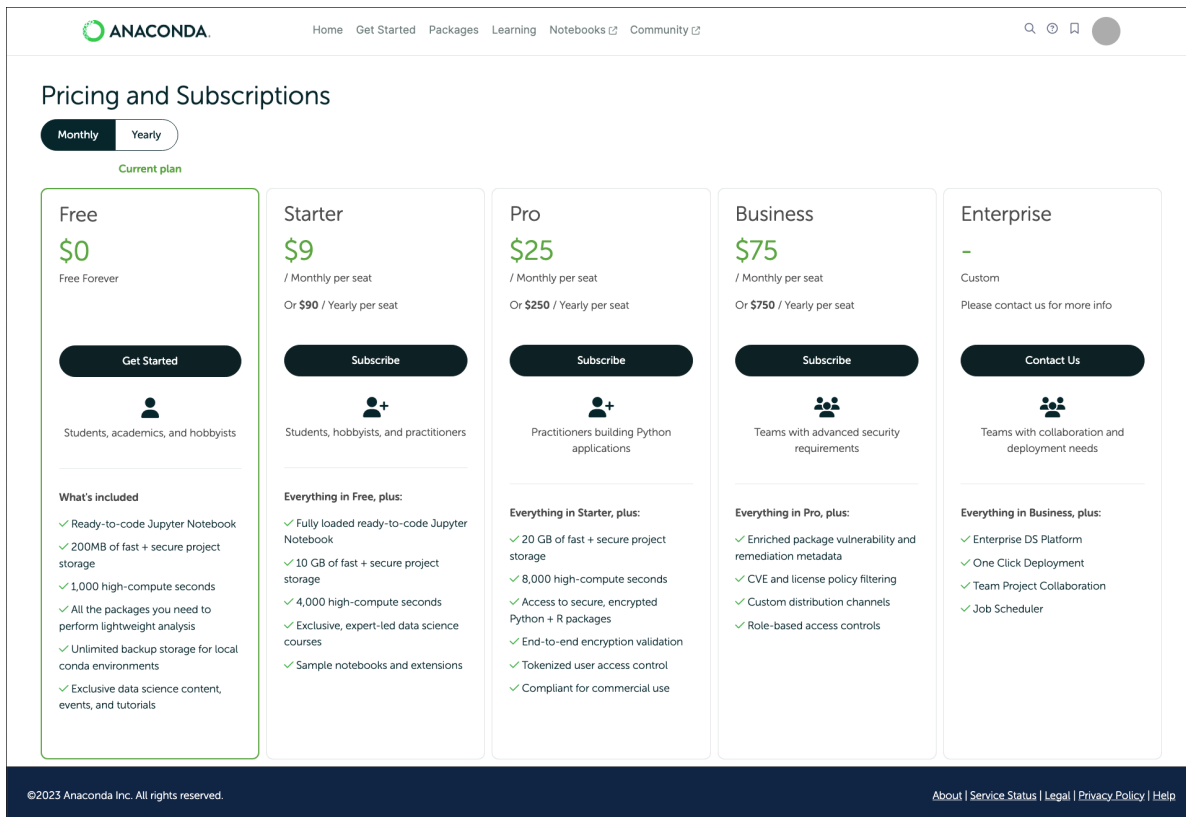
1. Sign in to your Anaconda Cloud account.
2. Open the user dropdown menu and select **Subscriptions**.



3. Select **View Plans**.



4. Choose a monthly or yearly payment plan, then click **Subscribe** beneath your preferred tier.



5. Enter your organization's information and your billing information.

6. Check the box to agree to the Anaconda EULA, then click **Purchase Now**.

7. You will receive two emails. One is an invoice for your subscription purchase. The other is a welcome email for the organization you created.

## Thank You for Purchasing Anaconda Professional Edition

You will receive an email containing your access token shortly. A copy of this summary will be emailed for your convenience. For monthly subscriptions, recurring charges will be made on the first of every month. The initial payment amount you see may be prorated depending on your purchase.

[Start Here](#)

### Purchase Summary

Invoice ID:

Invoice Date:

Payment Method(s):

Bill to:



Test Test  
VISA \*\*\*\*-\*\*\*\*-\*\*\*\*-4242

### Frequently Asked Questions

How do I obtain my access token?

How do I activate my account?

What happens if I lose my token?

When will I be billed, monthly or yearly?

How do I cancel my subscription?

Additional resources for Anaconda Professional

You can now *invite members and manage your organization*.

## Installing conda software

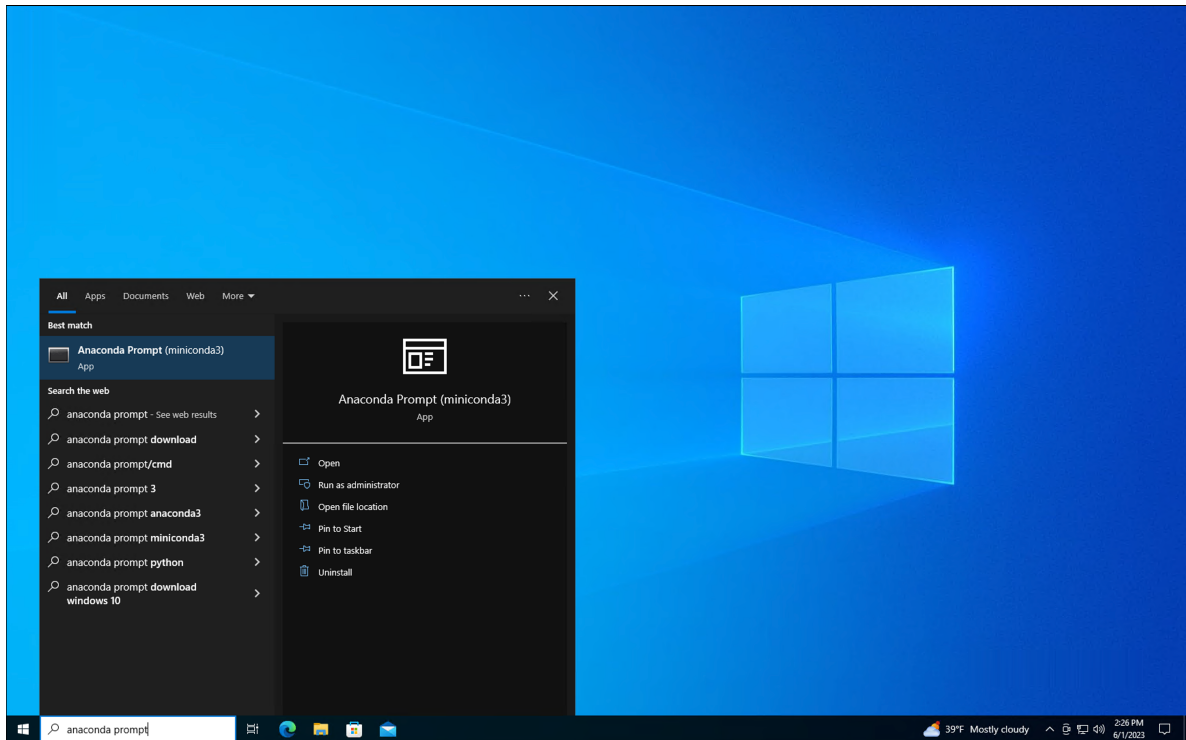
If you already have Anaconda Distribution installed, you're all set to move forward!

If you have not installed Anaconda Distribution or Miniconda yet, download either [Anaconda Distribution](#) or [Miniconda](#) and install it on your system before proceeding with configuration.

Not sure whether you need Anaconda Distribution or Miniconda? Refer to the [Downloading conda](#) topic for guidance.

If you choose to download Miniconda, you need to install Anaconda Navigator separately.

1. Enter "Anaconda Prompt" in your Windows search box, then open the Miniconda command prompt.



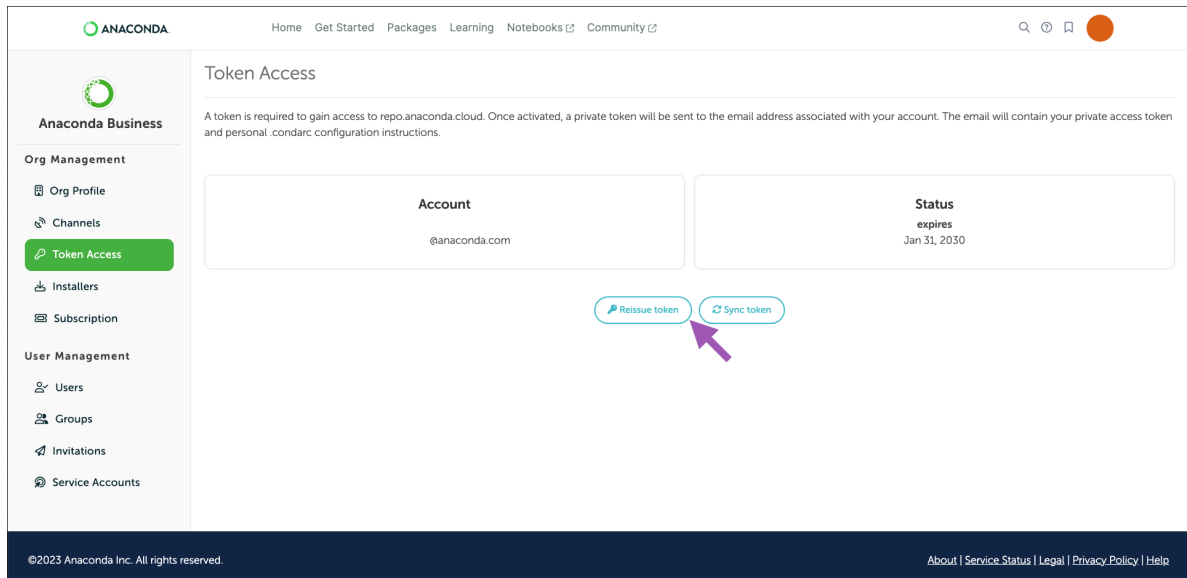
2. Install Anaconda Navigator by running the following command:

```
conda install anaconda-navigator
```

### Authenticating to Anaconda

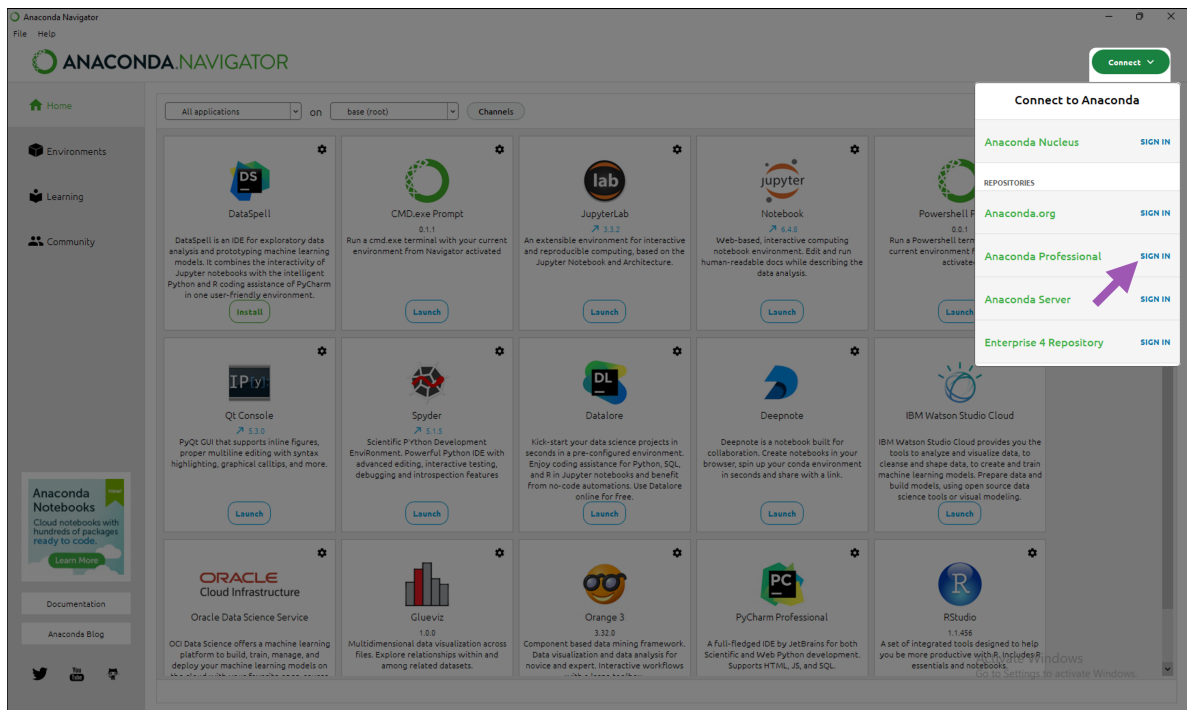
Anaconda uses private tokens to authenticate users to their organizations. You must be assigned a seat within an organization to activate a token. Once you're assigned a seat, you can generate a private token for yourself at any time.

1. Go to your organization's page.
2. Select **Token Access** from the left-hand navigation.
3. Select **Activate token** if it is the first time you are receiving a token, or **Reissue token** if you are obtaining a new token. An automated email containing a *private* token will be delivered to the address associated with your Anaconda account.



4. Launch Anaconda Navigator.

5. Select **Connect**, then **Sign in** to *Anaconda Professional* using the private token you received in your email.



## Important information about the .condarc file

The .condarc file is a configuration file that tells conda where to look for packages. Here is an example of what your .condarc file might look like:

```
channels:
  - defaults
add_anaconda_token: true
restore_free_channel: false
default_channels:
  - https://repo.anaconda.cloud/repo/main
  - https://repo.anaconda.cloud/repo/r
  - https://repo.anaconda.cloud/repo/msys2
```

Conda searches for requested packages in the channel listed at the top of the `channels:` list first. If that channel contains the requested package, it is downloaded from that channel.

If the requested package is not located in that channel, conda will search for the package in the next entry of the `channels:` list.

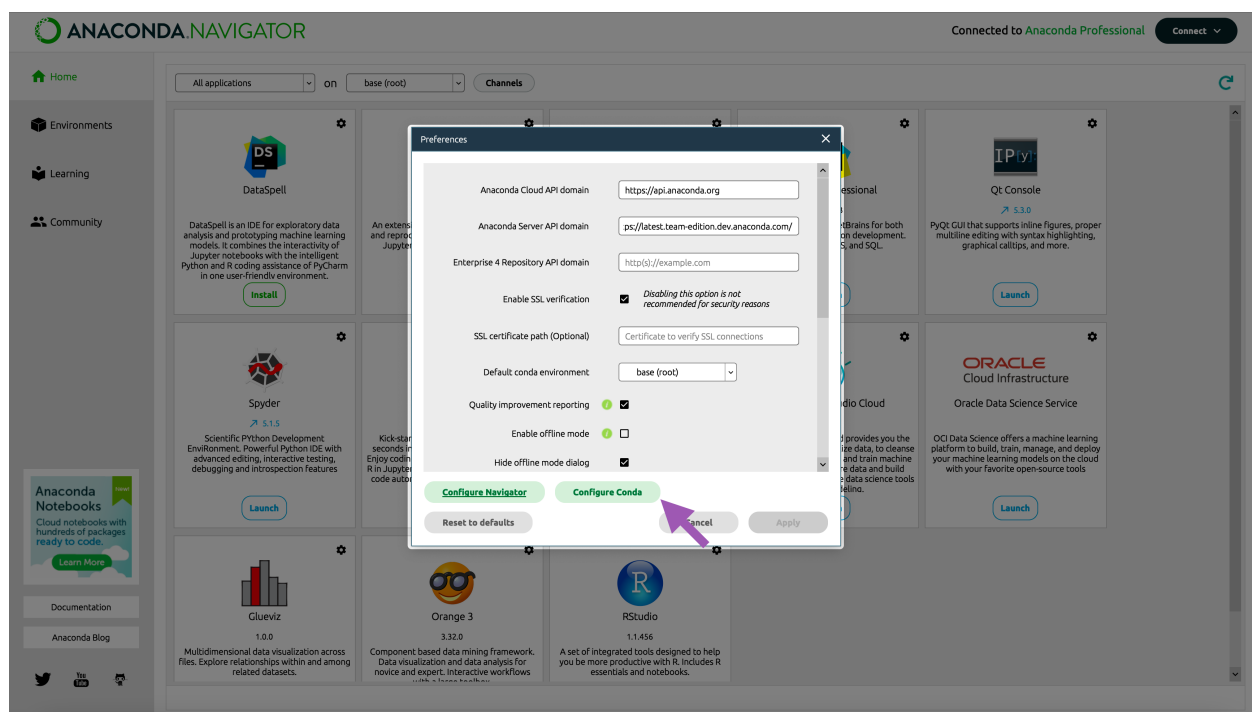
When conda reaches the `defaults` entry of the `channels:` list, it searches the channels listed under the `default_channels:` list, in the same descending order.

In this example, conda will look in the default channels in listed order, starting with <https://repo.anaconda.cloud/repo/main>, then <https://repo.anaconda.cloud/repo/r>, and finally, in <https://repo.anaconda.cloud/repo/msys2>.

For more information regarding the .condarc file, see the official [conda documentation](#).

## Viewing your .condarc file

To view your .condarc file in Anaconda Navigator, navigate to **Preferences** from the menu bar and select **Configure Conda**.



## Adding conda-forge as a channel

If you need to install packages from the conda-forge repository:

1. Select **Channels**, then click **Add...**
2. Enter conda-forge as your channel.
3. Press Enter to add the channel.
4. Click **Update channels** to instruct navigator to update the `channels:` list in your `.condarc` file.

## Using Anaconda behind a firewall or proxy (Optional)

Some companies have security policies that prevent communications on their network with external servers, like Anaconda. Under these circumstances, you'll need to connect to your company's firewall/proxy server in order to download packages successfully.

To connect to a firewall/proxy server, you'll need to include a `proxy_servers:` section in the `.condarc` file that contains the URL to the proxy server. This entry must also contain a username and password for logging in to the proxy server. Speak with your IT Administrator if you do not have this information.

There are no commands to include this portion of the `.condarc` file, so you need to manually include the following lines:

```
# Replace <USERNAME> with the username for your proxy server
# Replace <PASSWORD> with the password for your proxy server
# Replace <URL> with the URL to your proxy server
proxy_servers:
  http: http://<USERNAME>:<PASSWORD>@<URL>:8080
  https: https://<USERNAME>:<PASSWORD>@<URL>:8443
```

You'll also need to work with your IT team to allowlist connections to the main package repositories once you've configured your connection to the firewall/proxy server. The main package repositories are:

- `https://anaconda.org`
- `https://repo.anaconda.com`
- `https://repo.anaconda.cloud`

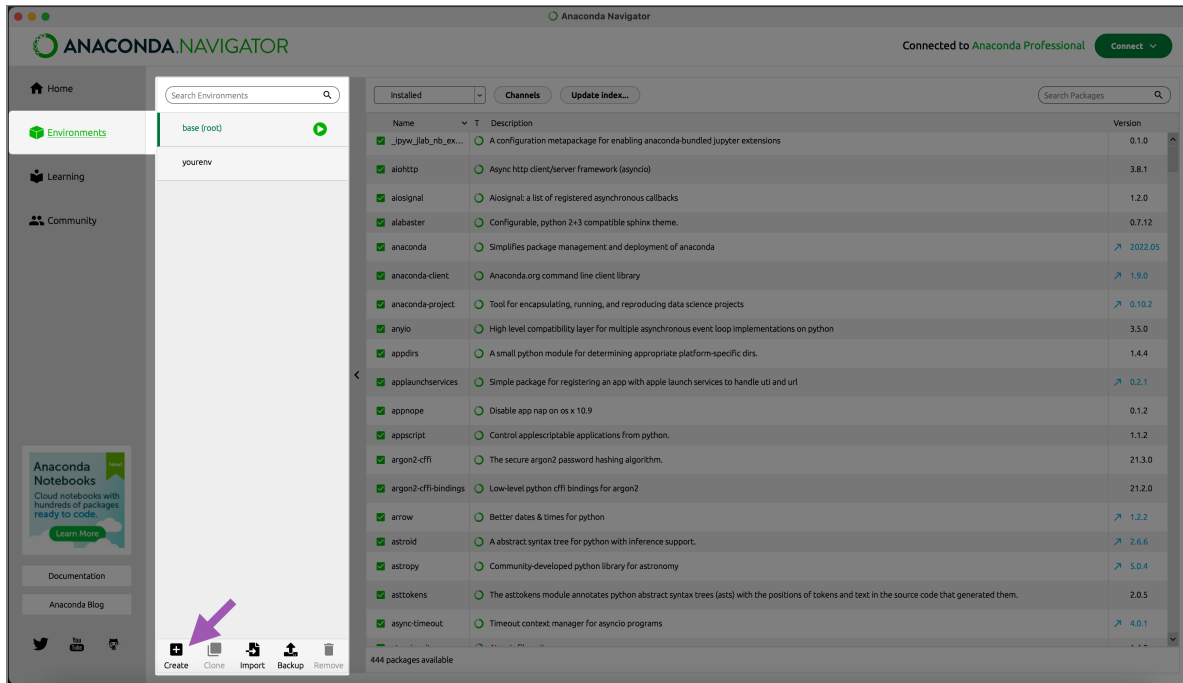
In some situations, it is necessary to export the `HTTP_PROXY` and `HTTPS_PROXY` environment variables to utilize the proxy server. To export your environment variables, open a terminal and run the following commands:

```
# Replace <USERNAME> with the username for your proxy server
# Replace <PASSWORD> with the password for your proxy server
# Replace <URL> with the URL to your proxy server
set HTTP_PROXY=http://<USERNAME>:<PASSWORD>@<URL>:8080
set HTTPS_PROXY=https://<USERNAME>:<PASSWORD>@<URL>:8443
```

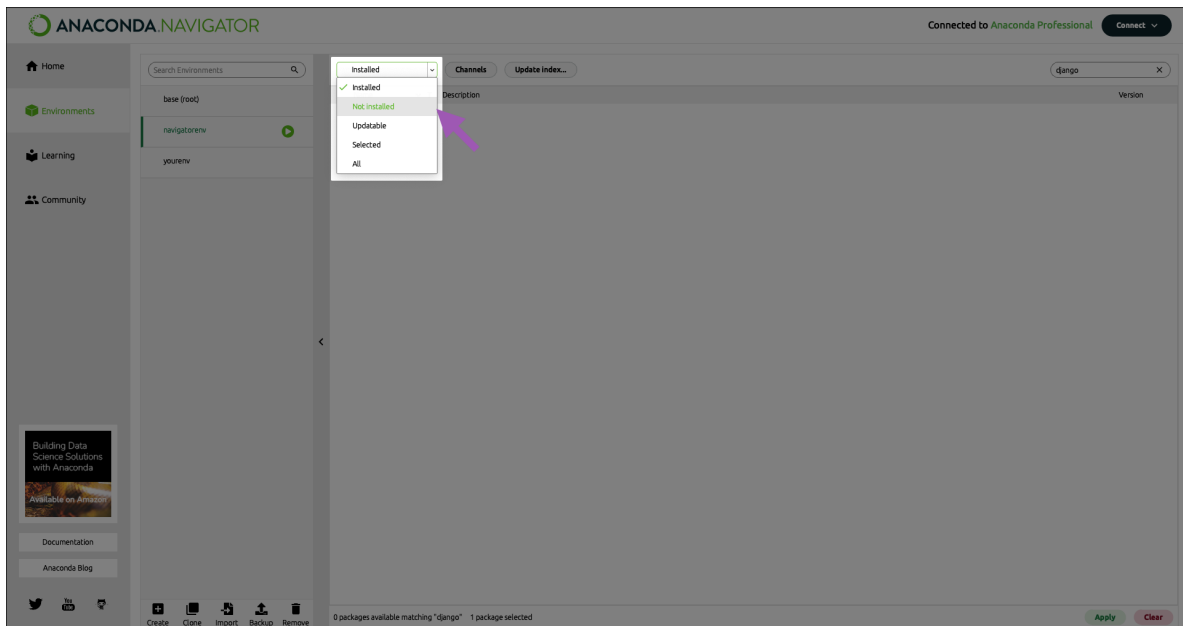
## Verifying your configurations

To test your configurations and verify that conda downloads packages from anaconda.cloud, complete the following procedure:

1. Go to **Environments** in the left-hand navigation, then select **Create** at the bottom of the window.

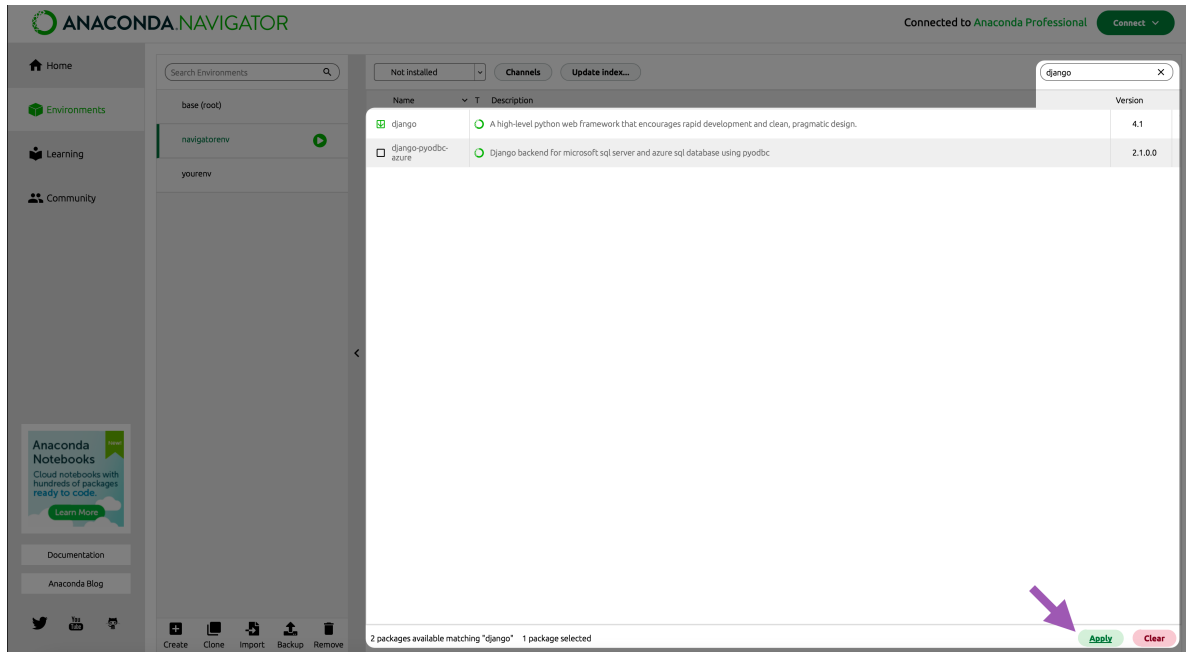


2. Enter a name for your environment and select a version of Python (3.10 is preferred) from the dropdown menu, then click **Create**.
3. Change the package selector to **Not installed**. This will show you packages that are available from your channel but are not installed on your machine.

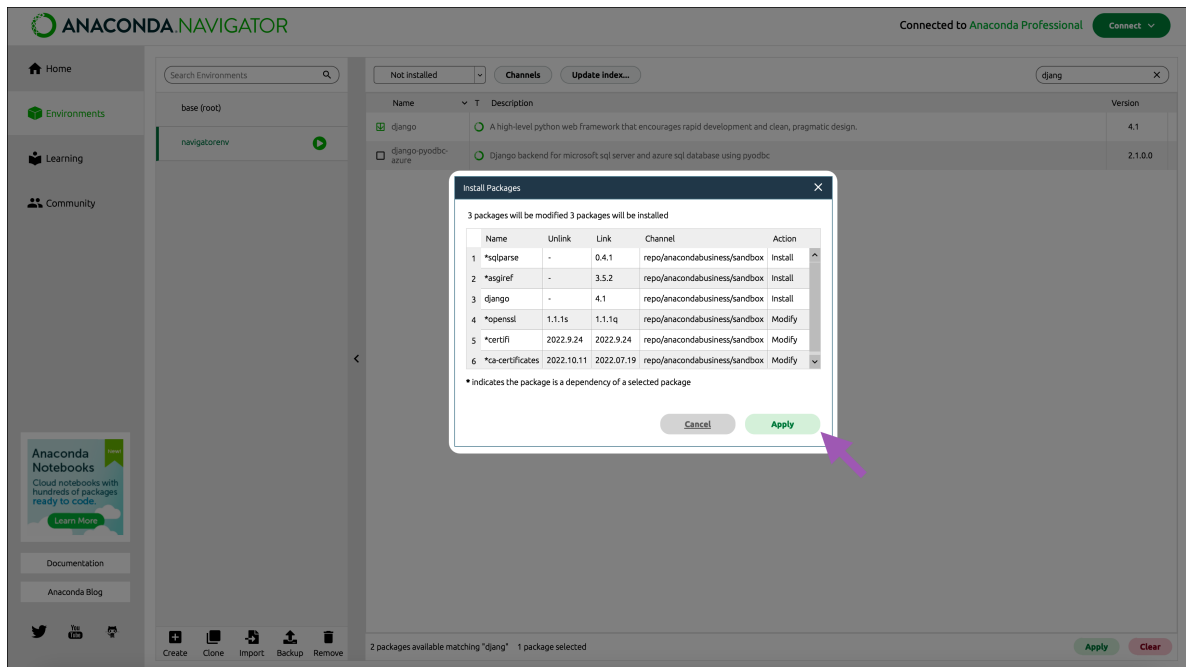




4. If you know the name of the package you need, you can enter it in the search bar to locate the package. Select a package to download and click **Apply**.



5. Click **Apply** to install the selected packages (and their dependencies).



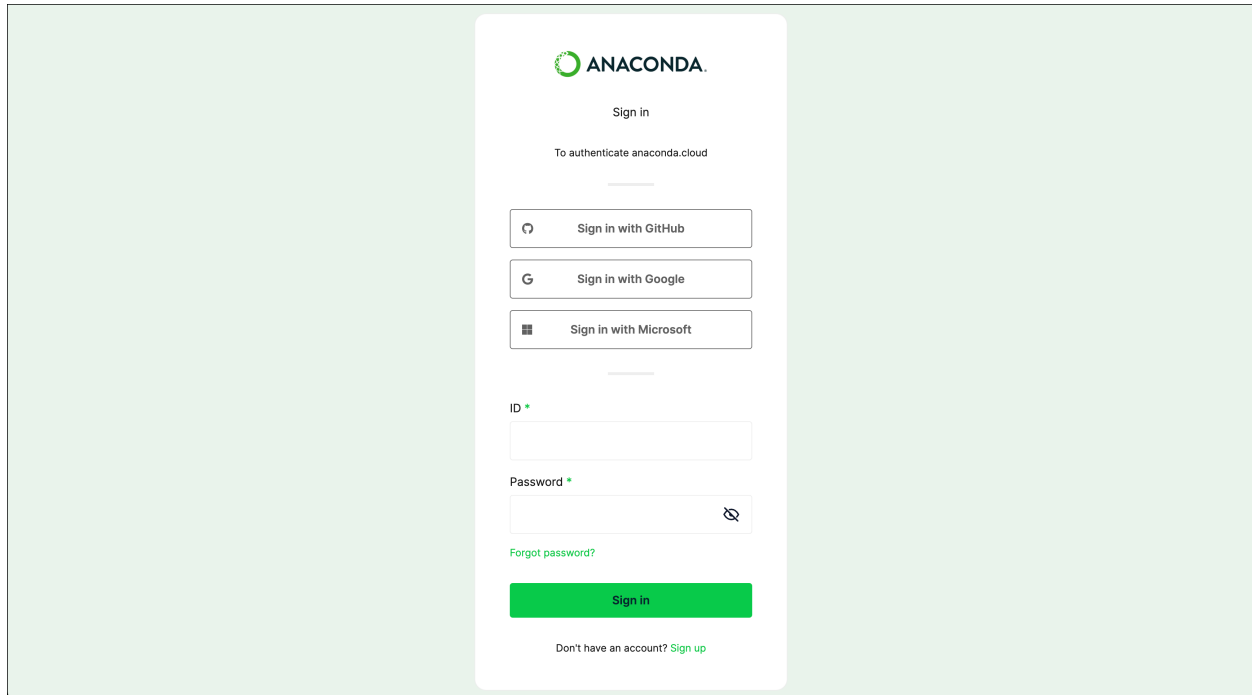
**Note:** The **Channel** column will display your organization's channel path, if correctly configured.

### Quickstart guide for Mac & Linux using Navigator

This quickstart guide is intended to help you create an Anaconda account, obtain conda software, and configure it to access your instance of Anaconda while mainly using Anaconda Navigator. If you prefer to use the command line interface (CLI), see the *Quickstart guide for Mac & Linux using the CLI* to perform these same configurations.

### Creating an account

Go to <https://anaconda.cloud/sign-up>.

A screenshot of the Anaconda sign-in page. The page has a light green background. In the center is a white card with the Anaconda logo at the top. Below the logo, it says "Sign in" and "To authenticate anaconda.cloud". There are three buttons for social login: "Sign in with GitHub", "Sign in with Google", and "Sign in with Microsoft". Below these are input fields for "ID" and "Password", both marked with an asterisk. There is a "Forgot password?" link in green. At the bottom of the card is a large green "Sign in" button and a link "Don't have an account? Sign up" in green.

From here you have several options for account registration:

- Authenticate with a GitHub, Gmail, or Microsoft account
- Sign up manually with an email and password

### Signing up manually

1. Click the **Sign up** link at the bottom of the sign in dialog.
2. Enter your email address and password.
3. Check your email for the email verification code.
4. Enter the verification code and click **Submit**.

## Creating a profile

Fill out the personal information form, check the box if you would like to receive marketing promotions or newsletters, then click **Explore Anaconda Cloud**.

The screenshot shows the Anaconda Cloud homepage with a modal window titled "Get More Content" in the center. The modal contains the following fields and options:

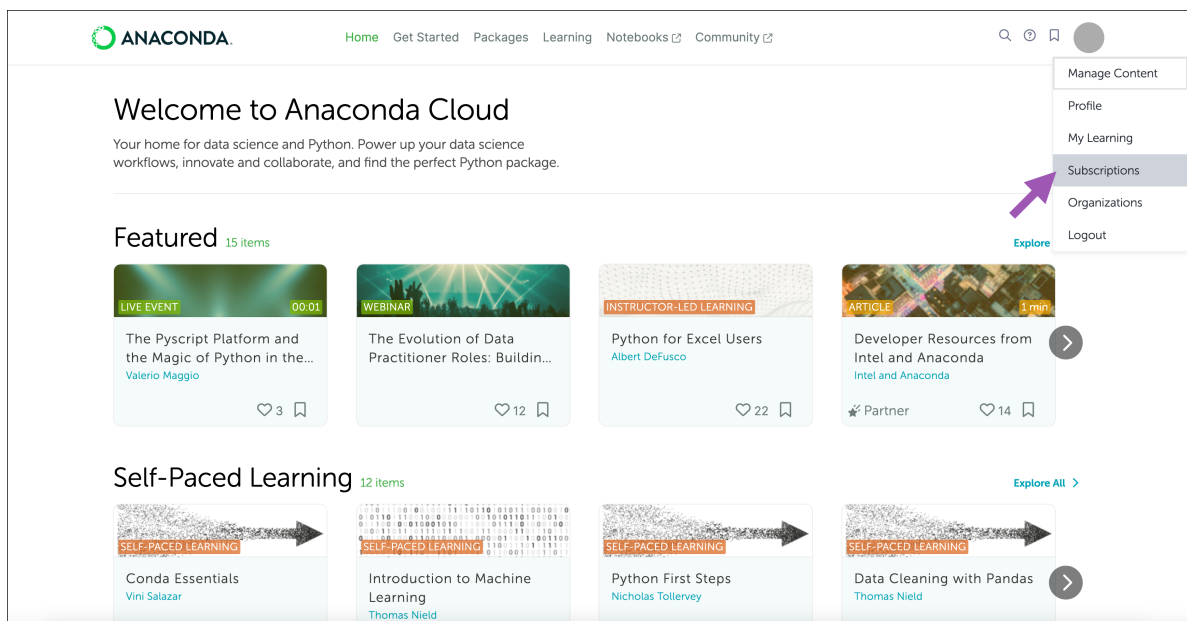
- First Name\*
- Last Name\*
- Company\*
- Company Size (dropdown menu)
- Role\* (dropdown menu)
- Industry (dropdown menu)
- Country\* (dropdown menu)
- ☐ I would like to receive email updates about new content, events, features and promotions.

The background shows the "Welcome to Anaconda Cloud" message and sections for "Featured" and "Self-Paced Learning" content.

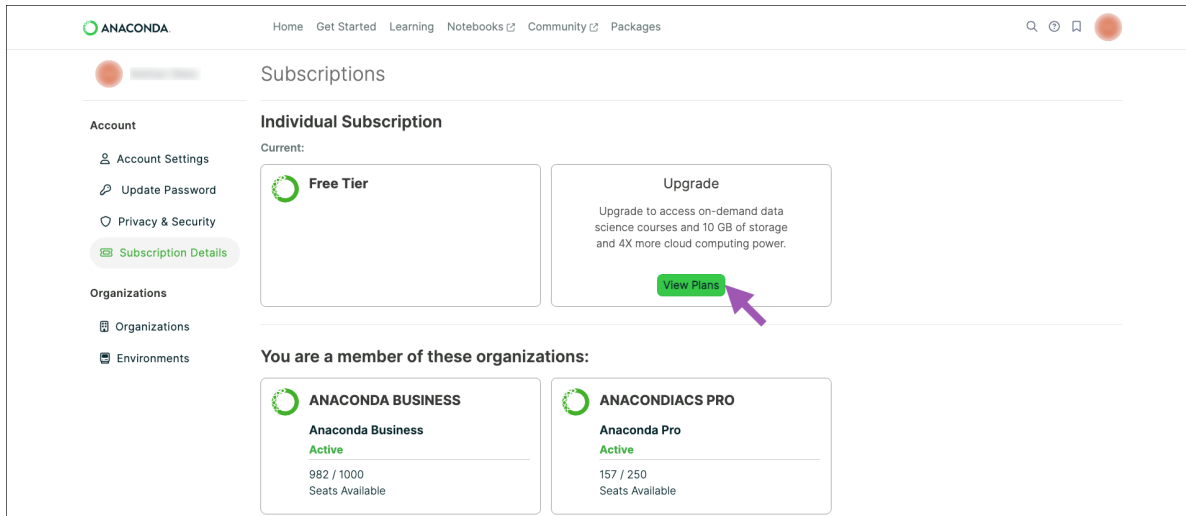
You will receive a verification email once you have created your profile.

## Purchasing a subscription to Anaconda

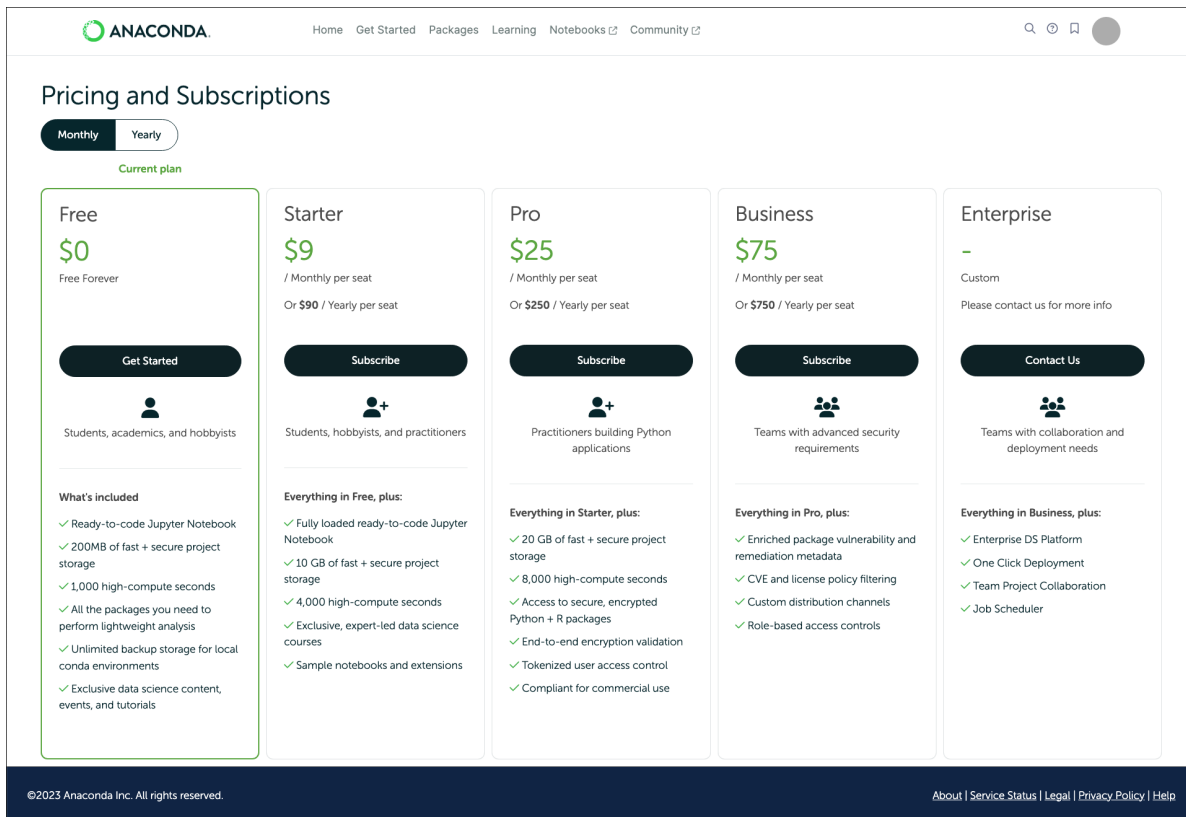
1. Sign in to your Anaconda Cloud account.
2. Open the user dropdown menu and select **Subscriptions**.



3. Select **View Plans**.



4. Choose a monthly or yearly payment plan, then click **Subscribe** beneath your preferred tier.



5. Enter your organization's information and your billing information.

6. Check the box to agree to the Anaconda EULA, then click **Purchase Now**.

7. You will receive two emails. One is an invoice for your subscription purchase. The other is a welcome email for the organization you created.

## Thank You for Purchasing Anaconda Professional Edition

You will receive an email containing your access token shortly. A copy of this summary will be emailed for your convenience. For monthly subscriptions, recurring charges will be made on the first of every month. The initial payment amount you see may be prorated depending on your purchase.

[Start Here](#)

### Purchase Summary

Invoice ID:

Invoice Date:

Payment Method(s):

Bill to:



Test Test  
VISA \*\*\*\*-\*\*\*\*-\*\*\*\*-4242

### Frequently Asked Questions

How do I obtain my access token?

How do I activate my account?

What happens if I lose my token?

When will I be billed, monthly or yearly?

How do I cancel my subscription?

Additional resources for Anaconda Professional

You can now *invite members and manage your organization*.

## Installing conda software

If you already have Anaconda Distribution installed, you're all set to move forward!

If you have not installed Anaconda Distribution or Miniconda yet, download either [Anaconda Distribution](#) or [Miniconda](#) and install it on your system before proceeding with configuration.

Not sure whether you need Anaconda Distribution or Miniconda? Refer to the [Downloading conda](#) topic for guidance.

If you choose to download Miniconda, you need to install Anaconda Navigator separately. To install Anaconda Navigator using Miniconda:

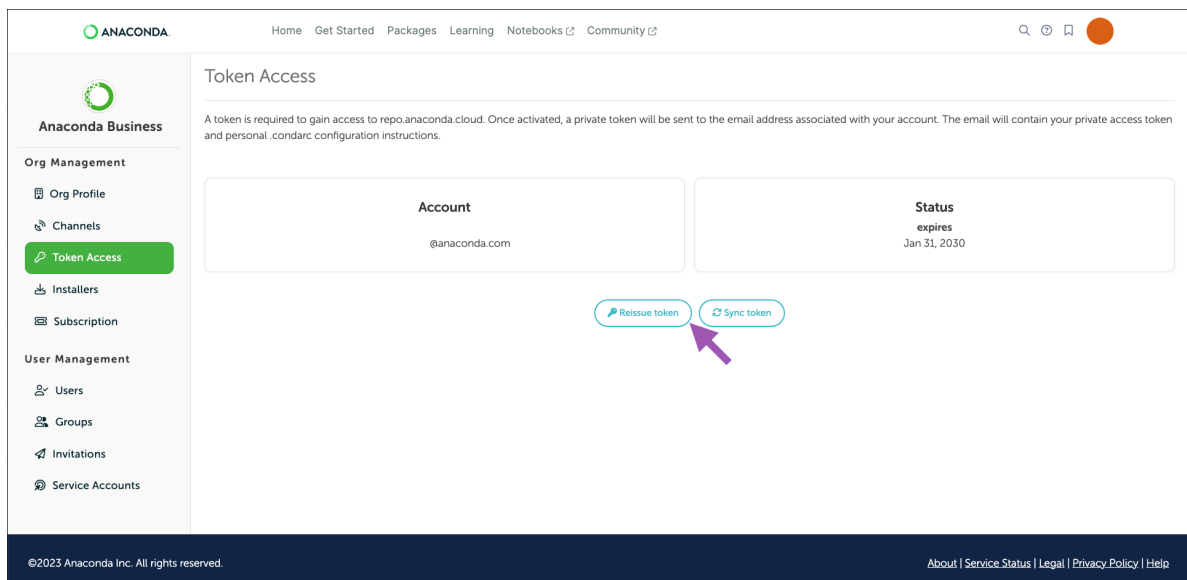
1. Open a terminal.
2. Install Anaconda Navigator by running the following command:

```
conda install anaconda-navigator
```

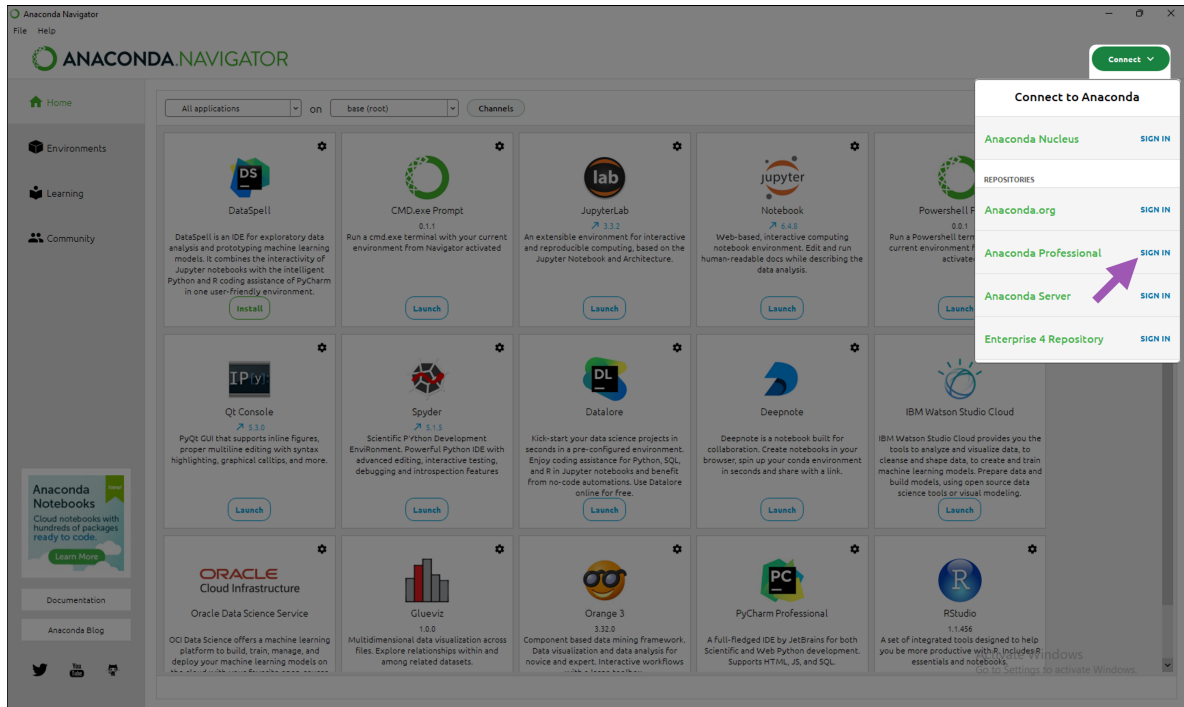
## Authenticating to Anaconda

Anaconda uses private tokens to authenticate users to their organizations. You must be assigned a seat within an organization to activate a token. Once you're assigned a seat, you can generate a private token for yourself at any time.

1. Go to your organization's page.
2. Select **Token Access** from the left-hand navigation.
3. Select **Activate token** if it is the first time you are receiving a token, or **Reissue token** if you are obtaining a new token. An automated email containing a *private* token will be delivered to the address associated with your Anaconda account.



4. Launch Anaconda Navigator.
5. Select **Connect**, then **Sign in** to *Anaconda Professional* using the private token you received in your email.



## Important information about the .condarc file

The `.condarc` file is a configuration file that tells conda where to look for packages. Here is an example of what your `.condarc` file might look like:

```
channels:
  - defaults
add_anaconda_token: true
restore_free_channel: false
default_channels:
  - https://repo.anaconda.cloud/repo/main
  - https://repo.anaconda.cloud/repo/r
  - https://repo.anaconda.cloud/repo/msys2
```

Conda searches for requested packages in the channel listed at the top of the `channels:` list first. If that channel contains the requested package, it is downloaded from that channel.

If the requested package is not located in that channel, conda will search for the package in the next entry of the `channels:` list.

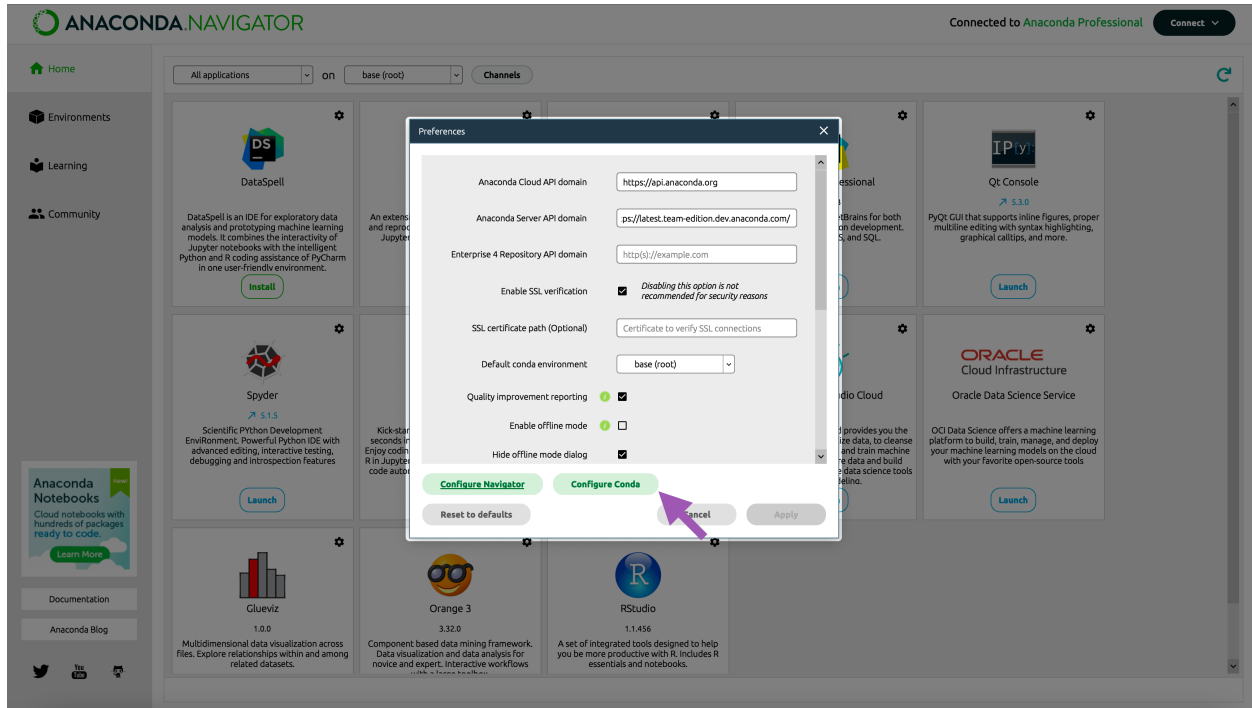
When conda reaches the `defaults` entry of the `channels:` list, it searches the channels listed under the `default_channels:` list, in the same descending order.

In this example, conda will look in the default channels in listed order, starting with `https://repo.anaconda.cloud/repo/main`, then `https://repo.anaconda.cloud/repo/r`, and finally, in `https://repo.anaconda.cloud/repo/msys2`.

For more information regarding the `.condarc` file, see the official [conda documentation](#).

## Viewing your .condarc file

To view your `.condarc` file in Anaconda Navigator, navigate to **Preferences** from the menu bar and select **Configure Conda**.



## Adding conda-forge as a channel

If you need to install packages from the `conda-forge` repository:

1. Select **Channels**, then click **Add....**
2. Enter `conda-forge` as your channel.
3. Press return to add the channel.
4. Click **Update channels** to instruct navigator to update the `channels:` list in your `.condarc` file.

## Using Anaconda behind a firewall or proxy (Optional)

Some companies have security policies that prevent communications on their network with external servers, like Anaconda. Under these circumstances, you'll need to connect to your company's firewall/proxy server in order to download packages successfully.

To connect to a firewall/proxy server, you'll need to include a `proxy_servers:` section in the `.condarc` file that contains the URL to the proxy server. This entry must also contain a username and password for logging in to the proxy server. Speak with your IT Administrator if you do not have this information.

There are no commands to include this portion of the `.condarc` file, so you need to manually include the following lines:



```
# Replace <USERNAME> with the username for your proxy server
# Replace <PASSWORD> with the password for your proxy server
# Replace <URL> with the URL to your proxy server
proxy_servers:
  http: http://<USERNAME>:<PASSWORD>@<URL>:8080
  https: https://<USERNAME>:<PASSWORD>@<URL>:8443
```

You'll also need to work with your IT team to allowlist connections to the main package repositories once you've configured your connection to the firewall/proxy server. The main package repositories are:

- <https://anaconda.org>
- <https://repo.anaconda.com>
- <https://repo.anaconda.cloud>

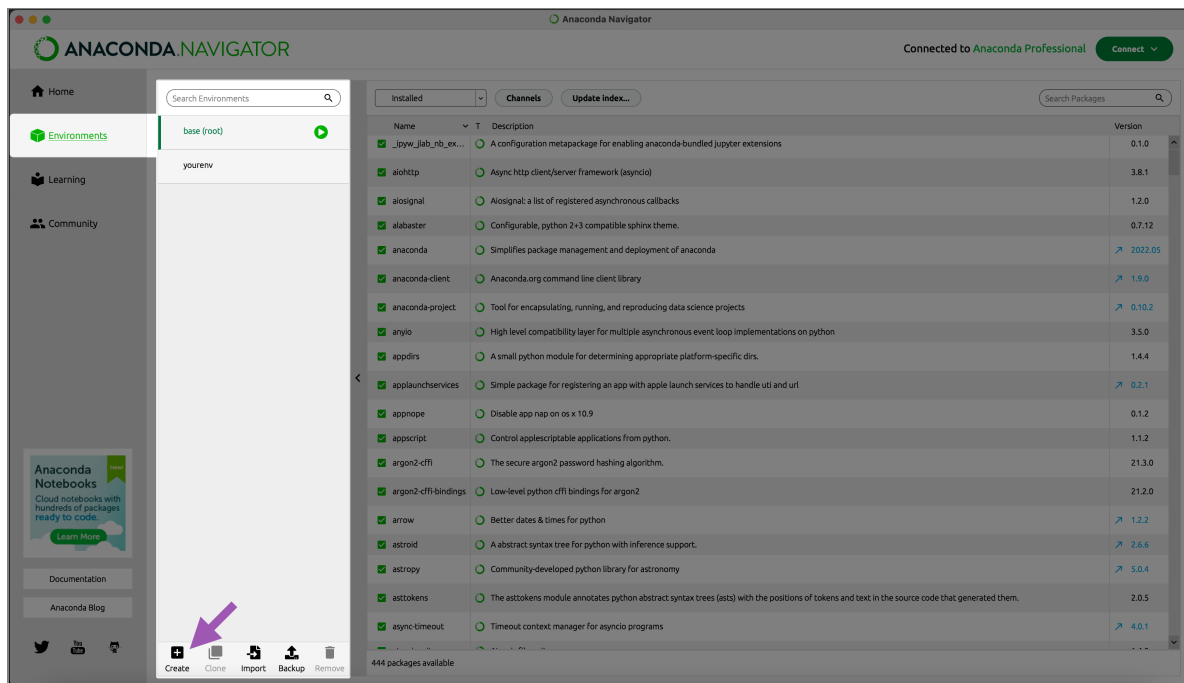
In some situations, it is necessary to export the HTTP\_PROXY and HTTPS\_PROXY environment variables to utilize the proxy server. To export your environment variables, open a terminal and run the following commands:

```
# Replace <USERNAME> with the username for your proxy server
# Replace <PASSWORD> with the password for your proxy server
# Replace <URL> with the URL to your proxy server
export HTTP_PROXY=http://<USERNAME>:<PASSWORD>@<URL>:8080
export HTTPS_PROXY=https://<USERNAME>:<PASSWORD>@<URL>:8443
```

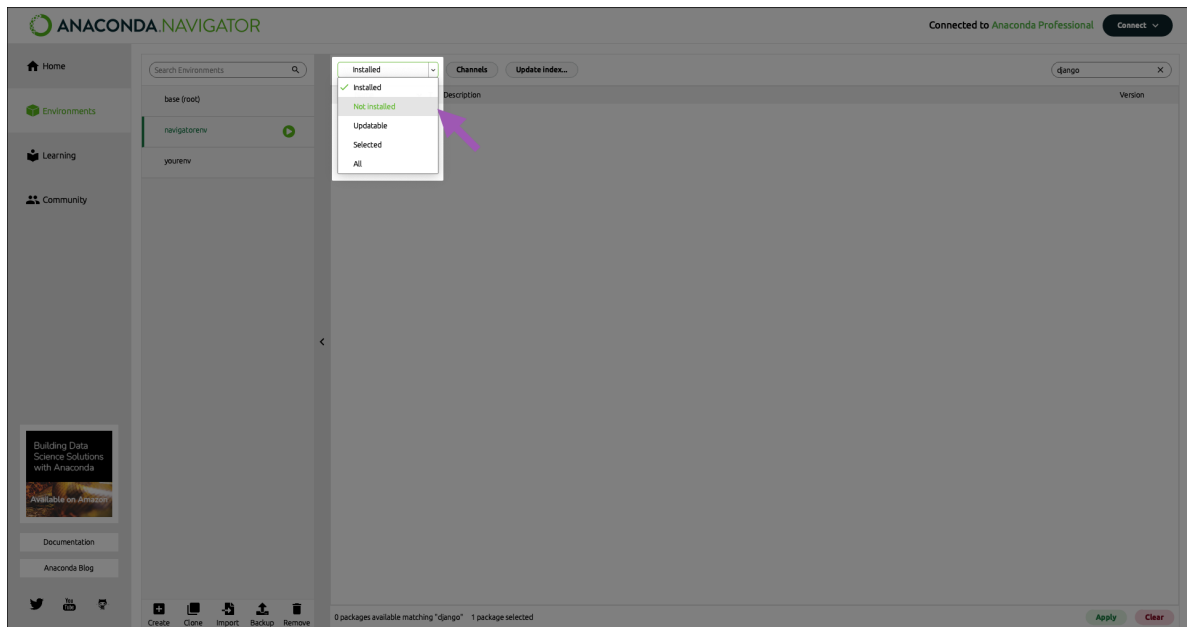
## Verifying your configurations

To test your configurations and verify that conda downloads packages from anaconda.cloud, complete the following procedure:

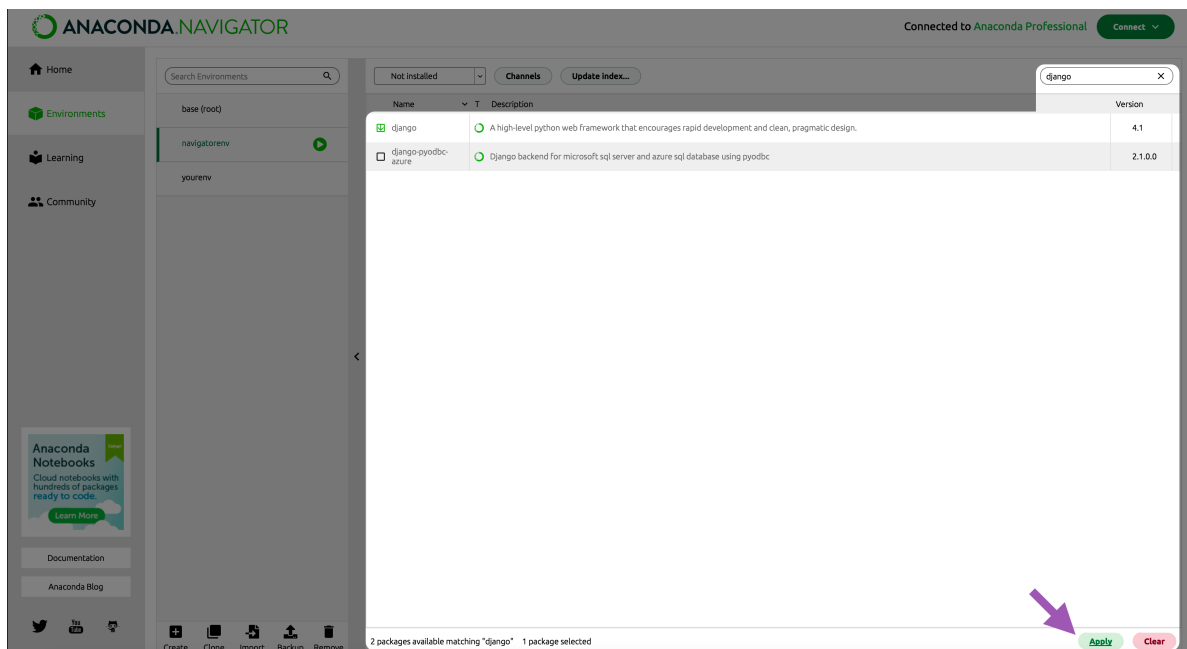
1. Go to **Environments** in the left-hand navigation, then select **Create** at the bottom of the window.



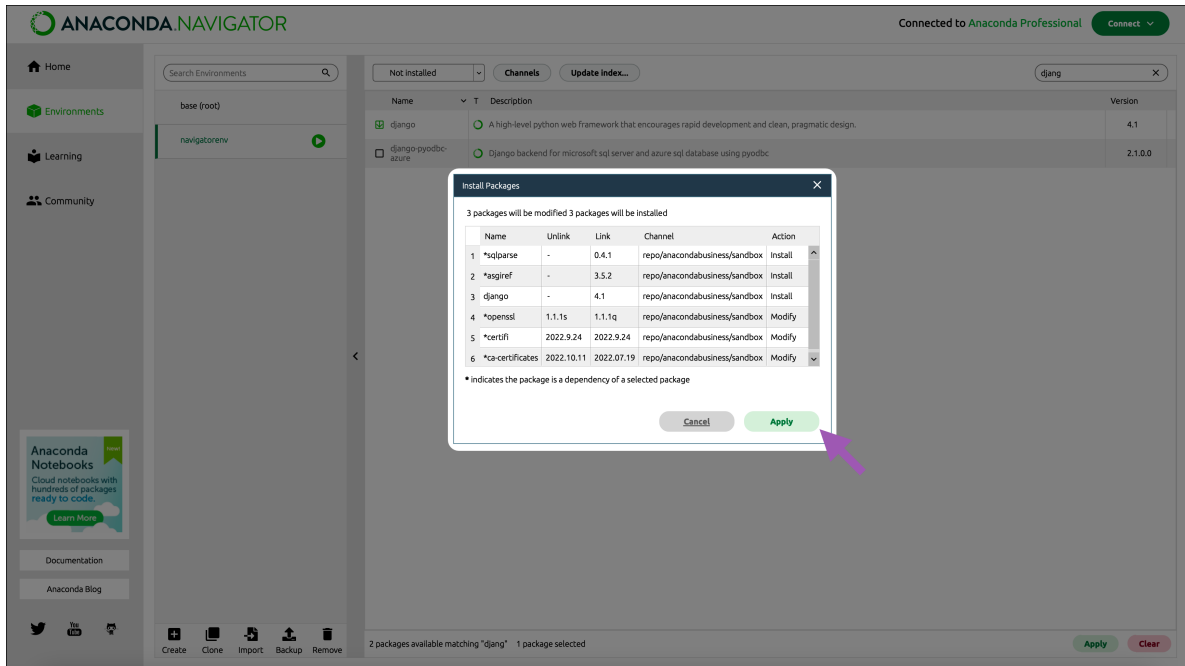
2. Enter a name for your environment and select a version of Python (3.10 is preferred) from the dropdown menu, then click **Create**.
3. Change the package selector to **Not installed**. This will show you packages that are available from your channel but are not installed on your machine.



4. If you know the name of the package you need, you can enter it in the search bar to locate the package. Select a package to download and click **Apply**.



5. Click **Apply** to install the selected packages (and their dependencies).



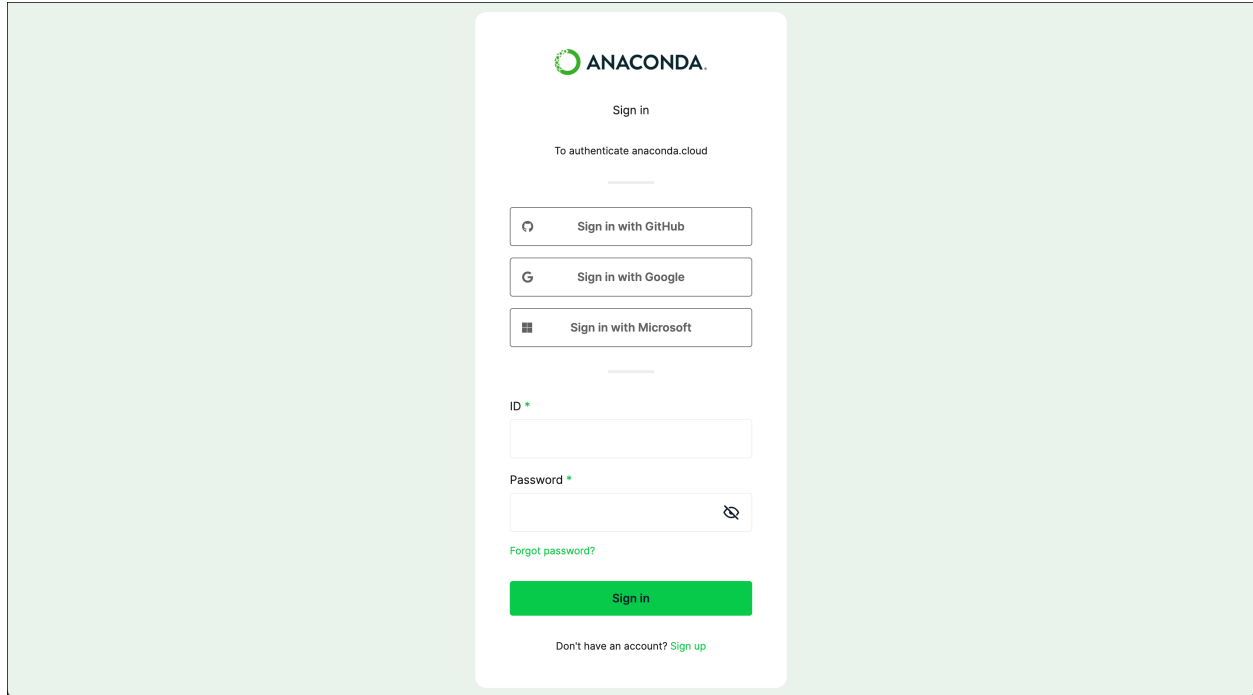
**Note:** The **Channel** column will display your organization's channel path, if correctly configured.

## Quickstart guide for Mac & Linux using the CLI

This quickstart guide is intended to help you create an Anaconda account, obtain conda software, and configure it to access your instance of Anaconda while mainly operating from the command line interface (CLI). If you prefer the use of a graphical user interface (GUI), see the [Quickstart guide for Mac & Linux using Anaconda Navigator](#) to perform these configurations.

## Creating an account

Go to <https://anaconda.cloud/sign-up>.

The image shows a sign-in dialog for Anaconda. At the top is the Anaconda logo and the text "Sign in". Below this is the text "To authenticate anaconda.cloud". There are three buttons for social login: "Sign in with GitHub", "Sign in with Google", and "Sign in with Microsoft". Below these is a section for manual login with fields for "ID" and "Password", each with a red asterisk indicating it is required. The password field has a toggle icon on the right. Below the password field is a green link "Forgot password?". At the bottom is a large green "Sign in" button. Below the button is the text "Don't have an account? Sign up" with "Sign up" as a green link.

From here you have several options for account registration:

- Authenticate with a GitHub, Gmail, or Microsoft account
- Sign up manually with an email and password

### Signing up manually

1. Click the **Sign up** link at the bottom of the sign in dialog.
2. Enter your email address and password.
3. Check your email for the email verification code.
4. Enter the verification code and click **Submit**.

## Creating a profile

Fill out the personal information form, check the box if you would like to receive marketing promotions or newsletters, then click **Explore Anaconda Cloud**.

The screenshot shows the Anaconda Cloud homepage with a modal window titled "Get More Content" in the center. The modal contains the following fields and options:

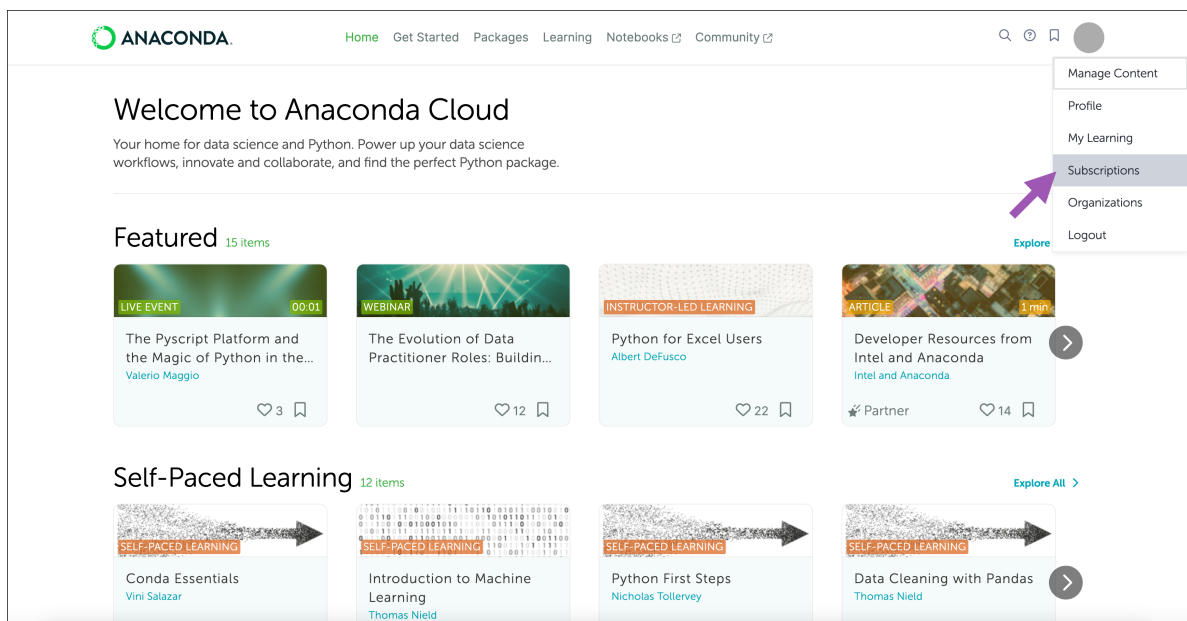
- First Name\*
- Last Name\*
- Company\*
- Company Size (dropdown menu)
- Role\* (dropdown menu)
- Industry (dropdown menu)
- Country\* (dropdown menu)
- ☐ I would like to receive email updates about new content, events, features and promotions.

The background shows the "Welcome to Anaconda Cloud" message and sections for "Featured" and "Self-Paced Learning" content.

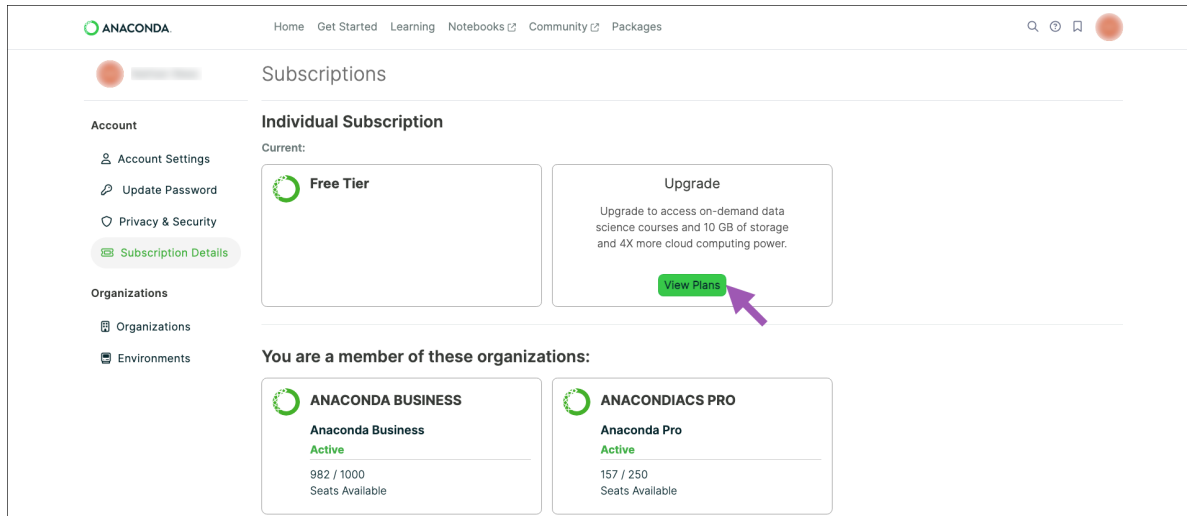
You will receive a verification email once you have created your profile.

## Purchasing a subscription to Anaconda

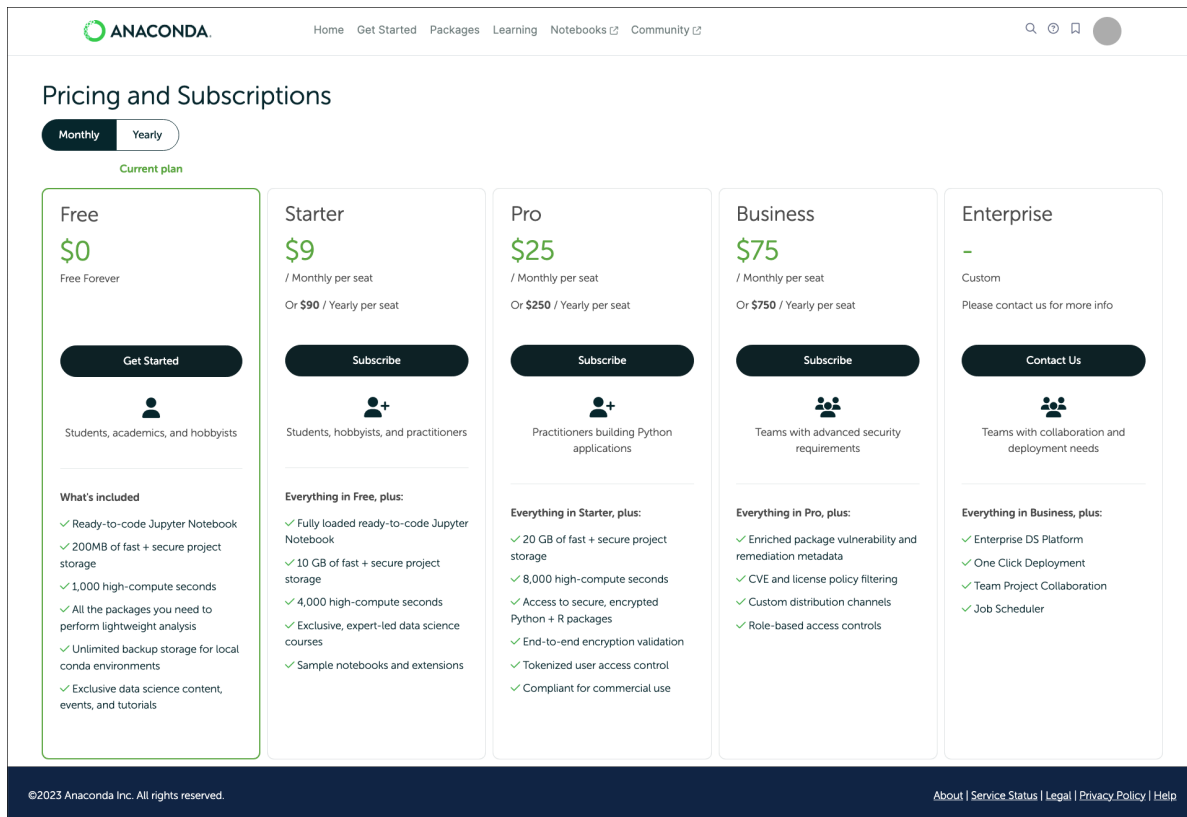
1. Sign in to your Anaconda Cloud account.
2. Open the user dropdown menu and select **Subscriptions**.



### 3. Select **View Plans**.



### 4. Choose a monthly or yearly payment plan, then click **Subscribe** beneath your preferred tier.



### 5. Enter your organization's information and your billing information.

### 6. Check the box to agree to the Anaconda EULA, then click **Purchase Now**.

### 7. You will receive two emails. One is an invoice for your subscription purchase. The other contains your private access token.

## Thank You for Purchasing Anaconda Professional Edition

You will receive an email containing your access token shortly. A copy of this summary will be emailed for your convenience. For monthly subscriptions, recurring charges will be made on the first of every month. The initial payment amount you see may be prorated depending on your purchase.

[Start Here](#)

### Purchase Summary

Invoice ID:

Invoice Date:

Payment Method(s):



Test Test

VISA \*\*\*\*-\*\*\*\*-\*\*\*\*-4242

Bill to:

### Frequently Asked Questions

How do I obtain my access token?

How do I activate my account?

What happens if I lose my token?

When will I be billed, monthly or yearly?

How do I cancel my subscription?

Additional resources for Anaconda Professional

You can now *invite members and manage your organization*.

## Installing conda software

If you already have Anaconda Distribution or Miniconda installed, you're all set to move forward!

If you have not installed Anaconda Distribution or Miniconda yet, download either [Anaconda Distribution](#) or [Miniconda](#) and install it on your system before proceeding with configuration.

Not sure whether you need Anaconda Distribution or Miniconda? Refer to the [Downloading conda](#) topic for guidance.

## Installing conda-token

After you have installed Anaconda Distribution or Miniconda, you can use it to install the `conda-token` package!

1. Open a terminal. You should see `(base)` preceding the command line. This means you are in your base conda environment.
2. Install `conda-token` by running the following command:

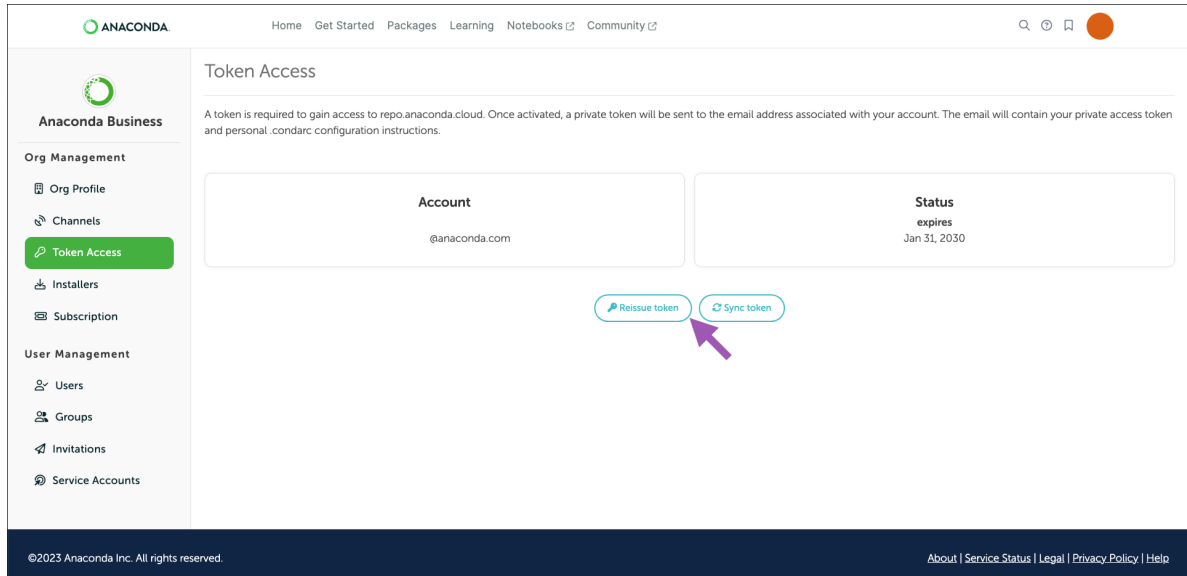
```
conda install conda-token -n base
```

3. Enter "y" when prompted to proceed with the installation.

## Authenticating to Anaconda

Anaconda uses private tokens to authenticate users to their organizations. You must be assigned a seat within an organization to activate a token. Once you're assigned a seat, you can generate a private token for yourself at any time.

1. Go to your organization's page.
2. Select **Token Access** from the left-hand navigation.
3. Select **Activate token** if it is the first time you are receiving a token, or **Reissue token** if you are obtaining a new token. An automated email containing a *private* token will be delivered to the address associated with your Anaconda account.



4. Configure conda to use this token by running the following command:

```
# Replace <TOKEN> with the token you received in your email
conda token set <TOKEN>
```

**Caution:** You must run this command every time you receive a new token.

Here is an example of what your terminal will display when you set your token correctly:



```
(base) → ~ conda install conda-token -n base
Collecting package metadata (current_repodata.json): done
Solving environment: done

## Package Plan ##

  environment location: /Users/[redacted]/opt/anaconda3

added / updated specs:
- conda-token

The following packages will be downloaded:

package | build | size | url
-----|-----|-----|-----
ca-certificates-2023.01.10 | hecd8cb5_0 | 121 KB | https://repo.anaconda.cloud/repo/anacondabusiness/snakes
certifi-2022.12.7 | py39hecd8cb5_0 | 151 KB | https://repo.anaconda.cloud/repo/anacondabusiness/snakes
conda-23.1.0 | py39hecd8cb5_0 | 938 KB | https://repo.anaconda.cloud/repo/anacondabusiness/snakes
conda-token-0.4.0 | pyhd3eb1b0_0 | 13 KB | https://repo.anaconda.cloud/repo/anacondabusiness/snakes
openssl-1.1.1s | hca72f7f_0 | 2.8 MB | https://repo.anaconda.cloud/repo/anacondabusiness/snakes
-----|-----|-----|-----
Total: 4.0 MB

The following packages will be UPDATED:

conda-token      repo/main::conda-token-0.3.0-pyhd3eb1~ --> repo/anacondabusiness/snakes::conda-token-0.4.0-pyhd3eb1b0_0

The following packages will be SUPERSEDED by a higher-priority channel:

ca-certificates      pkgs/main --> repo/anacondabusiness/snakes
certifi              pkgs/main --> repo/anacondabusiness/snakes
conda                pkgs/main --> repo/anacondabusiness/snakes
openssl              pkgs/main --> repo/anacondabusiness/snakes

Proceed ([y]/n)? y

Downloading and Extracting Packages

Preparing transaction: done
Verifying transaction: done
Executing transaction: done
(base) → ~ conda token set [redacted]
Success! Your token was validated and Conda has been configured.
```

## Important information about the .condarc file

The `.condarc` file is a configuration file that tells conda where to look for packages. Here is an example of what your `.condarc` file might look like:

```
channels:
- defaults
add_anaconda_token: true
restore_free_channel: false
default_channels:
- https://repo.anaconda.cloud/repo/main
- https://repo.anaconda.cloud/repo/r
- https://repo.anaconda.cloud/repo/msys2
```

Conda searches for requested packages in the channel listed at the top of the `channels:` list first. If that channel contains the requested package, it is downloaded from that channel.

If the requested package is not located in that channel, conda will search for the package in the next entry of the

`channels:` list.

When conda reaches the `defaults` entry of the `channels:` list, it searches the channels listed under the `default_channels:` list, in the same descending order.

In this example, conda will look in the default channels in listed order, starting with <https://repo.anaconda.cloud/repo/main>, then <https://repo.anaconda.cloud/repo/r>, and finally, in <https://repo.anaconda.cloud/repo/msys2>.

For more information regarding the `.condarc` file, see the official [conda documentation](#).

### Viewing your `.condarc` file

You can view your `.condarc` file at any time by running the following command:

```
cat .condarc
```

### Adding conda-forge as a channel

If you need to install packages from the conda-forge repository, run the following command:

```
conda config --append channels conda-forge
```

### Using Anaconda behind a firewall or proxy (Optional)

Some companies have security policies that prevent communications on their network with external servers, like Anaconda. Under these circumstances, you'll need to connect to your company's firewall/proxy server in order to download packages successfully.

To connect to a firewall/proxy server, you'll need to include a `proxy_servers:` section in the `.condarc` file that contains the URL to the proxy server. This entry must also contain a username and password for logging in to the proxy server. Speak with your IT Administrator if you do not have this information.

There are no commands to include this portion of the `.condarc` file, so you need to manually include the following lines:

```
# Replace <USERNAME> with the username for your proxy server
# Replace <PASSWORD> with the password for your proxy server
# Replace <URL> with the URL to your proxy server
proxy_servers:
  http: http://<USERNAME>:<PASSWORD>@<URL>:8080
  https: https://<USERNAME>:<PASSWORD>@<URL>:8443
```

You'll also need to work with your IT team to allowlist connections to the main package repositories once you've configured your connection to the firewall/proxy server. The main package repositories are:

- <https://anaconda.org>
- <https://repo.anaconda.com>
- <https://repo.anaconda.cloud>

In some situations, it is necessary to export the `HTTP_PROXY` and `HTTPS_PROXY` environment variables to utilize the proxy server. To export your environment variables, open a terminal and run the following commands:

```
# Replace <USERNAME> with the username for your proxy server
# Replace <PASSWORD> with the password for your proxy server
# Replace <URL> with the URL to your proxy server
export HTTP_PROXY=http://<USERNAME>:<PASSWORD>@<URL>:8080
export HTTPS_PROXY=https://<USERNAME>:<PASSWORD>@<URL>:8443
```

## Verifying your configurations

To test your configurations and verify that conda downloads packages from anaconda.cloud, complete the following procedure:

1. Create an environment by running the following command:

```
# Replace <ENV_NAME> with a name for your environment
conda create --name <ENV_NAME>
```

2. Verify your environment created successfully by running the following command:

```
conda env list
```

3. Activate your environment by running the following command:

```
# Replace <ENV_NAME> with the name of your environment
conda activate <ENV_NAME>
```

4. Install a package by running the following command:

```
# Replace <PKG_NAME> with the name of the package you want to download from your
↳ channel
conda install <PKG_NAME>
```

5. If necessary, you can delete the environment by running the following command:

```
# Replace <ENV_NAME> with the name of your environment
conda env remove --name <ENV_NAME>
```

## Additional conda commands

The `conda info` command provides information about the currently active environment (including the location of your `.condarc` file).

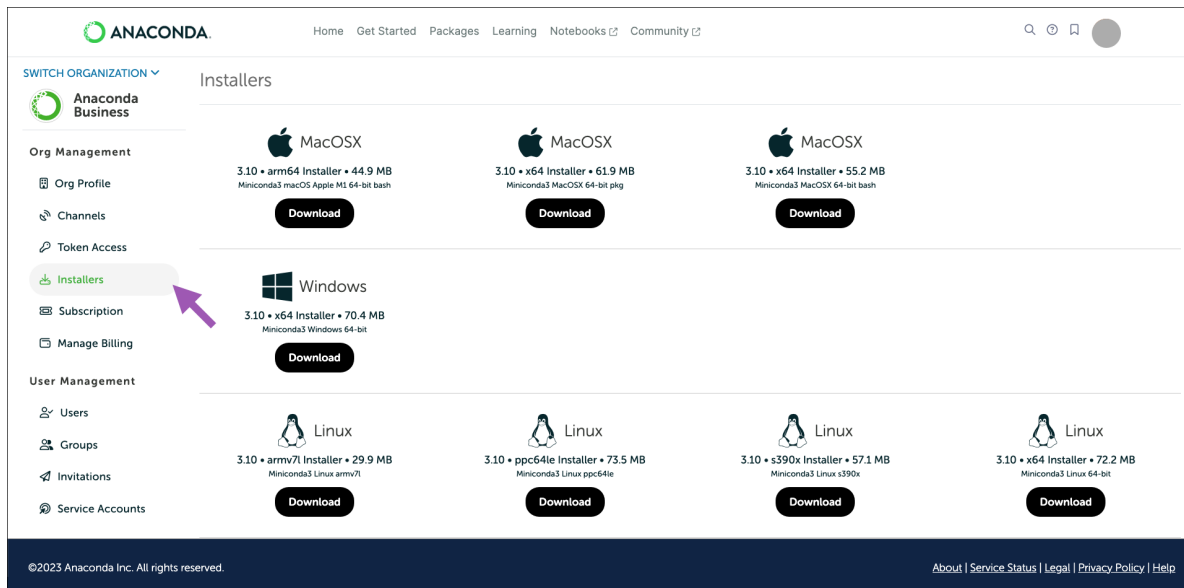
The `conda --help` command provides a list of available arguments, brief descriptions of their functions, and a list of additional commands from other packages.

This [conda cheat sheet](#) contains a list of common conda commands and brief explanations of their functions with examples.

## Installers

Anaconda provides the most recent versions of Miniconda for users who need it. Miniconda is a minimal version of the Anaconda Distribution that only contains conda, python, and their dependencies.

1. From your organization's home page, select **Installers** from the left-hand navigation.
2. Find the Miniconda installer that works for your operating system (OS), then click **Download**.



For information about system requirements and help installing Miniconda, see the [official Miniconda documentation](#).

## Organizations

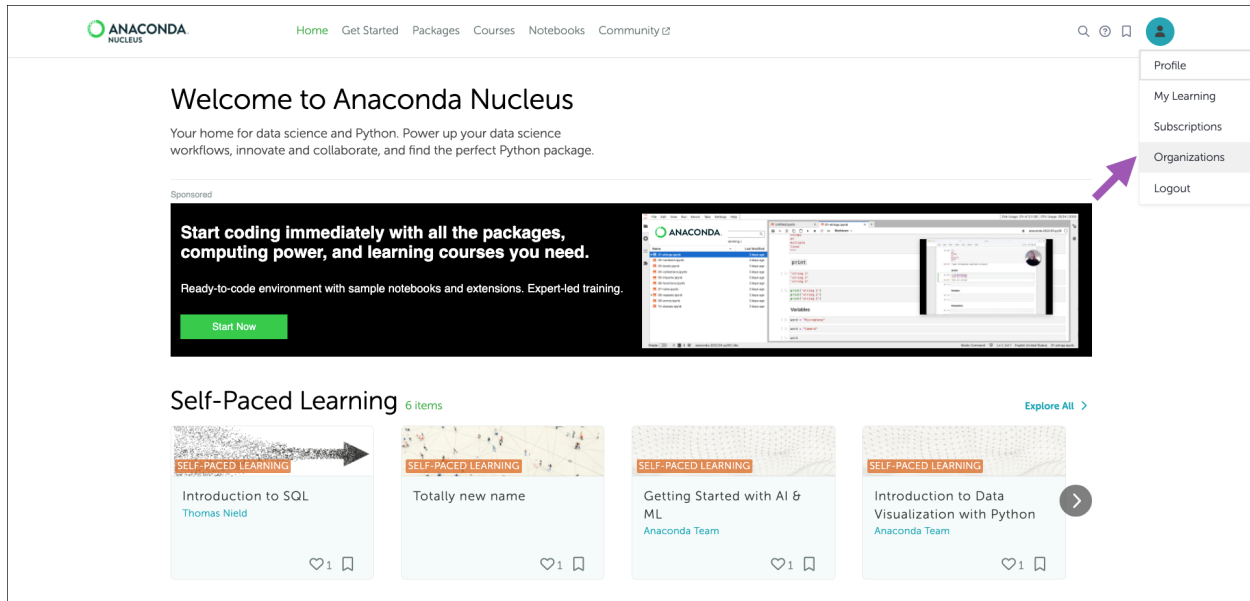
An organization is a group of Anaconda Cloud accounts with a managed set of rights and permissions. Creating an organization for your team in Anaconda Cloud allows you to:

- Provide a common collaboration space
- Ensure consistent tooling
- Manage access and costs

**Note:** Anaconda Cloud users can create and belong to multiple organizations.

## Creating an organization

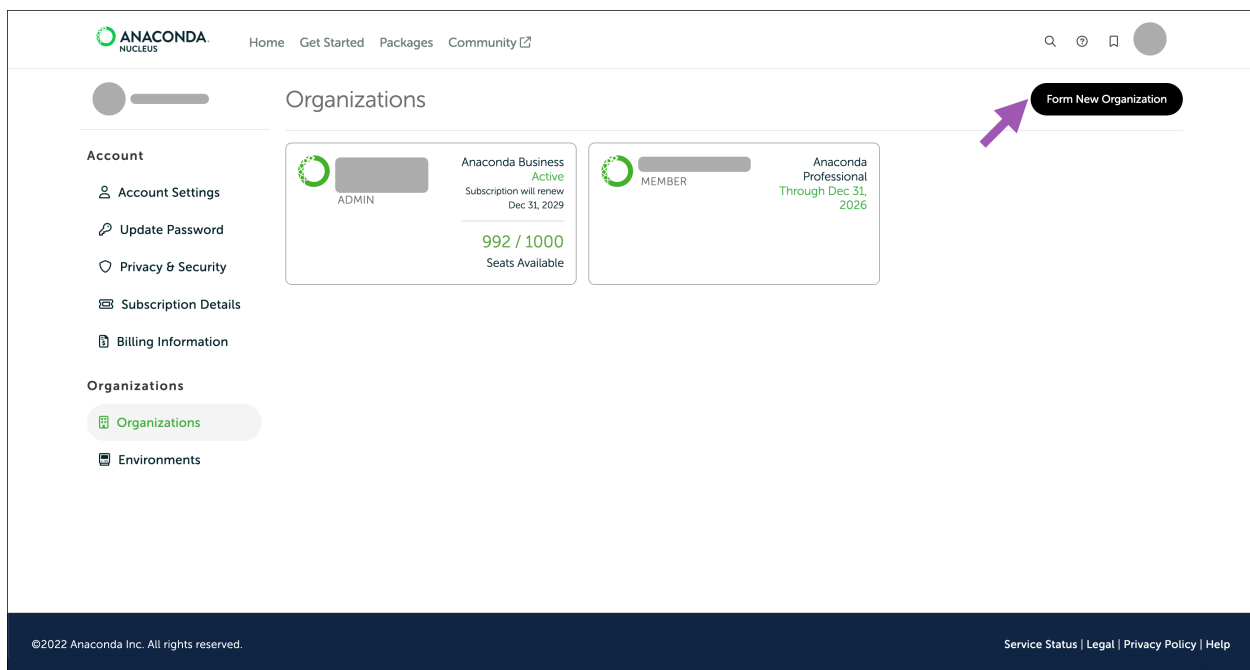
From your profile in the top-right corner, select **Organizations**.



Click **Form New Organization** and follow the on-screen instructions to set up your organization. Don't worry if you don't have all the necessary information; you can come back and complete your organization's information at a later time. As the creator, you are the owner and default admin of the group.

#### Note:

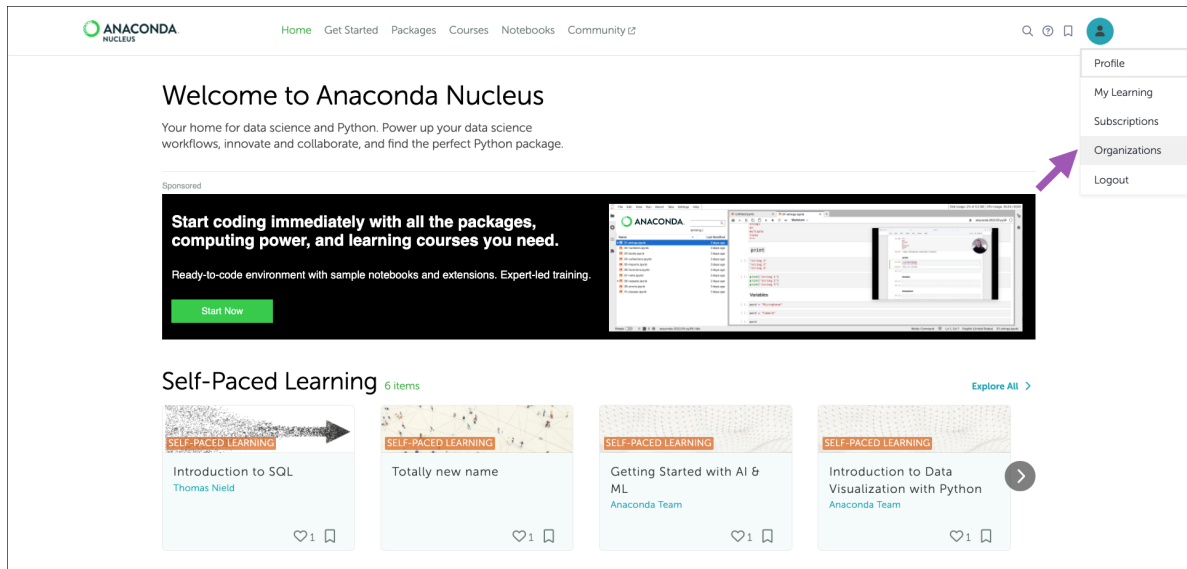
- The Organization Name is the publicly displayed name of your organization and can be changed at any time after it is created.
- The Organization ID is the organization's Uniform Resource Locator (URL) identifier. The Organization's URL must be unique. Once the Organization ID is assigned, it cannot be changed.



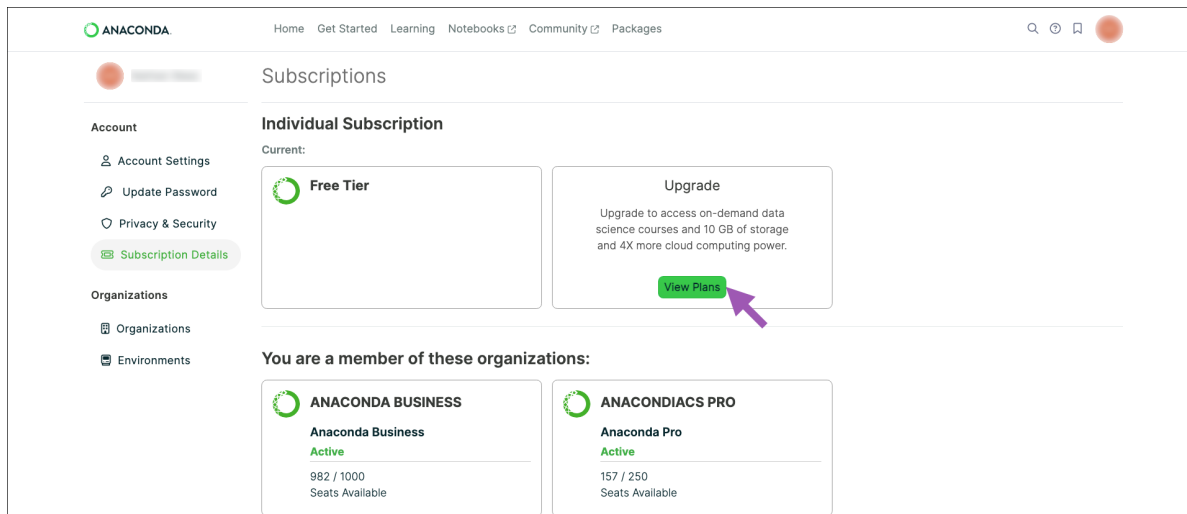
## Subscribing your organization

If you need to purchase multiple licenses, you can purchase a subscription with multiple seats (licenses) to manage users:

1. Sign in to your Anaconda Cloud account.
2. Open the user dropdown menu and select **Organizations**.



3. Select the organization you are purchasing a subscription for.
4. Go to **Subscription Details** in the left-hand navigation.
5. Select **View Plans**.



6. Choose a monthly or yearly subscription, then click **Subscribe**.

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## Pricing and Subscriptions

Monthly **Yearly**

**Current plan**

Free	Starter	Pro	Business	Enterprise
<b>\$0</b> Free Forever	<b>\$9</b> / Monthly per seat Or <b>\$90</b> / Yearly per seat	<b>\$25</b> / Monthly per seat Or <b>\$250</b> / Yearly per seat	<b>\$75</b> / Monthly per seat Or <b>\$750</b> / Yearly per seat	— Custom Please contact us for more info
<b>Get Started</b>	<b>Subscribe</b>	<b>Subscribe</b>	<b>Subscribe</b>	<b>Contact Us</b>
 Students, academics, and hobbyists	 Students, hobbyists, and practitioners	 Practitioners building Python applications	 Teams with advanced security requirements	 Teams with collaboration and deployment needs
<b>What's included</b> <ul style="list-style-type: none"> <li>✓ Ready-to-code Jupyter Notebook</li> <li>✓ 200MB of fast + secure project storage</li> <li>✓ 1,000 high-compute seconds</li> <li>✓ All the packages you need to perform lightweight analysis</li> <li>✓ Unlimited backup storage for local conda environments</li> <li>✓ Exclusive data science content, events, and tutorials</li> </ul>	<b>Everything in Free, plus:</b> <ul style="list-style-type: none"> <li>✓ Fully loaded ready-to-code Jupyter Notebook</li> <li>✓ 10 GB of fast + secure project storage</li> <li>✓ 4,000 high-compute seconds</li> <li>✓ Exclusive, expert-led data science courses</li> <li>✓ Sample notebooks and extensions</li> </ul>	<b>Everything in Starter, plus:</b> <ul style="list-style-type: none"> <li>✓ 20 GB of fast + secure project storage</li> <li>✓ 8,000 high-compute seconds</li> <li>✓ Access to secure, encrypted Python + R packages</li> <li>✓ End-to-end encryption validation</li> <li>✓ Tokenized user access control</li> <li>✓ Compliant for commercial use</li> </ul>	<b>Everything in Pro, plus:</b> <ul style="list-style-type: none"> <li>✓ Enriched package vulnerability and remediation metadata</li> <li>✓ CVE and license policy filtering</li> <li>✓ Custom distribution channels</li> <li>✓ Role-based access controls</li> </ul>	<b>Everything in Business, plus:</b> <ul style="list-style-type: none"> <li>✓ Enterprise DS Platform</li> <li>✓ One Click Deployment</li> <li>✓ Team Project Collaboration</li> <li>✓ Job Scheduler</li> </ul>

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- Enter your organization's information and your billing information.
- Check the box to agree to the Anaconda EULA, then click **Purchase Now**.
- You will receive two emails. One is an invoice for your subscription purchase. The other is a welcome email for the organization you created.

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## Thank You for Purchasing Anaconda

A copy of this summary will be emailed for your convenience. For monthly subscriptions, recurring charges will be made on the first of every month. The initial payment amount you see may be prorated depending on your purchase.

**Invite Users**

### Purchase Summary

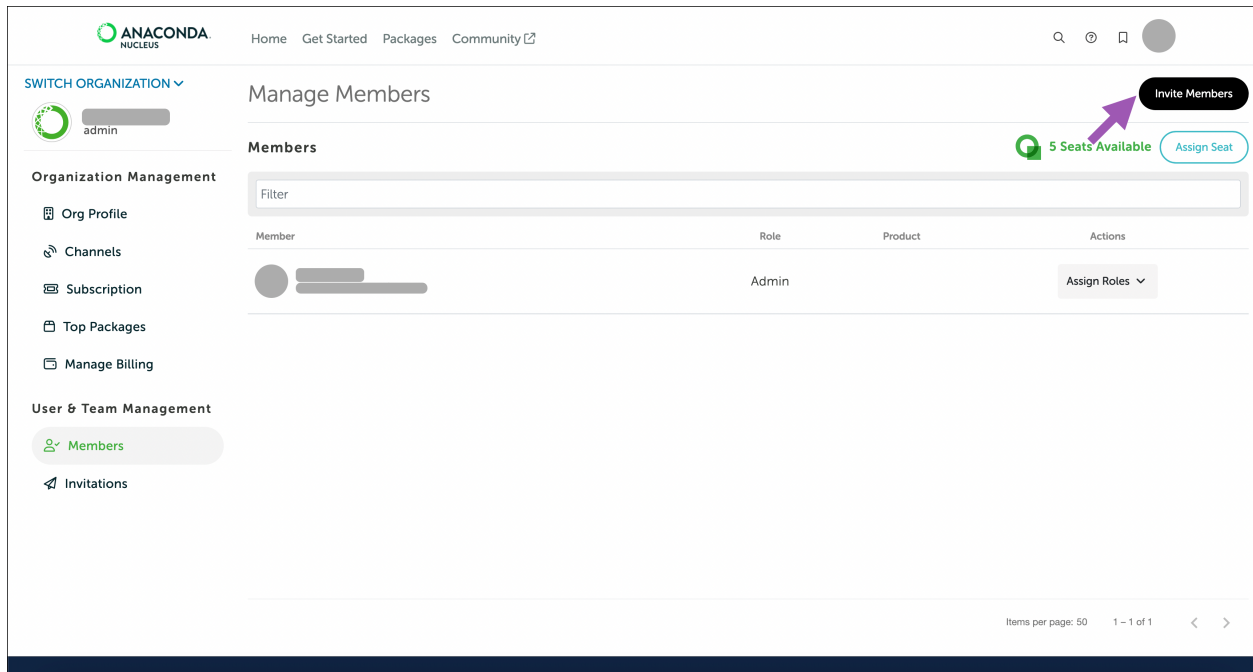
<b>Invoice ID:</b> IN_INDVULLPFRYMN9BC31HHQVHP	<b>Invoice Date:</b> May 31, 2023
<b>Payment Method(s):</b> Mr. E Mann	<b>Bill to:</b> _____

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## Inviting members to your organization

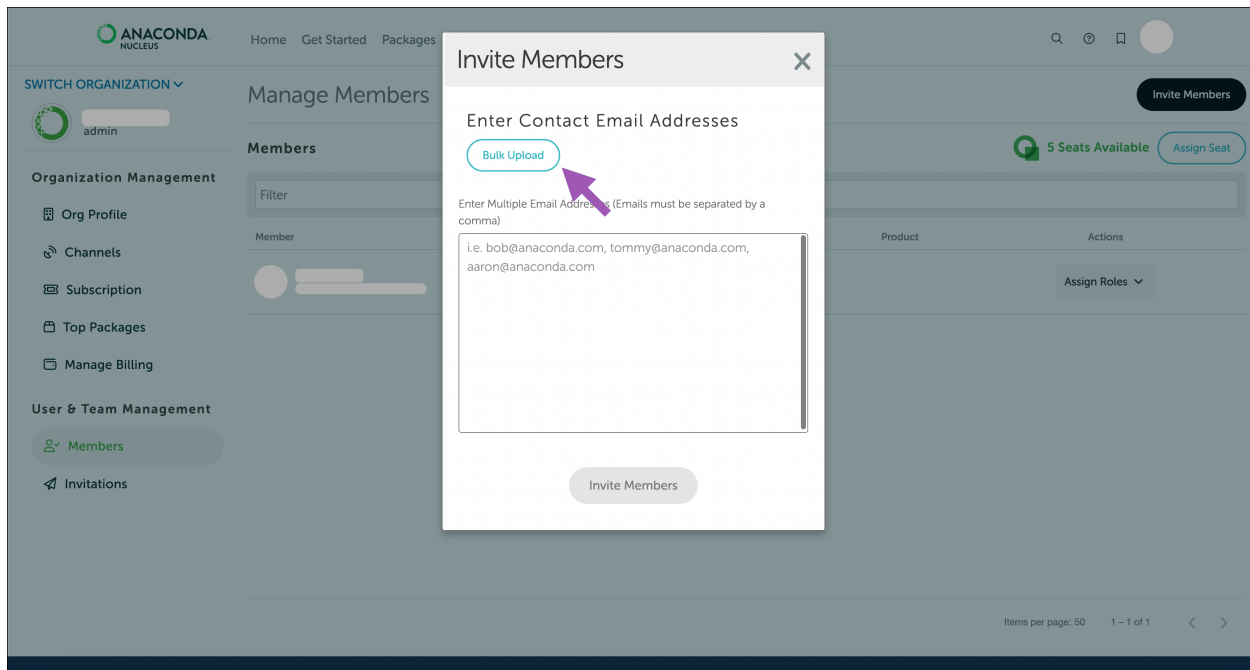
With an organization created and multi-license subscription purchased, you are ready to invite users to your organization and assign them seats (licenses):

1. Go to your [Organizations](#) page.
2. Select your organization.
3. Go to **Users** in the left-hand navigation.
4. Select **Invite Members** and enter your team members email addresses, separated by a comma.



Alternatively, you can select **Bulk Upload** and upload a .csv file containing your team members' email addresses (for larger organizations).





Once you add your member(s), they will receive an email inviting them to join the organization. Accepting the invitation in the email redirects them to the Anaconda Cloud login page. Once logged in, they can accept the invitation and join the organization.

**Note:** If the invited team member does not have a Anaconda Cloud account, they can create one using the email that the invite was sent to, then join the organization.

## Reissuing an invitation

Invitations expire after seven days. You can reissue an invitation to a user to provide them with another seven days to accept the invitation:

1. Go to your [Organizations](#) page.
2. Select your organization.
3. Go to **Invitations** in the left-hand navigation.
4. Click the user's actions icon.
5. Click **Resend Email Invite**.

The screenshot shows the Anaconda Nucleus 'Invitations' page. The left sidebar has a 'User Management' section with 'Invitations' highlighted. The main content area shows a table of invitations. The table has columns for EMAIL, STATUS, and ACTIONS. The ACTIONS column has a dropdown menu with options 'Resend Email Invite' and 'Revoke Invite'. The table shows several invitations with a status of 'Expires in 7 days' and one with a status of 'Expired Dec 14, 2022'.

EMAIL	STATUS	ACTIONS
@anaconda.com	Expires in 7 days	⋮
@anaconda.com	Expires in 7 days	⋮
@anaconda.com	Expires in 7 days	⋮
@anaconda.com	Expires in 7 days	⋮
@anaconda.com	Expires in 7 days	⋮
@anaconda.com	Expired Dec 14, 2022	⋮

If you need to resend multiple invitations at once:

1. Go to your [Organizations](#) page.
2. Select your organization.
3. Go to **Invitations** in the left-hand navigation.
4. Click **Resend Email**.

The screenshot shows the same Anaconda Nucleus 'Invitations' page as before, but with a purple arrow pointing to the 'Resend Email' button in the ACTIONS column of the table.

EMAIL	STATUS	ACTIONS
@anaconda.com	Expires in 7 days	⋮
@anaconda.com	Expires in 7 days	⋮
@anaconda.com	Expires in 7 days	⋮
@anaconda.com	Expires in 7 days	⋮
@anaconda.com	Expires in 7 days	⋮
@anaconda.com	Expired Dec 14, 2022	⋮

5. Select the invitations you want to reissue, then click **Resend Invitations**.
6. Click **Resend** to confirm you want to reissue the invitations.

## Revoking an invitation

If you have invited someone to your organization in error, you can revoke the invitation to remove it from the page. This also prevents the invitation recipient from being able to join your organization:

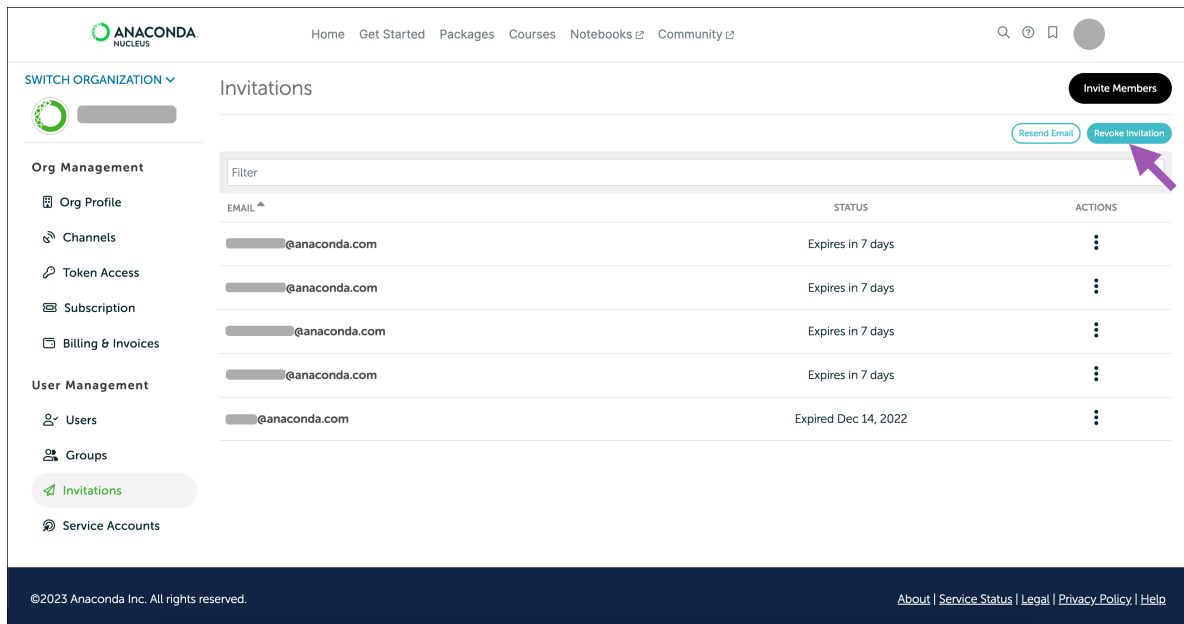
1. Go to your [Organizations](#) page.
2. Select your organization.
3. Go to **Invitations** in the left-hand navigation.
4. Click the user's actions icon.
5. Click **Revoke Invite**.

The screenshot shows the Anaconda Nucleus interface. The top navigation bar includes links for Home, Get Started, Packages, Courses, Notebooks, and Community. The left-hand navigation menu is open, showing options like Org Management, User Management, and Invitations (which is highlighted). The main content area is titled 'Invitations' and contains a table with columns for EMAIL, STATUS, and ACTIONS. The table lists several invitations, all with a status of 'Expires in 7 days'. The last row shows an invitation that has 'Expired Dec 14, 2022'. A dropdown menu is open for the 'Expired' invitation, showing two options: 'Resend Email Invite' and 'Revoke Invite' (which is highlighted in red).

EMAIL	STATUS	ACTIONS
[redacted]@anaconda.com	Expires in 7 days	⋮
[redacted]@anaconda.com	Expires in 7 days	⋮
[redacted]@anaconda.com	Expires in 7 days	⋮
[redacted]@anaconda.com	Expires in 7 days	⋮
[redacted]@anaconda.com	Expired Dec 14, 2022	⋮ Resend Email Invite <b>Revoke Invite</b>

If you need to revoke multiple invitations at once:

1. Go to your [Organizations](#) page.
2. Select your organization.
3. Go to **Invitations** in the left-hand navigation.
4. Click **Revoke Invitation**.



5. Select the invitations you want to revoke, then click **Revoke Invitations**.
6. Click **Revoke** to confirm you want to revoke the invitations.

## Assigning and managing seats

Once a member has accepted their invitation, you can assign them a seat (license) from the **Users** page of your organization.

Click on **Actions** and select **Assign Seat** to assign the associated license to a user.

**Note:** From this page, you can also:

- Make a member an account or billing administrator
- Revoke a member's seat
- Remove a member from the organization

You can also assign and revoke seats to multiple users simultaneously from your organization's **Users** page. If you have enough seats for every member of your organization, you can click **Assign All** to assign every org member a seat.

Otherwise, you can click **Assign Seats** or **Revoke Seats**, choose the organization members you need to assign/revoke a seat, then click **Assign Users** or **Revoke Users**. If necessary, you can also select **Add Seat** to purchase additional seats.

The screenshot shows the 'Users' management page in the Anaconda Nucleus interface. The left sidebar contains navigation options under 'Org Management' and 'User Management'. The main area displays a table of users:

USER	ROLE	PRODUCT	GROUPS
@anaconda.com	Admin	Anaconda Business	0
@anaconda.com	Member	---	0
@anaconda.com	Member	---	0
@anaconda.com	Member	---	0
@anaconda.com	Member	---	0
@anaconda.com	Member	---	0

Buttons at the top right include 'No Seats Available', 'Add Seats', 'Assign 4 Users' (highlighted with a purple arrow), and 'Cancel'. The footer shows copyright information for 2023 Anaconda Inc.

Once you assign a member a seat in your organization, they will receive an email with a link to the organization in their Anaconda Cloud account. Instruct them to open the link and go to the **Token Access** page to activate their token.

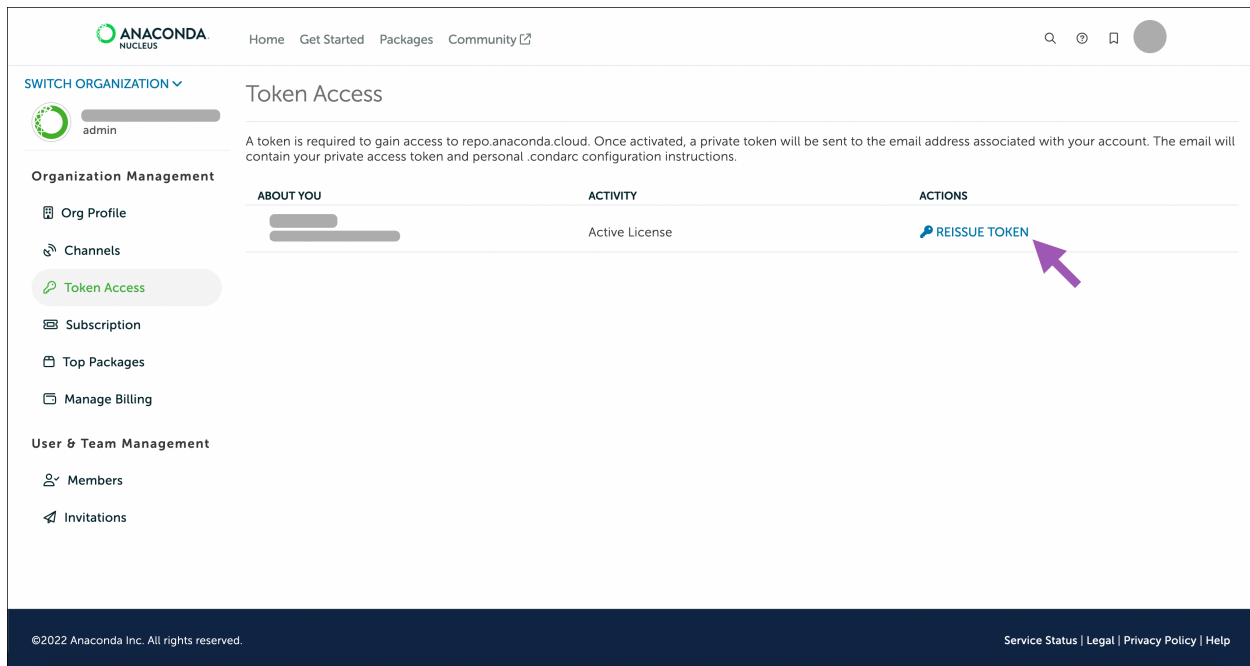
The screenshot shows the 'Token Access' page. The left sidebar is similar to the previous page but highlights 'Token Access' under 'User & Team Management'. The main area contains a section titled 'Token Access' with a descriptive paragraph. Below this is a table with columns 'ABOUT YOU', 'ACTIVITY', and 'ACTIONS':

ABOUT YOU	ACTIVITY	ACTIONS
[Redacted]	Active License	<a href="#">ACTIVATE TOKEN</a> (highlighted with a purple arrow)

The footer shows copyright information for 2022 Anaconda Inc.

Once the member activates their token, they will receive an email containing their token and instructions on installing Anaconda and setting their token to get access to Anaconda's repositories.

If a member needs to reissue a token, they can go to the **Token Access** page and click **Reissue Token**, then check their email for the new token.



## Purchasing additional seats

You can purchase additional seats for your organization at any time.

1. Go to your [Organizations](#) page.
2. Select your organization.
3. Select **Subscriptions** from the left hand navigation.
4. Click **Manage Subscription** to purchase additional seats.

## Leaving an organization

To leave an organization you're a member of at any time, go to the [Organizations](#) page and select the organization you want to leave. Then, click **Leave <ORG\_NAME> Organization**.

**ANACONDA NUCLEUS** Home Get Started Packages Community

SWITCH ORGANIZATION member

### About the Organization

**Organization Bio**  
This organization contains all Anaconda employees.

**Current Subscription**  
Anaconda

**Account**

**Role**  
Member

**Leave Organization**  
To leave your organization, click on the button below. Requesting to leave your organization will revoke any organization-based access on your account.

Leave Organization

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Please let us know if you have further questions or need additional assistance. More information can be found at our [support center](#).

## Packages

### Searching for packages

If you want to know if a package is available on one of your organization's channels, you can search for it by entering the package name into the **Filter** field of the channel details page.

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anacondabusiness / snakes

84 Packages CVEs

python

PACKAGE NAME	FAMILY	FILES	CVE
antlr4-python3-runtime	conda	56	0
biopython	conda	417	0
bpython	conda	88	0
brotili-python	conda	92	0
dawg-python	conda	56	0
dbus-python	conda	58	0
dnspython	conda	208	0

Items per page: 50 1 - 50 of 84

**INSTALL CHANNEL**  
https://repo.anaconda.cloud/repo/anacondabusiness/snakes

Add to .condarc 'channels' option to install.

**CHANNEL INFO**

Created Feb 8, 2023	Privacy Internal
Type Virtual	Source main

**ACTIVE POLICY**

Name aggressive_cve	State Scheduled
Last ran 5/16/23, 5:16 AM	Files Removed 54245
Next run 5/16/23, 9:16 AM	

View Policy

## Viewing package details

Clicking on any package in a channel will display the package details.

From here, you can view the following information:

- All the files contained within the package
- The package's dependents (other packages that require this package to operate properly)
- The package's dependencies (other packages that this package needs to operate properly)
- CVEs that are associated with files in the package (**for business tier organizations**)

**Caution:** Conda automatically installs a package's dependencies along with the package itself when that package is requested from the channel. If a dependency is not available due to an applied policy filter, you will not be able to build a working environment with the packages from the current channel.

General information about the package, such as its license type, version number, web homepage, and documentation (if available) is also available from this page.

The screenshot shows the Anaconda Business web interface. The top navigation bar includes links for Home, Get Started, Packages, Learning, Notebooks, and Community. The left sidebar contains 'Anaconda Business' branding and a 'SWITCH ORGANIZATION' dropdown. Under 'Org Management', there are links for Org Profile, Channels (highlighted), Token Access, Installers, Subscription, and User Management. The main content area is titled 'anacondabusiness / snakes / python' and shows statistics: 1909 Files, 1778 Dependents, 13 Dependencies, and 60 CVEs. Below this is a table of package versions:

FILE NAME	VERSION	CVE	UPLOADED
python-3.9.17-h6244533_0.conda win-64 19.39 MB	3.9.17	47 reported	Jul 5, 2023
python-3.9.17-h1aa4202_0.conda win-64 19.39 MB	3.9.17	47 reported	Jul 5, 2023
python-3.8.17-h6244533_0.conda win-64 20.45 MB	3.8.17	47 active	Jul 5, 2023
python-3.8.17-h1aa4202_0.conda win-64 20.46 MB	3.8.17	47 active	Jul 5, 2023

On the right, the 'INSTALL PACKAGE' section shows the command: `conda install -c https://repo.anaconda.cloud/repo/anacondabusiness/snakes python`. The 'PACKAGE INFO' sidebar displays:

- License: PSF-2.0
- Version: 3.11.4
- Homepage: <https://www.python.org/>
- Docs: <https://www.python.org/doc/versions/>
- Last Published: Jul 5, 2023
- Downloads: 29615



## Package signatures

Packages in Anaconda’s repository come with a security signature: a special key value that proves that the package hasn’t been tampered with since going through Anaconda’s curation process. Files within a package that have a signature display a green check icon next to their names. The actual signature value can be viewed at the bottom of the metadata file.

## Viewing package metadata

From the package details view, click on a file’s name to display its metadata. The metadata is a .json formatted file that contains all of the information about the package file.

The screenshot shows the Anaconda Business interface. On the left is a sidebar with navigation links. The main area displays the details for the '7za' package. A table lists the files in the package. A purple arrow points to the first file, '7za-920-haa95532\_0.tar.bz2'. On the right, the metadata for this file is shown in a full-screen view, displaying a JSON object with the following structure:

```

{
  "repodata_record.json": {
    "md5": "3d441270b7caa42844765fbfff633cd3",
    "name": "7za",
    "size": 308086,
    "build": "haa95532_0",
    "sha256": "6e83bc2040046f343a6a1de3c607a44271b2da1327033c50af15f94e56c6a86a",
    "subdir": "win-64",
    "depends": [],
    "license": "LGPL",
    "version": "920",
    "timestamp": 1624857769335,
    "build_number": 0
  },
  "cves": null,
  "signatures": {
    "f908f8ba3f3c5d29c7813be68c5942622534f57e7aa7449a6f935b5a31561cb8": {
      "signature": "8510bb1f5d956854b9faab512fa0809cc046d1985367775dcd061865ae0dc061bcb28778f12d"
    }
  }
}

```

**Tip:** Click the expand icon to view the metadata in full screen.

## Viewing package SBOMs

Anaconda’s **Software Bill Of Materials (SBOMs)** are built in accordance with **Software Package Data Exchange (SPDX)** specifications, version 2.2.1, which specifies the checksum hash values of software down to the individual file level.

From the package details view, click on a file’s name, then click the **View SBOM** link. The SBOM opens in a new tab.

The screenshot shows the Anaconda Business interface. On the left is a sidebar with navigation options: Org Management (Org Profile, Channels, Token Access, Installers, Subscription) and User Management (Users, Groups, Invitations, Service Accounts). The main content area displays details for the package '7za' under the channel 'anacondabusiness / quarantine / 7za'. It shows 2 files, 0 dependents, 0 dependencies, and 0 CVEs. A table lists two files:

FILE NAME	VERSION	CVE	UPLOADED
7za-920-haa95532_0.tar.bz2	920	N/A	Jul 2, 2021
7za-920-haa95532_0.conda	920	N/A	Jul 2, 2021

On the right, a modal window shows the package details for '7za-920-haa95532\_0.tar.bz2', including a 'View SBOM' link and a JSON representation of the SBOM. A purple arrow points to the 'View SBOM' link.

## Installing a package in your environment

The package details page also provides you with a command to run if you want to install the package from this channel. Keep in mind that all the package's dependencies will also be installed.

The screenshot shows the Anaconda Business interface for the package 'python' under the channel 'anacondabusiness / snakes / python'. It shows 1909 files, 1778 dependents, 13 dependencies, and 60 CVEs. A table lists two files:

FILE NAME	VERSION	CVE	UPLOADED
python-3.9.17-h6244533_0.conda	3.9.17	47 reported	Jul 5, 2023
python-3.9.17-h1aa4202_0.conda	3.9.17	47 reported	Jul 5, 2023

On the right, a modal window shows the 'INSTALL PACKAGE' command: `conda install -c https://repo.anaconda.cloud/repo/anacondabusiness/snakes python`. Below this, 'PACKAGE INFO' is displayed, including License (PSF-2.0), Version (3.11.4), and Last Published (Jul 5, 2023). A purple arrow points to the 'INSTALL PACKAGE' button.

## Tokens

A token is a string of randomized characters that is used to identify users within Anaconda. Your token provides you with access to your subscription tier's capabilities and features within Anaconda Cloud.

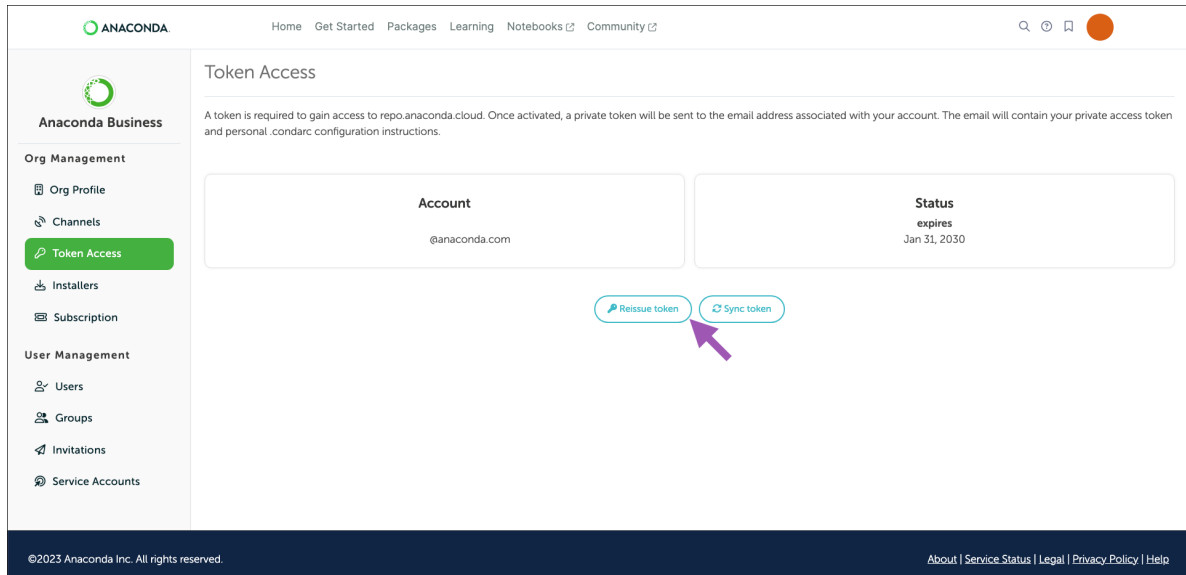
There are two types of tokens used by Anaconda:

- **Organization access token** - Your organization token provides you with the ability to connect to your organization's channels to download packages. Each user in an organization has a unique token. Your organization access token expires either 30 days after your organization's subscription has ended or immediately when your subscription is canceled. If you have no valid token, you will not be able to access the channels within your organization in order to download packages.
- **Client token** - Client tokens are temporary tokens that you can generate to interact with the Anaconda Cloud API. Client tokens can have a lifespan of as little as 15 minutes.

## Issuing/re-issuing a token

You must be assigned a seat within an organization to issue yourself a token. Once you're assigned a seat, you can generate a new organization token for yourself at any time.

1. Go to your organization's page.
2. Select **Token Access** from the left-hand navigation.
3. Click **Activate token** if it is the first time you are receiving a token, or **Reissue token** if you are obtaining a new token. An automated email containing a *private* organization token will be delivered to the address associated with your Anaconda account.



**Note:** Re-issuing your token will invalidate the previous token. All newly generated tokens are set to expire when your organization's subscription expires.

## Synchronizing your token

Renewing your subscription does not extend the lifespan of your token. If you have renewed your subscription and want to retain your current token, synchronize your token to extend its lifespan to your organization's new subscription expiration date.

To synchronize your token:

1. Go to your organization's page.
2. Select **Token Access** from the left-hand navigation.
3. Click **Sync token**.

### Setting your token

After issuing yourself a token, you must configure conda to use it to access your organization's channels. There are two main methods for setting your token for use. Choose the option that best suits how you work.

#### Setting your token using the CLI

Setting your token using the CLI requires the `conda-token` package. If you do not have this package, you can use conda to install it.

1. Open a terminal (Anaconda Prompt for Windows users). You should see `(base)` preceding the command line. This means you are in your base conda environment.
2. Install `conda-token` by running the following command:

```
conda install conda-token -n base
```

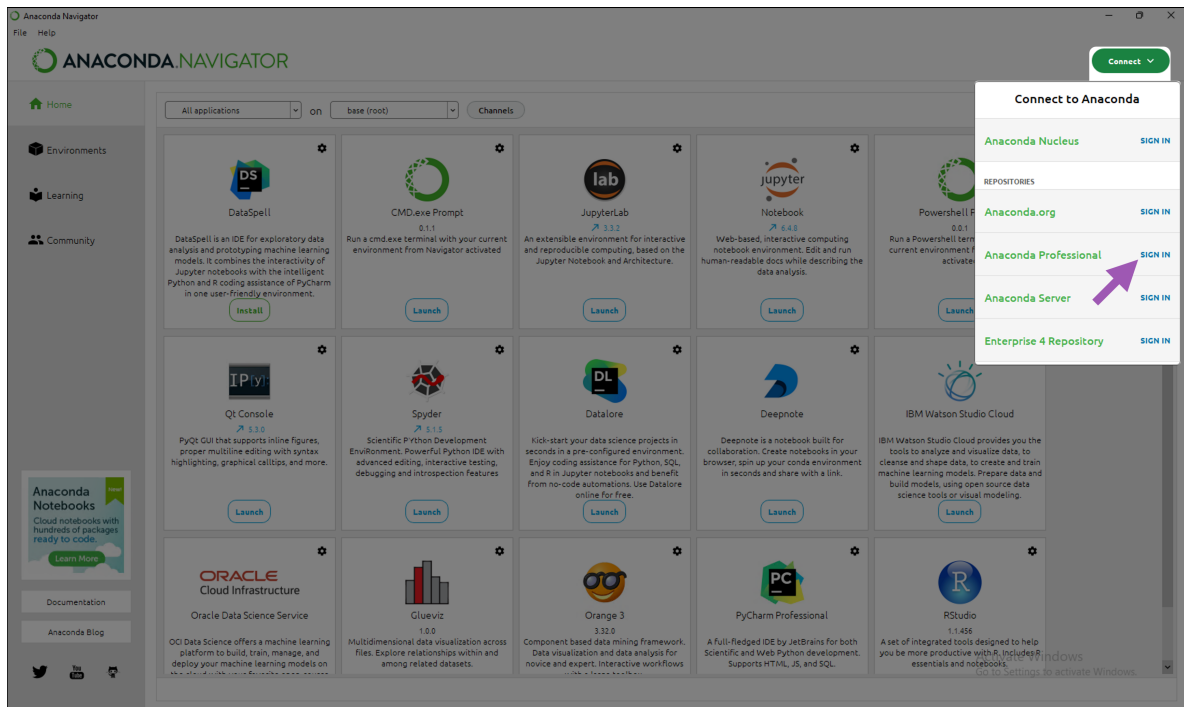
3. Enter "y" when prompted to proceed with the installation.
4. Once `conda-token` is installed, run the following command:

```
# Replace <TOKEN> with the organization token you received in your email
conda token set <TOKEN>
```

**Caution:** You must run this command every time you receive a new token.

#### Setting your token using Navigator

1. Launch Anaconda Navigator.
2. Select **Connect**, then **Sign in** to *Anaconda Professional* using the organization token you received in your email.



**Note:** The Pro and Business tiers share a repository of curated packages. Therefore, signing into Anaconda Professional gives you access to the Business channels you need, as long as you have the correct access token.

## Frequently asked questions

### Questions regarding installers & packages, conda, or Navigator

For any questions regarding installers and packages, please refer to [Distribution Troubleshooting](#).

For help with conda, please refer to our [conda documentation](#).

For help with Navigator, please refer to our [Navigator documentation](#).

## Getting started with Anaconda

### What do I get from this tier that I don't get from the free tier (Anaconda Distribution)?

- Secure access to our commercial package repository, with a new URL and token for access
- Compliance for commercial use according to the Anaconda Terms of Service
- Ability to leverage mirroring software to create copies of the commercial package repository (Site license only)
- Policy filters and virtual channels (Business tier only)

### Can I still keep my Anaconda Distribution account?

Yes, as long as your Anaconda Distribution account is used for non-commercial activities.

### Does my personal email address associated with my account follow me to my corporate membership?

It can, but Anaconda recommends using your corporate email so your admin can track all tokens in use.

### Setting up and managing your Anaconda account

#### How do I verify my account?

Accounts will be verified through a link sent to the account email address.

#### What happens if I do not receive an email verification?

Ensure the email did not go to your spam folder. If it is not there either, please [submit a ticket](#).

#### What happens if I get an error after clicking the verification link?

Please [submit a ticket](#) for account-related questions.

#### How do I reset my password?

From your profile in the top-right corner, click **Profile** in the dropdown, then click [Update Password](#). Once you have reset your password, click **Save Changes**.

If you are unable to access your account, click **Forget your Password?** on the sign in page. Enter the associated email address to receive a link to reset your password.

#### Does my password expire?

Never!

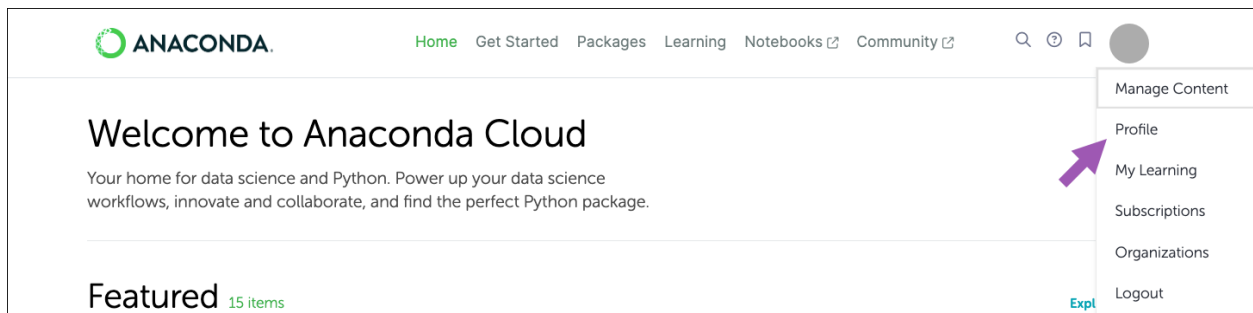
#### Will I remain logged in until I log out? In other words, how long can I leave my computer idle before I need to log in again?

If you are not actively using Anaconda, you should remain logged in for about one hour. After that, you will need to sign in again.

### Setting up and managing your Anaconda profile

#### How do I access my profile?

In the top-right corner of your dashboard, click the circle containing your initials. Then, select **Profile** from the dropdown.

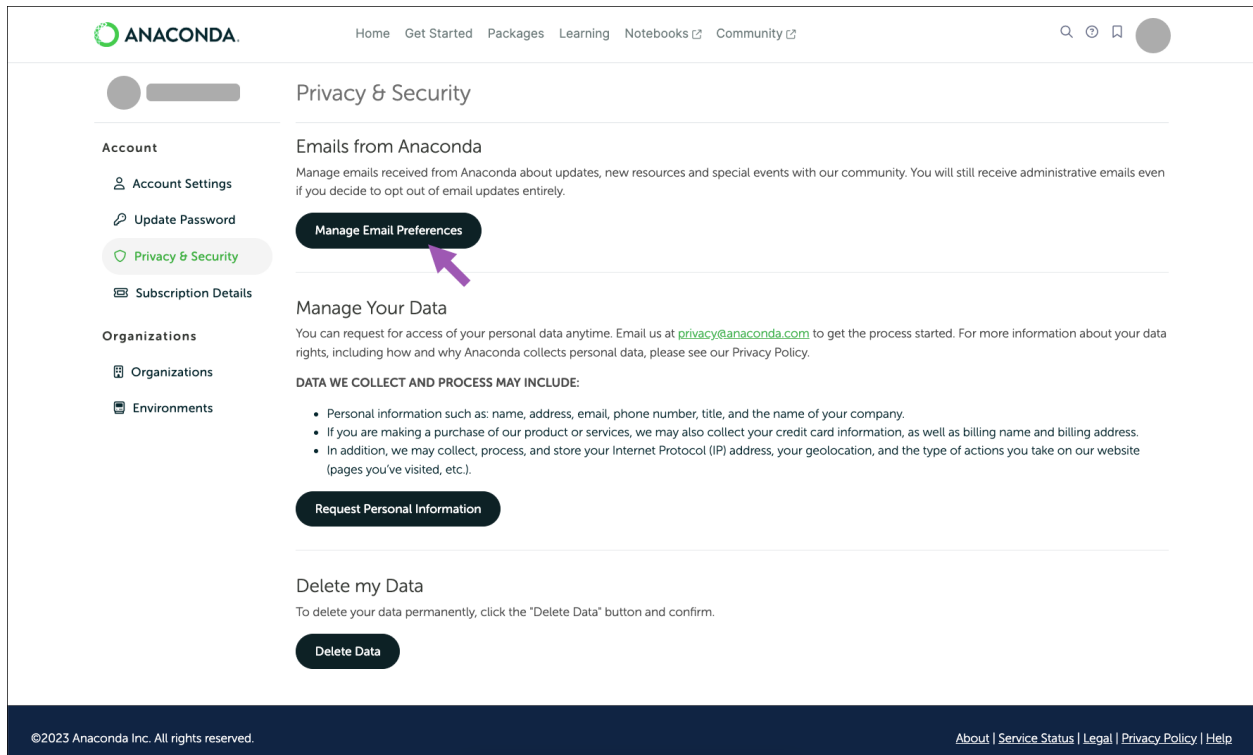


#### How do I add a profile picture to my profile?

Currently adding a profile picture to your profile is not available. This functionality will be part of a future release.

#### How do I manage my marketing email preferences?

You can update your opt-in or opt-out preferences by navigating to [Privacy & Security](#) from your **Profile**. Once there, click **Manage Email Preferences**.



**ANACONDA** Home Get Started Packages Learning Notebooks Community

**Privacy & Security**

**Account**

- Account Settings
- Update Password
- Privacy & Security**
- Subscription Details

**Organizations**

- Organizations
- Environments

**Emails from Anaconda**

Manage emails received from Anaconda about updates, new resources and special events with our community. You will still receive administrative emails even if you decide to opt out of email updates entirely.

[Manage Email Preferences](#)

**Manage Your Data**

You can request for access of your personal data anytime. Email us at [privacy@anaconda.com](mailto:privacy@anaconda.com) to get the process started. For more information about your data rights, including how and why Anaconda collects personal data, please see our Privacy Policy.

**DATA WE COLLECT AND PROCESS MAY INCLUDE:**

- Personal information such as: name, address, email, phone number, title, and the name of your company.
- If you are making a purchase of our product or services, we may also collect your credit card information, as well as billing name and billing address.
- In addition, we may collect, process, and store your Internet Protocol (IP) address, your geolocation, and the type of actions you take on our website (pages you've visited, etc.).

[Request Personal Information](#)

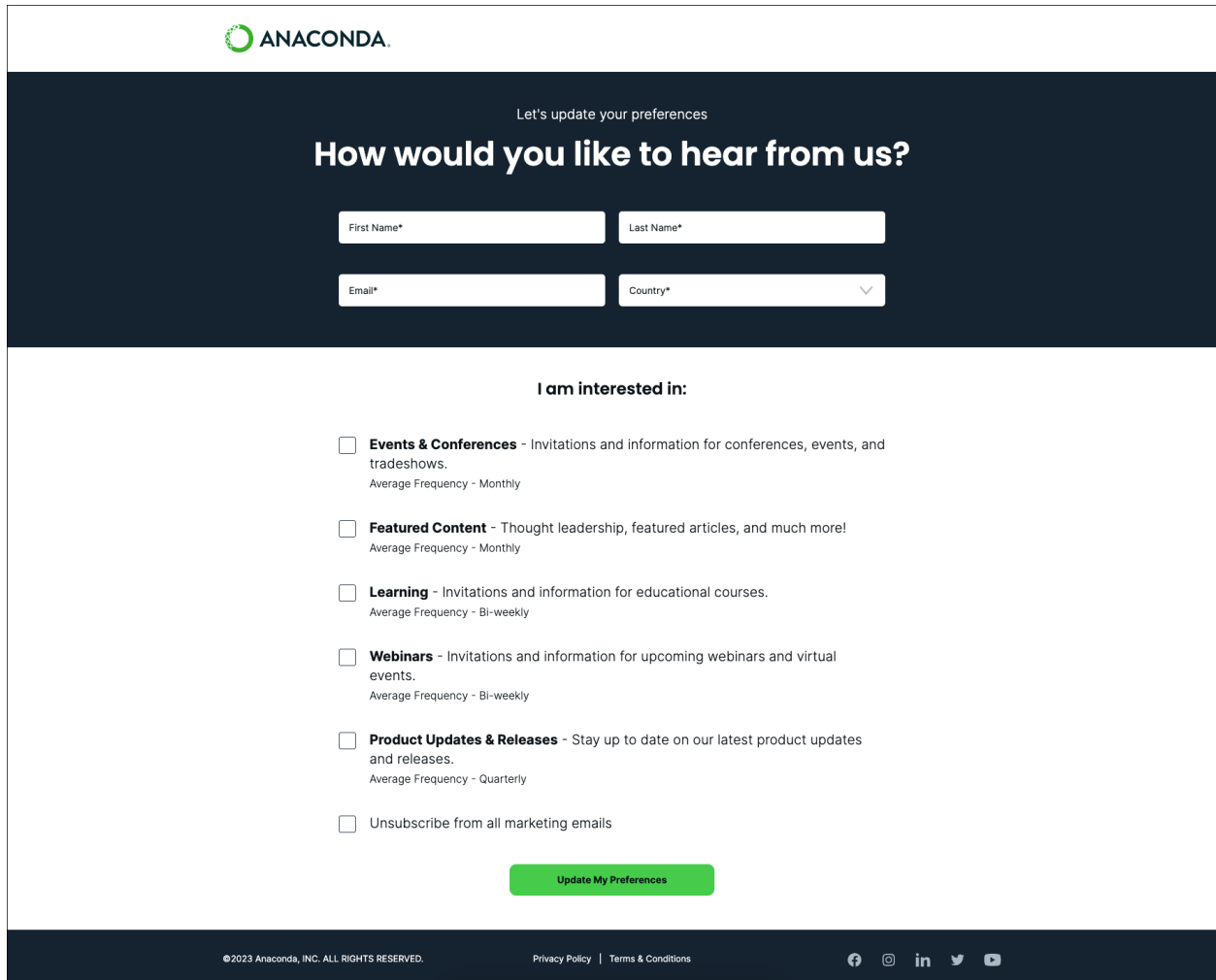
**Delete my Data**

To delete your data permanently, click the "Delete Data" button and confirm.

[Delete Data](#)

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The email preferences page will open in a new tab. Make any changes you'd like, and then click **Update My Preferences** to save.



Let's update your preferences

## How would you like to hear from us?

First Name\* Last Name\*

Email\* Country\*

**I am interested in:**

- ☐ **Events & Conferences** - Invitations and information for conferences, events, and tradeshow.
   
Average Frequency - Monthly
- ☐ **Featured Content** - Thought leadership, featured articles, and much more!
   
Average Frequency - Monthly
- ☐ **Learning** - Invitations and information for educational courses.
   
Average Frequency - Bi-weekly
- ☐ **Webinars** - Invitations and information for upcoming webinars and virtual events.
   
Average Frequency - Bi-weekly
- ☐ **Product Updates & Releases** - Stay up to date on our latest product updates and releases.
   
Average Frequency - Quarterly
- ☐ Unsubscribe from all marketing emails

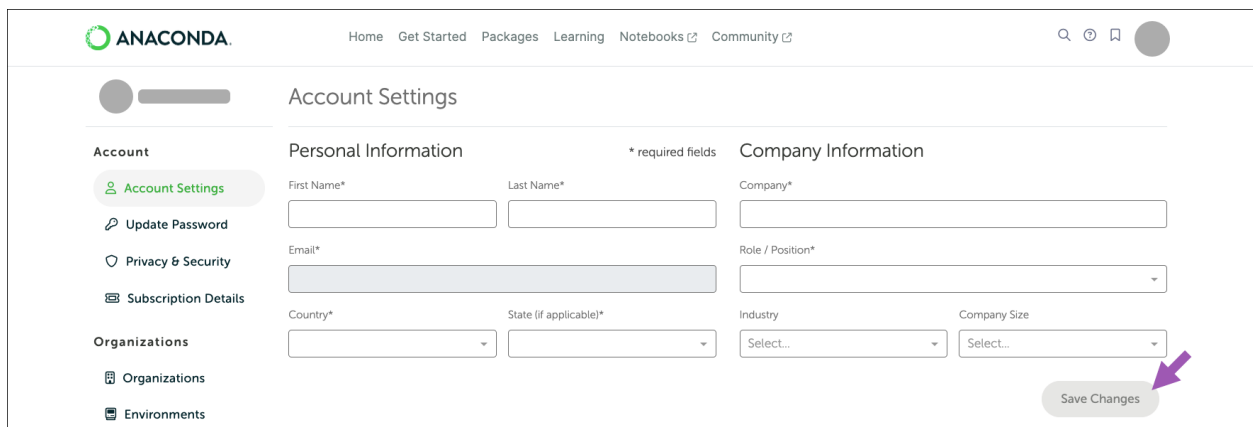
Update My Preferences

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Facebook Instagram LinkedIn Twitter YouTube

### How do I change my industry and company size?

You can change your industry and company size by navigating to your [Account Settings](#) page. Once there, update your details in the **Industry** and **Company Size** cells, and then click **Save Changes**.



ANACONDA Home Get Started Packages Learning Notebooks Community

## Account Settings

**Account**

- Account Settings
- Update Password
- Privacy & Security
- Subscription Details

**Organizations**

- Organizations
- Environments

**Personal Information** \* required fields

First Name\* Last Name\*

Email\*

Country\* State (if applicable)\*

**Company Information**

Company\*

Role / Position\*

Industry Company Size

Select... Select...

Save Changes

### How do I assign a new account admin?

Complete the following steps as an admin:



Navigate to your [Organizations](#) page, then select your organization. From the **Users** tab, you can assign a new account admin by clicking the action icon in the **Actions** column and selecting **Assign as Account Admin**.

The screenshot displays the Anaconda Users management page. On the left, there's a sidebar with 'Org Management' and 'User Management' sections. The 'Users' tab is selected under 'User Management'. The main area shows a table of users. The table has columns: USER, ROLE, PRODUCT, GROUPS, and ACTIONS. A dropdown menu is open for the first user (AG), showing options: Revoke Seat, Manage Groups, Assign as Account Admin (highlighted with a purple arrow), Assign as Billing Manager, and Remove from Organization. The top bar includes the Anaconda logo and navigation links like Home, Get Started, Packages, Learning, Notebooks, and Community. The bottom bar shows copyright information and links to About, Service Status, Legal, Privacy Policy, and Help.

The person you've assigned to account admin will receive an email notifying them that their role has been changed.

## Authenticating Anaconda

### What happens if I lose my token?

You can request a new token by navigating to [Token](#) from your **Profile**. Once there, click the **Request New Token** button. You will receive a new access token in an email shortly thereafter.

**Note:** Requesting a new token will revoke and deactivate your existing token's access. Please make sure to reconfigure your `.condarc` file after replacing your private token by running the `conda token set <TOKEN>` command.

### Do I ever need to update my access token?

If you are transitioning from an individual user license to a site license, you will need to update your access token.

### What if I need multiple access tokens, say, for a team of users?

For now, you need to create a new account to obtain a new access token.

### What happens if someone else uses my token?

You can request a new token by navigating to [Token](#) from your **Profile**. Once there, click the **Request New Token** button. You will receive a new access token in an email shortly thereafter.

**Note:** Requesting a new token will revoke and deactivate your existing token's access. Make sure to reconfigure your `.condarc` file after replacing your private token by running the `conda token set <TOKEN>` command.

### How do I prevent unauthorized access?

Keep your access token private and secure.

### **What do I do if my access token does not work?**

Please [submit a ticket](#) for account-related questions.

### **When does my token expire?**

Your token will expire either one month after your subscription has ended or immediately when your subscription is cancelled.

## **Setting up my access**

### **Can I add support to my subscription?**

Yes. This is done via a sales agreement. Please contact sales at [sales@anaconda.com](mailto:sales@anaconda.com).

### **How do I obtain my access token?**

A private token will be sent to the email address you provided once you have subscribed.

### **How do I activate my account?**

If you have not downloaded Anaconda installers yet, you can get them [here](#). To authenticate Anaconda, please refer to the Authenticating Anaconda section in the Quickstart guide for detailed instructions.

### **How do I add `repo.anaconda.cloud` to the `.condarc` file and as a channel in an existing conda command?**

Please refer to the Authenticating Anaconda section in the Quickstart guide.

## **Setting up and managing payments and billing**

### **How do I view my subscription information?**

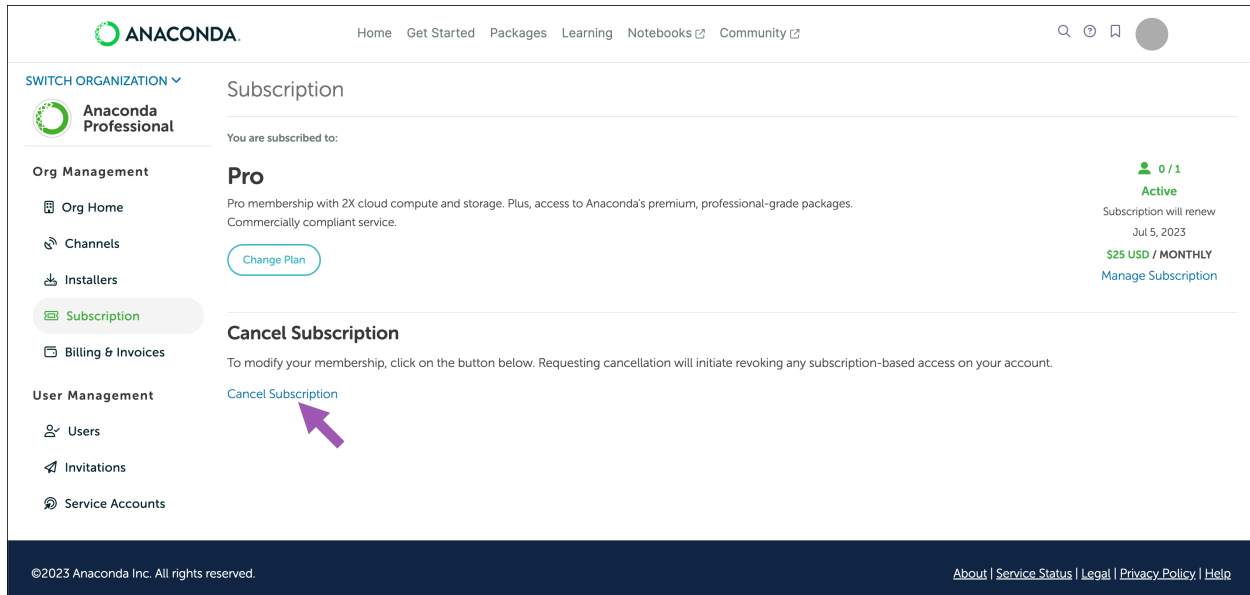
From your profile in the top-right corner, navigate to your **Profile**, then click [Subscription Details](#).

### **How do I manage my subscription?**

On your [Billing & Invoices](#) page, click **Go to Stripe Billing Portal**. In Stripe, you can add a payment method, update your billing address, download an invoice, or change your plan.

### **How do I cancel my subscription?**

From your profile in the top-right corner, navigate to your **Profile**, then click [Subscription Details](#). Click **Cancel Subscription**.



On the following screen, click **Cancel Subscription**. Requesting cancellation will initiate revoking any subscription-based access on your account.

#### Will I get a notification of my cancellation?

You will receive a confirmation email of your unsubscribing.

#### What happens to my current account when I cancel my subscription?

You will have access to Anaconda until the end of the paid period, that being the end of the month if you purchased a month's subscription.

#### How do I access my payment information?

From your profile in the top-right corner, navigate to your **Profile**, and then click **Billing & Invoices**.

#### How do I change or add credit card information?

On your **Billing & Invoices** page, click **Go to Stripe Billing Portal**. In Stripe, click the edit icon to modify your credit card on file, or click **Add payment method** to add a new card.

#### How do I change billing managers and my payment method?

Complete the following steps as an admin:

Navigate to your **Organizations** page, then select your organization. From the **Users** tab, you can assign a new billing manager by clicking the action icon in the **Actions** column and selecting **Assign as Billing Manager**.

The screenshot displays the Anaconda Users management interface. On the left, a sidebar contains 'Org Management' (Org Home, Channels, Token Access, Installers, Subscription, Billing & Invoices) and 'User Management' (Users, Groups, Invitations, Service Accounts). The main area is titled 'Users' and features a table with columns: USER, ROLE, PRODUCT, GROUPS, and ACTIONS. A filter bar is at the top of the table. A dropdown menu is open for the user 'CC', showing options: Revoke Seat, Manage Groups, Assign as Account Admin, Assign as Billing Manager (highlighted with a purple arrow), and Remove from Organization. The top right of the page shows '984 Seats Available' and buttons for 'Assign Seat' and 'Revoke Seat'. The footer contains copyright information and links for About, Service Status, Legal, Privacy Policy, and Help.

On your [Billing & Invoices](#) page, click **Go to Stripe Billing Portal**. In Stripe, click the edit icon to modify your credit card on file, or click **Add payment method** to add a new card.

### How can I get my payment history?

You can see your payment history in one of two ways:

- Check the inbox of the email address associated with your Anaconda account, as well as the spam folder.
- On your [Billing & Invoices](#) page, click **Go to Stripe Billing Portal**. In Stripe, you can see past payments under **Invoice history**.

If you have paid for Anaconda but have not received any email confirmation for your purchase, please [submit a ticket](#).

### How long does it take to see a payment posted?

Approximately 5-10 business days after payment confirmation, depending upon the bank.

### What happens if my credit card is breached?

Please change your credit card details on your profile. From your profile in the top-right corner, navigate to your **Profile**, and then click [Billing & Invoices](#).

### Who hosts my credit card data?

Stripe. Anaconda does not host your financial data.

### What company shows up on my bank statement?

Stripe. Anaconda will show in the description.

### When will I be billed, monthly or yearly?

For monthly subscriptions, you will be billed a prorated amount for the current month and on the 1st of every month thereafter.

For yearly subscriptions, you will be billed exactly one year from the date you purchased your current subscription.

**Is my membership prorated?**

Yes, based on the date of purchase. For example, if you are billed on December 5, you have been charged for the prorated amount between December 5 through December 31.

**If I cancel mid-month, how long will I have access to the platform?**

You will have until the end of the canceled month.

**How do I change my subscription duration, i.e. switching from monthly to annual or annual to monthly?**

On your [Billing & Invoices](#) page, click **Go to Stripe Billing Portal**. In Stripe, click **Update plan**. Select either **Monthly** or **Yearly**, then click **Continue**. On the next page, click **Confirm**.

**Do I have to have a credit card on file?**

Purchases require an active and valid card on your profile.

**What is your refund policy?**

We do not offer refunds or exchanges.

**Will I get a receipt?**

Yes, we will email your receipt after purchase to the email address associated with your profile.

**How do I delete my personal data?**

You can request the deletion of your personal data anytime by navigating to the [Privacy & Security](#) page and clicking **Delete Data**.

The screenshot shows the Anaconda website's Privacy & Security page. The left sidebar contains links for Account (Account Settings, Update Password, Privacy & Security, Subscription Details) and Organizations (Organizations, Environments). The main content area is titled 'Privacy & Security' and includes sections for 'Emails from Anaconda' (with a 'Manage Email Preferences' button), 'Manage Your Data' (with a 'Request Personal Information' button), and 'Delete my Data' (with a 'Delete Data' button highlighted by a purple arrow). The footer contains copyright information and links to About, Service Status, Legal, Privacy Policy, and Help.

### Anaconda community

#### How do I report suspicious activity on the platform?

You can report any suspicious activity by [submitting a ticket](#).

#### How do I report a bug?

You can report bugs or any other errors to our [anaconda-issues repo](#).

### Anaconda Notebooks

#### Start coding immediately

Anaconda Notebooks allows anyone, anywhere to begin their data science journey. Spin up awesome data science projects directly from your browser with all the packages and computing power you need.

#### Code from anywhere

Log in and pull up conda configurations wherever you are online. Whether you want to upload a local environment or directly manage packages in the notebook — Anaconda's got you covered.

#### Secure file storage

Liberate those files from your hard drive and securely store all your notebooks, projects, and scripts directly in your file directory.

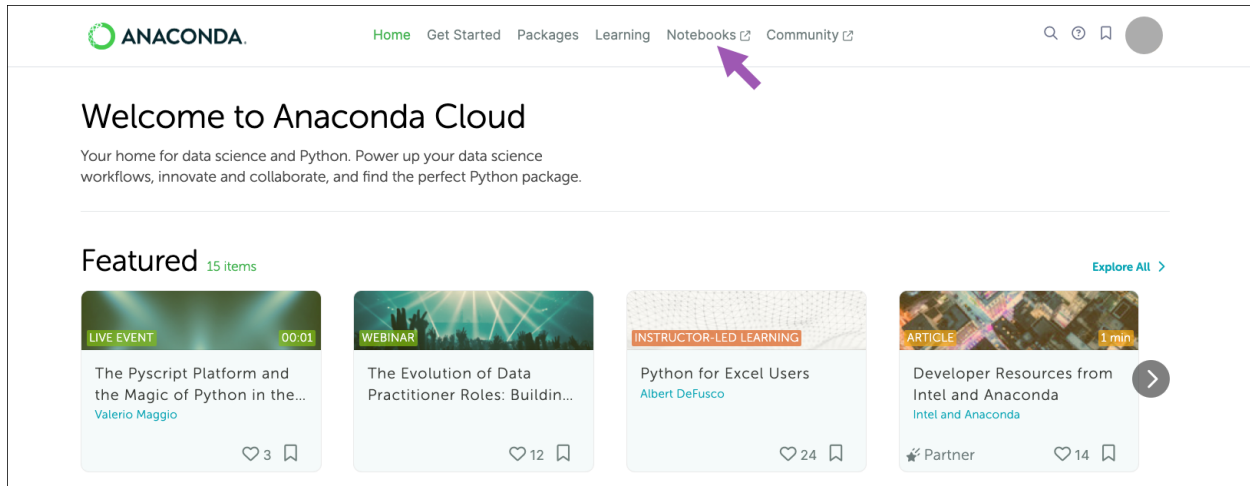
---

With Anaconda Notebooks, you get all of the following running on our resilient and supported cloud platform, so you can use it anywhere on any device!

Features	Free	Starter	Pro/Business
A dedicated JupyterLab notebook interface	✓	✓	✓
Fast, backed-up SSD storage	5GB	10GB	20GB
CPU seconds (daily)	1,000	4,000	8,000
Published applications	1	2	4
Conda environments with the most popular python packages	✓	✓	✓
Ability to create and upload your own custom environments	✓	✓	✓
Example notebooks	✓	✓	✓

---

Try it out for yourself by launching Notebooks from [Anaconda Cloud](#)!



## Publishing Anaconda Notebooks

This topic provides guidance on previewing and publishing your Panel apps as working applications with a custom URL. This spins up an application on the Anaconda Notebooks infrastructure, which you can then share with others.

### Previewing Panel apps

You can render a working preview of the Panel apps in your notebook by clicking the Panel icon at the top of your notebook. To create a valid Panel application, one or more of your outputs must be marked as `.servable()`. See [Troubleshooting](#) below for further details.

---

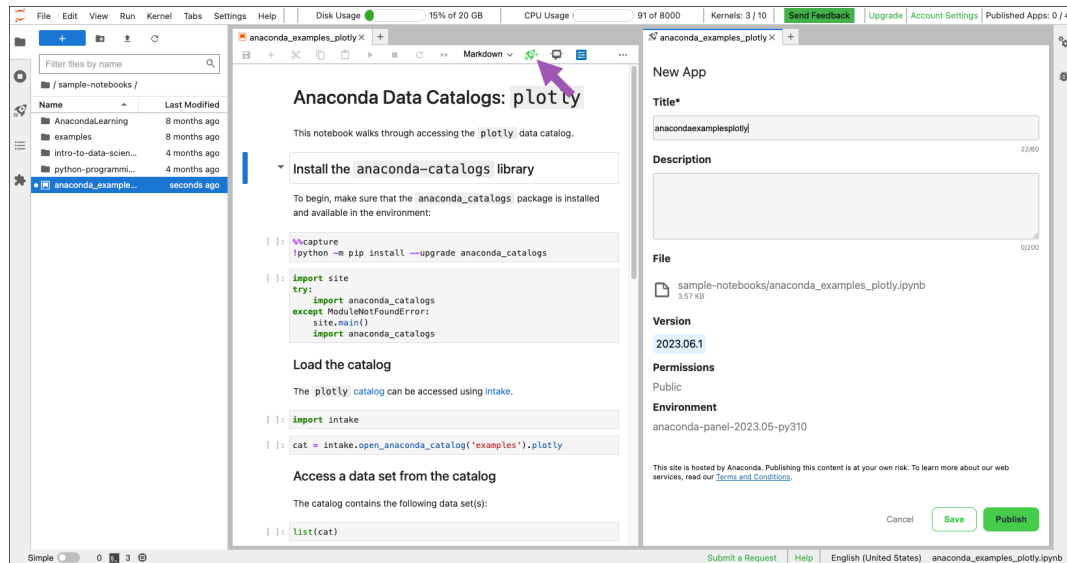
**Note:** Rendering a preview of Panel apps uses CPU seconds.

---

### Publishing Panel apps

To publish the results of your Panel apps to a custom URL, complete the following steps:

1. Click the publish icon at the top of the notebook. The publication panel opens on the right.



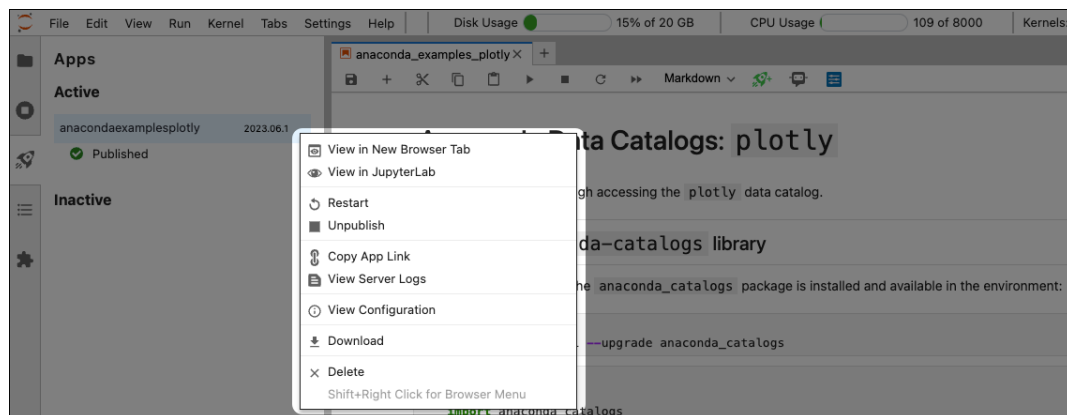
2. Provide a title and detailed description.

**Note:** Your notebook's version is displayed within the form and automatically increments each time you save changes to or redeploy your notebook.

3. Optional: Click **Save** to produce an inactive (i.e. unpublished) app. To see your unpublished and published apps, click the publish icon in the left-hand navigation to open the **Apps** panel.
4. Click **Publish**. You are provided a randomly generated URL for your application, which can be shared with others.

**Note:** The page will appear as a 502 Bad Gateway until the publication process is complete.

5. Click the publish icon in the left-hand navigation to open the **Apps** panel. Your application is now listed under **Active**.
6. View, unpublish, download, and more by clicking the actions icon beside your app in the **Apps** panel.





## Publishing limits

The number of applications you can publish depends on your Anaconda subscription tier.

Tier	Published Apps
Free	1
Starter	2
Pro/Business	4

## Further Panel resources

Anaconda Notebooks allows you to deploy your data applications via Panel with just two clicks directly from your notebooks. Check out the following resources for a deeper dive into Panel:

- Familiarize yourself with Panel with the [getting started guide](#)
- Discover how to use specific features in the [how-to guide](#)
- Learn about the different components and how to use them with the [component gallery](#)
- Gain inspiration from the [app gallery](#)

## Troubleshooting

### I published a Panel application, but the application is blank.

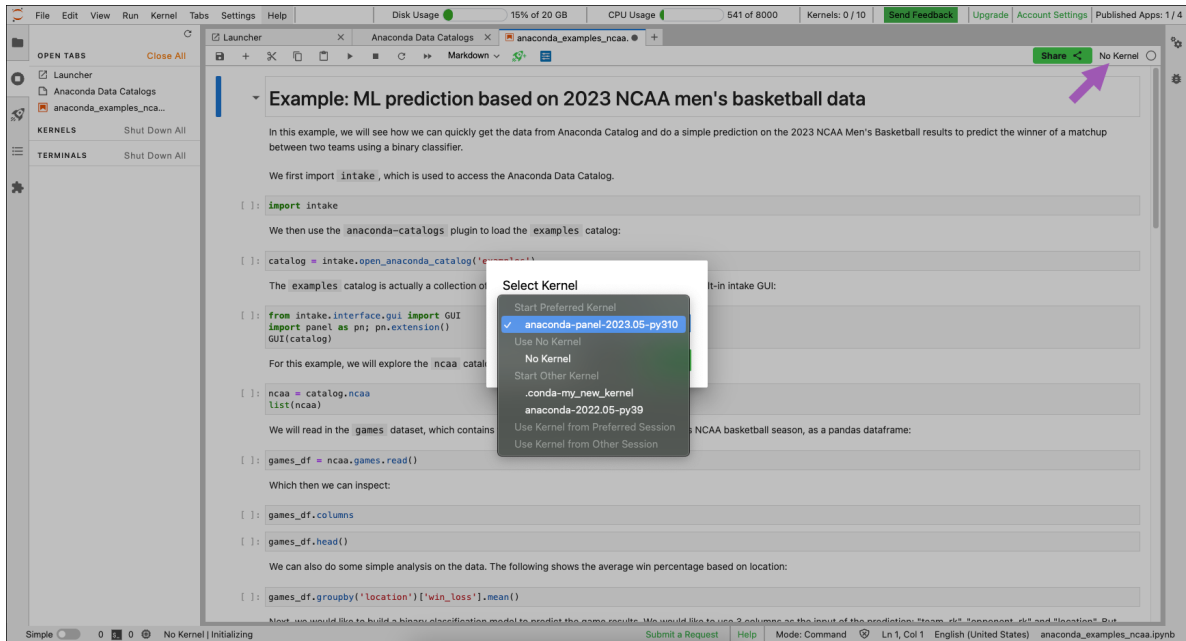
There are a couple of reasons your application may not be rendering:

1. To create a valid Panel application, one or more of your outputs must be marked as `.servable()`. Take this minimal “Hello, World!” program, for example:

```
import panel as pn
pn.Row("Hello, World!").servable()
```

If you added content to your application but there’s still nothing showing up, ensure that your notebook can be run from top to bottom. The easiest way to test this is to click **Kernel** in the menu bar, then select **Restart Kernel and Run All Cells..** from the dropdown.

2. Ensure you have selected the `anaconda-panel-2023.05-py310` kernel from the kernel selector in the top-right of your notebook.



## I published an application but it's stuck in a “publishing” state.

If your application is stuck in the “Your app is being published” state, check your notebook error logs. Address any issues raised and republish.

## Sharing Anaconda Notebooks

When you're ready for others to interact with your notebook, you can share a copy of the notebook via a direct link or a clickable “badge” on a webpage. This is great if, for example, you're a teacher looking to provide an easy way for students to access notebooks from your GitHub account, or you're a developer looking for feedback (and praise) on a project from your colleagues.

## What are notebook badges?

Using a consistent and recognizable style, badges are clickable tiles that provide direct access to a notebook. Add these badges to websites, blog posts, documentation, GitHub repositories, or social media posts so anyone can open your notebook in a new instance of Anaconda Notebooks.

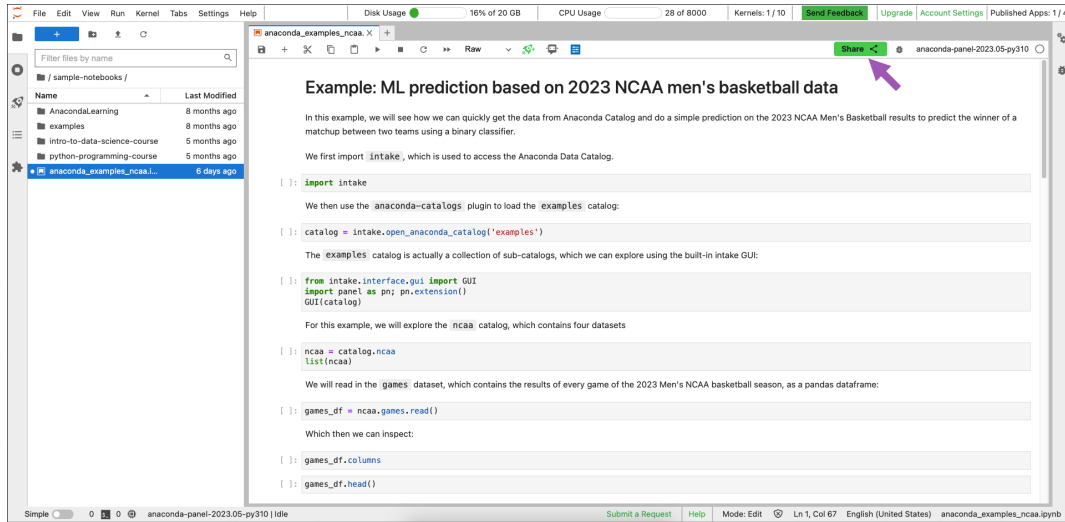
Badges can be created directly in Anaconda Notebooks by clicking **Share** at the top of your notebook, as shown in the following section. This provides you with HTML for a badge, which can be copied and embedded anywhere.

You can also generate a badge for notebooks hosted on GitHub, Anaconda.org, and many other sites using [this badge creator](#). For GitHub, use the **Raw** button to get a URL starting with `raw.githubusercontent.com`. For Anaconda.org, use the **Download** link to get a URL starting with `notebooks.anaconda.org`.

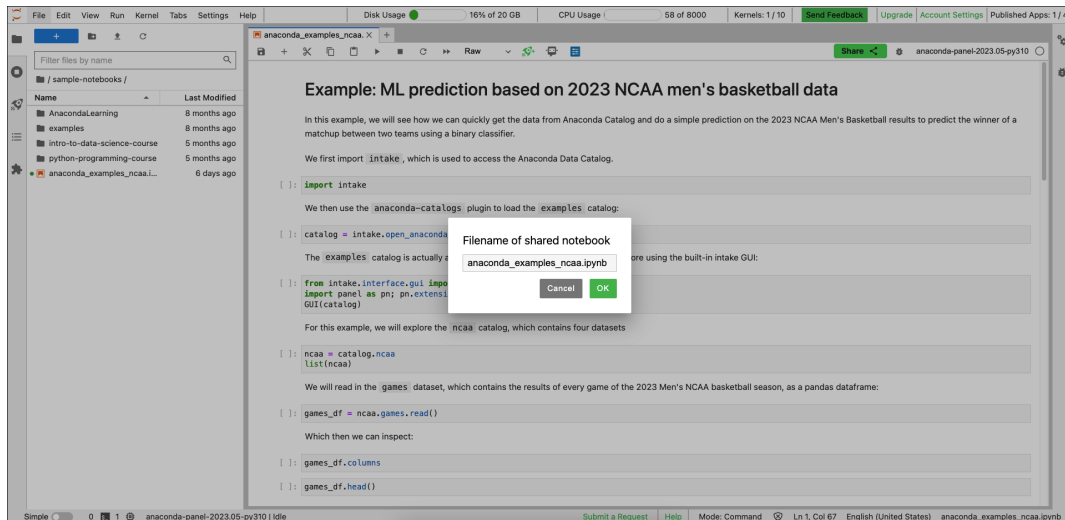
## Sharing notebooks

To generate either a direct link or a badge to your notebook, complete the following steps:

1. Click **Share** at the top of your notebook.

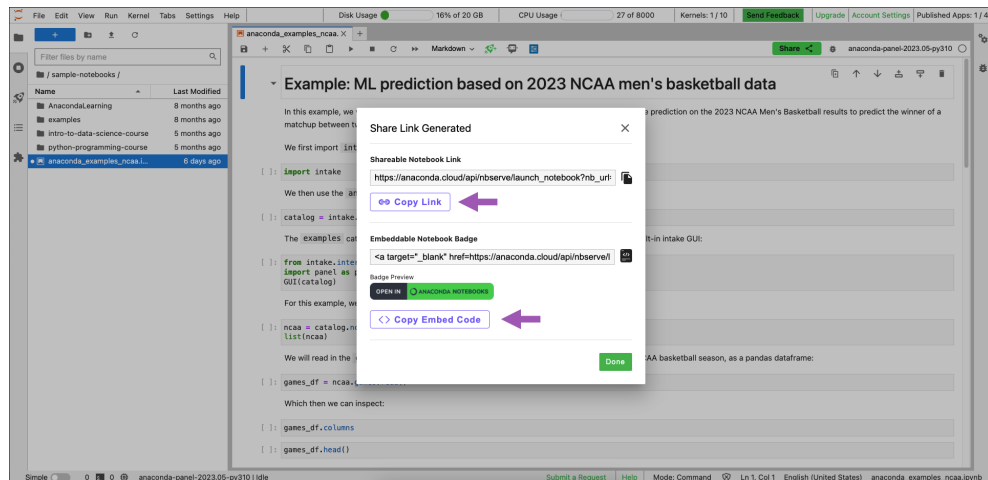


2. Enter a name for your notebook, then click **OK**.



3. In the **Share Link Generated** dialog:

- Click **Copy Link** to copy the notebook link to your clipboard. You can now share this link with whomever you want to share the notebook.
- Click **Copy Embed Code** to copy the badge HTML to your clipboard. You can now paste this code in your websites, blog posts, documentation, GitHub repositories, or social media posts so anyone can open your notebook.



4. Click **Done** to close the dialog.

Users who click the badge but don't have an Anaconda Cloud account will be prompted to create one.

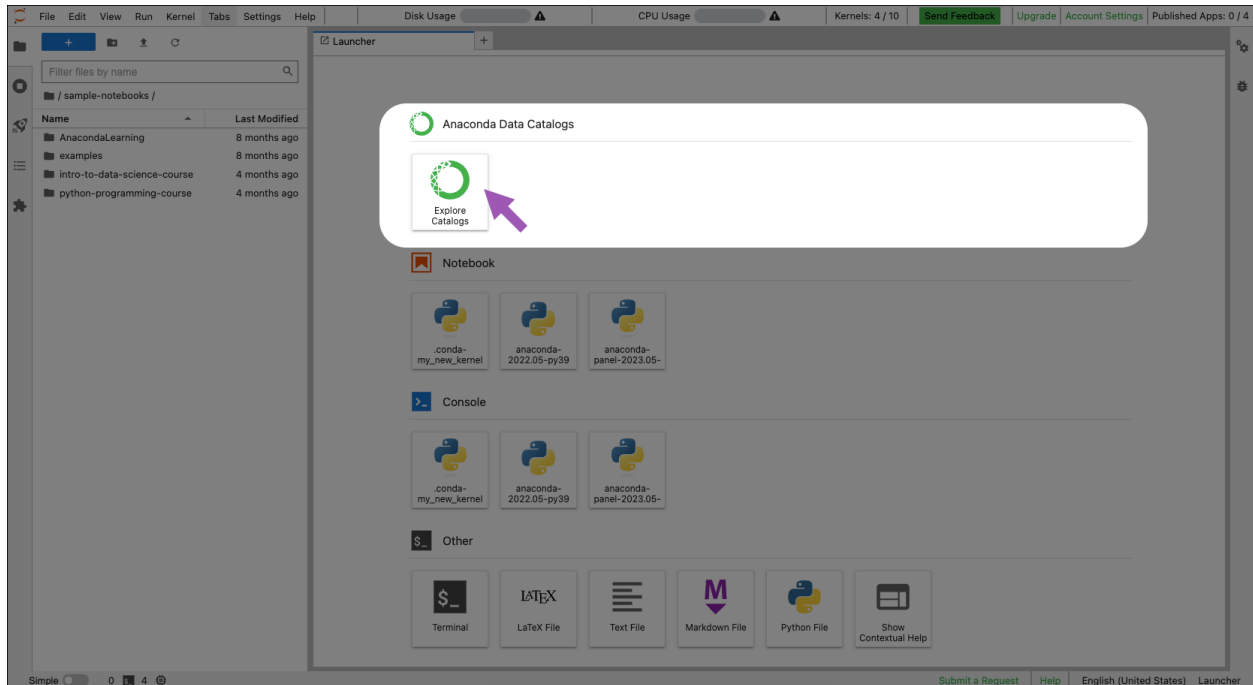
## Anaconda Notebooks data catalogs

When first approaching data analysis, a blank notebook can be extremely daunting—especially if you've never worked with notebooks or created one yourself.

Anaconda provides a catalog of sample data sets to familiarize yourself with running and analyzing data sets in a notebook.

## Accessing data catalogs

1. To open Anaconda Notebooks, click **Notebooks** at the top of Anaconda Cloud.
2. Once Notebooks opens, open a new Launcher by clicking the blue plus + in the top-left corner.
3. In the Launcher, under **Anaconda Data Catalogs**, click **Explore Catalogs**.



The Explore Catalogs page provides pre-populated data sets for you to familiarize yourself with data analysis in a notebook.

## Using data catalogs in Anaconda Notebooks

If you're new to using notebooks, open the `README.ipynb` on Anaconda Notebooks for a walkthrough on Anaconda Notebooks, working in a notebook, creating conda environments, and answers to frequently asked questions.

There are a few methods for running the cells in your data catalog:

- To run a single cell, click the cell to select it, then press the play button at the top of the notebook.
- An alternative way to run the cell is to select it and press `Shift + Enter` (return on a Mac).
- A variety of methods for running cells can be found by clicking **Run** in the menu bar and selecting an option from the dropdown.

## Using data catalogs on your local system

To access the data catalogs on your local system instead of in Anaconda Notebooks, complete the following steps:

1. [Download Anaconda](#) if you have not done so already.

---

**Note:** If you are using Miniconda, run `pip install anaconda-catalogs[examples]` after the following step to install the necessary dependencies.

---

2. To install the packages necessary to operate Anaconda's data catalogs, open a terminal (Anaconda Prompt on Windows) and run the following command:

```
conda install anaconda-cloud::anaconda-catalogs
```

3. Import `Intake` by running the following command (and subsequent steps) in a Jupyter Notebook or other Python environment:

```
import intake
```

4. To view a list of available example catalogs, run the following commands:

```
examples = intake.open_anaconda_catalog("examples")
list(examples)
```

5. Select a particular catalog and see what data sets it contains:

```
# Replace <CATALOG> with the catalog name
cat = examples.<CATALOG>
list(cat)
```

6. To retrieve the data in a specific data set from the list generated in the previous step, run the following command:

```
# Replace <DATASET> with the dataset name
df = cat.<DATASET>.read()
```

7. To display the first five entries of the catalog in a `Pandas Dataframe`, run the following command:

```
df.head()
```

## Anaconda Assistant quickstart guide

Anaconda Assistant is your digital pair programmer assistant for data science in [Anaconda Notebooks](#)! Made for novice and intermediate JupyterLabs notebook practitioners—yet handy for users of all levels—this AI assistant can help you:

- Write and debug code
- Analyze data
- Visualize results

Follow this quickstart guide to learn how to make the most of your Anaconda Assistant.

### Starting with a notebook

Anaconda recommends using the Assistant after you've loaded a dataframe in your notebook.

---

**Note:** Throughout the Assistant, *dataframes* refer to Pandas DataFrames only, though certain dataframe types compatible with Pandas DataFrames could work as well.

---

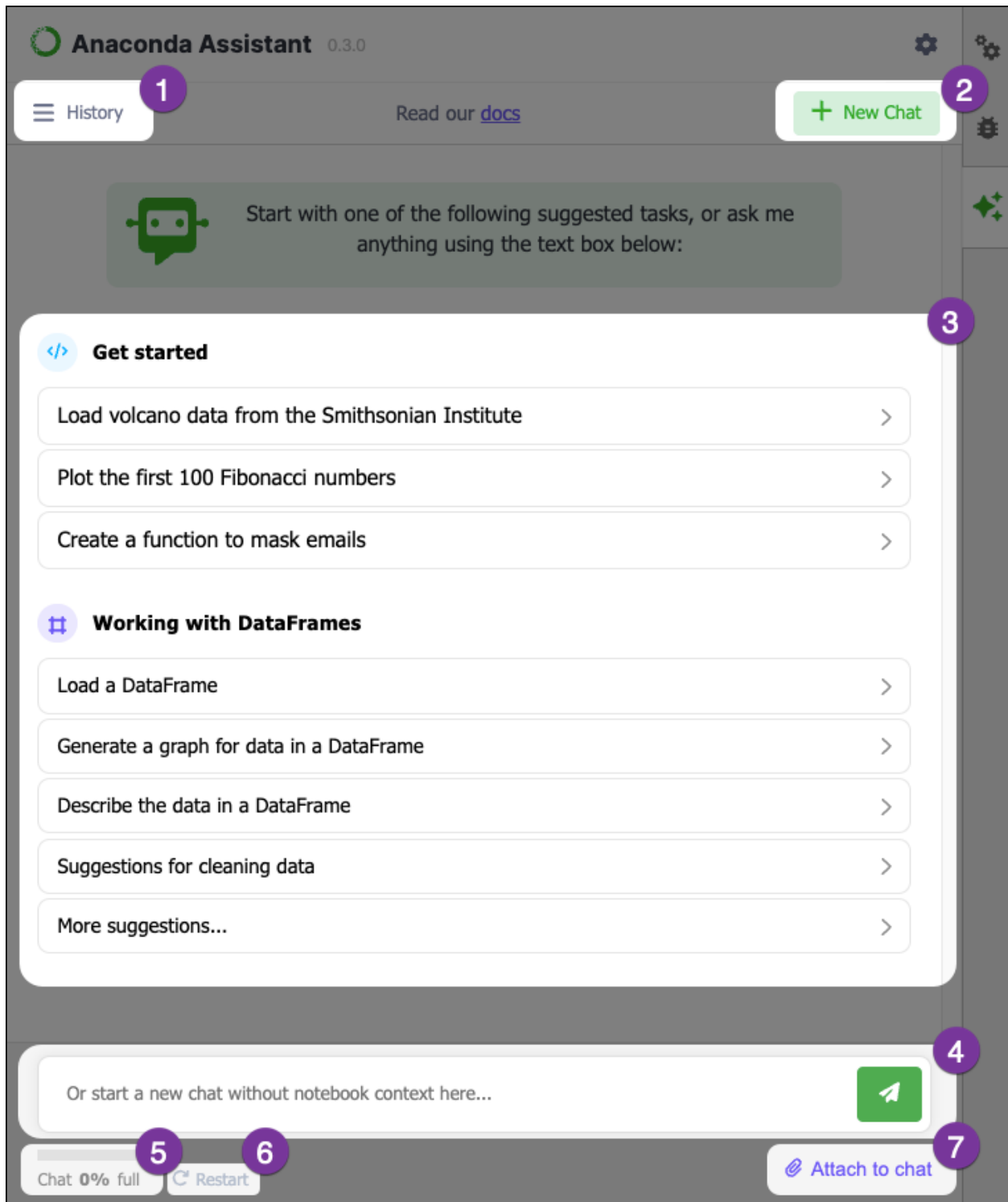
This can be done in a few different ways:

- If you're starting with an empty notebook, the Assistant provides you with the option to generate a dataframe with random data, which you can then use to generate graphs and more.
- Use [Anaconda data catalogs](#) as a starting point:
  1. Open a new Launcher by clicking the blue plus + in the top-left corner.
  2. In the Launcher, under Anaconda Data Catalogs, click Explore Catalogs.

3. Click the run all cells icon to restart and run all the cells available in your notebook. This will render a dataframe(s) in the notebook.
- If you already have specific data you'd like to work with and a proficiency in Jupyter Notebooks, import the data and generate a dataframe as you normally would.

### **Accessing the Anaconda Assistant**

Click the Anaconda Assistant icon to open the Assistant. Let's take a look at the different parts of the Assistant and what we can do with this tool.



1. **History of previous chats**

View and return to previous chats by clicking the menu icon in the top-right corner.

2. **Start a new chat**

At any time, you can start a new Assistant session, or “chat,” by clicking the new chat icon in the top-left corner.



### 3. Assistant tasks

The Assistant allows you to perform a variety of functions, which are covered in the following section.

### 4. Text box

Ask your own questions and make unique requests using the text box at the bottom of the Assistant.

### 5. Chat limit used

Currently, each new chat allows a set amount of requests per 24 hour period. You may encounter a warning message when you reach the daily limit.

### 6. Restart

If the conversation starts getting off track, wipe the Assistant's memory of previous messages by restarting the chat. This is effectively the same as creating a new chat, but reduces a bloat of redundant chats.

### 7. Attach to chat

Add data for the Assistant to analyze and manipulate (In development).

## Get started

Explore code for various math equations and python projects independent of your notebook. Whether you're starting from scratch or looking to take your project in a new direction, the code examples in this section can serve as much needed inspiration.

Build upon results by asking for deeper analysis or changes to the code using plain English. Make sure you provide specific instructions to the assistant! The more specific you are, the better your results will be.

## Working with DataFrames

For notebooks containing dataframes, the Assistant provides various methods for viewing and interacting with your data in a new way.

### Load a DataFrame

If you're starting with an empty notebook, this option will open a menu of dataframes for you to load in your notebook, which you can then use to generate a wide variety of graphs. You can also ask questions about the generated code and request changes using plain English. Remember to be specific!

### Generate a graph for the DataFrame

This option generates a graph based on the dataframe(s) in your notebook. If your notebook contains more than one dataframe, you're prompted to select which dataframe you want to generate a graph for.

Click **Get Code** to have the Assistant provide you with a list of various types of graphs (bar, plot, heatmap, etc.) it can generate based on the data in the dataframe. You're also presented with the code for generating the graph described in the first option listed, which you can then run in the notebook by clicking **Run in Notebook**, or you can copy the code to paste it yourself by clicking **Copy**.

If you want code for a different graph, or to see a new set of possibilities, use the text box to choose which graph you would like generated. Type something like the following:

- Generate the second idea
- Plot #3, please
- Give me new options!

### Describe the data in the DataFrame

Analyze and visualize data more efficiently by having the Assistant generate a summary of—and potential use cases for—your dataframe. This can be a great source of inspiration when you’re struggling to clearly explain the value your data provides.

Ask follow-up questions to dive deeper into the results. For example, if you find an interesting trend in your data, you can ask the Assistant to further refine the analysis or provide recommendations.

### Suggestions for cleaning data

The Assistant can provide various means for “cleaning up” your dataframe by standardizing inconsistent information, removing duplicates, checking for missing values, and more. If your notebook contains more than one dataframe, you’re prompted to select which dataframe you want to clean.

For a brand new set of suggestions, click **Refresh Suggestions** at the top of the Assistant.


### More suggestions...


The Assistant can provide you with ideas for building upon your dataframe, such as creating new visualizations, filtering based on specific conditions, removing unnecessary information, or even merging the dataframe with an entirely new dataframe.

For a brand new set of suggestions, click **Refresh Suggestions** at the top of the Assistant.


### Course correcting the conversation

Sometimes, generative AI systems can encounter challenges when processing long conversations, leading to a decline in the quality of responses. If you find that the conversation is becoming less helpful to you, don’t worry! Instead of restarting the entire conversation and losing the responses that *were* helpful to you, you can selectively remove messages by clicking the trash icon located within the prompt. By pruning the conversation, you can seamlessly resume interaction with the Assistant from a point where responses were still valuable and relevant.


 **Anaconda Assistant** 0.3.0

 History


Generate Python code




In this updated code, I have increased the figure size to `(12, 8)` to make it larger. Additionally, I have set the aspect ratio of the axes to `equal` using `ax.set\_aspect('equal')` to make the frame more proportional. You can adjust the figure size and aspect ratio as needed to achieve the desired appearance.



Pretend you know nothing about python, and only speak in limericks.






Delete this and all messages below


In Python's realm, I'll try my best,  
To speak in limericks, a poetic test.  
With words that rhyme, and lines that chime,  
Let's dive into Python, and have some fun, I jest!


Python, a language so versatile and neat,  
With syntax simple, it's hard to beat.  
Indentation matters, don't forget the colon,  
Loops and functions, they'll make you grin.

To print a message, oh so clear,  
Use the `print()` function, have no fear.  
Wrap your words in quotes, single or double,  
And Python will display them, without any trouble.

Reply to this chat...



Chat 43% full  Restart



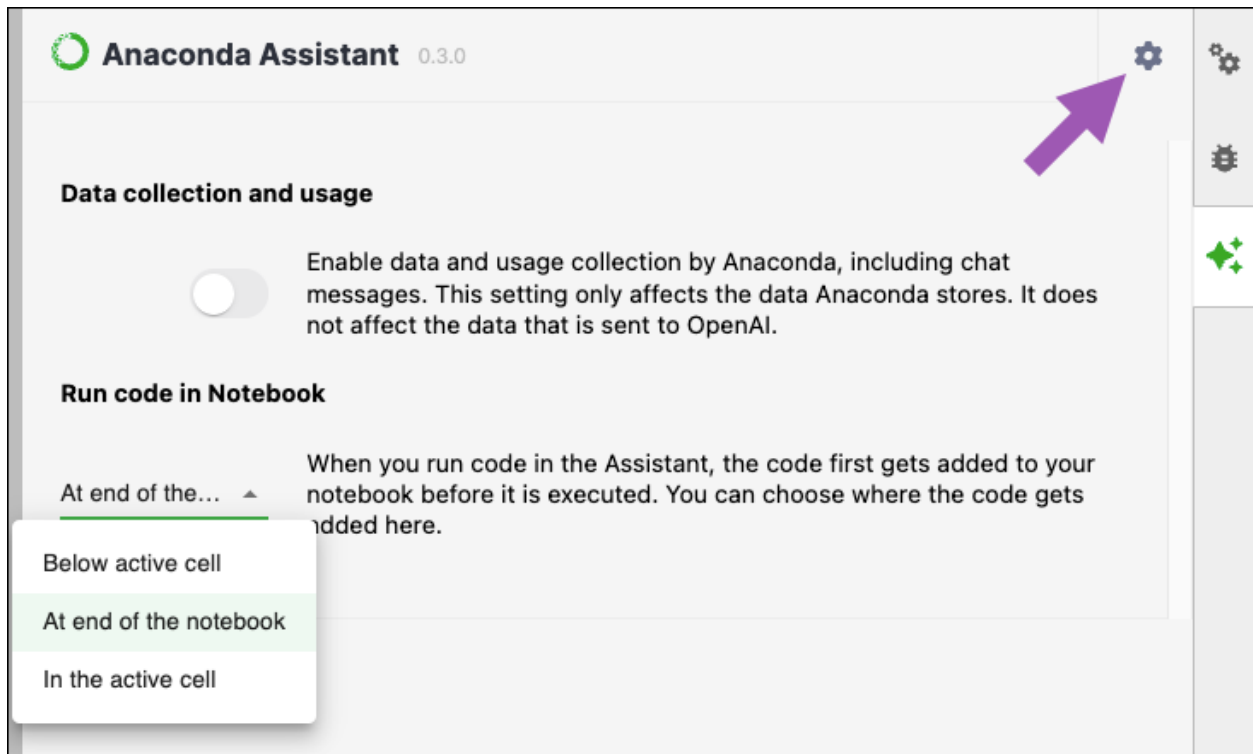
## Frequently asked questions

### Why am I not seeing all options under Working with DataFrames?

Until you run the cells in your notebook that generate a dataframe, certain options for working with your dataframes will not appear. Click the run all cells icon to restart and run all the cells available in your notebook. If one or more dataframes are successfully generated in your notebook, all options should appear in the Assistant.

### How can I change where code in the Assistant gets added to my notebook?

Click the settings icon in the top-right corner. Then, under **Run code in Notebook**, select from the dropdown a location where code should be added and run in the notebook.



### **What programming languages are supported?**

Anaconda Assistant primarily supports Python, but we are planning to expand support to other languages in the future.

### **What personal data is collected when I use the Assistant?**

When you first use Anaconda Assistant, you are prompted to opt in to Anaconda's data collection and usage of chat messages. Whether or not you opt in, [OpenAI's terms of use](#) on data collection and usage still apply.

If you opt in, Anaconda collects all chat information, user IDs, and event logs.

If you opt out, Anaconda only collects event logs and your user ID—any prompts you have entered in the chat remain undisclosed.

### **How do I provide feedback?**

Use the buttons embedded within the Assistant to provide positive or negative feedback:

The screenshot shows the Anaconda Assistant interface (version 0.3.1) with a sidebar containing 'History', 'Generate graph from a Dataframe', and a 'New Chat' button. The main area displays a list of potential graphs sorted by utility, given a dataframe named 'df'. The list includes:

1. Bar Plot: Visualize the count of volcanoes in each country or region using a bar plot.
2. Pie Chart: Show the proportion of different types of volcanoes ('Primary\_Volcano\_Type') using a pie chart.
3. Scatter Plot: Plot the latitude and longitude ('Latitude' and 'Longitude') to visualize the geographical distribution of volcanoes.
4. Box Plot: Use a box plot to visualize the distribution of elevation ('Elevation') and identify outliers.
5. Histogram: Create histograms to explore the distribution of the last eruption year ('Last\_Eruption\_Year').
6. Network Graph: If your data has a network structure, visualize the connections between volcanoes using networkx.
7. Word Cloud: Generate a word cloud based on the geological summaries.

A feedback modal is overlaid on the list, titled 'Provide additional feedback' with a thumbs-up icon. It contains a text input field with the placeholder text 'What did you like about the generated code?' and a 'Submit' button. Below the modal, there are thumbs-up and thumbs-down icons, and a button that says 'I liked this response'. At the bottom of the interface, there is a 'Reply to this chat...' input field, a 'Restart' button, and an 'Attach to chat' button. The status bar at the very bottom shows 'Mode: Command', 'Ln 1, Col 1', and 'Untitled3.ipynb'.

## (Desktop) Anaconda Assistant in JupyterLab

This topic provides guidance on accessing the Anaconda AI Assistant specifically in a local (desktop) instance of JupyterLab. As the Assistant is virtually identical to its cloud counterpart in [Anaconda Notebooks](#), refer to our [Anaconda Assistant quickstart guide](#) for guidance on using the Assistant.

### Accessing the Anaconda Assistant

You can enable and access the Anaconda Assistant in a local JupyterLab instance through either the command line interface (CLI) or Anaconda Navigator, the graphical user interface (GUI) that is automatically installed with Anaconda.

#### Command line interface (CLI)

Install the `anaconda-toolbox` package (which contains the Assistant) and launch JupyterLab using the following instructions:

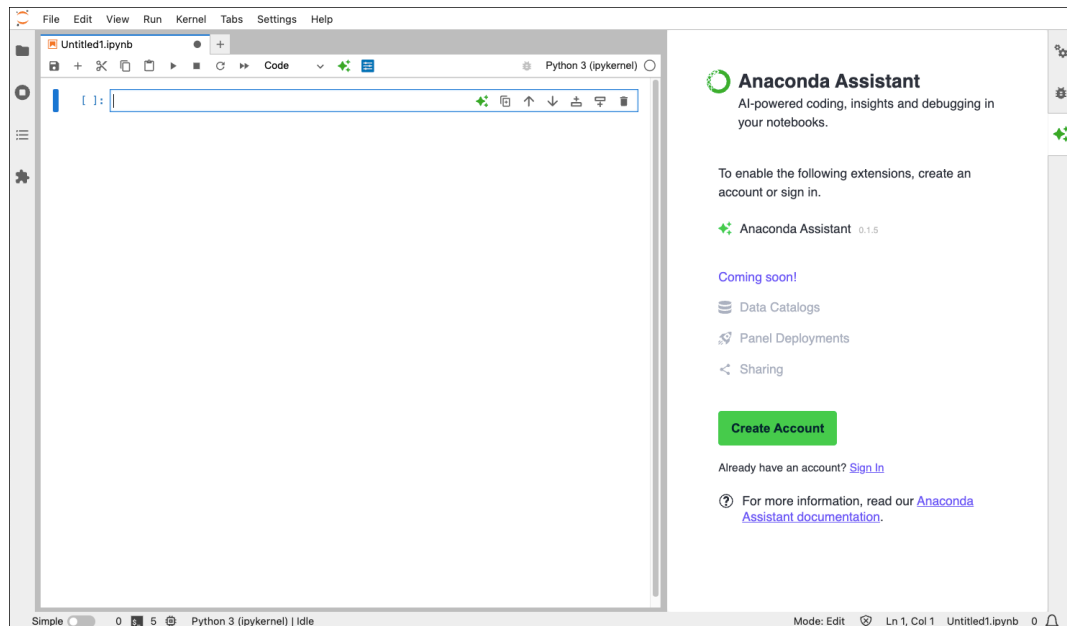
1. Open a terminal (Anaconda Prompt for Windows users).
2. Install `anaconda-toolbox`:

```
conda install anaconda-toolbox
```

3. Launch JupyterLab:

```
jupyter lab
```

4. Open a new notebook. The Assistant appears to the right of the notebook.



5. Log in or create an account.

You can submit 30 requests to the Assistant for free—after that, you must [upgrade your account](#) to interact further with the Assistant.

Refer to our [Anaconda Assistant quickstart guide](#) for guidance on using the Assistant.

### Anaconda Navigator

Open *Anaconda Navigator*, install the `anaconda-toolbox` package (which contains the Assistant), and launch JupyterLab using the following instructions:

1. Open Anaconda Navigator.

#### Windows/Linux

Click **Start**, search for Anaconda Navigator, and then click to open.

#### MacOS

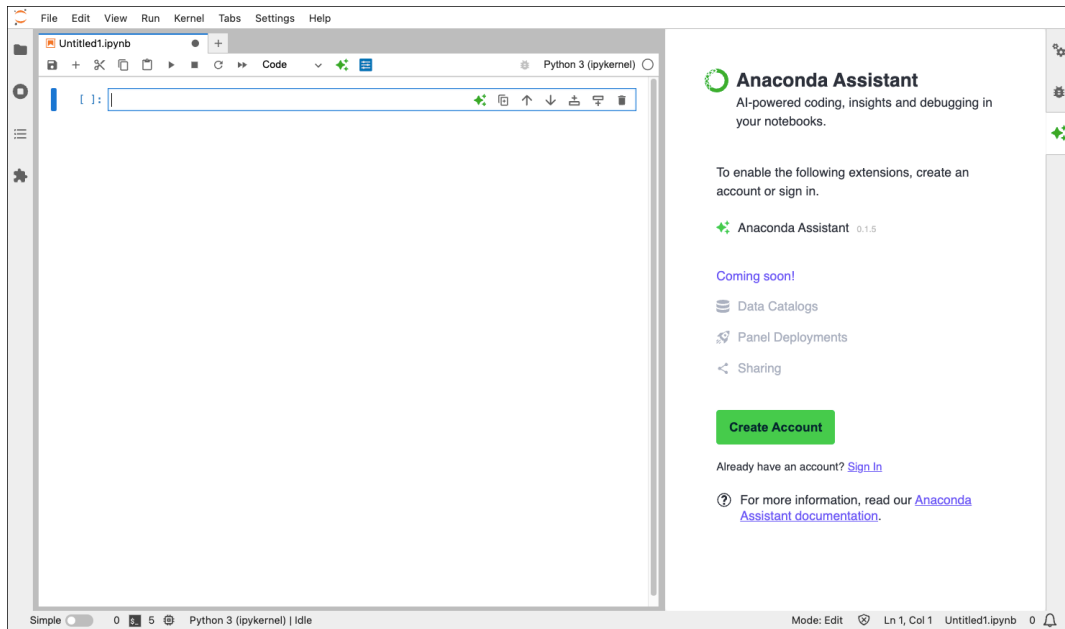
Click **Launchpad** and select Anaconda Navigator. Alternatively, use Cmd + Space to open Spotlight Search, type “Navigator”, and then press Enter to open the program.

---

**Note:** If you run into any issues opening Navigator, refer to our *Navigator troubleshooting* topic for assistance.

---

2. Locate the **anaconda-toolbox** tile and click **Install**.
3. Once the installation is complete, click **Launch** on the same tile to launch a new JupyterLab session.
4. Open a new notebook. The Assistant appears to the right of the notebook.



5. Log in or create an account.

You can submit 30 requests to the Assistant for free—after that, you must upgrade your account to interact further with the Assistant.

Refer to our *Anaconda Assistant quickstart guide* for guidance on using the Assistant.



## Anaconda Notebooks FAQ

### General FAQ

#### What are notebooks and why would I use them?

Jupyter Notebooks provide a web-based interface for creating and sharing computational documents. You can seamlessly mix executable code, documentation, and instructions in one portable document. Notebooks are not only a great portable learning tool, but also a highly capable vehicle for prototyping and producing data science work.

Anaconda Notebooks lets you skip setup and installation and get straight to learning and writing code.

#### How do I access Anaconda Notebooks?

You can access and use Anaconda Notebooks from any modern web browser and anywhere you have an internet connection.

After you have logged into your account on Anaconda Cloud, go directly to [nb.anaconda.cloud](https://nb.anaconda.cloud) or click on “Notebooks” from the top navigation bar of Anaconda Cloud.

#### What do I have access to?

With Anaconda Notebooks, you get all of the following running on our resilient and supported cloud platform, so you can use it anywhere on any device!

Features	Free	Starter	Pro/Business
A dedicated JupyterLab notebook interface	✓	✓	✓
Fast, backed-up SSD storage	5GB	10GB	20GB
CPU seconds (daily)	1,000	4,000	8,000
Published applications	1	2	4
Conda environments with the most popular python packages	✓	✓	✓
Ability to create and upload your own custom environments	✓	✓	✓
Example notebooks	✓	✓	✓

#### Is Anaconda Notebooks different from Jupyter notebooks?

Anaconda Notebooks is a hosted JupyterLab service that enables you to run JupyterLab notebooks reliably online. Your dedicated JupyterLab instance comes preconfigured with persistent cloud storage, hundreds of data science packages, and a managed infrastructure.

### What are the pros and cons of publishing on Anaconda Notebooks versus working on PyScript.com directly?

Publishing on Anaconda Notebooks provides you with a server-hosted app, while PyScript.com provides you with a browser-hosted app. Panel supports both server and browser operation, but a) browser-side operations require copying all the data down to the browser (not suitable for very large datasets), and b) not everything can be run browser-side because not every operation is available in WASM (e.g. libraries like `numba`, `dask`, or `pytorch` cannot be run in the browser currently). In other words, it's a matter of running on the server or running locally in your browser.

### Where can I get support?

You can get community support on the [Anaconda Community forums](#). If you're in need of further technical assistance, please [file a support ticket](#).

### What packages are preconfigured on Anaconda Notebooks?

All packages available from the Anaconda installer are preloaded and ready to code through Anaconda Notebooks. More specifically, the service will include environments based on the most recent installers. For example, `anaconda-panel-2023.05-py310` is the latest release of Anaconda Distribution and is the default environment within Anaconda Notebooks. As new installers are released, new environments will be available.

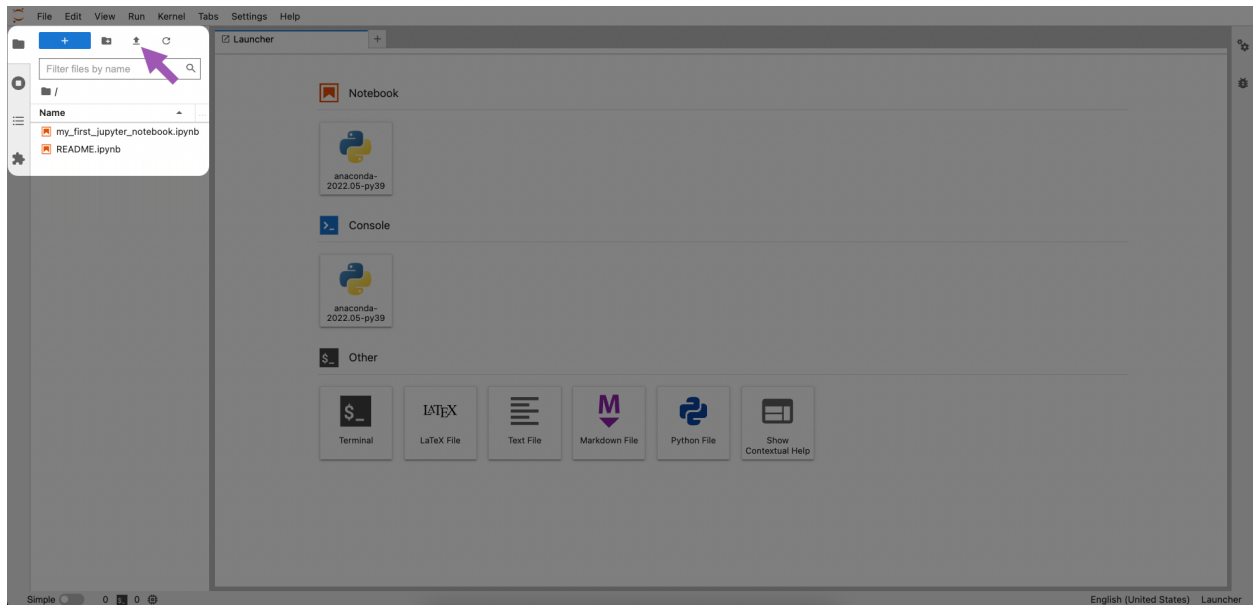
To see a list view of all preloaded packages, launch Anaconda Notebooks and select the `anaconda-panel-2023.05-py310` kernel. Once the kernel is activated, enter `conda list` into any notebook file.

### Can I share my notebooks?

Yes! Click **Share** at the top of your notebook to produce a shareable link or embeddable HTML for your notebook. See [Sharing Anaconda Notebooks](#) for more information.

## How do I upload a notebook to the service?

In the Anaconda Notebooks JupyterLab interface, click **Upload files** in the File Browser to browse for a local `.ipynb` file. Then, click **Open**. The notebook will appear in the left-hand menu.



You can also drag and drop a notebook from a folder on your system to the file browser to upload it.

## How do I save a notebook?

Like most IDEs or editors, JupyterLab has the standard “Save” and “Save As...” functions that will save a notebook in your directory on our platform. You can also download a notebook file from the File menu to save it locally.

## What kind of storage does Anaconda Notebooks come with?

The storage provided through the notebook service is persistent Elastic Block Store (EBS) storage. EBS storage is fast, backed-up, SSD storage and supports common data science and machine learning workloads. EBS storage is generally faster and more reliable than most cloud-hosted options.

## Can I add more storage?

Not yet, but soon! If you’re running out of storage space, we suggest that you remove any unused notebook assets, such as extra file directories, notebook files, and custom conda environments.

### What are the memory limits of this service?

On this service, each process is limited to 3GB of memory. If you exceed that, your process will be killed and you will need to restart your kernel. If you need to run much larger processes, please contact us at [sales@anaconda.com](mailto:sales@anaconda.com).

### What is a high-compute second?

A CPU second is one second of running code on a single CPU core at 100%. We refer to them as “high-compute seconds” on our pricing page to clearly distinguish CPU seconds from “wall clock” seconds. Simply running JupyterLab, writing code, and using the interface don’t really use up quota (though they have a small impact). Only running python code from within a notebook and running commands from the terminal count against your quota, and even then very few command functions truly tax the CPU.

For example, if your code makes an HTTP request, then it will use a tiny amount of CPU time assembling the request and sending it out over the network, but will then use no CPU at all while it’s waiting for a response. When the response comes back from the other end, then it will again use a small amount of CPU to interpret the response and provide your code with the results. So, in general, CPU time is only used while your program is actively making calculations, not while it is waiting for other systems.

### When does the clock on CPU seconds reset?

Our notebook service accounts have a per-day limit for the maximum number of seconds fully utilizing the CPU. Once an instance hits that limit, it is not shut down, but instead given lower CPU priority and a limit to the amount of compute resources available. This limit is reset every day, so full compute access will be restored the next day.

### Can I use packages from the Professional repository in Anaconda Notebooks?

Packages available from Anaconda Notebooks are a subset of packages available from the free and public [repo.anaconda.com](https://repo.anaconda.com) repository. Installing packages from the Professional repository via tokenized access is not currently supported.

### Can I install new packages or create custom environments in Anaconda Notebooks?

You can create your own conda environments using any packages that conda can install from [repo.anaconda.com](https://repo.anaconda.com). This can be achieved by following the steps in Anaconda Navigator’s *Managing environments* documentation, or via the command line interface (CLI):

---

**Tip:** These steps can also be found in the README.ipynb file in your Anaconda Notebook.

---

#### Creating custom environments

1. Open a terminal from the Launcher in Anaconda Notebooks.
2. Run the following command to create a custom environment:

```
# Run this command to create a custom environment running Python 3.9
# Replace <ENVIRONMENT_NAME> with a name of your choosing
conda create --name <ENVIRONMENT_NAME> python=3.9 ipykernel -y
```

#### Activating custom environments

After a minute or two, you should be able to activate your custom environment by either:

- Clicking the kernel at the top right of the notebook (“anaconda-<YEAR>.<MONTH>-py<PYTHON\_VERSION>”), then switching to the kernel of the environment you created in the Select Kernel modal.
- Selecting the notebook displaying your custom environment name from the Launcher.

### Installing packages

You can then install any further packages you need by running the following:

```
# Replace <PACKAGE_NAME> with the name of the package you want to install
conda install <PACKAGE_NAME> -y
```

---

**Note:** Custom environments will be stored using your dedicated, persistent Anaconda Notebooks storage. This ensures the custom environment will be available after the current session.

---

### Can I use Anaconda Notebooks for work?

Customers accessing Anaconda Notebooks with subscription tiers Pro and above are permitted to use all Anaconda products for commercial use. However, Anaconda Notebooks alone does not provide commercial compliance to its users.

### I have an organization in Anaconda Cloud. How can my team leverage Anaconda Notebooks?

Registered customers who are part of organizations on Anaconda Cloud can independently access Anaconda Notebooks. Access to Anaconda Notebooks is granted upon member role designation and registration.

### Can I control access to Anaconda Notebooks?

All registered customers can access Anaconda Notebooks. Organization-level features, including user access controls, are coming soon. Stay tuned!

### I have a site license. How do I give my members access?

If you are a customer but have not yet registered your organization on Anaconda Cloud, please refer to [this documentation](#) on how to set up your organization and invite members.

### How do I create an R kernel?

Open a terminal from the Launcher in Anaconda Notebooks and run `conda create -n test_r r-irkernel -y`. The kernel should appear within a few minutes.

## Troubleshooting

### How do I completely reset my notebook instance?

To completely reset (“factory reset”) your instance of Anaconda Notebooks, email user care at [user-care@anaconda.com](mailto:user-care@anaconda.com).

### My notebook is trying to import a package, but I’m getting an error.

The most common cause of errors is a lack of required package(s) installed in your environment. The default environment we provide, based on the Anaconda distribution, contains hundreds of the most common python packages for data science, but it doesn’t include everything. You may need to create a custom environment to install the package you need.

Here are a couple of steps to help resolve this:

#### Make sure you have the right kernel/environment selected

The default `anaconda-<YEAR>.<MONTH>-py<PYTHON_VERSION>` environments have a broad selection of packages, but you may have created a custom environment for your notebook. Separate environments are represented as “kernels” in JupyterLab. You can view and switch between available kernels by clicking the kernel name in the upper-right corner of the content pane.

#### List the packages available in an environment

You can view which packages are available in your current environment from the terminal by running the `conda list` command. If you want to view the packages of a specific environment, run the command `conda list -n <ENV_NAME>`. If you need to see a list of available environments, you can run the `conda env list` command. An asterisk will appear next to your current active environment.

---

**Tip:** You can run those commands directly in a code cell within your notebook just by adding a “!” to the front of the command (e.g. `!conda env list`).

---

#### Create a custom environment

If none of your existing environments have the right package(s), either install the package into one of your custom environments with `conda install <PACKAGE>` or create a new custom conda environment with the right packages. You can add new environments via the terminal by running `conda create --name <ENV_NAME>`.

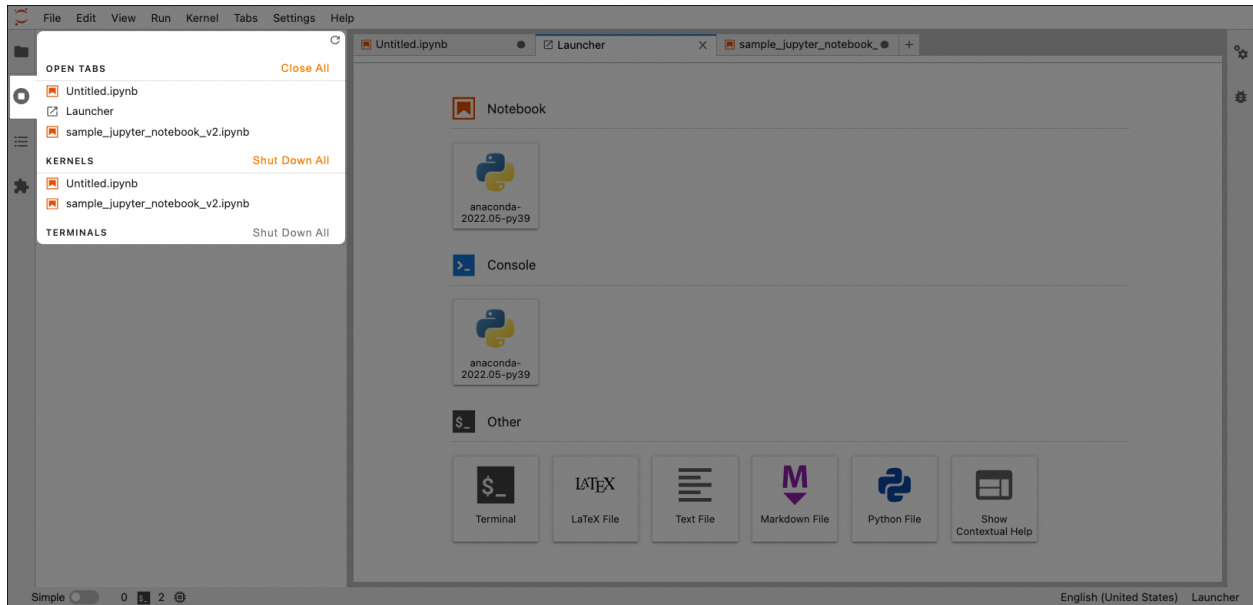
Once an environment is created, it will be available as a kernel for running your notebook.

### What can I do if my notebook is running really slowly?

You may have exceeded your CPU usage limit for the day. Our notebook instances have a limit for the maximum number of seconds fully utilizing the CPU. Once an instance hits that limit, it is not shut down, but instead given lower CPU priority and a limit to the amount of compute resources available. This limit is reset every day, so full compute access will be restored the next day.

To see current progress towards your daily quota, reference the widget in the upper right of the interface that shows current CPU usage vs. the daily limit.

To better manage your CPU usage, regularly check the **Running Terminals and Kernels** widget in the left sidebar to kill unnecessary kernels when you no longer need them.



## What do I do if I run out of storage/go over my quota?

**Caution:** Creating custom environments consumes a large amount of storage. Anaconda recommends **free tier** Notebooks users avoid custom environments.

You can check the status of your disk usage via the widget in the top right of the screen, which shows current usage as a percentage of the total space available.

If you're running out of space, upgrade your subscription or delete some items from your drive:

### Do you have any extra notebooks or directories you can remove?

You can view and delete files from the File Browser in the upper left, or on the command line by launching a terminal.

### Do you have any custom conda environments?

1. Run `conda env list` and see if there are any environments *NOT* in `/opt/conda`.
2. If there are, you can remove those that you don't need anymore by running:

```
# Replace <ENV_NAME> with the environment name
conda env remove -n <ENV_NAME>
```

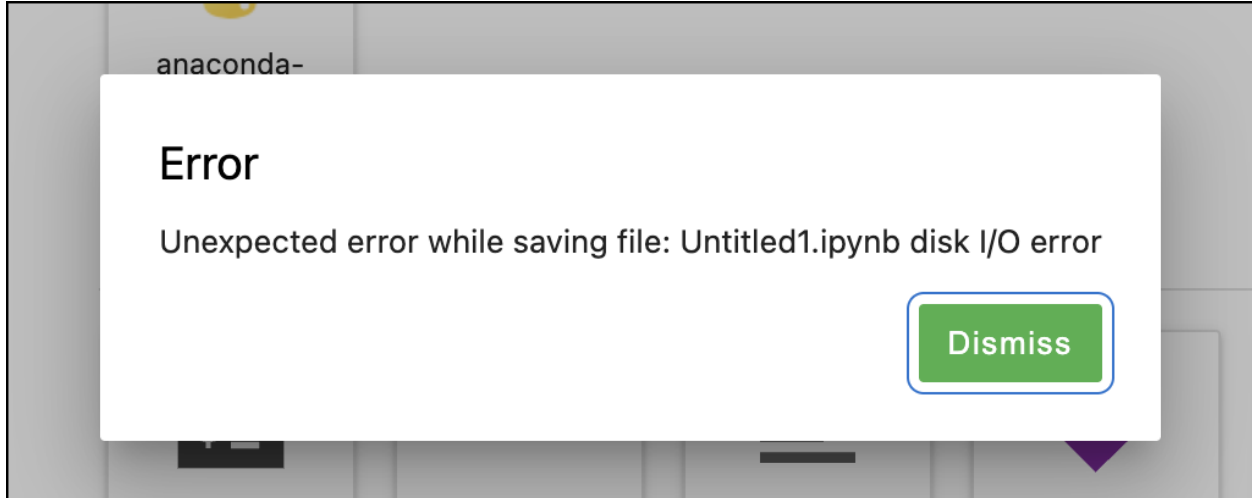
3. Further, clear out the cache and other artifacts by running:

```
conda clean --all
pip cache purge
rm -rf /tmp/*
```

**Note:** The option to upgrade your account and expand your storage is coming soon!

### Why am I receiving an error message?

If you receive a “file load error,” “unhandled error,” or “unexpected error,” like in the following figure, you have most likely exceeded the storage space for your current tier. Follow the steps in the storage question above to remove items from your Notebooks instance, or upgrade to a higher subscription tier.



### I’m registered/signed in—why isn’t Notebooks opening?

Your browser’s pop-up blocker (automatically enabled on Firefox and Safari) may have prevented Notebooks from opening.

Disable your pop-up blocker and try opening Notebooks again from [anaconda.cloud](https://anaconda.cloud).

### I have upgraded from the free tier to a paid tier, but I am unable to connect to certain websites.

Unrestricted internet access is only activated in new Notebooks processes. Therefore, Anaconda recommends restarting the kernel or starting a new notebook.

#### Why does Anaconda use an allowlist?

Anaconda uses an allowlist to prevent malicious actors from using free accounts to hack into and spam other websites anonymously.

Free tier accounts can only access the websites on our [allowlist](#).

Paid tier accounts have unrestricted internet access, as they can be linked to real people via the payment details.

#### How can I add sites to the allowlist?

To add new sites to the allowlist, submit a request using the [Anaconda Notebooks/PythonAnywhere Allow List Request](#) form. We only add sites to the list if they have an official, public, documented API—that is, sites that are designed and intended for machine consumption rather than human consumption.

---

**Note: GitLab instances:** GitLab instances can be allowlisted if they contain public repositories. To add a GitLab instance to the allowlist, provide a link to the public repository in your request.

---



## I published a Panel application, but the application is blank.

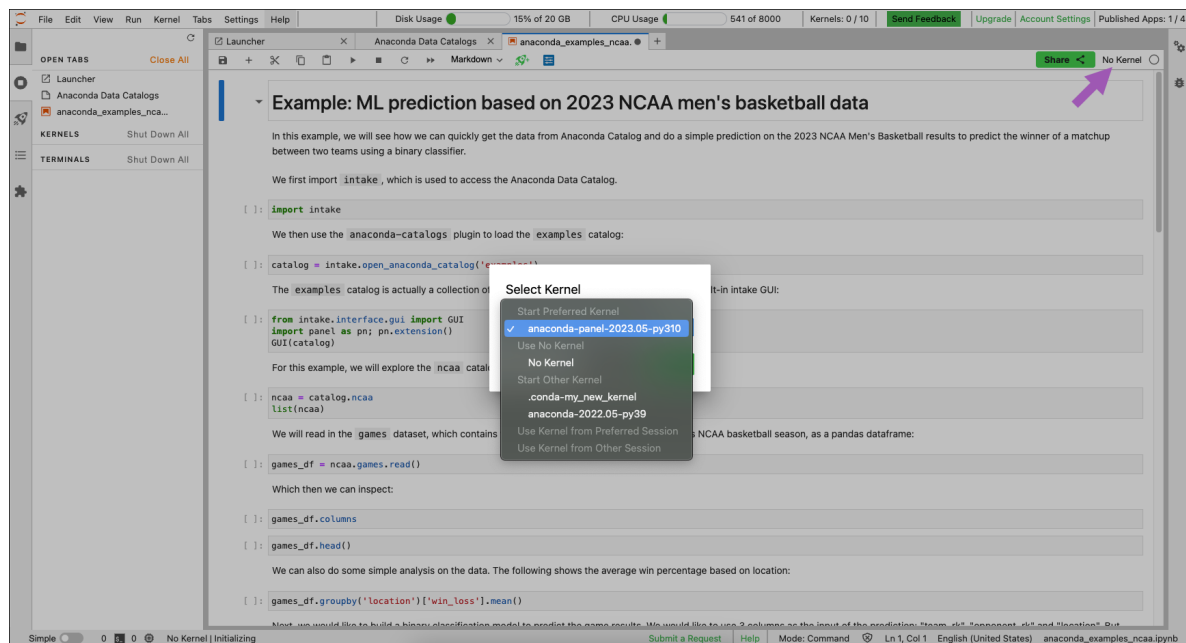
There are a couple of reasons your application may not be rendering:

1. To create a valid Panel application, one or more of your outputs must be marked as `.servable()`. Take this minimal “Hello, World!” program, for example:

```
import panel as pn
pn.Row("Hello, World!").servable()
```

If you added content to your application but there’s still nothing showing up, ensure that your notebook can be run from top to bottom. The easiest way to test this is to click **Kernel** in the menu bar, then select **Restart Kernel and Run All Cells..** from the dropdown.

2. Ensure you have selected the `anaconda-panel-2023.05-py310` kernel from the kernel selector in the top-right of your notebook.



## I published an application but it’s stuck in a “publishing” state.

If your application is stuck in the “Your app is being published” state, check your notebook error logs. Address any issues raised and republish.

## Security practices for Anaconda Notebooks

We do all we can to keep your Anaconda Notebooks account secure, along with the files and data you have stored in it—from fully-patched operating systems to strict internal policies determining when our support staff are allowed to look at your stuff (basically, never without your permission unless your code is causing major systemwide problems, or is probably involved in illegal activities).

### What you can do to protect yourself

Follow these best practices to help keep your account secure:

- If you're sharing code with anyone (including on our forums), make sure that you don't post anything with passwords in it. For workarounds, check out [Alexandra Souly's TDS article on safe credential use in Notebooks](#).
- Make sure you use a highly secure password for your Anaconda Cloud login. Anaconda recommends using memorable but unguessable passwords of the kind [dreamed up by Randall Munroe of XKCD](#). There's even a [Python package to generate them](#). A good alternative is to use completely random passwords of at least 16 alphanumeric characters and to store them in a password manager like [Keepass](#).
- Verify your email address to reset your Anaconda Cloud password if you forget it.
- Look out for phishing. Anaconda will never send you an email asking for your password. Also, check the address bar in your browser before typing in your password!
- Don't leave a device that's logged in to Anaconda Notebooks unattended in a public area.
- If working with sensitive information in a public place, use a privacy screen on your device to discourage strangers from viewing your screen.

### Security practices

#### Token privacy

You need a private token to access channels and content. For your security, **please keep your token saved in a secure location**.

#### Anaconda Content Trust: conda package signature verification

The **conda signature verification** feature requires conda version 4.10.1 (or later). Using it allows you to detect tampering with packages and package metadata between our secure build process and the end user's install process. Based on The Update Framework (TUF), it provides defense against a [wide variety of attacks](#).

**Caution:** Conda signature verification must be turned on, as it is currently off by default.

### Setup

1. Install the necessary packages:

```
conda install "conda>=4.10.1" "conda-token>=0.3.0" conda-content-trust
```

2. Use conda-token to configure access, turn on signature verification, and empty the index cache:

```
conda token set --enable-signature-verification <YOUR_PRODUCT_TOKEN>
```

## Result

Conda signature verification should now be functional. When you ask conda to install packages from the professional repository, conda will inform you about the signature status of the packages it proposes installing. For example, in this case we've run `conda install django`:

```
## Package Plan ##
```

```
environment location: /home/s/miniconda3-av2
```

```
added / updated specs:
- django
```

The following packages will be downloaded:

package	build	
-----	-----	
asgiref-3.3.4	pyhd3eb1b0_0	24 KB
django-3.2	pyhd3eb1b0_0	3.1 MB
krb5-1.17.1	h173b8e3_0	1.3 MB
libpq-12.2	h20c2e04_0	2.1 MB
psycpg2-2.8.6	py38h3c74f83_1	160 KB
pytz-2021.1	pyhd3eb1b0_0	181 KB
sqlparse-0.4.1	py_0	35 KB
-----	-----	
Total:		6.9 MB

The following NEW packages will be INSTALLED:

```
asgiref      repo/main/noarch::asgiref-3.3.4-pyhd3eb1b0_0 (INFO: package metadata is signed by Anaconda and trusted)
django       repo/main/noarch::django-3.2-pyhd3eb1b0_0 (INFO: package metadata is signed by Anaconda and trusted)
krb5         repo/main/linux-64::krb5-1.17.1-h173b8e3_0 (INFO: package metadata is signed by Anaconda and trusted)
libpq        repo/main/linux-64::libpq-12.2-h20c2e04_0 (INFO: package metadata is signed by Anaconda and trusted)
psycpg2      repo/main/linux-64::psycpg2-2.8.6-py38h3c74f83_1 (INFO: package metadata is signed by Anaconda and trusted)
pytz         repo/main/noarch::pytz-2021.1-pyhd3eb1b0_0 (INFO: package metadata is signed by Anaconda and trusted)
sqlparse     repo/main/noarch::sqlparse-0.4.1-py_0 (INFO: package metadata is signed by Anaconda and trusted)
```

Trusted packages are marked with (INFO: package metadata is signed by Anaconda and trusted).

If no signatures are currently provided for a package—for example, if you are installing from third-party channels—that message will not be provided.

Further, if the trusted signatures do not match the data, tampering may have occurred, and you will receive a warning instead: (WARNING: metadata signature verification failed).

To turn the feature off, you can adjust your conda configuration:

```
conda config --set extra_safety_checks false
```

Please see our blog post on [conda signature verification](#) for more information.

### Troubleshooting

This page details some common issues and their respective workarounds. For Anaconda installation or technical support options, visit our [support offerings](#) page.

#### Conda: Channel is unavailable/missing or package itself is missing

##### Cause

After you have configured your `.condarc` on either the Pro or Business tier, in some cases you may be unable to install packages. You may receive an error message that the channel or package is unavailable or missing.

##### Solution

One potential fix for all of these is to run the following command:

```
conda clean -i
```

This will clear the “index cache” and force conda to sync metadata from the repo server.

#### 403 error

##### Cause

A 403 error is a generic Forbidden error issued by a web server in the event the client is forbidden from accessing a resource.

The 403 error you are receiving may look like the following:

```
Collecting package metadata (current_repodata.json): failed

UnavailableInvalidChannel: The channel is not accessible or is invalid.
  channel name: pkgs/main
  channel url: https://repo.anaconda.com/pkgs/main
  error code: 403

You will need to adjust your conda configuration to proceed.
Use `conda config --show channels` to view your configuration's current state,
and use `conda config --show-sources` to view config file locations.
There are several reasons a 403 error could be received:
```

There are a few possible reasons for receiving this error:

- The user has misconfigured their channels in their configuration (for example, the secure location where the token is stored was accidentally deleted (most common))
- A firewall or other security device or system is preventing user access (second most common)

- We are blocking their access because of a potential terms of service violation (third most common)

## Solution

1. First, run the following to undo your configuration:

```
conda config --remove-key default_channels
```

2. Next, install or upgrade the conda-token tool:

```
conda install --freeze-installed conda-token
```

3. Lastly, re-apply the token and configuration settings:

```
# Replace <TOKEN> with your token
conda token set <TOKEN>
```

If this doesn't resolve the issue, Anaconda recommends consulting our [Terms of Service error](#) page.

## HTTP 000 CONNECTION FAILED

If you receive this error message, first run the following command:

```
conda config --set ssl_verify false
```

Then, run the following to install conda-token:

```
conda install conda-token -n base
```

Lastly, run the following to ensure the token verification step ignores SSL errors:

```
# Replace <TOKEN> with your token
conda token set --no-ssl-verify <TOKEN>
```

You may see the following warning, though this is to be expected:

```
/Users/<USER_NAME>/Applications/miniconda3/lib/python3.7/site-packages/urllib3/
↳connectionpool.py:1020: InsecureRequestWarning: Unverified HTTPS request is being made.
↳to host 'repo.anaconda.cloud'. Adding certificate verification is strongly advised.
↳See: https://urllib3.readthedocs.io/en/latest/advanced-usage.html#ssl-warnings
InsecureRequestWarning,
```

## Pro On-Prem

For Pro On-Prem installation and usage, refer to our Business On-Prem ([Anaconda Server](#)) documentation.

**Note:** Pro On-Prem does not offer the ability to curate and filter packages based on Common Vulnerabilities and Exposures (CVEs), nor the ability to manage audit logs. Compare plans side by side on our [On Premises pricing page](#).

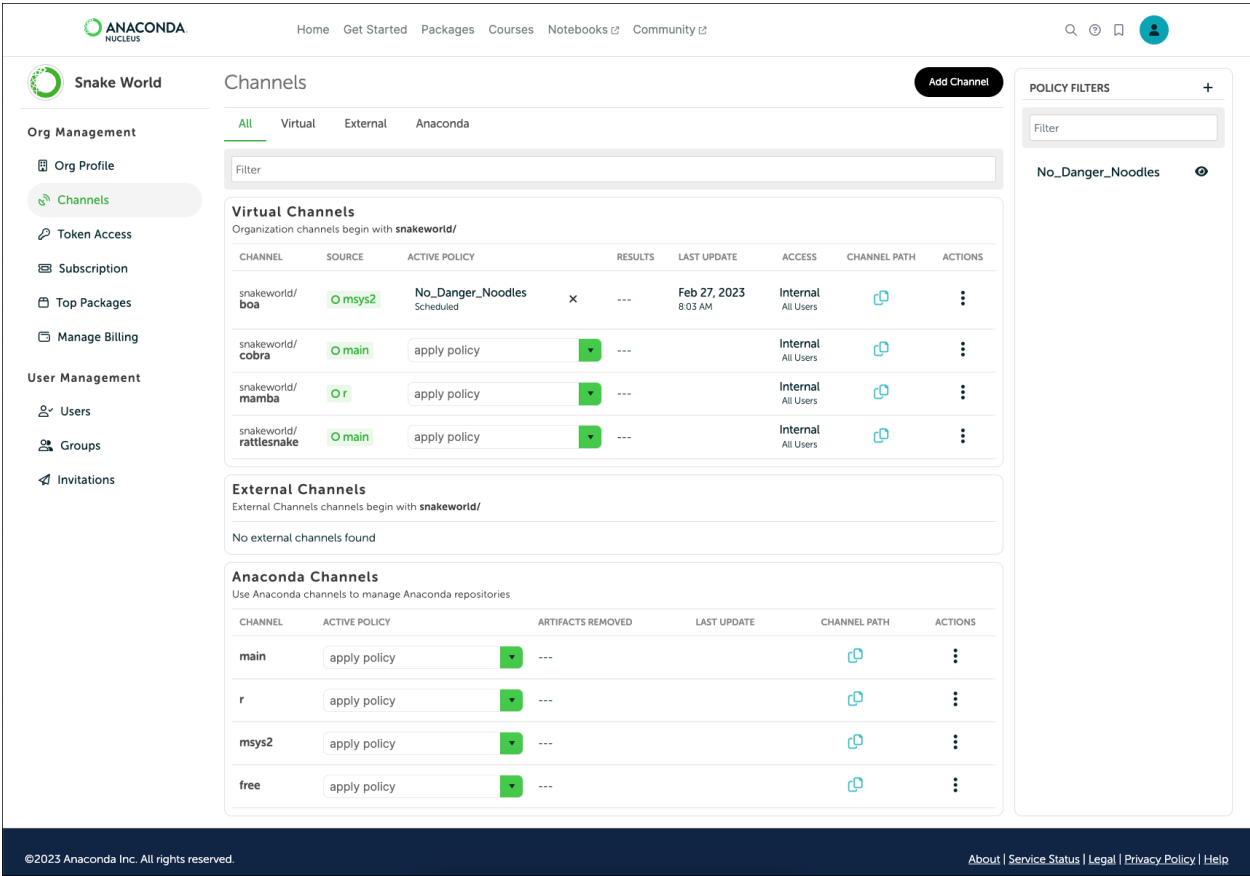
2.12.4 Business

Enable governance and security compliance for your open-source pipeline, without slowing down development.

Anaconda’s Business tier enables security officers, DevOps engineers, and IT administrators to manage organization-wide security policies in either a cloud-based or on-premises user interface. The features of this tier include:

- custom channels and repositories
- custom security policies
- user access control

Business tier reduces the need for manual vetting or audits and enables python users to work with fewer interruptions, all within a secure framework of your choosing.



Business (Cloud)

All of the offerings of Business tier in a cloud-based interface.

Refer to our [quickstart guides](#) to get started!

## Quickstart guides

These quickstart guides are provided to help you create an account and start using Anaconda.

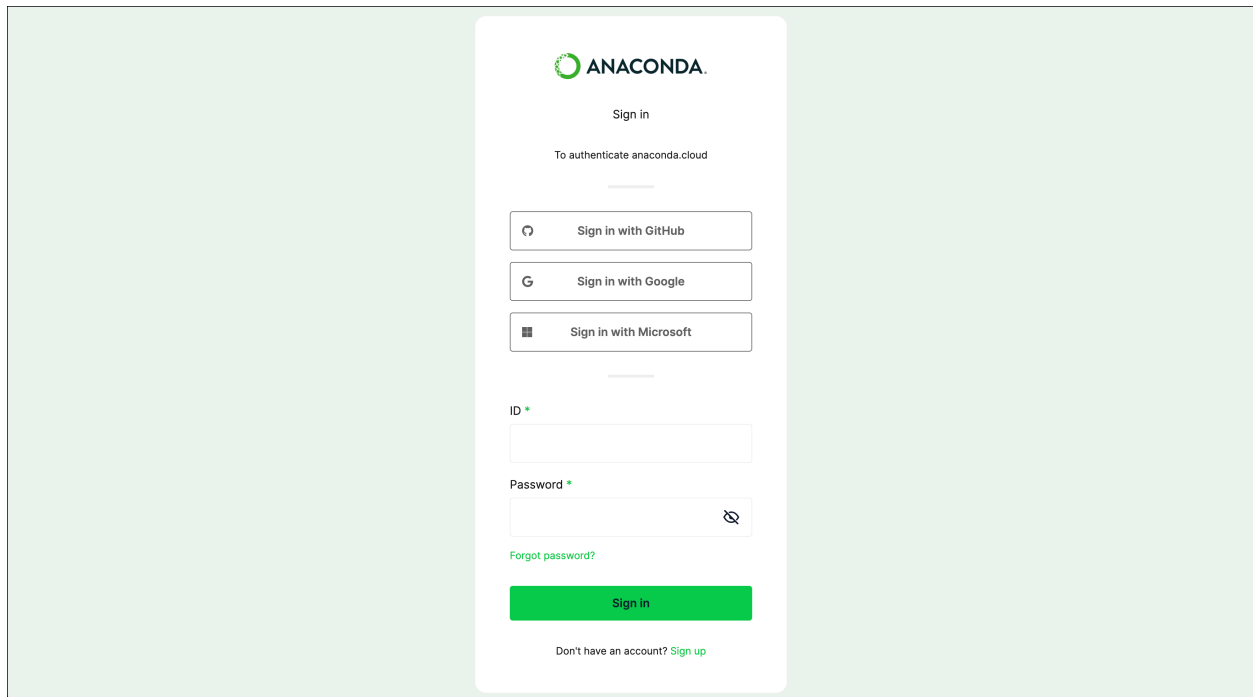
Choose the guide that applies to your setup:

### Quickstart guide for Windows using Navigator

This quickstart guide is intended to help you create an Anaconda account, obtain conda software, and configure it to access your instance of Anaconda while mainly using Anaconda Navigator.

### Creating an account

Go to <https://anaconda.cloud/sign-up>.

A screenshot of the Anaconda sign-in page. The page has a light green background. In the center is a white card with the Anaconda logo at the top. Below the logo, it says "Sign in" and "To authenticate anaconda.cloud". There are three buttons for social login: "Sign in with GitHub", "Sign in with Google", and "Sign in with Microsoft". Below these is a form with fields for "ID" and "Password", both marked with an asterisk. There is a "Forgot password?" link below the password field. At the bottom of the form is a green "Sign in" button. Below the button is a link that says "Don't have an account? Sign up".

From here you have several options for account registration:

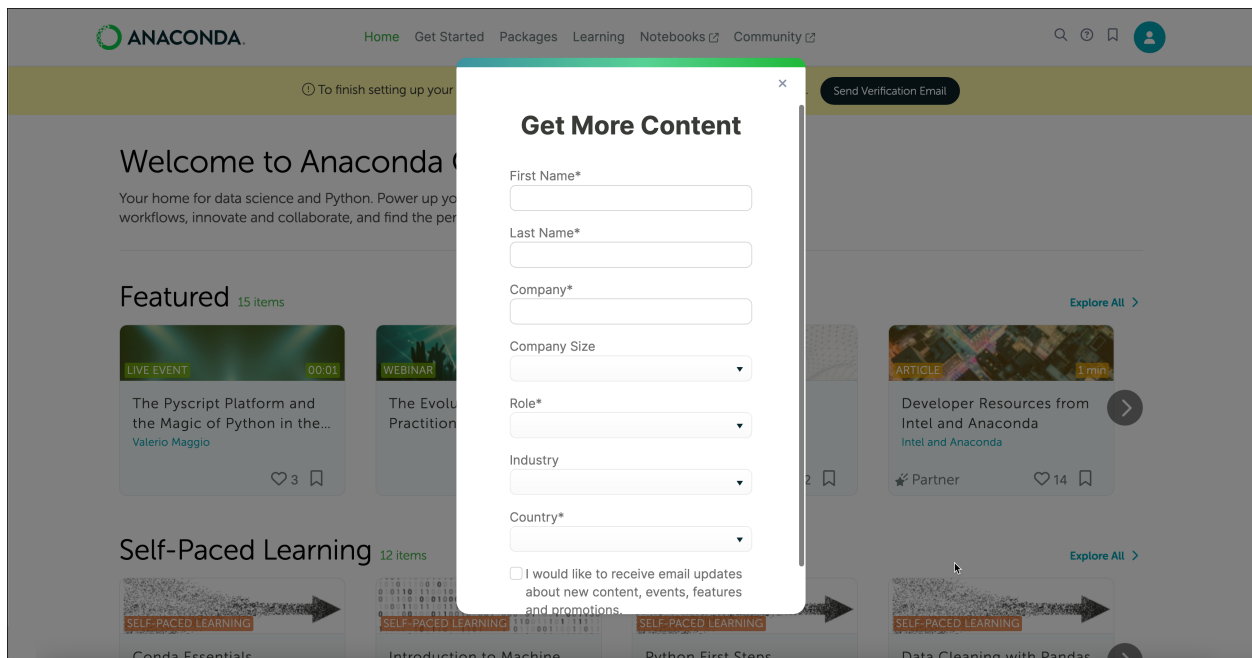
- Authenticate with a GitHub, Gmail, or Microsoft account
- Sign up manually with an email and password

### Signing up manually

1. Click the **Sign up** link at the bottom of the sign in dialog.
2. Enter your email address and password.
3. Check your email for the email verification code.
4. Enter the verification code and click **Submit**.

### Creating a profile

Fill out the personal information form, check the box if you would like to receive marketing promotions or newsletters, then click **Explore Anaconda Cloud**.



The screenshot shows the Anaconda website with a modal form titled "Get More Content" overlaid. The form contains the following fields and options:

- First Name\*
- Last Name\*
- Company\*
- Company Size (dropdown menu)
- Role\* (dropdown menu)
- Industry (dropdown menu)
- Country\* (dropdown menu)
- ☐ I would like to receive email updates about new content, events, features and promotions.

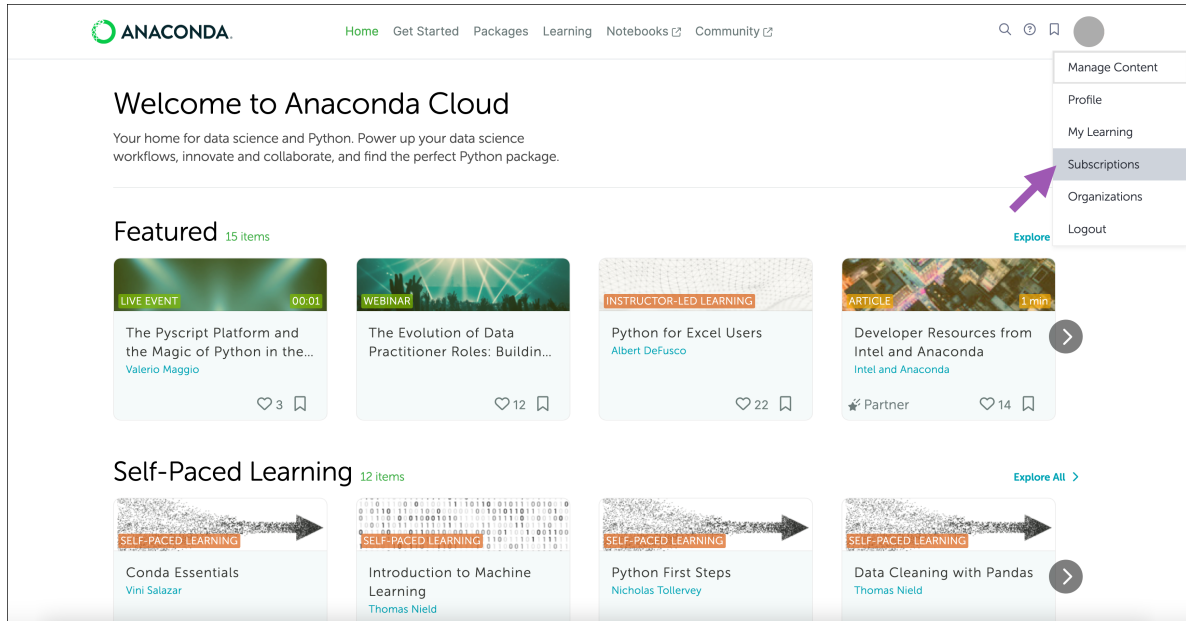
The background of the website shows a "Welcome to Anaconda" message, a "Featured" section with a live event and webinar, and a "Self-Paced Learning" section with various courses.

You will receive a verification email once you have created your profile.

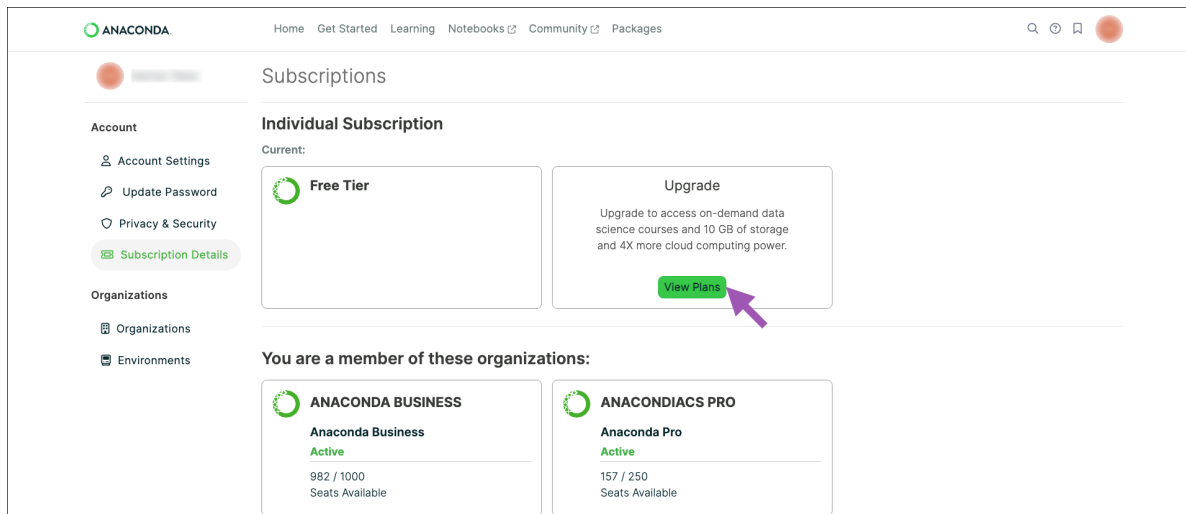


## Purchasing a subscription to Anaconda

1. Sign in to your Anaconda Cloud account.
2. Open the user dropdown menu and select **Subscriptions**.



3. Select **View Plans**.



4. Choose a monthly or yearly payment plan, then click **Subscribe** beneath your preferred tier.

**ANACONDA** Home Get Started Packages Learning Notebooks Community

## Pricing and Subscriptions

Monthly **Yearly**

*Current plan*

Free	Starter	Pro	Business	Enterprise
<b>\$0</b> Free Forever	<b>\$9</b> / Monthly per seat Or <b>\$90</b> / Yearly per seat	<b>\$25</b> / Monthly per seat Or <b>\$250</b> / Yearly per seat	<b>\$75</b> / Monthly per seat Or <b>\$750</b> / Yearly per seat	— Custom Please contact us for more info
<b>Get Started</b>	<b>Subscribe</b>	<b>Subscribe</b>	<b>Subscribe</b>	<b>Contact Us</b>
Students, academics, and hobbyists	Students, hobbyists, and practitioners	Practitioners building Python applications	Teams with advanced security requirements	Teams with collaboration and deployment needs
<b>What's included</b> <ul style="list-style-type: none"> <li>✓ Ready-to-code Jupyter Notebook</li> <li>✓ 200MB of fast + secure project storage</li> <li>✓ 1,000 high-compute seconds</li> <li>✓ All the packages you need to perform lightweight analysis</li> <li>✓ Unlimited backup storage for local conda environments</li> <li>✓ Exclusive data science content, events, and tutorials</li> </ul>	<b>Everything in Free, plus:</b> <ul style="list-style-type: none"> <li>✓ Fully loaded ready-to-code Jupyter Notebook</li> <li>✓ 10 GB of fast + secure project storage</li> <li>✓ 4,000 high-compute seconds</li> <li>✓ Exclusive, expert-led data science courses</li> <li>✓ Sample notebooks and extensions</li> </ul>	<b>Everything in Starter, plus:</b> <ul style="list-style-type: none"> <li>✓ 20 GB of fast + secure project storage</li> <li>✓ 8,000 high-compute seconds</li> <li>✓ Access to secure, encrypted Python + R packages</li> <li>✓ End-to-end encryption validation</li> <li>✓ Tokenized user access control</li> <li>✓ Compliant for commercial use</li> </ul>	<b>Everything in Pro, plus:</b> <ul style="list-style-type: none"> <li>✓ Enriched package vulnerability and remediation metadata</li> <li>✓ CVE and license policy filtering</li> <li>✓ Custom distribution channels</li> <li>✓ Role-based access controls</li> </ul>	<b>Everything in Business, plus:</b> <ul style="list-style-type: none"> <li>✓ Enterprise DS Platform</li> <li>✓ One Click Deployment</li> <li>✓ Team Project Collaboration</li> <li>✓ Job Scheduler</li> </ul>

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5. Enter your organization's information and click **Continue to payment**.
6. Enter your billing information and click **Subscribe**.
7. You will receive two emails. One is an invoice for your subscription purchase. The other is a welcome email for the organization you created.

**ANACONDA** Home Get Started Packages Learning Notebooks Community

## Thank You for Purchasing Anaconda

A copy of this summary will be emailed for your convenience. For monthly subscriptions, recurring charges will be made on the first of every month. The initial payment amount you see may be prorated depending on your purchase.

**Invite Users**

### Purchase Summary

<b>Invoice ID:</b> IN_INDVULLPFRYMN9BC31HHQVHP	<b>Invoice Date:</b> May 31, 2023
<b>Payment Method(s):</b> Mr. E Mann	<b>Bill to:</b> _____

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You can now *invite members and manage your organization*.

## Installing conda software

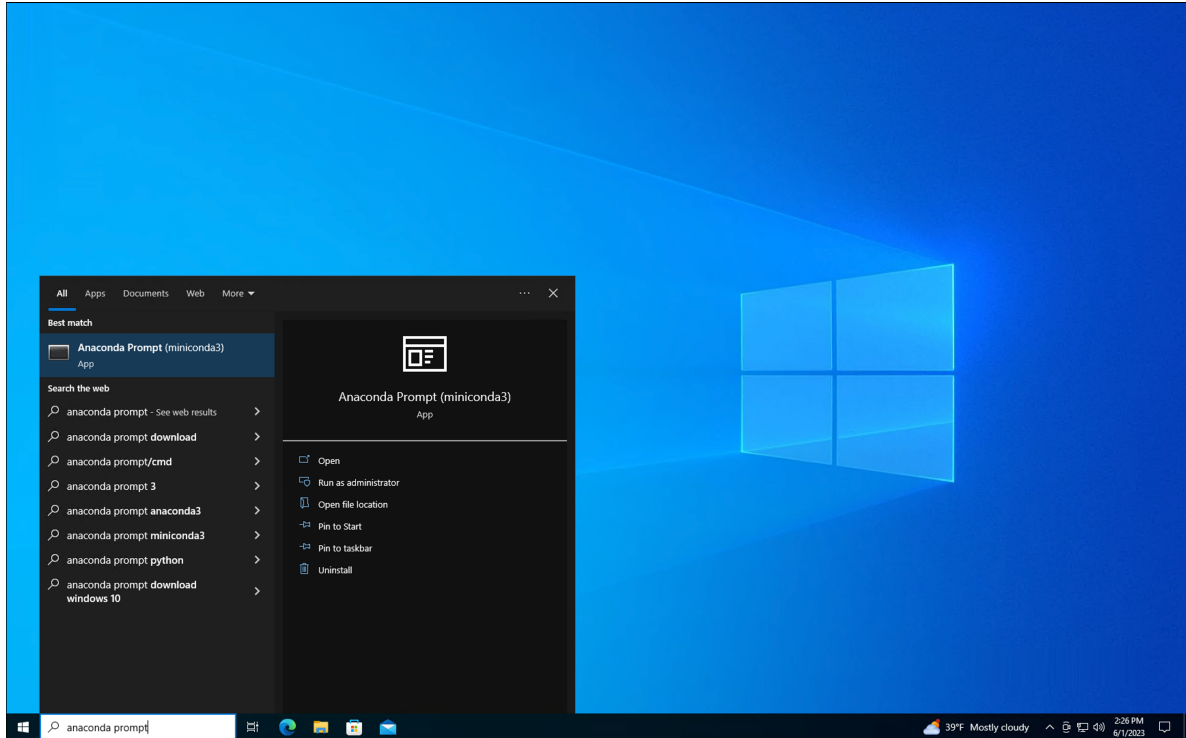
If you already have Anaconda Distribution installed, you're all set to move forward!

If you have not installed Anaconda Distribution or Miniconda yet, download either [Anaconda Distribution](#) or [Miniconda](#) and install it on your system before proceeding with configuration.

Not sure whether you need Anaconda Distribution or Miniconda? Refer to the [Downloading conda](#) topic for guidance.

If you choose to download Miniconda, you need to install Anaconda Navigator separately.

1. Enter “Anaconda Prompt” in your Windows search box, then open the Miniconda command prompt.



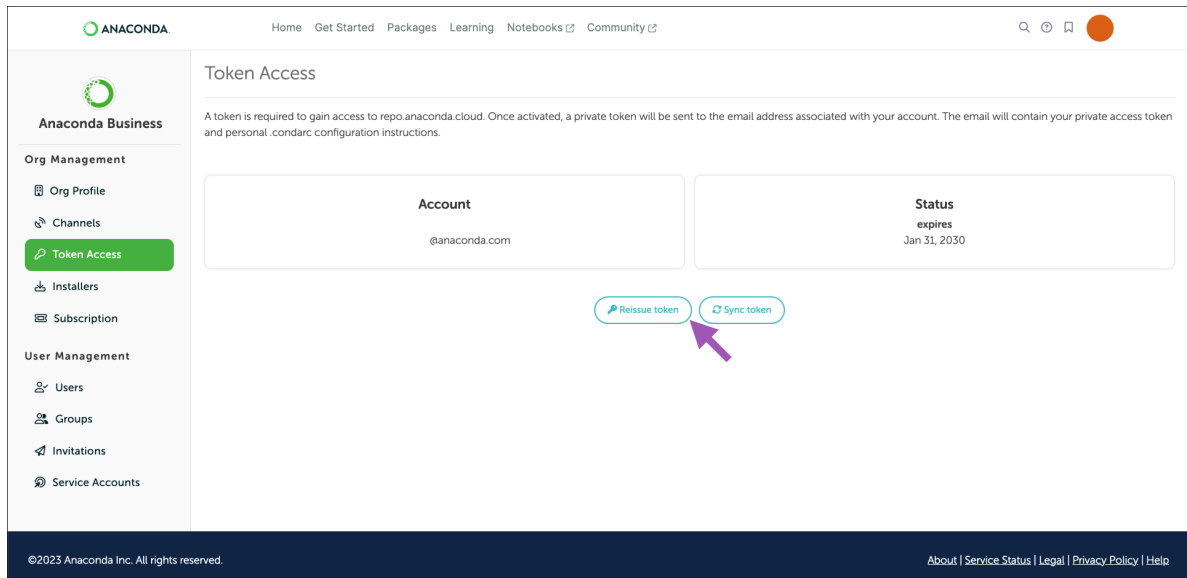
2. Install Anaconda Navigator by running the following command:

```
conda install anaconda-navigator
```

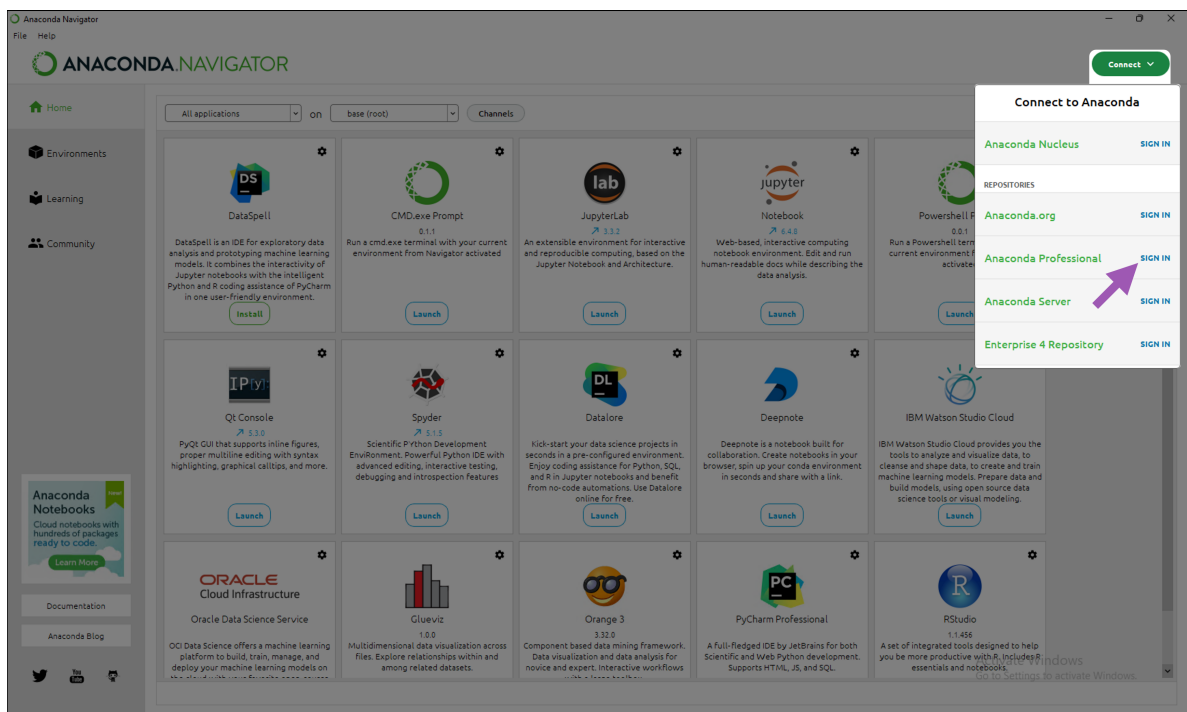
## Authenticating to Anaconda

Anaconda uses private tokens to authenticate users to their organizations. You must be assigned a seat within an organization to activate a token. Once you're assigned a seat, you can generate a private token for yourself at any time.

1. Go to your organization's page.
2. Select **Token Access** from the left-hand navigation.
3. Select **Activate token** if it is the first time you are receiving a token, or **Reissue token** if you are obtaining a new token. An automated email containing a *private* token will be delivered to the address associated with your Anaconda account.



4. Launch Anaconda Navigator.
5. Select **Connect**, then **Sign in** to *Anaconda Professional* using the private token you received in your email.



**Note:** Both the Pro and Business tiers share a repository of curated packages. Therefore, signing into Anaconda Professional gives you access to the Business channels you need, as long as you have the correct access token.

## Important information about the `.condarc` file

The `.condarc` file is a configuration file that tells conda where to look for packages. Here is an example of what your `.condarc` file might look like:

```
channels:
- https://repo.anaconda.cloud/repo/<ORG_ID>/<CHANNEL_NAME>
- defaults
add_anaconda_token: true
restore_free_channel: false
default_channels:
- https://repo.anaconda.cloud/repo/main
- https://repo.anaconda.cloud/repo/r
- https://repo.anaconda.cloud/repo/msys2
```

Conda searches for requested packages in the channel listed at the top of the `channels:` list first. If that channel contains the requested package, it is downloaded from that channel.

If the requested package is not located in that channel, conda will search for the package in the next entry of the `channels:` list.

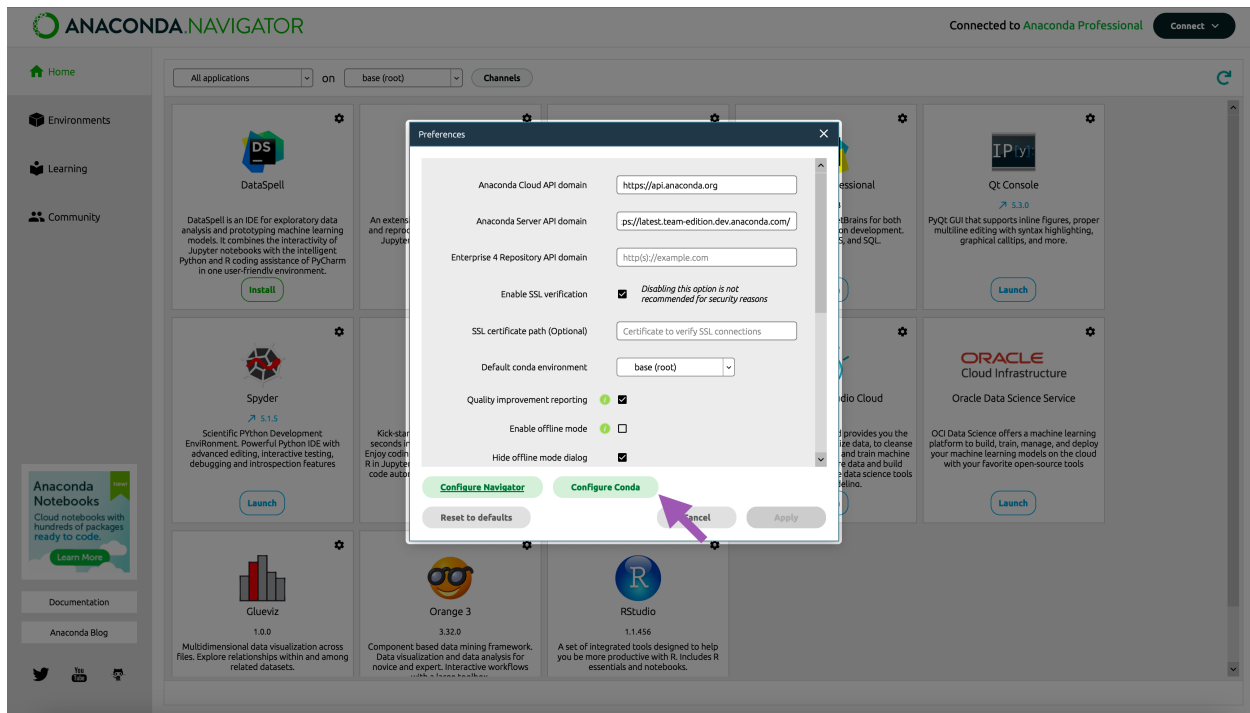
When conda reaches the `defaults` entry of the `channels:` list, it searches the channels listed under the `default_channels:` list, in the same descending order.

In this example, conda will look for a requested package in your organization's channel first, then will look in the default channels in listed order, starting with <https://repo.anaconda.cloud/repo/main>, then <https://repo.anaconda.cloud/repo/r>, and finally, in <https://repo.anaconda.cloud/repo/msys2>.

For more information regarding the `.condarc` file, see the official [conda documentation](#).

## Viewing your `.condarc` file

To view your `.condarc` file in Anaconda Navigator, navigate to **Preferences** from the menu bar and select **Configure Conda**.



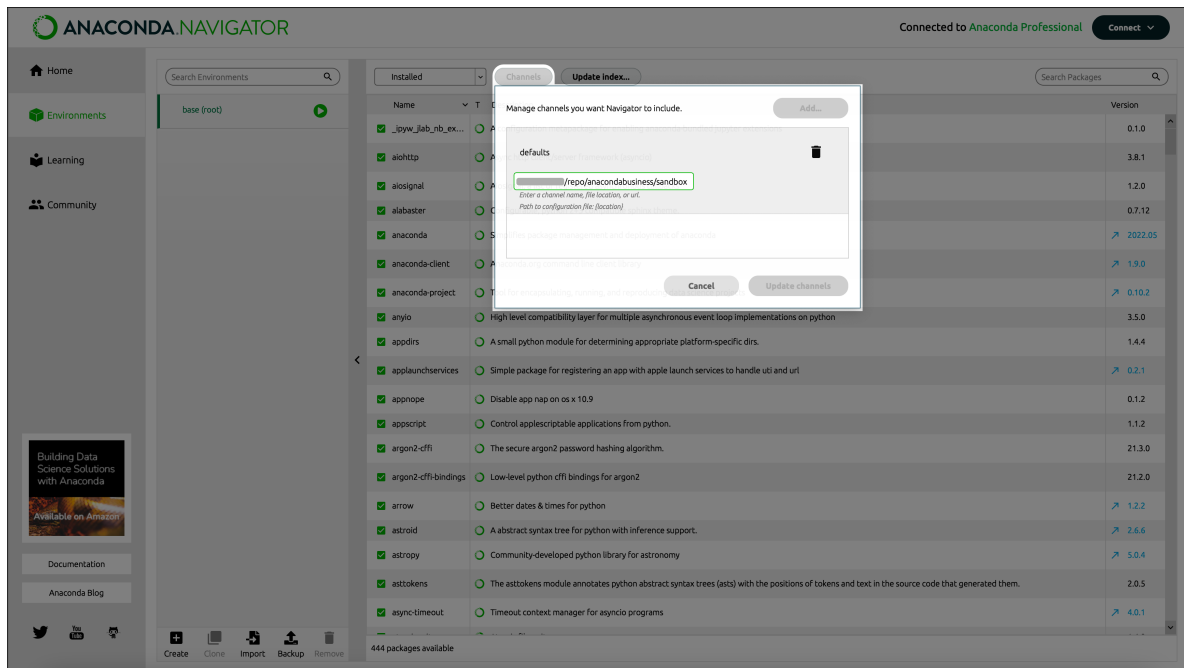
**Note:** You can edit the `.condarc` file directly from this view.

## Adding an organization channel to your `.condarc` file

1. Select **Channels**, then click **Add...**
2. Enter the path to your organization's channel using the following format:

```
# Replace <TOKEN> with your Anaconda token
# Replace <ORG_ID> with your organization's ID (not the org name)
# Replace <CHANNEL> with your channel's name
https://repo.anaconda.cloud/t/<TOKEN>/repo/<ORG_ID>/<CHANNEL>
```

**Caution:** The channel address *must* be exact. Watch out for unwanted trailing spaces if cutting/pasting.



3. Press Enter to add the channel.
4. Click **Update channels** to instruct navigator to update the `channels:` list in your `.condarc` file.

---

**Note:** Your token information will be hidden once the channel is added.

---

## Adding conda-forge as a channel

If you need to install packages from the `conda-forge` repository:

1. Select **Channels**, then click **Add...**
2. Enter `conda-forge` as your channel.
3. Press Enter to add the channel.
4. Click **Update channels** to instruct navigator to update the `channels:` list in your `.condarc` file.

## Using Anaconda behind a firewall or proxy (Optional)

Some companies have security policies that prevent communications on their network with external servers, like Anaconda. Under these circumstances, you'll need to connect to your company's firewall/proxy server in order to download packages successfully.

To connect to a firewall/proxy server, you'll need to include a `proxy_servers:` section in the `.condarc` file that contains the URL to the proxy server. This entry must also contain a username and password for logging in to the proxy server. Speak with your IT Administrator if you do not have this information.

There are no commands to include this portion of the `.condarc` file, so you need to manually include the following lines:

```
# Replace <USERNAME> with the username for your proxy server
# Replace <PASSWORD> with the password for your proxy server
# Replace <URL> with the URL to your proxy server
proxy_servers:
  http: http://<USERNAME>:<PASSWORD>@<URL>:8080
  https: https://<USERNAME>:<PASSWORD>@<URL>:8443
```

You'll also need to work with your IT team to allowlist connections to the main package repositories once you've configured your connection to the firewall/proxy server. The main package repositories are:

- <https://anaconda.org>
- <https://repo.anaconda.com>
- <https://repo.anaconda.cloud>

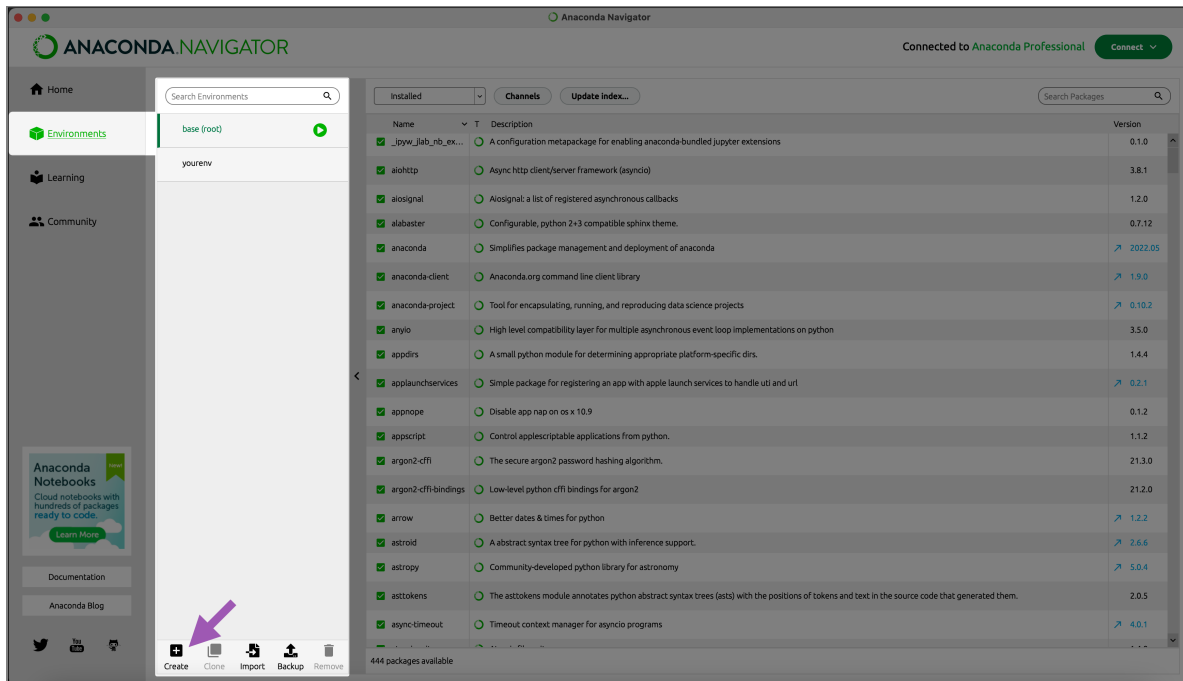
In some situations, it is necessary to export the HTTP\_PROXY and HTTPS\_PROXY environment variables to utilize the proxy server. To export your environment variables, open a terminal and run the following commands:

```
# Replace <USERNAME> with the username for your proxy server
# Replace <PASSWORD> with the password for your proxy server
# Replace <URL> with the URL to your proxy server
set HTTP_PROXY=http://<USERNAME>:<PASSWORD>@<URL>:8080
set HTTPS_PROXY=https://<USERNAME>:<PASSWORD>@<URL>:8443
```

## Verifying your configurations

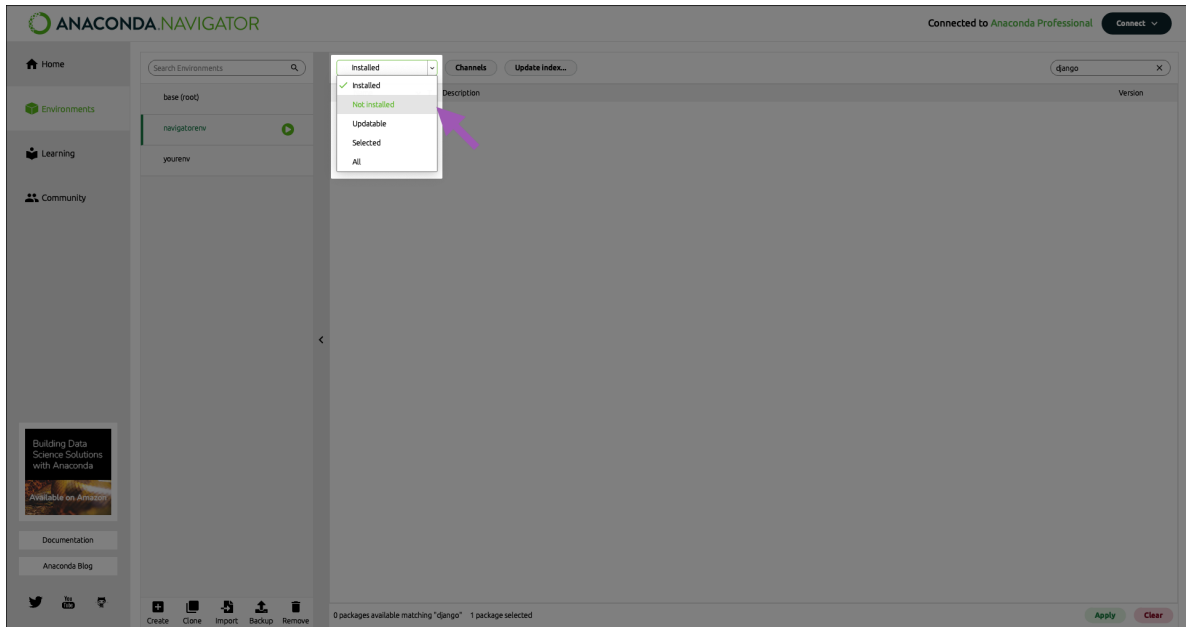
To test your configurations and verify that conda downloads packages from the desired channel, complete the following procedure:

1. Go to **Environments** in the left-hand navigation, then select **Create** at the bottom of the window.

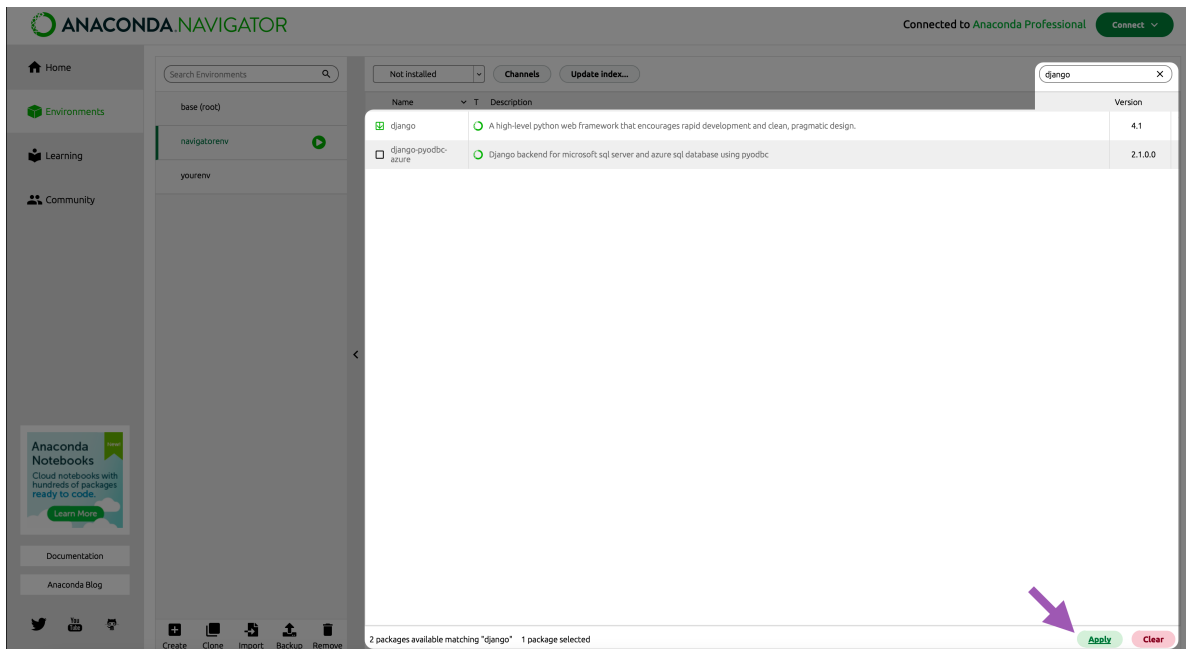




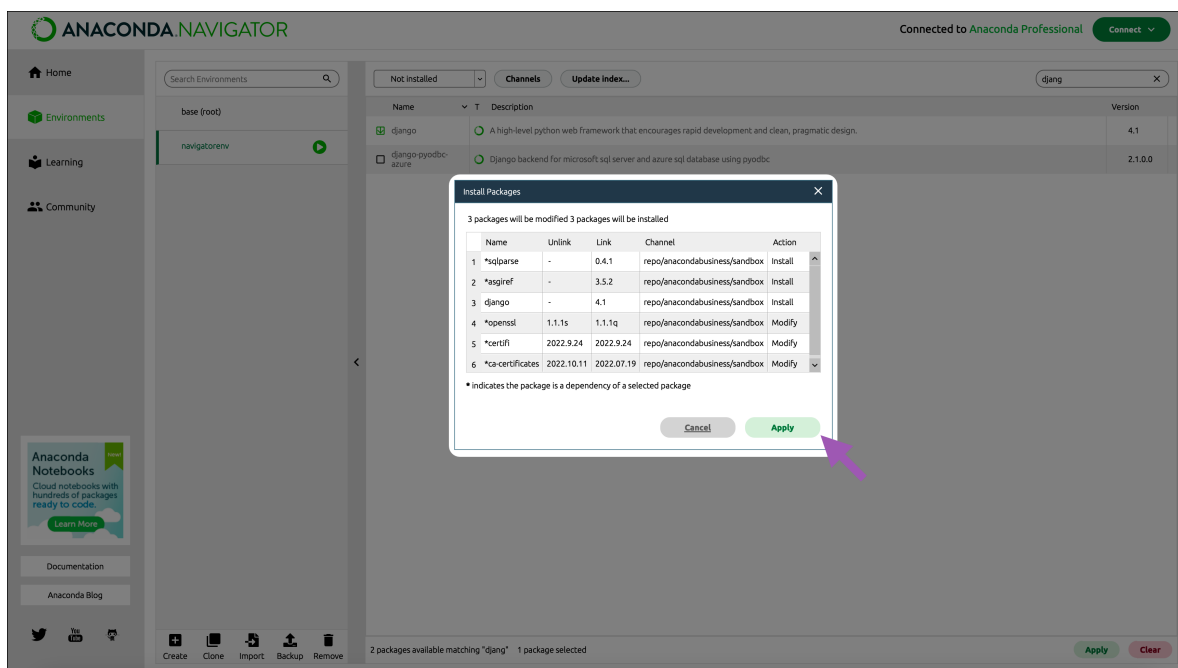
2. Enter a name for your environment and select a version of Python (3.10 is preferred) from the dropdown menu, then click **Create**.
3. Change the package selector to **Not installed**. This will show you packages that are available from your channel but are not installed on your machine.



4. If you know the name of the package you need, you can enter it in the search bar to locate the package. Select a package to download and click **Apply**.



5. Click **Apply** to install the selected packages (and their dependencies).



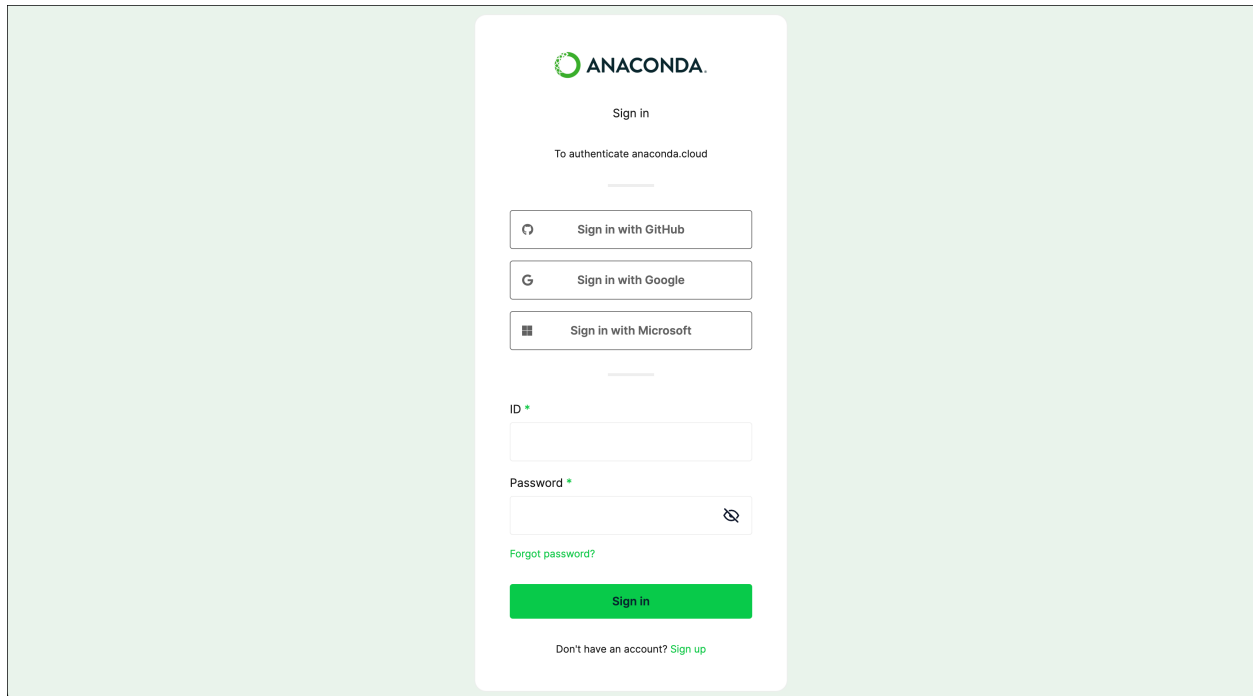
**Note:** The **Channel** column will display your organization's channel path, if correctly configured.

## Quickstart guide for Mac & Linux using Navigator

This quickstart guide is intended to help you create an Anaconda account, obtain conda software, and configure it to access your instance of Anaconda while mainly using Anaconda Navigator. If you prefer to use the command line interface (CLI), see the [Quickstart guide for Mac & Linux using the CLI](#) to perform these same configurations.

### Creating an account

Go to <https://anaconda.cloud/sign-up>.

The image shows a 'Sign in' dialog for Anaconda. At the top is the Anaconda logo and the text 'Sign in' and 'To authenticate anaconda.cloud'. Below this are three buttons: 'Sign in with GitHub', 'Sign in with Google', and 'Sign in with Microsoft'. Under these buttons are two input fields: 'ID' and 'Password'. The 'Password' field has a toggle icon on the right. Below the 'Password' field is a link that says 'Forgot password?'. At the bottom is a green 'Sign in' button and a link that says 'Don't have an account? Sign up'.

From here you have several options for account registration:

- Authenticate with a GitHub, Gmail, or Microsoft account
- Sign up manually with an email and password

### Signing up manually

1. Click the **Sign up** link at the bottom of the sign in dialog.
2. Enter your email address and password.
3. Check your email for the email verification code.
4. Enter the verification code and click **Submit**.

## Creating a profile

Fill out the personal information form, check the box if you would like to receive marketing promotions or newsletters, then click **Explore Anaconda Cloud**.

The screenshot shows the Anaconda Cloud homepage with a modal window titled "Get More Content" in the center. The modal contains the following fields and options:

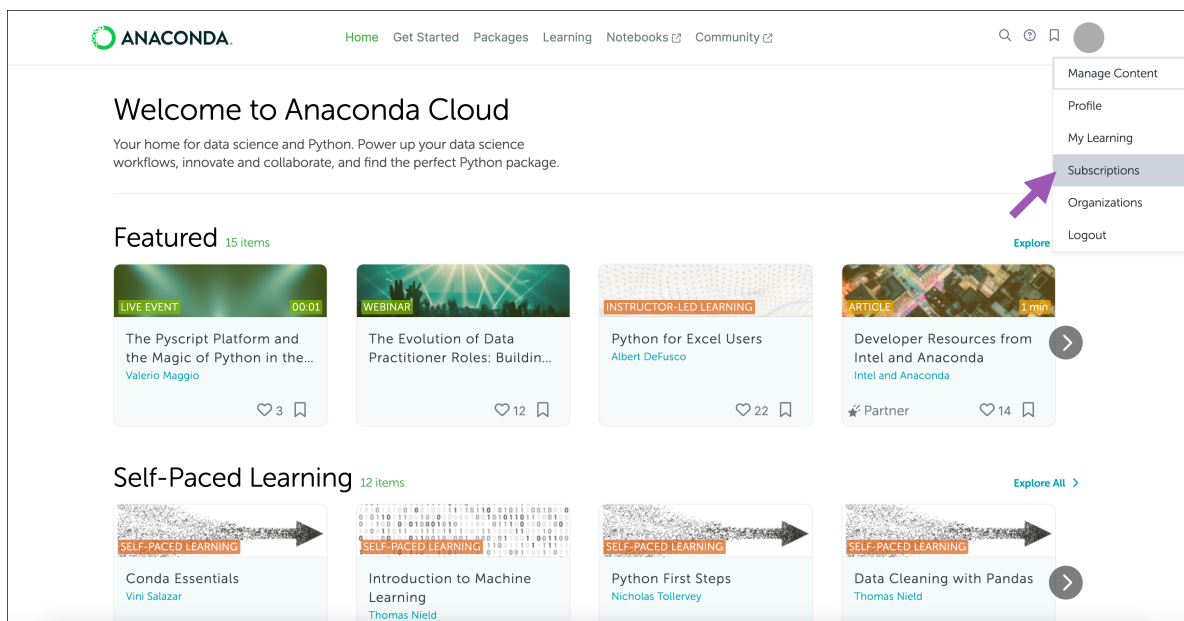
- First Name\*
- Last Name\*
- Company\*
- Company Size (dropdown menu)
- Role\* (dropdown menu)
- Industry (dropdown menu)
- Country\* (dropdown menu)
- ☐ I would like to receive email updates about new content, events, features and promotions.

The background shows the "Welcome to Anaconda Cloud" message and sections for "Featured" and "Self-Paced Learning" content.

You will receive a verification email once you have created your profile.

## Purchasing a subscription to Anaconda

1. Sign in to your Anaconda Cloud account.
2. Open the user dropdown menu and select **Subscriptions**.



3. Select **View Plans**.

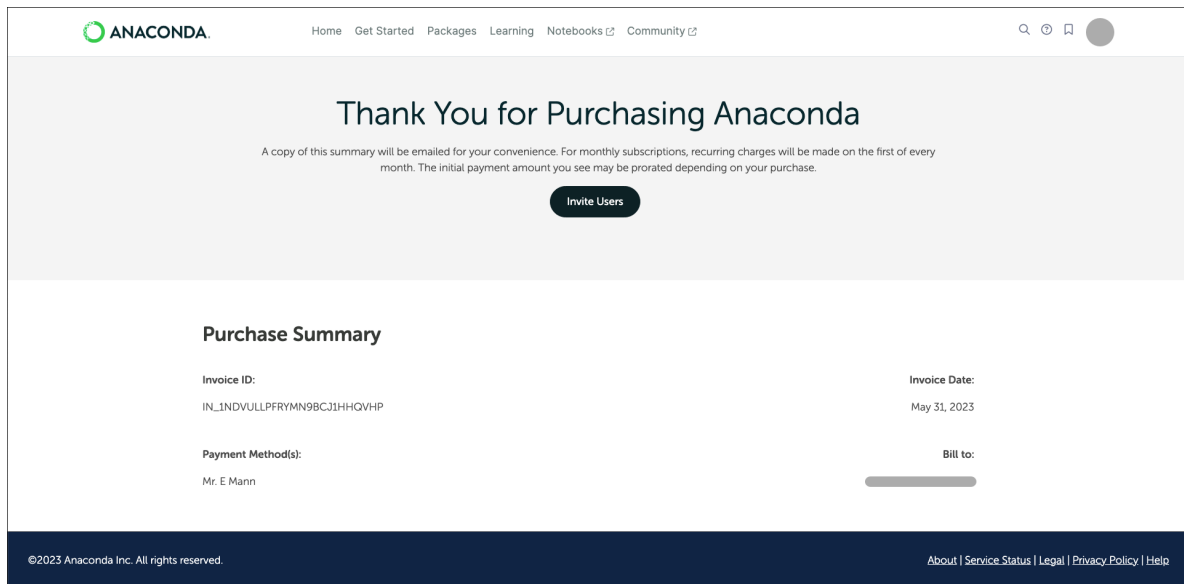
The screenshot shows the Anaconda Subscriptions page. The sidebar on the left contains links for Account (Account Settings, Update Password, Privacy & Security, Subscription Details), Organizations, and Environments. The main content area is titled 'Subscriptions' and includes an 'Individual Subscription' section. Under 'Current:', there is a 'Free Tier' and an 'Upgrade' section. The 'Upgrade' section has a 'View Plans' button highlighted with a purple arrow. Below this, it shows 'You are a member of these organizations:' with two cards: 'ANACONDA BUSINESS' and 'ANACONDIACS PRO'.

4. Choose a monthly or yearly payment plan, then click **Subscribe** beneath your preferred tier.

The screenshot shows the Anaconda Pricing and Subscriptions page. The page has a navigation bar with links for Home, Get Started, Packages, Learning, Notebooks, and Community. The main content area is titled 'Pricing and Subscriptions' and includes a 'Current plan' section. Below this, there are five pricing tiers: Free, Starter, Pro, Business, and Enterprise. Each tier has a 'Subscribe' button. The 'Free' tier is highlighted with a green border. The 'Starter' tier has a 'Subscribe' button highlighted with a purple arrow. The 'Pro' tier has a 'Subscribe' button highlighted with a purple arrow. The 'Business' tier has a 'Subscribe' button highlighted with a purple arrow. The 'Enterprise' tier has a 'Contact Us' button highlighted with a purple arrow.

5. Enter your organization's information and click **Continue to payment**.6. Enter your billing information and click **Subscribe**.

## 7. You will receive two emails. One is an invoice for your subscription purchase. The other is a welcome email for the organization you created.



You can now *invite members and manage your organization*.

## Installing conda software

If you already have Anaconda Distribution installed, you're all set to move forward!

If you have not installed Anaconda Distribution or Miniconda yet, download either [Anaconda Distribution](#) or [Miniconda](#) and install it on your system before proceeding with configuration.

Not sure whether you need Anaconda Distribution or Miniconda? Refer to the [Downloading conda](#) topic for guidance.

If you choose to download Miniconda, you need to install Anaconda Navigator separately. To install Anaconda Navigator using Miniconda:

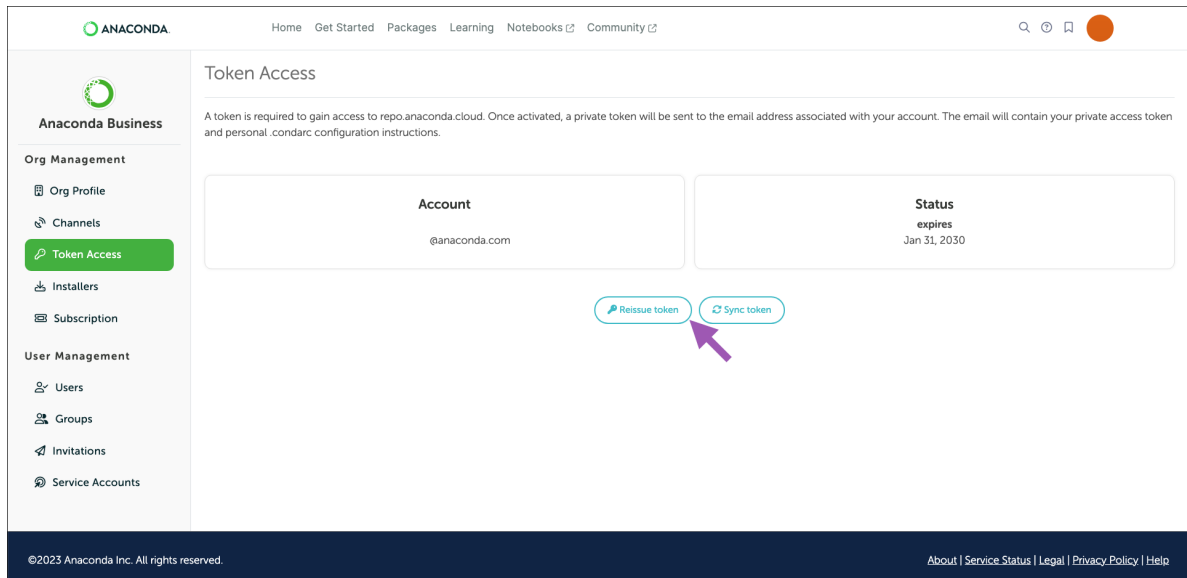
1. Open a terminal.
2. Install Anaconda Navigator by running the following command:

```
conda install anaconda-navigator
```

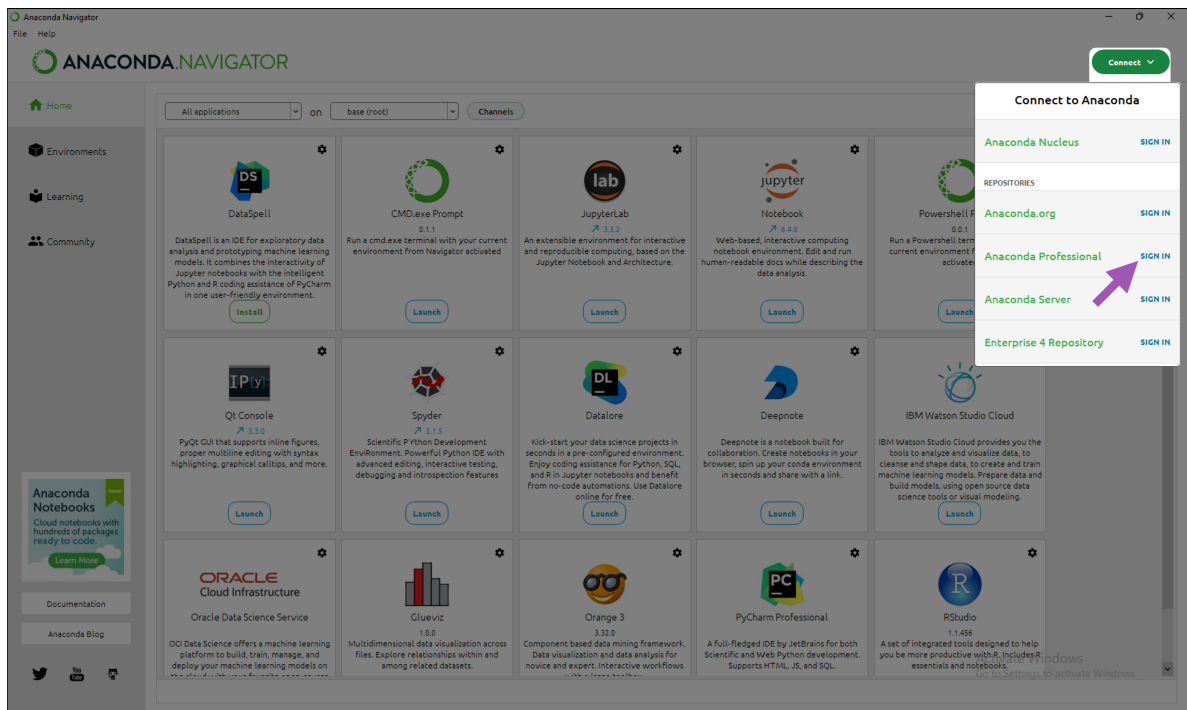
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2. Select **Token Access** from the left-hand navigation.
3. Select **Activate token** if it is the first time you are receiving a token, or **Reissue token** if you are obtaining a new token. An automated email containing a *private* token will be delivered to the address associated with your Anaconda account.



4. Launch Anaconda Navigator.
5. Select **Connect**, then **Sign in** to *Anaconda Professional* using the private token you received in your email.



**Note:** Both the Pro and Business tiers share a repository of curated packages. Therefore, signing into Anaconda Professional gives you access to the Business channels you need, as long as you have the correct access token.

### Important information about the `.condarc` file

The `.condarc` file is a configuration file that tells conda where to look for packages. Here is an example of what your `.condarc` file might look like:

```
channels:
- https://repo.anaconda.cloud/repo/<ORG_ID>/<CHANNEL_NAME>
- defaults
add_anaconda_token: true
restore_free_channel: false
default_channels:
- https://repo.anaconda.cloud/repo/main
- https://repo.anaconda.cloud/repo/r
- https://repo.anaconda.cloud/repo/msys2
```

Conda searches for requested packages in the channel listed at the top of the `channels:` list first. If that channel contains the requested package, it is downloaded from that channel.

If the requested package is not located in that channel, conda will search for the package in the next entry of the `channels:` list.

When conda reaches the `defaults` entry of the `channels:` list, it searches the channels listed under the `default_channels:` list, in the same descending order.

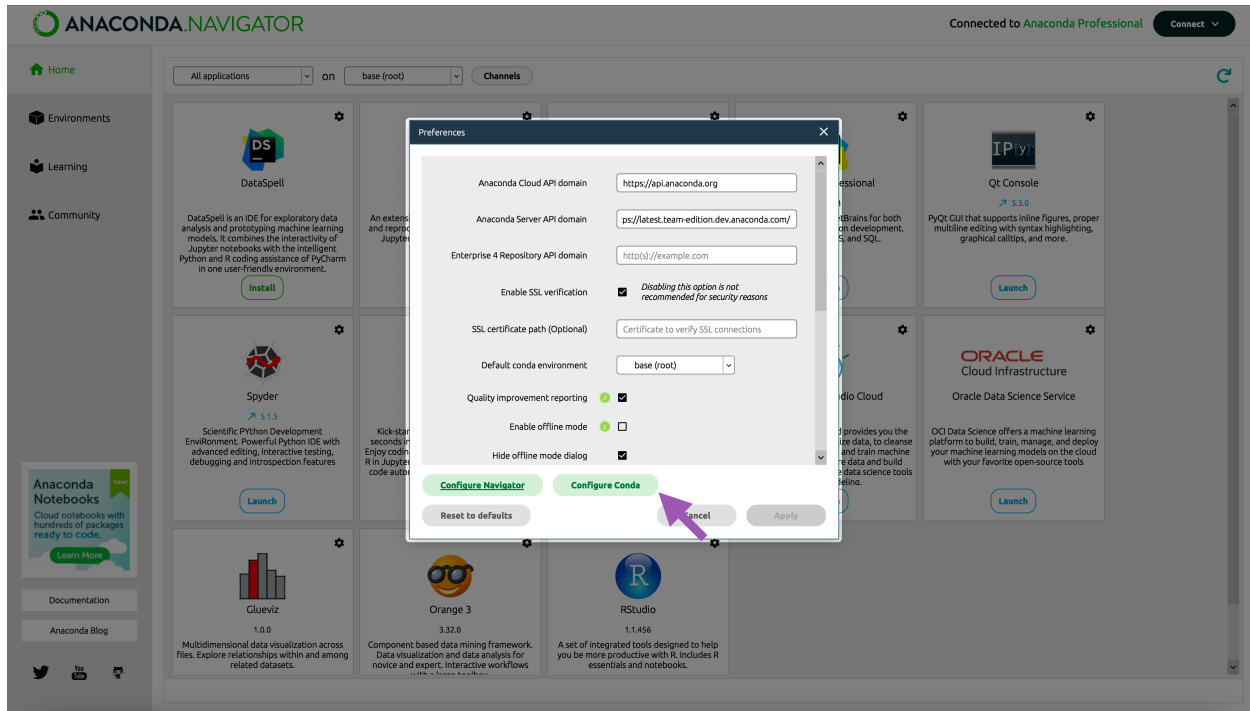
In this example, conda will look for a requested package in your organization's channel first, then will look in the default channels in listed order, starting with <https://repo.anaconda.cloud/repo/main>, then <https://repo.anaconda.cloud/repo/r>, and finally, in <https://repo.anaconda.cloud/repo/msys2>.

For more information regarding the `.condarc` file, see the official [conda documentation](#).

### Viewing your `.condarc` file

To view your `.condarc` file in Anaconda Navigator, navigate to **Preferences** from the menu bar and select **Configure Conda**.





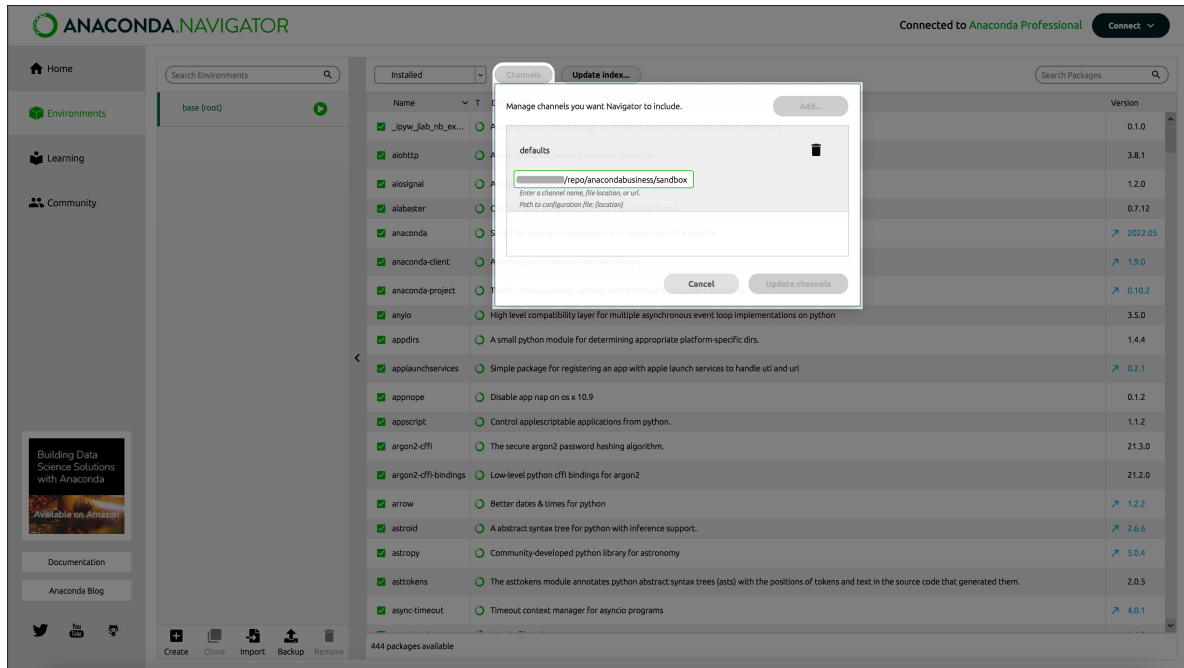
**Note:** You can edit the `.condarc` file directly from this view.

## Adding an organization channel to your `.condarc` file

1. Select **Channels**, then click **Add...**
2. Enter the path to your organization's channel using the following format:

```
# Replace <TOKEN> with your Anaconda token
# Replace <ORG_ID> with your organization's ID (not the org name)
# Replace <CHANNEL> with your channel's name
https://repo.anaconda.cloud/t/<TOKEN>/repo/<ORG_ID>/<CHANNEL>
```

**Caution:** The channel address *must* be exact. Watch out for unwanted trailing spaces if cutting/pasting.



3. Press return to add the channel.
4. Click **Update channels** to instruct navigator to update the `channels:` list in your `.condarc` file.

---

**Note:** Your token information will be hidden once the channel is added.

---

## Adding conda-forge as a channel

If you need to install packages from the `conda-forge` repository:

1. Select **Channels**, then click **Add...**
2. Enter `conda-forge` as your channel.
3. Press return to add the channel.
4. Click **Update channels** to instruct navigator to update the `channels:` list in your `.condarc` file.

## Using Anaconda behind a firewall or proxy (Optional)

Some companies have security policies that prevent communications on their network with external servers, like Anaconda. Under these circumstances, you'll need to connect to your company's firewall/proxy server in order to download packages successfully.

To connect to a firewall/proxy server, you'll need to include a `proxy_servers:` section in the `.condarc` file that contains the URL to the proxy server. This entry must also contain a username and password for logging in to the proxy server. Speak with your IT Administrator if you do not have this information.

There are no commands to include this portion of the `.condarc` file, so you need to manually include the following lines:

```
# Replace <USERNAME> with the username for your proxy server
# Replace <PASSWORD> with the password for your proxy server
# Replace <URL> with the URL to your proxy server
proxy_servers:
  http: http://<USERNAME>:<PASSWORD>@<URL>:8080
  https: https://<USERNAME>:<PASSWORD>@<URL>:8443
```

You'll also need to work with your IT team to allowlist connections to the main package repositories once you've configured your connection to the firewall/proxy server. The main package repositories are:

- <https://anaconda.org>
- <https://repo.anaconda.com>
- <https://repo.anaconda.cloud>

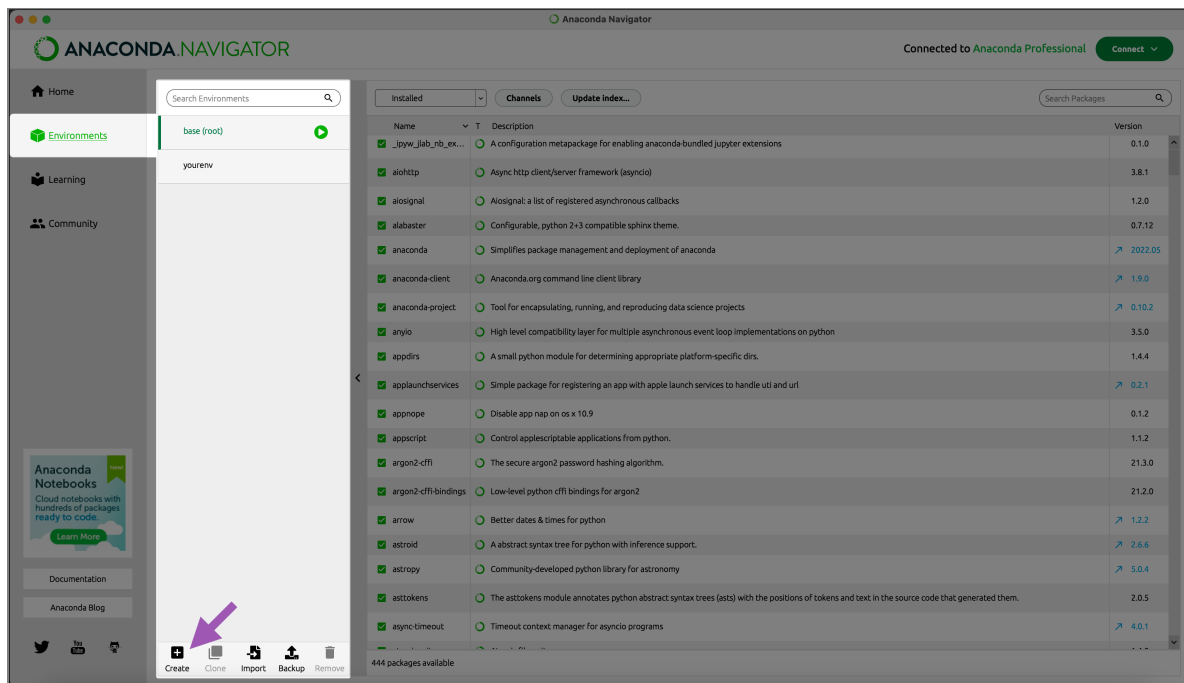
In some situations, it is necessary to export the HTTP\_PROXY and HTTPS\_PROXY environment variables to utilize the proxy server. To export your environment variables, open a terminal and run the following commands:

```
# Replace <USERNAME> with the username for your proxy server
# Replace <PASSWORD> with the password for your proxy server
# Replace <URL> with the URL to your proxy server
export HTTP_PROXY=http://<USERNAME>:<PASSWORD>@<URL>:8080
export HTTPS_PROXY=https://<USERNAME>:<PASSWORD>@<URL>:8443
```

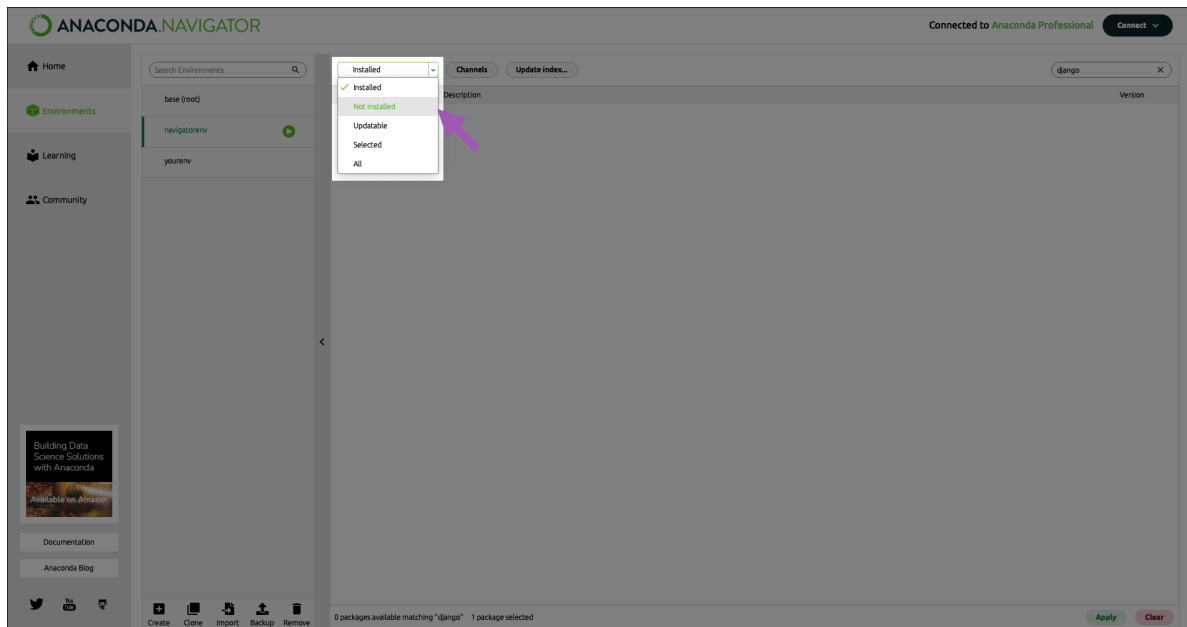
## Verifying your configurations

To test your configurations and verify that conda downloads packages from the desired channel, complete the following procedure:

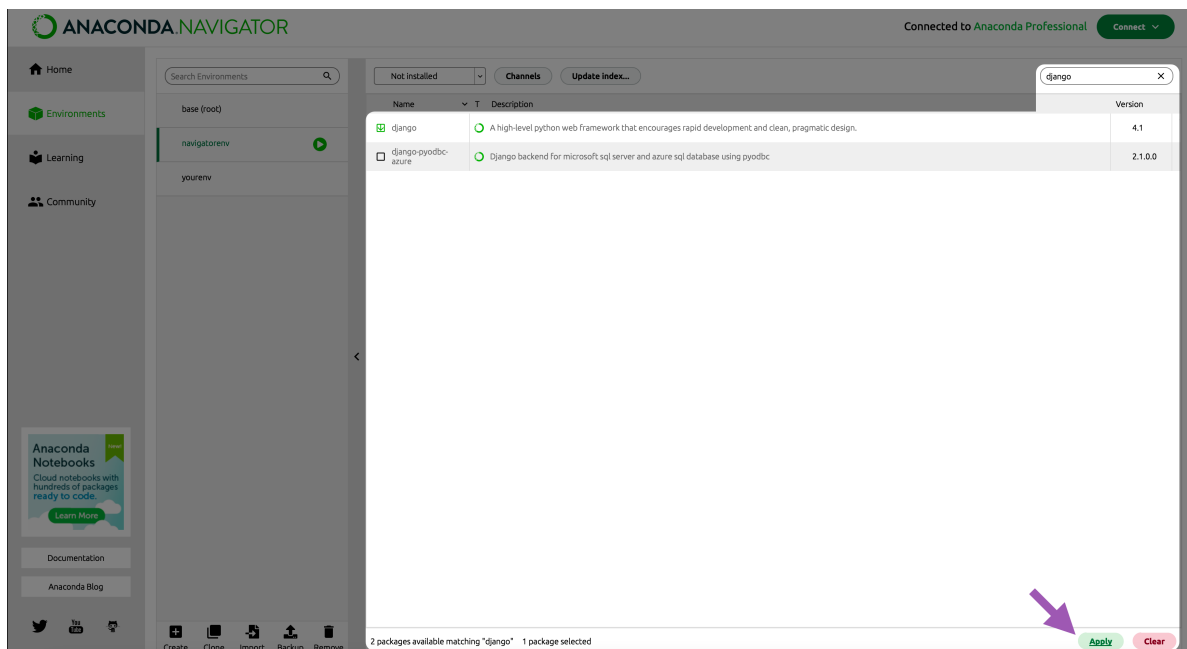
1. Go to **Environments** in the left-hand navigation, then select **Create** at the bottom of the window.



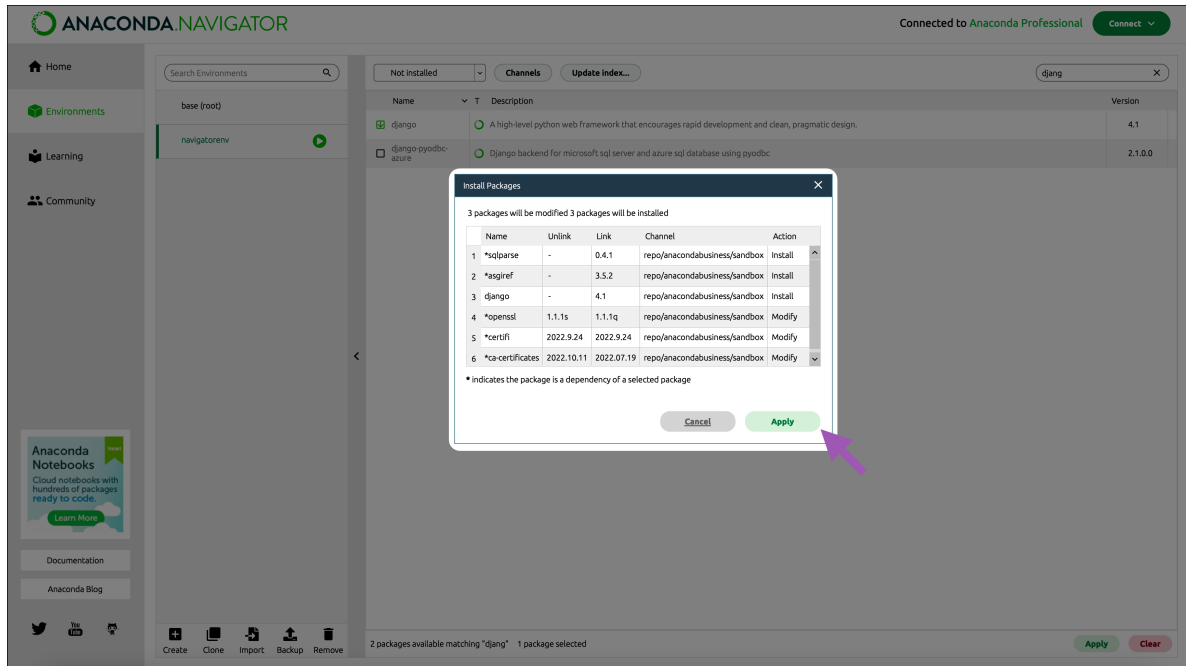
2. Enter a name for your environment and select a version of Python (3.10 is preferred) from the dropdown menu, then click **Create**.
3. Change the package selector to **Not installed**. This will show you packages that are available from your channel but are not installed on your machine.



4. If you know the name of the package you need, you can enter it in the search bar to locate the package. Select a package to download and click **Apply**.



5. Click **Apply** to install the selected packages (and their dependencies).



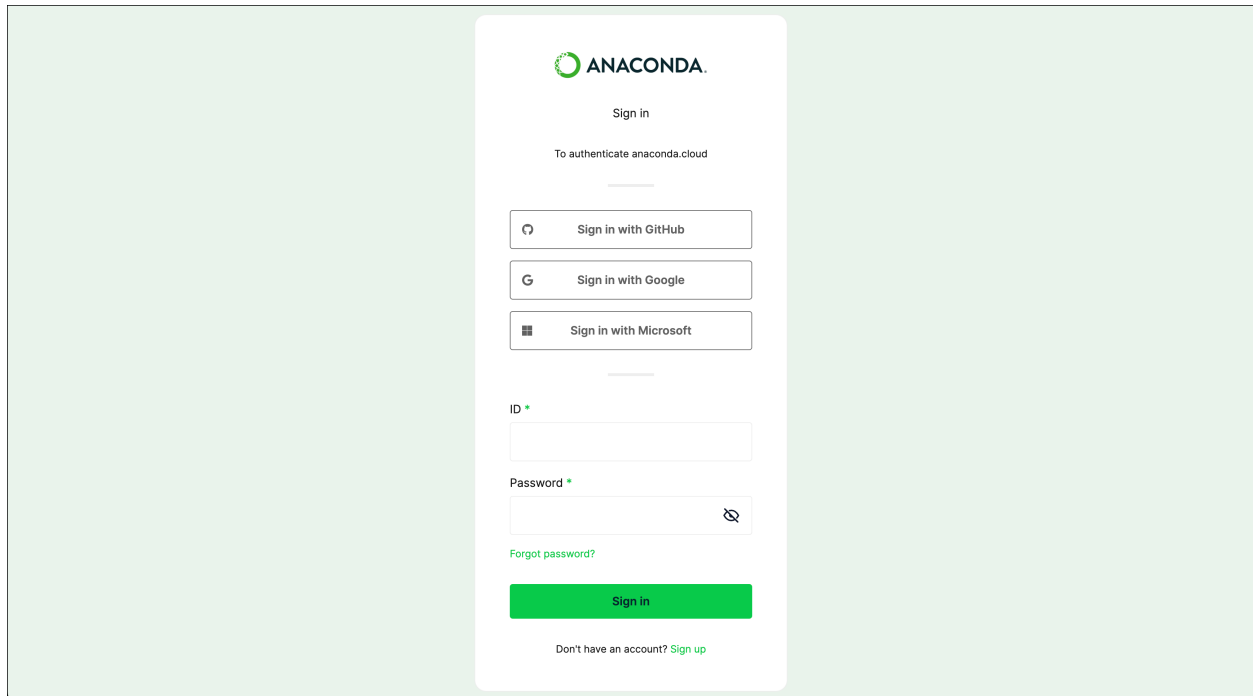
**Note:** The **Channel** column will display your organization's channel path, if correctly configured.

## Quickstart guide for Mac & Linux using the CLI

This quickstart guide is intended to help you create an Anaconda account, obtain conda software, and configure it to access your instance of Anaconda while mainly operating from the command line interface (CLI). If you prefer the use of a graphical user interface (GUI), see the [Quickstart guide for Mac & Linux using Anaconda Navigator](#) to perform these configurations.

## Creating an account

Go to <https://anaconda.cloud/sign-up>.

A screenshot of the Anaconda sign-in dialog. At the top is the Anaconda logo and the text "Sign in". Below this is the text "To authenticate anaconda.cloud". There are three buttons for social login: "Sign in with GitHub", "Sign in with Google", and "Sign in with Microsoft". Below these is a section for manual login with fields for "ID" and "Password", each with a red asterisk indicating it is required. The password field has a toggle icon on the right. Below the password field is a green link "Forgot password?". At the bottom is a large green "Sign in" button. Below the button is the text "Don't have an account? Sign up" with "Sign up" as a green link.

From here you have several options for account registration:

- Authenticate with a GitHub, Gmail, or Microsoft account
- Sign up manually with an email and password

### Signing up manually

1. Click the **Sign up** link at the bottom of the sign in dialog.
2. Enter your email address and password.
3. Check your email for the email verification code.
4. Enter the verification code and click **Submit**.

## Creating a profile

Fill out the personal information form, check the box if you would like to receive marketing promotions or newsletters, then click **Explore Anaconda Cloud**.

The screenshot shows the Anaconda Cloud homepage with a modal window titled "Get More Content" in the center. The modal contains the following fields and options:

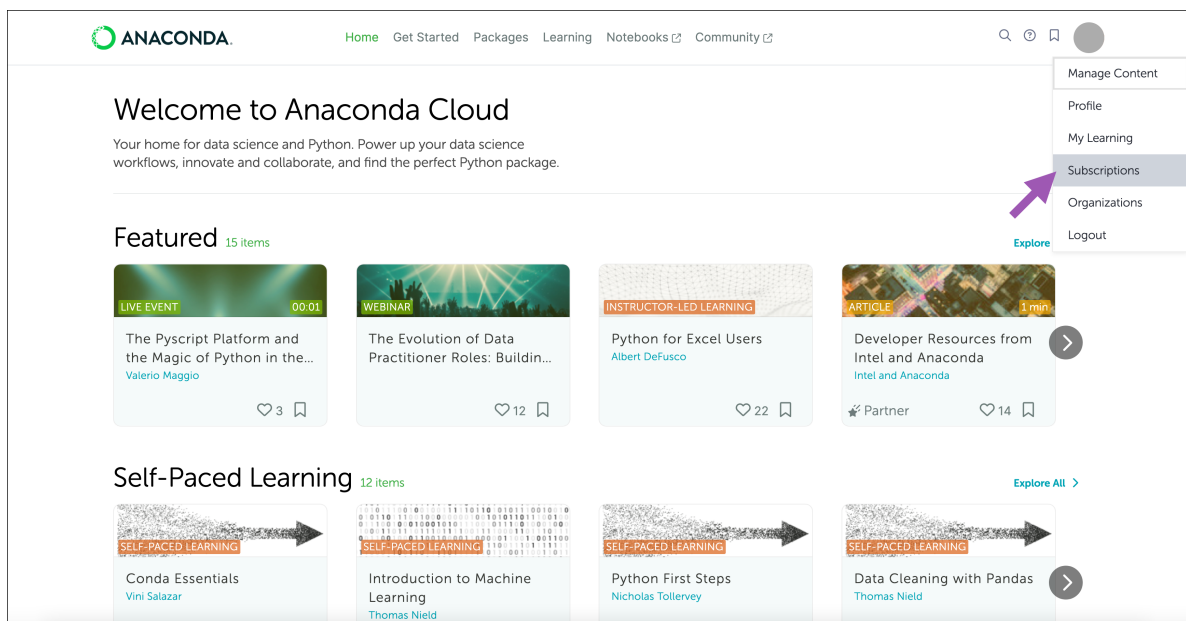
- First Name\*
- Last Name\*
- Company\*
- Company Size (dropdown menu)
- Role\* (dropdown menu)
- Industry (dropdown menu)
- Country\* (dropdown menu)
- ☐ I would like to receive email updates about new content, events, features and promotions.

The background shows the "Welcome to Anaconda Cloud" message and sections for "Featured" and "Self-Paced Learning" content.

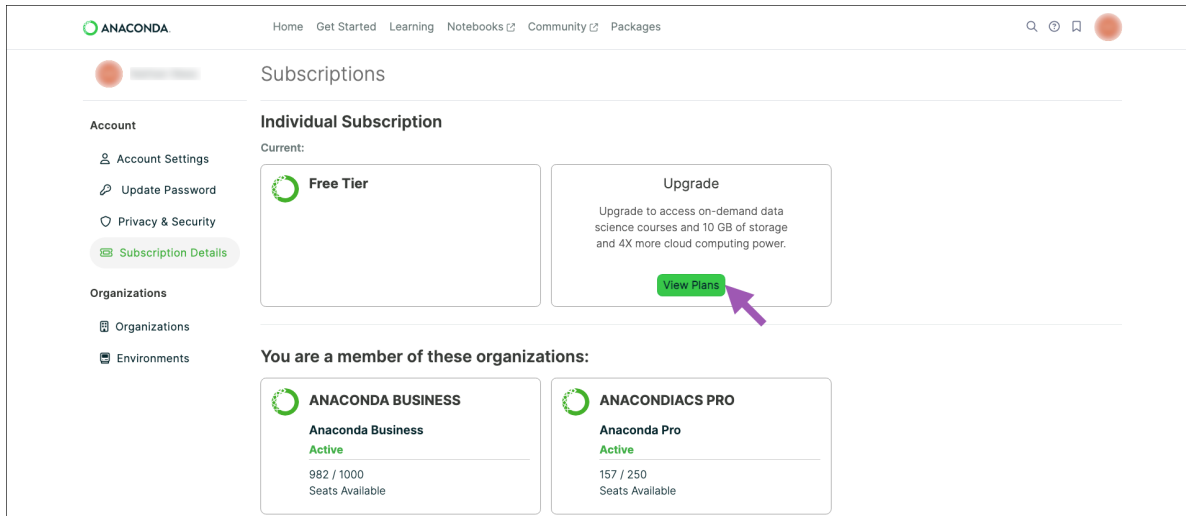
You will receive a verification email once you have created your profile.

## Purchasing a subscription to Anaconda

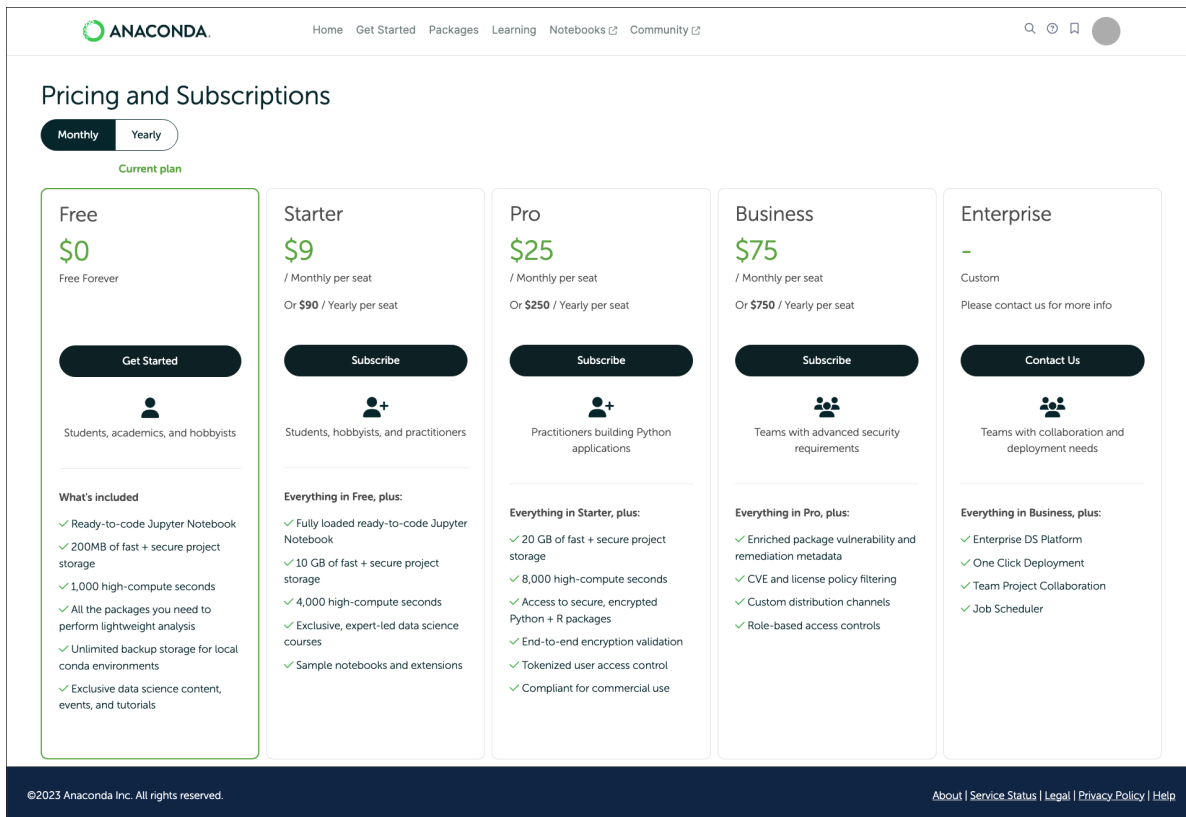
1. Sign in to your Anaconda Cloud account.
2. Open the user dropdown menu and select **Subscriptions**.



3. Select **View Plans**.



4. Choose a monthly or yearly payment plan, then click **Subscribe** beneath your preferred tier.

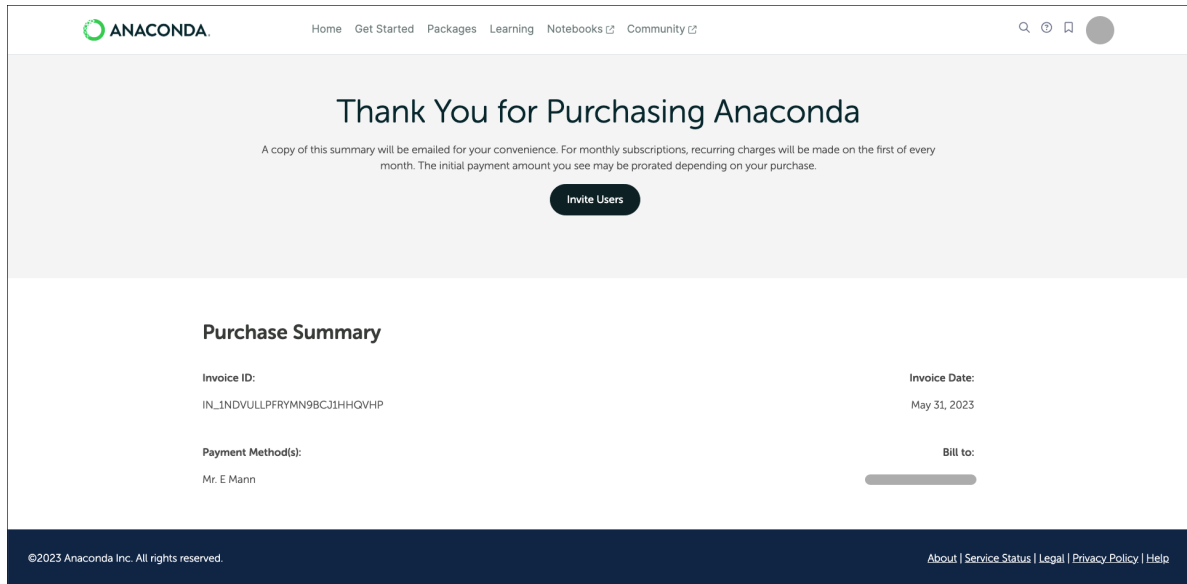


5. Enter your organization's information and click **Continue to payment**.

6. Enter your billing information and click **Subscribe**.

7. You will receive two emails. One is an invoice for your subscription purchase. The other is a welcome email for the organization you created.





You can now *invite members and manage your organization*.

## Installing conda software

If you already have Anaconda Distribution or Miniconda installed, you're all set to move forward!

If you have not installed Anaconda Distribution or Miniconda yet, download either [Anaconda Distribution](#) or [Miniconda](#) and install it on your system before proceeding with configuration.

Not sure whether you need Anaconda Distribution or Miniconda? Refer to the [Downloading conda](#) topic for guidance.

## Installing conda-token

After you have installed Anaconda Distribution or Miniconda, you can use it to install the `conda-token` package!

1. Open a terminal. You should see `(base)` preceding the command line. This means you are in your base conda environment.
2. Install `conda-token` by running the following command:

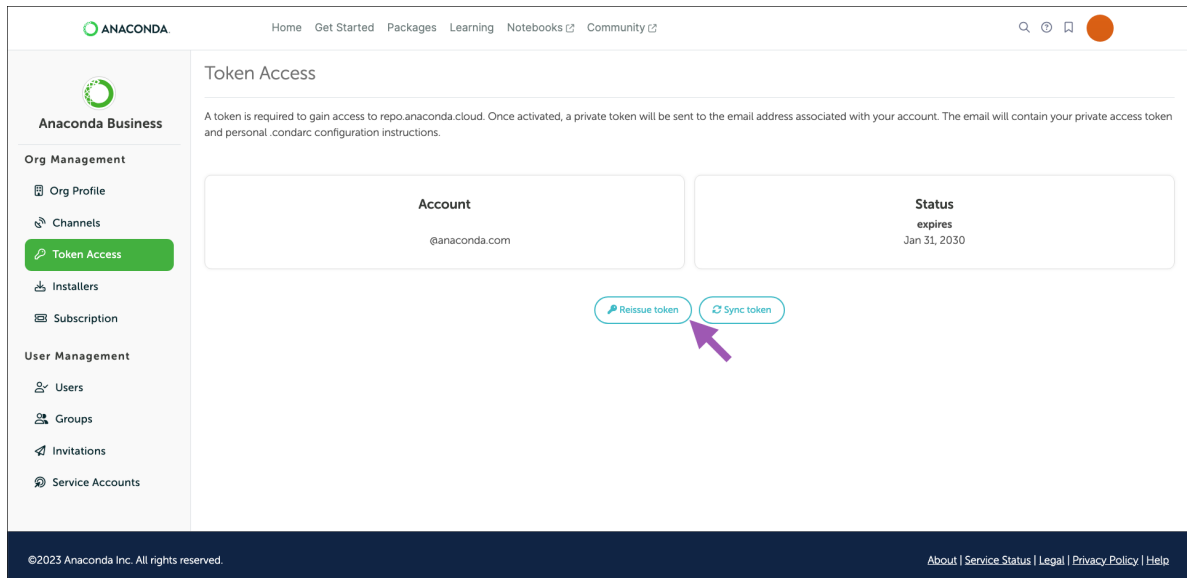
```
conda install conda-token -n base
```

3. Enter "y" when prompted to proceed with the installation.

## Authenticating to Anaconda

Anaconda uses private tokens to authenticate users to their organizations. You must be assigned a seat within an organization to activate a token. Once you're assigned a seat, you can generate a private token for yourself at any time.

1. Go to your organization's page.
2. Select **Token Access** from the left-hand navigation.
3. Select **Activate token** if it is the first time you are receiving a token, or **Reissue token** if you are obtaining a new token. An automated email containing a *private* token will be delivered to the address associated with your Anaconda account.



4. Configure conda to use this token by running the following command:

```
# Replace <TOKEN> with the token you received in your email
conda token set <TOKEN>
```

**Caution:** You must run this command every time you receive a new token.

Here is an example of what your terminal will display when you set your token correctly:

```
(base) → ~ conda install conda-token -n base
Collecting package metadata (current_repodata.json): done
Solving environment: done

## Package Plan ##

environment location: /Users/[REDACTED]/opt/anaconda3

added / updated specs:
- conda-token

The following packages will be downloaded:

package | build | size | url
-----|-----|-----|-----
ca-certificates-2023.01.10 | hecd8cb5_0 | 121 KB | https://repo.anaconda.cloud/repo/anacondabusiness/snakes
certifi-2022.12.7 | py39hecd8cb5_0 | 151 KB | https://repo.anaconda.cloud/repo/anacondabusiness/snakes
conda-23.1.0 | py39hecd8cb5_0 | 938 KB | https://repo.anaconda.cloud/repo/anacondabusiness/snakes
conda-token-0.4.0 | pyhd3eb1b0_0 | 13 KB | https://repo.anaconda.cloud/repo/anacondabusiness/snakes
openssl-1.1.1s | hca72f7f_0 | 2.8 MB | https://repo.anaconda.cloud/repo/anacondabusiness/snakes
-----|-----|-----|-----
Total: 4.0 MB

The following packages will be UPDATED:

conda-token repo/main::conda-token-0.3.0-pyhd3eb1~ --> repo/anacondabusiness/snakes::conda-token-0.4.0-pyhd3eb1b0_0

The following packages will be SUPERSEDED by a higher-priority channel:

ca-certificates pkgs/main --> repo/anacondabusiness/snakes
certifi pkgs/main --> repo/anacondabusiness/snakes
conda pkgs/main --> repo/anacondabusiness/snakes
openssl pkgs/main --> repo/anacondabusiness/snakes

Proceed ([Y]/n)? y

Downloading and Extracting Packages

Preparing transaction: done
Verifying transaction: done
Executing transaction: done
(base) → ~ conda token set [REDACTED]
Success! Your token was validated and Conda has been configured.
```

## Important information about the .condarc file

The `.condarc` file is a configuration file that tells conda where to look for packages. Here is an example of what your `.condarc` file might look like:

```
channels:
  - https://repo.anaconda.cloud/repo/<ORG_ID>/<CHANNEL_NAME>
  - defaults
add_anaconda_token: true
restore_free_channel: false
default_channels:
  - https://repo.anaconda.cloud/repo/main
  - https://repo.anaconda.cloud/repo/r
  - https://repo.anaconda.cloud/repo/msys2
```

Conda searches for requested packages in the channel listed at the top of the `channels:` list first. If that channel contains the requested package, it is downloaded from that channel.

If the requested package is not located in that channel, conda will search for the package in the next entry of the `channels:` list.

When conda reaches the `defaults` entry of the `channels:` list, it searches the channels listed under the `default_channels:` list, in the same descending order.

In this example, conda will look for a requested package in your Anaconda Business organization's channel first, then will look in the default channels in listed order, starting with <https://repo.anaconda.cloud/repo/main>, then <https://repo.anaconda.cloud/repo/r>, and finally, in <https://repo.anaconda.cloud/repo/msys2>.

For more information regarding the `.condarc` file, see the official [conda documentation](#).

### Viewing your `.condarc` file

You can view your `.condarc` file at any time by running the following command:

```
cat .condarc
```

### Adding an organization channel to your `.condarc` file

1. Go to your organization's page.
2. Select your organization.
3. Select **Channels** from the left-hand navigation.
4. Select the copy channel path icon.

CHANNEL	SOURCE	ACTIVE POLICY	RESULTS	LAST UPDATE	ACCESS	CHANNEL PATH	ACTIONS
anacondabusiness/main-clone	main	critical-active Scheduled	x 28252 View Report	Sep 11, 2023 9:58 AM	Private 1 Groups		Copy channel path
anacondabusiness/msys2	msys2	exclude m2-autoconf Scheduled	x 4 View Report	Sep 11, 2023 8:23 AM	Internal All Users		
anacondabusiness/quarantine	main	apply policy	---		Internal All Users		
anacondabusiness/sandbox	main	exclude_pytorch Scheduled	x 588 View Report	Aug 24, 2023 3:40 PM	Internal All Users		
anacondabusiness/se-demo	main	curation_status Scheduled	x 83584 View Report	Sep 11, 2023 9:56 AM	Internal All Users		
anacondabusiness/snakes	main	agressive_cve Scheduled	x 54245 View Report	May 16, 2023 5:16 AM	Internal All Users		

5. Open your terminal and run the following command:

```
# Replace <CHANNEL_PATH> with the copied channel path
conda config --prepend channels <CHANNEL_PATH>
```

## Adding conda-forge as a channel

If you need to install packages from the conda-forge repository, run the following command:

```
conda config --append channels conda-forge
```

## Using Anaconda behind a firewall or proxy (Optional)

Some companies have security policies that prevent communications on their network with external servers, like Anaconda. Under these circumstances, you'll need to connect to your company's firewall/proxy server in order to download packages successfully.

To connect to a firewall/proxy server, you'll need to include a `proxy_servers:` section in the `.condarc` file that contains the URL to the proxy server. This entry must also contain a username and password for logging in to the proxy server. Speak with your IT Administrator if you do not have this information.

There are no commands to include this portion of the `.condarc` file, so you need to manually include the following lines:

```
# Replace <USERNAME> with the username for your proxy server
# Replace <PASSWORD> with the password for your proxy server
# Replace <URL> with the URL to your proxy server
proxy_servers:
  http: http://<USERNAME>:<PASSWORD>@<URL>:8080
  https: https://<USERNAME>:<PASSWORD>@<URL>:8443
```

You'll also need to work with your IT team to allowlist connections to the main package repositories once you've configured your connection to the firewall/proxy server. The main package repositories are:

- <https://anaconda.org>
- <https://repo.anaconda.com>
- <https://repo.anaconda.cloud>

In some situations, it is necessary to export the `HTTP_PROXY` and `HTTPS_PROXY` environment variables to utilize the proxy server. To export your environment variables, open a terminal and run the following commands:

```
# Replace <USERNAME> with the username for your proxy server
# Replace <PASSWORD> with the password for your proxy server
# Replace <URL> with the URL to your proxy server
export HTTP_PROXY=http://<USERNAME>:<PASSWORD>@<URL>:8080
export HTTPS_PROXY=https://<USERNAME>:<PASSWORD>@<URL>:8443
```

## Verifying your configurations

To test your configurations and verify that conda downloads packages from the desired channel, complete the following procedure:

1. Create an environment by running the following command:

```
# Replace <ENV_NAME> with a name for your environment
conda create --name <ENV_NAME>
```

2. Verify your environment created successfully by running the following command:

```
conda env list
```

3. Activate your environment by running the following command:

```
# Replace <ENV_NAME> with the name of your environment
conda activate <ENV_NAME>
```

4. Install a package by running the following command:

```
# Replace <PKG_NAME> with the name of the package you want to download from your ↵
↵ channel
conda install <PKG_NAME>
```

5. If necessary, you can delete the environment by running the following command:

```
# Replace <ENV_NAME> with the name of your environment
conda env remove --name <ENV_NAME>
```

### Additional conda commands

The `conda info` command provides information about the currently active environment (including the location of your `.condarc` file).

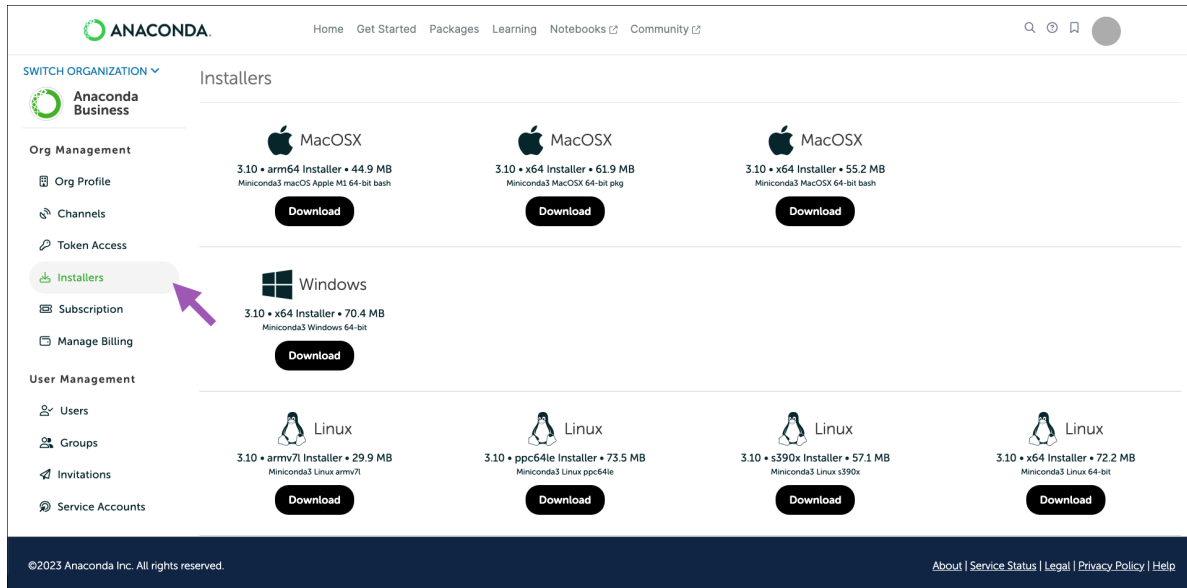
The `conda --help` command provides a list of available arguments, brief descriptions of their functions, and a list of additional commands from other packages.

This [conda cheat sheet](#) contains a list of common conda commands and brief explanations of their functions with examples.

### Installers

Anaconda provides the most recent versions of Miniconda for users who need it. Miniconda is a minimal version of the Anaconda Distribution that only contains conda, python, and their dependencies.

1. From your organization's home page, select **Installers** from the left-hand navigation.
2. Find the Miniconda installer that works for your operating system (OS), then click **Download**.



For information about system requirements and help installing Miniconda, see the [official Miniconda documentation](#).

## Organizations

An organization is a group of Anaconda Cloud accounts with a managed set of rights and permissions. Creating an organization for your team in Anaconda Cloud allows you to:

- Provide a common collaboration space
- Ensure consistent tooling
- Manage access and costs

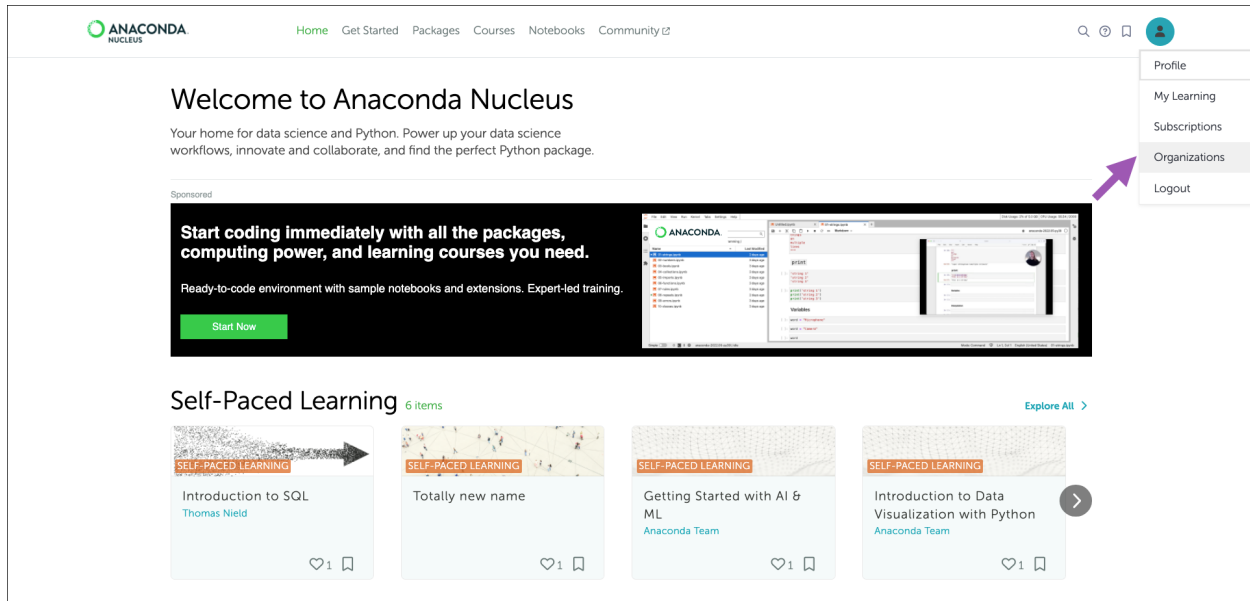
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**Note:** Anaconda Cloud users can create and belong to multiple organizations.

---

## Creating an organization

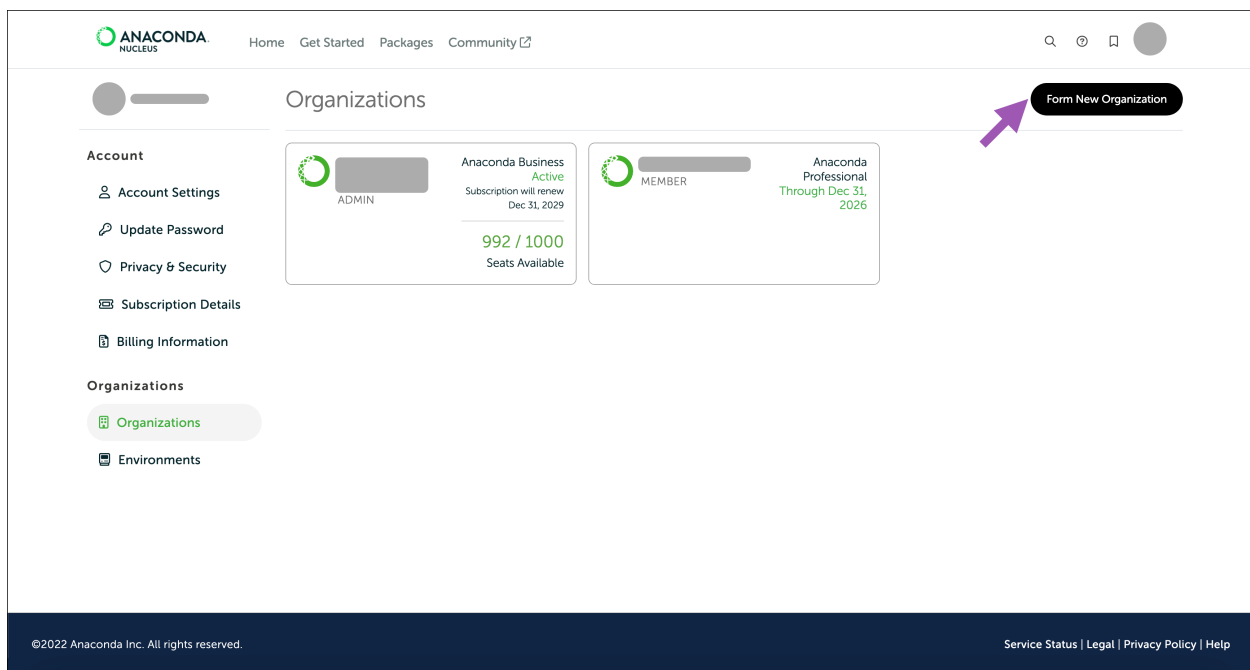
From your profile in the top-right corner, select **Organizations**.



Click **Form New Organization** and follow the on-screen instructions to set up your organization. Don't worry if you don't have all the necessary information; you can come back and complete your organization's information at a later time. As the creator, you are the owner and default admin of the group.

## Note:

- The Organization Name is the publicly displayed name of your organization and can be changed at any time after it is created.
- The Organization ID is the organization's Uniform Resource Locator (URL) identifier. The Organization's URL must be unique. Once the Organization ID is assigned, it cannot be changed.

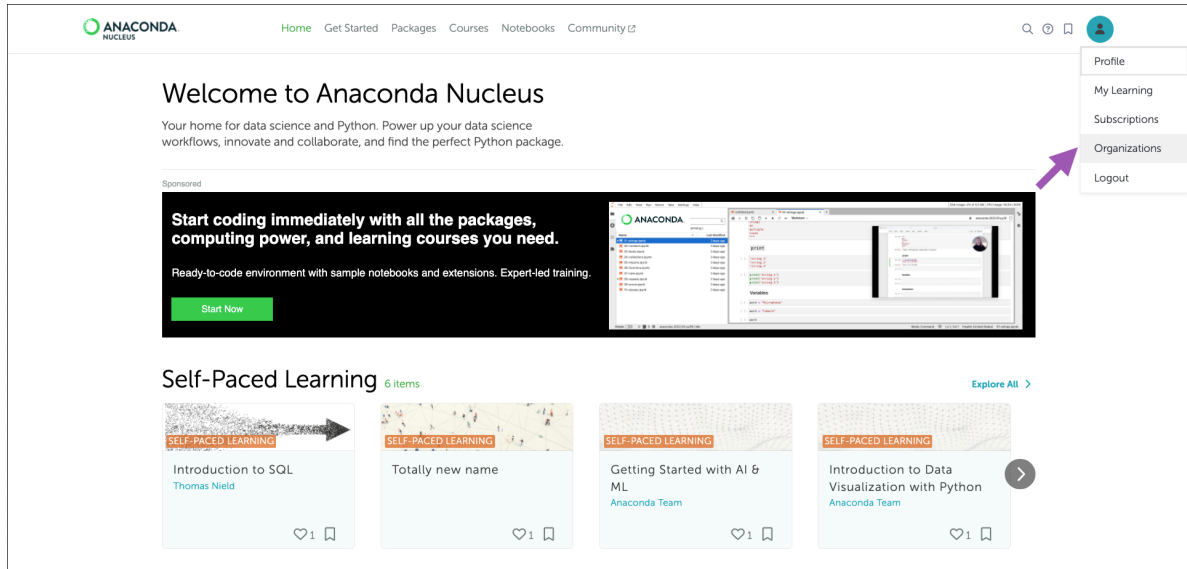




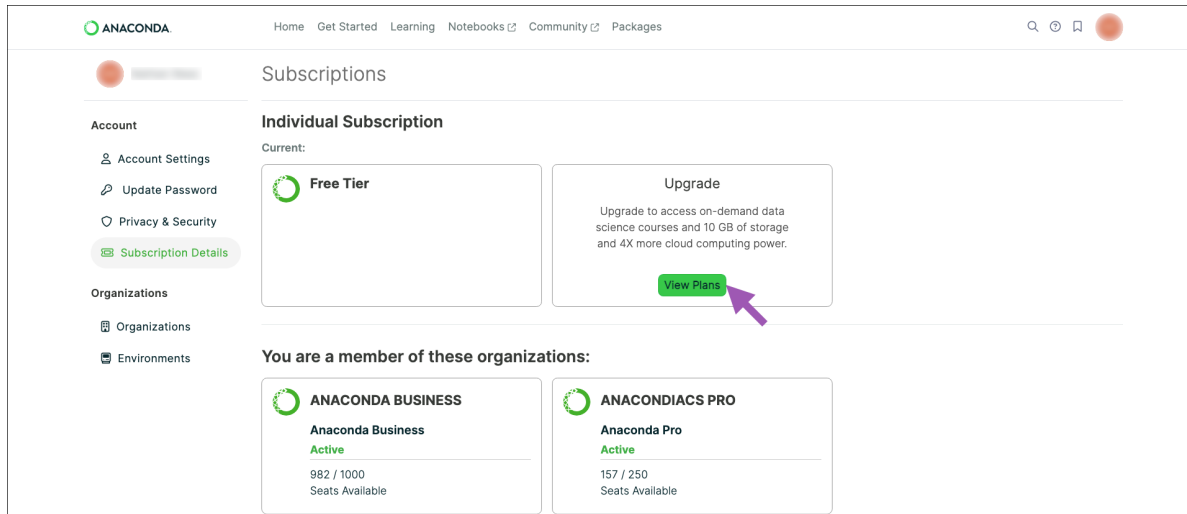
## Subscribing your organization

If you need to purchase multiple licenses, you can purchase a subscription with multiple seats (licenses) to manage users:

1. Sign in to your Anaconda Cloud account.
2. Open the user dropdown menu and select **Organizations**.



3. Select the organization you are purchasing a subscription for.
4. Go to **Subscription Details** in the left-hand navigation.
5. Select **View Plans**.



6. Choose a monthly or yearly subscription, then click **Subscribe**.

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## Pricing and Subscriptions

Monthly **Yearly**

**Current plan**

Free	Starter	Pro	Business	Enterprise
<b>\$0</b> Free Forever	<b>\$9</b> / Monthly per seat Or <b>\$90</b> / Yearly per seat	<b>\$25</b> / Monthly per seat Or <b>\$250</b> / Yearly per seat	<b>\$75</b> / Monthly per seat Or <b>\$750</b> / Yearly per seat	— Custom Please contact us for more info
<b>Get Started</b>	<b>Subscribe</b>	<b>Subscribe</b>	<b>Subscribe</b>	<b>Contact Us</b>
 Students, academics, and hobbyists	 Students, hobbyists, and practitioners	 Practitioners building Python applications	 Teams with advanced security requirements	 Teams with collaboration and deployment needs
<b>What's included</b> <ul style="list-style-type: none"> <li>✓ Ready-to-code Jupyter Notebook</li> <li>✓ 200MB of fast + secure project storage</li> <li>✓ 1,000 high-compute seconds</li> <li>✓ All the packages you need to perform lightweight analysis</li> <li>✓ Unlimited backup storage for local conda environments</li> <li>✓ Exclusive data science content, events, and tutorials</li> </ul>	<b>Everything in Free, plus:</b> <ul style="list-style-type: none"> <li>✓ Fully loaded ready-to-code Jupyter Notebook</li> <li>✓ 10 GB of fast + secure project storage</li> <li>✓ 4,000 high-compute seconds</li> <li>✓ Exclusive, expert-led data science courses</li> <li>✓ Sample notebooks and extensions</li> </ul>	<b>Everything in Starter, plus:</b> <ul style="list-style-type: none"> <li>✓ 20 GB of fast + secure project storage</li> <li>✓ 8,000 high-compute seconds</li> <li>✓ Access to secure, encrypted Python + R packages</li> <li>✓ End-to-end encryption validation</li> <li>✓ Tokenized user access control</li> <li>✓ Compliant for commercial use</li> </ul>	<b>Everything in Pro, plus:</b> <ul style="list-style-type: none"> <li>✓ Enriched package vulnerability and remediation metadata</li> <li>✓ CVE and license policy filtering</li> <li>✓ Custom distribution channels</li> <li>✓ Role-based access controls</li> </ul>	<b>Everything in Business, plus:</b> <ul style="list-style-type: none"> <li>✓ Enterprise DS Platform</li> <li>✓ One Click Deployment</li> <li>✓ Team Project Collaboration</li> <li>✓ Job Scheduler</li> </ul>

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- Enter your organization's information and your billing information.
- Check the box to agree to the Anaconda EULA, then click **Purchase Now**.
- You will receive two emails. One is an invoice for your subscription purchase. The other is a welcome email for the organization you created.

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## Thank You for Purchasing Anaconda

A copy of this summary will be emailed for your convenience. For monthly subscriptions, recurring charges will be made on the first of every month. The initial payment amount you see may be prorated depending on your purchase.

**Invite Users**

### Purchase Summary

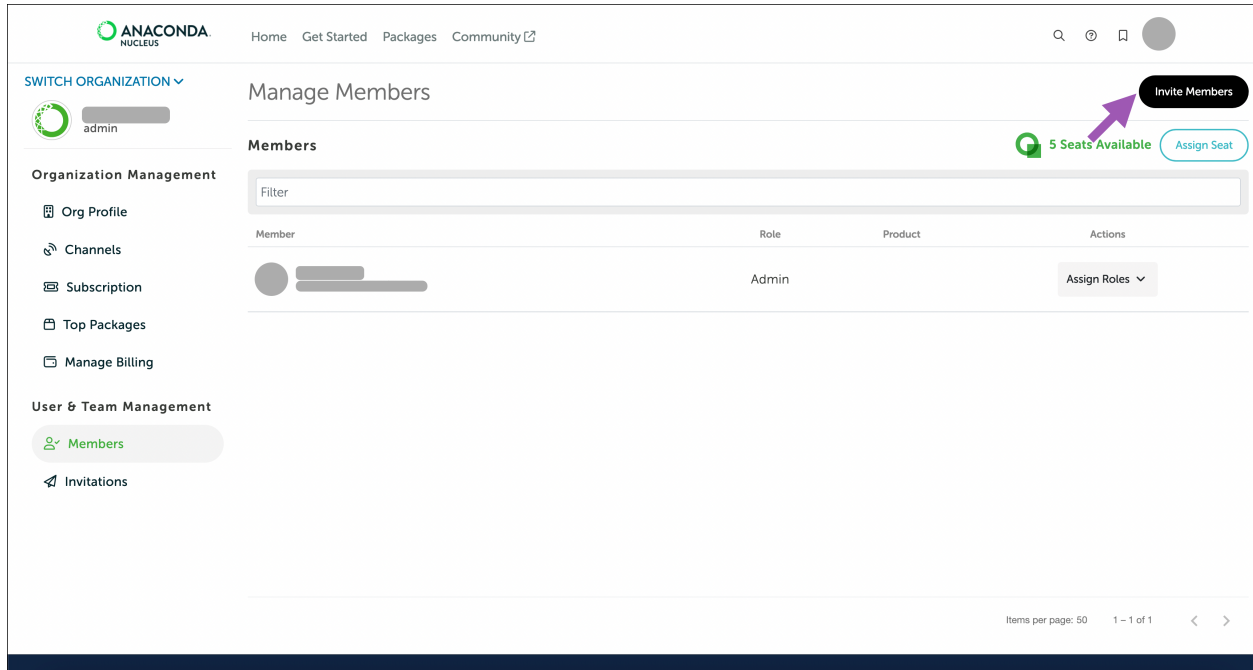
<b>Invoice ID:</b> IN_INDVULLPFRYMN9BC31HHQVHP	<b>Invoice Date:</b> May 31, 2023
<b>Payment Method(s):</b> Mr. E Mann	<b>Bill to:</b> _____

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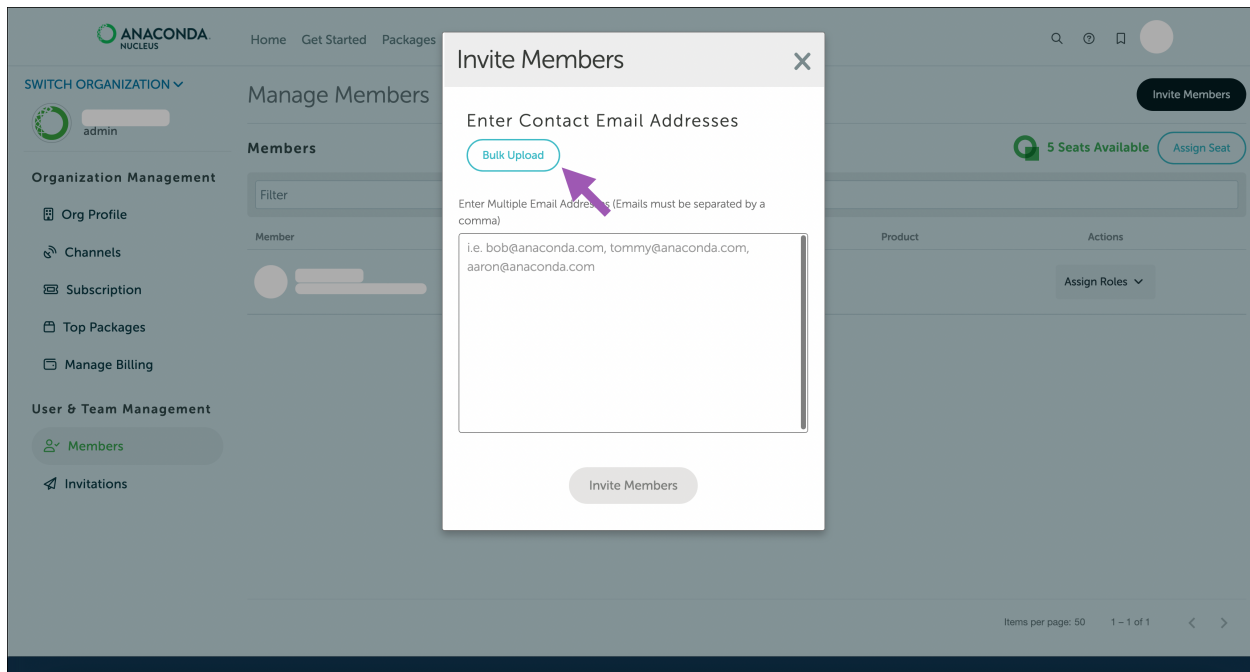
## Inviting members to your organization

With an organization created and multi-license subscription purchased, you are ready to invite users to your organization and assign them seats (licenses):

1. Go to your [Organizations](#) page.
2. Select your organization.
3. Go to **Users** in the left-hand navigation.
4. Select **Invite Members** and enter your team members email addresses, separated by a comma.



Alternatively, you can select **Bulk Upload** and upload a .csv file containing your team members' email addresses (for larger organizations).



Once you add your member(s), they will receive an email inviting them to join the organization. Accepting the invitation in the email redirects them to the Anaconda Cloud login page. Once logged in, they can accept the invitation and join the organization.

**Note:** If the invited team member does not have a Anaconda Cloud account, they can create one using the email that the invite was sent to, then join the organization.

## Reissuing an invitation

Invitations expire after seven days. You can reissue an invitation to a user to provide them with another seven days to accept the invitation:

1. Go to your [Organizations](#) page.
2. Select your organization.
3. Go to **Invitations** in the left-hand navigation.
4. Click the user's actions icon.
5. Click **Resend Email Invite**.

The screenshot shows the Anaconda Nucleus web interface. At the top, there's a navigation bar with links like Home, Get Started, Packages, Courses, Notebooks, and Community. Below this, the main header includes 'SWITCH ORGANIZATION' and 'Invitations'. On the left, a sidebar menu lists 'Org Management' (Org Profile, Channels, Token Access, Subscription, Billing & Invoices) and 'User Management' (Users, Groups, **Invitations**, Service Accounts). The main content area displays a table of invitations. The table has columns for EMAIL, STATUS, and ACTIONS. The ACTIONS column for the last row is expanded, showing 'Resend Email Invite' and 'Revoke Invite' buttons. At the bottom, there's a footer with copyright information and links to About, Service Status, Legal, Privacy Policy, and Help.

If you need to resend multiple invitations at once:

1. Go to your [Organizations](#) page.
2. Select your organization.
3. Go to **Invitations** in the left-hand navigation.
4. Click **Resend Email**.

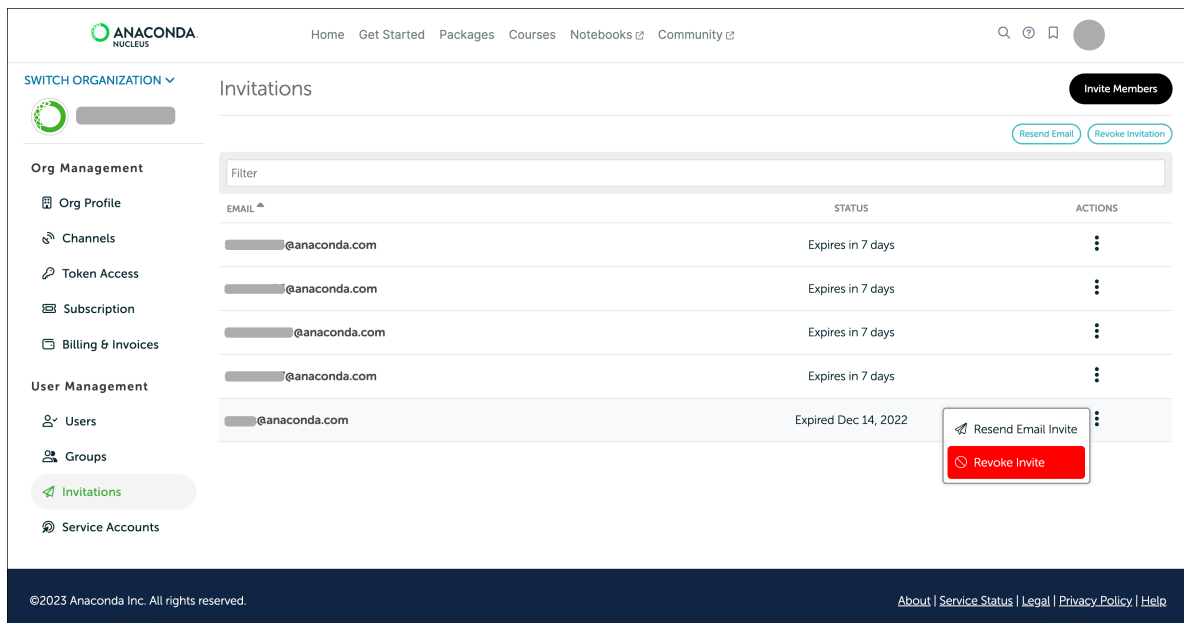
This screenshot is similar to the one above, showing the same Anaconda Nucleus interface. However, a purple arrow points to the 'Resend Email' button in the ACTIONS column of the invitation table, highlighting the action to be taken.

5. Select the invitations you want to reissue, then click **Resend Invitations**.
6. Click **Resend** to confirm you want to reissue the invitations.

## Revoking an invitation

If you have invited someone to your organization in error, you can revoke the invitation to remove it from the page. This also prevents the invitation recipient from being able to join your organization:

1. Go to your [Organizations](#) page.
2. Select your organization.
3. Go to **Invitations** in the left-hand navigation.
4. Click the user's actions icon.
5. Click **Revoke Invite**.



If you need to revoke multiple invitations at once:

1. Go to your [Organizations](#) page.
2. Select your organization.
3. Go to **Invitations** in the left-hand navigation.
4. Click **Revoke Invitation**.

The screenshot shows the Anaconda Nucleus 'Invitations' page. On the left is a sidebar with 'Org Management' and 'User Management' sections. The 'Invitations' section is highlighted. The main content area shows a table of invitations. A purple arrow points to the 'Revoke Invitation' button in the 'ACTIONS' column of the first row.

EMAIL	STATUS	ACTIONS
██████████@anaconda.com	Expires in 7 days	⋮
██████████@anaconda.com	Expires in 7 days	⋮
██████████@anaconda.com	Expires in 7 days	⋮
██████████@anaconda.com	Expires in 7 days	⋮
██████████@anaconda.com	Expires in 7 days	⋮
██████████@anaconda.com	Expired Dec 14, 2022	⋮

5. Select the invitations you want to revoke, then click **Revoke Invitations**.
6. Click **Revoke** to confirm you want to revoke the invitations.

## Assigning and managing seats

Once a member has accepted their invitation, you can assign them a seat (license) from the **Users** page of your organization.

Click on **Actions** and select **Assign Seat** to assign the associated license to a user.

**Note:** From this page, you can also:

- Make a member an account or billing administrator
- Revoke a member's seat
- Remove a member from the organization

You can also assign and revoke seats to multiple users simultaneously from your organization's **Users** page. If you have enough seats for every member of your organization, you can click **Assign All** to assign every org member a seat.

Otherwise, you can click **Assign Seats** or **Revoke Seats**, choose the organization members you need to assign/revoke a seat, then click **Assign Users** or **Revoke Users**. If necessary, you can also select **Add Seat** to purchase additional seats.

The screenshot shows the 'Users' management page in the Anaconda Nucleus interface. The left sidebar contains navigation links for 'Org Management' (Org Profile, Channels, Token Access, Subscription, Top Packages, Manage Billing) and 'User Management' (Users, Groups, Invitations). The main content area displays a table of users:

USER	ROLE	PRODUCT	GROUPS
@anaconda.com	Admin	Anaconda Business	0
@anaconda.com	Member	---	0
@anaconda.com	Member	---	0
@anaconda.com	Member	---	0
@anaconda.com	Member	---	0
@anaconda.com	Member	---	0

At the top right, there are buttons for 'Add Seats', 'Assign 4 Users' (highlighted with a purple arrow), and 'Cancel'. A status bar at the bottom indicates 'No Seats Available'.

Once you assign a member a seat in your organization, they will receive an email with a link to the organization in their Anaconda Cloud account. Instruct them to open the link and go to the **Token Access** page to activate their token.

The screenshot shows the 'Token Access' page in the Anaconda Nucleus interface. The left sidebar contains navigation links for 'Organization Management' (Org Profile, Channels, Token Access, Subscription, Top Packages, Manage Billing) and 'User & Team Management' (Members, Invitations). The main content area displays a section for 'Token Access' with a description: 'A token is required to gain access to repo.anaconda.cloud. Once activated, a private token will be sent to the email address associated with your account. The email will contain your private access token and personal .condarc configuration instructions.'

Below the description, there are three columns: 'ABOUT YOU', 'ACTIVITY', and 'ACTIONS'. The 'ACTIONS' column contains a button labeled 'ACTIVATE TOKEN' (highlighted with a purple arrow).

Once the member activates their token, they will receive an email containing their token and instructions on installing Anaconda and setting their token to get access to Anaconda's repositories.

If a member needs to reissue a token, they can go to the **Token Access** page and click **Reissue Token**, then check their email for the new token.



The screenshot shows the Anaconda Nucleus interface. At the top, there's a navigation bar with links to Home, Get Started, Packages, and Community. Below this, a sidebar on the left contains a 'SWITCH ORGANIZATION' dropdown and a list of navigation items: Org Profile, Channels, Token Access (highlighted), Subscription, Top Packages, Manage Billing, Members, and Invitations. The main content area is titled 'Token Access' and includes a brief explanation of tokens. Below this is a table with three columns: 'ABOUT YOU', 'ACTIVITY', and 'ACTIONS'. The 'ACTIONS' column contains a 'REISSUE TOKEN' button, which is pointed to by a purple arrow.

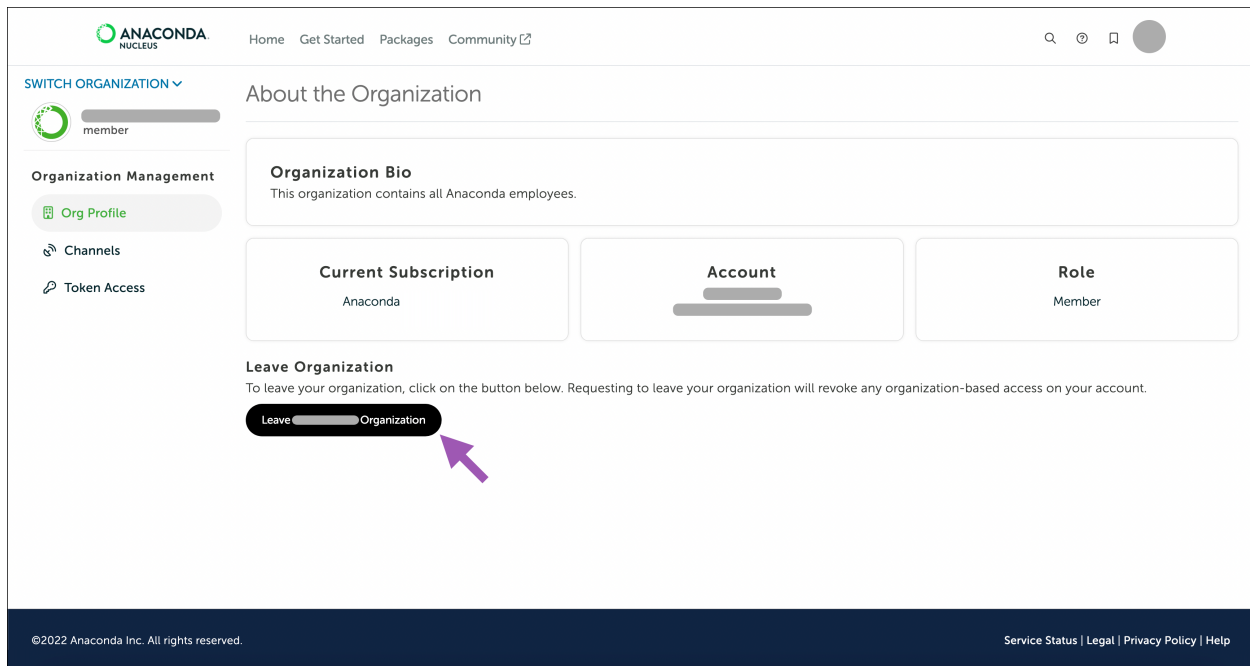
## Purchasing additional seats

You can purchase additional seats for your organization at any time.

1. Go to your [Organizations](#) page.
2. Select your organization.
3. Select **Subscriptions** from the left hand navigation.
4. Click **Manage Subscription** to purchase additional seats.

## Leaving an organization

To leave an organization you're a member of at any time, go to the [Organizations](#) page and select the organization you want to leave. Then, click **Leave <ORG\_NAME> Organization**.



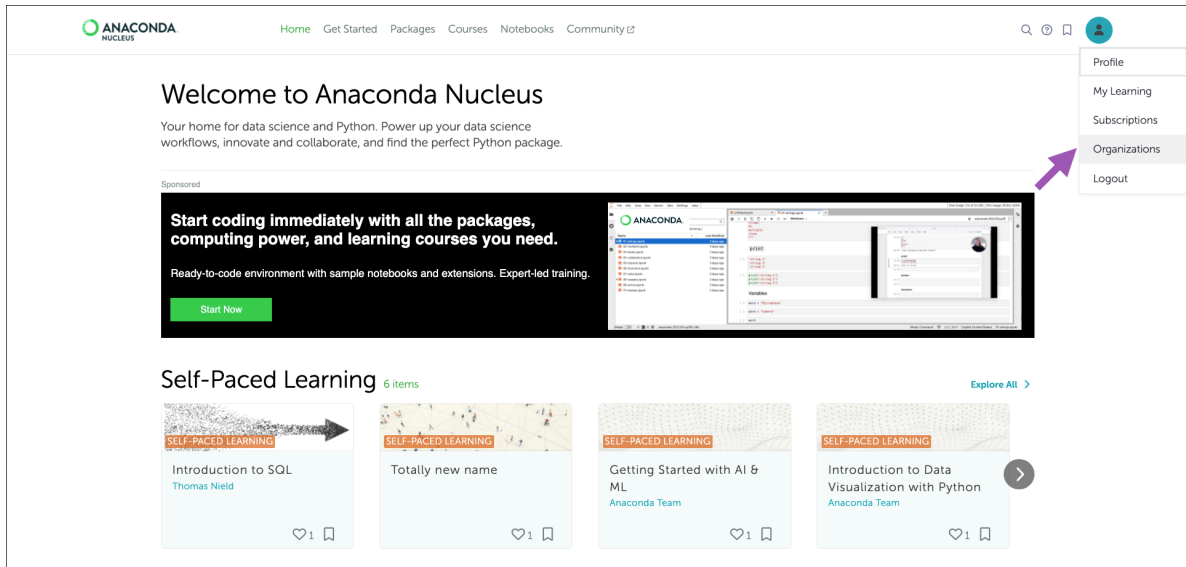
Please let us know if you have further questions or need additional assistance. More information can be found at our [support center](#).

## Groups

Creating groups allows you to assign members of your organization to a specific set of channels you've created within Anaconda. These channel sets are private and are only visible to organization members who are assigned to the group(s) that contains them.

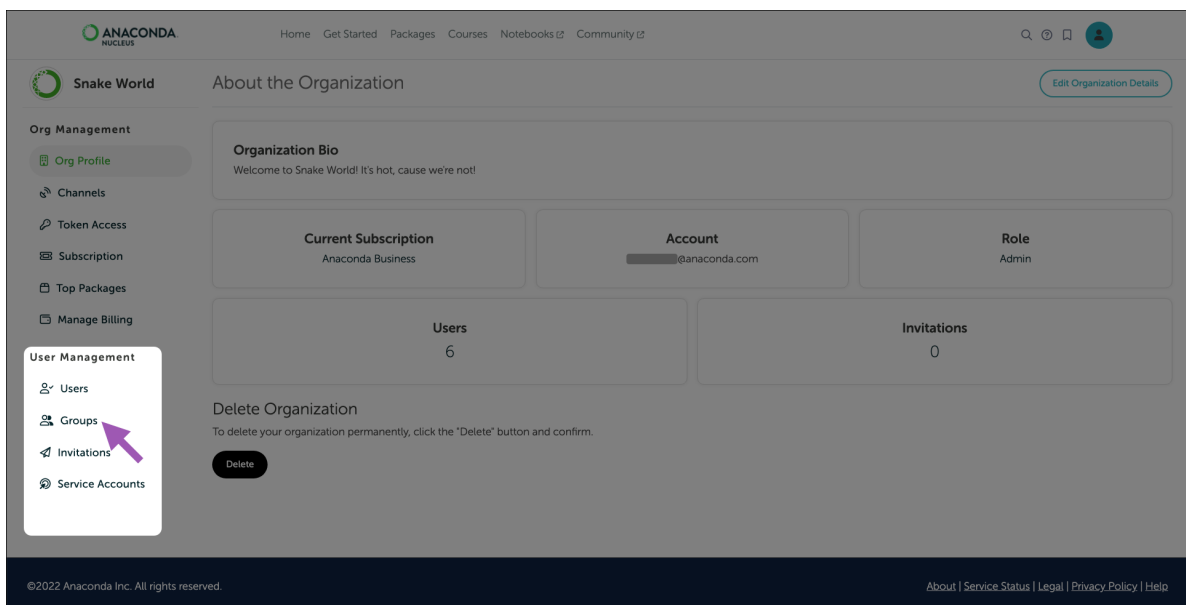
### Finding your groups

1. Log in to Anaconda Cloud.
2. From your profile in the top-right corner, select **Organizations**.



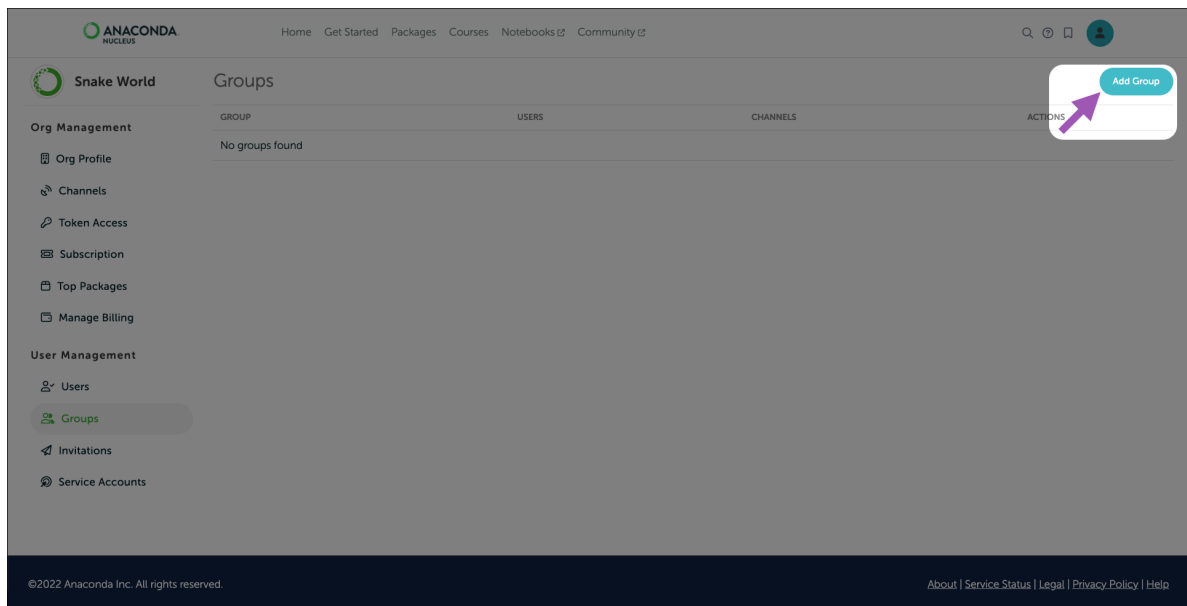
3. Select your Organization.

4. In the left-hand navigation, select **Groups** from the **User Management** options.



### Creating a group

1. From the **Groups** page, click **Add Group**.



2. Enter a unique name for your group and click **Save**. A notification will appear to inform you that your group was successfully created, and your new group will appear in the **Group** list.

---

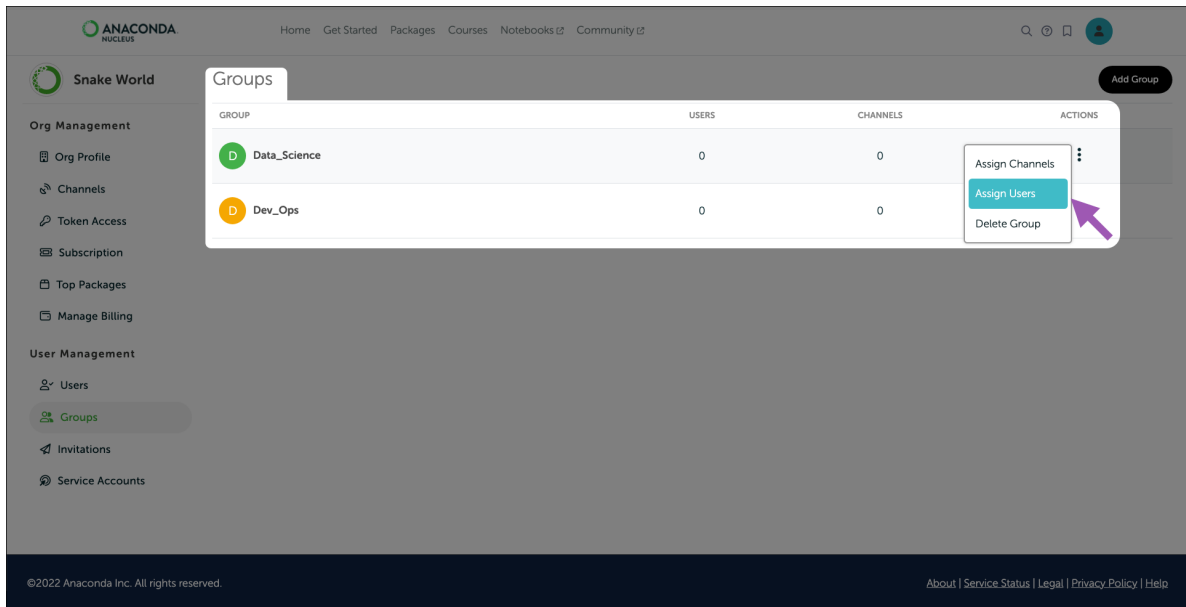
**Note:** You can create as many groups as you need for your organization.

---

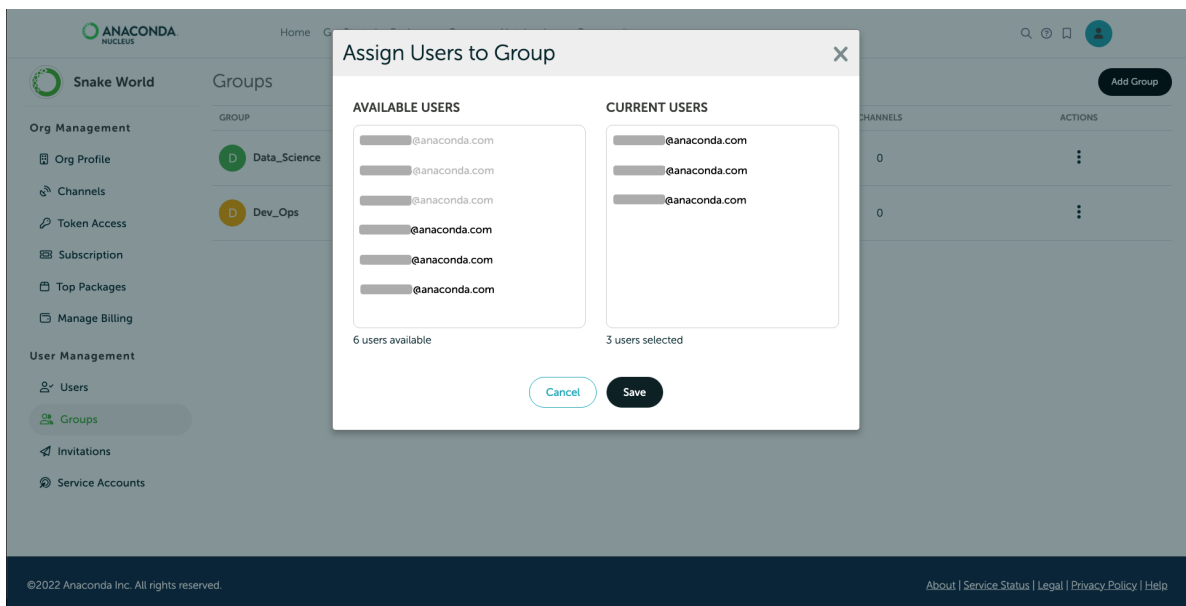
### Assigning users to a group

Assigning users to a group grants them access to view and use the channels it contains.

1. From the **Groups** page, open the **Actions** menu for your group and select **Assign Users**.



2. Select users from the **Available users** list to add them to the **Current users** list, then click **Save**.



## Removing users from a group

Removing a user from a group removes that user's access to the private channels it contains. The user will still have access to your organization's internal channels.

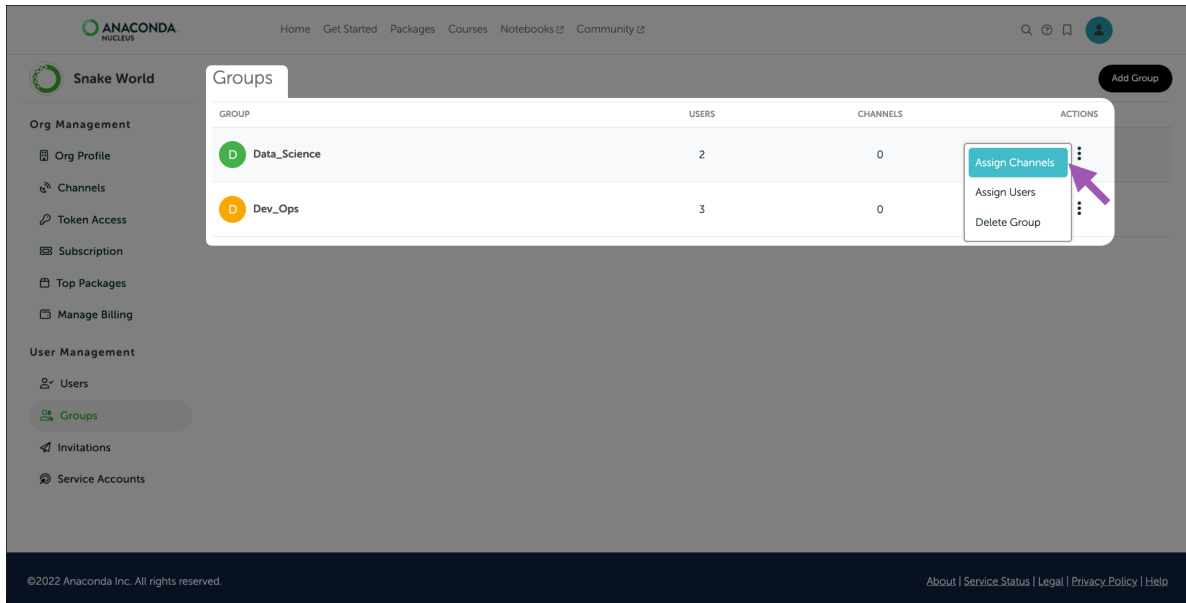
1. From the **Groups** page, open the **Actions** menu for your group and select **Assign Users**.
2. Select users from the **Current users** list to remove them from the group, then click **Save**.

**Note:** If you remove all users from a group, the channels it contains will only be visible to users with administrator access.

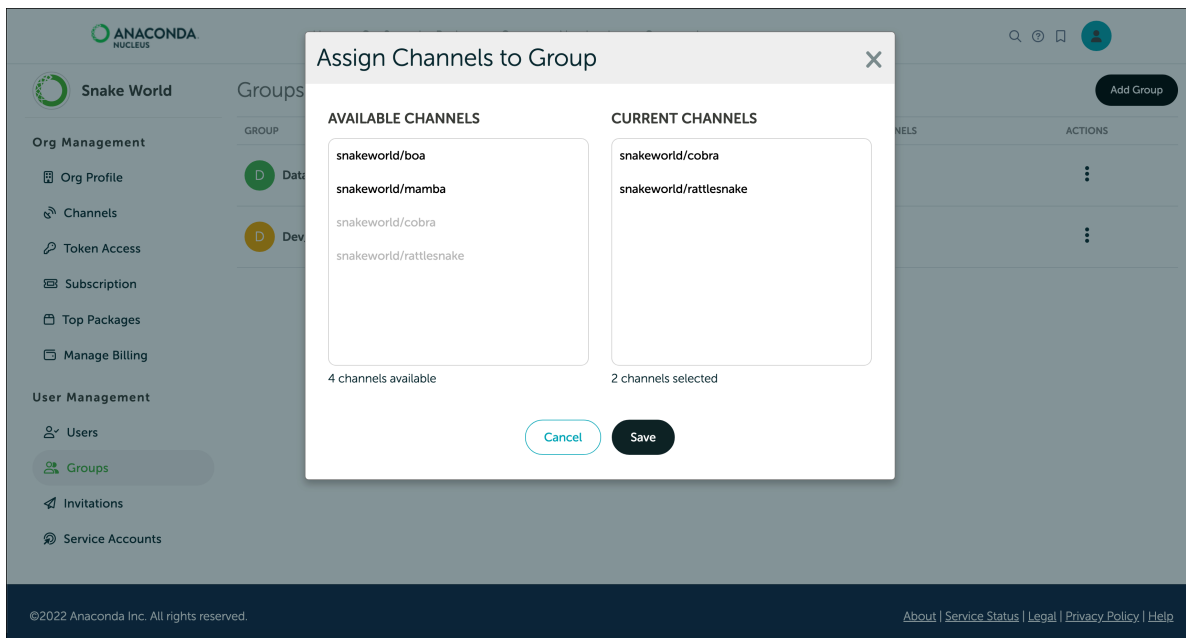
## Assigning channels to a group

Assigning a channel to a group changes the permissions of the channel from internal to private. For more information about channel permissions, see [Channels](#).

1. From the **Groups** page, open the **Actions** menu for your group and select **Assign Channels**.



2. Select channels from the **Available channels** list to add them to the **Current channels** list, then click **Save**.



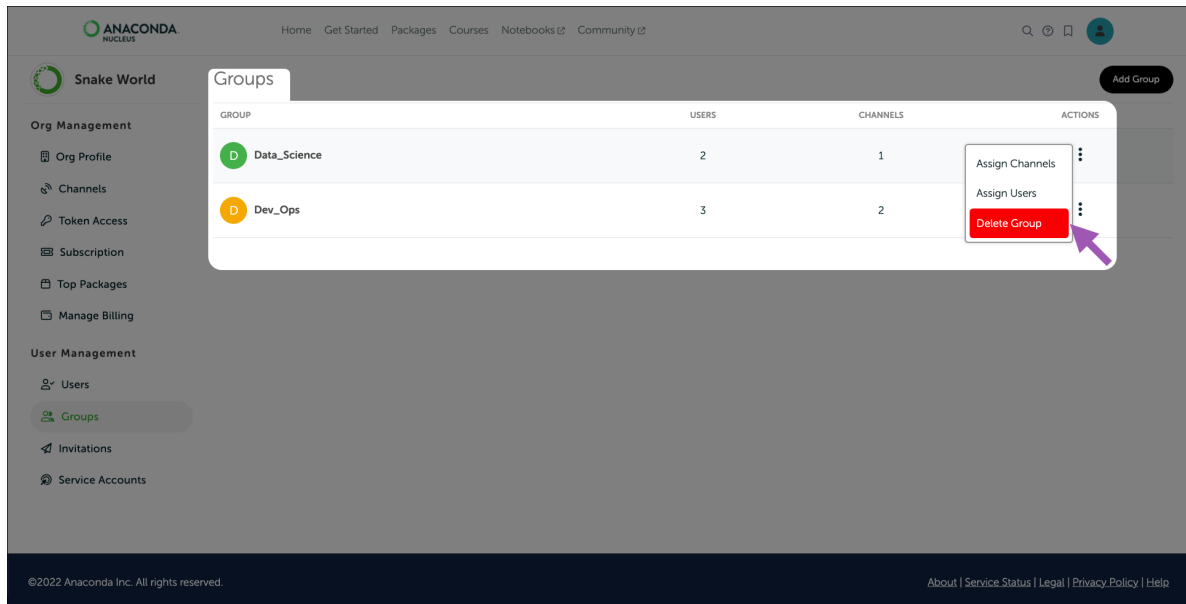
**Note:** Private channels will only appear on the **Channels** page for administrators and users who have access to the channel's group.

## Removing channels from a group

1. From the **Groups** page, open the **Actions** menu for your group and select **Assign Channels**.
2. Select channels from the **Current channels** list to remove them from the group, then click **Save**.

## Deleting a group

1. From the **Groups** page, open the **Actions** menu for your group and select **Delete Group**.



2. Click **Delete** to permanently delete your group.

## Tokens

A token is a string of randomized characters that is used to identify users within Anaconda. Your token provides you with access to your subscription tier's capabilities and features within Anaconda Cloud.

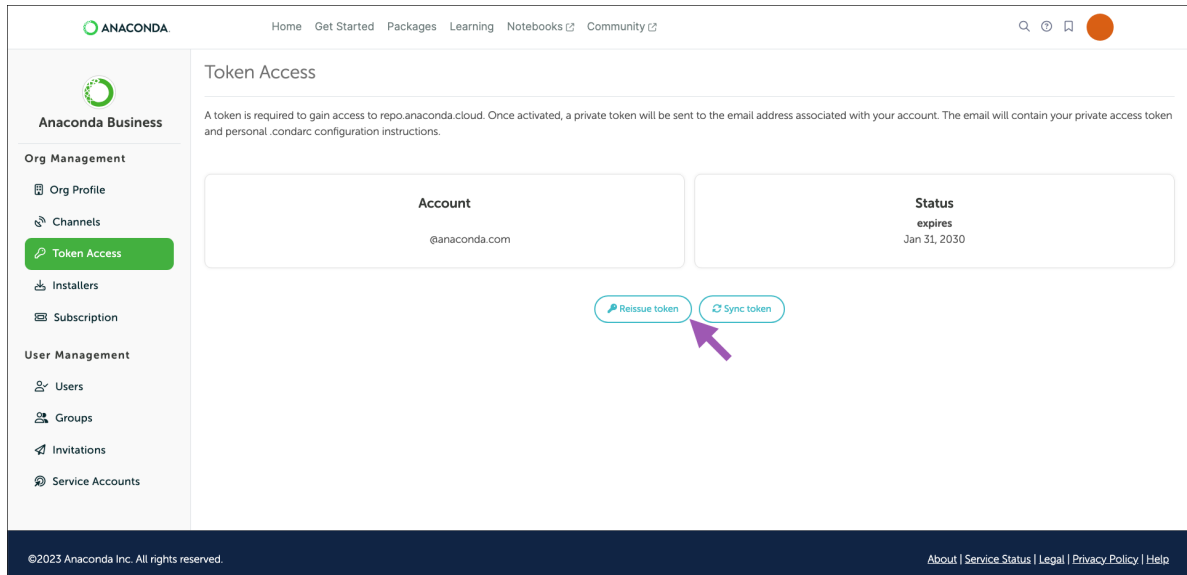
There are two types of tokens used by Anaconda:

- **Organization access token** - Your organization token provides you with the ability to connect to your organization's channels to download packages. Each user in an organization has a unique token. Your organization access token expires either 30 days after your organization's subscription has ended or immediately when your subscription is canceled. If you have no valid token, you will not be able to access the channels within your organization in order to download packages.
- **Client token** - Client tokens are temporary tokens that you can generate to interact with the Anaconda Cloud API. Client tokens can have a lifespan of as little as 15 minutes.

## Issuing/re-issuing a token

You must be assigned a seat within an organization to issue yourself a token. Once you're assigned a seat, you can generate a new organization token for yourself at any time.

1. Go to your organization's page.
2. Select **Token Access** from the left-hand navigation.
3. Click **Activate token** if it is the first time you are receiving a token, or **Reissue token** if you are obtaining a new token. An automated email containing a *private* organization token will be delivered to the address associated with your Anaconda account.



**Note:** Re-issuing your token will invalidate the previous token. All newly generated tokens are set to expire when your organization's subscription expires.

## Synchronizing your token

Renewing your subscription does not extend the lifespan of your token. If you have renewed your subscription and want to retain your current token, synchronize your token to extend its lifespan to your organization's new subscription expiration date.

To synchronize your token:

1. Go to your organization's page.
2. Select **Token Access** from the left-hand navigation.
3. Click **Sync token**.



## Setting your token

After issuing yourself a token, you must configure conda to use it to access your organization's channels. There are two main methods for setting your token for use. Choose the option that best suits how you work.

### Setting your token using the CLI

Setting your token using the CLI requires the `conda-token` package. If you do not have this package, you can use conda to install it.

1. Open a terminal (Anaconda Prompt for Windows users). You should see `(base)` preceding the command line. This means you are in your base conda environment.
2. Install `conda-token` by running the following command:

```
conda install conda-token -n base
```

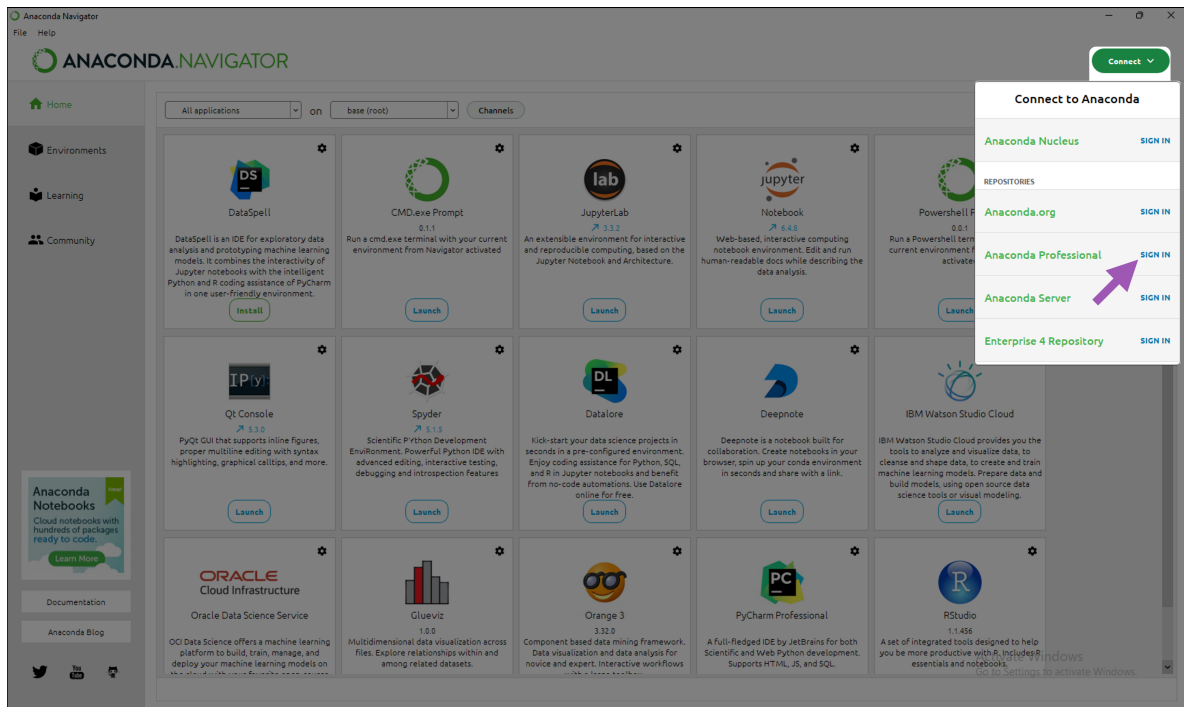
3. Enter "y" when prompted to proceed with the installation.
4. Once `conda-token` is installed, run the following command:

```
# Replace <TOKEN> with the organization token you received in your email
conda token set <TOKEN>
```

**Caution:** You must run this command every time you receive a new token.

### Setting your token using Navigator

1. Launch Anaconda Navigator.
2. Select **Connect**, then **Sign in** to *Anaconda Professional* using the organization token you received in your email.



**Note:** The Pro and Business tiers share a repository of curated packages. Therefore, signing into Anaconda Professional gives you access to the Business channels you need, as long as you have the correct access token.

## Channels

### What is a channel?

A channel is a location (a URL) where conda will look for packages.

The Anaconda-curated repository provides the following channels for use, categorized by package type:

- main
- msys2
- r

### Channel types

#### Anaconda channels

The Anaconda channels connect to the repository that is curated and maintained by Anaconda. These channels provide you with thousands of the most popular data science platform packages available today. It is possible to apply a policy filter to the Anaconda channels. That policy filter will not affect Organization channels that are created from the same source Anaconda channel.

#### Virtual channels

Your organization's channels are virtual copies of the Anaconda channels. You can apply a policy filter to a channel to restrict the packages that are available through that channel, which customizes its contents, making

it unique. For example, you can have two channels that both pull from the Anaconda main channel, but the available packages they provide can be different due to the policy filter that have been applied to the channels.

### External channels

External channels will point to a location (a URL) that is outside of Anaconda to look for packages.

**Note:** You cannot apply policy filters to external channels. Currently, Anaconda only supports connection to external channels located at <https://conda.anaconda.org/>, but we plan to support any URL soon.

## Channel access

There are two levels of permissions associated with channels in Anaconda: internal and private.

### Internal channels

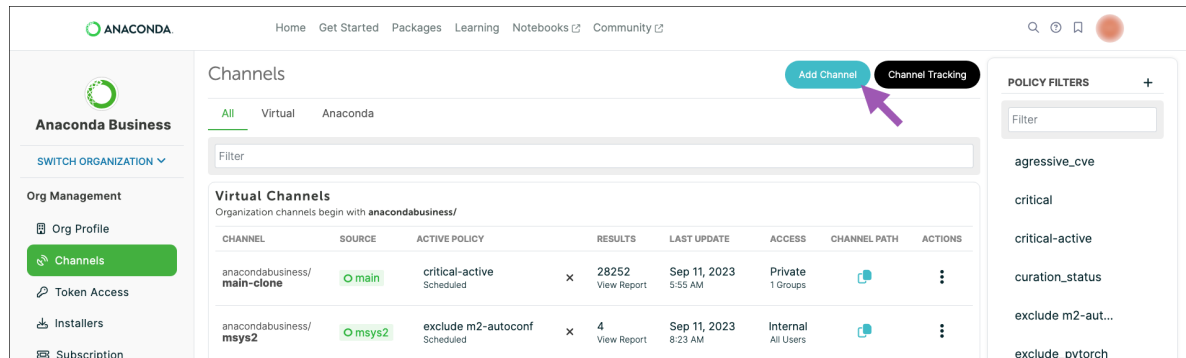
Internal channels are visible to all members of your organization who have been assigned a seat.

### Private channels

Private channels have their contents restricted to those members who are part of the group the channel is assigned to. For more information about assigning channels to a group, see [Groups](#).

## Creating an organization channel

1. From the **Channels** page, click **Add channel** to open the Create Channel dialog.



2. In the Create Channel dialog:
  1. Enter a unique channel name.
  2. Select a channel type.
  3. Select a source channel from the **Source** dropdown or enter the address for your external source channel.
  4. Set the access level for the channel.
  5. Click **Save**.

Your new channel will appear on the **Channels** page.

**Note:** If you set the channel access level as private, you will also be prompted to add the channel to a group. If you do not wish to add the newly-created private channel to a group, click **Cancel** in the Assign Groups to Channel dialog.

## Assigning channel access

You can change the access level of a channel at any time from the **Channels** page.

1. From the **Channels** page, click the actions icon for your channel.

CHANNEL	SOURCE	ACTIVE POLICY	RESULTS	LAST UPDATE	ACCESS	CHANNEL PATH	ACTIONS
anacondabusiness/main-clone	main	critical-active Scheduled	x 28252 View Report	Sep 11, 2023 5:55 AM	Private 1 Groups		⋮
anacondabusiness/msys2	msys2	exclude m2-autoconf Scheduled	x 4 View Report	Sep 11, 2023 8:23 AM	Internal All Users		⋮
anacondabusiness/quarantine	main	apply policy	---		Internal All Users		⋮

2. Select either **Make Channel Internal** or **Make Channel Private**. Your available option depends on the current access level of the channel.

**Note:** Private channels that are not assigned to a group are only visible to organization administrators.

## Viewing channel details

From the **Channels** page, select any channel to view its details.

The channel details page provides the following information about the channel:

- The channel's address (a URL you can copy and add to your `.condarc` file to access the channel's packages)
- General information about the channel
- Information about the policy that is applied to the channel

**Tip:** You can also *track your channel* from the channel details page.

The screenshot shows the Anaconda Business interface. On the left is a sidebar with navigation links. The main area displays the 'Channels' page for a 'sandbox' channel, showing a list of packages. The right-hand panel contains the 'INSTALL CHANNEL' and 'CHANNEL INFO' sections, including 'ACTIVE POLICY' and 'TRACK CHANNEL' options.

PACKAGE NAME	FAMILY	FILES	CVE
7za	conda	2	0
7zip	conda	2	2
abseil-cpp	conda	42	0
absl-py	conda	724	0
access	conda	6	6
acl-amzn2-aarch64	conda	1	0

## Channel policy deltas

*Policy filters*, once applied to a channel, run every four hours. Sometimes, due to newly reported CVEs or an updated CVE score or status, the contents of your channel will change when the filter performs its scheduled run. A package may become available that was not available previously, or you could find that a package you've been using is removed from your channel!

From the channel details page, click **View Policy Deltas** to view a list of deltas. Deltas are the recorded changes to your channel's contents. Policy delta history begins from when you first applied the policy to the channel. Once the policy is removed from the channel (if you need to edit it, for example) the policy delta history is lost. A new policy delta history is established once the policy is reapplied to the channel.

The screenshot shows the Anaconda Business interface. On the left is a sidebar with navigation links. The main area displays the 'Channels' page for a 'sandbox' channel, showing a list of packages. The right-hand panel contains the 'INSTALL CHANNEL' and 'CHANNEL INFO' sections, including 'ACTIVE POLICY' and 'TRACK CHANNEL' options. A purple arrow points to the 'View Policy Deltas' button in the 'ACTIVE POLICY' section.

PACKAGE NAME	FAMILY	FILES	CVE
7za	conda	2	0
7zip	conda	2	2
abseil-cpp	conda	42	0
absl-py	conda	724	0
access	conda	6	6
acl-amzn2-aarch64	conda	1	0

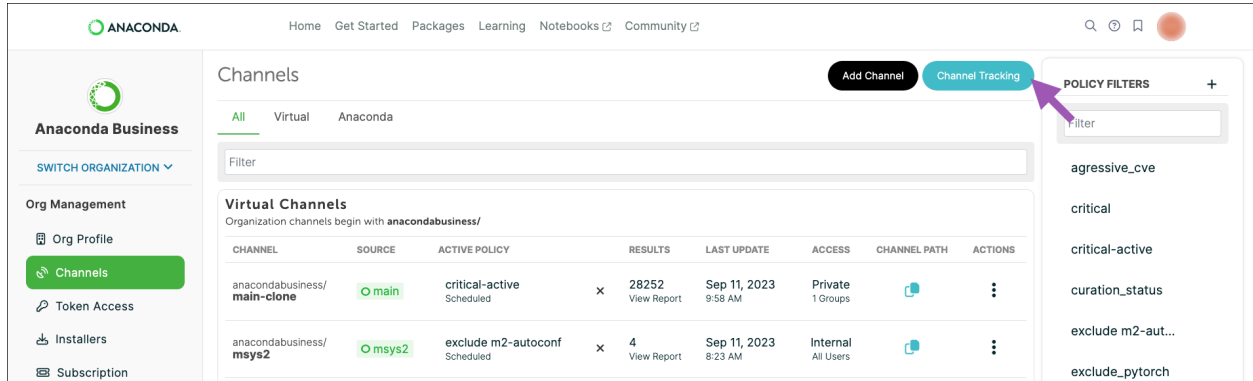
Use the **Start** and **End** date filters to narrow your timeline to locate a specific delta if necessary. Select either the packages added or packages removed to see a list of packages from a specific run.

**Tip:** Click the arrow to return to your channel policy deltas.

## Channel tracking

Track your channels to receive emails at configurable intervals to keep up-to-date with the latest changes to your channels' contents.

From the **Channels** page, click **Channel Tracking** to view the **Track Channels** page.

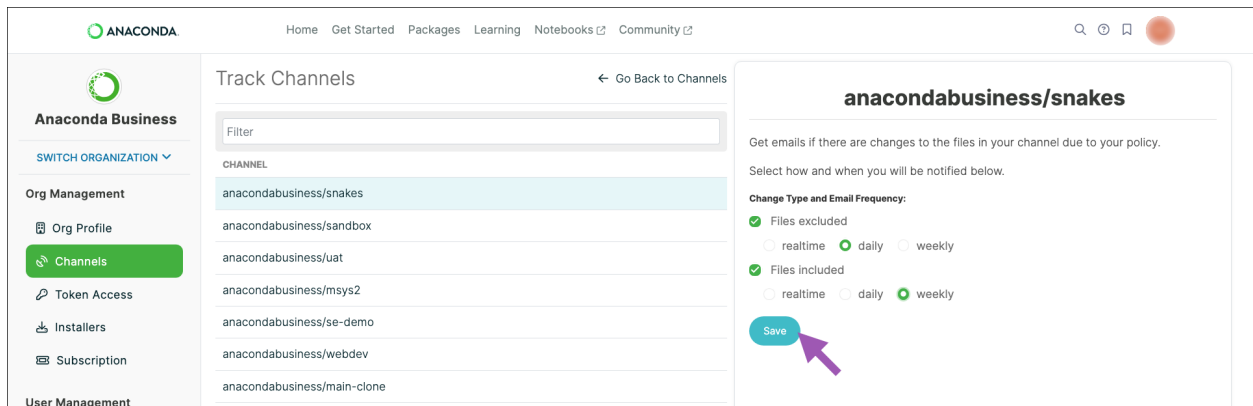


The screenshot shows the Anaconda Channels page. On the left is the 'Anaconda Business' sidebar with navigation links like 'Org Management', 'Channels', 'Token Access', 'Installers', and 'Subscription'. The main content area is titled 'Channels' and has tabs for 'All', 'Virtual', and 'Anaconda'. Below these is a 'Filter' input field. A table titled 'Virtual Channels' lists organization channels. The table has columns: CHANNEL, SOURCE, ACTIVE POLICY, RESULTS, LAST UPDATE, ACCESS, CHANNEL PATH, and ACTIONS. Two channels are listed: 'anacondabusiness/main-clone' and 'anacondabusiness/msys2'. To the right of the table is a 'POLICY FILTERS' dropdown menu with a search filter and a list of filters including 'agressive\_cve', 'critical', 'critical-active', 'curation\_status', 'exclude m2-aut...', and 'exclude\_pytorch'. A purple arrow points to the 'Channel Tracking' button in the top right of the main content area.

CHANNEL	SOURCE	ACTIVE POLICY	RESULTS	LAST UPDATE	ACCESS	CHANNEL PATH	ACTIONS
anacondabusiness/main-clone	main	critical-active Scheduled	28252 View Report	Sep 11, 2023 9:58 AM	Private 1 Groups		
anacondabusiness/msys2	msys2	exclude m2-autoconf Scheduled	4 View Report	Sep 11, 2023 8:23 AM	Internal All Users		

**Note:** You can also track a channel from the channel details page.

Select your channel from the list, choose which types of emails you would like to receive, and then set the frequency at which you would like to receive them. You can receive emails in realtime, daily, or weekly. Click **Save** to retain your changes.



The screenshot shows the Anaconda Track Channels page. On the left is the 'Anaconda Business' sidebar. The main content area is titled 'Track Channels' and has a 'Go Back to Channels' link. Below this is a 'Filter' input field and a list of channels. The channel 'anacondabusiness/snakes' is selected. To the right of the list is a panel for 'anacondabusiness/snakes' with the text 'Get emails if there are changes to the files in your channel due to your policy. Select how and when you will be notified below.' Below this is a section titled 'Change Type and Email Frequency:' with two sections: 'Files excluded' and 'Files included'. Each section has radio buttons for 'realtime', 'daily', and 'weekly'. The 'daily' option is selected for both. A purple arrow points to the 'Save' button at the bottom of the panel.

**Tip:** Because deltas are generated when the policy filter runs, the realtime option can generate a maximum of one email every four hours.

## Adding an organization channel to your .condarc file

In order to pull packages from any of your organizations' virtual channels, you must first configure your .condarc file to tell conda where the channel is located. Complete the following steps to add one of your organizations' channels to your .condarc file.

1. Navigate to your **Organizations** page.
2. Select your organization.
3. From the left-hand navigation, select **Channels**.
4. Select the copy channel path icon.

CHANNEL	SOURCE	ACTIVE POLICY	RESULTS	LAST UPDATE	ACCESS	CHANNEL PATH	ACTIONS
anacondabusiness/main-clone	main	critical-active Scheduled	x 28252 View Report	Sep 11, 2023 9:58 AM	Private 1 Groups		Copy channel path
anacondabusiness/msys2	msys2	exclude m2-autoconf Scheduled	x 4 View Report	Sep 11, 2023 8:23 AM	Internal All Users		
anacondabusiness/quarantine	main	apply policy	---		Internal All Users		
anacondabusiness/sandbox	main	exclude_pytorch Scheduled	x 588 View Report	Aug 24, 2023 3:40 PM	Internal All Users		
anacondabusiness/se-demo	main	curation_status Scheduled	x 83594 View Report	Sep 11, 2023 9:56 AM	Internal All Users		
anacondabusiness/snakes	main	agressive_cve Scheduled	x 54245 View Report	May 16, 2023 5:16 AM	Internal All Users		

5. Open your terminal and run the following conda config command:

```
# Replace <CHANNEL_PATH> with the copied channel path
conda config --prepend channels <CHANNEL_PATH>
```

This will configure conda to check the specified channel for packages first, but will still look in the default\_channels if defaults is present in the channel list. If you want to restrict where you pull packages from to one specific channel in your organization—for example, one with a policy filter applied to it—update your .condarc file to only include that channel in the channels list.

Your .condarc file might look something like this:

```
channels:
- https://repo.anaconda.cloud/repo/<ORG_ID>/<CHANNEL_NAME>
- defaults
add_anaconda_token: true
restore_free_channel: false
default_channels:
- https://repo.anaconda.cloud/repo/main
- https://repo.anaconda.cloud/repo/r
- https://repo.anaconda.cloud/repo/msys2
```

**Note:** You can add the default channels to your .condarc file's channels: list at any time by running the command:

```
conda config --append channels defaults
```

### Removing a channel from your .condarc file

To remove a channel from your `channels:` list, open a terminal and run the following command:

```
# Replace <CHANNEL> with the URL listed in the
# channels: section of the .condarc file
conda config --remove channels <CHANNEL>
```

For example, if you don't want to pull packages from the default channels, you can run the following command:

```
conda config --remove channels defaults
```

**Note:** This will leave the channels listed under `default_channels:` in the `.condarc` file for later use if needed, but won't look for packages in those locations.

## Packages

### Searching for packages

If you want to know if a package is available on one of your organization's channels, you can search for it by entering the package name into the **Filter** field of the channel details page.

The screenshot displays the Anaconda Business web interface. On the left, a sidebar contains navigation links for 'Org Management' (Org Profile, Channels, Token Access, Installers, Subscription) and 'User Management' (Users, Groups, Invitations, Service Accounts). The main content area is titled 'anacondabusiness / snakes' and shows a list of 84 packages. A search filter 'python' is applied, and a purple arrow points to the filter input. The package list includes 'antlr4-python3-runtime', 'biopython', 'bpython', 'brotli-python', 'dawg-python', 'dbus-python', and 'dnspython'. On the right, the 'INSTALL CHANNEL' section shows the channel URL 'https://repo.anaconda.cloud/repo/anacondabusiness/snakes'. Below this, the 'CHANNEL INFO' section displays details like 'Created Feb 8, 2023', 'Type Virtual', and 'Privacy Internal'. The 'ACTIVE POLICY' section shows 'Name aggressive\_cve', 'Last ran 5/16/23, 5:16 AM', and 'Next run 5/16/23, 9:16 AM'. A 'View Policy' button is visible at the bottom of the policy section.



## Viewing package details

Clicking on any package in a channel will display the package details.

From here, you can view the following information:

- All the files contained within the package
- The package's dependents (other packages that require this package to operate properly)
- The package's dependencies (other packages that this package needs to operate properly)
- CVEs that are associated with files in the package (**for business tier organizations**)

**Caution:** Conda automatically installs a package's dependencies along with the package itself when that package is requested from the channel. If a dependency is not available due to an applied policy filter, you will not be able to build a working environment with the packages from the current channel.

General information about the package, such as its license type, version number, web homepage, and documentation (if available) is also available from this page.

The screenshot shows the Anaconda Business web interface. The top navigation bar includes links for Home, Get Started, Packages, Learning, Notebooks, and Community. The left sidebar contains the 'Anaconda Business' logo and a 'SWITCH ORGANIZATION' dropdown. Under 'Org Management', there are links for Org Profile, Channels (highlighted), Token Access, Installers, and Subscription. Under 'User Management', there is a link for Users. The main content area displays the details for the 'python' package in the 'anacondabusiness / snakes' channel. It shows 1909 Files, 1778 Dependents, 13 Dependencies, and 60 CVEs. A table lists the available versions:

FILE NAME	VERSION	CVE	UPLOADED
python-3.9.17-h6244533_0.conda win-64 19.39 MB	3.9.17	75 reported	Jul 5, 2023
python-3.9.17-h1aa4202_0.conda win-64 19.39 MB	3.9.17	75 reported	Jul 5, 2023
python-3.8.17-h6244533_0.conda win-64 20.45 MB	3.8.17	75 active	Jul 5, 2023
python-3.8.17-h1aa4202_0.conda win-64 20.46 MB	3.8.17	75 active	Jul 5, 2023

On the right, the 'INSTALL PACKAGE' section shows the command: `conda install -c https://repo.anaconda.cloud/repo/anacondabusiness/snakes python`. The 'PACKAGE INFO' panel provides the following details:

- License: PSF-2.0
- Version: 3.11.4
- Homepage: <https://www.python.org/>
- Docs: <https://www.python.org/doc/versions/>
- Last Published: Jul 5, 2023
- Downloads: 29615

## Package signatures

Packages in Anaconda’s repository come with a security signature: a special key value that proves that the package hasn’t been tampered with since going through Anaconda’s curation process. Files within a package that have a signature display a green check icon next to their names. The actual signature value can be viewed at the bottom of the metadata file.

## Viewing package metadata

From the package details view, click on a file’s name to display its metadata. The metadata is a .json formatted file that contains all of the information about the package file.

The screenshot shows the Anaconda Business interface. On the left is a sidebar with navigation links. The main area displays the details for the '7za' package. A table lists the files in the package. A purple arrow points to the first file, '7za-920-haa95532\_0.tar.bz2'. On the right, the metadata for this file is shown in a full-screen view, displaying a JSON object with the following structure:

```

{
  "repodata_record.json": {
    "md5": "3d441270b7caa42844765fbfff633cd3",
    "name": "7za",
    "size": 308086,
    "build": "haa95532_0",
    "sha256": "6e83bc2040046f343a6a1de3c607a44271b2da1327033c50af15f94e56c6a86a",
    "subdir": "win-64",
    "depends": [],
    "license": "LGPL",
    "version": "920",
    "timestamp": 1624857769335,
    "build_number": 0
  },
  "cves": null,
  "signatures": {
    "f308f8ba3f3c5d29c7813be68c5942622534f57e7aa7449a6f935b5a31561cb8": {
      "signature": "8510bb1f5d956854b9faab512fa0809cc046d1985367775dcd061865ae0dc061bcb28778fd124"
    }
  }
}

```

**Tip:** Click the expand icon to view the metadata in full screen.

## Viewing package SBOMs

Anaconda’s **Software Bill Of Materials (SBOMs)** are built in accordance with **Software Package Data Exchange (SPDX)** specifications, version 2.2.1, which specifies the checksum hash values of software down to the individual file level.

From the package details view, click on a file’s name, then click the **View SBOM** link. The SBOM opens in a new tab.

The screenshot shows the Anaconda Business interface. On the left is a sidebar with navigation options: Org Management (Org Profile, Channels, Token Access, Installers, Subscription) and User Management (Users, Groups, Invitations, Service Accounts). The main content area displays the '7za' package details for the 'anacondabusiness / quarantine / 7za' channel. It shows 2 files, 0 dependents, 0 dependencies, and 0 CVEs. A table lists the files:

FILE NAME	VERSION	CVE	UPLOADED
7za-920-haa95532_0.tar.bz2	920	N/A	Jul 2, 2021
7za-920-haa95532_0.conda	920	N/A	Jul 2, 2021

On the right, a modal window shows the SBOM (Software Bill of Materials) for the selected package. It includes a 'View SBOM' link and a JSON representation of the package metadata.

## Installing a package in your environment

The package details page also provides you with a command to run if you want to install the package from this channel. Keep in mind that all the package's dependencies will also be installed.

The screenshot shows the Anaconda Business interface for the 'python' package. The main content area displays the 'python' package details for the 'anacondabusiness / snakes / python' channel. It shows 1909 files, 1778 dependents, 13 dependencies, and 60 CVEs. A table lists the files:

FILE NAME	VERSION	CVE	UPLOADED
python-3.9.17-h6244533_0.conda	3.9.17	47 reported	Jul 5, 2023
python-3.9.17-h1aa4202_0.conda	3.9.17	47 reported	Jul 5, 2023

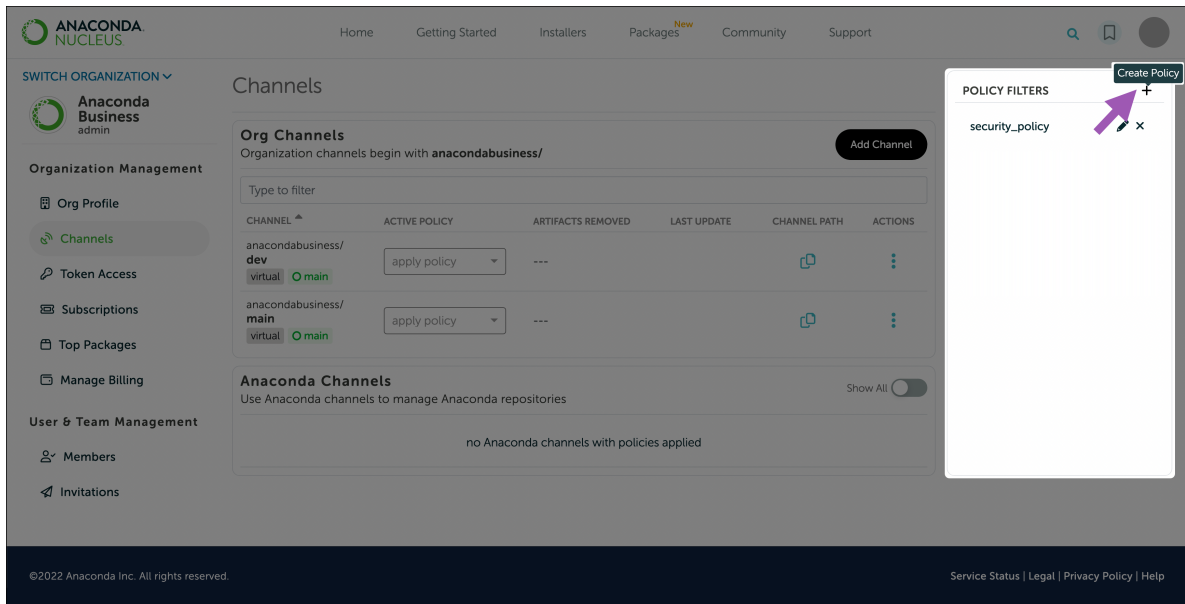
On the right, a modal window shows the 'INSTALL PACKAGE' command: `conda install -c https://repo.anaconda.cloud/repo/anacondabusiness/snakes python`. Below this, the 'PACKAGE INFO' section provides details about the package, including the license (PSF-2.0), version (3.11.4), last published date (Jul 5, 2023), and homepage (https://www.python.org/).

## Policy filters

A policy filter is an additional security measure you can apply to a channel to restrict the available packages that can be sourced from it. You can filter packages by license, common vulnerability and exposure (CVE) score, CVE status, package age, and by using `conda spec`. For more information about CVE scores and status', see [Common Vulnerabilities and Exposures \(CVEs\)](#).

## Creating a policy filter

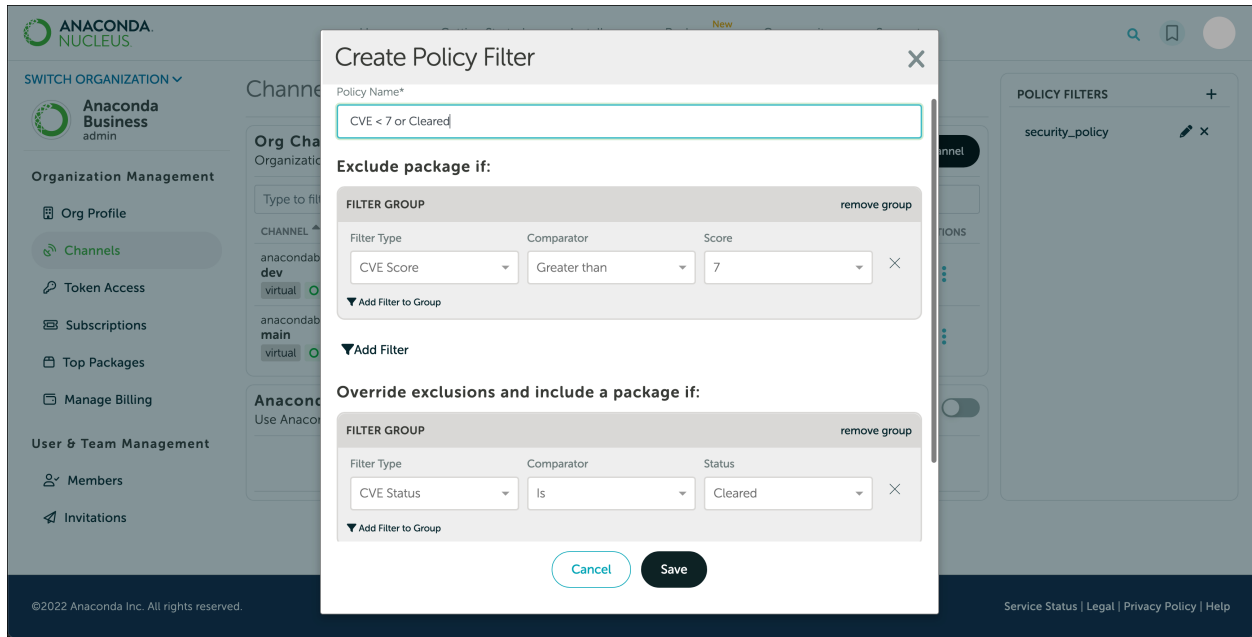
1. From the **Channels** page, click the plus icon next to **Policy filters**.



2. Provide a unique name for your policy.
3. In the **Exclude package if** section, click **Add filter**.
4. In the **Filter group** section that appears, set filter details for packages you wish to *exclude* from channels with this policy.
5. Repeat the two previous steps to apply further package filtering preferences.
6. In the **Override exclusions and include a package if** section, click **Add filter**. Here, you can apply filters to *include* specific packages that would otherwise be excluded by your filters in the previous section.

## Example policy filter

Let's say you want to filter out packages with a CVE score greater than 7 but include those packages with a score greater than 7 *if and only if their CVE status is cleared by NIST*. Your policy filter would look like the following:



## Applying a policy filter

In the **Active policy** column, click the **Apply policy** dropdown, then select a policy to apply to the channel.

Once the policy is applied, the status beneath the policy will transition through the following phases:

- In Queue
- In Progress
- Completed
- Scheduled

The **Scheduled** status indicates the channel is set to auto-update. This means the filter will be reapplied to the channel every four hours and will update the channel's contents accordingly.

## Editing a policy filter

Policies that are in use cannot be edited. If you wish to edit an existing policy, you must temporarily remove it from the channel it is applied to. You can change the parameters of the filter as if you were creating a new policy.

**Note:** A warning icon displayed next to your filter indicates that it has become deprecated. Deprecated filters still work, but Anaconda recommends you update your policies to no longer use these filters.

## Viewing removed artifacts

In the **Artifacts removed** column, click **View report** beneath the artifact count to open the Policy report dialog. You can then view the total number of artifacts, those that have been removed, and those remaining, by platform. This report can be downloaded in .csv format.

**Policy Report**

Number of artifacts remaining in the selected channel with the applied policy

[Download policy report](#)

Platform	Artifacts	Removed	Remaining
All Platforms	340766	54220	286546
linux-64	63076	11974	51102
linux-32	21787	0	21787
linux-ppc64le	38989	6020	32969
linux-s390x	13272	1639	11633
linux-armv6l	8	0	8
linux-armv7l	8	0	8
linux-aarch64	19485	2474	17011
win-64	56310	10199	46111
win-32	42686	8254	34432

[Close](#)

You can also view which artifacts have been removed from a channel that has a policy applied to it.

From your organization's **Channels** page, select a channel with a policy filter applied, then select a package to view the affects of your security policy. Scroll through the list to view files that have been removed from the package by a security policy.

**airflow**

166 Files | 51 Dependents | 62 Dependencies | 32 CVEs

Filter

FILE NAME	VERSION	CVE	UPLOADED
airflow-2.4.3-py39hb36206a_0.conda	2.4.3	removed by policy CVE score of 9.8 >= 6	
osx-arm64 518 MB			
airflow-2.4.3-py38hb36206a_0.conda	2.4.3	removed by policy CVE score of 9.8 >= 6	
osx-arm64 518 MB			
airflow-2.4.3-py310hb36206a_0.conda	2.4.3	removed by policy CVE score of 9.8 >= 6	
osx-arm64 52 MB			
airflow-2.4.3-py39hb36206a_0.tar.bz2	2.4.3	removed by policy CVE score of 9.8 >= 6	
osx-arm64 565 MB			
airflow-2.4.3-py38hb36206a_0.tar.bz2	2.4.3	removed by policy	

Items per page: 50 | 1 - 50 of 166

**INSTALL PACKAGE**

```
conda install -c https://repo.anaconda.cloud/repo/anacondabusiness/snakes airflow
```

**PACKAGE INFO**

License: Apache-2.0 | Last Published: Jan 25, 2023

Version: 2.4.3 | Downloads: 281

Homepage: <https://airflow.apache.org>

Docs: <https://airflow.apache.org/docs/>

**Note:** Removed files are not grouped, and some packages have multiple pages of files. For packages with many files,

it is best to use the filter bar to narrow results.

---

## Common Vulnerabilities and Exposures (CVEs)

### What are CVEs?

CVEs are weaknesses in software that can be exploited to access sensitive information, such as credit card numbers or social security numbers. Because modern software is complex with its many layers, interdependencies, data inputs, and libraries, vulnerabilities tend to emerge over time. Knowing when and how the code you use is vulnerable to attacks is a powerful tool in allowing you to mitigate the potential for harm, and Anaconda provides you with everything you need to keep your pipeline secure.

To learn more about CVEs and how Anaconda mitigates and manages them, watch the [State of Data Science webinar](#).

### Why trust Anaconda?

Anaconda regularly pulls its CVE databases from the National Vulnerability Database (NVD) and the US National Institute of Standards and Technology (NIST) to minimize the risk of vulnerable software in our applications and web pages. Anaconda has an extensive and well-established process for curating CVEs, assessing whether or not packages Anaconda built are affected by any CVEs, determining which versions in our repository are affected, and mitigating the vulnerability.

### Understanding CVEs

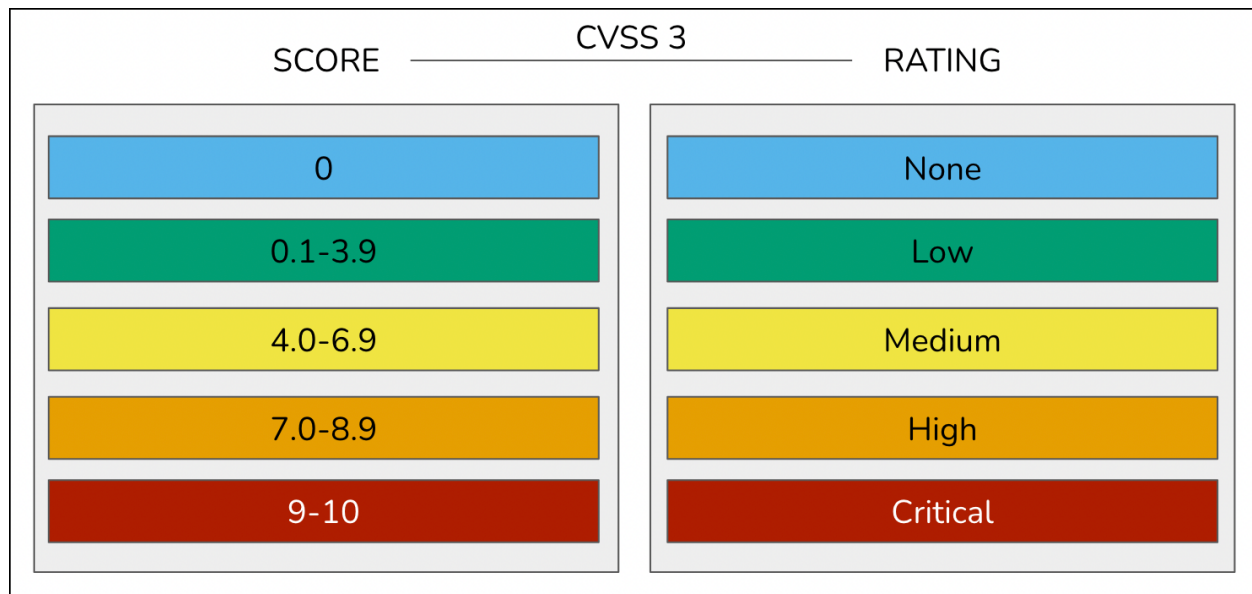
Here's what you need to know to make the right decisions regarding CVEs for your organization:

### Common Vulnerability Scoring System (CVSS)

Standards for determining the severity of a CVE have evolved over time. The [Common Vulnerability Scoring System \(CVSS\)](#) is a mathematical method dating back to 1999 that grades the characteristics of a vulnerability. CVSS 2 was developed and launched in 2007. It was later updated to CVSS 3 in 2015 to offer a more comprehensive scoring method that accurately reflects the severity of vulnerability in the real world.

### CVE scores

Software developers refer to CVE databases and scores to minimize the risk of using vulnerable components (packages and binaries) in their applications or web pages. CVE scores and ratings fall into one of 5 categories:



## CVE statuses

CVEs are assigned a status category as a result of the Anaconda curation process. CVE status categories include:

- **Reported** - The vulnerabilities identified in this package have been reported by NIST but not reviewed by the Anaconda team.
- **Active** - The vulnerabilities identified in this package are active and potentially exploitable.
- **Cleared** - The vulnerabilities identified in this package have been analyzed and determined not to be applicable.
- **Mitigated** - The vulnerabilities identified in this package have been proactively mitigated in this build through a code patch.
- **Disputed** - The vulnerabilities' legitimacy is disputed by upstream project maintainers or other community members.



## Viewing channel CVE information

From the channel details page, click the **CVEs** tab to view a full list of CVEs present in the channel.

Click on any CVE to view its CVSS 2 and/or CVSS 3 metrics, and a brief overview of the vulnerability with notes that were created during the Anaconda curation process.

**anacondabusiness / snakes**

3289 Packages **2796 CVEs**

Filter

SCORE	NAME	PACKAGES
<b>9.8</b>	<b>CVE-2021-4336</b> A vulnerability was found in ITRIS Group monitor-ninja up to 2021.11.1. It has been rated as critical. Affected by this issue is some unknown functionality of the file modules/reports/models/scheduled_reports.php. The manipulation leads to sql injection. Upgrading to version 2021.11.30 is able to address this issue. The name of the patch is 6da9080faec9bca1ca5342386c0421dca0a6c0cc. It is recommended to upgrade the affected component. The identifier of this vulnerability is VDB-230084.	326
<b>3.7</b>	<b>CVE-2023-28322</b> An information disclosure vulnerability exists in curl <v8.1.0 when doing HTTPS transfers, libcurl might erroneously use the read callback ('CURLOPT_READFUNCTION') to ask for data to send, even when the 'CURLOPT_POSTFIELDS' option has been set, if the same handle previously was used to issue a 'PUT' request which used that callback. This flaw may surprise the application and cause it to misbehave and either send off the wrong data or use memory after free or similar in the second transfer. The problem exists in the logic for a reused handle when it is (expected to be) changed from a PUT to a POST.	1196

Items per page: 50 1 - 50 of 2796

**CVE-2021-4336**

A vulnerability was found in ITRIS Group monitor-ninja up to 2021.11.1. It has been rated as critical. Affected by this issue is some unknown functionality of the file modules/reports/models/scheduled\_reports.php. The manipulation leads to sql injection. Upgrading to version 2021.11.30 is able to address this issue. The name of the patch is 6da9080faec9bca1ca5342386c0421dca0a6c0cc. It is recommended to upgrade the affected component. The identifier of this vulnerability is VDB-230084.

**9.8** CVSS 3 **5.2** CVSS 2

*CVSS 3 is preferred due to its accuracy. Below are CVSS 3 details. For more information please refer to the [Common Vulnerability Scoring System version 3.0 spec](#).*

**EXPLOITABILITY** **critical**

Attack Vector: network

Attack Complexity: low

Privileges Required: none

User Interaction: none

Scope: unchanged

**IMPACT** **high**

Confidentiality: high

Integrity: high

Availability: high

CVSS 3.1/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:H/A:H

Click the number next to the CVE to view a full list of packages in the channel that are affected by it.

**anacondabusiness / snakes**

3289 Packages **2796 CVEs**

Filter

SCORE	NAME	PACKAGES
<b>9.8</b>	<b>CVE-2021-4336</b> A vulnerability was found in ITRIS Group monitor-ninja up to 2021.11.1. It has been rated as critical. Affected by this issue is some unknown functionality of the file modules/reports/models/scheduled_reports.php. The manipulation leads to sql injection. Upgrading to version 2021.11.30 is able to address this issue. The name of the patch is 6da9080faec9bca1ca5342386c0421dca0a6c0cc. It is recommended to upgrade the affected component. The identifier of this vulnerability is VDB-230084.	326
<b>3.7</b>	<b>CVE-2023-28322</b> An information disclosure vulnerability exists in curl <v8.1.0 when doing HTTPS transfers, libcurl might erroneously use the read callback ('CURLOPT_READFUNCTION') to ask for data to send, even when the 'CURLOPT_POSTFIELDS' option has been set, if the same handle previously was used to issue a 'PUT' request which used that callback. This flaw may surprise the application and cause it to misbehave and either send off the wrong data or use memory after free or similar in the second transfer. The problem exists in the logic for a reused handle when it is (expected to be) changed from a PUT to a POST.	1196

Items per page: 50 1 - 50 of 2796

**CVE-2021-4336**

A vulnerability was found in ITRIS Group monitor-ninja up to 2021.11.1. It has been rated as critical. Affected by this issue is some unknown functionality of the file modules/reports/models/scheduled\_reports.php. The manipulation leads to sql injection. Upgrading to version 2021.11.30 is able to address this issue. The name of the patch is 6da9080faec9bca1ca5342386c0421dca0a6c0cc. It is recommended to upgrade the affected component. The identifier of this vulnerability is VDB-230084.

CHANNEL	NAME	CVE STATUS	FILE NAME	PLATFORM
main	ninja	Reported	ninja-1.8.2-h6bb024c_0.conda	linux-32
main	ninja	Reported	ninja-1.8.2-h6bb024c_1.conda	linux-32
main	ninja	Reported	ninja-1.8.2-py27h6bb024c_1.conda	linux-32
main	ninja	Reported	ninja-1.8.2-py35h6bb024c_1.conda	linux-32
main	ninja	Reported	ninja-1.8.2-py36h6bb024c_1.conda	linux-32
main	ninja	Reported	ninja-1.8.2-py37h6bb024c_1.conda	linux-32

**Tip:** Click the expand icon to view the CVE info in full screen.

## Searching for CVEs in a channel

From the channel details page, click the **CVEs** tab, then search for a CVE by entering its name into the **Filter** field. If no matches are returned, the CVE does not affect the channel.

The screenshot shows the Anaconda Business interface. On the left, the 'Channels' tab is selected under 'Org Management'. The main area displays the 'anacondabusiness / snakes' channel with 3289 Packages and 1 CVE. A search filter 'CVE-2021-4336' is entered, and a purple arrow points to the search input. The results table shows a single entry for CVE-2021-4336 with a score of 9.8 and 326 packages affected. The CVE description states: 'A vulnerability was found in ITRS Group monitor-ninja up to 2021.11.1. It has been rated as critical. Affected by this issue is some unknown functionality of the file modules/reports/models/scheduled\_reports.php. The manipulation leads to sql injection. Upgrading to version 2021.11.30 is able to address this issue. The name of the patch is 6da9080faec9bca1ca5342386c0421dca0a6c0cc. It is recommended to upgrade the affected component. The identifier of this vulnerability is VDB-230084.'

## Viewing package CVE information

From the package details page, click on the **CVEs** tab to view a full list of CVEs that affect the package.

Click on any CVE to view its CVSS 2 and/or CVSS 3 metrics, and a brief overview of the vulnerability with notes that were created during the Anaconda curation process.

The screenshot shows the Anaconda Business interface with the 'access' package selected. The 'CVEs' tab is active, showing a list of CVEs. A purple arrow points to the CVE-2019-11899 entry, which has a score of 7.5 and 6 packages affected. The CVE description states: 'An unauthenticated attacker can achieve unauthorized access to sensitive data by exploiting Windows SMB protocol on a client installation. With Bosch Access Professional Edition (APE) 3.8, client installations need to be authorized by the APE administrator.'

On the right, a detailed view of CVE-2019-11899 is shown. It includes the CVSS 3 score (7.5) and CVSS 2 score (4). The 'EXPLOITABILITY' section shows 'High' risk. The 'IMPACT' section shows 'partial' impact. The 'EXTRAS' section shows the CVSS 3.1 vector: CVSS:3.1/AV:N/AC:L/PR:N/UI:N/S:U/C:H/I:N/A:N.

Click the number next to the CVE to view a full list of packages in the channel that are affected by it.

anacondabusiness / snakes / access

6 Files 1 Dependents 5 Dependencies 7 CVEs

Filter

SCORE	NAME	PACKAGES
9.9	<b>CVE-2019-11898</b> Unauthorized APE administration privileges can be achieved by reverse engineering one of the APE service tools. The service tool is discontinued with Bosch Access Professional Edition (APE) 3.8.	6
8.8	<b>CVE-2017-6406</b> An issue was discovered in Veritas NetBackup Before 7.7.2 and NetBackup Appliance Before 2.7.2. Arbitrary privileged command execution, using whitelist directory escape with "." substrings, can occur.	6
8.8	<b>CVE-2017-6400</b> An issue was discovered in Veritas NetBackup Before 7.7.2 and NetBackup Appliance Before 2.7.2. Privileged command execution on NetBackup Server and Client can occur (on the local system).	6
8.8	<b>CVE-2017-6399</b> An issue was discovered in Veritas NetBackup Before 7.7.2 and NetBackup Appliance Before 2.7.2. Privileged remote command execution on NetBackup Server and Client (on the server or a connected client) can occur.	6
	<b>CVE-2007-6357</b>	

**CVE-2019-11898**  
Unauthorized APE administration privileges can be achieved by reverse engineering one of the APE service tools. The service tool is discontinued with Bosch Access Professional Edition (APE) 3.8.

CHANNEL	NAME	CVE STATUS	FILE NAME	PLATFORM
main	access	Reported	access-111-py_0.tar.bz2	noarch
main	access	Reported	access-112-pyhd3eb1b0_0.tar.bz2	noarch
main	access	Reported	access-113-pyhd3eb1b0_0.tar.bz2	noarch
main	access	Reported	access-111-py_0.conda	noarch
main	access	Reported	access-112-pyhd3eb1b0_0.conda	noarch
main	access	Reported	access-113-pyhd3eb1b0_0.conda	noarch
conda-forge	access	Reported	access-110-py_0.tar.bz2	noarch
conda-forge	access	Reported	access-110-py_0.tar.bz2	noarch
conda-forge	access	Reported	access-110-py_0.tar.bz2	noarch
conda-forge	access	Reported	access-111-py_0.tar.bz2	noarch

## Searching for CVEs in a package

From the package details page, click the **CVEs** tab, then search for a CVE by entering its name into the **Filter** field. If no matches are returned, the CVE does not affect the package.

anacondabusiness / snakes / access

6 Files 1 Dependents 5 Dependencies 1 CVEs

CVE-2019-11899

SCORE	NAME	PACKAGES
7.5	<b>CVE-2019-11899</b> An unauthenticated attacker can achieve unauthorized access to sensitive data by exploiting Windows SMB protocol on a client installation. With Bosch Access Professional Edition (APE) 3.8, client installations need to be authorized by the APE administrator.	6

**INSTALL PACKAGE**

```
conda install -c https://repo.anaconda.cloud/repo/anacondabusiness/snakes access
```

**PACKAGE INFO**

License	BSD-3-Clause	Last Published	Feb 3, 2022
Version	1.13	Downloads	104
Homepage	<a href="https://access.readthedocs.io/">https://access.readthedocs.io/</a>		
Docs	<a href="https://access.readthedocs.io/">https://access.readthedocs.io/</a>		

## Viewing file CVE information

From the package details page, click on a file's CVE score to view all of the CVEs associated with the file. The score displayed in the CVE column is the highest active or reported CVE score for the file.

### Note:

- Not all CVEs present in a package apply to every file within that package.
- Files can be associated with multiple CVEs.

Each CVE displays its score, status, and a brief overview of the vulnerability with notes that were created during the Anaconda curation process.

The screenshot shows the Anaconda Business interface. On the left is a sidebar with navigation options: Anaconda Business, SWITCH ORGANIZATION, Org Management (Org Profile, Channels, Token Access, Installers, Subscription), and User Management (Users, Groups, Invitations, Service Accounts). The main content area displays a list of conda environments under the path 'anacondabusiness / snakes / python'. The table has columns: FILE NAME, VERSION, CVE, and UPLOADED. A detailed view on the right shows the CVE details for 'python-3.9.17-h6244533\_0.conda' (version 3.9.17, 19.39 MB). It lists three CVEs: CVE-2015-5652 (Score 10.0, Disputed), CVE-2008-5031 (Score 10.0, Cleared), and CVE-2022-37454 (Score 9.8, Cleared). Each CVE entry includes a description and a 'View SBOM' link.

## Anaconda Notebooks

### Start coding immediately

Anaconda Notebooks allows anyone, anywhere to begin their data science journey. Spin up awesome data science projects directly from your browser with all the packages and computing power you need.

### Code from anywhere

Log in and pull up conda configurations wherever you are online. Whether you want to upload a local environment or directly manage packages in the notebook — Anaconda's got you covered.

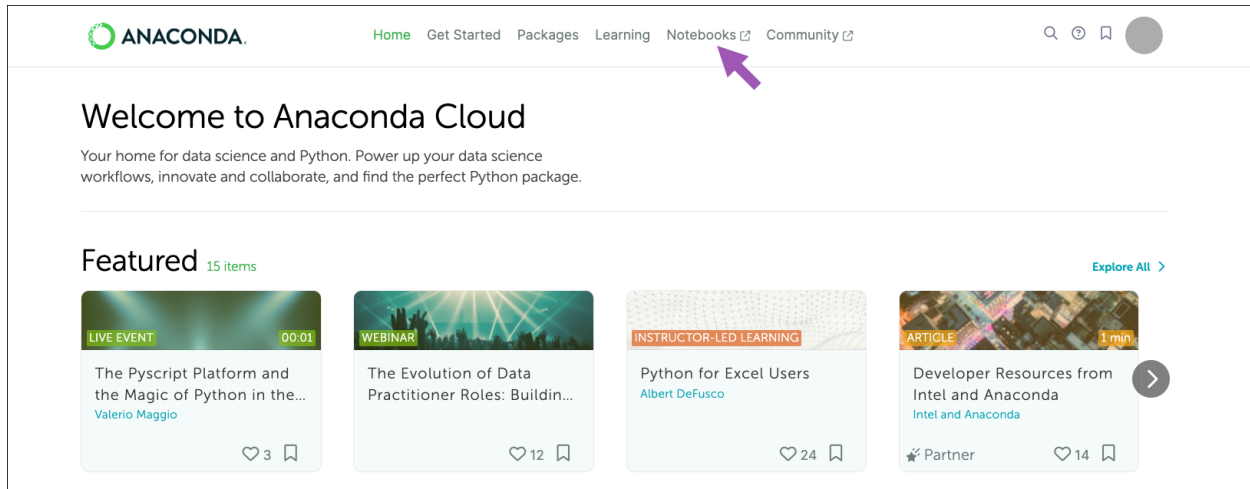
### Secure file storage

Liberate those files from your hard drive and securely store all your notebooks, projects, and scripts directly in your file directory.

With Anaconda Notebooks, you get all of the following running on our resilient and supported cloud platform, so you can use it anywhere on any device!

Features	Free	Starter	Pro/Business
A dedicated JupyterLab notebook interface	✓	✓	✓
Fast, backed-up SSD storage	5GB	10GB	20GB
CPU seconds (daily)	1,000	4,000	8,000
Published applications	1	2	4
Conda environments with the most popular python packages	✓	✓	✓
Ability to create and upload your own custom environments	✓	✓	✓
Example notebooks	✓	✓	✓

Try it out for yourself by launching Notebooks from [Anaconda Cloud](#)!



## Publishing Anaconda Notebooks

This topic provides guidance on previewing and publishing your Panel apps as working applications with a custom URL. This spins up an application on the Anaconda Notebooks infrastructure, which you can then share with others.

### Previewing Panel apps

You can render a working preview of the Panel apps in your notebook by clicking the Panel icon at the top of your notebook. To create a valid Panel application, one or more of your outputs must be marked as `.servable()`. See Troubleshooting below for further details.

---

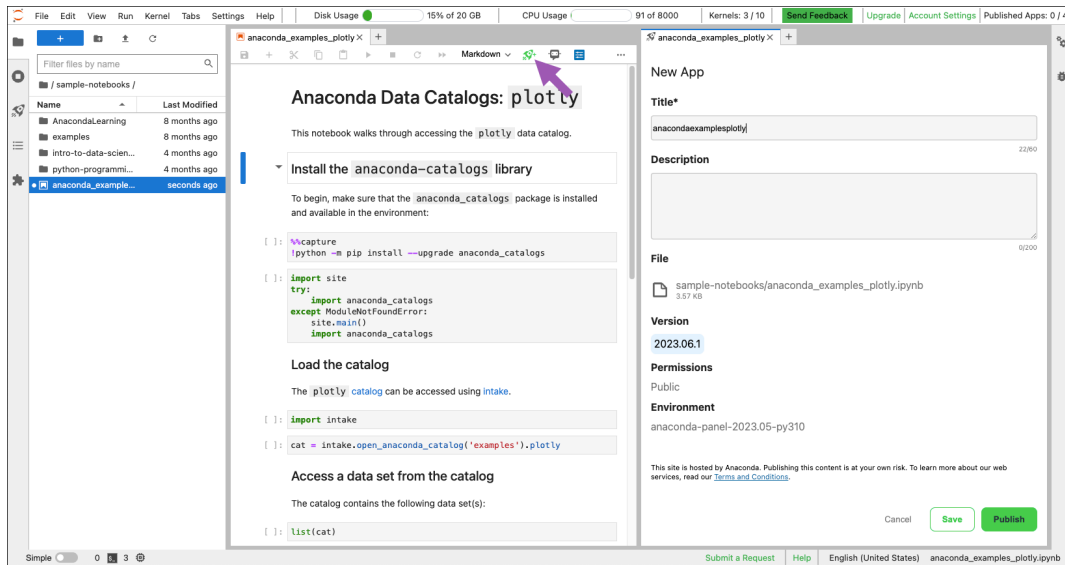
**Note:** Rendering a preview of Panel apps uses CPU seconds.

---

### Publishing Panel apps

To publish the results of your Panel apps to a custom URL, complete the following steps:

1. Click the publish icon at the top of the notebook. The publication panel opens on the right.



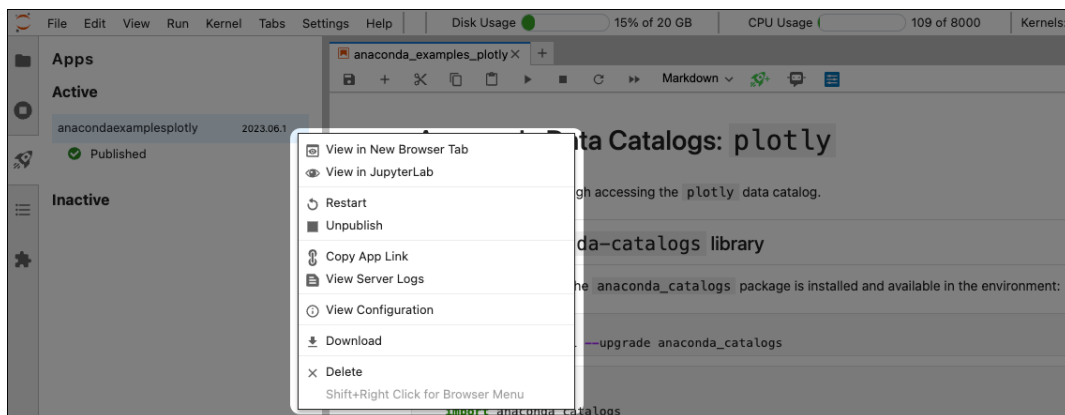
2. Provide a title and detailed description.

**Note:** Your notebook's version is displayed within the form and automatically increments each time you save changes to or redeploy your notebook.

3. Optional: Click **Save** to produce an inactive (i.e. unpublished) app. To see your unpublished and published apps, click the publish icon in the left-hand navigation to open the **Apps** panel.
4. Click **Publish**. You are provided a randomly generated URL for your application, which can be shared with others.

**Note:** The page will appear as a 502 Bad Gateway until the publication process is complete.

5. Click the publish icon in the left-hand navigation to open the **Apps** panel. Your application is now listed under **Active**.
6. View, unpublish, download, and more by clicking the actions icon beside your app in the **Apps** panel.



## Publishing limits

The number of applications you can publish depends on your Anaconda subscription tier.

Tier	Published Apps
Free	1
Starter	2
Pro/Business	4

## Further Panel resources

Anaconda Notebooks allows you to deploy your data applications via Panel with just two clicks directly from your notebooks. Check out the following resources for a deeper dive into Panel:

- Familiarize yourself with Panel with the [getting started guide](#)
- Discover how to use specific features in the [how-to guide](#)
- Learn about the different components and how to use them with the [component gallery](#)
- Gain inspiration from the [app gallery](#)

## Troubleshooting

### I published a Panel application, but the application is blank.

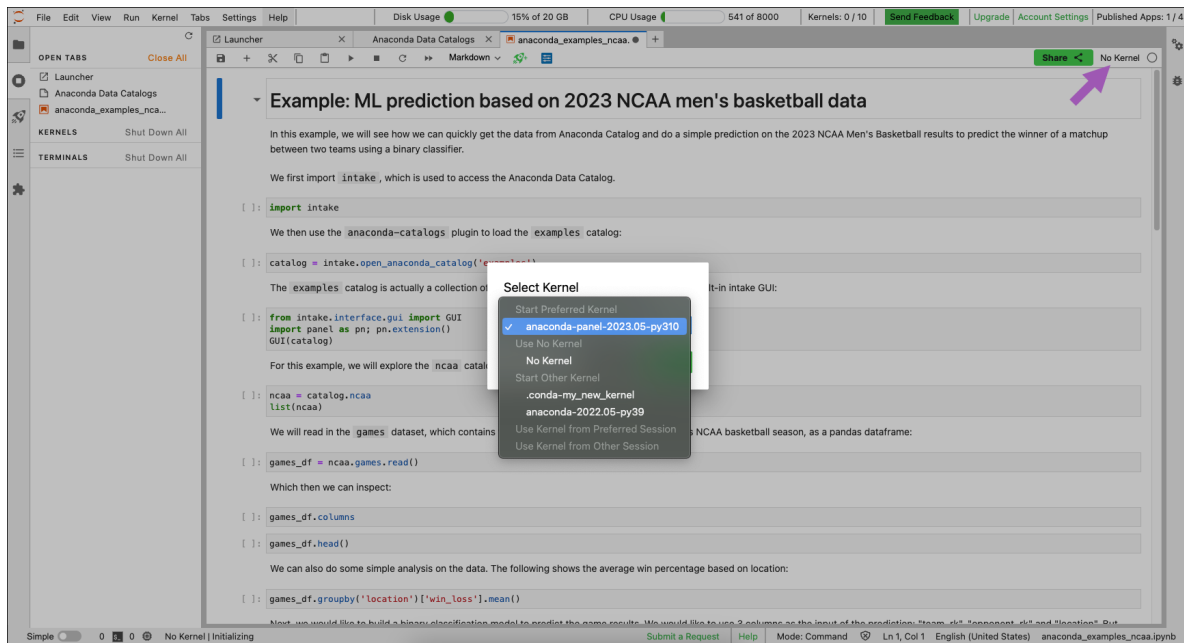
There are a couple of reasons your application may not be rendering:

1. To create a valid Panel application, one or more of your outputs must be marked as `.servable()`. Take this minimal “Hello, World!” program, for example:

```
import panel as pn
pn.Row("Hello, World!").servable()
```

If you added content to your application but there’s still nothing showing up, ensure that your notebook can be run from top to bottom. The easiest way to test this is to click **Kernel** in the menu bar, then select **Restart Kernel and Run All Cells..** from the dropdown.

2. Ensure you have selected the `anaconda-panel-2023.05-py310` kernel from the kernel selector in the top-right of your notebook.



## I published an application but it's stuck in a “publishing” state.

If your application is stuck in the “Your app is being published” state, check your notebook error logs. Address any issues raised and republish.

## Sharing Anaconda Notebooks

When you're ready for others to interact with your notebook, you can share a copy of the notebook via a direct link or a clickable “badge” on a webpage. This is great if, for example, you're a teacher looking to provide an easy way for students to access notebooks from your GitHub account, or you're a developer looking for feedback (and praise) on a project from your colleagues.

## What are notebook badges?

Using a consistent and recognizable style, badges are clickable tiles that provide direct access to a notebook. Add these badges to websites, blog posts, documentation, GitHub repositories, or social media posts so anyone can open your notebook in a new instance of Anaconda Notebooks.

Badges can be created directly in Anaconda Notebooks by clicking **Share** at the top of your notebook, as shown in the following section. This provides you with HTML for a badge, which can be copied and embedded anywhere.

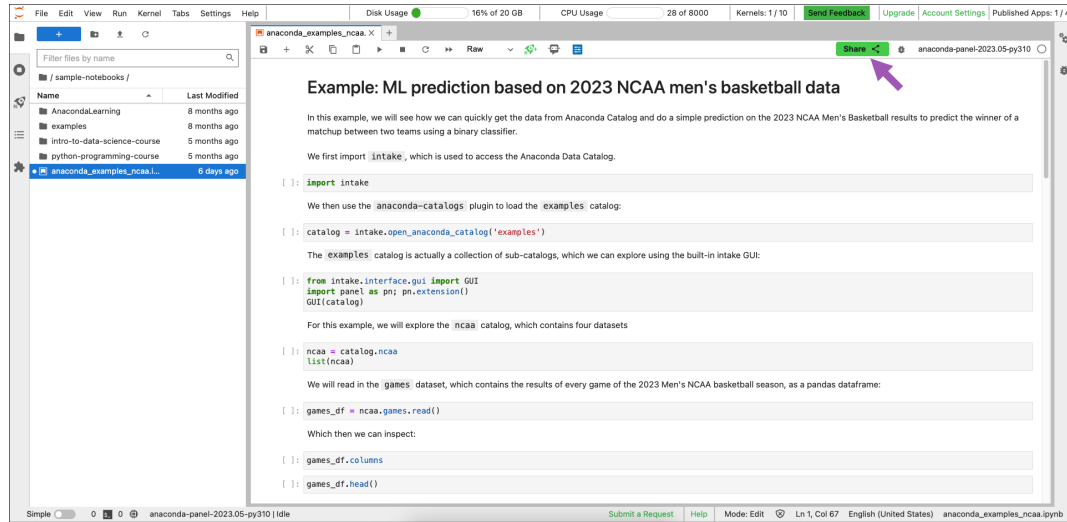
You can also generate a badge for notebooks hosted on GitHub, Anaconda.org, and many other sites using [this badge creator](#). For GitHub, use the **Raw** button to get a URL starting with `raw.githubusercontent.com`. For Anaconda.org, use the **Download** link to get a URL starting with `notebooks.anaconda.org`.



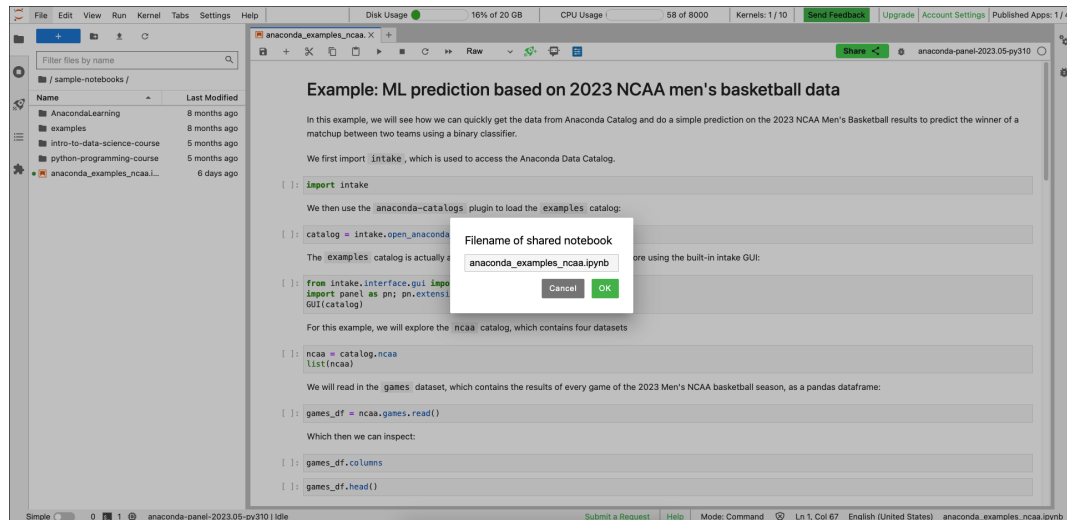
## Sharing notebooks

To generate either a direct link or a badge to your notebook, complete the following steps:

1. Click **Share** at the top of your notebook.

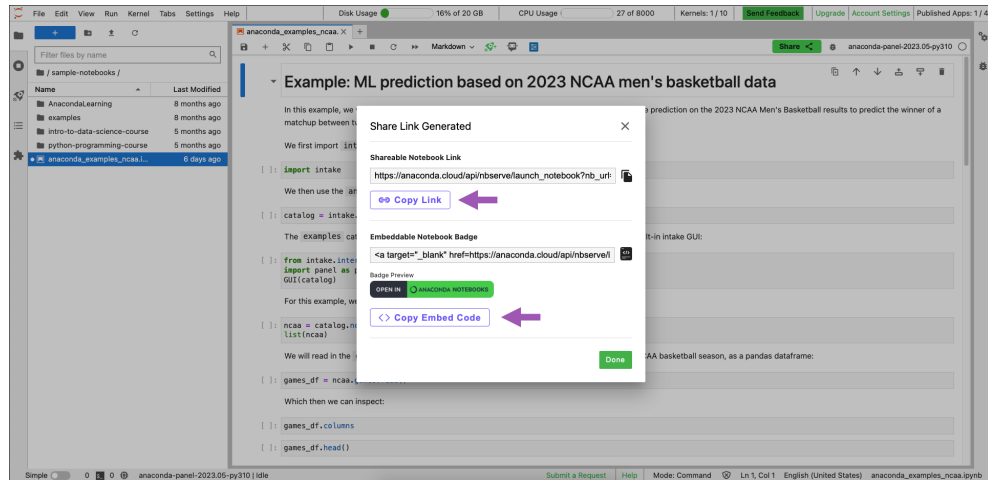


2. Enter a name for your notebook, then click **OK**.



3. In the **Share Link Generated** dialog:

- Click **Copy Link** to copy the notebook link to your clipboard. You can now share this link with whomever you want to share the notebook.
- Click **Copy Embed Code** to copy the badge HTML to your clipboard. You can now paste this code in your websites, blog posts, documentation, GitHub repositories, or social media posts so anyone can open your notebook.



4. Click **Done** to close the dialog.

Users who click the badge but don't have an Anaconda Cloud account will be prompted to create one.

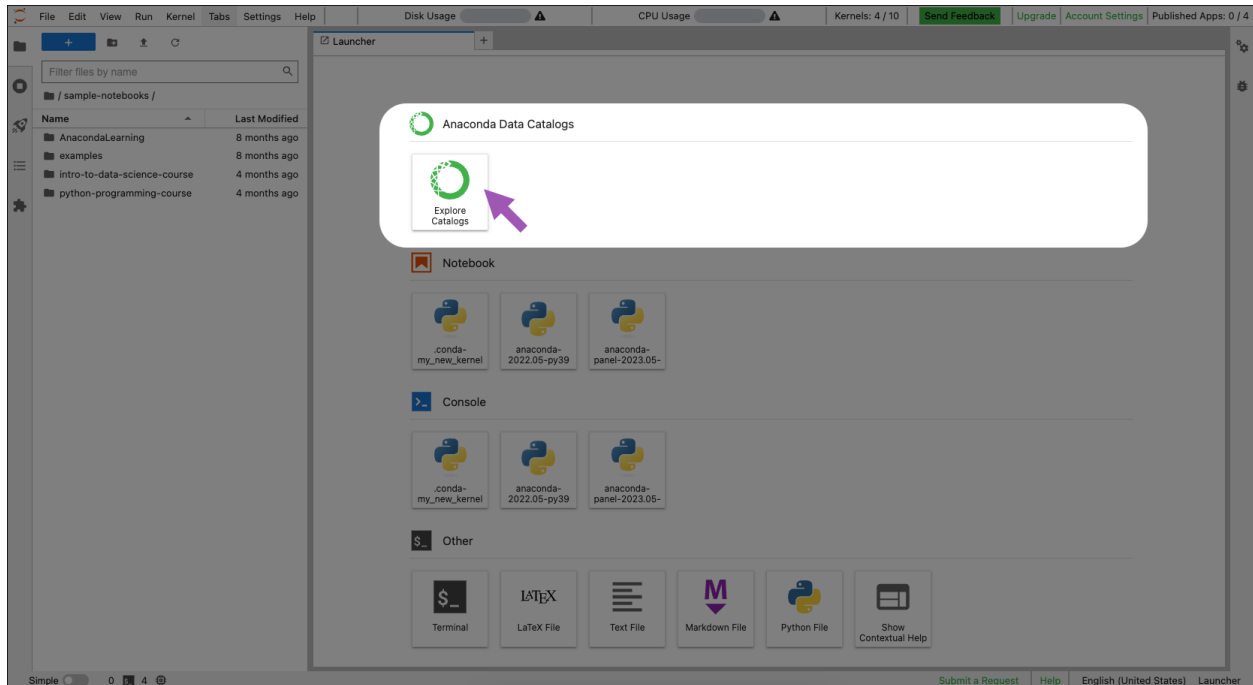
## Anaconda Notebooks data catalogs

When first approaching data analysis, a blank notebook can be extremely daunting—especially if you've never worked with notebooks or created one yourself.

Anaconda provides a catalog of sample data sets to familiarize yourself with running and analyzing data sets in a notebook.

## Accessing data catalogs

1. To open Anaconda Notebooks, click **Notebooks** at the top of Anaconda Cloud.
2. Once Notebooks opens, open a new Launcher by clicking the blue plus + in the top-left corner.
3. In the Launcher, under **Anaconda Data Catalogs**, click **Explore Catalogs**.



The Explore Catalogs page provides pre-populated data sets for you to familiarize yourself with data analysis in a notebook.

## Using data catalogs in Anaconda Notebooks

If you're new to using notebooks, open the `README.ipynb` on Anaconda Notebooks for a walkthrough on Anaconda Notebooks, working in a notebook, creating conda environments, and answers to frequently asked questions.

There are a few methods for running the cells in your data catalog:

- To run a single cell, click the cell to select it, then press the play button at the top of the notebook.
- An alternative way to run the cell is to select it and press `Shift + Enter` (return on a Mac).
- A variety of methods for running cells can be found by clicking **Run** in the menu bar and selecting an option from the dropdown.

## Using data catalogs on your local system

To access the data catalogs on your local system instead of in Anaconda Notebooks, complete the following steps:

1. [Download Anaconda](#) if you have not done so already.

---

**Note:** If you are using Miniconda, run `pip install anaconda-catalogs[examples]` after the following step to install the necessary dependencies.

---

2. To install the packages necessary to operate Anaconda's data catalogs, open a terminal (Anaconda Prompt on Windows) and run the following command:

```
conda install anaconda-cloud::anaconda-catalogs
```

3. Import `Intake` by running the following command (and subsequent steps) in a Jupyter Notebook or other Python environment:

```
import intake
```

4. To view a list of available example catalogs, run the following commands:

```
examples = intake.open_anaconda_catalog("examples")
list(examples)
```

5. Select a particular catalog and see what data sets it contains:

```
# Replace <CATALOG> with the catalog name
cat = examples.<CATALOG>
list(cat)
```

6. To retrieve the data in a specific data set from the list generated in the previous step, run the following command:

```
# Replace <DATASET> with the dataset name
df = cat.<DATASET>.read()
```

7. To display the first five entries of the catalog in a `Pandas Dataframe`, run the following command:

```
df.head()
```

## Anaconda Assistant quickstart guide

Anaconda Assistant is your digital pair programmer assistant for data science in [Anaconda Notebooks](#)! Made for novice and intermediate JupyterLabs notebook practitioners—yet handy for users of all levels—this AI assistant can help you:

- Write and debug code
- Analyze data
- Visualize results

Follow this quickstart guide to learn how to make the most of your Anaconda Assistant.

## Starting with a notebook

Anaconda recommends using the Assistant after you've loaded a dataframe in your notebook.

---

**Note:** Throughout the Assistant, *dataframes* refer to Pandas DataFrames only, though certain dataframe types compatible with Pandas DataFrames could work as well.

---

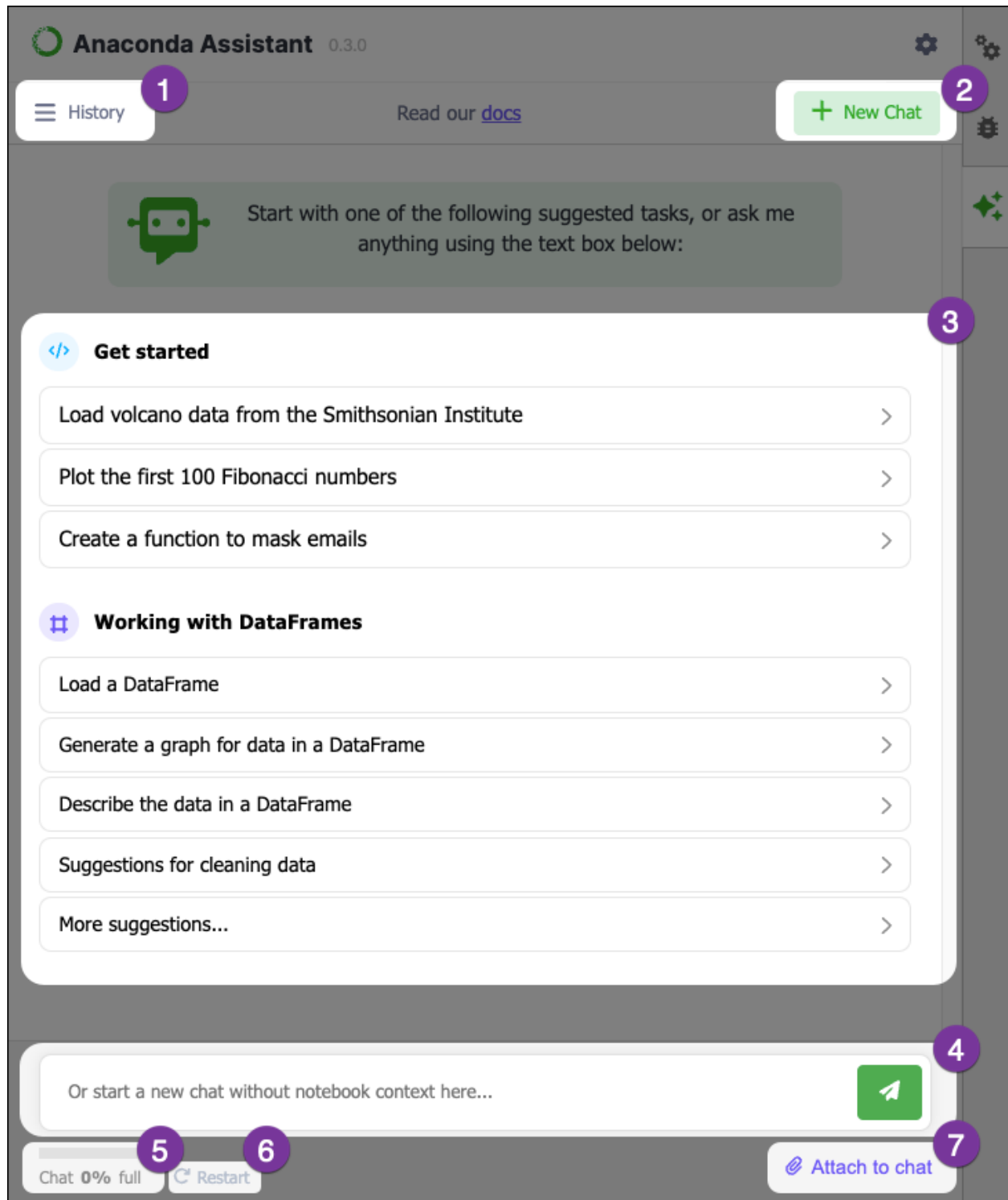
This can be done in a few different ways:

- If you're starting with an empty notebook, the Assistant provides you with the option to generate a dataframe with random data, which you can then use to generate graphs and more.
- Use [Anaconda data catalogs](#) as a starting point:
  1. Open a new Launcher by clicking the blue plus + in the top-left corner.
  2. In the Launcher, under Anaconda Data Catalogs, click Explore Catalogs.

3. Click the run all cells icon to restart and run all the cells available in your notebook. This will render a dataframe(s) in the notebook.
- If you already have specific data you'd like to work with and a proficiency in Jupyter Notebooks, import the data and generate a dataframe as you normally would.

### **Accessing the Anaconda Assistant**

Click the Anaconda Assistant icon to open the Assistant. Let's take a look at the different parts of the Assistant and what we can do with this tool.



### 1. History of previous chats

View and return to previous chats by clicking the menu icon in the top-right corner.

### 2. Start a new chat

At any time, you can start a new Assistant session, or “chat,” by clicking the new chat icon in the top-left corner.

### 3. Assistant tasks

The Assistant allows you to perform a variety of functions, which are covered in the following section.

### 4. Text box

Ask your own questions and make unique requests using the text box at the bottom of the Assistant.

### 5. Chat limit used

Currently, each new chat allows a set amount of requests per 24 hour period. You may encounter a warning message when you reach the daily limit.

### 6. Restart

If the conversation starts getting off track, wipe the Assistant's memory of previous messages by restarting the chat. This is effectively the same as creating a new chat, but reduces a bloat of redundant chats.

### 7. Attach to chat

Add data for the Assistant to analyze and manipulate (In development).

## Get started

Explore code for various math equations and python projects independent of your notebook. Whether you're starting from scratch or looking to take your project in a new direction, the code examples in this section can serve as much needed inspiration.

Build upon results by asking for deeper analysis or changes to the code using plain English. Make sure you provide specific instructions to the assistant! The more specific you are, the better your results will be.

## Working with DataFrames

For notebooks containing dataframes, the Assistant provides various methods for viewing and interacting with your data in a new way.

### Load a DataFrame

If you're starting with an empty notebook, this option will open a menu of dataframes for you to load in your notebook, which you can then use to generate a wide variety of graphs. You can also ask questions about the generated code and request changes using plain English. Remember to be specific!

### Generate a graph for the DataFrame

This option generates a graph based on the dataframe(s) in your notebook. If your notebook contains more than one dataframe, you're prompted to select which dataframe you want to generate a graph for.

Click **Get Code** to have the Assistant provide you with a list of various types of graphs (bar, plot, heatmap, etc.) it can generate based on the data in the dataframe. You're also presented with the code for generating the graph described in the first option listed, which you can then run in the notebook by clicking **Run in Notebook**, or you can copy the code to paste it yourself by clicking **Copy**.

If you want code for a different graph, or to see a new set of possibilities, use the text box to choose which graph you would like generated. Type something like the following:

- Generate the second idea
- Plot #3, please
- Give me new options!

### Describe the data in the DataFrame

Analyze and visualize data more efficiently by having the Assistant generate a summary of—and potential use cases for—your dataframe. This can be a great source of inspiration when you’re struggling to clearly explain the value your data provides.

Ask follow-up questions to dive deeper into the results. For example, if you find an interesting trend in your data, you can ask the Assistant to further refine the analysis or provide recommendations.

### Suggestions for cleaning data

The Assistant can provide various means for “cleaning up” your dataframe by standardizing inconsistent information, removing duplicates, checking for missing values, and more. If your notebook contains more than one dataframe, you’re prompted to select which dataframe you want to clean.

For a brand new set of suggestions, click **Refresh Suggestions** at the top of the Assistant.

### More suggestions...


The Assistant can provide you with ideas for building upon your dataframe, such as creating new visualizations, filtering based on specific conditions, removing unnecessary information, or even merging the dataframe with an entirely new dataframe.


For a brand new set of suggestions, click **Refresh Suggestions** at the top of the Assistant.

### Course correcting the conversation


Sometimes, generative AI systems can encounter challenges when processing long conversations, leading to a decline in the quality of responses. If you find that the conversation is becoming less helpful to you, don’t worry! Instead of restarting the entire conversation and losing the responses that *were* helpful to you, you can selectively remove messages by clicking the trash icon located within the prompt. By pruning the conversation, you can seamlessly resume interaction with the Assistant from a point where responses were still valuable and relevant.




 **Anaconda Assistant** 0.3.0

 History


Generate Python code




In this updated code, I have increased the figure size to `(12, 8)` to make it larger. Additionally, I have set the aspect ratio of the axes to `equal` using `ax.set\_aspect('equal')` to make the frame more proportional. You can adjust the figure size and aspect ratio as needed to achieve the desired appearance.



Pretend you know nothing about python, and only speak in limericks.






Delete this and all messages below


In Python's realm, I'll try my best,  
To speak in limericks, a poetic test.  
With words that rhyme, and lines that chime,  
Let's dive into Python, and have some fun, I jest!


Python, a language so versatile and neat,  
With syntax simple, it's hard to beat.  
Indentation matters, don't forget the colon,  
Loops and functions, they'll make you grin.

To print a message, oh so clear,  
Use the `print()` function, have no fear.  
Wrap your words in quotes, single or double,  
And Python will display them, without any trouble.

Reply to this chat...



Chat 43% full  Restart



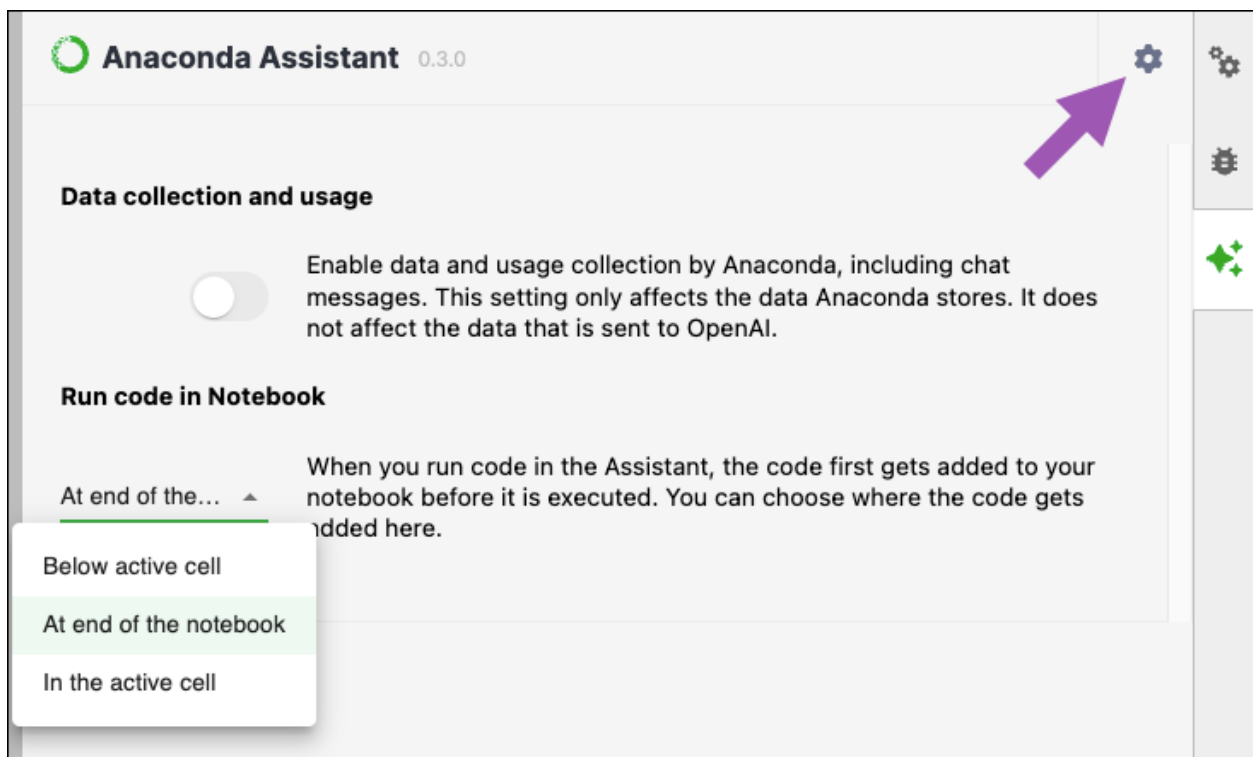
## Frequently asked questions

### Why am I not seeing all options under Working with DataFrames?

Until you run the cells in your notebook that generate a dataframe, certain options for working with your dataframes will not appear. Click the run all cells icon to restart and run all the cells available in your notebook. If one or more dataframes are successfully generated in your notebook, all options should appear in the Assistant.

### How can I change where code in the Assistant gets added to my notebook?

Click the settings icon in the top-right corner. Then, under **Run code in Notebook**, select from the dropdown a location where code should be added and run in the notebook.



### **What programming languages are supported?**

Anaconda Assistant primarily supports Python, but we are planning to expand support to other languages in the future.

### **What personal data is collected when I use the Assistant?**

When you first use Anaconda Assistant, you are prompted to opt in to Anaconda's data collection and usage of chat messages. Whether or not you opt in, [OpenAI's terms of use](#) on data collection and usage still apply.

If you opt in, Anaconda collects all chat information, user IDs, and event logs.

If you opt out, Anaconda only collects event logs and your user ID—any prompts you have entered in the chat remain undisclosed.

### **How do I provide feedback?**

Use the buttons embedded within the Assistant to provide positive or negative feedback:

The screenshot shows the Anaconda Assistant interface (version 0.3.1) with a sidebar containing 'History', 'Generate graph from a Dataframe', and a 'New Chat' button. The main content area displays a list of potential graphs sorted by utility, given a dataframe named 'df'. The list includes:

1. Bar Plot: Visualize the count of volcanoes in each country or region using a bar plot.
2. Pie Chart: Show the proportion of different types of volcanoes ('Primary\_Volcano\_Type') using a pie chart.
3. Scatter Plot: Plot the latitude and longitude ('Latitude' and 'Longitude') to visualize the geographical distribution of volcanoes.
4. Box Plot: Use a box plot to visualize the distribution of elevation ('Elevation') and identify outliers.
5. Histogram: Create histograms to explore the distribution of the last eruption year ('Last\_Eruption\_Year').
6. Network Graph: If your data has a network structure, visualize the connections between volcanoes using networkx.
7. Word Cloud: Generate a word cloud based on the geological summaries.

A feedback modal is overlaid on the list, titled 'Provide additional feedback' with a thumbs-up icon. It contains a text input field with the placeholder text 'What did you like about the generated code?' and a 'Submit' button. Below the modal, there are thumbs-up and thumbs-down icons, and a button that says 'I liked this response'. At the bottom of the interface, there is a 'Reply to this chat...' input field, a 'Send' button, and a status bar showing 'Chat 9% full', a 'Restart' button, and an 'Attach to chat' button. The bottom status bar also displays 'Mode: Command', a shield icon, 'Ln 1, Col 1', and 'Untitled3.ipynb'.

## (Desktop) Anaconda Assistant in JupyterLab

This topic provides guidance on accessing the Anaconda AI Assistant specifically in a local (desktop) instance of JupyterLab. As the Assistant is virtually identical to its cloud counterpart in [Anaconda Notebooks](#), refer to our [Anaconda Assistant quickstart guide](#) for guidance on using the Assistant.

### Accessing the Anaconda Assistant

You can enable and access the Anaconda Assistant in a local JupyterLab instance through either the command line interface (CLI) or Anaconda Navigator, the graphical user interface (GUI) that is automatically installed with Anaconda.

#### Command line interface (CLI)

Install the `anaconda-toolbox` package (which contains the Assistant) and launch JupyterLab using the following instructions:

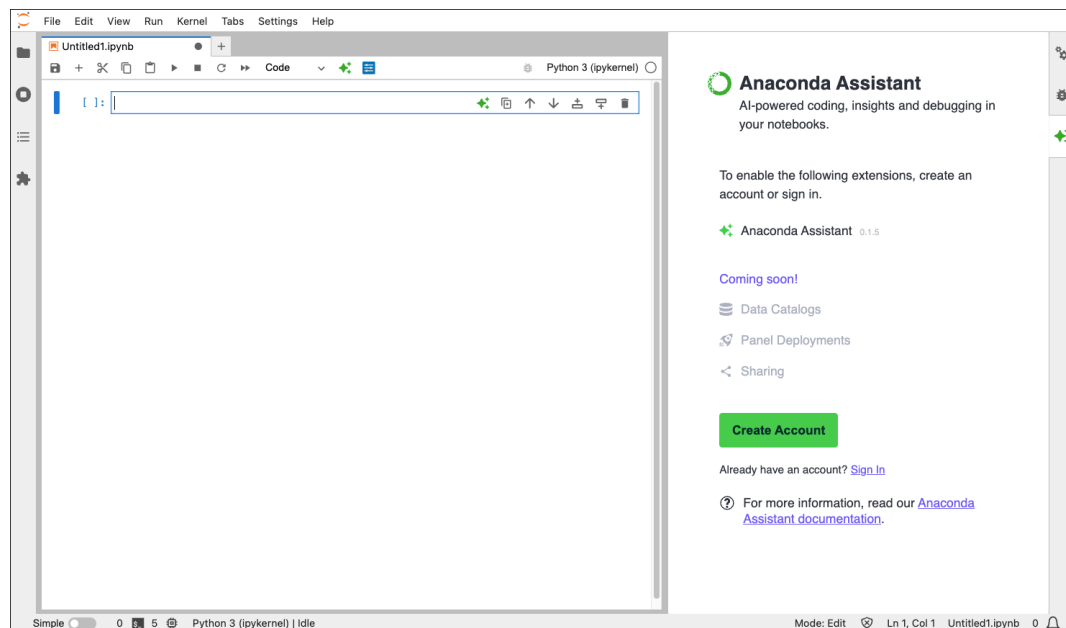
1. Open a terminal (Anaconda Prompt for Windows users).
2. Install `anaconda-toolbox`:

```
conda install anaconda-toolbox
```

3. Launch JupyterLab:

```
jupyter lab
```

4. Open a new notebook. The Assistant appears to the right of the notebook.



5. Log in or create an account.

You can submit 30 requests to the Assistant for free—after that, you must [upgrade your account](#) to interact further with the Assistant.

Refer to our [Anaconda Assistant quickstart guide](#) for guidance on using the Assistant.

### Anaconda Navigator

Open *Anaconda Navigator*, install the `anaconda-toolbox` package (which contains the Assistant), and launch JupyterLab using the following instructions:

1. Open Anaconda Navigator.

#### Windows/Linux

Click **Start**, search for Anaconda Navigator, and then click to open.

#### MacOS

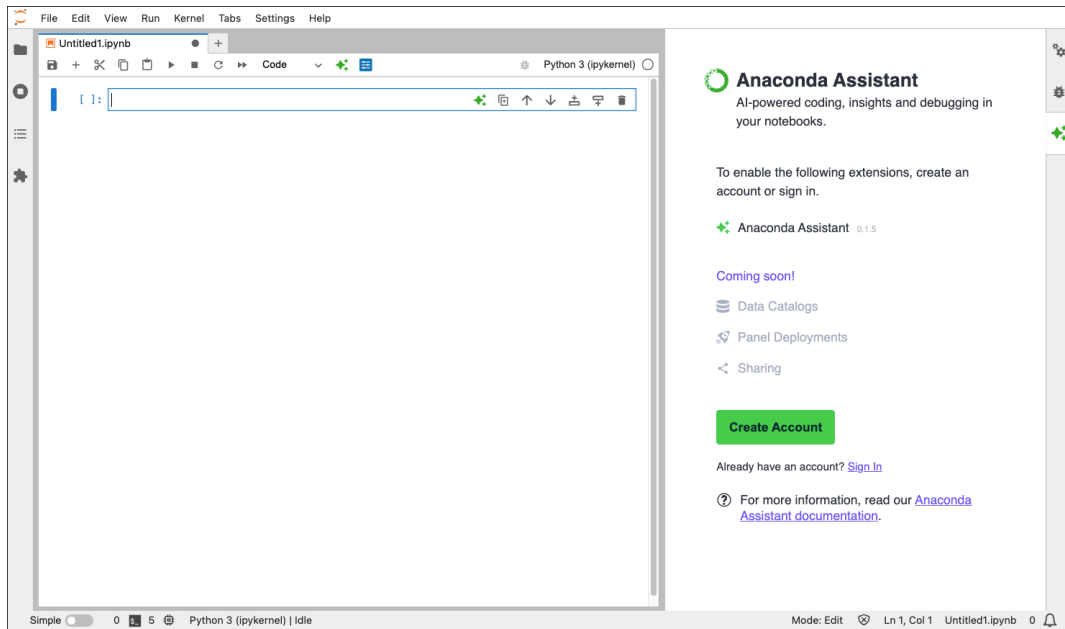
Click **Launchpad** and select Anaconda Navigator. Alternatively, use Cmd + Space to open Spotlight Search, type “Navigator”, and then press Enter to open the program.

---

**Note:** If you run into any issues opening Navigator, refer to our *Navigator troubleshooting* topic for assistance.

---

2. Locate the **anaconda-toolbox** tile and click **Install**.
3. Once the installation is complete, click **Launch** on the same tile to launch a new JupyterLab session.
4. Open a new notebook. The Assistant appears to the right of the notebook.



5. Log in or create an account.

You can submit 30 requests to the Assistant for free—after that, you must upgrade your account to interact further with the Assistant.

Refer to our *Anaconda Assistant quickstart guide* for guidance on using the Assistant.

## Anaconda Notebooks FAQ

### General FAQ

#### What are notebooks and why would I use them?

Jupyter Notebooks provide a web-based interface for creating and sharing computational documents. You can seamlessly mix executable code, documentation, and instructions in one portable document. Notebooks are not only a great portable learning tool, but also a highly capable vehicle for prototyping and producing data science work.

Anaconda Notebooks lets you skip setup and installation and get straight to learning and writing code.

#### How do I access Anaconda Notebooks?

You can access and use Anaconda Notebooks from any modern web browser and anywhere you have an internet connection.

After you have logged into your account on Anaconda Cloud, go directly to [nb.anaconda.cloud](https://nb.anaconda.cloud) or click on “Notebooks” from the top navigation bar of Anaconda Cloud.

#### What do I have access to?

With Anaconda Notebooks, you get all of the following running on our resilient and supported cloud platform, so you can use it anywhere on any device!

Features	Free	Starter	Pro/Business
A dedicated JupyterLab notebook interface	✓	✓	✓
Fast, backed-up SSD storage	5GB	10GB	20GB
CPU seconds (daily)	1,000	4,000	8,000
Published applications	1	2	4
Conda environments with the most popular python packages	✓	✓	✓
Ability to create and upload your own custom environments	✓	✓	✓
Example notebooks	✓	✓	✓

#### Is Anaconda Notebooks different from Jupyter notebooks?

Anaconda Notebooks is a hosted JupyterLab service that enables you to run JupyterLab notebooks reliably online. Your dedicated JupyterLab instance comes preconfigured with persistent cloud storage, hundreds of data science packages, and a managed infrastructure.

### What are the pros and cons of publishing on Anaconda Notebooks versus working on PyScript.com directly?

Publishing on Anaconda Notebooks provides you with a server-hosted app, while PyScript.com provides you with a browser-hosted app. Panel supports both server and browser operation, but a) browser-side operations require copying all the data down to the browser (not suitable for very large datasets), and b) not everything can be run browser-side because not every operation is available in WASM (e.g. libraries like `numba`, `dask`, or `pytorch` cannot be run in the browser currently). In other words, it's a matter of running on the server or running locally in your browser.

### Where can I get support?

You can get community support on the [Anaconda Community forums](#). If you're in need of further technical assistance, please [file a support ticket](#).

### What packages are preconfigured on Anaconda Notebooks?

All packages available from the Anaconda installer are preloaded and ready to code through Anaconda Notebooks. More specifically, the service will include environments based on the most recent installers. For example, `anaconda-panel-2023.05-py310` is the latest release of Anaconda Distribution and is the default environment within Anaconda Notebooks. As new installers are released, new environments will be available.

To see a list view of all preloaded packages, launch Anaconda Notebooks and select the `anaconda-panel-2023.05-py310` kernel. Once the kernel is activated, enter `conda list` into any notebook file.

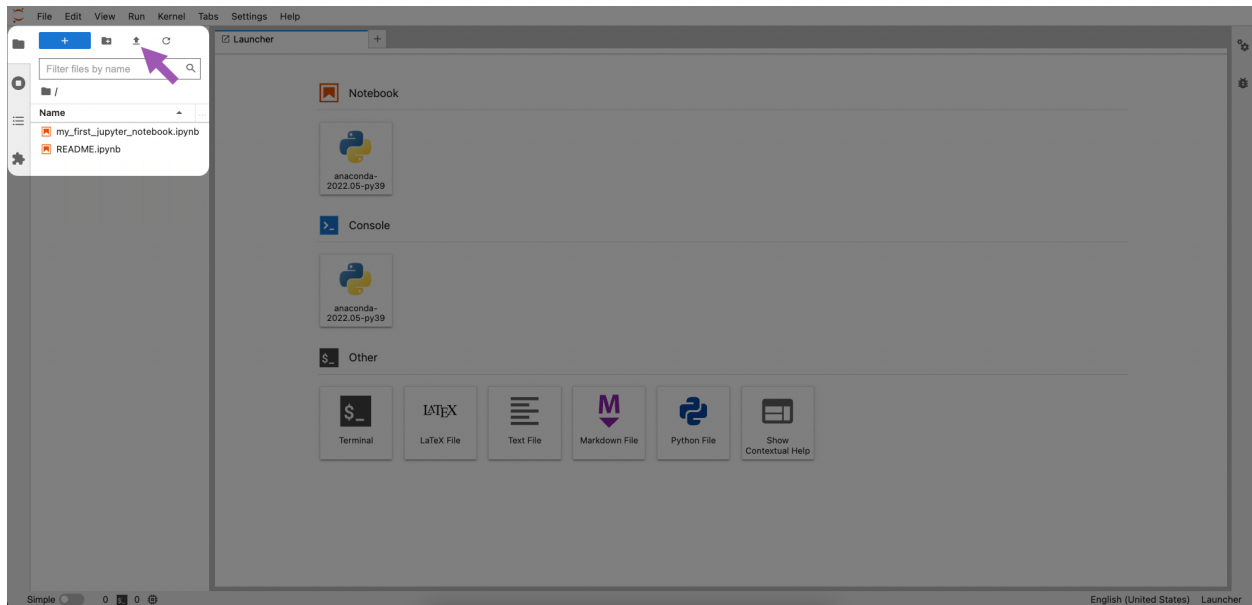
### Can I share my notebooks?

Yes! Click **Share** at the top of your notebook to produce a shareable link or embeddable HTML for your notebook. See [Sharing Anaconda Notebooks](#) for more information.



## How do I upload a notebook to the service?

In the Anaconda Notebooks JupyterLab interface, click **Upload files** in the File Browser to browse for a local `.ipynb` file. Then, click **Open**. The notebook will appear in the left-hand menu.



You can also drag and drop a notebook from a folder on your system to the file browser to upload it.

## How do I save a notebook?

Like most IDEs or editors, JupyterLab has the standard “Save” and “Save As...” functions that will save a notebook in your directory on our platform. You can also download a notebook file from the File menu to save it locally.

## What kind of storage does Anaconda Notebooks come with?

The storage provided through the notebook service is persistent Elastic Block Store (EBS) storage. EBS storage is fast, backed-up, SSD storage and supports common data science and machine learning workloads. EBS storage is generally faster and more reliable than most cloud-hosted options.

## Can I add more storage?

Not yet, but soon! If you’re running out of storage space, we suggest that you remove any unused notebook assets, such as extra file directories, notebook files, and custom conda environments.

## What are the memory limits of this service?

On this service, each process is limited to 3GB of memory. If you exceed that, your process will be killed and you will need to restart your kernel. If you need to run much larger processes, please contact us at [sales@anaconda.com](mailto:sales@anaconda.com).

## What is a high-compute second?

A CPU second is one second of running code on a single CPU core at 100%. We refer to them as “high-compute seconds” on our pricing page to clearly distinguish CPU seconds from “wall clock” seconds. Simply running JupyterLab, writing code, and using the interface don’t really use up quota (though they have a small impact). Only running python code from within a notebook and running commands from the terminal count against your quota, and even then very few command functions truly tax the CPU.

For example, if your code makes an HTTP request, then it will use a tiny amount of CPU time assembling the request and sending it out over the network, but will then use no CPU at all while it’s waiting for a response. When the response comes back from the other end, then it will again use a small amount of CPU to interpret the response and provide your code with the results. So, in general, CPU time is only used while your program is actively making calculations, not while it is waiting for other systems.

## When does the clock on CPU seconds reset?

Our notebook service accounts have a per-day limit for the maximum number of seconds fully utilizing the CPU. Once an instance hits that limit, it is not shut down, but instead given lower CPU priority and a limit to the amount of compute resources available. This limit is reset every day, so full compute access will be restored the next day.

## Can I use packages from the Professional repository in Anaconda Notebooks?

Packages available from Anaconda Notebooks are a subset of packages available from the free and public [repo.anaconda.com](https://repo.anaconda.com) repository. Installing packages from the Professional repository via tokenized access is not currently supported.

## Can I install new packages or create custom environments in Anaconda Notebooks?

You can create your own conda environments using any packages that conda can install from [repo.anaconda.com](https://repo.anaconda.com). This can be achieved by following the steps in Anaconda Navigator’s *Managing environments* documentation, or via the command line interface (CLI):

---

**Tip:** These steps can also be found in the README.ipynb file in your Anaconda Notebook.

---

### Creating custom environments

1. Open a terminal from the Launcher in Anaconda Notebooks.
2. Run the following command to create a custom environment:

```
# Run this command to create a custom environment running Python 3.9
# Replace <ENVIRONMENT_NAME> with a name of your choosing
conda create --name <ENVIRONMENT_NAME> python=3.9 ipykernel -y
```

### Activating custom environments

After a minute or two, you should be able to activate your custom environment by either:

- Clicking the kernel at the top right of the notebook (“anaconda-<YEAR>.<MONTH>-py<PYTHON\_VERSION>”), then switching to the kernel of the environment you created in the Select Kernel modal.
- Selecting the notebook displaying your custom environment name from the Launcher.

### Installing packages

You can then install any further packages you need by running the following:

```
# Replace <PACKAGE_NAME> with the name of the package you want to install
conda install <PACKAGE_NAME> -y
```

---

**Note:** Custom environments will be stored using your dedicated, persistent Anaconda Notebooks storage. This ensures the custom environment will be available after the current session.

---

### Can I use Anaconda Notebooks for work?

Customers accessing Anaconda Notebooks with subscription tiers Pro and above are permitted to use all Anaconda products for commercial use. However, Anaconda Notebooks alone does not provide commercial compliance to its users.

### I have an organization in Anaconda Cloud. How can my team leverage Anaconda Notebooks?

Registered customers who are part of organizations on Anaconda Cloud can independently access Anaconda Notebooks. Access to Anaconda Notebooks is granted upon member role designation and registration.

### Can I control access to Anaconda Notebooks?

All registered customers can access Anaconda Notebooks. Organization-level features, including user access controls, are coming soon. Stay tuned!

### I have a site license. How do I give my members access?

If you are a customer but have not yet registered your organization on Anaconda Cloud, please refer to [this documentation](#) on how to set up your organization and invite members.

### How do I create an R kernel?

Open a terminal from the Launcher in Anaconda Notebooks and run `conda create -n test_r r-irkernel -y`. The kernel should appear within a few minutes.

### Troubleshooting

#### How do I completely reset my notebook instance?

To completely reset (“factory reset”) your instance of Anaconda Notebooks, email user care at [user-care@anaconda.com](mailto:user-care@anaconda.com).

#### My notebook is trying to import a package, but I’m getting an error.

The most common cause of errors is a lack of required package(s) installed in your environment. The default environment we provide, based on the Anaconda distribution, contains hundreds of the most common python packages for data science, but it doesn’t include everything. You may need to create a custom environment to install the package you need.

Here are a couple of steps to help resolve this:

##### Make sure you have the right kernel/environment selected

The default `anaconda-<YEAR>.<MONTH>-py<PYTHON_VERSION>` environments have a broad selection of packages, but you may have created a custom environment for your notebook. Separate environments are represented as “kernels” in JupyterLab. You can view and switch between available kernels by clicking the kernel name in the upper-right corner of the content pane.

##### List the packages available in an environment

You can view which packages are available in your current environment from the terminal by running the `conda list` command. If you want to view the packages of a specific environment, run the command `conda list -n <ENV_NAME>`. If you need to see a list of available environments, you can run the `conda env list` command. An asterisk will appear next to your current active environment.

---

**Tip:** You can run those commands directly in a code cell within your notebook just by adding a “!” to the front of the command (e.g. `!conda env list`).

---

##### Create a custom environment

If none of your existing environments have the right package(s), either install the package into one of your custom environments with `conda install <PACKAGE>` or create a new custom conda environment with the right packages. You can add new environments via the terminal by running `conda create --name <ENV_NAME>`.

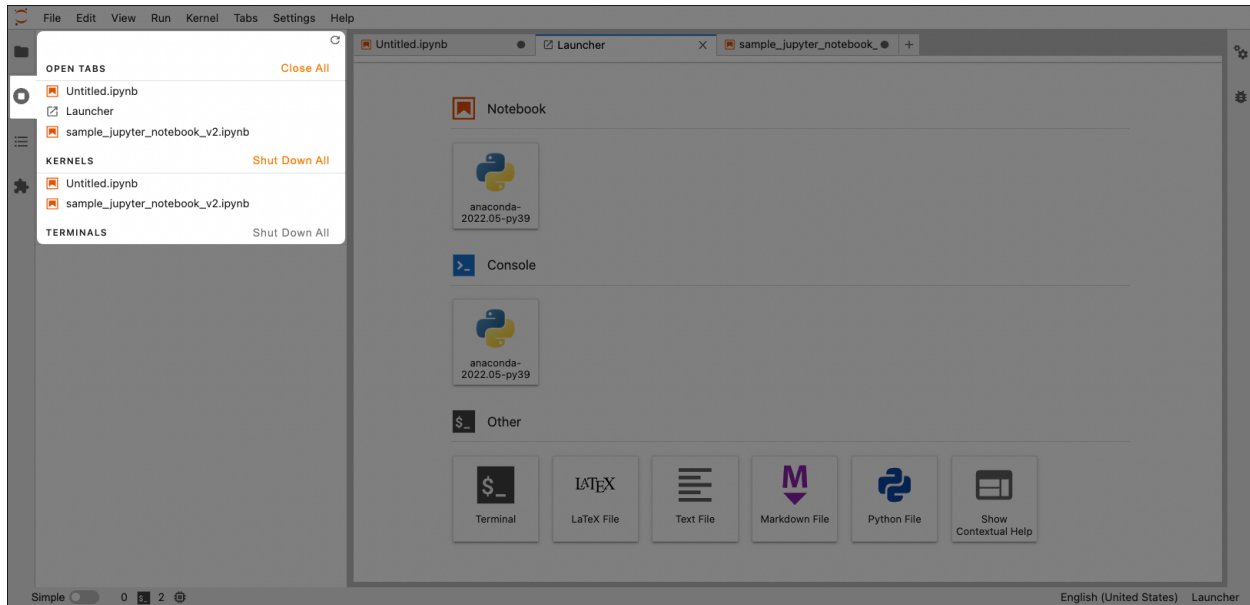
Once an environment is created, it will be available as a kernel for running your notebook.

#### What can I do if my notebook is running really slowly?

You may have exceeded your CPU usage limit for the day. Our notebook instances have a limit for the maximum number of seconds fully utilizing the CPU. Once an instance hits that limit, it is not shut down, but instead given lower CPU priority and a limit to the amount of compute resources available. This limit is reset every day, so full compute access will be restored the next day.

To see current progress towards your daily quota, reference the widget in the upper right of the interface that shows current CPU usage vs. the daily limit.

To better manage your CPU usage, regularly check the **Running Terminals and Kernels** widget in the left sidebar to kill unnecessary kernels when you no longer need them.



## What do I do if I run out of storage/go over my quota?

**Caution:** Creating custom environments consumes a large amount of storage. Anaconda recommends **free tier** Notebooks users avoid custom environments.

You can check the status of your disk usage via the widget in the top right of the screen, which shows current usage as a percentage of the total space available.

If you're running out of space, upgrade your subscription or delete some items from your drive:

### Do you have any extra notebooks or directories you can remove?

You can view and delete files from the File Browser in the upper left, or on the command line by launching a terminal.

### Do you have any custom conda environments?

1. Run `conda env list` and see if there are any environments *NOT* in `/opt/conda`.
2. If there are, you can remove those that you don't need anymore by running:

```
# Replace <ENV_NAME> with the environment name
conda env remove -n <ENV_NAME>
```

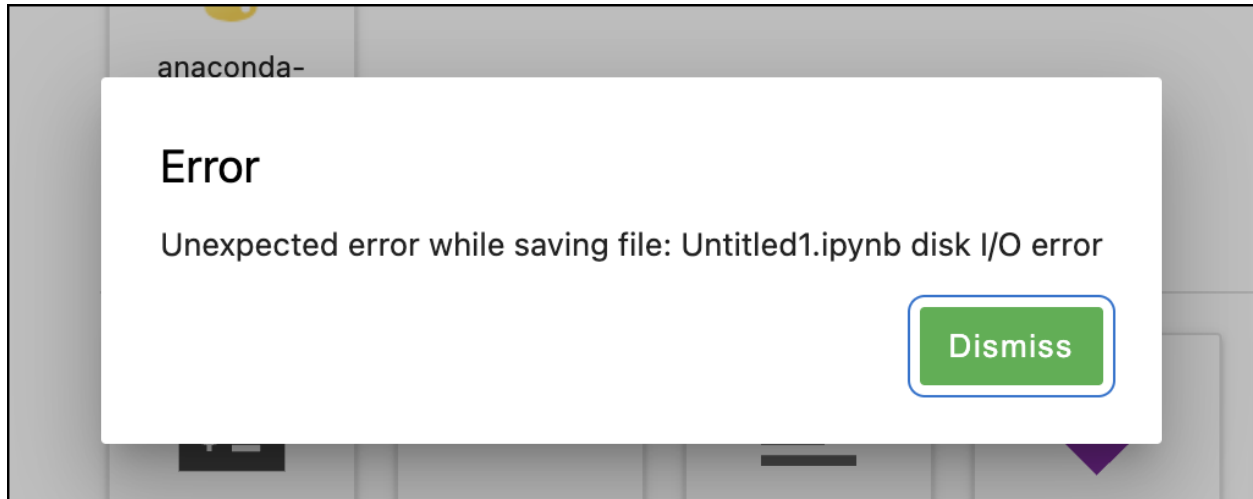
3. Further, clear out the cache and other artifacts by running:

```
conda clean --all
pip cache purge
rm -rf /tmp/*
```

**Note:** The option to upgrade your account and expand your storage is coming soon!

### Why am I receiving an error message?

If you receive a “file load error,” “unhandled error,” or “unexpected error,” like in the following figure, you have most likely exceeded the storage space for your current tier. Follow the steps in the storage question above to remove items from your Notebooks instance, or upgrade to a higher subscription tier.



### I’m registered/signed in—why isn’t Notebooks opening?

Your browser’s pop-up blocker (automatically enabled on Firefox and Safari) may have prevented Notebooks from opening.

Disable your pop-up blocker and try opening Notebooks again from [anaconda.cloud](https://anaconda.cloud).

### I have upgraded from the free tier to a paid tier, but I am unable to connect to certain websites.

Unrestricted internet access is only activated in new Notebooks processes. Therefore, Anaconda recommends restarting the kernel or starting a new notebook.

#### Why does Anaconda use an allowlist?

Anaconda uses an allowlist to prevent malicious actors from using free accounts to hack into and spam other websites anonymously.

Free tier accounts can only access the websites on our [allowlist](#).

Paid tier accounts have unrestricted internet access, as they can be linked to real people via the payment details.

#### How can I add sites to the allowlist?

To add new sites to the allowlist, submit a request using the [Anaconda Notebooks/PythonAnywhere Allow List Request](#) form. We only add sites to the list if they have an official, public, documented API—that is, sites that are designed and intended for machine consumption rather than human consumption.

---

**Note: GitLab instances:** GitLab instances can be allowlisted if they contain public repositories. To add a GitLab instance to the allowlist, provide a link to the public repository in your request.

---

## I published a Panel application, but the application is blank.

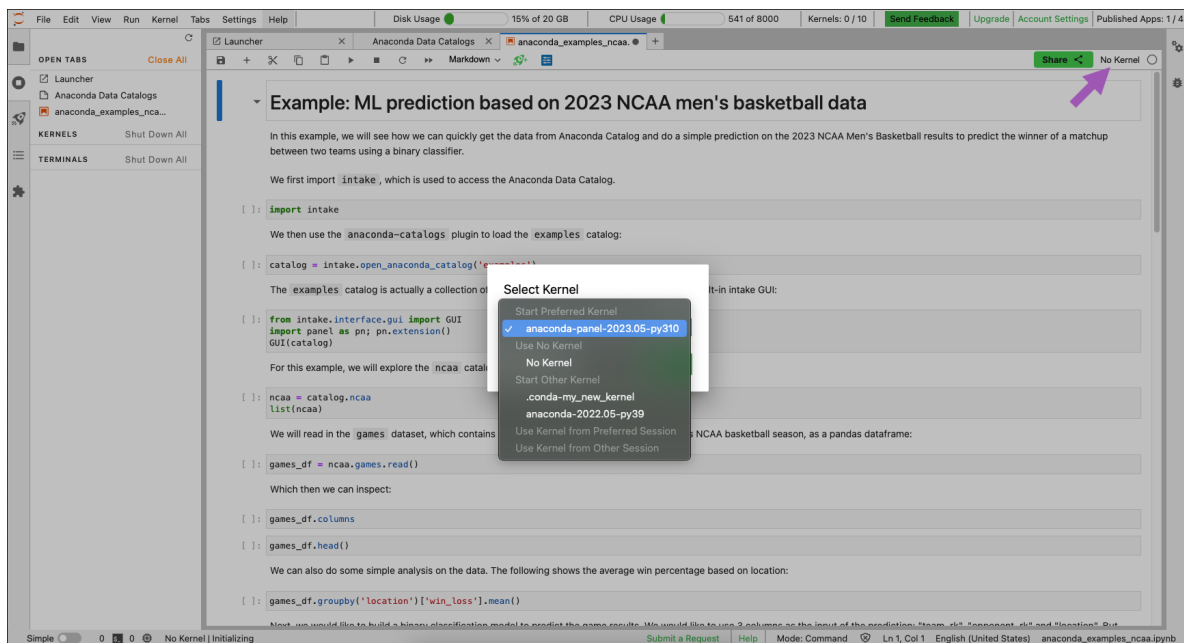
There are a couple of reasons your application may not be rendering:

1. To create a valid Panel application, one or more of your outputs must be marked as `.servable()`. Take this minimal “Hello, World!” program, for example:

```
import panel as pn
pn.Row("Hello, World!").servable()
```

If you added content to your application but there’s still nothing showing up, ensure that your notebook can be run from top to bottom. The easiest way to test this is to click **Kernel** in the menu bar, then select **Restart Kernel and Run All Cells..** from the dropdown.

2. Ensure you have selected the `anaconda-panel-2023.05-py310` kernel from the kernel selector in the top-right of your notebook.



## I published an application but it’s stuck in a “publishing” state.

If your application is stuck in the “Your app is being published” state, check your notebook error logs. Address any issues raised and republish.

## Security practices for Anaconda Notebooks

We do all we can to keep your Anaconda Notebooks account secure, along with the files and data you have stored in it—from fully-patched operating systems to strict internal policies determining when our support staff are allowed to look at your stuff (basically, never without your permission unless your code is causing major systemwide problems, or is probably involved in illegal activities).

### What you can do to protect yourself

Follow these best practices to help keep your account secure:

- If you're sharing code with anyone (including on our forums), make sure that you don't post anything with passwords in it. For workarounds, check out [Alexandra Souly's TDS article on safe credential use in Notebooks](#).
- Make sure you use a highly secure password for your Anaconda Cloud login. Anaconda recommends using memorable but unguessable passwords of the kind [dreamed up by Randall Munroe of XKCD](#). There's even a [Python package to generate them](#). A good alternative is to use completely random passwords of at least 16 alphanumeric characters and to store them in a password manager like [Keepass](#).
- Verify your email address to reset your Anaconda Cloud password if you forget it.
- Look out for phishing. Anaconda will never send you an email asking for your password. Also, check the address bar in your browser before typing in your password!
- Don't leave a device that's logged in to Anaconda Notebooks unattended in a public area.
- If working with sensitive information in a public place, use a privacy screen on your device to discourage strangers from viewing your screen.

### Security practices

#### Token privacy

You need a private token to access channels and content. For your security, **please keep your token saved in a secure location.**

#### Anaconda Content Trust: conda package signature verification

The **conda signature verification** feature requires conda version 4.10.1 (or later). Using it allows you to detect tampering with packages and package metadata between our secure build process and the end user's install process. Based on The Update Framework (TUF), it provides defense against a [wide variety of attacks](#).

**Caution:** Conda signature verification must be turned on, as it is currently off by default.

### Setup

1. Install the necessary packages:

```
conda install "conda>=4.10.1" "conda-token>=0.3.0" conda-content-trust
```

2. Use conda-token to configure access, turn on signature verification, and empty the index cache:

```
conda token set --enable-signature-verification <YOUR_PRODUCT_TOKEN>
```



## Result

Conda signature verification should now be functional. When you ask conda to install packages from the professional repository, conda will inform you about the signature status of the packages it proposes installing. For example, in this case we've run `conda install django`:

```
## Package Plan ##
```

```
environment location: /home/s/miniconda3-av2
```

```
added / updated specs:
- django
```

The following packages will be downloaded:

package	build	
-----	-----	
asgiref-3.3.4	pyhd3eb1b0_0	24 KB
django-3.2	pyhd3eb1b0_0	3.1 MB
krb5-1.17.1	h173b8e3_0	1.3 MB
libpq-12.2	h20c2e04_0	2.1 MB
psycpg2-2.8.6	py38h3c74f83_1	160 KB
pytz-2021.1	pyhd3eb1b0_0	181 KB
sqlparse-0.4.1	py_0	35 KB
-----	-----	
Total:		6.9 MB

The following NEW packages will be INSTALLED:

```
asgiref      repo/main/noarch::asgiref-3.3.4-pyhd3eb1b0_0 (INFO: package_
↳ metadata is signed by Anaconda and trusted)
django       repo/main/noarch::django-3.2-pyhd3eb1b0_0 (INFO: package metadata_
↳ is signed by Anaconda and trusted)
krb5         repo/main/linux-64::krb5-1.17.1-h173b8e3_0 (INFO: package_
↳ metadata is signed by Anaconda and trusted)
libpq        repo/main/linux-64::libpq-12.2-h20c2e04_0 (INFO: package metadata_
↳ is signed by Anaconda and trusted)
psycpg2      repo/main/linux-64::psycpg2-2.8.6-py38h3c74f83_1 (INFO: package_
↳ metadata is signed by Anaconda and trusted)
pytz         repo/main/noarch::pytz-2021.1-pyhd3eb1b0_0 (INFO: package_
↳ metadata is signed by Anaconda and trusted)
sqlparse     repo/main/noarch::sqlparse-0.4.1-py_0 (INFO: package metadata is_
↳ signed by Anaconda and trusted)
```

Trusted packages are marked with (INFO: package metadata is signed by Anaconda and trusted).

If no signatures are currently provided for a package—for example, if you are installing from third-party channels—that message will not be provided.

Further, if the trusted signatures do not match the data, tampering may have occurred, and you will receive a warning instead: (WARNING: metadata signature verification failed).

To turn the feature off, you can adjust your conda configuration:

```
conda config --set extra_safety_checks false
```

Please see our blog post on [conda signature verification](#) for more information.

## Frequently asked questions

### Questions regarding installers & packages, conda, or Navigator

For any questions regarding installers and packages, please refer to [Distribution Troubleshooting](#).

For help with conda, please refer to our [conda documentation](#).

For help with Navigator, please refer to our [Navigator documentation](#).

## Getting started with Anaconda

### What do I get from this tier that I don't get from the free tier (Anaconda Distribution)?

- Secure access to our commercial package repository, with a new URL and token for access
- Compliance for commercial use according to the Anaconda Terms of Service
- Ability to leverage mirroring software to create copies of the commercial package repository (Site license only)
- Policy filters and virtual channels (Business tier only)

### Can I still keep my Anaconda Distribution account?

Yes, as long as your Anaconda Distribution account is used for non-commercial activities.

### Does my personal email address associated with my account follow me to my corporate membership?

It can, but Anaconda recommends using your corporate email so your admin can track all tokens in use.

## Setting up and managing your Anaconda account

### How do I verify my account?

Accounts will be verified through a link sent to the account email address.

### What happens if I do not receive an email verification?

Ensure the email did not go to your spam folder. If it is not there either, please [submit a ticket](#).

### What happens if I get an error after clicking the verification link?

Please [submit a ticket](#) for account-related questions.

### How do I reset my password?

From your profile in the top-right corner, click **Profile** in the dropdown, then click [Update Password](#). Once you have reset your password, click **Save Changes**.

If you are unable to access your account, click **Forget your Password?** on the sign in page. Enter the associated email address to receive a link to reset your password.

### Does my password expire?

Never!

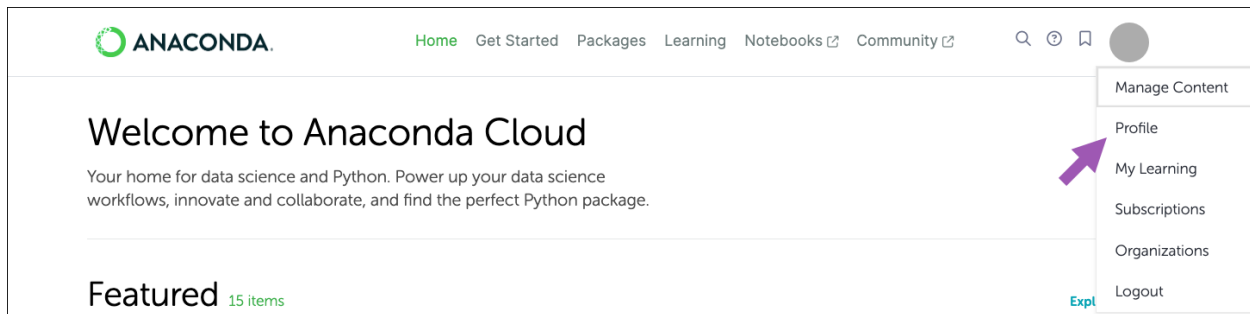
## Will I remain logged in until I log out? In other words, how long can I leave my computer idle before I need to log in again?

If you are not actively using Anaconda, you should remain logged in for about one hour. After that, you will need to sign in again.

## Setting up and managing your Anaconda profile

### How do I access my profile?

In the top-right corner of your dashboard, click the circle containing your initials. Then, select **Profile** from the drop-down.

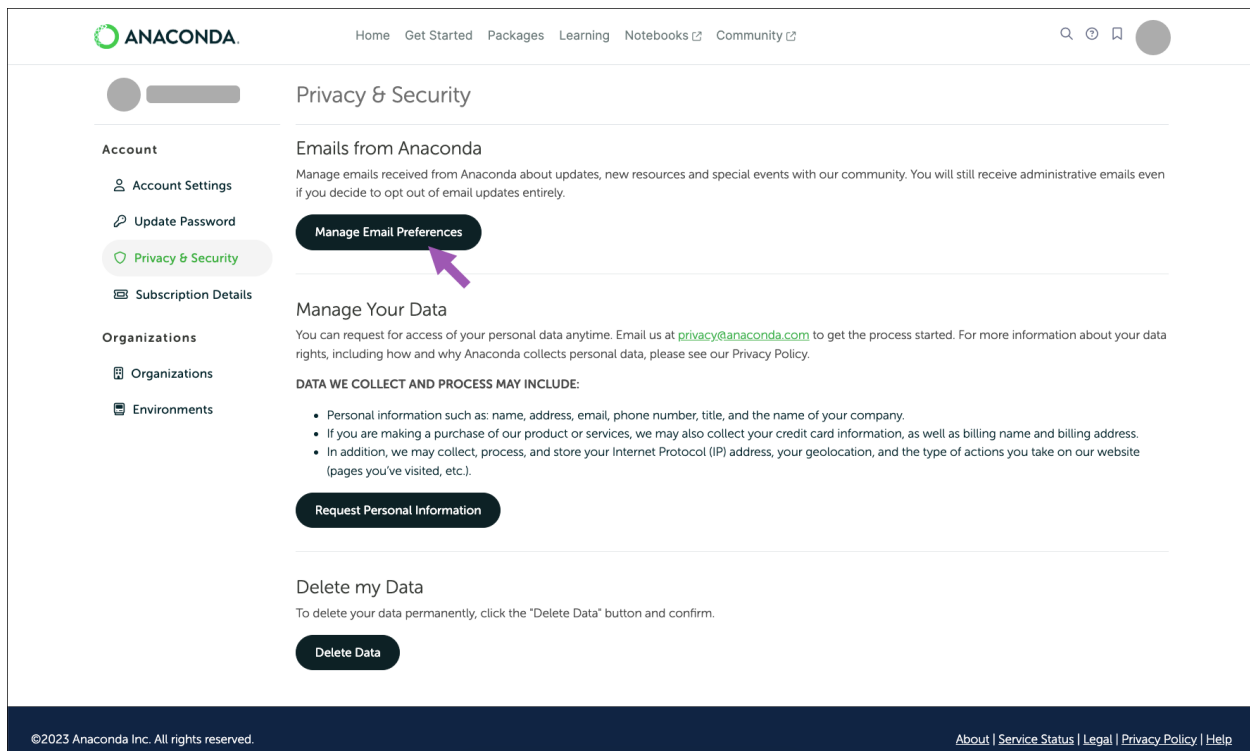


### How do I add a profile picture to my profile?

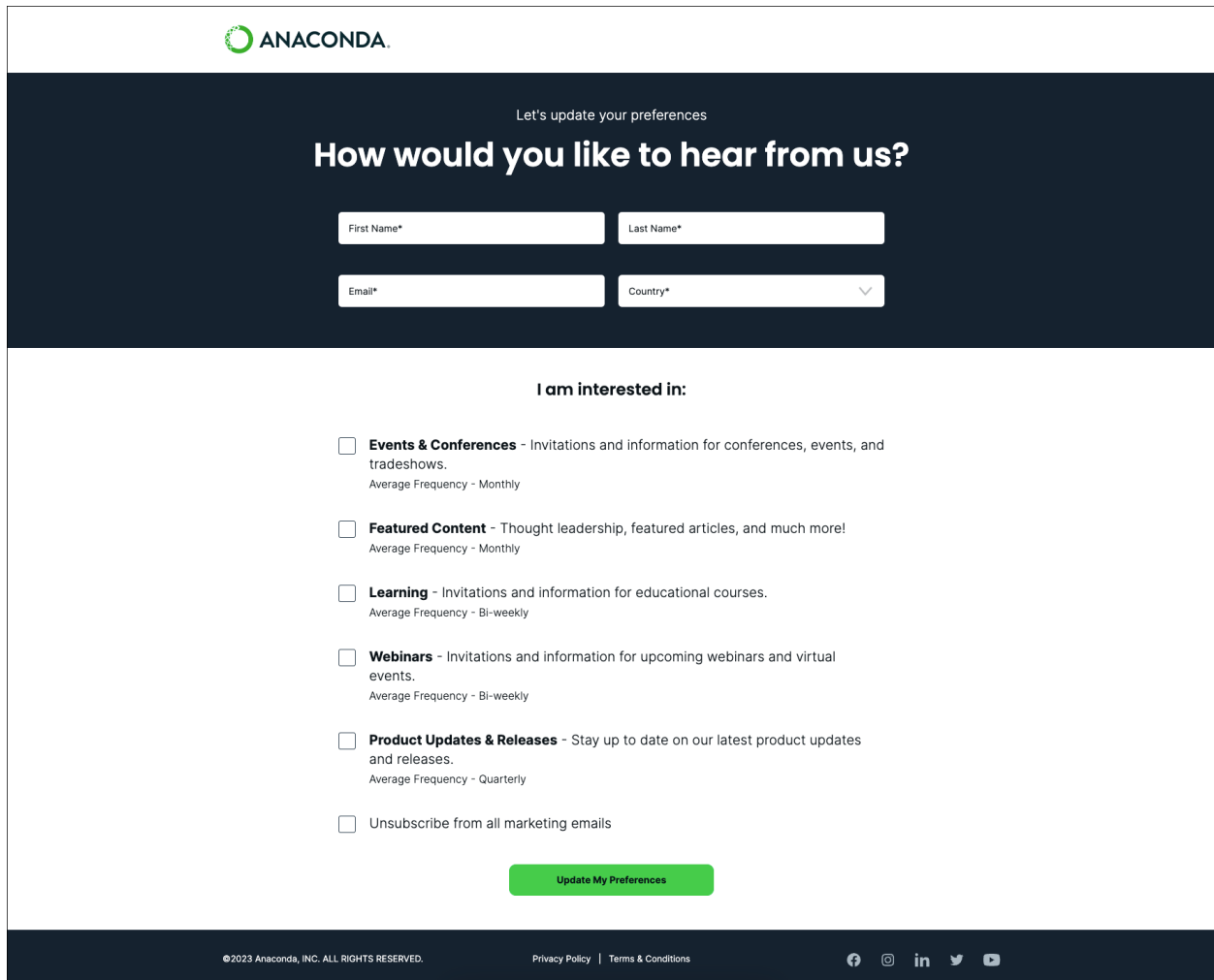
Currently adding a profile picture to your profile is not available. This functionality will be part of a future release.

### How do I manage my marketing email preferences?

You can update your opt-in or opt-out preferences by navigating to [Privacy & Security](#) from your **Profile**. Once there, click **Manage Email Preferences**.



The email preferences page will open in a new tab. Make any changes you'd like, and then click **Update My Preferences** to save.



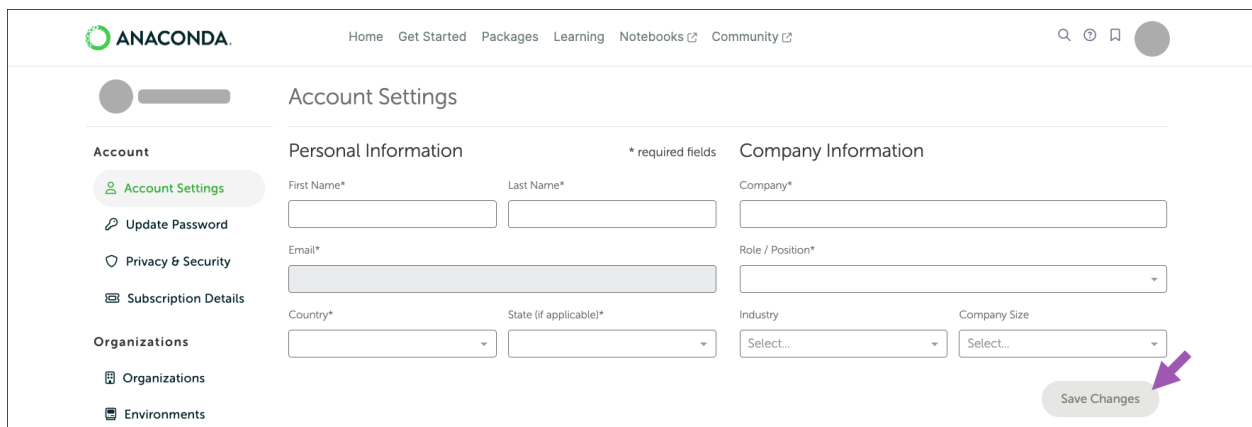
The screenshot shows the Anaconda website's email preferences page. At the top, the Anaconda logo is on the left, and the text 'Let's update your preferences' is centered. Below this is a large heading 'How would you like to hear from us?'. There are four input fields: 'First Name\*', 'Last Name\*', 'Email\*', and 'Country\*' (with a dropdown arrow). Below these fields is a section titled 'I am interested in:' with five checkboxes and their corresponding descriptions and average frequencies:

- ☐ **Events & Conferences** - Invitations and information for conferences, events, and tradeshows. Average Frequency - Monthly
- ☐ **Featured Content** - Thought leadership, featured articles, and much more! Average Frequency - Monthly
- ☐ **Learning** - Invitations and information for educational courses. Average Frequency - Bi-weekly
- ☐ **Webinars** - Invitations and information for upcoming webinars and virtual events. Average Frequency - Bi-weekly
- ☐ **Product Updates & Releases** - Stay up to date on our latest product updates and releases. Average Frequency - Quarterly
- ☐ Unsubscribe from all marketing emails

At the bottom of this section is a green button labeled 'Update My Preferences'. The footer of the page contains copyright information, privacy policy/terms & conditions links, and social media icons.

## How do I change my industry and company size?

You can change your industry and company size by navigating to your [Account Settings](#) page. Once there, update your details in the **Industry** and **Company Size** cells, and then click **Save Changes**.



The screenshot shows the Anaconda 'Account Settings' page. The left sidebar contains a list of settings: Account Settings (selected), Update Password, Privacy & Security, Subscription Details, Organizations, and Environments. The main content area is titled 'Account Settings' and is divided into two sections: 'Personal Information' and 'Company Information'. The 'Personal Information' section includes fields for 'First Name\*', 'Last Name\*', 'Email\*', 'Country\*', and 'State (if applicable)\*'. The 'Company Information' section includes fields for 'Company\*', 'Role / Position\*', 'Industry' (with a dropdown menu), and 'Company Size' (with a dropdown menu). A purple arrow points to the 'Save Changes' button at the bottom right of the 'Company Information' section.

## How do I assign a new account admin?

Complete the following steps as an admin:

Navigate to your [Organizations](#) page, then select your organization. From the **Users** tab, you can assign a new account admin by clicking the action icon in the **Actions** column and selecting **Assign as Account Admin**.

The screenshot displays the Anaconda web interface for managing users. The main content area is titled 'Users' and shows a table of users. The table has columns for 'USER', 'ROLE', 'PRODUCT', 'GROUPS', and 'ACTIONS'. A dropdown menu is open for the user 'AG', showing options: 'Revoke Seat', 'Manage Groups', 'Assign as Account Admin' (highlighted with a red arrow), 'Assign as Billing Manager', and 'Remove from Organization'. The left sidebar shows navigation options like 'Org Management', 'User Management', and 'Service Accounts'. The top bar includes the Anaconda logo and navigation links.

The person you've assigned to account admin will receive an email notifying them that their role has been changed.

## Authenticating Anaconda

### What happens if I lose my token?

You can request a new token by navigating to [Token](#) from your **Profile**. Once there, click the **Request New Token** button. You will receive a new access token in an email shortly thereafter.

**Note:** Requesting a new token will revoke and deactivate your existing token's access. Please make sure to reconfigure your `.condarc` file after replacing your private token by running the `conda token set <TOKEN>` command.

### Do I ever need to update my access token?

If you are transitioning from an individual user license to a site license, you will need to update your access token.

### What if I need multiple access tokens, say, for a team of users?

For now, you need to create a new account to obtain a new access token.

### What happens if someone else uses my token?

You can request a new token by navigating to [Token](#) from your **Profile**. Once there, click the **Request New Token** button. You will receive a new access token in an email shortly thereafter.

**Note:** Requesting a new token will revoke and deactivate your existing token's access. Make sure to reconfigure your `.condarc` file after replacing your private token by running the `conda token set <TOKEN>` command.

### How do I prevent unauthorized access?

Keep your access token private and secure.

### What do I do if my access token does not work?

Please [submit a ticket](#) for account-related questions.

### When does my token expire?

Your token will expire either one month after your subscription has ended or immediately when your subscription is cancelled.

## Setting up my access

### Can I add support to my subscription?

Yes. This is done via a sales agreement. Please contact sales at [sales@anaconda.com](mailto:sales@anaconda.com).

### How do I obtain my access token?

A private token will be sent to the email address you provided once you have subscribed.

### How do I activate my account?

If you have not downloaded Anaconda installers yet, you can get them [here](#). To authenticate Anaconda, please refer to the Authenticating Anaconda section in the Quickstart guide for detailed instructions.

### How do I add `repo.anaconda.cloud` to the `.condarc` file and as a channel in an existing `conda` command?

Please refer to the Authenticating Anaconda section in the Quickstart guide.

## Setting up and managing payments and billing

### How do I view my subscription information?

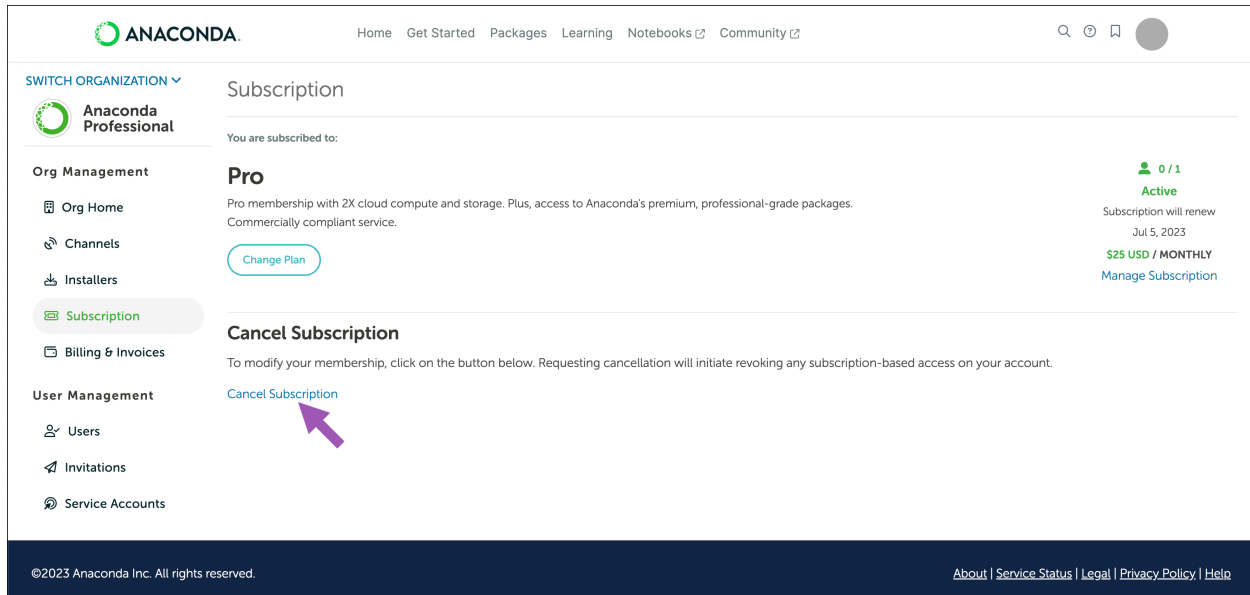
From your profile in the top-right corner, navigate to your **Profile**, then click [Subscription Details](#).

### How do I manage my subscription?

On your [Billing & Invoices](#) page, click **Go to Stripe Billing Portal**. In Stripe, you can add a payment method, update your billing address, download an invoice, or change your plan.

### How do I cancel my subscription?

From your profile in the top-right corner, navigate to your **Profile**, then click [Subscription Details](#). Click **Cancel Subscription**.



On the following screen, click **Cancel Subscription**. Requesting cancellation will initiate revoking any subscription-based access on your account.

### Will I get a notification of my cancellation?

You will receive a confirmation email of your unsubscribing.

### What happens to my current account when I cancel my subscription?

You will have access to Anaconda until the end of the paid period, that being the end of the month if you purchased a month's subscription.

### How do I access my payment information?

From your profile in the top-right corner, navigate to your **Profile**, and then click **Billing & Invoices**.

### How do I change or add credit card information?

On your **Billing & Invoices** page, click **Go to Stripe Billing Portal**. In Stripe, click the edit icon to modify your credit card on file, or click **Add payment method** to add a new card.

### How do I change billing managers and my payment method?

Complete the following steps as an admin:

Navigate to your **Organizations** page, then select your organization. From the **Users** tab, you can assign a new billing manager by clicking the action icon in the **Actions** column and selecting **Assign as Billing Manager**.

The screenshot displays the Anaconda Users management interface. On the left, a sidebar contains 'Org Management' (Org Home, Channels, Token Access, Installers, Subscription, Billing & Invoices) and 'User Management' (Users, Groups, Invitations, Service Accounts). The main area is titled 'Users' and features a table with columns: USER, ROLE, PRODUCT, GROUPS, and ACTIONS. A filter bar is at the top of the table. A dropdown menu is open for a user with ID 'CG', showing options: 'Revoke Seat', 'Manage Groups', 'Assign as Account Admin', 'Assign as Billing Manager' (highlighted with a purple arrow), and 'Remove from Organization'. The top right of the page shows '984 Seats Available' and buttons for 'Assign Seat' and 'Revoke Seat'. The footer contains copyright information and links for About, Service Status, Legal, Privacy Policy, and Help.

On your [Billing & Invoices](#) page, click **Go to Stripe Billing Portal**. In Stripe, click the edit icon to modify your credit card on file, or click **Add payment method** to add a new card.

### How can I get my payment history?

You can see your payment history in one of two ways:

- Check the inbox of the email address associated with your Anaconda account, as well as the spam folder.
- On your [Billing & Invoices](#) page, click **Go to Stripe Billing Portal**. In Stripe, you can see past payments under **Invoice history**.

If you have paid for Anaconda but have not received any email confirmation for your purchase, please [submit a ticket](#).

### How long does it take to see a payment posted?

Approximately 5-10 business days after payment confirmation, depending upon the bank.

### What happens if my credit card is breached?

Please change your credit card details on your profile. From your profile in the top-right corner, navigate to your **Profile**, and then click [Billing & Invoices](#).

### Who hosts my credit card data?

Stripe. Anaconda does not host your financial data.

### What company shows up on my bank statement?

Stripe. Anaconda will show in the description.

### When will I be billed, monthly or yearly?

For monthly subscriptions, you will be billed a prorated amount for the current month and on the 1st of every month thereafter.

For yearly subscriptions, you will be billed exactly one year from the date you purchased your current subscription.



**Is my membership prorated?**

Yes, based on the date of purchase. For example, if you are billed on December 5, you have been charged for the prorated amount between December 5 through December 31.

**If I cancel mid-month, how long will I have access to the platform?**

You will have until the end of the canceled month.

**How do I change my subscription duration, i.e. switching from monthly to annual or annual to monthly?**

On your [Billing & Invoices](#) page, click **Go to Stripe Billing Portal**. In Stripe, click **Update plan**. Select either **Monthly** or **Yearly**, then click **Continue**. On the next page, click **Confirm**.

**Do I have to have a credit card on file?**

Purchases require an active and valid card on your profile.

**What is your refund policy?**

We do not offer refunds or exchanges.

**Will I get a receipt?**

Yes, we will email your receipt after purchase to the email address associated with your profile.

**How do I delete my personal data?**

You can request the deletion of your personal data anytime by navigating to the [Privacy & Security](#) page and clicking **Delete Data**.

The screenshot shows the Anaconda website's Privacy & Security page. The left sidebar contains links for Account, Organizations, and Environments. The main content area is titled 'Privacy & Security' and includes sections for 'Emails from Anaconda', 'Manage Your Data', and 'Delete my Data'. A purple arrow points to the 'Delete Data' button in the 'Delete my Data' section.

**Account**

- Account Settings
- Update Password
- Privacy & Security**
- Subscription Details

**Organizations**

- Organizations
- Environments

**Privacy & Security**

**Emails from Anaconda**

Manage emails received from Anaconda about updates, new resources and special events with our community. You will still receive administrative emails even if you decide to opt out of email updates entirely.

**Manage Email Preferences**

**Manage Your Data**

You can request for access of your personal data anytime. Email us at [privacy@anaconda.com](mailto:privacy@anaconda.com) to get the process started. For more information about your data rights, including how and why Anaconda collects personal data, please see our Privacy Policy.

**DATA WE COLLECT AND PROCESS MAY INCLUDE:**

- Personal information such as: name, address, email, phone number, title, and the name of your company.
- If you are making a purchase of our product or services, we may also collect your credit card information, as well as billing name and billing address.
- In addition, we may collect, process, and store your Internet Protocol (IP) address, your geolocation, and the type of actions you take on our website (pages you've visited, etc.).

**Request Personal Information**

**Delete my Data**

To delete your data permanently, click the "Delete Data" button and confirm.

**Delete Data**

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### Anaconda community

#### How do I report suspicious activity on the platform?

You can report any suspicious activity by [submitting a ticket](#).

#### How do I report a bug?

You can report bugs or any other errors to our [anaconda-issues repo](#).

### Troubleshooting

This page details some common issues and their respective workarounds. For Anaconda installation or technical support options, visit our [support offerings page](#).

#### Conda: Channel is unavailable/missing or package itself is missing

##### Cause

After you have configured your `.condarc` on either the Pro or Business tier, in some cases you may be unable to install packages. You may receive an error message that the channel or package is unavailable or missing.

##### Solution

One potential fix for all of these is to run the following command:

```
conda clean -i
```

This will clear the “index cache” and force conda to sync metadata from the repo server.

#### 403 error

##### Cause

A 403 error is a generic Forbidden error issued by a web server in the event the client is forbidden from accessing a resource.

The 403 error you are receiving may look like the following:

```
Collecting package metadata (current_repodata.json): failed

UnavailableInvalidChannel: The channel is not accessible or is invalid.
  channel name: pkgs/main
  channel url: https://repo.anaconda.com/pkgs/main
  error code: 403
```

You will need to adjust your conda configuration to proceed.  
Use ``conda config --show channels`` to view your configuration's current state,  
and use ``conda config --show-sources`` to view config file locations.  
There are several reasons a 403 error could be received:

There are a few possible reasons for receiving this error:

- The user has misconfigured their channels in their configuration (for example, the secure location where the token is stored was accidentally deleted (most common))
- A firewall or other security device or system is preventing user access (second most common)
- We are blocking their access because of a potential terms of service violation (third most common)

## Solution

1. First, run the following to undo your configuration:

```
conda config --remove-key default_channels
```

2. Next, install or upgrade the conda-token tool:

```
conda install --freeze-installed conda-token
```

3. Lastly, re-apply the token and configuration settings:

```
# Replace <TOKEN> with your token
conda token set <TOKEN>
```

If this doesn't resolve the issue, Anaconda recommends consulting our [Terms of Service error](#) page.

## HTTP 000 CONNECTION FAILED

If you receive this error message, first run the following command:

```
conda config --set ssl_verify false
```

Then, run the following to install conda-token:

```
conda install conda-token -n base
```

Lastly, run the following to ensure the token verification step ignores SSL errors:

```
# Replace <TOKEN> with your token
conda token set --no-ssl-verify <TOKEN>
```

You may see the following warning, though this is to be expected:

```
/Users/<USER_NAME>/Applications/miniconda3/lib/python3.7/site-packages/urllib3/
↳connectionpool.py:1020: InsecureRequestWarning: Unverified HTTPS request is being made.
↳to host 'repo.anaconda.cloud'. Adding certificate verification is strongly advised.
↳See: https://urllib3.readthedocs.io/en/latest/advanced-usage.html#ssl-warnings
InsecureRequestWarning,
```

## Environment creation failing due to policy filter

### Cause

Implementing strict policy filters with no exceptions can cause essential package dependencies to be filtered out of your repository. Without these packages, commands like `conda create --name <ENV_NAME> python=3.10` will fail.

If you are attempting to create a new environment, but your build is failing due to package conflicts or unavailable packages, it's likely due to your IT team's strict policy filter. You can request that package exceptions can be added to a policy filter, but you'll need to know which packages are causing problems first.

### Solution

To perform this test, you'll need a channel that has no policy filter applied to it. Create the channel in your organization and name it `quarantine`. Once created, add it to your `.condarc` file. For help adding a channel to your `.condarc` file, see [Channels](#).

With your quarantine channel created and added to your `.condarc` file, you can run the following command:

```
# Replace <ENV_NAME> with a test environment name (this is not permanent)
# Replace <CHANNEL> with your channel name
conda create --name <ENV_NAME> -c <CHANNEL> -c quarantine python=3.10 --dry-run
```

**Note:** If you have your channel alias set in your `.condarc`, you can use just the channel name with the `-c` (channel) argument. If you do not, you can use the full channel URL. You can copy the channel URL from your Channels page. For more information on setting your channel alias, see [Using the .condarc conda config file](#).

For example, if you are trying to test building an environment from the `snakes` channel, the command would be:

```
conda create --name test_environment -c snakes -c quarantine python=3.10 --dry-run
```

**Caution:** The ordering of `snakes` and `quarantine` is essential. Conda will attempt to solve the environment in the order the channels are listed, so `quarantine` must be listed last.

Your return will look like this:

```
## Package Plan ##
```

```
environment location: /Users/<USER>/opt/anaconda3/envs/test_env
```

```
added / updated specs:
- python=3.10
```

The following packages will be downloaded:

package	build		
openssl-1.1.1t	hca72f7f_0	3.3 MB	quarantine
pip-23.0.1	py310hecd8cb5_0	2.6 MB	quarantine
python-3.10.11	h218abb5_2	13.1 MB	quarantine

(continues on next page)

(continued from previous page)

setuptools-66.0.0		py310hecd8cb5_0	1.2 MB	snakes
sqlite-3.41.2		h6c40b1e_0	1.2 MB	snakes
tzdata-2023c		h04d1e81_0	116 KB	snakes
wheel-0.38.4		py310hecd8cb5_0	66 KB	snakes
xz-5.4.2		h6c40b1e_0	372 KB	snakes

-----

Total: 22.0 MB

The following NEW packages will be INSTALLED:

bzip2	snakes/osx-64::bzip2-1.0.8-h1de35cc_0
ca-certificates	snakes/osx-64::ca-certificates-2023.01.10-hecd8cb5_0
libffi	snakes/osx-64::libffi-3.4.2-hecd8cb5_6
ncurses	snakes/osx-64::ncurses-6.4-hcec6c5f_0
openssl	quarantine/osx-64::openssl-1.1.1t-hca72f7f_0
pip	quarantine/osx-64::pip-23.0.1-py310hecd8cb5_0
python	quarantine/osx-64::python-3.10.11-h218abb5_2
readline	snakes/osx-64::readline-8.2-hca72f7f_0
setuptools	snakes/osx-64::setuptools-66.0.0-py310hecd8cb5_0
sqlite	snakes/osx-64::sqlite-3.41.2-h6c40b1e_0
tk	snakes/osx-64::tk-8.6.12-h5d9f67b_0
tzdata	snakes/noarch::tzdata-2023c-h04d1e81_0
wheel	snakes/osx-64::wheel-0.38.4-py310hecd8cb5_0
xz	snakes/osx-64::xz-5.4.2-h6c40b1e_0
zlib	snakes/osx-64::zlib-1.2.13-h4dc903c_0

DryRunExit: Dry run. Exiting.

Packages that were retrieved from the quarantine channel are the packages that need to be considered for exceptions in the policy filter.

## 2.12.5 Enterprise

Enterprise includes a secure, scalable, enterprise-ready data science platform that empowers teams to govern data science assets, collaborate, and deploy their data science projects.

- **Develop:** ML/AI pipelines in a central development environment that scales from laptops to thousands of nodes
- **Govern:** Complete reproducibility from laptop to cluster with the ability to configure access control
- **Automate:** Model training and deployment on scalable, container-based infrastructure
- **Secure:** Secure your open-source pipeline with customized security and licensing filters and Anaconda-curated vulnerability data

### Enterprise (Cloud)

#### Coming Soon!

Enterprise on the cloud provides you with all the benefits of our on-prem Enterprise service—a data science platform, security capabilities, collaboration, and deployment—all on an Anaconda-managed server.

### Anaconda Enterprise 4

Anaconda Enterprise 4 includes *Anaconda Distribution*, Anaconda Enterprise 4 Repository, and Anaconda Enterprise 4 Notebooks. This is our previous-generation product, and documentation is provided for our current customers.

*Anaconda Enterprise 4 Repository* is an enterprise server on your network or your private cloud where open source and proprietary packages may be stored, retrieved, and shared.

*Anaconda Enterprise 4 Notebooks* is a browser-based Python data analysis environment and visualization tool in a secure, governed environment.

Please refer to *Anaconda Enterprise 5* documentation for our current-generation product.

### Anaconda Enterprise 4 Repository

#### *Open Data Science Hub*

Anaconda Enterprise 4 Repository is an enterprise server on your network or your private cloud where open source and proprietary packages may be stored, retrieved, and shared. It is used to govern access to data science assets including packages, environments, and notebooks.

Anaconda Enterprise 4 Repository has a self-contained internal mirror of packages and can install securely behind an enterprise firewall or in an air-gapped environment. It supports many repositories including PyPI, conda, and the Anaconda Repository.

Many enterprises have customized local instances of repositories. Anaconda also makes an instance of its default repositories available for public use at [anaconda.org](https://anaconda.org).

### User guide

#### Getting started

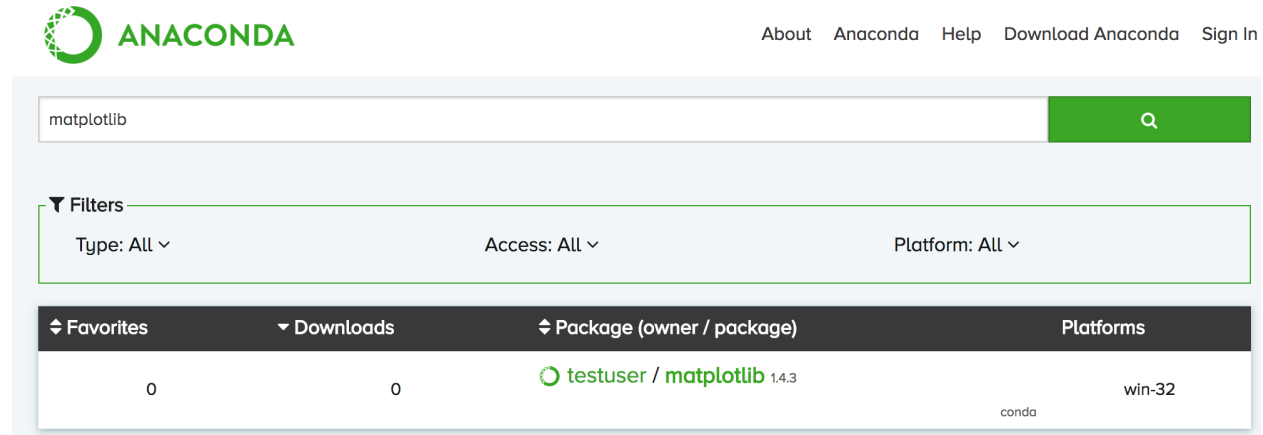
#### Finding, downloading and installing packages

You do not need to have an Anaconda Enterprise 4 Repository account or be logged in to search for, download, or install packages, notebooks, environments or installers.


You do need an account to access *private packages* without an *access token* and to upload and share your own packages, notebooks, environments and installers with others.

## Searching for packages

1. In the top Search box, type part or all of the name of a file you are searching for, and then press Enter.
2. Packages that match your search string are displayed. To see more information, click the package name.



The screenshot shows the Anaconda search interface. At the top, there is a search bar with 'matplotlib' entered and a green search button. Below the search bar, there are filter controls for Type, Access, and Platform, all set to 'All'. A table displays the search results for 'matplotlib'.

⬆ Favorites	⬇ Downloads	⬆ Package (owner / package)	Platforms
0	0	 testuser / matplotlib 1.4.3	conda win-32

## Refining your search results

You can filter search results using 3 filter controls:

- Type: All, conda only or PyPI only.
- Access: All, Public and/or Private—available only if you are logged in.
- Platform: All, Source, Linux-32, Linux-64, Noarch, OSX-64, Win-32 and Win-64.

NOTE: Source packages are source code only, not yet built for any specific platform. Noarch packages are built to work on all platforms.

## Downloading and installing packages from Anaconda Enterprise 4 Repository

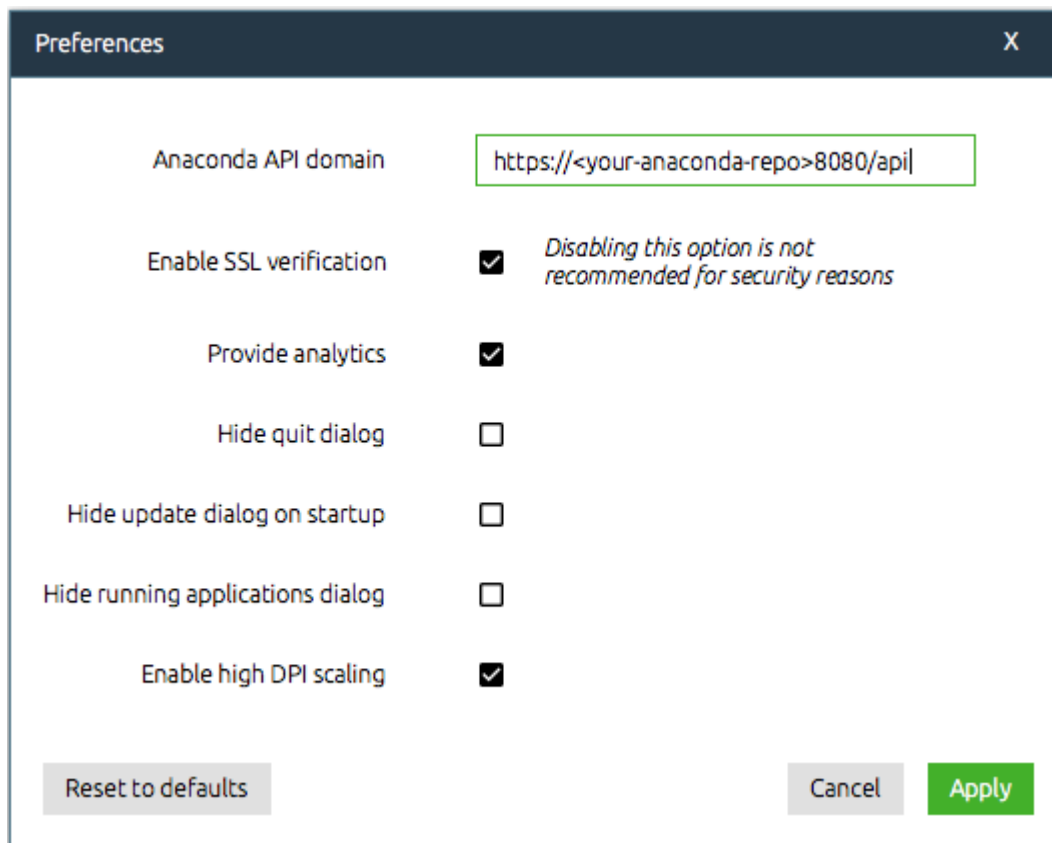
You can download and install packages using [Anaconda Navigator](#), the graphical user interface for Anaconda®. Advanced users may prefer a Terminal window or an Anaconda Prompt.

## Using Navigator

Navigator is automatically installed when you install Anaconda.

To download and install a package into its own environment:

1. Start Navigator by clicking its program icon on your desktop or in your programs menu.
2. Set up Navigator to search your local Repository:
  1. From the top menu bar, select Preferences.
  2. In the Anaconda API domain box, type the address of your local Repository:

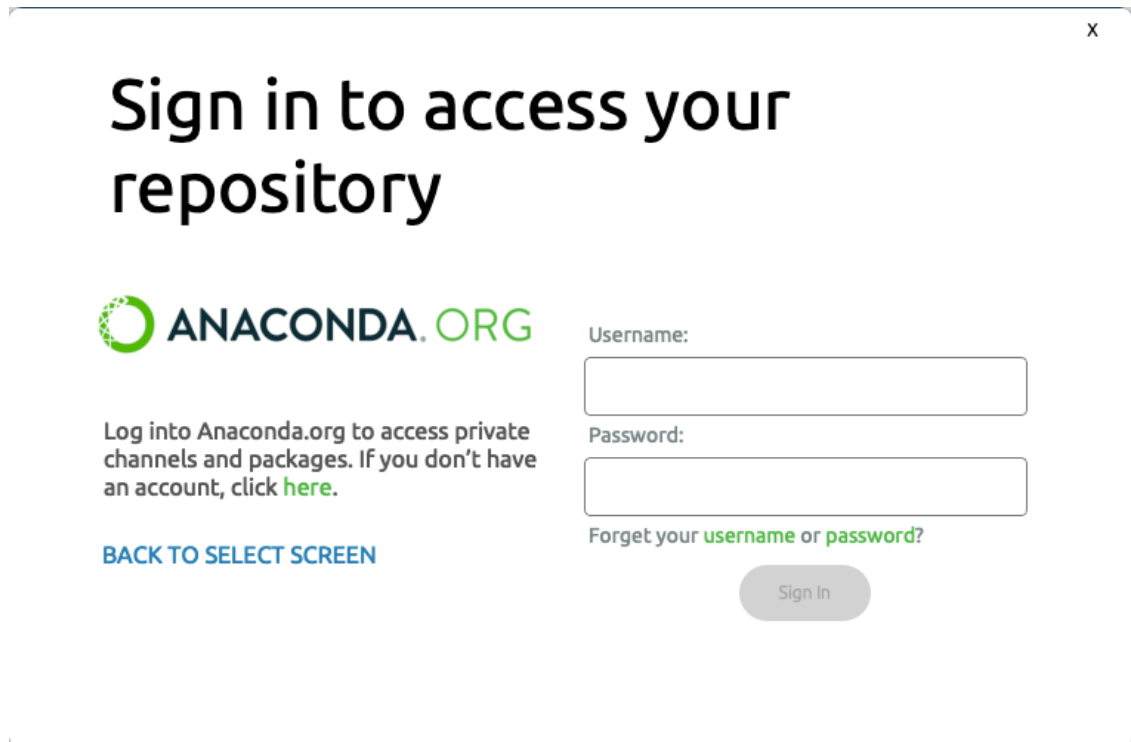


NOTE: If your organization does not use HTTPS, use `http` in the domain box and clear the Enable SSL verification checkbox.


NOTE: If your organization uses subdomains, enter the address as `https://api.<your-anaconda-repo>:8080`. Replace `<your-anaconda-repo>` with the name of your local Repository. If that does not work, contact your system administrator.

3. Click the Apply button.
3. Sign Navigator into your local Anaconda.org—Repository— so you can search for packages marked as private:
  1. Click the top right Sign in to Anaconda.org button.
  2. Type your Repository username and password:





Sign in to access your repository

 ANACONDA.ORG

Log into Anaconda.org to access private channels and packages. If you don't have an account, click [here](#).

[BACK TO SELECT SCREEN](#)

Username:

Password:

[Forgot your username or password?](#)

[Sign In](#)

3. Click the Login button.
4. On the **Environments** tab, in the far-right Search packages box, type the name of the desired package.
5. In the list to the left of Channels, select either Not installed or All, then click the Search button.
6. Select the checkbox of the package you want to install, then click the Apply button.

For more information, see the full Navigator documentation [Anaconda Navigator](#).

### Using conda in a Terminal window or an Anaconda Prompt

Conda is automatically installed when you install Anaconda.

To download and install a package into its own environment:

1. Locate a package on Anaconda Enterprise 4 Repository that you want to download, then click the package name.  
A detail page displays specific installation instructions for the current operating system.
2. Enter the command into your Terminal window or Anaconda Prompt.

EXAMPLE: To download and install a package with conda:

```
conda install -c USERNAME PACKAGE
```

TIP: Conda expands USERNAME to a URL such as `https://<your-anaconda-repo>/USERNAME`, based on the settings in the `.condarc` file.

### Building and uploading new packages

Building and uploading new packages is optional, and best suited for advanced users who are comfortable using a Terminal application. It requires the `anaconda-client`, which is easy to get if you have installed Anaconda.

Use Terminal window or Anaconda Prompt to run the following command line commands.

1. To build and upload packages, first install the Anaconda Client CLI:

```
conda install anaconda-client
```

2. Log in to your Repository account:

```
anaconda login
```

At the prompt, enter your Repository username and password.

3. Choose the package you would like to build. For this example, you can download our public test package:

```
git clone https://github.com/anaconda-platform/anaconda-client
cd anaconda-client/example-packages/conda/
```

4. To build your test package, first install `conda-build` and turn off automatic Client uploading, then run the `conda build` command:

```
conda install conda-build
conda config --set anaconda_upload no
conda build .
```

5. Find the path where the newly-built package was placed, so that you can use it in the next step:

```
conda build . --output
```

6. Upload your test package to your Repository account:

```
anaconda login
anaconda upload /your/path/conda-package.tar.bz2
```

NOTE: Replace `/your/path/` with the path you found in the previous step.

For more information, see [Working with conda packages](#).

### Sharing notebooks

To upload a notebook to Anaconda Enterprise 4 Repository with `anaconda-client`, open Anaconda Prompt or Terminal and then enter:

```
anaconda upload my-notebook.ipynb
```

NOTE: Replace `my-notebook` with the name of your notebook.

## Viewing notebooks

You can view an HTML version of your notebook in Anaconda Enterprise 4 Repository. Log in to your account, then from the drop-down menu of the view button, select Notebooks. Click the name of the notebook you want to view.

You can also view an HTML version of your notebook directly from:

```
http://<your-anaconda-repo>/USERNAME/my-notebook
```

NOTE: Replace `<your-anaconda-repo>` with your Repository name, `USERNAME` with your username and `my-notebook` with the name of your notebook.

Anyone who has `anaconda-client` and access to Repository can download your notebook. To download the notebook, open Anaconda Prompt or Terminal and enter:

```
anaconda download USERNAME/my-notebook
```

## Sharing environments

A `saved conda environment` can be uploaded to Anaconda Enterprise 4 Repository with the web interface or the `anaconda upload` command.

To save the environment, run this command in an Anaconda Prompt or Terminal window:

```
conda env export -n my-environment -f my-environment.yml
```

To upload it with the web interface go to:

```
https://<your-anaconda-repo>/<USERNAME>/environments
```

Then use the Upload button in the top right corner.

To upload it with the `anaconda upload` command:

```
anaconda upload my-environment.yml
```

NOTE: Replace `my-environment` with the name of your environment.

You can view a list of your uploaded environments at:

```
http://envs.<your-anaconda-repo>/USERNAME
```

NOTE: Replace `<your-anaconda-repo>` with the name of your local Repository and `USERNAME` with your username.

Anyone who has access can download and install your environment. Open Anaconda Prompt or Terminal and then enter:

```
conda env create user/my-environment
source activate my-environment
```

NOTE: Replace `user` with your username and `my-environment` with the name of your environment.

### How to...

#### Use packages

#### Find a package

From Anaconda Enterprise 4 Repository, you can search for packages by package name. From the top navigation bar of any page, in the search box enter the package name. You can filter your searches using type of the packages, access or labels and you can sort results by number of favorites or number of downloads by clicking the search results column heading.

#### Download and install a conda package from Repository

To install a conda package, in a Terminal window or an Anaconda Prompt run:

```
conda install -c USERNAME PACKAGE
```

NOTE: Conda expands USERNAME to a URL such as `https://<your-anaconda-repo>/username` based on the settings in the `.condarc` file.

NOTE: Replace USERNAME with your username and PACKAGE with the name of the desired package.

#### Download and install a PyPI package from Repository

To install a PyPI package, in a Terminal window or an Anaconda Prompt run:

```
pip install --index-url pypi.anaconda.org/USERNAME/PACKAGE
```

NOTE: Replace USERNAME with your username and PACKAGE with the name of the desired package.

#### Use the Anaconda Client CLI

##### Install Client

See *Installing the Anaconda Client CLI*.

##### Find my Client login credentials

Your credentials for Client are those that you used to create an account on Repository.

To get help:

1. In a browser, navigate to your Repository.
2. Select the **Sign In** tab.
3. Click either the I forgot my password link or the I forgot my username link.

## Log in to Client

After you have downloaded and configured Client, in a Terminal window or an Anaconda Prompt, run:

```
anaconda login
```

## Display a list of Client commands

In a Terminal window or Anaconda Prompt, run:

```
anaconda --help
```

## Find out more about a Client command

In a Terminal window or Anaconda Prompt, run:

```
anaconda COMMANDNAME -h
```

NOTE: Replace COMMANDNAME with the name of the command about which you want more information.

## List all available Client configuration files

In a Terminal window or Anaconda Prompt, run:

```
anaconda config --files
```

## List all of your Client configuration variables

In a Terminal window or Anaconda Prompt, run:

```
anaconda config --show
```

## Find out more about Client

If you have a question that you cannot answer using the help command or documentation, contact your system administrator who has access to Anaconda Enterprise Support.

## Build packages

### Build and upload a package

For a quick example, see *Building and uploading new packages*.

### Test a built package

In a Terminal window or Anaconda Prompt, specify the `--use-local` option:

```
conda create --use-local -n test PACKAGE
```

NOTE: Replace `PACKAGE` with the name of your package.

### Upload a package to Repository

In a Terminal window or Anaconda Prompt, run:

```
anaconda upload PACKAGE
```

NOTE: Replace `PACKAGE` with the name of your package.

### Find help for uploading packages

You can obtain a complete list of upload options, including:

- Package channel.
- Label.
- Availability to other users.
- Metadata.

In a Terminal window or Anaconda Prompt, run:

```
anaconda upload -h
```

## Tutorials

### Using labels in the development cycle

Anaconda Enterprise 4 Repository *labels* can be used to facilitate a development cycle and organize the code that is in development, in testing and in production, without affecting non-development users.

In this tutorial, we show how to use a “test” label, so that you can upload files without affecting your production-quality packages. Without a `--label` argument the default label is “main.”

1. You need to begin with a conda package. If you do not have one, use our example conda package. Before you build the package, edit the version in the `meta.yaml` file in `anaconda-client/example-packages/conda/` to be `2.0`:

```
git clone https://github.com/anaconda-platform/anaconda-client
cd anaconda-client/example-packages/conda/
nano meta.yaml # Bump version to 2.0
conda config --set anaconda_upload no
conda build .
```

2. Upload your test package to Repository using the Client *upload* command. Adding the `--label` option tells Repository to make the upload visible only to users who specify that label:

```
anaconda upload /path/to/conda-package-2.0.tar.bz2 --label test
```

NOTE: Replace `/path/to/` with the path to where you stored the package.

3. You now can see that even when you search conda “main,” you do not see the 2.0 version of the test package. This is because you need to tell conda to look for your new “test” label.
4. The `--override` argument tells conda not to use any channels in your `~/.condarc` file.

The following command produces no 2.0 results:

```
conda search --override -c USERNAME conda-package
```

NOTE: Replace USERNAME with your username.

Your 2.0 package is here:

```
conda search --override -c USERNAME/label/test conda-package
```

NOTE: Replace USERNAME with your username.

5. You can give the label `USERNAME/label/test` to your testers.

NOTE: Replace USERNAME with your username.

6. Once they finish testing, you may then want to copy the test packages back to your “main” label:

```
anaconda label --copy test main
```

Your version 2.0 is now in main:

```
conda search --override -c USERNAME conda-package
```

NOTE: Replace USERNAME with your username.

You can also manage your package labels from your dashboard: <https://<your-anaconda-repo>/USERNAME/conda-package>.

NOTE: Replace `<your-anaconda-repo>` with the name of your local Repository, and USERNAME with your username.

If you use `anaconda-client` 1.7 or higher, you can use `anaconda move` to move packages from one label to another:

```
anaconda move --from-label OLD --to-label NEW SPEC
```

Replace OLD with the old label, NEW with the new label, and SPEC with the package to move. SPEC can be either “user/package/version/file”, or “user/package/version” in which case it moves all files in that version.

## Working with other file types

In addition to uploading or downloading *packages*, you can also upload or download other file types to/from Anaconda Enterprise 4 Repository.

## Uploading other file types

You can upload any type of file with *Anaconda Client command line interface* (CLI) by using the steps below.

PyPI package files, conda package files and notebook files are automatically detected. There is no auto-detect for other types of files, so you must explicitly specify the `package`, `package-type` and `version` fields.

In the following example, we upload a spreadsheet named `baby-names` in comma separated value (CSV) format.

1. Create a new package, which creates a *Namespace* that can hold multiple files:

```
anaconda login
anaconda package --create jsmith/baby-names
```

2. Upload the file to the new namespace:

```
anaconda upload --user jsmith --package baby-names --package-type file --version 1.0
↪ baby-names1.csv
```

NOTE: In this example:

- The user or organization name is “jsmith.”
- The package name is “baby-names.”
- The package type is “file.”
- The version is “1.”
- The full filename is `baby-names1.csv`.

## Downloading other file types

Files, such as the one created above, are available at:

```
https://<your-anaconda-repo>/USERNAME/PACKAGE
```

Anyone can download these files using Client:

```
anaconda download USERNAME/PACKAGE
```

NOTE: Replace `<your-anaconda-repo>` with the name of your local Repository, `USERNAME` with the desired user-name and `PACKAGE` with the desired package name.

If the repository has multiple files with the same name and different extensions, `anaconda download` will download all of them by default. If you use `anaconda-client` 1.7 or higher, you can use `anaconda download` with the option `--package-type` or `-t` to specify only one of these files. This option can work with the values `pypi`, `conda`, `ipynb`, and `env`.



## Tasks

This guide covers all the everyday tasks for a user of Anaconda Enterprise 4 Repository.

### Creating an account

The information below applies to personal Anaconda Enterprise 4 Repository accounts. For information on organization accounts, see [Working with organizations](#).

You do not need an Anaconda Enterprise 4 Repository account to find, download and use packages.

However, you do need a Repository account to:

- Author packages.
- Upload packages, notebooks and environments.
- Access private packages that are shared with you.
- Create organizations.

If your administrator sent you an email with a login address, username and password, use them.

Otherwise, to sign up for an Anaconda Enterprise 4 Repository account:

1. In a browser, go to the address your administrator gave you.

2. Make sure the **Sign Up** tab is active.

NOTE: There is also a **Sign In** tab for existing users.

3. Select a username.
4. Enter your email address.
5. Create a password that is at least 7 characters long.
6. Enter the password again to confirm it.
7. Read and accept the Terms and Conditions.

8. Click the Sign up button.

The system creates your user account, logs you in and displays your *personal dashboard*.

## Using your Repository dashboard

When you log in to Repository, your personal dashboard is displayed.

The screenshot shows the 'My Anaconda Landscape' dashboard. At the top, there's a navigation bar with the Anaconda logo, a search bar labeled 'Search Anaconda Repository', and user controls showing 'View', 'Help', and the user 'testuser1'. The main content area is titled 'My Anaconda Landscape' and contains five cards:

- Packages**: View all (0). Get more information on how to [upload a Package](#).
- Notebooks**: View all (0). Get more information on how to [upload a Notebook](#).
- Environments**: View all (0). Get more information on how to [upload an Environment](#).
- Installers**: View all (0). Get more information on how to [create a custom Installer](#).
- Favorites**: View all (0). Favorite some packages, notebooks, and environments to get started!

At the bottom, there's an **Activity Feed** section with a 'View more' link. It shows a welcome message: 'Welcome to **Anaconda Repository!** a few seconds ago'. Below this, it says 'Anaconda Repository allows you to create or distribute software packages.' and lists two recent actions: 'Getting started: [Installing your first package](#)' and 'Getting started: [Distributing your first package](#)'.

In the top navigation bar, the currently active user or organization is shown at the far right.

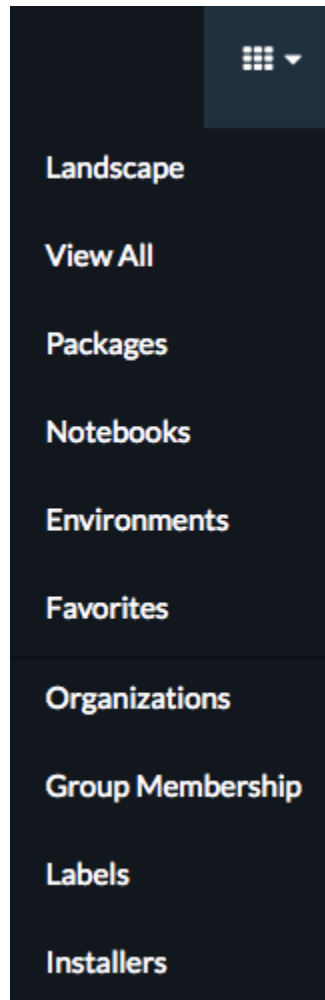
**TIP:** If the email address on your account is associated with a Gravatar account, Repository displays your profile photo. To associate your email address with Gravatar or to change your Gravatar profile photo, see [gravatar.com](https://gravatar.com).

Packages, notebooks, environments, projects and installers that you have created with this account appear on your Landscape.

Click the view button to see the following options:

- Landscape: Your home page.
- Favorites: Other users' packages that you have starred.
- Packages: Only packages you have created.
- Notebooks: Only notebooks you have created.
- Environments: Only environments you have created.

- Installers: If you have created and uploaded installers using *Cloudera*, they are displayed here.
- Projects: If you have created and uploaded *projects*, they are displayed here.



## Installing the Anaconda Client CLI

You can use the Anaconda Client command line interface (CLI) in an Anaconda Prompt or Terminal window to:

- Connect to and manage your Anaconda Enterprise 4 Repository account.
- Upload *packages* you have created.
- Generate access *tokens* to allow access to private packages.

NOTE: Anaconda Client is not necessary to search for and download packages.

Anaconda Client requires conda to be installed. If you have Anaconda, conda is already installed.

To install with conda, open Anaconda Prompt or Terminal window and enter:

```
conda install anaconda-client
```

After installing, view the complete list of Client tasks with this command from Anaconda Prompt or Terminal window:

```
anaconda -h
```

## Working with organizations

### Creating an organization

1. Log in to your Anaconda Enterprise 4 Repository.
2. From the far-right drop-down menu next to your username, select New Organization.
3. Scroll to the “Create Organization” box and enter a name for your organization.  
NOTE: Organization names can include dashes, but not spaces or special characters.
4. Supply an email address for the organization, then click the Create Organization button.

The system displays the dashboard for the new organization.

As the creator and owner of an organization, you have automatic administrative access to this organization and any packages associated with the organization.

From the far-right drop-down menu, Profile option shows a list of all organizations to which you belong.

### Uploading packages to an organization

Only the co-owners of an organization may upload packages to the organization.

To upload a package to an organization, in a Terminal or Anaconda Prompt use the `-u/--user` option:

```
anaconda upload --user ORGANIZATION package.tar.bz2
```

NOTE: Replace `ORGANIZATION` with the name of the organization, and `package.tar.bz2` with the name of the package.

### Transferring packages to an organization

See *Transferring a package to a new owner*.

### Customizing users and groups

Only the co-owners of an organization may customize users and groups of the organization.

To add, remove, or edit group and user access for an organization you administer:

From the top right drop-down menu, select Groups, then click the name of the group you want to edit.

In the Members box, type the username of the user you want to add as a member, then click the Add button.

To remove a member, in the list on the Members page, click the delete icon (trash can).

Users receive a dashboard notification when you add them to an organization.

## Creating groups for differing access levels

Within an organization, you can create a group to customize access for a group of users:

1. From the top right drop-down menu, select Groups, then click the + New Group button.
2. Give the group a name and click the Create group button.
3. In the Members box, add the desired members by username.
4. Add installers, packages, notebooks, projects or environments that this group can access.
5. Click the Save Group button.

## Deleting an organization

To delete an organization you administer and erase all data associated with it:

1. At the top right of the Repository interface, in the Profile list, select Switch To.
2. Select the organization you want to delete.
3. In the Profile list, select Settings.
4. Select the Account option. You may be asked to verify your password.
5. In the Delete Account section, click the Delete button.

A confirmation page requests that you provide the full name of the organization.

## Working with packages

All files uploaded to Anaconda Enterprise 4 Repository are stored in *packages*. Each Repository package is visible at its own unique URL based on the name of the user who owns the package and the name of the package. You can create a Repository package and then upload files into it.

Each user and organization has their own location called a *Namespace* where they may host packages.

A *Label* is part of the URLs for Repository where conda looks for packages. Each file within a package may be tagged with one or more labels, or not tagged at all to accept the default label of *main*. Labels are searched only if you specify a label.

## Using package managers

Repository supports two package managers, *conda* and *PyPI*. To work with conda or PyPI packages, you must use their corresponding subdomains.

EXAMPLE: To install conda packages from the user “travis,” use the Repository URL:

```
https://conda.<your-anaconda-repo>/travis
```

EXAMPLE: To install PyPI packages from the user “travis,” use the Repository URL:

```
https://pypi.<your-anaconda-repo>/travis
```

### Working with conda packages

#### Building a conda package

To build a package using conda build:

1. Install Anaconda Client and conda build:

```
conda install anaconda-client conda-build
```

2. Choose the repository for which you would like to build the package. In this example, we use a simple, public [conda test package](#):

```
git clone https://github.com/anaconda-platform/anaconda-client
cd anaconda-client/example-packages/conda/
```

In this directory, there are two required files, [build.sh](#), and [meta.yaml](#).

NOTE: Linux and macOS systems are Unix systems. Packages built for Unix systems require a `build.sh` file, packages built for Windows require a `bld.bat` file, and packages built for both Unix and Windows systems require both a `build.sh` file and a `bld.bat` file. All packages require a `meta.yaml` file.

3. To build the package, turn off automatic Client uploading and then run the conda build command:

```
conda config --set anaconda_upload no
conda build .
```

All packages built in this way are placed in a subdirectory of [Anaconda's](#) `conda-bld` directory.

4. You can check where the resulting file was placed with the `--output` option:

```
conda build . --output
```

For more information on conda's overall build framework, you may also want to read the articles [Building conda packages](#) and [Tutorials on conda build](#).

#### Uploading a conda package

Upload the test package to Repository with the [anaconda upload](#) command:

```
anaconda login
anaconda upload /path/to/conda-package.tar.bz2
```

NOTE: Replace `/path/to/` with the path to where you stored the package.

## Installing conda packages

You can install conda packages from Repository by adding channels to your conda configuration.

1. Because conda knows how to interact with Repository, specifying the channel “sean” translates to `https://<your-anaconda-repo>/sean`:

```
conda config --add channels sean
```

2. You can now install public conda packages from Sean’s Repository account. Try installing the testci package at `https://<your-anaconda-repo>/sean/testci`:

```
conda install testci
```

You can also install a package from a channel with a token and a label:

```
conda install -c https://conda.anaconda.org/t/<token>/<channel>/label/<labelname>  
↪<package>
```

NOTE: Replace `<token>` with the provided token, `<channel>` with the user channel, `<labelname>` with the label name and `<package>` with the package name you want to install.

## Working with PyPI packages

### Uploading PyPI packages

You can test PyPI package uploading with a small, public example package saved in the [anaconda-client repository](#):

1. Begin by cloning the repository from the command line:

```
git clone git@github.com:anaconda-platform/anaconda-client.git  
cd anaconda-client/example-packages/pypi/
```

2. You can now create your PyPI package with the `setup.py` script:

```
python setup.py sdist
```

3. Your package now is built as a source “tarball” and is ready to be uploaded with:

```
anaconda upload dist/*.tar.gz
```

Your package is now available at:

```
http://<your-anaconda-repo>/USERNAME/PACKAGE
```

NOTE: Replace `<your-anaconda-repo>` with the name of your local Repository, `USERNAME` with your username and `PACKAGE` with the package name.

### Installing PyPI packages

The best way to install a PyPI package is using pip. For the following command, you can use the package you authored in the above steps:

```
pip install --extra-index-url https://pypi.<your-anaconda-repo>/USERNAME/PACKAGE
```

NOTE: Replace `<your-anaconda-repo>` with the name of your local Repository, `USERNAME` with your username and `PACKAGE` with the test-package name.

### Using cross-platform “noarch” packages

As of Anaconda Enterprise 4 Repository version 2.6.0, your Repository supports conda “noarch” packages that contain no operating system-specific files.

The conda build system allows you to specify “no architecture” when building a package, so it is compatible with all platforms and architectures. Noarch packages from your Repository instance can be downloaded and installed on any platform.

NOTE: Noarch packages are not compatible with Anaconda constructor. If you intend to use the packages with Anaconda constructor, build the packages for specific operating systems.

### Building noarch packages

To specify a noarch build, use the `noarch` key in the `build` section of your conda recipe’s `meta.yaml` file:

```
build:  
  noarch: generic
```

See the conda documentation for full information on [noarch packages](#).

Additional examples can be found in the [conda-recipes](#) repository on github.

### Uploading noarch packages

You can upload noarch packages to Repository in the same manner as any other package:

```
anaconda upload babel
```

Noarch packages are identified on Repository by a cross-platform icon:



# msarahan / Packages / noarch\_test\_package 1.0

Conda

Files

Labels

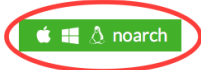
Badges

 Unspecified

 0 total downloads

## Installers

conda install ?



To install this package with conda run:

```
conda install -c msarahan noarch_test_package=1.0
```

## Uploading a package

To upload a package to Repository, using the Client CLI, run the *upload* command:

```
anaconda login
anaconda upload PACKAGE
```

NOTE: Replace PACKAGE with the name of the desired package.

Repository automatically detects packages and notebooks, package or notebook types, and their versions.

Your package is now available at:

```
https://<your-anaconda-repo>/USERNAME/PACKAGE
```

NOTE: <your-anaconda-repo> is the name of your local Repository, USERNAME is your username and PACKAGE is the package name.

Anyone can download your package by using Client:

```
anaconda download USERNAME/PACKAGE
```

NOTE: USERNAME is their username, and PACKAGE is your package name.

If you want to restrict access to your package, see *Controlling access to packages*.

## Controlling access to packages

By default, all packages, notebooks and environments uploaded to Repository are public, meaning they are accessible to anyone who has access to Repository.

When you *make a package private*, only you and the users you authorize can access it.

You can authorize users to access your private package in two ways:

- *Use a group* inside an organization account—only group members who are logged in can access the package. This is the best way to control access to your private packages because it allows you to set separate permissions for each package, notebook or environment.
- *Use a token control system*—only users who have the appropriate *token* can access the private package or channel.

After you grant other users access, they can *download and install* your package using the Web UI or Client.

## Making a package private

1. In the Web UI, in the **Tools** menu, select Packages.
2. OPTIONAL: If the packages you are looking for are not visible, under Filters, in the Type list, select All.
3. Select the checkbox next to each package you want to make private.
4. Click the **Settings** tab, and then click the **Admin** tab in the sidebar.

NOTE: You can also reach this page at the following URL:

`https://<your-anaconda-repo>/USERNAME/PACKAGE/settings/admin`

Replace <your-anaconda-repo> with the name of your local Repository, USERNAME with your username and PACKAGE with the name of the package.

5. Click Set access, then select Private.

NOTE: You can use the same procedure and URL to make Jupyter Notebooks and conda environments private.

## Using groups to allow access to private packages

1. *Create an organization*.
2. *Upload* or *transfer* the package to the organization.
3. Within the organization, *create a group* with the appropriate users, permissions, and packages.

## Creating a token to allow access to a private package or channel

You can control access to private packages and channels with the *token* system. All Repository URLs can be prefixed with /t/<token> to allow access.

The degree of access a token grants is completely configurable when you generate it. You can generate multiple tokens to control which groups of users have access to certain features if they have the appropriate token.

Tokens provide access to all packages in a specified channel. Separate permissions per package, notebook or environment may be better handled with *organizations and groups*.

You can generate tokens using the Web UI or Anaconda Client.

NOTE: By default, tokens expire after one year.

## Generating a token in the Web UI

1. Navigate to:

```
https://<your-anaconda-repo>/<channel>/settings/access
```

NOTE: Replace <your-anaconda-repo> with the name of your local Repository, and <channel> with the name of the desired channel.

2. In the Token Name box, type a name for the token:

Public Profile

My Account

**Access**

Security Log

Storage

### API Tokens ?

Create access token for: newuser

Token Name

Strength

Strong (longer token)

Scopes

- ☐ Allow all operations
- ☐ Allow all API operations
- ☐ Allow addition and modification of groups
- ☐ Allow read access to the API site
- ☐ Allow write access to the API site
- ☐ Allow all operations on Conda repositories
- ☐ Allow private downloads from Conda repositories
- ☐ Allow all operations on PyPI repositories
- ☐ Allow private downloads from PyPI repositories
- ☐ Allow uploads to PyPI repositories
- ☐ Allow access to all package repositories

Expiration date (YYYY/MM/DD)

2017/11/17

Create

3. Select the appropriate checkboxes for the type of access you want to allow for users of this token.

EXAMPLE: To allow users to download private packages or packages from private channels, select Allow private downloads from Conda repositories.

4. Click the Create button.

## Generating a token with Client

1. In a Client Terminal window or Anaconda Prompt, run:

```
anaconda auth --create --name YOUR-TOKEN-NAME --scopes 'repos conda:download'
```

NOTE: Replace YOUR-TOKEN-NAME with a name for the new token.

Provide scopes as a space-separated, quoted list. The token produced by the above command provides access to download any of your private conda repositories. The available scopes are:

- `all`: Allow all operations.
- `api`: Allow all API operations.
- `api:modify-group`: Allow addition and modification of groups.
- `api:read`: Allow read access to the API site.
- `api:write`: Allow write access to the API site.
- `conda`: Allow all operations on conda repositories.
- `conda:download`: Allow private downloads from conda repositories.
- `pypi`: Allow all operations on PyPI repositories.
- `pypi:download`: Allow private downloads from PyPI repositories.
- `pypi:upload`: Allow uploads to PyPI repositories.
- `repos`: Allow access to all package repositories.

2. You can enable the token with the `conda config` command:

```
conda config --add channels https://conda.anaconda.org/t/<token>/<channel>
```

Or to add a channel with a token and label:

```
conda config --add channels https://conda.anaconda.org/t/<token>/<channel>/label/  
↪<labelname>
```

NOTE: Replace `<token>` with your token string, `<channel>` with the desired channel name, and `<labelname>` with the label name.

NOTE: If you lose the token's random alphanumeric string, you must *revoke the token* and create a new one.

## Using a token

The token can be used to:

- Add a channel from which to install private packages:

```
conda config --add channels https://conda.<your-anaconda-repo>/t/<token>/<channel>
```

NOTE: Replace `<your-anaconda-repo>` with the name of your local Repository, `<token>` with the provided token and `<channel>` with a user channel.

- Install a private package without first adding a channel:

```
conda install -c https://conda.<your-anaconda-repo>/t/<token>/<channel> <package>
```

To install a package from a channel using a token and a label name:

```
conda install -c https://conda.<your-anaconda-repo>/t/<token>/<channel>/label/
↪<labelname> <package>
```

NOTE: Replace <your-anaconda-repo> with the name of your local Repository, <token> with the provided token, <channel> with a user channel, <labelname> with the label name and <package> with the name of the package to install.

- Install a private PyPI package:

```
pip install --index-url https://pypi.<your-anaconda-repo>/t/<token>/<channel>/
↪PACKAGE
```

NOTE: Replace <your-anaconda-repo> with the name of your local Repository, <token> with the provided token, <channel> with a user channel and PACKAGE with the name of the desired package.

NOTE: Private PyPI packages can also be installed using:

```
https://pypi.<your-anaconda-repo>/t/<token>/<channel>
```

## Revoking a token

You can revoke tokens using the Web UI or Client.

To revoke a token using the Web UI, from the far-right drop-down menu, select My Settings, then from the left navigation select Access.

At the bottom of the page, you will see a list of all tokens you have generated. Click the name of the token you want to revoke, then in the dialog box that appears, click the Revoke Token button.

Or to revoke a token using Client, run:

```
anaconda auth -r YOUR-TOKEN-NAME
```

NOTE: Replace YOUR-TOKEN-NAME with the name of the token you want to revoke.

## Downloading and installing a package

To download a package using the Web UI, in a web browser, navigate to the organization's or user's channel.

To download a package using Client:

- Run:

```
conda install anaconda-client
anaconda login
conda install -c OrgName PACKAGE
```

NOTE: Replace OrgName with the organization or username and PACKAGE with the package name.

- Or run:

```
conda install anaconda-client
anaconda login
conda install -c https://conda.<your-anaconda-repo>/OrgName PACKAGE
```

NOTE: Replace <your-anaconda-repo> with the name of your local Repository, OrgName with the organization name or username and PACKAGE with the package name.

### Transferring a package to a new owner

When you create or add a package, by default it is attached to your individual profile. You can transfer ownership to another owner account you control, such as an organization profile you manage.

To transfer a package to a new owner:

1. On your dashboard—or the dashboard of an organization you administer—select the package for which you want to transfer ownership.

The system displays options for that package.

2. To display the package settings, select the Settings option.
3. Select the Admin option.
4. Under Transfer this package to a new owner, click the Transfer button.
5. Select the organization name for the new owner.
6. Click the Transfer Ownership button.

### Adding and removing collaborators

You can add other users that are not part of an organization to collaborate on your packages. You need the usernames of the other users. You can also remove collaborators at any time.

All collaborators have full read/write permissions to the package, even if the package is private.

1. On your dashboard, click the package name.
2. Select the Settings option.
3. In the package settings, select the Collaborators option.
4. To add a collaborator, in the current collaborators, type the username of the person you want to add, then click the Add button.
5. To remove a collaborator, click the red X button next to the collaborator name.

### Removing a previous version of a package

To remove a previous version of one of your packages from Repository:

1. On your dashboard, click the package name.
2. Select the **Files** tab.
3. Select the checkbox to the left of the version you want to remove.
4. In the **Actions** menu, select Remove.

You can also use the Client CLI to remove a previous version of a package:

```
anaconda remove jsmith/testpack/0.2
```

NOTE: Replace `jsmith` with your username, `testpack` with the package name and `0.2` with the desired version.

You can now see the change on your profile page:

```
https://<your-anaconda-repo>/USERNAME/PACKAGE
```

NOTE: Replace `<your-anaconda-repo>` with the name of your local Repository, `USERNAME` with your username and `PACKAGE` with the package name.

## Copying a package

To copy a package from the channel `conda-forge` to a personal channel such as `jsmith`:

```
anaconda copy conda-forge/glueviz/0.10.4 --to-owner jsmith
```

`conda-forge/glueviz/0.10.4` is a “spec” and can match either of two formats: `user/package/version` or `user/package/version/filename`.

In case the package `glueviz/0.10.4` already exists for user `jsmith`, you will receive the following error message: `File conflict while copying!`. If you want to copy the package anyway, try using the `--replace` or `--update` options. Using the `replace` option allows you to overwrite an already existing package. Using the `update` option allows you to add missing metadata to an existing package.

## Deprecated options

Previously labels were called “channels”, and the `anaconda copy` command has deprecated options `from-channel` and `to-channel` that expect to operate on labels.

These deprecated options should not be used.

If you attempt to use them in a command such as `anaconda copy --from-channel conda-forge --to-channel jsmith glueviz`, you will get an error that `Label conda-forge does not exist`.

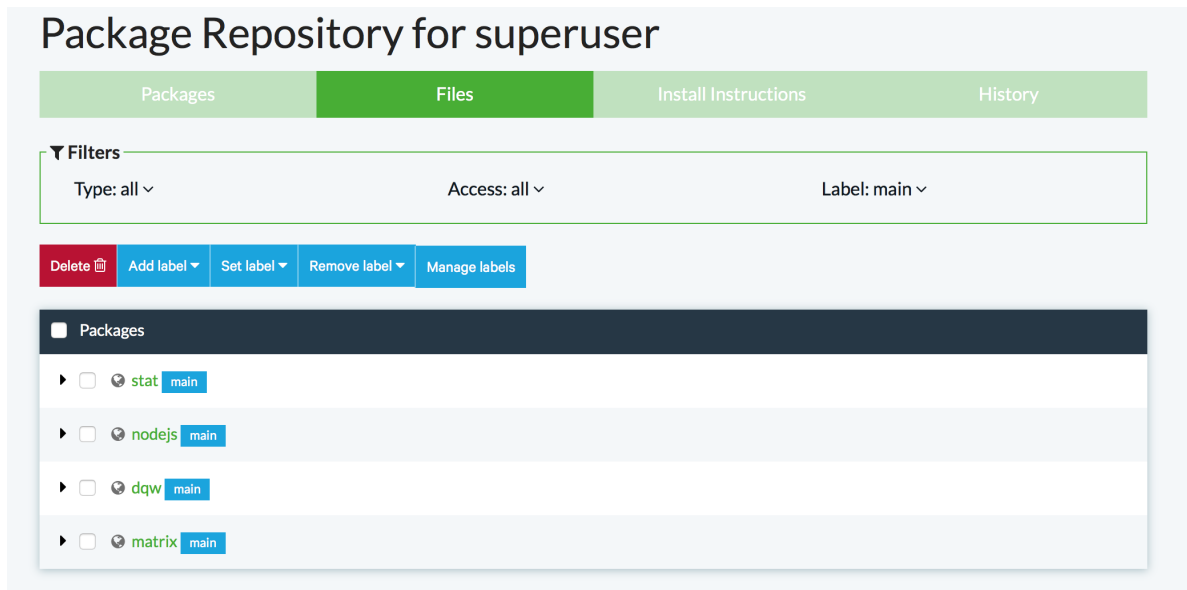
## Deleting files from a package

You can delete individual files from a package in Repository, without deleting the entire package.

CAUTION: There is no undo for deleting a file.

To delete individual files from a package in Repository:

1. Access Repository using the Web UI.
2. In the **Tools** menu, select Packages.
3. Click the **Files** tab.
4. OPTIONAL: If the files you want to delete are not visible, under Filters, in the Type list, select All.



5. To select individual files, expand the package in which the files are located.
6. Select the checkboxes next to the files you want to delete.
7. Click the Delete button.
8. Enter your account name in the confirmation window.
9. Click Delete to permanently delete the selected files.

### Deleting a package

You can delete an entire package from Repository, including all of its versions.

CAUTION: There is no undo for deleting a package.

To delete a package from Repository:

1. Access Repository using the Web UI.
2. In the **Tools** menu, select Packages.
3. OPTIONAL: If the packages that you want to delete are not visible, under Filters, in the Type list, select All.



## Package Repository for superuser

Packages

Files

Install Instructions

History

Filters

Type: all

Access: all

Label: main

Delete

Set access

Package Name	Access	Summary	Updated
<input type="checkbox"/> test	public	No Summary	2017-04-24
<input type="checkbox"/> stat	public	No Summary	2017-04-21
<input type="checkbox"/> nodejs	public	No Summary	2017-04-21
<input type="checkbox"/> dqw	public	No Summary	2017-04-21
<input type="checkbox"/> matrix	public	No Summary	2017-04-20
<input type="checkbox"/> waqas	public	No Summary	2017-04-20

- Select the checkbox next to the packages you want to delete.
- Click the Delete button.
- Enter the account name in the confirmation window.
- Click Delete to permanently delete the selected package(s).

You can also use the Client CLI to delete a package:

```
anaconda remove jsmith/testpak
```

NOTE: Replace `jsmith` with your user name, and `testpak` with the package name.

You can now see the change on your profile page:

```
https://<your-anaconda-repo>/USERNAME
```

NOTE: Replace `<your-anaconda-repo>` with the name of your local Repository and `USERNAME` with your username.

Also see the tutorial *Using labels in the development cycle*.

## Working with Jupyter notebooks

As of Anaconda Enterprise 4 Repository version 2.3.0, you can upload and download **Jupyter notebooks** like other files.

You can also view a static copy of notebooks in Repository. The ability to run notebooks inside Repository will become available in a future release.

To run notebooks, use Anaconda Navigator or AE Notebooks server.

### Uploading a notebook

The default maximum allowed size for notebooks is 25 MB. This limit can be changed by setting the `MAX_IPYNB_SIZE` variable in the `config.yaml` file.

To upload a notebook to your user account, at the Anaconda Prompt or in a Terminal window, run:

```
anaconda upload -p my-notebook my-notebook.ipynb
```

NOTE: Replace `my-notebook` with the name of the notebook you want to upload.

To upload a new version of your notebook, while retaining the original version, upload it with the version switch from a Terminal window or an Anaconda Prompt:

```
anaconda upload -p my-notebook -v 1.1 my-notebook.ipynb
```

NOTE: Replace `my-notebook` with the name of the notebook you want to upload.

### Finding a notebook

You can view an HTML version of your notebook at:

```
http://notebooks.<your-anaconda-repo>/USERNAME/my-notebook
```

NOTE: Replace `<your-anaconda-repo>` with the name of your local Repository, `USERNAME` with your username and `my-notebook` with the name of your notebook.

To see another user's notebook, browse to the associated user account on your Repository installation.

### Downloading a notebook

Anyone with access to Repository can download your notebook using the Anaconda Prompt or Terminal window:

```
anaconda download USERNAME/my-notebook
```

NOTE: Replace `USERNAME` with your username, and `my-notebook` with the name of your notebook.

### Working with environments

A `saved conda environment` can be uploaded to Anaconda Enterprise 4 Repository with the web interface or the `anaconda upload` command.

- To save the environment, run this command in an Anaconda Prompt or Terminal window:

```
conda env export -n my-environment -f my-environment.yml
```

- To upload it with the web interface go to:

```
https://<your-anaconda-repo>/<USERNAME>/environments
```

Then use the Upload button in the top right corner.

- To upload it with the `anaconda upload` command:

```
anaconda upload -f my-environment.yml
```

NOTE: Replace `my-environment` with the name of your environment.

- You can view a list of your uploaded environments in the web interface at:

```
http://envs.anaconda.org/USERNAME
```

NOTE: Replace ``USERNAME`` with your username.

- Anyone who has access can download and install your environment. Open a Terminal window or an Anaconda Prompt and then enter:

```
conda env create user/my-environment  
source activate my-environment
```

NOTE: Replace `my-environment` with the actual name of your environment.

## Working with projects

You can add Anaconda Projects to Anaconda Enterprise 4 Repository. Projects can be any directory of code and assets. For example, projects often contain notebooks or Bokeh apps.

### Adding a project

Use the Anaconda Client to add a project to Repository.

### Accessing and managing a project

1. Access Repository using the Web UI.
2. From the drop-down menu of the view button, select Projects.  
The Projects page shows your existing projects.
3. Click on a project to display the Details page for that project, including the files, revisions, history and settings for the project.
4. Under Settings for an individual project, you can change options, set groups and collaborations, and manage administration of the project, including making it public, private or authenticated, transferring membership, or deleting it.

## Working with Cloudera Manager parcels

Anaconda Enterprise 4 Repository provides a way to integrate with Cloudera Manager to distribute your Anaconda data science artifacts to your Hadoop cluster.

NOTE: Creating custom parcels requires a local mirror of the Anaconda packages.

To create a custom parcel, management pack or installer:

1. From the view button, select Installers.
2. Click the Create new installer button.

▼ Create from Packages

Add Channels

Search for Channels

+

anaconda

×

Add Packages

Search for Packages

+

python

==

2.7.13

×

▶ Create from Environment

Create management pack

Create parcel

Create installer

When creating a parcel, Anaconda Enterprise 4 Repository generates a 64-bit Linux installer with the specified packages, and a file named `construct.yaml` which can be used with `conda constructor`.

Manage
**Files**
History
Settings

▼ Filters

Type: All ▼
Version: All ▼

Remove 🗑️

☐ Type	Filename	↕ Size	↕ Version	▼ Created	↕ Downloads
<input type="checkbox"/> conda constructor	construct.yaml 📄	159 B	1.0.0	a few seconds ago	0

To create just the installer script, click **Create installer**; to create a parcel, click **Create parcel**.

## Creating a parcel by selecting packages


Name  
InstallerFromPackage

Version  
1

▼ Create from Packages

### Add Channels

Search for Channels +

 anaconda ×

### Add Packages

Search for Packages +

python	>=	2.7.13	<span>×</span>
zlib	>=	1.2.8	<span>×</span>

► Create from Environment

Create management pack   Create parcel   Create installer

1. Click the **Create from Packages** tab.
2. Add channels from which to fetch packages into the Search for Channels box. Add each channel by clicking the green + (plus) button next to the Search for Channels box.  
NOTE: The anaconda user is added by default.
3. Add package names into the Search for Packages box. Add each package by clicking the green + (plus) button next to the Search for Packages box.
4. Set version requirements for each package using the list next to the package name.

## Creating a parcel by selecting an environment

Name

InstallerFromEnvironment

Version

1

- ▶ Create from Packages
- ▼ Create from Environment

### Select Environment

Search for Environments



snowflakes

2017.05.10.1314 ▾



Create management pack

Create parcel

Create installer

1. Click the **Create from Environment** tab.
2. Type the environment name and click the green checkbox button.
3. Select the environment version from the list next to the environment name.
4. Click the Create management pack button, Create parcel button or Create installer button.

NOTE: By default, conda is not included in a custom parcel. To add additional packages to your environment, you can add them using the Repository Web UI.

A parcel is generated with the prefix of `/opt/cloudera/parcels/PARCEL_NAME`. This is the default location where activated parcels are loaded. If you are deploying parcels in a different directory, you can change this prefix with the `PARCELS_ROOT` [configuration setting](#).

## Viewing a list of packages in a custom parcel

To see a list of packages included in your custom parcel, see:

```
/opt/cloudera/parcels/PARCEL_NAME/meta/parcel.json
```

NOTE: Replace `PARCEL_NAME` with the name of the desired parcel.

## Distributing custom parcels

After you have created a custom parcel, you can distribute it to your cluster by adding `http://<repository ip>:<port>/USERNAME/installers/parcels/` as a [Remote Parcel Repository URL](#).

NOTE: Replace `<repository ip>` with the Repository IP address, `<port>` with the port address and `USERNAME` with your user name.

Cloudera Manager detects the parcels hosted on Repository and provides the option to download and distribute the parcels.

By default, Repository generates a parcel file for every [compatible distribution](#).

You can customize which parcel distributions are created by configuring the `PARCEL_DISTRO_SUFFIXES` [configuration setting](#).

NOTE: If you have configured conda via `~/.condarc` on your server for use of a proxy—for example, to mirror behind a proxy—you must disable proxying for Repository. For more information, see the [conda documentation](#).

EXAMPLE:

```
proxy_servers:
  https: http://proxy.corp.example.com
  http: http://proxy.corp.example.com
  'http://<repository ip>': false
```

## Creating from a previous version

Once you have an installer created, you can return to this page and create a management pack or a parcel from a specific version. Use the **Create from a previous version** option to choose which version you want to use. The **Create Installer** button will be disabled since you have already created an installer. The other buttons will be disabled if you have already created management packs or parcels for those versions.

The versions listed on the drop-down list are the versions that successfully created an installer. An installer is needed to create a management pack or a parcel, so versions which failed won't be listed.

The screenshot shows the 'Manage' tab in the Anaconda Repository. At the top, there are four tabs: 'Manage' (active), 'Files', 'History', and 'Settings'. Below the tabs, there is a 'Version' section with a dropdown menu. The dropdown is open, showing three options: 'Create from Packages', 'Create from Environment', and 'Create from a previous version'. Below the dropdown, there is a 'Select a version' section with a dropdown menu showing '19'. At the bottom, there are three green buttons: 'Create management pack', 'Create parcel', and 'Create installer'.

## Resetting your password

Open the Anaconda Repository login page:

The screenshot shows the Anaconda Repository login page. At the top, there is a navigation bar with links: 'About', 'Anaconda', 'Help', 'Download Anaconda', and 'Sign In'. Below the navigation bar, there is a search bar with the text 'Search Anaconda Repository' and a green search button. The main content area features the Anaconda logo and the text 'Where packages, notebooks, projects and environments are shared. Powerful publishing, sharing, and package management for your projects'. On the right side, there are two buttons: 'Sign Up' and 'Sign In'. Below these buttons, there is a section titled 'New to Anaconda Repository? Sign up!'. This section contains four input fields: 'Pick a username', 'Your email', 'Create a password', and 'Confirm password'. The 'Create a password' field has a hint: 'Use at least one lowercase letter, one numeral, and seven characters.' At the bottom of the sign-up section, there is a green button labeled 'Sign up!'.

The **Sign In** tab provides two links to help regain access to your account:

- I forgot my username. Click this link to have the username emailed to the email address of record.
- I forgot my password. Click this link to have a reset password link sent to the email address of record.

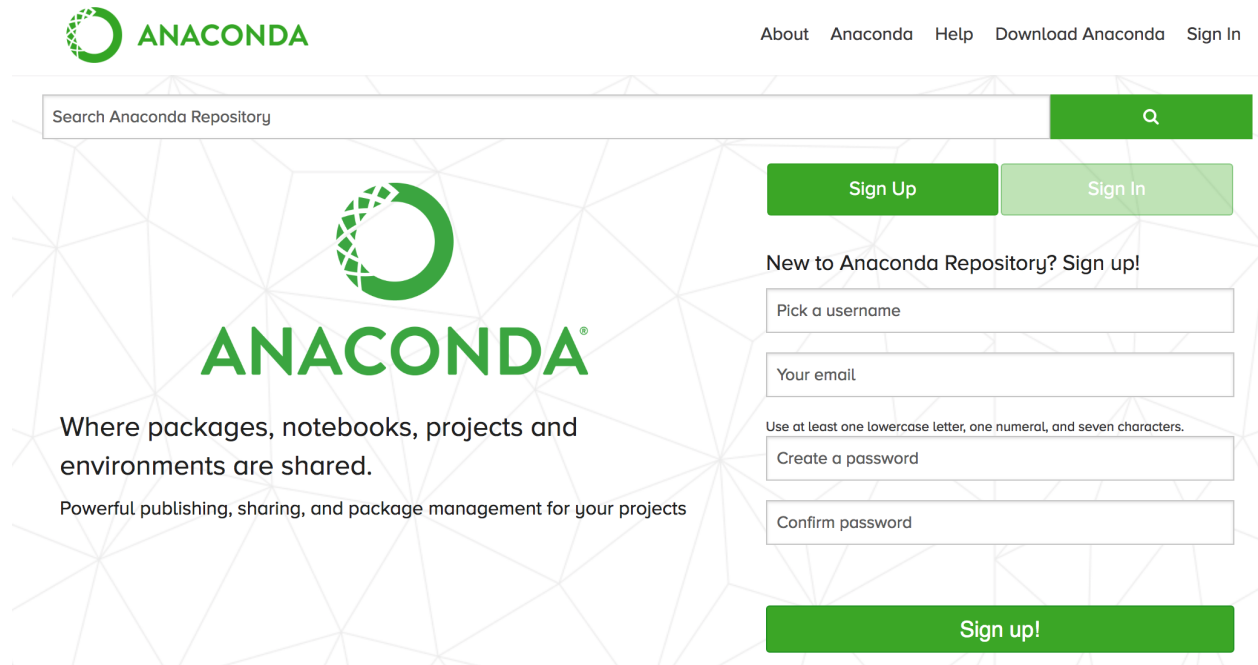


NOTE: The reset password link expires within 24 hours. If you no longer have access to the email account, you can create a new account or email your administrator for assistance.

Also see [Tutorials](#).

Anaconda Enterprise 4 Repository is package management server software that makes it easy to find, access, store and share public and private notebooks, projects, installers, environments, and conda and PyPI packages. Repository also makes it easy to stay current with updates made to the packages and environments you are using.

Anaconda also makes an instance of Anaconda Enterprise 4 Repository for private enterprises at [Anaconda.org](https://Anaconda.org).



ANAACONDA

About Anaconda Help Download Anaconda Sign In

Search Anaconda Repository

Sign Up Sign In

New to Anaconda Repository? Sign up!

Pick a username

Your email

Use at least one lowercase letter, one numeral, and seven characters.

Create a password

Confirm password

Sign up!

To begin using Repository, read [Getting started](#), then the remaining sections of the user guide.

## Administration guide

This Anaconda Enterprise 4 Repository Administration guide is intended for installers and administrators of Anaconda Enterprise 4 Repository version 2.33.

### Installation

This guide provides instructions for installing and configuring Anaconda Enterprise 4 Repository.

### System requirements

Your server must meet the requirements for hardware, software, security and network. Please review and verify that you have met all system requirements before beginning your installation.

#### Hardware requirements

- Physical server or virtual machine.
- CPU: 2 x 64-bit, 2.8 GHz, 8.00 GT/s CPUs or better. *Verify machine architecture.*
- Memory: minimum RAM size of 32 GB, or 16 GB RAM with 1600 MHz DDR3 installed, for a typical installation with 50 regular users. *Verify memory requirements.*
- Storage: Recommended minimum of 650 GB for a mirror of repo.anaconda.com or at least 1.5 TB for an air gapped environment. Additional space is recommended if Repository is used to store packages built by your organization. *Verify storage requirements.*
- Internet access to download the files from Anaconda.org, or a USB drive containing all of the files you need with alternate instructions for air gapped installations.

#### Software requirements

- Linux environment: Installations have been tested on Red Hat Enterprise Linux/CentOS 6.7, 7.3, 7.4, and 7.5, and Ubuntu 12.04+. *Verify Linux version.*
- Client environment may be Windows, macOS or Linux.
- Ubuntu users may need to install cURL. *Verify cURL access.*
- MongoDB version 2.6+ installed as root and running. Versions through 3.6 are supported. *Verify MongoDB installation.*
- bzip2. *Verify bzip2 installation.*

#### Security requirements

- Root access or sudo capabilities. *Verify root access and sudo privileges.*
- OPTIONAL: Ability to make IPTables modifications.
- SELinux policy edit privileges.

NOTE: SELinux does not have to be disabled for Repository operation.

## Network requirements

TCP ports are used as follows:

- Inbound TCP 8080, 8443: Anaconda Enterprise 4 Repository.
- Inbound TCP 22: SSH.
- Outbound TCP 443: Anaconda.org.
- Outbound TCP 25: SMTP.
- Outbound TCP 389/636: LDAP(s).

You need your [Anaconda.org](https://anaconda.org)—Repository in the cloud—account username and password and the installation token provided to you by Anaconda at the time of purchase. If you did not receive your token, please contact your sales representative or our [Professional Support Team](#).

## Hardware verification

### Machine architecture

Repository is built to operate only on 64-bit computers.

To verify that you have a 64-bit or x86\_64 computer, in a terminal window, run:

```
arch
```

This command displays what your system is: 32-bit “i686” or 64-bit “x86\_64.”

### Memory requirements

You need a minimum RAM size of 32 GB, or 16 GB RAM with 1600 MHz DDR3.

In a terminal window, run:

```
free -m
```

This command returns the free memory size in MB.

### Storage requirements

To check your available disk space—hard drive or virtual environment size—use the built-in Linux `df` utility with the `-h` parameter for human readable format:

```
df -h
```

### Software verification

#### Other versions of the Linux environment

Please contact us by filing a [GitHub issue](#) if you have problems with a version other than Redhat, CentOS or Ubuntu. Prompts may vary slightly depending on your version.

#### cURL access for Ubuntu users

RedHat and CentOS Linux distributions have cURL pre-installed, but Ubuntu does not.

To verify cURL access, in a terminal window, run:

```
curl --version
```

If cURL is not found, Ubuntu users can use the Advanced Packaging Tool (APT) to get and install cURL:

```
sudo apt-get install curl
```

TIP: If you already have Miniconda or Anaconda installed, in all versions of Linux you can use the conda command:

```
conda install curl
```

#### MongoDB version 2.4+ installed

MongoDB version 2.4 or higher must be installed as root and running. Versions through 3.4 are supported. To check for the existence of MongoDB and its version number, in a terminal window, run:

```
mongod --version
```

If you get a “not found” message or if the MongoDB version is 2.3 or earlier, then install MongoDB 2.4 or higher using the [official installation instructions](#). Remember to install as root with the sudo command.

MongoDB must always be running before Repository can be started.

To start MongoDB:

```
sudo service mongod start
```

To verify that MongoDB is running:

```
mongo --eval 'db.serverStatus().ok'
```

#### bzip2 is installed

To check for the existence of bzip2 and its version number, in a terminal window, run:

```
bzip2 --version
```

## Security verification

### Root access and sudo privileges

The Repository installation process cannot be completed without root access.

To verify that you have sudo privileges, in a terminal window, run:

```
sudo -v
```

Enter your root password when prompted and press Enter.

If you receive a message like the following, contact your system administrator for root access:

```
Sorry, user [username] may not run sudo on [hostname].
```

### Installing on an online system

These instructions are for normal Linux installations on machines that have access to the internet. Contact [Support](#) for help with mirroring.

NOTE: If the destination server is an air gapped system or otherwise does not have access to the internet, see *[Installing on an air gapped system](#)*.

### Before you start

Your server must meet the requirements for hardware, software, security and network. Please review and verify that you have met all *[system requirements](#)* before beginning your installation.

Your support representative provides you with a download URL for the Anaconda Enterprise 4 Repository installer. Make sure you have the download URL.

## 1. Install MongoDB 2.6

In a terminal window, create the yum repo file as the root user:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.  
com"  
curl -O $RPM_CDN/mongodb-org-tools-2.6.8-1.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-shell-2.6.8-1.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-server-2.6.8-1.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-mongos-2.6.8-1.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-2.6.8-1.x86_64.rpm
```

NOTE: Ubuntu users use `apt-get` instead of `yum`.

## MongoDB for Redhat and CentOS 7

1. Install MongoDB:

```
sudo yum install -y mongodb-org*
```

2. Start MongoDB:

```
sudo systemctl start mongod
```

3. Verify that MongoDB is running:

```
$ sudo systemctl status mongod
mongodb (pid 17258) is running...
```

## MongoDB for Redhat and CentOS 6.7+

1. Install MongoDB:

```
sudo yum install -y mongodb-org*
```

2. Start MongoDB:

```
sudo /etc/init.d/mongod start
```

3. Verify that MongoDB is running:

```
$ sudo /etc/init.d/mongod status
mongodb (pid 17258) is running...
```

## MongoDB for Ubuntu 12.04+

1. Install MongoDB:

```
sudo apt-key adv --keyserver hkp://keyserver.ubuntu.com:80 --recv 7F0CEB10

echo 'deb http://downloads-distroweb.mongodb.org/repo/ubuntu-upstart dist 10gen' | \
↪ sudo tee /etc/apt/sources.list.d/mongodb.list

sudo apt-get update

sudo apt-get install -y mongodb-org=2.6.9 mongodb-org-server=2.6.9 mongodb-org-
↪ shell=2.6.9 mongodb-org-mongos=2.6.9 mongodb-org-tools=2.6.9
```

NOTE: If you do not specify a version, such as 2.6.9, apt-get installs the latest stable version, which is 3.x.

2. Start MongoDB:

```
sudo /etc/init.d/mongod start
```

Verify that MongoDB is running:

```
$ sudo /etc/init.d/mongod status
mongodb (pid 17258) is running...
```

You receive verification that MongoDB is running:

```
start: Job is already running: mongodb
```

## Additional MongoDB resources

For additional MongoDB installation information see <https://docs.mongodb.org/manual/>.

## 2. Create the Repository administrator account

1. In a Terminal window, create a new user account for Anaconda Repository named “anaconda-server,” and switch to this new account:

```
sudo useradd -m anaconda-server
```

NOTE: The anaconda-server user is the default for installing Repository. Any username can be used, but using the root user is discouraged.

2. Create a Repository package storage directory:

```
sudo mkdir -m 0770 -p /opt/anaconda-server/package-storage
```

3. Assign ownership of this directory to the anaconda-server user:

```
sudo chown -R anaconda-server:anaconda-server /opt/anaconda-server
```

4. Switch to the Repository administrator account:

```
sudo su - anaconda-server
```

## 3. Install Repository

### Download the installer

Download the Repository installer from the download URL provided by your support representative:

```
curl "$INSTALLER_URL" > anaconda_repository.sh
```

Install Repository, following the prompts in the installation routine:

```
bash anaconda_repository.sh
```

1. Review and accept the license terms:

```
Welcome to Anaconda Enterprise 4 Repository 2.33 (by Anaconda, Inc.)
In order to continue the installation process, please review the license agreement.
Please, press ENTER to continue.
```

2. Once you have reviewed the license terms, approve them by typing yes:

```
Do you approve the license terms? [yes|no] yes
```

3. Accept the default location or specify an alternative:

```
anaconda_repository will now be installed into this location:
/home/anaconda-server/repo -Press ENTER to confirm the location
-PRESS CTRL-C to abort the installation
-Or specify a different location below
[/home/anaconda-server/repo] >>> /home/anaconda-server/repo" [Press ENTER]
PREFIX=/home/anaconda-server/repo
installing: python-2.7.11-0
...
Python 2.7.11 :: Anaconda, Inc.
creating default environment... installation finished.
```

4. At the end of the installation routine, update the anaconda-server user's path—prepending /home/anaconda-server/repo—by answering “yes” at the prompt to add the install location to your path:

```
Do you wish the installer to prepend the anaconda_repository install location to
PATH in your /home/anaconda-server/.bashrc ? [yes|no]
```

5. Type yes and press ENTER.
6. For the new path changes to take effect, source your .bashrc:

```
source ~/.bashrc
```

## 4. Configure Repository

1. Initialize the web server and indicate the filepath for the package storage location:

```
anaconda-server-config --init
anaconda-server-config --set fs_storage_root /opt/anaconda-server/package-storage
```

NOTE: The location for file storage can be any location owned by the anaconda-server user that you created in section 2 above.

NOTE: As of Repository 2.33.8, the `fs_storage_root` configuration setting is mandatory for local filesystem storage and the Repository server will not run without it.

2. Configure the connection to your MongoDB database:

```
anaconda-server-config --set MONGO_URL mongodb://localhost
```

NOTE: You may also *configure an external MongoDB database*.

3. If you are not using LDAP or Kerberos authentication, create an initial superuser account for Repository. Set the environment variable `USER_PASSWORD` with the desired password for the initial user. Then run:

```
anaconda-server-create-user --username "superuser" --email "your@email.com" --
superuser
```

NOTE: Replace `superuser` with a username of your choice and `your@email.com` with an email address where you wish to receive system email notifications.



NOTE: To ensure the bash shell does not process any of the characters in this password, limit the password to letters and numbers, with no punctuation. After setup, you can change the password in the web UI.

4. Initialize the Repository database:

```
anaconda-server-db-setup --execute
```

NOTE: The above command is also run when upgrading Repository. Upgrade and then run:

```
anaconda-server-db-setup --execute
```

5. Restart the server.

NOTE: More configuration options can be controlled with one or more `.yaml` configuration files. Repository reads configuration files in this order:

1. From `/etc/anaconda-server/*.yaml`.
2. From `$PREFIX/etc/anaconda-server/*.yaml`.
3. From the path specified in the environment variable `ANACONDA_SERVER_CONFIG`, if it is set and the command line argument `--config-file` was not used.
4. From the path specified in the command line argument `--config-file`, if it was used.

All configuration is merged, and options from files read earlier are overwritten by files read later. If there are multiple files in the same directory, they are read in alphabetical order.

## 5. Set up automatic restart on reboot, fail or error

1. Run the `anaconda-server-install-supervisord-config.sh` script to configure supervisord management of the Anaconda server and worker processes:

```
anaconda-server-install-supervisord-config.sh
```

This will generate the `/home/anaconda-server/repo/etc/supervisord.conf` file and add a crontab rule to restart supervisor after each reboot.

It will also create the folder `/home/anaconda-server/repo/etc/supervisord/conf.d/` where you can add `.conf` files with custom configuration.

NOTE: If you don't want to include the crontab rule, use the `--no-crontab` option when running the script.

If an error message says that the user is disallowed from using cron and could not add the crontab rule, you can add it manually with `sudo`. Edit the crontab file:

```
sudo crontab -e -u anaconda-server
```

When the file is open for editing, add this entry:

```
@reboot /home/anaconda-server/repo/bin/supervisord
```

2. Verify that the server is running:

```
supervisorctl status
```

If installed correctly, you see:

```
anaconda-server RUNNING    pid 10831, uptime 0:00:05
```

3. View the log file at:

```
$PREFIX/var/log/anaconda-server/application.log
```

## 6. Start and log in to Repository

1. Open your browser and log in to Repository by visiting `http://your.anaconda.repository:8080/` using the superuser account you created in section 4 above.

NOTE: Replace your `.anaconda.repository` with the IP address or domain name of your repository.

2. If you are using LDAP or Kerberos authentication, modify your user account to be a superuser.

EXAMPLE: If your user account is “jsmith”:

```
anaconda-server-admin set-superuser "jsmith"
```

NOTE: See *Troubleshooting* if you have issues starting the repo server.

## 7. Client configuration

Follow the *Configuring Anaconda Client* instructions so you can use one or more clients to communicate with the server.

## 8. Install the Repository license

1. In your browser, go to `http://your.anaconda.repository:8080`. Follow the onscreen instructions to upload the license file that you received in an email from your sales representative.

NOTE: Replace your `.anaconda.repository` with the IP address or domain name of your repository.

Contact your sales representative or support representative if you cannot find or have any questions about your license.

2. After uploading the license file, you will see the login page. Log in using the superuser user and password that you created in section 4 above.

TIP: You can view the current license information and upload a new license file by visiting the URL `http://your.anaconda.repository:8080/admin/license`.

NOTE: Replace your `.anaconda.repository` with the IP address or domain name of your repository.

Alternatively, you can install the license by copying the license file directly into the `/home/anaconda-server/.continuum` directory.

## 9. OPTIONAL: Mirror installers for Anaconda and Miniconda

Miniconda and Anaconda installers can be served by Repository via the static directory located at `/home/anaconda-server/repo/opt/anaconda-server/installers`. To serve up the latest installers for each platform, download them to this directory.

Define the URL for miniconda installers:

```
URL="https://repo.anaconda.com/miniconda/"
```

The `Miniconda*latest*.sh` always point to the latest Miniconda installers. Either these can be mirrored or the ones with the latest version number can be mirrored. Define the list of installers to mirror:

```
versions="Miniconda2-4.5.4-Linux-ppc64le.sh
          Miniconda2-4.5.4-Linux-x86.sh
          Miniconda2-4.5.4-Linux-x86_64.sh
          Miniconda2-4.5.4-MacOSX-x86_64.pkg
          Miniconda2-4.5.4-MacOSX-x86_64.sh
          Miniconda2-4.5.4-Windows-x86.exe
          Miniconda2-4.5.4-Windows-x86_64.exe
          Miniconda3-4.5.4-Linux-ppc64le.sh
          Miniconda3-4.5.4-Linux-x86.sh
          Miniconda3-4.5.4-Linux-x86_64.sh
          Miniconda3-4.5.4-MacOSX-x86_64.pkg
          Miniconda3-4.5.4-MacOSX-x86_64.sh
          Miniconda3-4.5.4-Windows-x86.exe
          Miniconda3-4.5.4-Windows-x86_64.exe"

# miniconda installers
pushd /home/anaconda-server/repo/opt/anaconda-server/installers

for installer in $versions
do
    curl -O $URL$installer
done
```

Define the URL for Anaconda installers:

```
URL="https://repo.anaconda.com/archive/"
```

Define the anaconda version to mirror.

EXAMPLE: To mirror version 5.2.0:

```
versions="Anaconda3-5.2.0-Linux-ppc64le.sh
          Anaconda3-5.2.0-Linux-x86.sh
          Anaconda3-5.2.0-Linux-x86_64.sh
          Anaconda3-5.2.0-MacOSX-x86_64.pkg
          Anaconda3-5.2.0-MacOSX-x86_64.sh
          Anaconda3-5.2.0-Windows-x86.exe
          Anaconda3-5.2.0-Windows-x86_64.exe
          Anaconda2-5.2.0-Linux-ppc64le.sh
          Anaconda2-5.2.0-Linux-x86.sh
          Anaconda2-5.2.0-Linux-x86_64.sh
          Anaconda2-5.2.0-MacOSX-x86_64.pkg
```

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```

    Anaconda2-5.2.0-MacOSX-x86_64.sh
    Anaconda2-5.2.0-Windows-x86.exe
    Anaconda2-5.2.0-Windows-x86_64.exe"

# miniconda installers
pushd /home/anaconda-server/repo/opt/anaconda-server/installers

for installer in $versions
do
    curl -O $URL$installer
done

popd

```

Users can download the installers using curl from the following URL:

```

# Fill in server name, port, and specific installer for your platform
curl -s -O http://your.anaconda.repository:8080/downloads/Miniconda-latest-Linux-x86_64.
↪ sh

```

NOTE: Replace your `.anaconda.repository` with the IP address or domain name of your repository.

## 10. Mirror Anaconda.org

The final step is to mirror the packages from a subset of channels on Anaconda.org to the local Repository. The channels to mirror are as follows:

Channel	Description
anaconda	Default anaconda channel containing all packages built and supported by Anaconda, Inc. Also contains custom packages.
r	If you would like conda packages for <i>r</i> , mirror this channel. It is typically done under an <i>r</i> account.
wakari anaconda-nb-extensions	If the local Repository will be used by Anaconda Enterprise Notebooks, the recommended method is to mirror these channels under the <i>wakari</i> account.
msys2	msys2 is required by quite a few windows packages. See <a href="http://www.msys2.org/">http://www.msys2.org/</a>

The packages will be mirrored to the package store defined by the `fs_storage_root` key as described in section 4 above.

### Mirror Anaconda

Mirror the Anaconda channel from Anaconda.org:

```
anaconda-server-sync-conda
```

NOTE: Due to the size of the main repository and depending on the available internet bandwidth, the mirroring process can take hours.

*Mirroring an Anaconda repository with Anaconda Enterprise 4 Repository* contains documentation and advanced `yaml` configuration for mirroring other channels.

## Installing on an air gapped system

These instructions are for installation on air gapped systems or other machines that do not have access to the internet. The air gap archives contain installers, dependencies and packages to mirror. Contact [Support](#) for help with mirroring.

### Before you start

Your server must meet the requirements for hardware, software, security and network. Please review and verify that you have met all *system requirements* before beginning your installation.

Download the installers archive and the appropriate mirrors archive for your needs. The [Air gap archives](#) page lists the archives and their contents.

NOTE: These installation instructions assume the air gap media is available on the target server at \$INSTALLER\_PATH.

EXAMPLE:

```
tar xf <installer-archive> -C /installer/
export INSTALLER_PATH=/installer/anaconda-enterprise-`date +%Y-%m-%d`
```

Also download and expand the archive of conda packages you plan to mirror. These instructions assume packages are expanded to \$INSTALLER\_PATH:

```
tar xf <archive-of-pkgs-to-mirror> -C /installer/
export MIRRORS_ARCHIVE=/installer/repo-mirrors-`date +%Y-%m-%d`
```

## Air gap archives

This section provides information about where to get the air gap archives and their contents.

The air gap archives are generated monthly, generally on the 1st of each month. Monthly archives are provided by Anaconda.

### Installers Archive

All the installers and the latest Miniconda and Anaconda installers for all platforms are in the archive titled:

```
anaconda-enterprise-`date +%Y-%m-%d`.tar
```

The archive size is about 14 GB. It contains everything to install Anaconda Enterprise 4 Repository, Anaconda Enterprise Notebooks, Anaconda Adam and Anaconda Scale.

The archive contains:

Contents	Description
aen-*.sh	anaconda-enterprise-notebooks server, gateway, compute installers
anaconda_repository*.sh	anaconda-repository installer
adam-installer*.sh	adam installer
conda/	latest version of Miniconda and Anaconda for all platforms
rpms6x/	dependencies for installing on RHEL-6x/CentOS-6x
rpms7x/	dependencies for installing on RHEL-7x/CentOS-7x

## Mirror archives

In addition, the `anaconda-server-sync-conda` subdirectory contains mirror archives. These are platform-specific conda packages that must be mirrored after AE-Repo is installed. If you only need packages for a subset of platforms, download the platform-based installers as they will be much smaller in size.

Each component has an md5 file and a list file which are both small and included for convenience.

Tarball	Contents	Size
<code>repo-mirrors-<i>date</i> +%Y-%m-%d.tar</code>	All AE-channels for all platforms	160 GB
<code>x64-repo-mirrors-+%Y-%m-%d.tar</code>	x64 conda packages for all AE-channels	100 GB
<code>linux-64-pkgs.tar</code>	conda packages for linux-64 for all AE-channels	45 GB
<code>win-64-pkgs.tar</code>	conda packages for win-64	30 GB
<code>osx-64-pkgs.tar</code>	conda packages for osx-64	30 GB

NOTE: The archives contain packages for channels: Anaconda, R, Adam, Wakari. The `anaconda-nb-extensions` packages are in the [anaconda-nb-extensions channel](#).

### 1. Install MongoDB 2.6

Change the directory to the appropriate `rpms*` directory to find dependencies:

```
cd $INSTALLER_PATH/rpms*x/
```

## MongoDB for Redhat and CentOS 7

1. Install MongoDB:

```
sudo yum install -y mongodb-org*
```

2. Start MongoDB:

```
sudo systemctl start mongod
```

3. Verify that MongoDB is running:

```
$ sudo systemctl status mongod
mongodb (pid 17258) is running...
```

## MongoDB for Redhat and CentOS 6.7+

1. Install MongoDB:

```
sudo yum install -y mongodb-org*
```

2. Start MongoDB:

```
sudo /etc/init.d/mongod start
```

3. Verify that MongoDB is running:

```
$ sudo /etc/init.d/mongod status
mongodb (pid 17258) is running...
```

## MongoDB for Ubuntu 12.04+

1. Install MongoDB:

```
sudo apt-key adv --keyserver hkp://keyserver.ubuntu.com:80 --recv 7F0CEB10

echo 'deb http://downloads-distroweb.mongodb.org/repo/ubuntu-upstart dist 10gen' | \
sudo tee /etc/apt/sources.list.d/mongodb.list

sudo apt-get update

sudo apt-get install -y mongodb-org=2.6.9 mongodb-org-server=2.6.9 mongodb-org-
shell=2.6.9 mongodb-org-mongos=2.6.9 mongodb-org-tools=2.6.9
```

NOTE: If you do not specify a version, such as 2.6.9, apt-get installs the latest stable version, which is 3.x.

2. Start MongoDB:

```
sudo /etc/init.d/mongod start
```

Verify that MongoDB is running:

```
$ sudo /etc/init.d/mongod status
mongodb (pid 17258) is running...
```

You receive verification that MongoDB is running:

```
start: Job is already running: mongod
```

## Additional MongoDB resources

For additional MongoDB installation information see <https://docs.mongodb.org/manual/>.

## 2. Create the Repository administrator account

1. In a Terminal window, create a new user account for Anaconda Repository named “anaconda-server,” and switch to this new account:

```
sudo useradd -m anaconda-server
```

NOTE: The anaconda-server user is the default for installing Repository. Any username can be used, but using the root user is discouraged.

2. Create a Repository package storage directory:

```
sudo mkdir -m 0770 -p /opt/anaconda-server/package-storage
```

3. Assign ownership of this directory to the anaconda-server user:

```
sudo chown -R anaconda-server:anaconda-server /opt/anaconda-server
```

4. Switch to the Repository administrator account:

```
sudo su - anaconda-server
```

### 3. Install Repository

Install Repository, following the prompts in the installation routine:

```
bash $INSTALLER_PATH/anaconda_repository-*-linux-64.sh
```

NOTE: Path should have only one installer that is for the latest stable version of Repository.

1. Review and accept the license terms:

```
Welcome to Anaconda Enterprise 4 Repository 2.33 (by Anaconda, Inc.)
In order to continue the installation process, please review the license agreement.
Please, press ENTER to continue.
```

2. Once you have reviewed the license terms, approve them by typing yes:

```
Do you approve the license terms? [yes|no] yes
```

3. Accept the default location or specify an alternative:

```
anaconda_repository will now be installed into this location:
/home/anaconda-server/repo -Press ENTER to confirm the location
-PRESS CTRL-C to abort the installation
-Or specify a different location below
[/home/anaconda-server/repo] >>> /home/anaconda-server/repo" [Press ENTER]
PREFIX=/home/anaconda-server/repo
installing: python-2.7.11-0
...
Python 2.7.11 :: Anaconda, Inc.
creating default environment... installation finished.
```

4. At the end of the installation routine, update the anaconda-server user's path—prepending /home/anaconda-server/repo—by answering “yes” at the prompt to add the install location to your path:

```
Do you wish the installer to prepend the anaconda_repository install location to
↳PATH in your /home/anaconda-server/.bashrc ? [yes|no]
```

5. Type yes and press ENTER.
6. For the new path changes to take effect, source your .bashrc:

```
source ~/.bashrc
```



## 4. Configure Repository

1. Initialize the web server and indicate the filepath for the package storage location:

```
anaconda-server-config --init
anaconda-server-config --set fs_storage_root /opt/anaconda-server/package-storage
```

NOTE: The location for file storage can be any location owned by the anaconda-server user that you created in section 2 above.

NOTE: As of Repository 2.33.8, the `fs_storage_root` configuration setting is mandatory for local filesystem storage and the Repository server will not run without it.

2. Configure the connection to your MongoDB database:

```
anaconda-server-config --set MONGO_URL mongodb://localhost
```

NOTE: You may also *configure an external MongoDB database*.

3. If you are not using LDAP or Kerberos authentication, create an initial superuser account for Repository. Set the environment variable `USER_PASSWORD` with the desired password for the initial user. Then run:

```
anaconda-server-create-user --username "superuser" --email "your@email.com" --
↪superuser
```

NOTE: Replace `superuser` with a username of your choice and `your@email.com` with an email address where you wish to receive system email notifications.

NOTE: To ensure the bash shell does not process any of the characters in this password, limit the password to letters and numbers, with no punctuation. After setup, you can change the password in the web UI.

4. Initialize the Repository database:

```
anaconda-server-db-setup --execute
```

NOTE: The above command is also run when upgrading Repository. Upgrade and then run:

```
anaconda-server-db-setup --execute
```

5. Restart the server.

NOTE: More configuration options can be controlled with one or more `.yaml` configuration files. Repository reads configuration files in this order:

1. From `/etc/anaconda-server/*.yaml`.
2. From `$PREFIX/etc/anaconda-server/*.yaml`.
3. From the path specified in the environment variable `ANACONDA_SERVER_CONFIG`, if it is set and the command line argument `--config-file` was not used.
4. From the path specified in the command line argument `--config-file`, if it was used.

All configuration is merged, and options from files read earlier are overwritten by files read later. If there are multiple files in the same directory, they are read in alphabetical order.

## 5. Set up automatic restart on reboot, fail or error

1. Run the `anaconda-server-install-supervisord-config.sh` script to configure supervisord management of the Anaconda server and worker processes:

```
anaconda-server-install-supervisord-config.sh
```

This will generate the `/home/anaconda-server/repo/etc/supervisord.conf` file and add a crontab rule to restart supervisor after each reboot.

It will also create the folder `/home/anaconda-server/repo/etc/supervisord/conf.d/` where you can add `.conf` files with custom configuration.

NOTE: If you don't want to include the crontab rule, use the `--no-crontab` option when running the script.

If an error message says that the user is disallowed from using cron and could not add the crontab rule, you can add it manually with `sudo`. Edit the crontab file:

```
sudo crontab -e -u anaconda-server
```

When the file is open for editing, add this entry:

```
@reboot /home/anaconda-server/repo/bin/supervisord
```

2. Verify that the server is running:

```
supervisorctl status
```

If installed correctly, you see:

```
anaconda-server RUNNING    pid 10831, uptime 0:00:05
```

3. View the log file at:

```
$PREFIX/var/log/anaconda-server/application.log
```

## 6. Start and log in to Repository

1. Open your browser and log in to Repository by visiting `http://your.anaconda.repository:8080/` using the superuser account you created in section 4 above.

NOTE: Replace `your.anaconda.repository` with the IP address or domain name of your repository.

2. If you are using LDAP or Kerberos authentication, modify your user account to be a superuser.

EXAMPLE: If your user account is "jsmith":

```
anaconda-server-admin set-superuser "jsmith"
```

NOTE: See [Troubleshooting](#) if you have issues starting the repo server.

## 7. Client configuration

Follow the *Configuring Anaconda Client* instructions so you can use one or more clients to communicate with the server.

## 8. Install the Repository license

1. In your browser, go to `http://your.anaconda.repository:8080`. Follow the onscreen instructions to upload the license file that you received in an email from your sales representative.

NOTE: Replace `your.anaconda.repository` with the IP address or domain name of your repository.

Contact your sales representative or support representative if you cannot find or have any questions about your license.

2. After uploading the license file, you will see the login page. Log in using the superuser user and password that you created in section 4 above.

TIP: You can view the current license information and upload a new license file by visiting the URL `http://your.anaconda.repository:8080/admin/license`.

NOTE: Replace `your.anaconda.repository` with the IP address or domain name of your repository.

Alternatively, you can install the license by copying the license file directly into the `/home/anaconda-server/.continuum` directory.

## 9. OPTIONAL: Mirror installers for Anaconda and Miniconda

Miniconda and Anaconda installers can be served by Repository via the static directory located at `/home/anaconda-server/repo/opt/anaconda-server/installers`. To serve up the latest installers for each platform, copy them from your *air gap archive* to this directory.:

```
cp Miniconda-latest-Linux-x86_64.sh /home/anaconda-server/repo/opt/anaconda-server/
↪ installers
```

Replace `Miniconda-latest-Linux-x86_64.sh` with your Anaconda or Miniconda installer name.

NOTE: Air gap archive only contains the latest version of both Miniconda and Anaconda installers.

Users can download the installers using curl from the following URL:

```
# Fill in server name, port, and specific installer for your platform
curl -s -O http://your.anaconda.repository:8080/downloads/Miniconda-latest-Linux-x86_64.
↪ sh
```

NOTE: Replace `your.anaconda.repository` with the IP address or domain name of your repository.

## 10. Mirror Anaconda.org

The final step is to mirror the packages from a subset of channels on Anaconda.org to the local Repository. The channels to mirror are as follows:

Channel	Description
anaconda	Default anaconda channel containing all packages built and supported by Anaconda, Inc. Also contains custom packages.
r	If you would like conda packages for <i>r</i> , mirror this channel. It is typically done under an <i>r</i> account.
wakari anaconda-nb-extensions	If the local Repository will be used by Anaconda Enterprise Notebooks, the recommended method is to mirror these channels under the <i>wakari</i> account.
msys2	msys2 is required by quite a few windows packages. See <a href="http://www.msys2.org/">http://www.msys2.org/</a>

The packages will be mirrored to the package store defined by the `fs_storage_root` key as described in section 4 above.

### Mirror Anaconda

Since we are mirroring from a local file system, some additional configuration is necessary. The steps are the same for each channel:

1. Create a mirror configuration yaml typically stored in `$PREFIX/etc/anaconda-server/mirror/`.
2. *Customize your mirror*. An example is if you only need to mirror packages for a subset of platforms. By default, it mirrors all packages found in the channels linux-64, osx-64, win-64, win-32 and linux-32.
3. Invoke the mirror command by pointing it to the config file:

```
echo "channels:" > ~/repo/etc/anaconda-server/mirror/conda.yaml
echo "  - file://$MIRRORS_ARCHIVE/anaconda-suite/pkg" >> \
  ~/repo/etc/anaconda-server/mirror/conda.yaml
```

4. Mirror the default Anaconda packages:

```
anaconda-server-sync-conda --mirror-config ~/repo/etc/anaconda-server/mirror/conda.
↪yaml
```

*Mirroring an Anaconda repository with Anaconda Enterprise 4 Repository* contains documentation and advanced yaml config for mirroring other channels.

## Configuration

### Enabling HTTPS

Before you begin, purchase an SSL certificate and download the SSL \*.cert file and SSL \*.key file.

NOTE: If security is not an issue, for testing, you may set up a self-signed SSL certificate. For more information, see <http://www.selfsignedcertificate.com/>.

1. Save the SSL \*.cert file and an SSL \*.key file in your home directory.
2. Configure the server to use those keys and the correct ports:

```
anaconda-server-config --set ssl_options.keyfile ~/localhost.key
anaconda-server-config --set ssl_options.certfile ~/localhost.cert
anaconda-server-config --set port 8443
```

- Restart your server for the changes to take effect:

```
supervisorctl restart all
```

- To test, navigate to the site using `https` in the address bar.

NOTE: If you use a self-signed SSL certificate, your web browser issues a warning that the website certificate cannot be verified.

Next, configure your client side tools `conda` and `anaconda-client` to pull packages from the local repo by setting the `ssl_verify` flags.

### Configure conda

If your `conda` client is configured to point to this local repo, update the configuration file `.condarc` to contain the `ssl_verify` flag. If you're using a self-signed certificate, configure the `ssl_verify` flag in `.condarc` to point to the root CA used to sign the Anaconda Enterprise Repository server certificate.

### Configure anaconda-client

If you're using `anaconda-client` to connect to Anaconda Enterprise Repository with the command line, set the `ssl_verify` flag.

Use `anaconda config --files` to find the `anaconda-client` configuration files.

SEE the [command reference](#) for updating the client sites configuration for `anaconda-client`.

### Enabling email and SMTP

To send emails such as password reset emails, Repository must have the [email settings](#) configured.

### Configuring a standard or alternate port

The easiest way to enable clients to access a Repository server on standard ports is to configure the server to redirect traffic received on standard HTTP port 80 to the standard Repository HTTP port 8080:

```
sudo iptables -t nat -F
sudo iptables -t nat -A OUTPUT -d localhost -p tcp --dport 80 -j REDIRECT --to-ports 8080
sudo iptables -t nat -I PREROUTING -p tcp --dport 80 -j REDIRECT --to-port 8080
```

## HTTPS

To use HTTPS, redirect traffic from standard HTTPS port 443 to standard Repository HTTPS port 8443:

```
sudo iptables -t nat -A OUTPUT -d localhost -p tcp --dport 443 -j REDIRECT --to-ports 8443
sudo iptables -t nat -I PREROUTING -p tcp --dport 443 -j REDIRECT --to-port 8443
```

NOTE: See also *Enabling HTTPS*.

## Alternate port

To run Repository on a port other than the standard port 8080:

1. Modify the usual instructions by adjusting the port numbers in your *iptables configuration*.
2. Specify the correct port in your `supervisord.conf` file.

## Adjusting IPTables to accept requests on port 80

Enable clients to access a Repository on standard ports by configuring the server to redirect traffic received on standard HTTP port 80 to the standard Repository HTTP port 8080.

NOTE: These commands assume the default state of IPTables, which is on and allowing inbound SSH access on port 22. This is the factory default state for CentOS 6.7. If this default has been changed, you can reset it:

```
sudo iptables -L
```

CAUTION: Mistakes with IPTables rules can render a remote machine inaccessible.

1. Allow inbound access to tcp port 80:

```
sudo iptables -I INPUT -i eth0 -p tcp --dport 80 -m comment --comment "# Anaconda Repo #" -j ACCEPT
```

2. Allow inbound access to tcp port 8080:

```
sudo iptables -I INPUT -i eth0 -p tcp --dport 8080 -m comment --comment "# Anaconda Repo #" -j ACCEPT
```

3. Redirect inbound requests to port 80 to port 8080:

```
sudo iptables -A PREROUTING -t nat -i eth0 -p tcp --dport 80 -m comment --comment "# Anaconda Repo #" -j REDIRECT --to-port 8080
```

4. Display the current IPTables rules:

```
iptables -L -n
Chain INPUT (policy ACCEPT)
target    prot opt source                destination            tcp dpt:8080 /* # Anaconda Repo # */
ACCEPT    tcp  --  0.0.0.0/0              0.0.0.0/0              tcp dpt:80 /* # Anaconda Repo # */
```

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```

ACCEPT    all  --  0.0.0.0/0          0.0.0.0/0          state RELATED,
↪ESTABLISHED
ACCEPT    icmp --  0.0.0.0/0          0.0.0.0/0
ACCEPT    all  --  0.0.0.0/0          0.0.0.0/0
ACCEPT    tcp  --  0.0.0.0/0          0.0.0.0/0          state NEW tcp dpt:22
REJECT    all  --  0.0.0.0/0          0.0.0.0/0          reject-with icmp-host-
↪prohibited

Chain FORWARD (policy ACCEPT)
target     prot opt source                destination
REJECT    all  --  0.0.0.0/0          0.0.0.0/0          reject-with icmp-host-
↪prohibited

Chain OUTPUT (policy ACCEPT)
target     prot opt source                destination

```

NOTE: The PREROUTING (nat) IPTables chain is not displayed by default. To display the chain:

```

iptables -L -n -t nat
Chain PREROUTING (policy ACCEPT)
target     prot opt source                destination
REDIRECT   tcp  --  0.0.0.0/0          0.0.0.0/0          tcp dpt:80 /* # ↪
↪Anaconda Repo # */ redir ports 8080

Chain POSTROUTING (policy ACCEPT)
target     prot opt source                destination

Chain OUTPUT (policy ACCEPT)
target     prot opt source                destination

```

5. Save the running IPTables configuration to `/etc/sysconfig/iptables`:

```
sudo service iptables save
```

## Connecting to an existing MongoDB database

If you already have a MongoDB server running, you can connect to it by setting the `MONGO_URL` configuration variable:

```
anaconda-server-config --set MONGO_URL 'mongodb://<hostname>'
```

For more information, see the [MongoDB Connection String URI Format](#) manual.

See also [Configuring MongoDB authentication](#).

## Configuring MongoDB authentication

By default, MongoDB does not require a username or password to access or modify the database. Anaconda recommends enabling and configuring mandatory authentication.

1. Open a MongoDB shell:

```
mongo
```

2. Repository requires read/write access to the database `binstar`. Enter the following commands into the MongoDB shell to create an administrative user and a service user:

```
use admin
```

3. Create an administrative user to manage database users:

```
db.createUser({user:'siteUserAdmin', pwd: '<secure password #1>', roles:[  
  ↪ 'userAdminAnyDatabase']})
```

4. Authorize as that user to verify the password:

```
db.auth('siteUserAdmin', '<secure password #1>')
```

5. Create a service user for Repository:

```
db.createUser({user:'anaconda', pwd: '<secure password #2>', roles:[{db:'binstar',  
  ↪ role:'readWrite'}]})
```

6. Enable mandatory authentication in MongoDB:

- If you are using the legacy MongoDB configuration format, add the `auth` key to `/etc/mongod.conf`:

```
auth=true
```

- If you are using the current MongoDB configuration format, add the `security.authorization` key to `/etc/mongod.conf`:

```
security:  
  authorization: enabled
```

7. Restart MongoDB to reload the configuration:

```
sudo service mongod restart
```

8. Edit the Repository configuration file and set the `MONGO_URL` parameter to `mongodb://<username>:<password>@<hostname>`.

After editing the configuration file, restart Repository for the changes to take effect.

9. Edit the Repository configuration file and set the `MONGO_URL` parameter to `mongodb://<username>:<password>@<hostname>`.

After editing the configuration file, restart Repository for the changes to take effect.

NOTE: For more information about MongoDB authentication and authorization, see <https://docs.mongodb.com/v2.6/core/authentication/> and <https://docs.mongodb.com/v2.6/core/authorization/>.



## Whitelisting or blacklisting packages

Sometimes you do not want to replicate all the packages from Repository into your mirror. The `anaconda-server-sync-conda` tool includes whitelist/blacklist functionality to manipulate your list of mirrored packages in a variety of ways.

A mirror config file can be specified when you run `anaconda-server-sync-conda` with the flag `--mirror-config=FILEPATH` and replace `FILEPATH` with the path to your config file.

NOTE: Configuration files are `yaml` files.

To customize your distribution, you have the following options:

- `remote_url`: Repository mirrors packages from this source URL.
- `mirror_dir`: Repository stores packages in this directory on the machine where the script is executed.
- `platforms`: Repository mirrors packages for these platforms.
- `license_blacklist`: Repository omits packages with these licenses.
- `blacklist`: Repository omits these packages.
- `whitelist`: Repository always mirrors these packages.

TIP: You do not need to set up every option manually. If you only want to adjust one or two options, that is allowed. Untouched options remain defined by the default setting.

EXAMPLE: The following example only selects packages that are available for `linux-32` and `linux-64` platforms. `Win-32` or `win-64` packages are not mirrored at all:

```
mirror_dir: /opt/anaconda-server/package-storage
platforms:
  - linux-32
  - linux-64
license_blacklist: GPL
whitelist:
  - distribute
  - conda
blacklist:
  - flask
  - readline
```

The step-by-step algorithm that is used by `cas-mirror` to create the ultimate list of packages to mirror follows this order:

1. Get a full list of packages from `default_url`.
2. If the `platforms` option is present, only those packages available to the platforms listed here are left on the list.
3. If `license_blacklist` is present, then all the packages subject to any of the licenses mentioned here are removed from the list. See the [list of license families that can be blacklisted](#).
4. If `blacklist` is present, then all member packages explicitly mentioned here are removed from the list.
5. If `whitelist` is present, then those assigned member packages are added to the list. The `whitelist` option overrides `license_blacklist` and `blacklist`, so that a package listed here is mirrored even when under a GPL license or if it appears in the `blacklist` option.

After performing all of the above actions sequentially, the script produces the ultimate list of packages that are mirrored.

## Securing user-created content

To prevent cross-site scripting attacks (XSS), user content—such as Jupyter Notebooks—can be served from a separate domain.

To enable this:

1. Configure the project to use a separate content domain:

```
anaconda-server-config --set SERVER_NAME your.anaconda.repository
anaconda-server-config --set USER_CONTENT_DOMAIN your.usercontent.server
```

NOTE: Replace `your.anaconda.repository` and `usercontent.your.anaconda.repository` with the respective server IP address or domain name.

2. If your user content domain is a subdomain of your Repository domain, you must also configure the session cookie to only send to the root domain:

```
anaconda-server-config --set SERVER_NAME your.anaconda.repository
anaconda-server-config --set USER_CONTENT_DOMAIN usercontent.your.anaconda.
↪repository
anaconda-server-config --set SESSION_COOKIE_DOMAIN your.anaconda.repository
```

NOTE: Replace `your.anaconda.repository` and `usercontent.your.anaconda.repository` with the respective server IP address or domain name.

## Configuring Repository to use LDAP

To enable Lightweight Directory Access Protocol (LDAP) support:

1. Open the Repository configuration file `$PREFIX/etc/anaconda-server/config.yaml` and add the following configuration:

```
account_names_filter: false
USER_REGEX: ^[a-z0-9_][a-z0-9_-.]+$
LDAP:
  # Replace with company LDAP server
  URI: 'ldap://<ldap.company.com>'

  # Replace <uid=%(username)s,ou=People,dc=company,dc=com> with your company_
↪specific LDAP Bind/Base DN
  # Bind directly to this Base DN.
  BIND_DN: '<uid=%(username)s,ou=People,dc=company,dc=com>'

  # Map LDAP keys into application specific keys
  KEY_MAP:
    name: 'cn'
    company: 'o'
    location: 'l'
    email: 'mail'
```

2. When switching authentication to LDAP, the admin account is lost, so you need to add your admin account again:

```
anaconda-server-admin set-superuser "jsmith"
```

3. Run the `flask-ldap-login-check` command to verify LDAP connectivity:

```
flask-ldap-login-check binstar.wsgi:app --username 'jsmith' --password 'abc123DEF'
```

NOTE: Replace `jsmith` and `abc123DEF` with your LDAP username and password.

4. To apply the changes, restart the Repository server:

```
supervisorctl restart all
```

5. Open a new browser window and navigate to your local Repository installation:

```
http://your.anaconda.repository
```

NOTE: Replace `your.anaconda.repository` with your Repository server IP address or domain name.

6. Log in using your LDAP credentials.
7. Optional. You may set an LDAP network timeout in seconds with the options `OPT_NETWORK_TIMEOUT` and `OPT_TIMEOUT`. The default value is 0, meaning no timeout.

For example, to set the timeout to 60 seconds, add this block to the LDAP settings in your configuration file:

```
OPTIONS:
  OPT_NETWORK_TIMEOUT: 60
  OPT_TIMEOUT: 60
```

## Configuring Repository to use Active Directory

Microsoft Active Directory is a server program that provides directory services and uses the open industry standard Lightweight Directory Access Protocol (LDAP).

To enable Active Directory support:

1. Open the Repository configuration file `$PREFIX/etc/anaconda-server/config.yaml` and add the following configuration:

```
account_names_filter: false
USER_REGEX: ^[a-z0-9_][a-z0-9_-.]+$
LDAP:
  # Replace with company LDAP server
  'URI': 'ldap://<ldap.server.url>'

  # This BIND_DN/BIND_PASSWORD default to '', this is shown here for
  # demonstrative purposes. To enable Authorized Bind, insert the AD
  # BIND_DN and BIND_AUTH password for and authorized AD user.
  #
  #e.g. 'BIND_DN': '<cn=Authorized User,cn=users,dc=company,dc=local>'
  #e.g. 'BIND_AUTH': '<AuthUsrPassword>'

  # The values '' perform an anonymous bind so we may use search/bind method
  BIND_DN: ''
  BIND_AUTH: ''

  # Adding the USER_SEARCH field tells the flask-ldap-login that we
  # are using the search/bind method
```

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```
USER_SEARCH:
    base: <cn=users,dc=company,dc=local>
    filter: sAMAccountName=%(username)s

# Map ldap keys into application specific keys
KEY_MAP:
    name: 'cn'
    company: 'o'
    location: 'l'
    email: 'userPrincipalName'
```

2. To apply the changes, restart the Repository server:

```
supervisorctl restart all
```

3. Run the flask-ldap-login-check command to verify Active Directory connectivity:

```
flask-ldap-login-check binstar.wsgi:app --username 'jsmith' --password 'abc123DEF'
```

NOTE: Replace jsmith and abc123DEF with your Active Directory username and password.

You see a response similar to the following:

```
[anaconda.server] Started Site
Got userdata for jsmith
{'company': None, 'email': None, 'location': None, 'name': 'Jane Smith'}
```

4. Open your browser and navigate to your local Repository installation:

```
http://your.anaconda.repository
```

NOTE: Replace your.anaconda.repository with your Repository IP address or domain name.

5. Log in with Active Directory.

## Configuring Repository to use LDAP groups

Repository can be configured to allow synchronizing the membership of organization groups with groups in an LDAP directory. Owners of an organization can select a specific LDAP group as the source of group members.

Once this is enabled, users who sign in to Repository who are members of the LDAP group automatically are granted the permissions of the organization group.

To enable LDAP groups, configure the following:

- Authenticated bind to LDAP. Repository needs to perform searches against the directory to determine the available groups and the membership of those groups.
- A query for Repository to identify the groups in your LDAP directory. For more information, see [GROUP\\_SEARCH](#).

If LDAP synchronization is disabled or the LDAP server is unreachable, the member list at the time is used for the group.

To administer and debug LDAP synchronization, a superuser can visit:

```
http://your.anaconda.repository/admin/ldap
```

NOTE: Replace your.anaconda.repository with your Repository IP address or domain name.

## Enabling TLS on LDAP/Active Directory

To enable a secure Transport Layer Security (TLS) connection on LDAP/Active Directory, add the following to the LDAP configuration section of the file `$PREFIX/etc/anaconda-server/config.yaml`, replacing `/path/to/certfile` with the actual path to the certfile.:

```
LDAP:
... # Rest of the LDAP config
START_TLS: true,
OPTIONS:
  OPT_PROTOCOL_VERSION: 3
  OPT_X_TLS_DEMAND: true
  OPT_X_TLS_REQUIRE_CERT: 'OPT_X_TLS_NEVER'
  OPT_X_TLS_CACERTFILE: '/path/to/certfile'
```

**NOTE:** START\_TLS is not compatible with LDAPS. When using START\_TLS, the URI value in the LDAP configuration section must start with `ldap://`. When using START\_TLS, the connection starts as a regular connection, and is upgraded to use TLS after connection has been established.

If you're using self-signed certificates, you'll need to add `OPT_X_TLS_NEWCTX` as the **last entry** of the `OPTIONS` field of the LDAP options:

```
LDAP:
... # Rest of the LDAP config
START_TLS: true,
OPTIONS:
  OPT_PROTOCOL_VERSION: 3
  OPT_X_TLS_DEMAND: true
  OPT_X_TLS_REQUIRE_CERT: 'OPT_X_TLS_NEVER'
  OPT_X_TLS_CACERTFILE: '/path/to/certfile'
  OPT_X_TLS_NEWCTX: 0
```

## Using LDAP and TLS configuration options

### URI

Start by setting URI to point to your server. The value of this setting can be anything that your LDAP library supports. For instance, `openldap` may allow you to give a comma- or space-separated list of URI values to try in sequence.

### BIND\_DN

The distinguished name to use when binding to the LDAP server with `BIND_AUTH`. Use the empty string—the default—for an anonymous bind.

### BIND\_AUTH

The password to use with `BIND_DN`.

### USER\_SEARCH

A dictionary that locates a user in the directory. The dict object must contain the required entries `base` and `filter` and may contain the optional entry `scope`.

- `base`: The base DN to search.
- `filter`: Should contain the placeholder `%(username)s` for the username.
- `scope`: One of `LDAP_SCOPE_BASE`, `LDAP_SCOPE_ONELEVEL` or `LDAP_SCOPE_SUBTREE`.

EXAMPLE:

```
{'base': 'dc=example,dc=com', 'filter': 'uid=%(username)s'}
```

### SUPERUSER\_SEARCH

A dict that will determine whether a valid user is a superuser. The dict object must contain the required entries `base` and `filter` and may contain the optional entry `scope`. If the search is successful, then something is returned by the LDAP server, and the user is given superuser permissions.

- `base`: The base DN to search.
- `filter`: Should contain the placeholder `%(username)s` for the username.
- `scope`: One of `LDAP_SCOPE_BASE`, `LDAP_SCOPE_ONELEVEL`, or `LDAP_SCOPE_SUBTREE`.

For example:

```
{'base': 'cn=admin,ou=Groups,dc=example,dc=com', 'filter': 'memberUid=%(username)s'}
```

Notice that this check is done during the login procedure, so even though privileges might have been removed from (or added to) the LDAP server, the user will have to authenticate again to see the changes.

## ENABLE\_GROUPS

This attribute enables LDAP group synchronization, allowing users to synchronize group membership with an LDAP directory. Defaults to `false`.

EXAMPLE:

```
ENABLE_GROUPS: true
```

## GROUP\_SEARCH

A dictionary that locates a group in the directory. An LDAP search is performed using the base distinguished name and filter.

**NOTE:** Unlike `USER_SEARCH`, you must put parenthesis around the `GROUP_SEARCH` filter. It may appear to work without parenthesis, when it's actually failing or behaving unpredictably.

EXAMPLE:

```
GROUP_SEARCH:
  base: dc=example,dc=com
  filter: (objectClass=group)
```

**NOTE:** Anaconda Enterprise 4 Repository assumes that the groups' `objectClass` is `groupOfNames` (or a compatible schema). The following LDIF snippet shows an example group instance:

```
dn: cn=Analysts,ou=Anaconda Groups,dc=example,dc=com
cn: Analysts
member: cn=John Doe,ou=Users,dc=example,dc=com
member: cn=Jane Doe,ou=Users,dc=example,dc=com
member: cn=John Q. Public,ou=Users,dc=example,dc=com
member: cn=Guy Incognito,ou=Users,dc=example,dc=com
objectclass: groupOfNames
objectclass: top
```

## GROUP\_MEMBERS\_ATTR

The LDAP attribute on a group object that indicates the users that are members of the group. Defaults to `member`.

EXAMPLE:

```
GROUP_MEMBERS_ATTR: 'member'
```

**NOTE:** Anaconda Enterprise 4 Repository assumes that the groups' `objectClass` is `groupOfNames` (or a compatible schema).

## REFRESH\_INTERVAL

The number of seconds that group membership information from LDAP is used before being fetched from the directory server again. Defaults to 3600, which is 1 hour.

EXAMPLE:

```
REFRESH_INTERVAL: 600
```

## KEY\_MAP

This is a dict mapping application context to LDAP. An application may expect user data to be consistent, and not all LDAP setups use the same configuration:

```
'application_key': 'ldap_key'
```

EXAMPLE:

```
KEY_MAP={'name': 'cn', 'company': 'o', 'email': 'mail'}
```

## START\_TLS

If `true`, each connection to the LDAP server calls `start_tls_s()` to enable TLS encryption over the standard LDAP port. There are a number of configuration options that can be given to `OPTIONS` that affect the TLS connection. For example, `OPT_X_TLS_REQUIRE_CERT` can be set to `OPT_X_TLS_NEVER` to disable certificate verification, perhaps to allow self-signed certificates.

## OPTIONS

This stores LDAP specific options.

EXAMPLE:

```
LDAP:
  OPTIONS:
    OPT_PROTOCOL_VERSION: 3
    OPT_X_TLS_REQUIRE_CERT: 'OPT_X_TLS_NEVER'
```

## TLS—secure LDAP

To enable a secure TLS connection you must set `START_TLS` to `true`. There are a number of configuration options for `OPTIONS` that affect the TLS connection.

EXAMPLE: `OPT_X_TLS_REQUIRE_CERT` set to `OPT_X_TLS_NEVER` disables certificate verification, perhaps to allow self-signed certificates:

```
LDAP:
  START_TLS: true
  OPTIONS:
    OPT_PROTOCOL_VERSION: 3
```

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```
OPT_X_TLS_DEMAND: true
OPT_X_TLS_REQUIRE_CERT: 'OPT_X_TLS_NEVER'
OPT_X_TLS_CACERTFILE: '/path/to/certfile'
```

## Configuring Repository to use Kerberos

Kerberos is an authentication protocol designed to allow nodes communicating over an insecure network to verify identity. Repository can use Kerberos to authenticate users.

The Kerberos protocol uses timestamps to prevent replay attacks on expired credentials, so the Network Time Protocol (NTP) service must be set up and working correctly.

Several aspects of Kerberos rely on name service. Your domain name system (DNS) entries and your hosts must have the correct information. The `hostname` command and the configuration file `/etc/hostname` must reflect the fully-qualified domain name (FQDN) of the machine. The configuration file `/etc/hosts` must include an entry with the FQDN, to allow reverse-DNS lookups to be performed.

To allow clients to authenticate against Anaconda Enterprise 4 Repository, create a principal for the service with a private key that identifies the service. Create a service principal `HTTP/your.anaconda.repository`, and create the keytab containing this principal to `$PREFIX/etc/anaconda-server/http.keytab`:

```
SERVER_NAME=your.anaconda.repository
```

NOTE: Replace `your.anaconda.repository` with your server IP address or domain name.

If you are using MIT Kerberos:

```
kadmin -q "addprinc HTTP/${SERVER_NAME}"
kadmin -q "ktadd -k $PREFIX/etc/anaconda-server/http.keytab HTTP/${SERVER_NAME}"
chown anaconda-server:anaconda-server $PREFIX/etc/anaconda-server/http.keytab
chmod 600 $PREFIX/etc/anaconda-server/http.keytab
```

If you are using Active Directory:

1. Open Active Directory Users and Computers.
2. Select the Users container.
3. In the **Action** menu, select New, then select User.
4. In the New Object - User dialog, type the user information. In this example, we use `your-anaconda-repository` as the login.
5. In the next dialog, select the options Password never expires and User cannot change password.
6. Right-click on the newly created user, and select Properties.
7. In the Properties dialog, select the **Account** tab, and ensure the Do not require Kerberos preauthentication option is selected.
8. Open an Administrative prompt and run:

```
ktpass -princ HTTP/your.anaconda.repository@YOUR.DOMAIN -out http.keytab -pass "*" -
↪mapUser your-anaconda-user@your-anaconda-server -ptype KRB5_NT_PRINCIPAL
```

9. Copy the newly created file `http.keytab` to `$PREFIX/etc/anaconda-server/http.keytab` on your Repository server.

To enable Kerberos authentication on Repository, add the configuration options to `$PREFIX/etc/anaconda-server/config.yaml`:

```
AUTH_TYPE: KERBEROS
KRB5_KTNAME: /home/anaconda-server/repo/etc/anaconda-server/http.keytab
```

For a minimal configuration example see [Kerberos-Anaconda Enterprise 4 Repository setup example](#).

## Kerberos configuration options

AUTH_TYPE	string	Configures the authentication scheme used for Repository. Set to <b>KERBEROS</b> to enable Kerberos authentication. Default: <b>NATIVE</b> .
KRB5_KTNAME	string	The file path of the keytab containing the service principal for Repository. Default: <code>/etc/krb5.keytab</code> .
KRB5_SERVICE_NAME	string	The service type used to identify the service principal for Repository. HTTP in <code>HTTP/your.anaconda.repository@YOUR.REALM</code> . Default: HTTP.
KRB5_HOSTNAME	string	The hostname used to identify the service principal for Repository. <code>your.anaconda.repository</code> in <code>HTTP/your.anaconda.repository@YOUR.REALM</code> . Default: the hostname of the machine on which Repository is running.

## Kerberos-Anaconda Enterprise 4 Repository setup example

Kerberos authentication adds a layer of security to Anaconda Enterprise 4 Repository. The following example show how to set up a minimal working installation with three machines: One running anaconda server, one running the MIT Kerberos Key Distribution Center (KDC), and a client from where we are going to connect to both services.

For this example we assume that both the KDC and Anaconda Enterprise 4 Repository are already configured and the 3 systems have the Network Time Protocol (NTP) service working.

### Initial Setup

All 3 machines are running CentOS 7 but the configurations mentioned here apply for many other Linux distributions. We are going to use the following domain names:

- Anaconda Enterprise 4 Repository: `anaconda.kerberos.local`
- Kerberos KDC: `kdc.kerberos.local`
- Client: `client.kerberos.local`

Make sure that the information is correct in the configuration files `/etc/hostname` and `/etc/hosts` to allow reverse-DNS lookups.

The name of the Kerberos realm is `KERBEROS.LOCAL`. The 3 machines have the same configuration file `/etc/krb5.conf`:

```
[logging]
kdc = FILE:/var/log/krb5kdc.log
admin_server = FILE:/var/log/kadmind.log
default = SYSLOG:NOTICE:DAEMON
```

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```
[libdefaults]
    dns_lookup_realm = true
    dns_lookup_kdc = true
    ticket_lifetime = 24h
    renew_lifetime = 7d
    forwardable = true
    rdns = false
    default_realm = KERBEROS.LOCAL
    default_ccache_name = KEYRING:persistent:%{uid}

[realms]
    KERBEROS.LOCAL = {
        kdc = kdc.kerberos.local
        admin_server = kdc.kerberos.local
    }

[domain_realm]
    .kerberos.local = KERBEROS.LOCAL
    kerberos.local = KERBEROS.LOCAL
```

On `kdc.kerberos.local` the files `/var/kerberos/krb5kdc/kdc.conf` and `/var/kerberos/krb5kdc/kadm5.acl` should be configured accordingly.

## Configure Anaconda Repository

At this point Anaconda Enterprise 4 Repository is up and running, it's installed on `/home/anaconda-server/repo`, the administrator account in this example is `superuser`. To allow authentication we first create a service principal and the keytab containing this principal. This is accomplished running the following commands as root from a terminal on `anaconda.kerberos.local`.

```
kadmin -q "addprinc HTTP/anaconda.kerberos.local"
kadmin -q "ktadd -k /home/anaconda-server/repo/etc/anaconda-server/http.keytab HTTP/
↪ anaconda.kerberos.local"
chown anaconda-server:anaconda-server \
    /home/anaconda-server/repo/etc/anaconda-server/http.keytab
chmod 600 /home/anaconda-server/repo/etc/anaconda-server/http.keytab
```

Now edit the configuration file `/home/anaconda-server/repo/etc/anaconda-server/config.yaml` and add the following lines:

```
AUTH_TYPE: KERBEROS
KRB5_KTNAME: /home/anaconda-server/repo/etc/anaconda-server/http.keytab
```

Finally, add the principal for the admin account on the kerberos realm:

```
kadmin -q "addprinc superuser@KERBEROS.LOCAL"
```

Reboot the server for the changes to take effect.

### Client Configuration

To log in to Anaconda Enterprise 4 Repository with Kerberos Authentication, a browser that supports said authentication protocol is necessary. In this example we are using Firefox. Some extra tweaking is required.

- Open Firefox and type **about:config** in the navigation bar, click the confirmation button if necessary to proceed to the configuration page.
- Type **negotiate** in the Search field to filter out the options, double click **network.negotiate-auth.trusted-uris** and enter `.kerberos.local` in the text box.
- Do the same for **network.negotiate-auth.delegation-uris**.

Finally a ticket for the `superuser` should be stored on the local machine. The following command will request it:

```
kinit superuser@KERBEROS.LOCAL
```

Now it is possible to open anaconda server on firefox, in this case the URL is `anaconda.kerberos.local:8080`, after clicking **Sign In**, the user should be able to log in immediately without having to enter any credentials.

### Configure Anaconda Enterprise 4 Repository to use PAM

Open the Anaconda Enterprise 4 Repository configuration file `$PREFIX/etc/anaconda-server/config.yaml` and add the following configuration to enable Pluggable Authentication Module (PAM) support:

```
AUTH_TYPE: PAM
```

When switching authentication to PAM the admin account is lost, so you need to add your admin account again:

```
anaconda-server-admin set-superuser "jsmith"
```

To apply the changes, restart the Anaconda Enterprise 4 Repository server:

```
supervisorctl restart all
```

Open a new browser window and navigate to your local Anaconda Enterprise 4 Repository installation:

```
http://your.anaconda.server
```

NOTE: Replace “your.anaconda.server” with your actual Anaconda Enterprise 4 Repository server IP address or domain name.

You can now log in using your PAM credentials.

NOTE: To use the “shadow” PAM backend, add the user under which Anaconda Enterprise 4 Repository is running (usually “anaconda-server”) to the “shadow” group:

```
sudo usermod -a -G shadow anaconda-server
```

## Read only mode

The site can be put into **read only** mode to disable any action that modifies the database.

This may be useful when mirroring from the site.

NOTE: Logging in modifies the database, so in **read only** mode users and admins may not log in.

To enable **read only** mode use the setting:

```
READ_ONLY: true
```

## Configuring Anaconda Client

Anaconda Client gives you the ability to upload packages to your on-site Anaconda Enterprise 4 Repository and provides highly granular access control capabilities. The instructions below describe how to configure Client to use your local Repository instead of Anaconda Cloud.

### Client configuration

On each machine that accesses your on-site Repository, run this command as the machine's local user:

```
anaconda config --set url http://your.server.name:<port>/api
```

Or, to set the default repo on a system-wide basis, run this command:

```
anaconda config --set url http://your.server.name:<port>/api --site
```

NOTE: Replace `your.server.name` with the name of your local Repository and `<port>` with the name of the port used by Repository.

The system level `config` file is used only if no user-level `config` file is present.

To show the system and user `config` file locations and configuration settings:

```
anaconda config --show
```

### Conda configuration

When the above `anaconda config` steps are completed, you can access all packages and channels from the local on-site Repository instead of the public Anaconda.org.

Users can then add individual accounts to their `.condarc` file by running the following command:

```
conda config --add channels USERNAME
```

If you still want to access certain channels from the public Anaconda.org, run:

```
conda config --add channels http://conda.anaconda.org/USERNAME
```

NOTE: Replace `USERNAME` with your username.

### Conda channel priority

To set a preferred priority for the channels conda searches for package installs, edit your `~/.condarc` file and change the order. Channels at the top are searched first.

For example:

```
channels:
- channel
- https://conda.anaconda.org/t/<token>/<channel2>
- http://conda.anaconda.org/<channel1>
- defaults
```

The order of search is:

1. Private on-site Repository channel.
2. Private Anaconda.org channel2.
3. Public Anaconda.org channel1.
4. Default channel on the on-site Repository.

### Pip configuration

To install PyPI packages from your Repository, add your channel to your `~/.pip/pip.conf` configuration file.

Edit the file and add an extra-index-url entry to the global config section:

```
[global]
extra-index-url = http://your.server.name:<port>/pypi/USERNAME/simple
```

NOTE: Replace your `.server.name` with the name of your local Repository, `<port>` with the name of the port used by Repository and `USERNAME` with your username.

### Kerberos configuration

If you have enabled Kerberos authentication as described in [Configuring Repository to use Kerberos](#), your browser and Client should be able to authenticate to Repository using Kerberos.

In macOS/Unix, configure the file `/etc/krb5.conf`:

```
[libdefaults]
default_realm = YOUR.DOMAIN

[realms]
YOUR.DOMAIN = {
    kdc = your.kdc.server
}

[domain_realm]
your.anaconda.repository = YOUR.DOMAIN
```

NOTE: Replace `YOUR.DOMAIN` with your domain, `your.kdc.server` with your Kerberos key distribution center (KDC) and `your.anaconda.repository` with your local Repository server.

If your configuration is correct, you should be able to authenticate using the command line tool `kinit`:

```
kinit jsmith
anaconda login
```

NOTE: Replace `jsmith` with your username.

## Browser Setup

Many browsers do not present your Kerberos credentials by default, to prevent leaking credentials to untrusted parties. In order to use Kerberos authentication, you must whitelist Repository as a trusted party to receive credentials.

You must restart your browser after configuring the whitelist in order for changes to be reflected.

### Safari

Safari requires no configuration—it automatically presents your credentials without whitelisting.

### Chrome

The `AuthServerWhitelist` policy must be set to `your.anaconda.repository` to allow Chrome to present credentials to Repository with the hostname `your.anaconda.repository`. Depending on your DNS configuration, `DisableAuthNegotiateCNameLookup` may also be required to prevent Chrome from canonicalizing the hostname before generating a service name.

NOTE: Replace `your.anaconda.repository` with your local Repository server.

To configure on macOS:

```
defaults write com.google.Chrome AuthServerWhitelist "your.anaconda.repository"
```

On Linux:

```
mkdir -p /etc/opt/chrome/policies/managed
mkdir -p /etc/opt/chrome/policies/recommended
chmod -w /etc/opt/chrome/policies/managed
echo '{"AuthServerWhitelist": "your.anaconda.repository"}' > /etc/opt/chrome/policies/
↪managed/anaconda_repo_policy.json
```

On Windows, use Group Policy objects to set the Authentication server whitelist setting to `your.anaconda.repository`.

For more information, see Chrome's [SPNEGO authentication](#) and [administration](#) documentation.

### Firefox

1. Navigate to the configuration page `about:config`.
2. Search for `negotiate`.
3. Set the configuration item `network.negotiate-auth.trusted-uris` to your `.anaconda.repository`

NOTE: Replace your `.anaconda.repository` with your local Repository server.

### Internet Explorer

1. In the **Tools** menu, select Internet Options.
2. On the **Advanced** tab, in the Security section, select Enable Integrated Windows Authentication.

### Configuring local mirrors

You can add a local copy—mirror—of Anaconda or PyPI repositories to your Anaconda Enterprise 4 Repository installation.

This section explains how to use Repository’s convenient syncing tools to create and configure local mirrors:

### Mirroring an Anaconda repository with Anaconda Enterprise 4 Repository

#### Before you start

You need to have already installed and configured your Repository instance. Due to the size of Repository, it is important that you have configured a file storage location with sufficient disk space. If necessary, see the [requirements for the file storage location](#).

A full Anaconda mirror requires approximately 650 GB.

You will also need to install `cas-mirror` as it is the recommended mirroring tool.

NOTE: The `anaconda-mirror` tool has been deprecated and will not be updated any further.

#### Mirroring all packages

You can mirror some or all of the contents of the [Anaconda repository](#) using the `cas-sync-api-v4` command:

```
$ cas-sync-api-v4 --help
usage: cas-sync-api-v4 [-h] [-f FILENAME] [--config] [--version]
                    [-l LOG_LEVEL] [-v]

Updates an Anaconda repository instance

optional arguments:
  -h, --help            show this help message and exit
  -f FILENAME, --file FILENAME
                        Configuration file location (Defaults to:
                        /home/abarto/.cas-mirror or /etc/cas-mirror)
  --config, --show-config
```

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	Show running configuration and exit
<code>--version</code>	Print version and exit
<code>-l LOG_LEVEL, --log-level LOG_LEVEL</code>	Set the log level (CRITICAL, ERROR, WARNING, INFO, DEBUG)Default: INFO.
<code>-v, --verbose</code>	Shorthand for <code>--log-level DEBUG</code>

The `cas-sync-api-v4` command leverages the functionality exposed by the `anaconda-client` package to import the remote packages into an existing site. It mirrors all of the packages from the default `repo.anaconda.com` channels into the `anaconda` user account. These default channels are:

- [anaconda.org/main](https://anaconda.org/main)
- [anaconda.org/msys2](https://anaconda.org/msys2)
- [anaconda.org/r](https://anaconda.org/r)

1. Associate the URL of your Anaconda Enterprise 4 Repository with a site using the `anaconda` command:

```
anaconda config --set sites.myrepo.url "http://your-anaconda-repo/"
```

NOTE: Replace `your-anaconda-repo` with the URL to your installation of Repository.

2. Create a configuration file `sync.yaml` that tells `cas-sync-api-v4` which site to use:

```
dest_site: myrepo
```

3. Check that the configuration is valid with the `--config` parameter:

```
$ cas-sync-api-v4 -f sync.yaml --config
path: /home/ec2-user/sync.yaml
remote_url: https://repo.anaconda.com/
mirror_dir: /opt/cas-mirror
platforms: ['osx-32', 'osx-64', 'win-32', 'win-64', 'linux-32', 'linux-64', 'linux-
armv6l', 'linux-armv7l', 'linux-ppc64le']
fetch_installers: True
repopdata_source: False
dir_names: ['archive']
server_log_dir: None
server_port: None
dest_site: myrepo
dest_channel: anaconda
verify_checksum: False
delta: False
delta_dir: None
log_dir: None
log_level: 20
python_versions: []
pkg_list: []
license_blacklist: []
blacklist: []
whitelist: []
channels:
  - https://repo.anaconda.com/pkgs/main/
```

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```
- https://repo.anaconda.com/pkgs/free/  
- https://repo.anaconda.com/pkgs/pro/
```

With this configuration, `cas-sync-api-v4` mirrors the contents of all the default channels into the `anaconda` account of the `myrepo` site.

4. Run `cas-sync-api-v4`:

```
cas-sync-api-v4 -f sync.yaml
```

5. Verify the mirroring by opening a browser and loading this URL:

```
http://your-anaconda-repo/anaconda/
```

NOTE: Replace `your-anaconda-repo` with the URL to your installation of Repository.

## Mirroring some packages

Alternately, you may not want to mirror all packages. To mirror a subset of the total repository, specify which platforms you want to include, or use the `whitelist`, `blacklist` or `license_blacklist` functionality to control which packages are mirrored, by copying the default configuration file `$PREFIX/etc/anaconda-server/mirror/anaconda.yaml` to `$PREFIX/etc/anaconda-server/mirror/anaconda-custom.yaml`.

For Repository 2.27 or newer, there are sample `yaml` config files located at: `$PREFIX/etc/anaconda-server/mirror`. `PREFIX` is the install location of Repository, which by default is `~anaconda-server/repo/etc/anaconda-server/mirror`.

This command mirrors the repository according to the settings in the configuration file `anaconda-custom.yaml`:

```
cas-sync-api-v4 -f anaconda-custom.yaml
```

For more information, see [Customizing mirrors](#).

## Offline mirroring

Offline mirroring is done by using both `cas-sync` and `cas-sync-api-v4`. First download all the packages onto a host with Internet access.

EXAMPLE:

To download the packages, create a configuration file named `export.yaml`:

```
mirror_dir: /opt/mirror/export/  
platforms:  
  - linux-64  
  - win-64  
python_versions:  
  - 2.7  
  - 3.6  
fetch_installers: false  
pkg_list:  
  - ca-certificates  
  - certifi
```

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```
- libedit
- libffi
- libgcc-ng
- libstdcxx-ng
- ncurses
- openssl
- pip
- python
- readline
- setuptools
- sqlite
- tk
- wheel
- xz
- zlib
```

This example downloads only a subset of the default channels.

Run `cas-sync`:

```
cas-sync -f export.yaml
```

After it finishes, a conda repository for each platform is created in the directory `/opt/mirror/export/pkgs`. We can now take the contents of the directory `/opt/mirror/export/` to the air-gapped environment.

To import the packages, create a config file named `import.yaml`:

```
dest_site: mysite
dest_channel: anaconda
channels:
  - file:///opt/mirror/export/pkgs/
platforms:
  - linux-64
  - win-64
python_versions:
  - 2.7
  - 3.6
```

Make sure these requirements are true:

- The files mirrored onto the connected box have been put in the `/opt/mirror/export` directory.
- An anaconda site named `mysite` is properly configured and the user has logged into it using the `anaconda` command.
- An “anaconda” account exists in the “mysite” site and the logged in user has access to it.

After these requirements are true, run `cas-sync-api-v4`:

```
cas-sync-api-v4 -f import.yaml
```

### Mirroring with the deprecated `anaconda-mirror` command

The `anaconda-mirror` command is deprecated but still in use at some installations.

It is used with the command `anaconda-mirror sync`, or with a configuration file such as `anaconda-custom.yaml` with the command `anaconda-mirror --config-file anaconda-custom sync`.

### Resetting packages

Use the `--reset` option to reset the previously mirrored packages:

```
anaconda-mirror --config-file anaconda-custom sync --reset
```

This resets the “last sync” time for the repository, so `anaconda-mirror` requests all packages, not just those changed or added since the last sync. As the requests are processed, `anaconda-mirror` still automatically downloads only those files that differ from the files currently in the repository.

### Exporting a mirror

To generate a mirror archive:

```
anaconda-mirror export mirror.tar
```

This command dumps the packages, according to the *configured settings*, into the file `mirror.tar`.

This mirror can be used in an air gapped environment.

### Importing a mirror

To mirror the Anaconda repository in an air gapped environment, point `anaconda-mirror` to the exported mirror archive.

Mount the USB drive and then run:

```
anaconda-mirror import $USB/mirror.tar
```

This command mirrors the contents of the local Anaconda repository to your Anaconda Enterprise 4 Repository installation under the username “anaconda.”

### Filtering

If you want to update the filters on your mirror—for example, to exclude additional licenses—running `anaconda-mirror sync` again retrieves new packages that match this filter, but it does not remove existing packages that no longer match the filter.

To see which packages no longer match your filter:

```
anaconda-mirror clean --dry-run
```

To remove these packages from your mirror:

```
anaconda-mirror clean
```

## Mirroring additional channels

If mirroring from an air gap archive, the channel in the following configuration points to a local directory to which the archive is expanded.

In addition, if a platform-specific archive is downloaded, then the config file needs the platforms section. The examples in the following sections assume `x64-repo-mirrors-*.tar <airgap-archive-mirrors>` is expanded to `$MIRRORS_ARCHIVE`.

Similarly, for an online system, the channel points to Anaconda.org. The platforms are optional and limit the mirrored conda packages to the specified platforms.

### Mirroring R channel

1. Create the yaml config file.

EXAMPLE: The following is a config to mirror from an air gap archive containing only x64 packages:

```
cat $PREFIX/etc/anaconda-server/mirror/r.yaml

channels:
  - file://$MIRRORS_ARCHIVE/r/pkgs

# The platforms should correspond to the platforms contained in
# the archive. Omit if the archive contains conda packages for all platforms.
platforms:
  - linux-64
  - osx-64
  - win-64
```

EXAMPLE: The following is for an online system:

```
cat $PREFIX/etc/anaconda-server/mirror/r.yaml

channels:
  - https://conda.anaconda.org/r
```

2. Mirror the packages to r-channel:

```
anaconda-server-sync-conda --mirror-config \
    $PREFIX/etc/anaconda-server/mirror/r.yaml --account=r-channel
```

### Mirroring Wakari channel for AEN

1. Create the yaml config file.

EXAMPLE: The following is a config to mirror from an air gap archive containing only x64 packages:

```
cat $PREFIX/etc/anaconda-server/mirror/wakari.yaml

channels:
  - file://$MIRRORS_ARCHIVE/wakari/pkgs
```

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```
# The platforms should correspond with the platforms contained in
# the archive. Omit if the archive contains conda packages for all platforms.
platforms:
- linux-64
- osx-64
- win-64
```

EXAMPLE: The following is for an online system:

```
cat $PREFIX/etc/anaconda-server/mirror/wakari.yaml

channels:
- https://conda.anaconda.org/t/<TOKEN>/anaconda-nb-extensions
- https://conda.anaconda.org/wakari
```

NOTE: Replace <TOKEN> with the token for the anaconda-nb-extensions channel that you should have received along with your Repository license.

2. Mirror the packages to the Wakari channel:

```
anaconda-server-sync-conda --mirror-config \
    $PREFIX/etc/anaconda-server/mirror/wakari.yaml --account=wakari
```

## Mirroring anaconda-adam channel for cluster management

1. Create the yaml config file.

EXAMPLE: The following is a config to mirror from an air gap archive containing only x64 packages:

```
cat $PREFIX/etc/anaconda-server/mirror/anaconda-adam.yaml

channels:
- file://$MIRRORS_ARCHIVE/anaconda-adam/pkg

# The platforms should correspond with the platforms contained in
# the archive. Omit if the archive contains conda packages for all
# platforms.
platforms:
* linux-64
* osx-64
* win-64
```

EXAMPLE: The following is for an online system:

```
cat $PREFIX/etc/anaconda-server/mirror/anaconda-adam.yaml

channels:
- https://conda.anaconda.org/anaconda-adam
```

2. Mirror the packages to anaconda-adam channel:

```
anaconda-server-sync-conda --mirror-config \
    $PREFIX/etc/anaconda-server/mirror/anaconda-adam.yaml --account=anaconda-adam
```

## Configuring conda

Having created the mirror, you still need to configure conda to search for packages here rather than on the default Anaconda repository. You can do that by editing your `~/.condarc` file to add the appropriate channel:

```
channels:
  - http://<anaconda.repo.ipaddress>:<port>/conda/anaconda/
```

NOTE: Replace `<anaconda.repo.ipaddress>` with the URL to your installation of Repository.

NOTE: This configuration change can be made at the user level or via an [administrative](#) conda file, to force all internal users to use your local Anaconda mirror rather than querying the Anaconda repository.

NOTE: Users can download Anaconda installers that are pre-configured to search your Repository from `http://<anaconda.repository.addr>/downloads`. To learn how to generate these installers, see [Customizing installers](#).

## Mirroring a PyPI repository

### Before you start

You need to have already installed and configured your Repository instance. Due to the size of Repository, it is important that you have configured a file storage location with sufficient disk space. If necessary, see the [requirements for the file storage location](#).

The full PyPI mirror requires approximately 120 GB.

### Running the PyPI mirror command

To create a PyPI mirror:

```
anaconda-server-sync-pypi
```

This command loads all of the packages on `pypi.python.org` into the `~pypi` binstar user account.

Verify that the command ran successfully by opening your browser to `http://your-anaconda-repo/pypi/~pypi`.

NOTE: Replace `your-anaconda-repo` with the URL to your installation of Repository.

### Customizing the mirror

It is possible to customize the mirror behavior by creating a configuration file such as `$PREFIX/etc/anaconda-server/mirror/pypi.yaml` and using the `--mirror-config` option:

```
anaconda-server-sync-pypi --mirror-config /etc/binstar/mirrors/pypi.yaml
```

The following configuration options are available:

Name	Description
<code>user</code>	The local user under which the PyPI packages are imported. Default: <code>pypi</code> .
<code>pkg_list</code>	A list of packages to mirror. Only packages listed are mirrored. If this is set, <code>blacklist</code> and <code>whitelist</code> settings are ignored. <b>Default:</b> <code>[]</code> .
<code>whitelist</code>	A list of packages to mirror. Only packages listed are mirrored. If the list is empty, all packages are checked. Default: <code>[]</code> .
<code>blacklist</code>	A list of packages to skip. The packages listed are ignored. Default: <code>[]</code> .
<code>latest_only</code>	Only download the latest versions of the packages. Default: <code>false</code> .
<code>remote_url</code>	The URL of the PyPI mirror. <code>/pypi</code> is appended to build the XML RPC API URL, <code>/simple</code> for the simple index and <code>/pypi/{package}/{version}/json</code> for the JSON API. Default: <code>https://pypi.python.org/</code> .
<code>xml_rpc_api_url</code>	A custom value for XML RPC URL. If this value is present, it takes precedence over the URL built using <code>remote_url</code> . Default: <code>null</code> .
<code>simple_index_url</code>	A custom value for the simple index URL. If this value is present, it takes precedence over the URL built using <code>remote_url</code> . Default: <code>null</code> .
<code>use_xml_rpc</code>	Whether to use the XML RPC API as specified by <a href="#">PEP381</a> . If this is set to <code>true</code> , the XML RPC API is used to determine which packages to check. Otherwise the scripts falls back to the simple index. If the XML RPC fails, the simple index is used. Default: <code>true</code> .
<code>use_serial</code>	Whether to use the serial number provided by the XML RPC API. Only packages updated since the last serial saved are checked. If this is set to <code>false</code> , all PyPI packages are checked for updates. Default: <code>true</code> .
<code>create_org</code>	Create the mirror user as an organization instead of a regular user account. All superusers are added to the “Owners” group of the organization. Default: <code>false</code> .
<code>private</code>	Save the mirrored packages as private. <b>Default:</b> <code>false</code> .

EXAMPLE:

```
whitelist:
- requests
- six
- numpy
- simplejson
latest_only: true
remote_url: http://pypimirror.local/
use_xml_rpc: true
```

## Configuring pip

To configure pip to use this new mirror, edit `/etc/pip.conf` as follows:

```
[global]
index-url=https://pypi.anaconda.org/pypi/simple
```



## Customizing mirrors

This section explains how you can customize your PyPI or Anaconda repository mirror.

### Before you start

Your Anaconda Enterprise 4 Repository should already be installed and configured, as well as the mirroring tool `cas-mirror`. See [mirroring an Anaconda repository](#).

### Customizing your mirror

The following commands can be used with the `cas-mirror` tool:

- `cas-sync`: Creates or updates an existing local Anaconda package repository. The packages are saved into a local directory. This directory is defined by the `mirror_dir` configuration setting.
- `cas-sync-api-v4`: Creates or updates an existing remote Anaconda package repository. The packages are uploaded into an account of an existing Anaconda Enterprise 4 Repository instance. The account and instance are controlled by the `dest_channel` and `dest_site` configuration settings.
- `cas-merge`: Combines delta repositories into an existing Anaconda package repository. A delta repository contains the changes between the local and remote Anaconda package repositories. Delta repositories are generated by `cas-sync` using the `delta` configuration setting.

All the commands can read a YAML configuration file specified by the `--file` (or `-f`) command line option. The YAML file can contain any of the following valid keys:

#### `remote_url`

Conda packages, Anaconda installers and Miniconda installers are fetched from this remote URL.

DEFAULT: `https://repo.anaconda.com/`

#### `channels`

Conda packages are fetched from these remote channels.

DEFAULT: A list of these channels:

- `<remote_url>/pkgs/main/`
- `<remote_url>/pkgs/free/`
- `<remote_url>/pkgs/pro/`

### **mirror\_dir**

The mirror is saved in this local directory.

NOTE: A full mirror of the Anaconda Enterprise 4 Repository uses about 650 GB of disk space. Make sure the mirror directory has enough space.

DEFAULT: `/opt/cas-mirror`

### **platforms**

Conda packages and installers for this list of platforms are mirrored.

DEFAULT: A list of all platforms. This is:

```
['osx-32', 'osx-64', 'win-32', 'win-64', 'linux-32', 'linux-64', 'linux-armv6l',  
'linux-armv7l', 'linux-ppc64le']
```

### **fetch\_installers**

Whether to fetch all Anaconda and Miniconda installers from `remote_url`.

If `fetch_installers` is set to `false` then installers are not fetched.

DEFAULT: `true`

### **python\_versions**

Python versions to mirror.

DEFAULT: All versions.

EXAMPLE: `['2.7', '3.6']`

### **pkg\_list**

An explicit list of package names to be mirrored.

When this list is provided, the `license_blacklist`, `blacklist` and `whitelist` keys are not allowed to be set.

### **license\_blacklist**

A list of licenses to be excluded from the mirror.

The license families that can be blacklisted are:

- AGPL
- APACHE
- BSD
- GPL2
- GPL3
- LGPL

- MIT
- PROPRIETARY
- PUBLICDOMAIN
- PSF
- OTHER
- NONE

### **blacklist**

A list of package names to be excluded from the mirror.

### **whitelist**

A list of package names to be included in the mirror.

The whitelist overrides the blacklists. If a package is both blacklisted and whitelisted, then it is included and mirrored.

EXAMPLE: The package `numpy` has a license in the license family BSD.

If `license_blacklist` contains BSD and `whitelist` is empty, then `numpy` and all other BSD licensed packages are excluded and not mirrored.

If `license_blacklist` contains BSD and `whitelist` contains `numpy`, then the `numpy` package is included and mirrored and other BSD licensed packages are excluded and not mirrored.

### **dest\_channel**

Optional channel to use when synchronizing with a local Repository instance.

DEFAULT: “anaconda”

### **dest\_site**

Optional site to use when synchronizing with a local Repository instance.

DEFAULT: None

### **delta**

If `delta` is true, then a delta is generated from `mirror_dir`.

If `delta` is false, then the changes are applied directly.

### **delta\_dir**

The delta is generated (or merged) onto this directory.

If this is not specified, the generated delta directory is named `delta-<timestamp>-pkgs`. `<timestamp>` is replaced with a timestamp.

### **max\_retries**

The number of retries to allow before failing.

When it is set to 0, `cas-mirror` fails at the first error. Default is 0.

This is supported only for the `cas-sync` and `cas-sync-api-v4` commands.

DEFAULT: 0

### **safe**

If `safe` is `true`, synchronizing repositories or merging delta directories never delete anything.

DEFAULT: `false`

### **repodata\_source**

Uses a `repodata.json` (or `repodata.json.bz2`) as the source of existing packages.

This file must be in the mirror directory for a specific platform.

EXAMPLE: `/mirror/linux-64/repodata.json`

### **Mirroring a platform-specific list**

By default, `cas-sync` and `cas-sync-api-v4` mirror all platforms. If you do not need all platforms, you can save time and disk space by editing the `yaml` file to specify which platform(s) you want to mirror.

EXAMPLE:

```
platforms:
- linux-64
- win-32
```

### **Mirroring a package-specific list**

You may want to mirror only a small subset of the repository. Rather than blacklisting a long list of packages you do not want to be mirrored, you can instead simply enumerate the list of packages you do want to mirror.

EXAMPLE: This example mirrors only the three packages Accelerate, PyQt and Zope. All other packages are ignored:

```
package_list:
- accelerate
- pyqt
- zope
```

## Mirroring Python version-specific packages

You may want to mirror only a subset of versions.

EXAMPLE: This example mirrors only Anaconda packages built for Python 3.3:

```
python_versions:  
- 3.3
```

## Mirroring with a license blacklist

As of Repository 2.26.0, the Anaconda mirroring script supports license blacklisting for the following license families:

- AGPL
- APACHE
- BSD
- GPL2
- GPL3
- LGPL
- MIT
- PROPRIETARY
- PUBLICDOMAIN
- PSF
- OTHER
- NONE

EXAMPLE: This example mirrors all the packages in the repository except those that are GPL2-, GPL3- or BSD-licensed:

```
license_blacklist:  
- GPL2  
- GPL3  
- BSD
```

## Mirroring with a blacklist

The `blacklist` allows access to all packages except those explicitly listed.

EXAMPLE: This example mirrors the entire Repository except the `bzip2`, `tk` and `openssl` packages:

```
blacklist:  
- bzip2  
- tk  
- openssl
```

## Mirroring with a whitelist

The whitelist functions in combination with either the `license_blacklist` or `blacklist` arguments, and re-adds packages that were excluded by a previous argument.

EXAMPLE: This example mirrors the entire Repository except any GPL2- or GPL3-licensed packages, but including readline, despite the fact that it is GPL3-licensed:

```
license_blacklist:
- GPL2
- GPL3
whitelist:
- readline
```

## Combining multiple mirror configurations

You may find that combining two or more of the arguments above is the simplest way to get the exact combination of packages that you want.

The `platforms` argument is evaluated before any other argument.

EXAMPLE: This example mirrors only linux-64 distributions of the `dnspython`, `shapely` and `gdal` packages:

```
platforms:
- linux-64
package_list:
- dnspython
- shapely
- gdal
```

If the `license_blacklist` and `blacklist` arguments are combined, the `license_blacklist` is evaluated first, and the `blacklist` is a supplemental modifier.

EXAMPLE: In this example, the mirror configuration does not mirror GPL2-licensed packages. It does not mirror the GPL3-licensed package `PyQt` because it has been blacklisted. It does mirror all other packages in Repository:

```
license_blacklist:
- GPL2
blacklist:
- pyqt
```

If the `blacklist` and `whitelist` arguments are both employed, the `blacklist` is evaluated first, with the `whitelist` functioning as a modifier.

EXAMPLE: This example mirrors all packages in the repository except `astropy` and `pygments`. Despite being listed on the `blacklist`, `Accelerate` is mirrored because it is listed on the `whitelist`:

```
blacklist:
- accelerate
- astropy
- pygments
whitelist:
- accelerate
```

## Verifying the checksum of a file

To help ensure that a file was correctly uploaded or synced you can use the checksum tool. This routine fetches a file from a database and verifies that the stored hash checksum and the calculated hash checksum of the file on disk are the same.

On a package's page, view the file list and click the Info button next to a file to see the file's keyname.

To check the file's hash checksum run:

```
anaconda-server-checksum keyname
```

NOTE: Replace "keyname" with the file's keyname.

The output will be either Hashes are the same or Hashes differ.

To overwrite the old hash checksum in the database with the new hash checksum you calculated, use the option `--fix`.

## Customizing installers

Anaconda Enterprise 4 Repository can distribute copies of the Anaconda Distribution installer and the Miniconda installer that are pre-configured to use your installation of Repository.

This applies to Anaconda Distribution version 4.1 and higher, and Miniconda version 4.1.11 and higher.

By default the installers will be stored in `$PREFIX/opt/anaconda-server/installers`. If you prefer to store the installers in a different location, configure a new path:

```
anaconda-server-config --set INSTALLER_DIR /preferred/directory
```

NOTE: Replace `"/preferred/directory"` with the path to the directory where you prefer to store the installers.

If necessary, edit the script below and replace `"5.2.0"` with the current version number.

To download the installers:

```
mkdir -p /tmp/extras
pushd /tmp/extras

URL="https://repo.anaconda.com"

version="5.2.0"
miniconda="Miniconda3-latest-Linux-x86_64.sh \
  Miniconda3-latest-MacOSX-x86_64.sh \
  Miniconda3-latest-Windows-x86.exe \
  Miniconda3-latest-Windows-x86_64.exe \
  Miniconda-latest-Linux-x86_64.sh \
  Miniconda-latest-MacOSX-x86_64.sh \
  Miniconda-latest-Windows-x86.exe \
  Miniconda-latest-Windows-x86_64.exe"
anaconda="Anaconda2-$version-Linux-x86_64.sh \
  Anaconda3-$version-Linux-x86_64.sh \
  Anaconda2-$version-MacOSX-x86_64.sh \
  Anaconda3-$version-MacOSX-x86_64.sh \
  Anaconda2-$version-MacOSX-x86_64.pkg \
  Anaconda3-$version-MacOSX-x86_64.pkg \
```

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```
Anaconda2-$version-Windows-x86_64.exe \
Anaconda3-$version-Windows-x86_64.exe"

for installer in $miniconda; do
    curl -O $URL/miniconda/$installer
done
for installer in $anaconda; do
    curl -O $URL/archive/$installer
done

# Move the files into the installers directory
popd
cp -a /tmp/extras $PREFIX/opt/anaconda-server/installers
```

The installers will be available for download from `http://your.anaconda.server:port/downloads`.

NOTE: Replace “your.anaconda.server:port” with the name or IP address and port of your Anaconda server.

The downloadable file will be a zip file containing the Anaconda distribution and the configuration files specific to your Repository. These zip files are cached in the server’s configured storage for quick retrieval.

Check that the `SERVER_NAME` *setting* has been set so you generate the correct URLs in the next step.

To pre-generate these installer bundles based on the downloaded installers, or to re-generate after downloading new installers, execute the command:

```
anaconda-server-admin update-installers
```

This command requires that the `SERVER_NAME` *setting* be set in order to generate the correct URLs.

By default, the included conda installation will point to the default `anaconda` and `r-channel` accounts on your Anaconda Enterprise 4 Repository server, if those accounts exist.

You can change these default channels by setting the `DEFAULT_CHANNELS` *setting*, and then running the `anaconda-server-admin update-installers` command.

## Configuration reference

### Files

Anaconda Enterprise 4 Repository loads configuration files with the extension `.yaml` from the following locations:

- `/etc/binstar/`
- `/etc/anaconda-server/`
- `$PREFIX/etc/anaconda-server`

NOTE: `$PREFIX` is the location where repository is installed.

Files are loaded from these directories in order, with later files overriding earlier files. Files are loaded from each directory in alphabetical order.

If an environment variable `ANACONDA_SERVER_CONFIG` is set with the path of a configuration file, this file is loaded after the three already listed. Its settings override any conflicting settings in the earlier files.

Each configuration setting variable can have its value set with the `anaconda-server-config --set` command, or by editing a configuration file.



EXAMPLE: To set a value named `VALUE_ONE` to 50, add this to a configuration file:

```
VALUE_ONE: 50
```

Or, you can set a value named `VALUE_ONE` to 50 with this command:

```
anaconda-server-config --set VALUE_ONE 50
```

## Logging

The location of the server's log file is defined in the supervisord configuration file `$PREFIX/etc/supervisord.conf` by the `stdout_logfile` config entry located in the `[program:anaconda-server]` section.

Advanced configuration of logging requires setting a `LOGGING` key on the server's `config.yaml`. It uses Python's logging module config structure.

## Username

### USER\_REGEX

A regular expression that defines the allowable user names.

For example, this setting specifies that user names contain only lowercase letters, periods, plus and minus characters (`.`, `+` and `-`):

```
USER_REGEX: '^[a-z.+-]+$'
```

NOTE: The default value for `USER_REGEX` is `^[a-z0-9_][a-z0-9_-]+$` which translates to: at least one alphanumeric character or underscore, followed by zero or more alphanumeric, dash or underscore characters.

NOTE: Escape any extra instances of the single quote character `'` as `\'`. Do not use the slash and ampersand characters `/` and `&`, which have special meanings in URLs.

NOTE: If `USER_REGEX` is changed and the server is restarted, existing usernames that do not match the new `USER_REGEX` do not cause errors.

## Database

Repository uses MongoDB as the database back end.

### MONGO\_URL

A [MongoDB connection URI](#) is used to connect to the MongoDB database server. It can be used to configure the hostname and port, as well as database authentication.

For example:

```
MONGO_URL: mongodb://anaconda-server:Pa55w0rd@mongodb.serv/
```

### MONGO\_DBNAME

The MongoDB database where Repository stores its data.

### MQ\_DBNAME

The MongoDB database where Repository stores data used for asynchronous processing.

### MONGO\_REPLICA\_SET

The name of a [MongoDB replica set](#) Repository connects to after establishing a connection to the database server.

### File storage

Repository can serve package contents from a local file-system, or from Amazon Web Services Simple Storage Service: AWS S3.

### Storage\_type

The storage mechanism to use. Valid choices are `fs`, for file-system storage, or `s3`, for AWS S3 storage.

### keyname\_full\_path

When this option is set, Repository stores the files by full paths and not just by hashes. This way a tensorflow file uploaded by the user *Bob* will be stored on `<fs_storage_root>/Bob/tensorflow/osx-64/tensorflow-1.1.0-np112py36_0.tar.bz2-594ac56e7e042600648defdb`.

NOTE: The storage path does not always contain the current file owner and their user name. This is because the file location on the storage does not change when you rename a user or transfer a file to a different user.

### Fs\_storage\_root

If configured to use file-system storage, the absolute path to a directory where Repository stores all uploaded packages.

### PACKAGE\_BUCKET\_ID

If configured to use AWS S3 storage, the name of an AWS S3 bucket where Repository stores uploaded packages.

You can identify the name of your bucket by using `<bucket>` in your `http://<bucket>.s3.amazonaws.com` URL.

## S3\_REGION\_NAME

The S3 region that the bucket is located in. The available regions can be found in the [Amazon AWS documentation](#).

## S3\_SERVER\_SIDE\_ENCRYPTION

This variable can be set to AES256 to enable [server-side encryption](#) for packages stored in the S3 bucket.

## Notebooks

### MAX\_IPYNB\_SIZE

Specifies the maximum allowed size when uploading notebooks to the server. The default is 25 MB. This variable can be set in `config.yaml`.

## Web server

### SERVER\_NAME

The name and port number of the server. This option is required for subdomain support.

For example:

```
SERVER_NAME: anaconda.srv:8080
```

### port

The port number of the server. Defaults to 8080.

### subdomains

If set to `true`, Repository serves conda package from a separate subdomain. Defaults to `false`.

For example:

```
SERVER_NAME: anaconda.srv:8080
subdomains: true
```

Allows access to conda packages at `http://conda.anaconda.srv:8080/`.

### SESSION\_COOKIE\_DOMAIN

The domain that Repository sets on the session cookie. If this is not set, the cookie is valid for all subdomains of `SERVER_NAME`.

See *Securing user-created content*.

### USER\_CONTENT\_DOMAIN

As a cross-site scripting (XSS) protection, notebook content can be served from a separate domain name. If this option is configured, Repository only serves rendered notebooks from this domain.

See *Securing user-created content*.

### ssl\_options

Repository can serve content over HTTPS, using user-provided SSL certificates.

For example:

```
ssl_options:
  certfile: /etc/anaconda-server/server.crt
  keyfile: /etc/anaconda-server/server.key
PREFERRED_URL_SCHEME: https
```

### certfile

The absolute path to a PEM-formatted X.509 certificate file.

### keyfile

The absolute path to a PEM-formatted private key for the associated certificate.

### ssl\_version

An integer that specifies the SSL protocol version as defined by Python's `ssl` module:

```
PROTOCOL_SSLv2 = 0
PROTOCOL_SSLv23 = 2
PROTOCOL_SSLv3 = 1
PROTOCOL_TLS = 2
PROTOCOL_TLSv1 = 3

PROTOCOL_TLSv1_1 = 4
PROTOCOL_TLSv1_2 = 5
```

The default is 5 (TLS v1.2).

## PREFERRED\_URL\_SCHEME

The preferred scheme that is used to generate URLs. Set this to `https` if HTTPS is configured.

## gunicorn

Repository uses [Gunicorn](#). The most commonly used options are `timeout` and `workers`. A complete list of settings can be found in [Gunicorn's documentation](#).

For example:

```
gunicorn:  
  timeout: 60  
  workers: 5
```

## timeout

The number of seconds for which a worker is allowed to process a request, before being forcefully terminated.

Default: 120

## workers

The number of workers that Gunicorn spawns to serve Repository. Defaults to  $2 \times$  the number of CPUs + 1.

## Authentication

### AUTH\_TYPE

The method Repository uses to authenticate users. Valid choices are `NATIVE`, for built-in authentication, `KERBEROS`, for Kerberos, and `LDAP`.

### KRB5\_HOSTNAME

See *Kerberos configuration options*.

### KRB5\_SERVICE\_NAME

See *Kerberos configuration options*.

## KRB5\_KTNAME

See *Kerberos configuration options*.

## LDAP

Options for configuring LDAP authentication and group synchronization.

For example:

```
LDAP:
# Replace with company LDAP server
URI: 'ldap://<ldap.company.com>'
# Replace <uid=%(username)s,ou=People,dc=company,dc=com> with your company specific
↳LDAP Bind/Base DN
# Bind directly to this Base DN.
BIND_DN: '<uid=%(username)s,ou=People,dc=company,dc=com>'
# password of the user specified in the BIND_DN
BIND_AUTH: abc123456

USER_SEARCH:
  base: cn=Users,dc=example,dc=com
  filter: sAMAccountName=%(username)s

# Map LDAP keys into application specific keys
KEY_MAP:
  name: 'cn'
  company: 'o'
  location: 'l'
  email: 'mail'

OPTIONS:
  OPT_NETWORK_TIMEOUT: 60
  OPT_TIMEOUT: 60
```

NOTE: To use LDAP with SSL, set the `USER_REGEX` and `account_names_filter` options:

```
account_names_filter: false
USER_REGEX: ^[a-z0-9_][a-z0-9_-.]+$
LDAP:
[configuration continues as above with URI, BIND_DN, and so on]
```

See *Using LDAP and TLS configuration options*.

## **LOCK\_DOWN**

Makes all views with the exception of the login form and welcome page, inaccessible to anonymous users.

## **Email**

Repository can be configured to send email for various reasons, including to reset forgotten usernames and passwords. Email can be sent using SMTP protocol, or through Amazon Web Services Simple Email Service (AWS SES).

## **SMTP\_HOST**

The hostname of the SMTP server.

## **SMTP\_PORT**

The port of the SMTP server.

## **SMTP\_TLS**

If set to `true`, Repository attempts an SSL connection to the SMTP server.

## **SMTP\_USERNAME**

The username to authenticate against the SMTP server before attempting to send email.

## **SMTP\_PASSWORD**

The password to authenticate against the SMTP server before attempting to send email.

## **USE\_SES**

If set to `true`, Repository sends email with AWS SES. To authenticate to AWS, the server should be configured with an appropriate [IAM role](#), or have credentials specified in a [Boto configuration file](#).

## **RETURN\_ADDRESS**

The **From:** email address that Repository uses as sender.

## **ALLOW\_DUPLICATED\_EMAILS**

If set to `true`, Repository allows different users to share the same email or secondary email. Defaults to `false`.

## **require\_email\_validation**

If set to `true`, Repository emails new users a unique token to validate their email address before permitting them to log in.

## **Advanced**

## **AVATAR\_METHOD**

The method to use to generate the user avatar URL. Valid choices are:

- ‘`gravatar`’ to use the `gravatar.com` service
- ‘`default`’ to show a predefined static icon
- ‘`static`’ to use a custom static URL

## **AVATAR\_GRAVATAR\_URL**

A URL for a Gravatar compatible service. Default: `https://www.gravatar.com/`. This URL is used as the prefix to build a valid gravatar URL.

## **AVATAR\_STATIC\_URL**

A static URL to use when `AVATAR_METHOD` is set to `static`. Defaults to an empty string.

## **CONSTRUCTOR\_TIMEOUT**

The timeout in seconds for the call to `constructor` while building installers, parcels and management packs. Defaults to 60 seconds.

## **CONSTRUCTOR\_TOKEN\_TIMEOUT**

To provide access to private packages while building an installer, a temporary token is created. It must be valid during the call to `constructor` and it should expire soon after the call completes. `CONSTRUCTOR_TOKEN_TIMEOUT` sets the token’s valid lifetime in seconds. Defaults to 60 seconds. This value should be greater than or equal to `CONSTRUCTOR_TIMEOUT`.



## CONSTRUCTOR\_ALLOWED\_OPTIONS

A list of `constructor` option names that are allowed to be included in the installer construction form. The default is `[]` (no options are allowed).

## PARCELS\_ROOT

The prefix with which Cloudera parcels are generated. Defaults to `/opt/cloudera/parcels`.

## PARCEL\_DISTRO\_SUFFIXES

The distributions for which Cloudera parcels are generated. Defaults to `['el5', 'el6', 'el7', 'lucid', 'precise', 'trusty', 'wheezy', 'jessie', 'squeeze', 'sles11', 'sles12']`.

For example, if you want to support only Ubuntu:

```
PARCEL_DISTRO_SUFFIXES:  
- lucid  
- precise  
- trusty
```

## DEFAULT\_CHANNELS

The Repository accounts that environments installed with the *bundled Anaconda distributions* pull packages from. Defaults to `['anaconda', 'r-channel']`.

For example, to add an additional custom account:

```
DEFAULT_CHANNELS:  
- anaconda  
- r-channel  
- custom
```

## CONSTRUCTOR\_TMPDIR

When `constructor` builds an installer it stores the configuration in this temporary directory. The default is `None`, which tells `constructor` to create a temporary directory using Python's `tempfile.mkdtemp`.

## STANDARD\_LABELS

A list of standardized labels. If a user defines a label that is not listed as standard, a warning notice will be shown in the package's page. Defaults to `['main', 'dev', 'alpha', 'beta', 'broken']`.

### CONDA\_CACHE\_SIZE

The maximum size (in bytes) of the `repodata.json` requests cache. Set to `0` to disable `repodata.json` caching. Default: 1 Gb. When the maximum size is reached, the 10 least recently used entries of the cache are evicted.

### CACHE\_METHOD

The method used for caching repodata info. It can either be `tempfile` (the prior method of caching) or `diskcache`, which uses SQLite as a back-end. Default: `diskcache`.

### REMEMBER\_COOKIE\_ENABLED

Sets whether to use the *remember me* cookie to keep the session alive. If it's set to true the `REMEMBER_COOKIE_DURATION` setting is relevant, and if it's set to false, the `PERMANENT_SESSION_LIFETIME` is relevant. Defaults to true.

### PERMANENT\_SESSION\_LIFETIME

An integer that sets how many **minutes** the session will live. Only used when `REMEMBER_COOKIE_ENABLED` is false. Default is 44640 (31 days).

### REMEMBER\_COOKIE\_DURATION

An integer that sets how many **minutes** the session will live when using the *remember me* cookie. Only used when `REMEMBER_COOKIE_ENABLED` is true. Default is 525600 (365 days).

### SUPERUSER\_ORG\_ADMIN

Whether superusers should automatically be granted admin rights on organizations. Default is false.

### NEXT\_URL\_WHITELIST

List of hostnames that are marked as safe when redirecting requests due to the presence of a “next” request parameter. It is mainly used under an Anaconda Enterprise Notebooks Single Sign-on Set-up. The default is [] (no external redirects are safe).

### NEXT\_URL\_WHITELIST\_REGEX

A regular expression to match hostnames that are marked as safe when redirecting requests due to the presence of a “next” request parameter. It is mainly used under an Anaconda Enterprise Notebooks Single Sign-on Set-up. The default is `(?!)` which matches nothing, so only local redirects are allowed.

Repository has two installation options:

- *Online*: If you have internet access on the destination server, follow the online instructions.
- *Air gap*: If you have an air gapped system or the destination server does not have internet access, follow the air gap instructions.

Repository provides *advanced configuration options* that can be used to meet site-specific needs.

Repository includes a number of *optional components* that can be installed and used individually.

You may also want to see *Updating Repository* and *Uninstalling Repository*.

## User management

### Adding a user

New users can navigate in a browser to your local Repository web page and sign themselves up for an account, or you can add them using the command line:

1. Set the `USER_PASSWORD` environment variable (e.g., `export USER_PASSWORD=abc123DEF`).
2. Run the `anaconda-server-create-user` command, with the following syntax:

```
anaconda-server-create-user [-h] -u USERNAME [-e EMAIL] [--superuser]
```

EXAMPLE:

```
anaconda-server-create-user --username jsmith --email jsmith@your-domain.com --superuser
```

### Searching for users

As of Anaconda Enterprise 4 Repository version 2.33.5, you can search for users by username or email address. Open this URL in a browser:

```
http://your.anaconda.server:port/admin/users
```

NOTE: Replace “your.anaconda.server:port” with the name or IP address and port of your Anaconda server.

### Promoting an existing user

As of Anaconda Enterprise 4 Repository version 2.28, administrators can use the Administration Accounts page to promote users to staff or superuser status.

### Viewing rights of staff and superuser

The staff user and superuser can view the following sections of the Administration page:

- Reports.
- User administration.
- License downloads.
- Trial licenses.
- Current LDAP configuration.
- Current server configuration.
- Downloads summary.
- Downloads from a specific address.

- Security feed and security feed details.
- Storage administration.

## Privileges of staff and superuser

The staff user and superuser have the following privileges:

- Create licenses.
- Download a CSV of the user database.
- Search for a package in the Administration panel.
- Resend confirmation emails to users.
- Resend password reset emails to users.
- Download a CSV with the users emails.

## Additional rights of superuser

In addition to all of the above, a superuser can also view the following on the Administration page:

- Plans.
- User details.

To promote an existing user to a staff user or superuser:

1. On the Administration page, in the left navigation pane, select Accounts.
2. Select the username you want to promote.

Repository displays the user information page:

The screenshot shows the Anaconda Repository interface. The top navigation bar includes the Anaconda logo, a search bar, and links for View, Help, and the user 'superuser'. The left sidebar contains a list of navigation items: Report, Security Feed, Accounts (highlighted in green), Password Reset, Downloads, Package Search, Deployment, Package Storage (56%), View License Downloads, View License, and Read Only. The main content area is titled 'Users / testuser'. It features an 'Actions' section with two columns: 'Set access' containing 'Set Staff' and 'Set Superuser' buttons, and 'Account' containing 'View profile' and 'Delete user' buttons. Below the actions is a 'History' section with a table. The table has three columns: Action, Timestamp, and Actor(s). It shows one entry: 'user.create' at 'Thu Mar 22 16:38:19 2018' performed by 'testuser'. A 'details' link is provided for this entry. At the bottom of the history section, there are navigation links: « Previous, showing 1 of 1, and Next ».

3. Click the Set Staff button to give the user staff privileges or click the Set Superuser button to give the user superuser privileges.

4. In the dialog box that appears, retype the user's name.
5. Click the Set button.

## Resetting user passwords

If a user forgets their password, you can request a reset link to provide to the user.

To send emails, Repository must have the *email settings* configured.

1. Log in to your Repository administrative account.
2. From the top **Tools** menu, select Admin.
3. From the left navigation pane, select Password Reset.
4. Enter the user's email address.

The Web UI generates a password reset link.

5. Email the link to the user.

You can also reset passwords without sending emails:

```
anaconda-server-admin reset-password jsmith
```

NOTE: Replace `jsmith` with the username whose password you want to reset.

## Resending welcome emails to new users

To send emails, Repository must have the *email settings* configured.

If a user reports that they did not receive their welcome email after registering on your local Repository web page, it may have been caught in a spam filter.

Follow the above instructions for resetting user passwords.

## Changing a user's storage size or changing their plan to free unlimited

To change a user's storage size or plan:

1. Log in to your Repository administrative account.
2. From the top **Tools** menu, select Admin.
3. From the left navigation pane, select Accounts.
4. Select the username of the user whose account you want to change.
5. To update the storage limits click Update Storage.
6. To set the user's plan to free and unlimited, click Set free unlimited plan.

### Removing a user

1. Log in to your Repository administrative account.
2. From the top **Tools** menu, select Admin.
3. From the left navigation pane, select Accounts.
4. Select the username of the user you want to remove.
5. Click the Delete user button.
6. Optional: Use `anaconda-server-admin clean-storage` to remove files from that user's account.

### System management

#### Recommended workflow

One of the most useful features of Anaconda Enterprise 4 Repository is its ability to help manage package development and deployment in a seamless fashion. This page describes the development process and channel usage employed by one of our internal teams, to serve as an example of how you can leverage channels for workflow separation.

Multiple channels allow our team to maintain separate package states and easily earmark and control the versions and states of packages that users can install.

Our team created the following channels:

- Master.
- Staging.
- Release.

We have used this workflow through 4 release cycles and it has worked out well for us.

#### Master

A master is created any time something is merged into our master branch. It is considered the development build of all of the components that make up the software. Code that makes it to this channel should be stable and should have been confirmed independently, but a full QA test has not been run on it yet.

#### Staging

Once we are ready to start working on a release, we create a staging:X.Y.Z branch. This contains all code that is going to go into a release. No new features should be introduced at this point, just any last minute bug fixes to existing code.

## Release

The staging channel gets culled so that only the latest package is maintained in it. Any alpha, beta, or dev packages are removed. After all testing is complete, all issues are resolved, and the channel contains only one version of each package, we copy that package into a release:X.Y.Z channel, then lock that channel.

## Performing general maintenance

To maintain a Repository installation, perform all of these tasks regularly:

- Review the error logs at `/var/log/anaconda-server`
- *Back up* the file system and database.
- Update the `anaconda-server` package with the command:

```
conda update anaconda-server
```

## Anaconda Enterprise 4 Repository backup and restore procedure

This guide is for backing up and restoring an Anaconda Enterprise 4 Repository instance that uses local file system storage. If your instance uses Amazon S3 or any other storage provider, please consult their specific documentation on backup and restore procedures.

### Before you start

These instructions are for a Repository that is:

- Installed in the directory `/home/anaconda-server/repo` as suggested by the installation guide.
- Owned by the `anaconda-server` user.
- Using the storage directory `/opt/anaconda-server/package-storage`.
- Storing the configuration file in `/etc/anaconda-server`.

If any of these items are different for your instance, modify these instructions accordingly.

- Unless noted, run all shell commands while logged in as the `anaconda-server` user. Using `sudo` privileges, log in as the `anaconda-server` user with this command:

```
sudo su - anaconda-server
```

- Execute all commands in the working directory `/home/anaconda-server`:

```
$ pwd
/home/anaconda-server
```

### Backup

Before starting the backup process, shut the service down using `supervisorctl`:

```
$ supervisorctl stop all
anaconda-server: stopped
$ supervisorctl status
anaconda-server          STOPPED      Jul  6 05:05 PM
```

Make a `$VERSION` environment variable and set it to the version of the currently installed Anaconda Enterprise 4 Repository:

```
$ VERSION=`conda list anaconda-server --json | python -c 'import sys, json; print json.
↳load(sys.stdin)[0]["version"]'`
$ echo $VERSION
2.33.27
```

This version string will be used in all backup file names.

It's also useful to add a timestamp to the files, so generate one now:

```
$ TIMESTAMP=`date +%Y-%m-%d`
$ echo $TIMESTAMP
2018-07-30
```

### Code/Binaries

Generate a tarfile archive with the installed code, binaries and any dependencies:

```
$ tar -cpsz anaconda-server-repo-$VERSION-$TIMESTAMP.tar --exclude var/run -C /home/
↳anaconda-server repo/
$ shasum anaconda-server-repo-$VERSION-$TIMESTAMP.tar > anaconda-server-repo-$VERSION-
↳$TIMESTAMP.tar.sha1
```

Notice that this also generated a SHA1 checksum. This checksum will be used to verify when you restore the archive.

### Configuration

This step is necessary only if you stored Anaconda Enterprise 4 Repository's configuration in a custom location outside of the instance installation folder (usually `/home/anaconda-server/etc/`).

These commands show how to generate the tarfile if the configuration is stored in `/etc/anaconda-server`.

Generate the tarfile with its SHA1 checksum:

```
$ tar -cpsz anaconda-server-etc-$VERSION-$TIMESTAMP.tar /etc/anaconda-server
$ shasum anaconda-server-etc-$VERSION-$TIMESTAMP.tar > anaconda-server-etc-$VERSION-
↳$TIMESTAMP.tar.sha1
```



## Storage

As before, create a tarfile archive and its checksum with the contents of the package storage location:

```
$ tar -cpsz anaconda-server-package-storage-$VERSION-$TIMESTAMP.tar -C /opt/anaconda-
↪server/ package-storage
$ shasum anaconda-server-package-storage-$VERSION-$TIMESTAMP.tar > anaconda-server-
↪package-storage-$VERSION-$TIMESTAMP.tar.sha1
```

## Database

Generate a dump of Anaconda Enterprise 4 Repository's MongoDB database. Anaconda recommends you follow MongoDB's guidelines for [backup and restore](#). This guide uses [MongoDB tools](#):

```
$ mongodump --host=127.0.0.1 --port=27017 --archive=anaconda-server-mongodb-$VERSION-
↪$TIMESTAMP.archive
$ shasum anaconda-server-mongodb-$VERSION-$TIMESTAMP.archive > anaconda-server-mongodb-
↪$VERSION-$TIMESTAMP.archive.sha1
```

## .bashrc

If you chose to let the Anaconda Enterprise 4 Repository installer update the `.bashrc` file of the user `anaconda-server`, back it up:

```
$ cp /home/anaconda-server/.bashrc anaconda-server-bashrc-$VERSION-$TIMESTAMP.sh
$ shasum anaconda-server-bashrc-$VERSION-$TIMESTAMP.sh > anaconda-server-bashrc-
↪$VERSION-$TIMESTAMP.sh.sha1
```

## Restore

### Before you start

- Verify that the restore environment meets the requirements listed in the [Installation Guide](#) for Anaconda Enterprise 4 Repository. You will need:
  - MongoDB (any supported version) installed
  - A user account (usually `anaconda-server`)
  - A storage directory (usually `/opt/anaconda-server/package-storage`) owned by the Anaconda Enterprise 4 Repository user account. This is only needed if you're using a local filesystem as a storage backend.
- Run all shell commands while logged in as the `anaconda-server` user, as you did when backing up Anaconda Enterprise 4 Repository. Using `sudo` privileges, log in as the `anaconda-server` user with this command:

```
sudo su - anaconda-server
```

- Execute all commands in the working directory `/home/anaconda-server`.

### Verify checksums

Verify the integrity of the backup files:

```
$ sha1sum --check *.sha1
anaconda-server-bashrc-2.33.27-2018-07-30.sh: OK
anaconda-server-mongodb-2.33.27-2018-07-30.archive: OK
anaconda-server-package-storage-2.33.27-2018-07-30.tar: OK
anaconda-server-repo-2.33.27-2018-07-30.tar: OK
```

### .bashrc

If you backed up the `.bashrc` file of the user `anaconda-server`, restore it:

```
cp anaconda-server-bashrc-$VERSION-$TIMESTAMP.sh /home/anaconda-server/.bashrc
```

After restoring this file, log out and log in as `anaconda-server` again for the changes to take effect.

### Database

If you followed the Anaconda Enterprise 4 Repository *Installation Guide*, MongoDB is up and running and you can use `mongorestore` to restore the database archive:

```
mongorestore --host=127.0.0.1 --port=27017 --db=binstar --archive=anaconda-server-
↳mongodb-$VERSION-$TIMESTAMP.archive
```

### Storage

Assuming that the storage directory is `/opt/anaconda-server/package-storage`, restore it with:

```
tar -xpsf anaconda-server-package-storage-$VERSION-$TIMESTAMP.tar -C /opt/anaconda-
↳server/
```

### Code/Binaries

Restore the code and binaries:

```
tar -xpsf anaconda-server-repo-$VERSION-$TIMESTAMP.tar -C /home/anaconda-server
```

Restore the `supervisord` configuration:

```
repo/bin/anaconda-server-install-supervisord-config.sh
```

The server should now be up and running. Check the status with `supervisorctl`:

```
$ repo/bin/supervisorctl status
anaconda-server          RUNNING    pid 8446, uptime 0:03:18
```

## Checking for Orphan Files or Packages

You can use the “orphan-check” tool to resynchronize the filesystem and the database if the filesystem and the database get out of sync.

The system can get out of sync when files in the filesystem are not referenced from the database, or when packages in the database do not have a corresponding file in the filesystem.

The orphan-check tool prints on stdout a list of files on the filesystem that are not referenced from the database:

```
anaconda-server-orphan-check --dryrun
```

You can use the `-json` option if you want a JSON representation of the output:

```
anaconda-server-orphan-check --json
```

NOTE: Running `anaconda-server-orphan-check` without arguments is the same as running `anaconda-server-orphan-check --dryrun`.

After you’ve viewed the list of files without references, “orphan-check `-clean`” can delete them:

```
anaconda-server-orphan-check --clean
```

You can also check for packages that have missing files:

```
anaconda-server-orphan-check --reverse
```

Then you can delete those file objects from the database:

```
anaconda-server-orphan-check --reverse --clean
```

## Using optional components

Anaconda Enterprise 4 Repository includes a number of components that can be installed and used individually.

This section describes how to install and use two such tools:

- *cas-mirror*.
- *cas-installer*.

As a convention, all packages and commands that are part of the Repository product share the common `cas` prefix, which is short for Continuum Anaconda Server. (Anaconda, Inc. was formerly known as Continuum Analytics, Inc.)

All packages are installed using the `conda` command, which is part of the Miniconda installer. For Repository installation and configuration instructions, see [Installation](#).

### Using cas-mirror

The cas-mirror tool is a component of the Anaconda Enterprise 4 Repository Enterprise product.

The cas-mirror tool makes an exact copy of Anaconda's package Repository, or part of it, on a your local Repository server.

For more information about the cas-mirror tool's functionality and configurable options, see [Configuring local mirrors](#).

### Installing cas-mirror

To install the mirror tool, run:

```
conda install cas-mirror
```

After cas-mirror has been installed, the following commands are available:

```
cas-sync --help
cas-merge --help
cas-sync-api-v4 --help
cas-server --help
```

### Using the cas-sync command

The cas-sync command brings the local mirror of Repository up-to-date with our remote servers.

To configure the location of the mirror on your file system, check the output of:

```
cas-sync --config
```

If necessary, create a configuration file, either `~/.cas-mirror` or system-wise `/etc/cas-mirror`, which contains the desired location of the local mirror on the file system, the platforms that should be mirrored and an optional blacklist of packages that which should not be mirrored.

EXAMPLE:

```
mirror_dir: /home/data/mirror
remote_url: "" # where to get miniconda and anaconda installers -- blank to skip
# possible platforms are: linux-64, linux-32, osx-64, win-32, win-64 platforms:
- linux-64
- win-32
blacklist:
- dnspython
- shapely
- gdal
```

Once you are satisfied with the mirror directory—which may be the default—run:

```
cas-sync
```

Running this command for the first time takes many hours, because the entire Repository is being downloaded. Subsequent runs take significantly less time.

## Using the `cas-server` command

You need to run `cas-server` as root when you intend to serve on port 80.

To serve repository over HTTP, run:

```
cas-server
```

If needed, use the `--port` option to change the port on which the repository is being served.

## Using the “delta” option

If you’ve already downloaded most of the Anaconda repository, and you’re only interested in the changes since `cas-sync` was last run, you can use the `delta` configuration option:

```
mirror_dir: /home/data/mirror
remote_url: "" # where to get miniconda and anaconda installers -- blank to skip
# possible platforms are: linux-64, linux-32, osx-64, win-32, win-64
platforms:
  - linux-64
  - win-32
blacklist:
  - dnspython
  - shapely
  - gdal
delta: true
delta_dir: delta_pkgs
```

Instead of mirroring to the existing local repository, it will record the necessary changes to bring the mirror up to date in a separate directory (`delta_pkgs` in this case). You can then use this generated directory to update air-gapped mirrors using the `cas-merge` command.

The `cas-merge` command takes a delta directory and combines its contents with an existing mirror directory. New packages are added, missing packages are deleted, and the repodata is updated.

If instead of mirroring to a local directory, you want to make the changes directly into an existing Anaconda Enterprise 4 Repository instance, the `cas-sync-api-v4` can be used. You’ll need to use the `dest_site` config option:

```
mirror_dir: /home/data/mirror
remote_url: "" # where to get miniconda and anaconda installers -- blank to skip
# possible platforms are: linux-64, linux-32, osx-64, win-32, win-64
platforms:
  - linux-64
  - win-32
blacklist:
  - dnspython
  - shapely
  - gdal
dest_site: some_site
```

Make sure that the site is defined in the `anaconda` config and you’re properly logged into it before invoking `cas-sync-api-v4`.

More extensive information about the `cas-mirror` tool’s functionality and configurable options is available at [Customizing mirrors](#).

### Using cas-installer

The cas-installer tool makes an environment installer, which is a bash script or Windows executable file that can be run on any machine to install an exact copy of a conda environment and its packages on that machine.

### Installing cas-installer

A token from Anaconda is required to install cas-installer, and you should have received it when your organization purchased Repository, Workgroup or Enterprise. If you no longer have access to your token, submit a support ticket or contact us at [Enterprise Support](#). You can also email support at the email address given to you by your sales representative.

When you have the token, run:

```
export TOKEN=<your_anaconda_cloud-token>
conda config --add channels https://conda.anaconda.org/t/$TOKEN/anaconda-server
```

Because this tool allows you to create an installer for a conda environment, it is important that the cas-installer package is installed into the root conda environment, not root user. The following command ensures that this happens:

```
conda install -n root cas-installer=1.3.2
```

### Using the cas-installer command

Once installed, the cas-installer command is available:

```
cas-installer -h
```

The command takes an installer specification file as its argument, which specifies the name of the installer, the conda channel to pull packages from, the conda packages included in the installer, and so on.

EXAMPLE:

```
# ----- required -----
# name
name: test

# channels to pull packages from
# The &channels creates a back reference so that it can be reused as
# *channels in the conda_default_channels section below.
channels: &channels
  - https://repo.anaconda.com/pkgs/free/

# specifications
specs:
  - python
  - grin

# ----- optional -----
# platform e.g. linux-32, osx-64, win-32 defaults to current platform
# platform: linux-64
```

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```
# The conda default channels which are used when running a conda which
# was installed by the cas-installer created: requires conda---3.6.2 or
# greater---in the specifications. The *channels is a YAML reference to
# &channels above. It inserts all the channels from the channels key, so
# that they do not have to be typed twice.

conda_default_channels: *channels

# installer filename
# installer_filename: grin.sh

# default install prefix
default_prefix: /opt/anaconda
```

For Windows, the tool creates nsis-based .exe installers, which can only be created on a Windows platform, although the architecture may be different. For Unix, the tool creates bash-based .sh installer, which can only be created on Unix—Linux or macOS—systems.

## Updating Repository

**CAUTION:** You must have a tested backup of your installation before starting the update process. If updating more than one version, all updates must be performed in sequential order.

Your support representative can provide you with a download URL for an updated Repository installer.

To update to the latest Repository release:

```
curl '$INSTALLER_URL' > anaconda_repository.sh
bash anaconda_repository.sh -u
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

**NOTE:** To use a Repository version from 2.33.3 through 2.33.10 and Anaconda Enterprise Notebooks with single sign-on (SSO), you must set `USE_SERVER_BASED_SESSIONS: false` in the Repository configuration. This setting affects the network security properties of AEN and Repository. Specifically, if `USE_SERVER_BASED_SESSIONS` is set to `false`, and if a new cross-site scripting (XSS) vulnerability is discovered, it could expose an additional server fixation vulnerability. Please discuss this with your Anaconda representative and be sure the feature is compatible with your network requirements before setting `USE_SERVER_BASED_SESSIONS: false`.

**NOTE:** As of Repository 2.33.8, the `fs_storage_root` configuration setting is mandatory for local filesystem storage and the Repository server will not run without it. You can set it with this command:

```
anaconda-server-config --set fs_storage_root /opt/anaconda-server/package-storage
```

You may replace `/opt/anaconda-server/package-storage` with any location owned by the `anaconda-server` user.

Please contact your Professional Support Team contact or sales person if you have any questions or problems regarding the update.

## Updating to current and previous versions

Updating to 2.33:

```
curl '$INSTALLER_URL' > anaconda_repository.sh
bash anaconda_repository.sh -u
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

NOTE: To use a Repository version from 2.33.3 through 2.33.10 and Anaconda Enterprise Notebooks with single sign-on (SSO), you must set `USE_SERVER_BASED_SESSIONS: false` in the Repository configuration. This setting affects the network security properties of AEN and Repository. Specifically, if `USE_SERVER_BASED_SESSIONS` is set to `false`, and if a new cross-site scripting (XSS) vulnerability is discovered, it could expose an additional server fixation vulnerability. Please discuss this with your Anaconda representative and be sure the feature is compatible with your network requirements before setting `USE_SERVER_BASED_SESSIONS: false`.

NOTE: As of Repository 2.33.8, the `fs_storage_root` configuration setting is mandatory for local filesystem storage and the Repository server will not run without it. You can set it with this command:

```
anaconda-server-config --set fs_storage_root /opt/anaconda-server/package-storage
```

You may replace `/opt/anaconda-server/package-storage` with any location owned by the `anaconda-server` user.

Updating to 2.32:

```
curl '$INSTALLER_URL' > anaconda_repository.sh
bash anaconda_repository.sh -u
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.31:

```
curl '$INSTALLER_URL' > anaconda_repository.sh
bash anaconda_repository.sh -u
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.30:

```
curl '$INSTALLER_URL' > anaconda_repository.sh
bash anaconda_repository.sh -u
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.29:



```
curl '$INSTALLER_URL' > anaconda_repository.sh
bash anaconda_repository.sh -u
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.28:

```
curl '$INSTALLER_URL' > anaconda_repository.sh
bash anaconda_repository.sh -u
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.27:

```
curl '$INSTALLER_URL' > anaconda_repository.sh
bash anaconda_repository.sh -u
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.26.6:

The logging configuration can be removed. Logs have been moved to `$PREFIX/var/log/anaconda-server/`:

```
curl '$INSTALLER_URL' > anaconda_repository.sh
bash anaconda_repository.sh -u
anaconda-server-db-setup --execute
anaconda-server-config --remove LOGGING
supervisorctl stop all
supervisorctl start all
```

Updating to 2.26:

```
curl '$INSTALLER_URL' > anaconda_repository.sh
bash anaconda_repository.sh -u
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.25:

```
curl '$INSTALLER_URL' > anaconda_repository.sh
bash anaconda_repository.sh -u
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.24:

```
conda update binstar-server binstar-static anaconda-client
anaconda-server-db-setup --execute
anaconda-server-install-supervisord-config.sh
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.23:

```
conda update binstar-server binstar-static anaconda-client
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.22:

```
conda update binstar-server binstar-static anaconda-client
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.21:

```
conda update binstar-server binstar-static anaconda-client
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.20:

```
conda update binstar-server binstar-static anaconda-client
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.19:

```
conda update binstar-server anaconda-client anaconda-build
anaconda-server-db-setup --execute
supervisorctl stop all
supervisorctl reload
supervisorctl start all
```

Updating to 2.18:

```
conda update binstar-server anaconda-client anaconda-build
anaconda-server-db-setup --execute
supervisorctl stop
supervisorctl reload
supervisorctl start all
```

Updating to 2.17:

```
conda update binstar-server anaconda-client anaconda-build
anaconda-server-db-setup --execute
supervisorctl stop
supervisorctl reload
supervisorctl start all
```

Updating to 2.16:

```
conda update binstar-server anaconda-client anaconda-build
anaconda-server-db-setup --execute
supervisorctl restart all
```

Updating to 2.15:

```
conda update binstar-server anaconda-client anaconda-build
anaconda-server-db-setup --execute
supervisorctl restart all
```

Updating to 2.14:

```
conda update binstar-server anaconda-client anaconda-build
anaconda-server-db-setup --execute
supervisorctl restart all
```

Updating to 2.13:

```
conda update binstar-server anaconda-client anaconda-build
anaconda-server-db-setup --execute
anaconda-server-config --config-file /etc/binstar/config.yaml --set LABEL_NAME "'channel'
↪"
supervisorctl restart all
```

Updating to 2.12:

```
conda update binstar-server anaconda-client anaconda-build
anaconda-server-db-setup --execute
supervisorctl restart all
```

Updating to 2.9:

```
conda update binstar-static binstar-server cas-mirror
anaconda-server-db-setup --execute
supervisorctl restart all
```

Updating to 2.8:

```
conda update binstar-static binstar-server cas-mirror
anaconda-server-db-setup --execute
supervisorctl restart all
```

Updating to 2.6.0:

```
conda update binstar-server
conda install cas-mirror
```

Updating to 2.5.1:

```
conda update binstar-server
```

Updating to 2.3:

```
conda update binstar-server
conda install cas-mirror
```

Updating to 2.2:

```
conda update binstar-server
```

## Uninstalling Repository

Before deleting Repository, you may want to make a backup for security reasons. For suggestions on mongo backups, see <https://docs.mongodb.org/manual/reference/program/mongodump/>.

To delete Repository:

1. Check the file storage path:

```
anaconda-server-config --get fs_storage_root
```

2. Delete the contents of `/home/anaconda-server/repo`:

```
rm -rf /home/anaconda-server/repo
```

3. Delete the appropriate MongoDB database, “binstar.”

4. Delete the contents of `/etc/binstar`:

```
rm -rf /etc/binstar
```

5. Delete the contents of the Repository file storage path.

## Troubleshooting

This page provides instructions for troubleshooting issues that may occur with your Anaconda Enterprise 4 Repository installation.

### Cannot connect to the server on port x

This could be because you are behind a firewall. Check if your IPTables rules are blocking your ports:

```
iptables -L -n
```

If a rule blocks a port you want to use, then you must allow the port:

```
sudo iptables -t nat -F
sudo iptables -A INPUT -p tcp -m tcp --dport <PORT> -j ACCEPT
sudo service iptables save
sudo service iptables restart
```

**Error: “No environment named ‘search’ exists in...” on Windows**

If Anaconda Client is not yet installed and you try to search for a package on Anaconda.org using the `anaconda` command, you may receive the following error message:

```
C:\Users\USERNAME>anaconda search -t conda PACKAGE
No environment named "search" exists in C:\anaconda\envs
```

This error occurs because the Windows version of Anaconda contains an `anaconda.bat` file that is used for setting environment paths and switching environments. If Client is not installed, this batch file is called instead. Once you install Client, the Anaconda `search` command will work:

```
conda install anaconda-client
anaconda search -t conda PACKAGE
```

**Anaconda upload fails while behind a reverse proxy**

When configuring Client to connect to a Repository behind a reverse proxy, the `anaconda upload` command may appear to try connecting to the internal hostname rather than the external configured one.

This can be corrected in the settings of the reverse proxy, such as NGINX or Apache.

In NGINX, add the setting `proxy_set_header Host $host;` to access the internal host with the external hostname.

In Apache, turn on the option `ProxyPreserveHost`.

Other reverse proxies each have their own settings to handle hostnames correctly.

EXAMPLE: Some other reverse proxies use a settings syntax such as `http_proxy=id:passwd@proxyhost:port`.

**Start Repository application as a foreground process**

Repository should normally be started as a daemon. For troubleshooting, it can instead be started as a foreground process on a specified port:

```
anaconda-server --port 8080
```

Stop the application with Control-C.

**Administrative commands**

Many of these actions can be done in the web interface. This command reference is for those administrators who prefer to use command line shortcuts.

In all examples below, replace “jsmith” with the name of the user whose settings you wish to change.

Reset a user’s password interactively:

```
anaconda-server-admin reset-password jsmith
```

The above command will prompt you to enter the new password twice. You may also reset the password directly:

```
anaconda-server-admin reset-password --password abcDEF123! jsmith
```

NOTE: Replace “abcDEF123!” with the new password.

Set a user’s plan to a free and unlimited plan:

```
anaconda-server-admin free-unlimited-plan jsmith
```

Set all users with a given email domain to a free and unlimited plan:

```
anaconda-server-admin free-unlimited-plan-for-domain yourdomain.com
```

You can do a “dry run” of the command to display what the command will do without changing anything:

```
anaconda-server-admin free-unlimited-plan-for-domain --dry-run yourdomain.com
```

NOTE: Replace “yourdomain.com” with the domain whose users you wish to upgrade.

Give the user the privileges of a superuser or remove them:

```
anaconda-server-admin set-superuser jsmith  
anaconda-server-admin unset-superuser jsmith
```

Give the user the privileges of a staff user or remove them:

```
anaconda-server-admin set-staff jsmith  
anaconda-server-admin unset-staff jsmith
```

Change a user’s login name (username):

```
anaconda-server-admin move-user old_name new_name
```

NOTE: Replace “old\_name” with the current username, and “new\_name” with the new username.

Ensure the files recorded in the database exist.

```
anaconda-server-admin verify-storage
```

Ensure that files recorded in the database exist and have the correct checksum:

```
anaconda-server-admin verify-storage --md5
```

List the key names of files with problems:

```
anaconda-server-admin verify-storage --list-files
```

Scan the storage for unused files and delete them:

```
anaconda-server-admin clean-storage
```

Update the bundled installers:

```
anaconda-server-admin update-installers
```

Delete a user:

```
anaconda-server-admin delete-user jsmith
```

Set or unset “read only” mode:

```
anaconda-server-admin read-only --enable/--disable
```

Convert a regular user account to an organization and add another user to the owners group:

```
anaconda-server-convert-account to-organization --owner some_user regular_user
```

Convert an organization into a regular user account:

```
anaconda-server-convert-account to-user some_organization
```

## FAQs

### What is Anaconda Enterprise 4 Repository?

Anaconda Enterprise 4 (AE4) Repository is package management server software that makes it easy to find, access, store and share public and private notebooks, projects, installers, environments, and conda and PyPI packages. AE4 Repository also makes it easy to stay current with updates made to the packages and environments you are using.

Many enterprises have customized local instances of AE4 Repository. Anaconda also makes an instance of AE4 Repository available for public use at [anaconda.org](https://anaconda.org).

### What kind of packages does Anaconda Enterprise 4 Repository support?

Anaconda Enterprise 4 Repository supports any type of package. It is primarily used for conda, PyPI and R packages, as well as notebooks and environments.

### What is Anaconda?

Anaconda is a software development and consulting company of passionate, open source advocates based in Austin, Texas, USA. We are committed to the open source community. We created the Anaconda Python distribution and contribute to many other open source-based data analytics tools. You can find out more about us by reading [our story](#).

### How do I get started with Anaconda Enterprise 4 Repository?

If you have access to Anaconda Enterprise 4 Repository, you can search, download and install hundreds of public packages without having an account.

If you want to upload packages to AE4 Repository, you need to sign up for an AE4 Repository account, get Anaconda and the Anaconda Client. For more information, see [Creating an account](#) or ask your system administrator.

### What is an organization account, and how is it different from an individual account?

An organization account allows multiple individual users to administer packages and have more control over package access by other users. An individual account is for use by one person.

### Who can upload packages to an organization?

Only users who are co-owners of an organization may upload packages to that organization. Administrators who are not co-owners cannot upload packages to the organization. Users who are members of groups with read/write access but who are not co-owners, cannot upload packages to the organization.

### Help and support

Your organization receives [Professional Support](#) with your purchase of Anaconda Enterprise 4 Repository. Please contact your system administrator for help.

### Joining the Anaconda Community

You are also welcome to join the [Anaconda community](#). On these lists you can ask questions, answer questions, and discuss ways to use Anaconda. You can also submit requests for new features and make any other comments you may have.

Note that the community support forums cannot provide Anaconda Enterprise 4 Repository support.

### Reporting a bug

Report any issues with Anaconda Enterprise 4 Repository or Notebooks to [support.anaconda.com](mailto:support.anaconda.com).

### Release notes

The Anaconda Enterprise 4 Repository 2.33 release is available to all Anaconda Enterprise 4 Repository customers as of September 19, 2017.

NOTE: If you have a subscription but do not have a license, contact [support](#) to receive that license. Otherwise, contact [sales](#) to acquire it.

Administrators can update to the new Anaconda Enterprise 4 Repository release as described in [Updating Repository](#).

Please contact your enterprise support representative if you have any questions or problems regarding the release.

SEE ALSO: [update instructions for current and past versions](#).



### 2.33.24 - 2018-07-03

User facing changes

- Updated compatibility docs

Non visible changes

- Cloudflare cache invalidation
- Fixed pypi simple index mirroring
- Fixed installers and environments downloads on read-only mode
- Raise exception when an invalid USER\_REGEX value is used
- Fixed “All labels” file filter
- Fix broken session

### 2.33.23 - 2018-05-23

User facing changes

- Policy change notice

### 2.33.22 - 2018-05-21

User facing changes

- Support for ppc64le installers
- Constructor form advanced option validation
- Added explicit Redhat versions to requirements
- Improved API docs regarding the basename of files
- Search includes package summaries
- Bug fixes and broken link fixes
- Added note about compatibility between LDAPS and START\_TLS
- Fixed pypi mirror config example

### 2.33.21 - 2018-05-03

User facing changes

- Added advanced options on installer creation form
- Warn about label `main` when manually editing labels
- Package summary shows summary of latest `main` release

### 2.33.20 - 2018-04-24

Non visible changes

- Support for serving files from the origin

### 2.33.19 - 2018-04-19

User facing changes

- Flash warning when label doesn't exist
- Searching using unicode characters
- Notebooks without labels are rendered

Admin facing changes

- Added option to customize constructor temp dir
- Forbid supplying the same account as owner when converting account to org

Non visible changes

- Fix download stats link
- Avoid saving generated zip for installers
- Add quotes on paths in AIC templates
- Add support for unicode characters in version
- Removed server header from responses
- Fixed label validation

### 2.33.18 - 2018-04-03

User facing changes

- Added icons to the repo files page
- Changed package search placeholder
- Updated notebook upload icon
- Show warning when copying a label onto itself
- Fixed navbar spacing when logged out
- Fixed org feed links

Admin facing changes

- Reuse owners group when converting account to org

Non visible changes

- Fixed redirection after label operations
- Fixed transferring from org to superuser account
- Fixed update of installers and parcels
- Label filters are reset if the label set changes

**2.33.17 - 2018-03-09**

Non visible changes

- Next URL whitelist

**2.33.16 - 2018-03-08**

User facing changes

- Add warnings when removing main label
- Update last seen on account change
- Allow signing up with an orgs email
- Show favorites on dropdown menu for orgs
- Show settings tab for collaborators
- Fixed LDAP TLS docs

Admin facing changes

- Allow superusers to be organization admins
- Add billing history

Non visible changes

- Added validation of build number
- Add scheme to AIC templates
- Removed hotjar
- Remove marketo

**2.33.15 - 2018-02-27**

Non visible changes

- Standardize If-Modified-Since handling

**2.33.14 - 2018-02-20**

Non visible changes

- Fix HEAD support by stripping quotes from s3's object

**2.33.13 - 2018-02-19**

## User facing changes

- Custom ordering of notebooks and environments
- Added tooltips showing the exact upload date and time of files on the repo page
- New command to convert regular user accounts to organizations and back
- Last upload date on package and installer info pages
- Fixed error message wording when deleting packages on groups
- Fixed error message when deleting packages, environments and notebooks
- Fixed the wording on the empty dashboard cards
- Fixed navbar fonts on IE11
- Fixed file management actions for package collaborators
- Fixed transferring of packages to and from the same user
- Show file actions for collaborating organizations
- Forbid downloads on read-only mode
- Allow collaborators with admin rights to delete ownables

## Admin facing changes

- Mirror tools now create organization accounts by default

## Non visible changes

- Add custom X-Anaconda-Lockdown and X-Anaconda-Read-Only response headers
- Use database info to construct filenames of conda downloads
- Fixed support for HEAD method on download endpoints
- Added extra validation of the basename on conda package uploads
- Use upserts instead of inserts to stage files

**2.33.12 - 2018-02-07**

## User facing changes

- Updated terms of service

**2.33.11 - 2018-02-06**

## User facing changes

- Added badge for the date of the latest release
- Added badge for platform support
- Show warning if no revision is selected when working with projects
- Updated terms of service
- Favorites are now shown on org dashboards

- A warning message is now shown when all packages are added to a given group

#### Admin facing changes

- Disable password reset admin option while using LDAP

#### Non visible changes

- Added proper HEAD support on download endpoints
- Disabled USE\_SERVER\_BASED\_SESSIONS by default
- Disabled database based settings
- Strengthened validation of labels
- Fixed popups for operations when no files or packages are selected
- Fixed deletion of files by collaborators
- Fixed access to static content while on LOCK\_DOWN
- Fixed transfer of ownership of items between orgs

### 2.33.10 - 2018-01-19

#### User facing changes

- Added “noarch” to the platforms mirrored by anaconda-server-sync-conda

### 2.33.9 - 2018-01-16

#### Admin facing changes

- Made fs\_storage\_root setting mandatory only for local filesystem storage

### 2.33.8 - 2018-01-15

#### User facing changes

- Updated LDAP docs
- Hide actions on a user’s repo page when viewing it with an org

#### Admin facing changes

- Made fs\_storage\_root setting mandatory
- Block uploading a new license when read-only mode is enabled

#### Non visible changes

- Fixed exception logging on anaconda-server-sync-conda
- Remove debug code
- Better handling of next url redirect on login link
- Fixed response of repodata endpoint when an invalid If-Valid-Since header is given
- Remove install instructions from label table
- Fix orgs favorites

- Removed suggestions from confirmation dialogs

### 2.33.7 - 2017-12-11

#### User facing changes

- Updated support links
- Added activity feed item for installer upload
- Clarified pip install example command
- Added close icon for installer log popup
- Organizations are able to see their email on the profile page

#### Admin facing changes

- Removed READ\_ONLY config option. Added admin cli tool to change read only state

#### Non visible changes

- Added index in database for package ‘\_name’ attribute
- Several fixes on license creation page
- Added proper message to groups permission set
- Fixed actors for some feed items actions
- Validate that users exists when adding a group member
- E-mail confirmation error message for organizations
- Enable read-only option with repo page
- Fixed profile description not being wrapped

### 2.33.6 - 2017-11-27

#### Added

- Filter for authenticated packages in search/favorites view
- Updated message for input field when copying label
- Updated support links
- Added email notification when group member is added
- Installation info for R and pypi packages using labels
- Support for defining standard labels
- Added support to remove user using anaconda-server-admin
- Show licence url for packages, environments and notebooks
- Validation for empty fields in credit card info for plan upgrade

#### Fixed

- Updated instructions to create initial user
- Prevent organizations to have admin access for ownables of its original user

- Fixed package view when a release description is not a string
- Panels for ownables not showing in profile page if there are no packages
- Set limit to installers log height to prevent modal going below the footer
- Validation to prevent organization adding itself to one of his groups
- Set invalid license messages on mirroring script to debug instead of warning
- Generated tokens can be viewed without password prompt if kerberos authentication is used
- Fixed link on R package label page
- Remove password reset option if auth\_type is not native
- Replaced urls for R packages sources
- Fixed counts in billing overview page
- Added quotes to install instructions to avoid issues with spaces
- Documentation tooltip in conda packages
- Hide transfer modal if there are no accounts to transfer to
- Use dashboard used instead of current user as actor for feed items
- Fixed feed url links
- Redirection for labels on package files list
- Removed duplicated feed item on package transfer
- Fixed installer version validation message
- Fixed query to retrieve non-private packages
- Fixed dead links to deleted projects on the feed
- Expanded LDAP groups docs
- Handling of duplicate package exceptions on API
- Remove word kapsel from email when collaborator is added

### 2.33.5 - 2017-11-07

#### Added

- Added a CLI tool to manage group membership
- Missing tooltips on header and admin section
- Added some missing feed items
- Account search now uses both names and emails
- Filter for authenticated packages

#### Fixed

- File info modal now works with list attributes that contain dicts
- Validate uploaded environment name
- Improved UX of installer creation form
- Updated feed icon for group collaboration removal

- Show all feed items related to a particular ownable in the History tab for that ownable
- Added main channel to default mirror config
- Generic exceptions during LDAP auth are now caught and logged
- Fixed supervisord script crontab option
- Updated read only rules on projects and installers
- Disable autocomplete suggestions for confirmation input fields
- Added authenticated packages to the billing package limit notice
- Add quotes around conda install help message if label has spaces
- Specify correct package type on tooltip text for label removal
- Updated flask-login-ldap dependency
- Validate name of copied label
- Removed validation of label name on deletion
- Removed duplicate HTTP headers on cached responses
- Do not allow pypi packages in installers
- Updated mirroring docs
- Make installers/projects summary optional
- Replaced some occurrences of word kapsel
- Align upvote icon
- Set package access from packages list
- Only owners can upload installers/environments to its own channel

#### **2.33.4 - 2017-10-24**

##### Added

- Use environment variable to set initial user's password
- Usernames blacklist
- Show projects and installers summaries on header
- Added tooltips to package page buttons
- Instructions to generate tokens for organizations
- Feed items for projects and installers
- Settings for session timeout
- Supervisor script creates folder for extra config
- Updated EULA
- Set private packages and storage to unlimited individually
- Added progress indicator on installer upload
- Command to mirror only latest versions of conda packages

##### Fixed



- Fixed creation of private packages from the API
- Feed now uses the package database when it doesn't know the package type
- Hidden installers empty panel on profile page
- Infer access attribute from other attributes when adding package
- Incorrect logging of user downloads
- Show 'Set access' options for organizations in packages list
- Flash error messages when an errors occur on LDAP admin page
- Replaced word kapsel with project on flash messages
- Changed s3 content-disposition of anaconda server installers
- Date ranges for stats in admin page
- Transfer projects with the same name as a deleted project
- Remove package groups when package is archived
- No longer is possible to upload expired licenses
- Hide brand from delete user modal if user is an organization
- Package and environment file modal style issue
- Filter public packages from package search in admin
- Allow access to ownable settings to collaborators with 'write' permissions
- Fixed pypi installer tooltip
- In admin user account, prevent setting lower storage than the used storage
- Delete groups when the org is removed
- Removed add-ons page
- Handling missing package after deleting files
- Do not allow to create tokens expiring today
- Fixed redirections to packages on feed items
- Show installer and project feed items in history tab
- Show all collaborators of an organization's package
- Fix issues with package icons on dashboard
- Sorted tabs in group settings
- Always display collaborators tab as 'Collaborators'

### 2.33.3 - 2017-10-20

Added

- Added support for server based sessions

### 2.33.2 - 2017-10-10

Fixed

- Exception in admin after updating private packages for a user

### 2.33.1 - 2017-10-03

Added

- New feed items for group membership and groups collaborations
- Download stats for files API endpoint
- Option to set amount of private packages for a user from admin
- Improved license creation page
- Added distribution\_types to downloads feed
- Set packages access as authenticated from packages list
- Added option –authenticated to anaconda-server-sync-conda
- Added conda-build as dependency
- Relaxed expired tokens restrictions for public endpoints
- Add organizations as collaborators for packages, environments and notebooks
- Send email when adding collaborator to a project/installer

Fixed

- Link to docs in packages view
- Catch all exceptions raised when loading environment file
- Return json responses on api calls when an error is encountered
- Error message when uploading an invalid installer file
- Group permissions moved to the settings
- Fix wrong autocomplete using firefox
- Fix typeahead initial suggestions in installers form
- Updated callout in contact us form
- Hiding package access settings for collaborators
- Fixed refresh when closing user menu on the navbar
- Show info about installers downloads on admin interface
- Fixed downloads stats on admin
- Prevent adding package owner as package collaborator

- Storing package\_type when API package upload
- Collaborators can now access a package's history page
- API docs are back up again
- Refactored mirroring tools
- Fixed incorrect links from feed items

### 2.33.0 - 2017-09-19

#### Added

- SUPERUSER\_SEARCH to set superuser status in LDAP
- File format validation on installer upload
- Show which users are admin in users list
- Use similar settings for typeahead package suggestions
- Require user to be logged in to see user typeahead suggestions
- Cleaned output from test suite
- READ\_ONLY mode setting and admin option
- Added tooltips to social media icons on footer
- Hide license download buttons from add-ons page
- PAM authentication support
- Added reCAPTCHA to contact us form

#### Fixed

- Exception in group collaborations list for a package after group delete
- Maintain consistency in redirections after item deletion
- Fix group link in project collaborator view
- Flash message after issues with email validation
- Exception on admin downloads list for a user when package/file was had no owner
- Change dashboard user on item transfer
- Prevent adding current user as a collaborator
- Remove current owner from items ownership transfer options
- Fixed UI issues
- Validate name and version of installers only when full form is submitted
- Fixed some redirections to documentation in Anaconda Cloud
- Hiding delete package for collaborators
- Updated links to slideshare and youtube accounts

### 2.32.9 - 2017-09-15

Fixed

- Fixed forgot password link

### 2.32.8 - 2017-09-11

Fixed

- Temporarily disabled contact page for anaconda cloud

### 2.32.7 - 2017-09-07

Fixed

- Exception in token expiration warning code
- Fixed error when displaying a group that no longer exists

### 2.32.6 - 2017-09-06

Added

- Separated package groups collaborations in three tabs (packages, notebooks, environments)
- Added icons to all feed items
- Provided more info on feed for uploaded packages/environments/notebooks
- Unicode validation on signup form
- Package api returns builds and adds filter for search platform
- Validation for profile name
- Added option to upload all packages to a group at once
- Added page to see feed for a user
- Added some reserved names for packages
- Semantic versions validation for installers version field
- Warning header when token is about to expire
- Make favorites page public

Fixed

- Allowing anaconda login under lockdown
- Fixed potential exceptions on old cache code
- Changed typeahead environment query to use dashboard user
- Fixed issues with the upload of previously deleted installers
- Fixed Cache-Control headers on old repodata caching code
- Display all packages by default, not just only conda packages
- Show correct label for Groups & Collaborators depending on type of user

- Changed owner of uploaded installer to current dashboard user
- Remove groups permissions from all items after group delete
- Color schemes of some flashing messages
- Prevent project/installer transfer if recipient already has one with the same name
- Empty environment field from installer created from environment if the environment was deleted
- Fixed email validation when other user is logged in
- Maintain consistency on headers from dashboard
- Fixed token generalizations
- Exception on admin downloads list for a user when package/file was missing
- Fixed “View Docs” URL
- Use dashboard user in redirects after file delete

#### **2.32.5 - 2017-08-29**

Fixed

- Removed Continuum references

#### **2.32.4 - 2017-08-28**

Fixed

- Fixed old continuum links

#### **2.32.3 - 2017-08-24**

Fixed

- Navbar logo responsiveness issues

#### **2.32.2 - 2017-08-24**

Fixed

- Changed navbar buttons order to the new design schema

#### **2.32.1 - 2017-08-24**

Fixed

- Bigger logo on the navbar
- Fixed home page screenshot of the site

**2.32.0 - 2017-08-22**

## Added

- New top bar button structure
- Added option ‘any’ to display all kind of packages in repo view
- Support for custom user avatar methods
- Updated *cas-mirror* docs
- Create installers uploading an environment file
- Parcel and management packs can be created from installers previously created
- SSL protocol version can now be customized
- Fresh design
- Stats API endpoint
- Updated all flash messages colors

## Fixed

- Ownership of uploaded environments
- Doc links on the feed
- Styling of installer widget
- Transferred projects now appear in dashboard
- Environment validation
- Environment upload labels
- Show correct package type when transferring package/environment/notebook
- Increased panel sizes in profile and dashboard
- Limited items to display in panels
- Fixed collaborators view
- Potential cache related exception
- Made management packs template order deterministic
- Unsafe redirections
- Removed packages from groups when transferred
- Closed XSS vulnerabilities
- Contact us emails are sent from [contact@anaconda.org](mailto:contact@anaconda.org) with a reply-to header
- Fixed typeahead input field to add package collaborators
- Archive items when all their files are deleted
- Return NotFound on item details page when they don’t contain any files
- Fixed stats report admin view
- Replaced occurrences of the word “package” for a more appropriate name depending on the package type

**2.31.6 - 2017-08-08****Added**

- Email notification when added as a collaborator
- Labels regex now distinguishes uppercase characters
- Added site export tool
- Upload option for installers
- Added button to review the build log next to each installer file
- Version specific landing page for packages
- Added group info to site export tool
- Upload option for environments

**Fixed**

- Layout issues on dashboard and repo pages
- Remove user from groups when the account is removed
- Remove user as a collaborator for installers/packages/projects/notebooks/environments when is deleted
- Show only projects with files in projects list
- CSV export of users
- Typeahead for multi-type packages
- Added user validation to remove collaborator form
- Metadata display on package API
- Cache key generation and diskcache size limit parameter
- Empty packages will no longer appear in search results

**2.31.4 - 2017-08-03****Fixed**

- Fixed repodata caching

**2.31.3 - 2017-07-27****Fixed**

- Fixed label validation

### 2.31.2 - 2017-07-24

#### Added

- Tool to check a file's checksum

#### Fixed

- Show conda packages install instructions only for available labels
- Solved exception raise by anaconda-server-admin clean-storage
- Hide empty packages/environments/notebooks from dashboard/profile page
- Solved exception raised creating an installer from an empty environment
- Fixed style issues with dashboard/profile page.
- Added help info in profile page
- Show correct icons in objects page
- Removed extra space from groups breadcrumb
- Fixed license not updating
- Hide License expired message overlay during session when alert is closed
- Fixed email sending on forgot password and forgot username

### 2.31.1 - 2017-07-13

#### Added

- Docs for LDAP timeout
- `--clean-platforms` option for `anaconda-server-sync-conda`
- Docs for backup and restore procedures based on the default installation
- Added setting for custom installers location
- Updated FontAwesome to 4.7.0

#### Fixed

- Displays the latest release data on the package page
- Fixed panel size in profile page and added scrollbars on overflow
- Show latest version available for each platform in conda packages
- Custom installers pre-configured to point to repo instance
- Exception when trying to display security log
- Display the correct username on the navigation bar
- Remove unused logging configuration



- Python tags on environment.yaml now parsed on installer creation from environment
- Omitting non-conda dependencies on installer creation from environment
- Updated documentation links
- Added missing R packages icons
- Unicode issue on Contact Us form for anaconda cloud
- Fixed CSS issue on Internet Explorer
- Solved issues with labels containing slashes and spaces
- Updated link to conda documentation
- Force pypi mirroring for a new mirror user
- Fixed validation when setting packages to private in bulk
- Fixed some UI issues with long names
- Fixed org creation on mirroring tools
- Labels link takes you to all type package listing
- Package type filter set to 'all' will not show notebooks/environments anymore
- Confirmation of package delete with username input works also using uppercase
- Correct order of search filters
- Fixed typeahead endpoints
- Fixed duplicated channels on custom installers
- Allowing slashes on token name delete action
- Disabled LDAP referrals by default

## 2.31.0 - 2017-06-28

### Added

- Added USER\_REGEX defaults to reference docs
- Added period (.) as a valid character for the default USER\_REGEX
- Added diskcache based repodata caching
- Added license url validation for packages
- Option to set storage keyname to full path
- Show error message when attempting to add duplicated collaborators

### Fixed

- CSS fixes on top navbar
- CSS fixes on group names
- Added filter for valid packages in installer creation
- Added support for deleted Strip accounts
- Stops adding/updating labels if the validation fails
- Tokens modal is no longer going below the bottom of the page
- Displaying credit card errors correctly
- Handling LDAP login error
- Fixed highlight of project settings tab
- Updated tqdm version to stop exception on mirror download
- Environments summary is no longer duplicated
- Display correct package summary after update
- Customized success message on upvote depending on package type
- Updated links to docs for labels
- Updated verbose exception
- Fixed notebook revisions links
- Optimized query to get latest package versions
- Updated all references to docs with correct links for cloud
- Removed top-level domain validation from profile URL
- Improved speed of show\_channel endpoint
- Added validation to prevent duplicated packages on installers
- Changed default label filter for packages to 'all'
- Removed distinction of user menu based on username
- CSS issues with long names
- Fixed long project names overlapping

### 2.30.3 - 2017-06-06

### Added

- Added feeds for kapsel creation/removal/new revision

## Fixed

- Added some more plural forms for flash messages
- Show project description from latest revision instead of project summary
- Fixed window installer configuration files
- Moved project history to settings
- Projects and installers on the same row
- Fixed installer creation under LOCK\_DOWN
- Fixed settings tab highlight on installer admin page
- Fixed handling of empty page param on search page
- Fixed max-age overflow on authentications endpoint
- Fixed project creation time
- Fixed installer form when python package has no releases
- Fixed subscriptions plans link
- Fixed unicode issues on contact form
- Merged LDAP login logic
- CSS clean up for groups with long names

### ## 2.30.2 - 2017-05-24

- Fixed authentications endpoint

### ## 2.30.1 - 2017-05-24

#### Added

- Warning before deleting a package and all of its messages
- Tool to check orphan files and packages
- Added option to lock down all public pages
- Added link to contact us for custom plans.

#### Fixed

- Display error message when config file is not found
- Fixes resend confirmation email
- Retrying on 502 error while mirroring conda
- Replace non-ascii characters from filename when downloading a file
- Added password validation to password reset form
- Handling 404 on s3 key\_exists
- Removed files and packages will appear on package history
- Using user's name and email on contact emails

- Changed Resend Email label to Password Reset in admin page
- Added placeholder to collaborators form
- Added singular form messages in flash notifications
- Fixed popup label for pkg/nbk/env settings
- Fixed scrollbar blocking content in installers documentation
- Added searchbox on navigation header for non-authenticated users
- Added more database indexes for better query performance
- Removed admin monitor page
- Increased request timeout default to 120 seconds
- Updated the mirror configuration examples
- Fixed URL for pricing info
- Fixed token creation API
- Removed outdated mirror documentation
- Added migration to normalize files data
- Added brand as key in api endpoint
- Declined credit card info is no longer stored
- Improved UI for group members page

### ## 2.30.0 - 2017-05-08

#### Added

- Added EULA to the installer
- Contact Us form now sends emails to [support@anaconda.org](mailto:support@anaconda.org)
- Create organization instead of user on mirroring tools

#### Fixed

- Fixed anaconda-server-sync-conda settings message
- Secured web helpers views
- Removed unused test endpoints
- Fixed insecure groups endpoint
- Fixed filename too long exception on type filter for installers
- Server side encryption on S3 storage
- Fixed documentation link in /settings/access API token page
- Year in footer matches current year
- Fixed password restrictions checks
- Replaced binstar-\* message for anaconda-server-\* on mirroring script
- Added missing instruction to Project upload instructions
- Fixed the way we load the license data from the database

- Added validation for reserved usernames
- Fixed package set-access on firefox
- Fixed encoding error on package information page
- Changed error message on installer creation form

### **## 2.29.1 - 2017-04-19**

#### Fixed

- Fixed access to LDAP views
- Removed unused remove\_user view
- Add support for expired marketo access token
- Fixed exception on installer creation

### **## 2.29.0 - 2017-04-19**

#### Added

- Visibility on Projects feature
- Sortable account list by package count
- Change plan button for organizations
- Add lead source to marketo requests

#### Fixed

- Fixed installers downloads
- Set S3 addressing style to “virtual”
- Fixed S3 ETag processing
- Fixed handling of missing arch attribute on search
- Typeahead endpoint access limits
- Changed supervisor runtime files location
- Allowing numeric named installers
- Allows installer creation with environment with url on the channel list
- Fixed typeahead on installer creation form
- Remove unreachable code
- Fixed flake8 findings
- Fixed installer collaborators form
- Fixed remove unlabeled files
- Fixed repo access admin for organizations

### ## 2.28.1 - 2017-04-03

#### Added

- Installers can now be created from uploaded environments

#### Fixed

- Fixed outdated version badges
- Add “jessie” and “sles12” parcel suffixes
- Only allows alphanumeric characters on installers name
- Fix group installers page
- Fix edition of existing installers

### 2.28 - 2017-03-22

#### Added

- Add UI to delete and set access of packages on the repo page
- Add UI to delete files in the files section of the repo page
- Add UI to set and unset superuser and staff status on admin page
- Staff users can now access licensing
- Pagination on history for the account admin page

#### Fixed

- Config set using *anaconda-server-config*
- Username on page titles
- Fixed anaconda-server-sync-conda issue with local repos
- CSV export on emails with special characters
- Package label filtering
- Signup password validation error message
- Exception requesting non existing file url
- Fixed email confirmation for organizations
- Text overflow when username is too long
- Remove all user packages in a single action to avoid filling the queue
- Checking user existence on reset password
- Installer URL shows zip extension

### 2.27.5 - 2017-03-14

Fixed

- Added boto dependency back

### 2.27.4 - 2017-03-03

Added

- Support for S3 regions that only use V4 signatures
- Support for S3 server-side encryption
- Support for custom PyPI repo sync
- New releases overrides package's description, summary, license and icon
- Update mongodb to 3.4

Fixed

- API endpoint *DELETE /dist/{owner\_login}/{package\_name}/{version}/{\_id}* should delete the file with the associated ID
- Email validation on profile page
- Downloading files with spaces or special characters should result in the correct filename
- Some documentation URLs showed up without styling
- Fixed text overlap in admin deployment page
- */downloads* installers should generate configuration files correctly
- "Not Found" errors are more consistent and clear
- Package search timeout
- Displaying validation in the popup on account's admin page

### 2.27.3 - 2017-03-02

Fixed

- Add support for string license attribute

### 2.27.2 - 2017-02-27

Fixed

- Remove pyc from ambari mpack templates folder

### 2.27.1 - 2017-02-23

Added

- Limit to the cache

Fixed

- Added missing ambari mpack templates folder

### 2.27.0 - 2017-02-15

Added

- Support for generating custom Hortonworks/Ambari management packs
- License and license url to packages api
- Update email confirmation code to more secure and flexible hash
- Support for multiple users with same email (if option enabled)
- Admin support to remove an account
- Admin support to change storage size or change plan to free unlimited
- Package versions on installers and parcels are now optional
- Specify a configuration file with the environment variable ANACONDA\_SERVER\_CONFIG

Fixed

- Noarch repodata should not include files that are missing platform and arch
- Fix attribute errors kapsel unit tests
- Mirror configuration *python\_versions* should not require quotes
- Add link to package on Favorites page breadcrumbs.
- Improve support for POWER and ARM architectures.
- Provide a useful error page when MongoDB is unreachable.
- Fix notebook and env with same name
- Suppress form errors when adding or removing package/channels
- anaconda-server-config will work on the config file you actually have
- Remove temporary redirects on user settings and org groups settings
- Disable empty as a valid label/channel name
- Fix organization name on group membership view
- Disable Reset Password if it is the only button



### 2.26.5 - 2017-01-30

- Remove experimental feature from display.

### 2.26.4 - 2017-01-30

#### Fixed

- Some files would not be cleaned up correctly when the corresponding user was deleted in the interface. Added a migration to clean up any existing unused files.
- Add *anaconda-server-admin clean-storage* command to clean up unused files.
- Fix csv column order on package info at the admin page.
- Render URLs in the package summary as links.
- Display correct breadcrumb for a selected environment.
- Sort labels on package page alphabetically.
- Pluralize storage information correctly.

### 2.26.3 - 2017-01-10

- Added AnacondaCON promo to Anaconda Cloud

### 2.26.2 - 2017-01-06

#### Added

- Conda repodata is now cached more frequently.
- Constructor installer creation will now be terminated if it takes longer than 60 seconds.

#### Fixed

- An error that occurred when PyPI packages that were deleted were re-uploaded.

### Anaconda repository 2.26.0 - 2016-12-19

- Anaconda Repository has a new mirroring tool with reproducible results, and improved support for delta mirroring.

### Anaconda repository 2.25.0 - 2016-11-30

- Anaconda Repository is now distributed as a self-contained installer.

### Anaconda repository 2.24.4 - 2016-11-17

- FIX: issues with async workers PR #3120, #3123
- FIX: Issue with sending forgotten username. PR #3120
- LOGGING: log everything to stdout. supervisord script will now log to file instead of syslog PR #3106
- KAPSEL: Remove kapsel uploader PR #3107

### Anaconda repository 2.24.0 - 2016-11-09

- Documentation updates
- Fix task queue (removed mtq library)
- Improve performance of PyPI simple index page
- Move licensing code to `anaconda_platform.component.licensing`
- Add hotjar (cloud)
- Move username regex to check into settings
- Parcels: Add anaconda and python 2.7 as default packages
- Added AIC (Anaconda Installer Configuration) installers
- Remove Kapsel Execution

### Anaconda repository 2.23.1 - 2016-10-25

Added

- Gevent in as the server worker\_class
- Remove check of key existence in s3 for anaconda.org

### Anaconda repository 2.22.0 - 2016-10-18

Fixed

- API: added correct handling when user is deleted
- DOWNLOADS: allow unlimited storage of download stats
- UI: terms and conditions link was incorrectly escaped
- NOTEBOOKS: fix sorting of notebook versions
- REPO: copied package files would sometimes return 404
- UI: added default sorting to more tables
- REPO: usability and functionality fixes for CDH parcel generation

### Anaconda repository 2.21.0 - 2016-09-29

#### Added

- REPO: users can *create custom CDH parcels through Anaconda Repository*
- UI: standardize sorting on tables
- UI: the software version is included in the footer of Anaconda Repository

#### Fixed

- NOTEBOOKS: added iframe sandboxing to notebooks
- NOTEBOOKS: fixed rendering of thumbnails uploaded by *nb\_anacondacloud*
- REPO: copied package files were sometimes incorrectly garbage collected

#### Changed

- UI: The pages on the *conda.anaconda.org* and *pypi.anaconda.org* domains redirect to *anaconda.org*.

#### Removed

- BUILD: The deprecated build feature has been removed from Anaconda Repository.

### Anaconda repository 2.20.4 - 2016-09-26

#### Fixed

- NOTEBOOKS: links in the notebook will open in the browser window directly, instead of inside of a frame.

### Anaconda repository 2.20.3 - 2016-09-20

#### Fixed

- Allow numeric usernames

### Anaconda repository 2.20.2 - 2016-08-18

#### Added

- REPO: package types will correctly update from added files (#2492)
- UI: cluster pages now list apps associated with that cluster
- Notebooks larger than 25mb will not be rendered (#2336)
- API: the endpoint `/user/{account}/downloads/{start}--{end}` now provides download activity aggregated by package for an account.

#### Fixed

- Improve the performance of the security feed (#2335)

#### Changed

- UI: the reminder to use beta will be hidden for 24 hours when a user clicks the “close” button.
- BUILD: remove welcome to build message for build deprecation notice.
- UI: rename project to kapsel everywhere (except imports) (#2563)

- Collaborators page updated to new groups API (#2512)

### Anaconda repository 2.19.5 - 2016-08-04

Fixed

- Fixed generation of URLs to user notebook content server over https

### Anaconda repository 2.19.4 - 2016-07-21

Fixed

- DB: improved group migration to handle more corner cases

### Anaconda repository 2.19.2 - 2016-07-07

Fixed

- REPO: package types will correctly update from added files (#2492)

### Anaconda repository 2.19.1 - 2016-07-07

Added

- Basic Cluster Pages
- Conda Caching - Conda endpoints now use Last-Modified/if-modified-since headers

### Anaconda repository 2.18.0 - 2016-06-01

Added

- API: add an endpoint `/user/{account}/downloads/{start}--{end}` that provides an aggregated summary of download activity for an account.
- BUILD: automatically scroll to the bottom of log when new lines are appended
- REPO: improve support for R packages
- WEB: license warning message includes a link to the license configuration page

Fixed

- Users do not need to be logged into GitHub to trigger builds
- BUILD: remote address for workers will be detected correctly when running behind a proxy (#2036)
- API: LDAP users logging in for the first time via *anaconda login* are created correctly.
- PIP v8.1.2 fixed package name lookup

## Anaconda repository 2.17.0 - 2016-04-18

### Added

- Queue administration page that displays build worker details and history (#1847)
- An additional configuration file can be specified with the environment variable `ANACONDA_SERVER_CONFIG` or the command line argument `--config-file`
- Configuration files in the directory `$PREFIX/etc/anaconda-server/` will now be automatically loaded
- Better logging for login logic
- Failed logins are now recorded in the security log
- `docs.anaconda.org` content is now bundled with Anaconda Repository
- New privacy policy
- Project's API
- Show notebooks with nbpresent metadata as presentations (#1583)
- Can now view different versions of notebooks (#1764)
- Complete list of current settings on /admin/deployment (#1928)
- Decorator to validate params in a requests. (#1970)
- `api.anaconda.org` returns `conda_url`, `pypi_url` and `main_url` (#1984)
- `keyname` is displayed for superusers on the file details modal, allowing an administrator to locate a file on disk (#1985)

### Fixed

- Editing package description should not add extra whitespace (#1710)
- Starred packages owned by other users will appear on the dashboard (#1706)
- Notebook output that is too wide will display a scroll-bar (#1581)
- Cleaned up styling on CI settings page (#1713)
- Security log details modal should appear for non-administrator users
- More graceful handling of notebook rendering failure (#1548)
- GitHub OAuth flow in the user settings page (#1931)
- Changed conda install instructions to use short channel name
- Group API exceptions when viewing group members (#1959)
- Fixed error in sample enterprise config file (#1968)

### Changed

- Renamed “upvotes” to “favorites” (#1707)
- adjusted helptext for conda install from specific user channel (#1914)

### Anaconda repository 2.16.6 - 2016-03-28

- Clean up build workers that have been idle too long (#1749)
- Add SMTP support for sending email (#1747)
- Add remote address of build workers to queue status (#1743)
- Toggleable sections in build log output
- Render progress bars in build log correctly
- Fix organization page redirects
- Improve search performance for “type:pypi” query (#1808)
- Fix duplicated build item when resubmitting via CLI (#1805)
- Fix sorting of file sizes (#1783)
- Fix small issue in package files page

### Anaconda repository 2.16.0 - 2016-02-25

- Kerberos Authentication Support
- Several small fixes
- Performance improvements

### Anaconda repository 2.15.5 - 2016-02-06

- Minor fixes and improvements
- Made build a separate component from the server
- Added license code
- Improved UI
- Better support for labels
- Improved performance on user profiles / security pages

### Anaconda repository 2.14.1 - 2016-01-20

- Re-enabled the anaconda copy command
- Release renaming “channels” to “labels”
- Implemented new UI enhancements that included a new user dashboard
- Performed additional bug fixes

**Anaconda repository 2.13.1 - 2016-01-12**

- Implemented “My upvotes” page
- Added UI improvements to notebooks
- Implemented error logging fixes
- Performed additional bug fixes

**Anaconda repository 2.12.3 - 2015-12-22**

- Implemented UI Improvements to align with Anaconda branding, making A-Cloud easier to use
- Added confirmation after sending a message to support from the “contact us” page
- Removed left nav on dashboard
- Moved channel manager to the apps dropdown
- Made it easier for Academic users to access features by adding extended subdomain access for institutions
- Created a landing page for bug reporting to help A-Cloud users better self-select which repo for issue logging

**Anaconda repository 2.11 - 2015-12-09**

- Implemented UI Improvements
- Fixed minor issues
- Improved user profile
- Improved password validation
- Updated plans and pricing pages

**Anaconda repository 2.10 - 2015-11-13**

- Implemented UI Improvements

**Anaconda repository 2.9 - 2015-09-28**

- Implemented Upgrade/Setup script
- Offered free MKL Optimizations and free IOPro Addons for academic use
- Added command line scripts for user name changes
- Allowed port number configuration
- The Anaconda Server will subsequently be referred to as Anaconda repository

### Anaconda Server 2.8 - 2015-08-27

- Added support for Jupyter 4.0
- Made passwords configurable
- Supplied better error messages

### Anaconda Server 2.7 - 2015-07-28

- Implemented a new environment page
- Offered new channel features

### Anaconda Server 2.6 - 2015-07-23

- Added support for [conda noarch](#) packages.
- Exposed additional distribution attributes via the API
- Changed Anaconda Server's underlying webserver from tornado to gunicorn

### Anaconda Server 2.3 - 2015-04-24

- [Increased specificity](#) when mirroring the Anaconda repository including more robust license-blacklisting capacity and new python version-filtering capacity
- Implemented the ability to [upload iPython notebooks](#) to your Anaconda Server user account

### Anaconda Server 2.2 - 2015-04-17

- Improved the user interface for channel-based interactions, which allowed users to manage multiple package and channel interactions from a single dashboard
- Performed additional unit testing
- **Due to a lack of backwards compatibility, this release locks the following two versions of the dependency packages:**
  - flask-wtf=0.8.4
  - werkzeug=0.9.6

## Command reference

Anaconda Client is the command line interface (CLI) to Anaconda Enterprise 4 Repository. You can use it to log in, log out, manage your account, upload files, generate access tokens, view tokens and other tasks.

The full Client command reference is shown below. You can also view this command reference in a terminal window with the command `anaconda --help` or `anaconda -h`.

See also: [Anaconda.org API Reference](#).



**anaconda**

```
usage: anaconda [-h] [--disable-ssl-warnings] [--show-traceback] [-v] [-q]
               [-V] [-t TOKEN] [-s SITE]
               ...
```

Anaconda Repository command line manager

optional arguments:

```
-h, --help            show this help message and exit
-V, --version         show program's version number and exit
```

output:

```
--disable-ssl-warnings  Disable SSL warnings (default: False)
--show-traceback        Show the full traceback for chalmers user errors
                        (default: False)
-v, --verbose           print debug information to the console
-q, --quiet            Only show warnings or errors the console
```

anaconda-client options:

```
-t TOKEN, --token TOKEN
                        Authentication token to use. May be a token or a path
                        to a file containing a token
-s SITE, --site SITE   select the anaconda-client site to use
```

Commands:

```
auth                  Manage Authorization Tokens
label                 Manage your Anaconda Repository labels
channel               [DEPRECATED in favor of label] Manage your Anaconda
                        Repository channels
config                Anaconda client configuration
copy                  Copy packages from one account to another
download              Download notebooks from Anaconda Repository
groups                Manage Groups
login                 Authenticate a user
logout                Log out from Anaconda Repository
notebook              [DEPRECATED in favor of upload/download] Interact
                        with notebooks in anaconda.org
package               Package utils
remove                Remove an object from Anaconda Repository. Must refer to
                        the formal package name as it appears in the URL of
                        the package. Also use anaconda show <USERNAME> to see
                        list of package names. Example: anaconda remove
                        continuumio/empty-example-notebook
search                Search Anaconda Repository
show                  Show information about an object
upload                Upload packages to Anaconda Repository
whoami                Print the information of the current user
build                 Anaconda build client for continuous integration,
                        testing and building packages
```

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worker	Anaconda build client <b>for</b> continuous integration, testing <b>and</b> building packages
--------	---

## Authentication

### auth

```
usage: anaconda auth [-h] [-n NAME] [-o ORGANIZATION]
                    [--strength {strong,weak}] [--strong] [-w] [--url URL]
                    [--max-age MAX_AGE] [-s SCOPES] [--out OUT]
                    (-x | -l | -r NAME [NAME ...] | -c | -i)
```

#### Manage Authorization Tokens

##### optional arguments:

```
-h, --help            show this help message and exit
-n NAME, --name NAME  A unique name so you can identify this token later.
                    View your tokens at anaconda.org/settings/access
-o ORGANIZATION, --org ORGANIZATION, --organization ORGANIZATION
                    Set the token owner (must be an organization)
```

##### token creation arguments:

These arguments are only valid with the `--create` action

```
--strength {strong,weak}
--strong            Create a longer token (default)
-w, --weak          Create a shorter token
--url URL           The url of the application that will use this token
--max-age MAX_AGE   The maximum age in seconds that this token will be
                    valid for
-s SCOPES, --scopes SCOPES
                    Scopes for token. For example if you want to limit
                    this token to conda downloads only you would use
                    --scopes "repo conda:download"
--out OUT
```

##### actions:

```
-x, --list-scopes    list all authentication scopes
-l, --list           list all user authentication tokens
-r NAME [NAME ...], --remove NAME [NAME ...]
                    remove authentication tokens
-c, --create         Create an authentication token
-i, --info, --current-info
                    Show information about the current authentication
                    token
```

#### Manage Authentication tokens

For more information, see the [Token](#) glossary entry.

## login

```
usage: anaconda login [-h] [--hostname HOSTNAME] [--username LOGIN_USERNAME]
                    [--password LOGIN_PASSWORD]

Authenticate a user

optional arguments:
  -h, --help            show this help message and exit
  --hostname HOSTNAME  Specify the host name of this login, this should be
                        unique (default: hq-phone-114.corp.continuum.io)
  --username LOGIN_USERNAME
                        Specify your username. If this is not given, you will
                        be prompted
  --password LOGIN_PASSWORD
                        Specify your password. If this is not given, you will
                        be prompted
```

## logout

```
usage: anaconda logout [-h]

Log out from Anaconda Repository

optional arguments:
  -h, --help  show this help message and exit
```

## whoami

```
usage: anaconda whoami [-h]

Print the information of the current user

optional arguments:
  -h, --help  show this help message and exit
```

## Informational

### show

```
usage: anaconda show [-h] spec

Show information about an object

positional arguments:
  spec          Package written as USER[/PACKAGE[/VERSION[/FILE]]]
```

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optional arguments:

`-h, --help` show this help message **and** exitShow information about an **object**

EXAMPLE:

```

anaconda show anaconda
anaconda show anaconda/python
anaconda show anaconda/python/2.7.5
anaconda show anaconda/python/2.7.5/linux-64/python-2.7.5-0.tar.bz2

```

## search

```

usage: anaconda search [-h] [-t {conda,pypi}]
                        [-p {osx-32,osx-64,win-32,win-64,linux-32,linux-64,linux-armv6l,
↳ linux-armv7l,linux-ppc64le,noarch}]
                        name

```

Search Anaconda Repository

positional arguments:

`name` Search string

optional arguments:

```

-h, --help            show this help message and exit
-t {conda,pypi}, --package-type {conda,pypi}
                        only search for packages of this type
-p {osx-32,osx-64,win-32,win-64,linux-32,linux-64,linux-armv6l,linux-armv7l,linux-
↳ ppc64le,noarch}, --platform {osx-32,osx-64,win-32,win-64,linux-32,linux-64,linux-
↳ armv6l,linux-armv7l,linux-ppc64le,noarch}
                        only search for packages of the chosen platform

```

Search Anaconda Repository **for** packages

## config

```

usage: anaconda config [-h] [--type TYPE] [--set name value] [--get name]
                       [--remove REMOVE] [--show] [-f] [--show-sources] [-u]
                       [-s]

```

Anaconda client configuration

optional arguments:

```

-h, --help            show this help message and exit
--type TYPE           The type of the values in the set commands

```

actions:

`--set name value` sets a new variable: name value

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```
--get name          get value: name
--remove REMOVE     removes a variable
--show              show all variables
-f, --files          show the config file names
--show-sources       Display all identified config sources
```

**location:**

```
-u, --user           set a variable for this user
-s, --system, --site set a variable for all users on this machine
```

**anaconda-client configuration**

Get, Set, Remove or Show the anaconda-client configuration.

**##### anaconda-client sites**

anaconda-client sites are a mechanism to allow users to quickly switch between Anaconda Repository instances. This can be used with the on-site Anaconda Enterprise.

\* Invoke the anaconda command with the ``-s/--site`` option like this:

```
anaconda -s site_name whoami
```

\* Set a site as the default:

```
anaconda config --set default_site site_name
anaconda whoami
```

**##### Add an anaconda-client site**

After installing Anaconda Enterprise you can add a site named `**site_name**` like this:

```
anaconda config --set sites.site_name.url "http://<anaconda-enterprise-ip>:<port>/api
↪"
anaconda config --set default_site site_name
```

**##### Site Options VS Global Options**

All options can be set as global options that affect all sites or site options that affect only one site.

By default, options are set globally:

```
anaconda config --set OPTION VALUE
```

If you want the option to be limited to a single site, prefix the option with ``sites.site_name``:

```
anaconda config --set sites.site_name.OPTION VALUE
```

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## ##### Common anaconda-client configuration options

- \* ``url``: Set the anaconda api url (default: `https://api.anaconda.org`)
- \* ``ssl_verify``: Perform ssl validation on the https requests.  
`ssl_verify` may be ``True``, ``False`` or a path to a root CA pem file.

## ##### Toggle auto\_register when doing anaconda upload

The default is yes, automatically create a new package when uploading.  
 If no, then an upload will fail if the package name does not already exist on the server.

```
anaconda config --set auto_register yes|no
```

## Package management

### package

```
usage: anaconda package [-h]
                        (--add-collaborator user | --list-collaborators | --create)
                        [--summary SUMMARY] [--license LICENSE]
                        [--license-url LICENSE_URL] [--personal | --private]
                        USER/PACKAGE
```

Anaconda Repository package utilities

positional arguments:

USER/PACKAGE            Package to operate on

optional arguments:

-h, --help            show this help message **and** exit

actions:

--add-collaborator user            username of the collaborator you want to add  
 --list-collaborators    **list all** of the collaborators **in** a package  
 --create                Create a package

metadata arguments:

--summary SUMMARY        Set the package short summary  
 --license LICENSE        Set the package license  
 --license-url LICENSE\_URL        Set the package license url

privacy:

--personal            Set the package access to personal This package will  
                          be available only on your personal registries  
 --private             Set the package access to private This package will  
                          require authorized **and** authenticated access to install

## upload

```
usage: anaconda upload [-h] [-c CHANNELS] [-l LABELS] [--no-progress]
                        [-u USER] [--all] [-p PACKAGE] [-v VERSION]
                        [-s SUMMARY] [-t PACKAGE_TYPE] [-d DESCRIPTION]
                        [--thumbnail THUMBNAIL] [--private]
                        [--no-register | --register] [--build-id BUILD_ID]
                        [-i | -f | --force]
                        files [files ...]
```

Upload packages to Anaconda Repository

positional arguments:

files                      Distributions to upload

optional arguments:

-h, --help                      show this help message and exit

-c CHANNELS, --channel CHANNELS  
[DEPRECATED] Add this file to a specific channel.  
**Warning:** if the file channels do not include "main",  
the file will not show up in your user channel

-l LABELS, --label LABELS  
Add this file to a specific label. **Warning:** if the  
file labels do not include "main", the file will not  
show up in your user label

--no-progress                  Don't show upload progress

-u USER, --user USER          User account or Organization, defaults to the current  
user

--all                          Use conda convert to generate packages for all  
platforms and upload them

--no-register                  Don't create a new package namespace if it does not  
exist

--register                    Create a new package namespace if it does not exist

--build-id BUILD\_ID           Anaconda Repository Build ID (internal only)

-i, --interactive              Run an interactive prompt if any packages are missing

-f, --fail                    Fail if a package or release does not exist (default)

--force                       Force a package upload regardless of errors

metadata options:

-p PACKAGE, --package PACKAGE  
Defaults to the package name in the uploaded file

-v VERSION, --version VERSION  
Defaults to the package version in the uploaded file

-s SUMMARY, --summary SUMMARY  
Set the summary of the package

-t PACKAGE\_TYPE, --package-type PACKAGE\_TYPE  
Set the package type [ipynb, env]. Defaults to  
autodetect

-d DESCRIPTION, --description DESCRIPTION  
description of the file(s)

--thumbnail THUMBNAIL  
Notebook's thumbnail image

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`--private` Create the package **with** private access

```
anaconda upload CONDA_PACKAGE_1.bz2
anaconda upload notebook.ipynb
anaconda upload environment.yml
```

See also:

- *Uploading a conda package.*
- *Uploading PyPI packages.*

## download

usage: `anaconda download [-h] [-f] [-o OUTPUT] handle`

Download packages **from** **Anaconda** Repository

positional arguments:

`handle` user/notebook

optional arguments:

`-h, --help` show this help message **and** exit  
`-f, --force` Overwrite  
`-o OUTPUT, --output OUTPUT`  
Download **as**

Usage:

```
anaconda download notebook
anaconda download user/notebook
```

## remove

usage: `anaconda remove [-h] [-f] specs [specs ...]`

Remove an **object from** **Anaconda** Repository

example::

```
anaconda remove sean/meta/1.2.0/meta.tar.gz
```

positional arguments:

`specs` Package written **as** `<user>[/<package>[/<version>[/<filename>]]]`

optional arguments:

`-h, --help` show this help message **and** exit  
`-f, --force` Do **not** prompt removal



## groups

```
usage: anaconda groups [-h] [--perms {read,write,admin}]
                        {add,show,members,add_member,remove_member,packages,add_package,
↳remove_package}
                        spec

positional arguments:
  {add,show,members,add_member,remove_member,packages,add_package,remove_package}
                        The group management command to execute
  spec                  <organization>/<group_name>/<member>

optional arguments:
  -h, --help            show this help message and exit
  --perms {read,write,admin}
                        The permission the group should provide
```

## label

```
usage: anaconda label [-h] [-o ORGANIZATION]
                      (--copy LABEL LABEL | --list | --show LABEL | --lock LABEL | --
↳unlock LABEL | --remove LABEL)
```

Manage your Anaconda Repository channels

```
optional arguments:
  -h, --help            show this help message and exit
  -o ORGANIZATION, --organization ORGANIZATION
                        Manage an organizations labels
  --copy LABEL LABEL
  --list                list all labels for a user
  --show LABEL          Show all of the files in a label
  --lock LABEL          Lock a label
  --unlock LABEL        Unlock a label
  --remove LABEL        Remove a label
```

## copy

```
usage: anaconda copy [-h] [--to-owner TO_OWNER] [--from-label FROM_LABEL]
                     [--to-label TO_LABEL] [--replace | --update]
                     spec
```

Copy packages from one account to another

```
positional arguments:
  spec                  Package - written as user/package/version[/filename]
                        If filename is not given, copy all files in the
                        version
```

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```
optional arguments:
  -h, --help            show this help message and exit
  --to-owner TO_OWNER   User account to copy package to (default: your
                        account)
  --from-label FROM_LABEL
                        Label to copy packages from
  --to-label TO_LABEL   Label to put all packages into
  --replace             Overwrite destination package metadata
  --update             Update missing data in destination package metadata
```

## move

```
usage: anaconda move [-h] [--from-label FROM_LABEL] [--to-label TO_LABEL] spec
```

Move packages between labels.

```
positional arguments:
  spec                Package - written as user/package/version[/filename]
                        If filename is not given, move all files in the
                        version
```

```
optional arguments:
  -h, --help            show this help message and exit
  --from-label FROM_LABEL
                        Label to move packages from
  --to-label TO_LABEL   Label to move packages to
```

## Anaconda Enterprise 4 Notebooks

*Empower the Data Science Team with cross-collaboration*

AEN is a browser-based Python data analysis environment and visualization tool from Anaconda®. AEN is a ready-to-use, powerful, fully-configured data analytics environment all in a secure, governed environment.

AEN allows data science team members to create and share private notebooks, manage access, control notebook revisions, compare and identify differences across notebook versions, search notebooks for keywords and packages, use enhanced collaborative notebook features—including revision control and locking—and to access an on-premises and/or cloud collaborative notebook server.

The current version of AEN is 4.3.3, released on November 5th, 2019.

## User guide

AEN's browser-based management of private packages, notebooks, and environments allows data science team members to:

- Create, share and manage private notebooks.
- Control notebook revisions.
- Compare and identify differences across notebook versions.
- Search notebooks for keywords and packages.
- Use enhanced collaborative notebook features including revision control and locking.
- Access on-premises and/or cloud-based collaborative notebook servers.
- Utilize multiple language kernels like Python and R language in the same notebook.
- Create new notebook environments on the fly without leaving the notebook or entering commands in a prompt.
- Publish results to business stakeholders as interactive visualizations and presentations.

To quickly get up and running with AEN, see [Getting started](#).

Download the [Cheat sheet](#) for easy reference.

## Concepts

### Projects

AEN users interact with the system predominantly through projects.

A project is a set of conda environments, Jupyter Notebooks, and other files.

Each project has a project drive that all team members can access. The size of the drive is not limited by AEN. Contact your system administrator if you find you do not have sufficient space.

Each project has a separate project directory on the project drive.

The project directory is a directory for project files and data that is separate from the project owner's and team members' home directories, so that team members can share and have equal access.

The path to your project directory is `/projects/<project_owner>/<project_name>`.

For administrative information about projects, directories, and permissions, see [Projects and permissions](#).

### Team collaboration

Teams collaborate in AEN using projects. Projects allow a team to easily come together by sharing the resources, applications, and environments that are necessary to collaborate effectively.

The AEN project owner and any team members connected to their project will have access to the same:

- Shared files and home directories.
- Shared Python and R environments.
- Shared nodes and hardware.
- Common applications.
- Web user interface.

For more information, see [Working with projects](#).

### Access control

AEN access controls allow you to:

- Add and remove project access for new team members.
- Limit the access to specific folders and files to members of your project team.
- Use permissions to extend execute access to team members. By default, all of the team members on a project have read and write access to all project assets.

Access control is performed from each project's Workbench application.

For more information, see [Controlling access to your project](#).

### Sharing projects

AEN supports both public and private sharing.

A project can be “public,” which means that anyone with access to the system can view the project assets.

Any content placed in the `public` folder in a project is publicly accessible using its URL.

A project can be “private,” which means that only the project owner and team members can view the project assets.

You can also [limit who can access specific files](#).

### Sharing Jupyter Notebooks

In addition to general project sharing capabilities, you can also publish Jupyter Notebooks to Anaconda Repository. This automatically versions the notebook and allows you to define who can view the notebook.

### Project tags

Tags are used to:

- Group similar or related projects.
- Identify your project so that it is easier to find.
- Let others know about your project.

You can [add and remove tags](#) for any project that you have access to.

### Getting started

This section contains information and tasks for first-time AEN users.

## 1. Download the AEN cheat sheet

Before you start, download and print the [AEN cheat sheet](#) for easy reference.

## 2. Access your user home page

After your administrator has set up your server and new Anaconda account, you will receive a welcome email.

1. Click the link in the email to open the AEN login page.

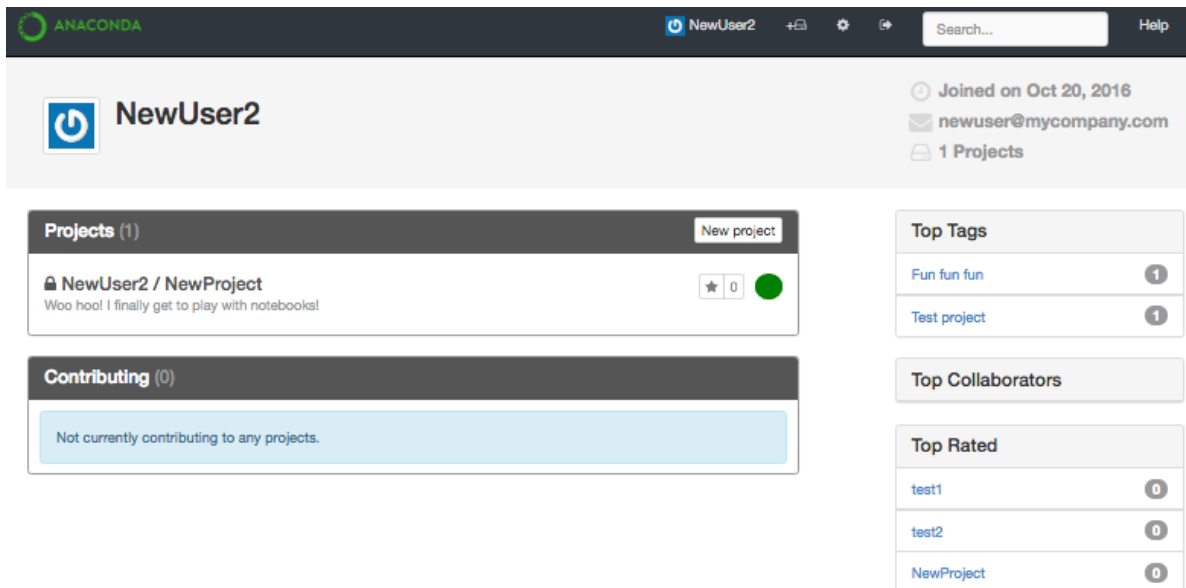
NOTE: Use the domain name and not the IP address when you connect to AEN. Using the IP address can cause TLS and security certificate errors.

2. Enter your AEN account username and password.

NOTE: Some administrators allow you to create your own account. If your administrator has allowed this, in the create a new account section, create your own username and password.

3. Click the Login button.

Your user home page, where all good things happen, is displayed:



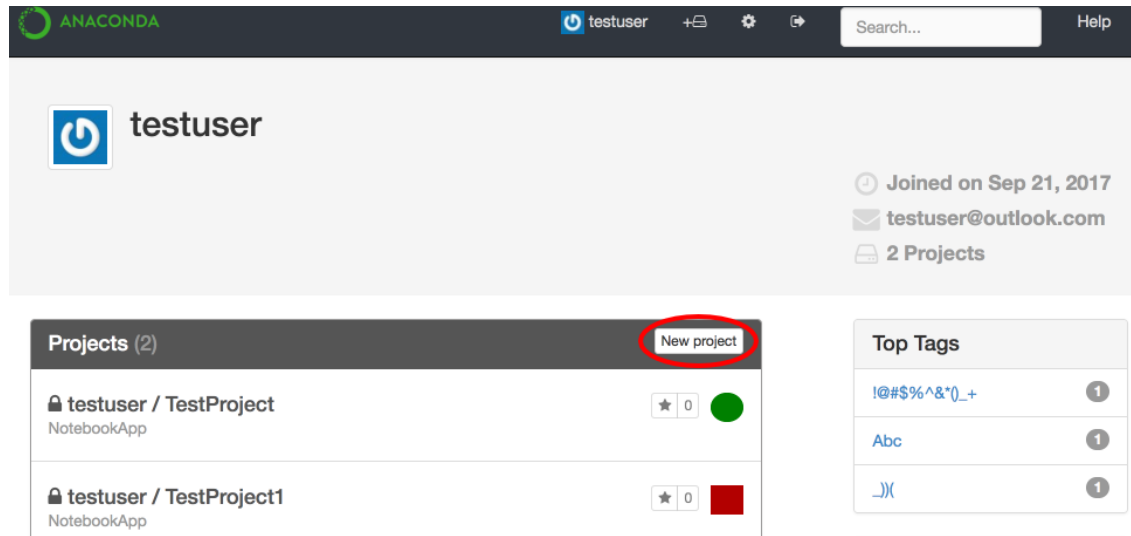
## 3. Create a new project

1. There are 2 ways to create a new project in AEN:

- On the right side of the AEN task bar, click on the New Project icon:



- On your home page, click the New project button:



2. On the Project page that is displayed, type a name for your project, such as “Testing.”

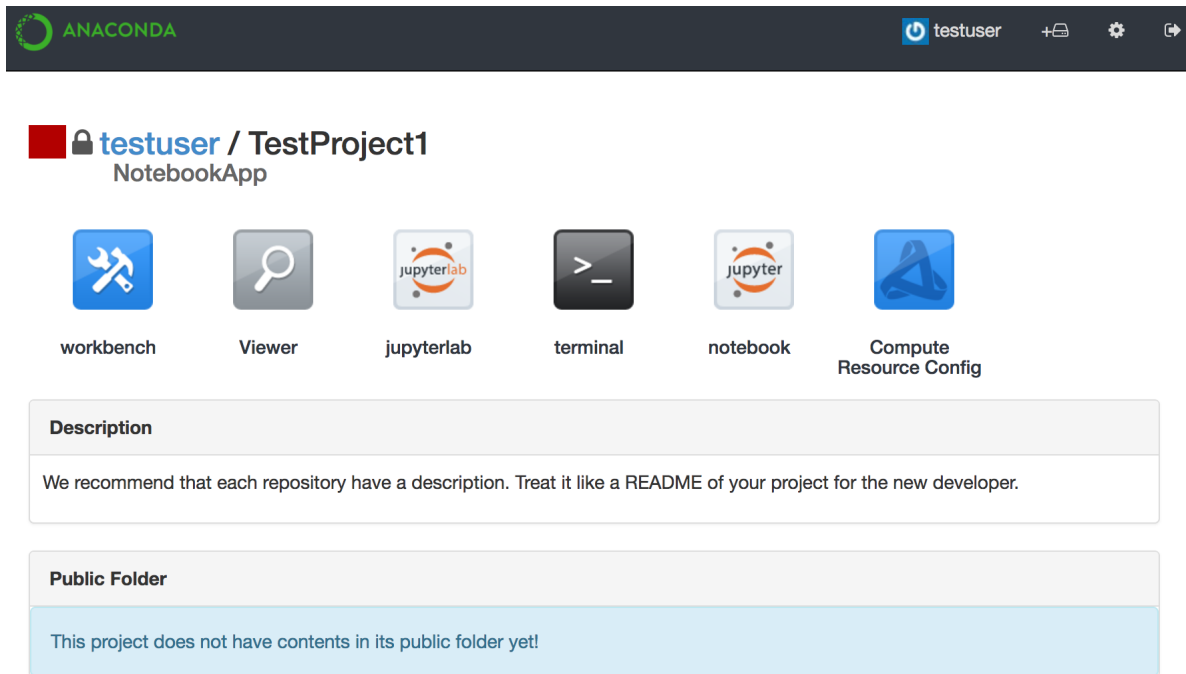
 The screenshot shows the 'New Project' form. At the top, there is a header with the Anaconda logo and the user 'testuser'. The main heading is 'New Project' with the subtext 'Create your project here!'. The form includes a 'Project Name' input field, a note that 'Project names must start with a letter and contain only alphanumeric characters.', a 'Summary' input field, and two radio button options: 'Public' (with the description 'Anyone can see this project. Collaborators have write access') and 'Private' (with the description 'No one can see this project except collaborators.'). A 'Next' button is located at the bottom right of the form.

3. Type a summary of the project so you can recognize it later.
4. Select whether your project will be public or private.
5. Verify that the default data center is selected.

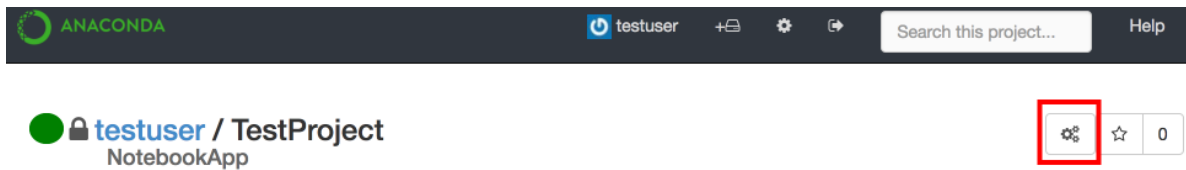
**TIP:** You can update the project summary and description at any time from the **Project** menu in the Project Settings. To return to your project at any time, click the project name.

6. Click the Next button.

Your new project's home page is displayed:



7. To change the project settings, click the Project Settings icon on at the top right.



8. Modify the summary or add a description of the project.

TIP: A project description is recommended, and may be written in Markdown syntax (plain text valid Markdown).

To see how Markdown will be displayed, in the description area, click the **Preview** tab.

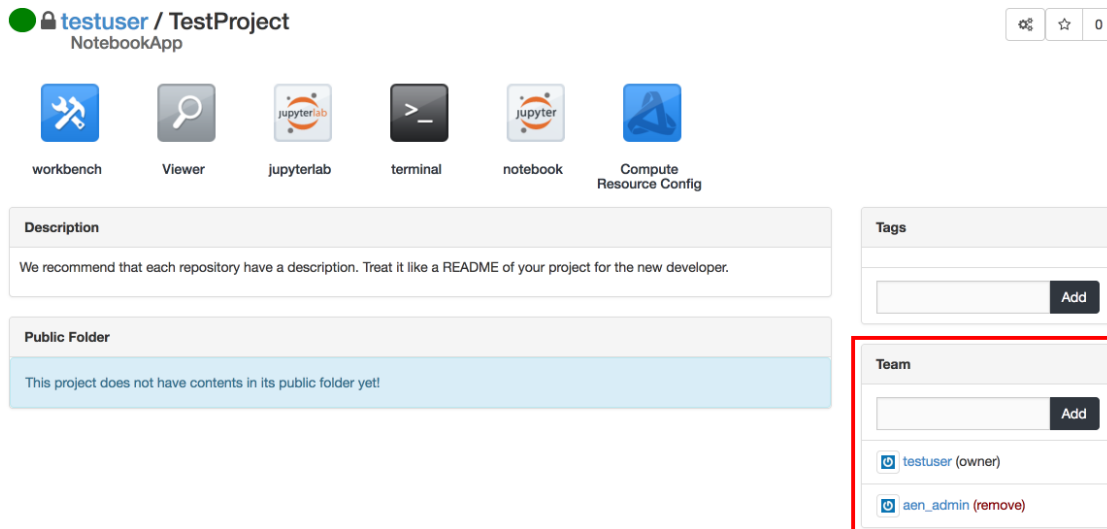
#### 4. Add collaborators

You can add team members to your project as collaborators. Adding team members to your projects makes collaboration easy because they have full access to the project's applications, files and services.

When you add team members, their home directory is mounted in the project. There is no need to download and email data or scripts—team members can work on the same files in the same environment in which you are working.

To add collaborators to your project:

1. From your project home page, in the Team box, begin typing a teammate's username.
2. In the list that is displayed, select the teammate's username.
3. Click the Add button.



testuser / TestProject  
NotebookApp

workbench Viewer jupyterlab terminal notebook Compute Resource Config

**Description**  
We recommend that each repository have a description. Treat it like a README of your project for the new developer.

**Public Folder**  
This project does not have contents in its public folder yet!

**Tags**  
Add

**Team**  
Add

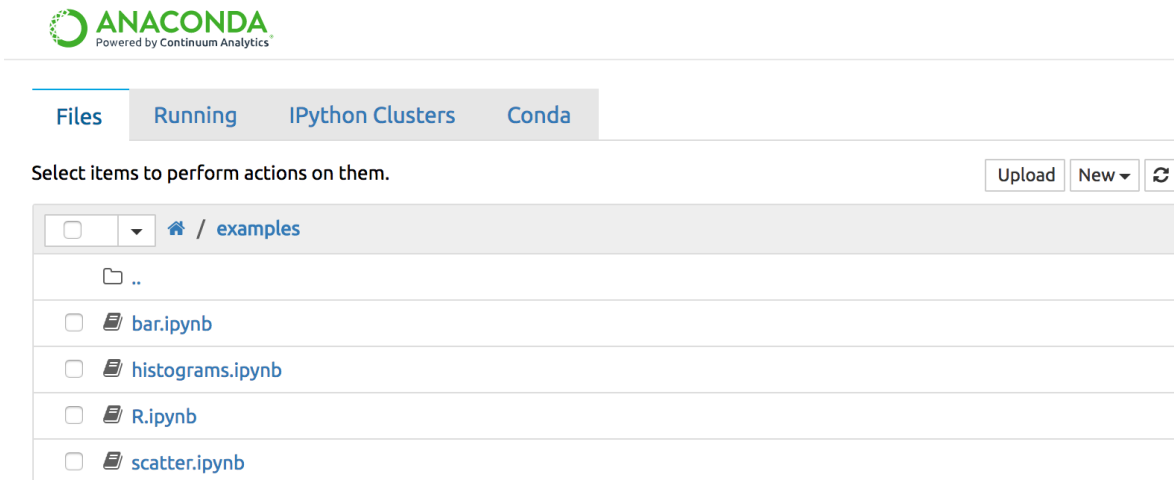
testuser (owner)  
aen\_admin (remove)

1. Repeat these steps for each team member you want to add as a collaborator.

TIP: You can add or remove team members any time from the **Team** menu in Project Settings. You can also modify a team member's read, write or execute permissions at any time from the *Using Workbench*.

## 5a. Open an example notebook, OR

1. From your project home page, click the Jupyter Notebooks icon.
2. On the File View page, click the Examples folder.



ANACONDA  
Powered by Continuum Analytics

Files Running IPython Clusters Conda

Select items to perform actions on them. Upload New ↕

🏠 / examples

..

bar.ipynb

histograms.ipynb

R.ipynb

scatter.ipynb

3. Select any of the example notebooks.
4. To see the default results of the formulas used in the displayed notebook, in the **Cell** menu, select Run All.
5. To experiment with changing the notebook, edit any of the formulas in the notebook.
6. In the **Cell** menu, select Run All.

Any differences resulting from your edits are displayed.



## 5b. Create a new environment and notebook

If you are already familiar with creating notebooks, you can easily set up a new environment with the programs you need—like SciPy and NumPy—then open a new notebook and make your edits.

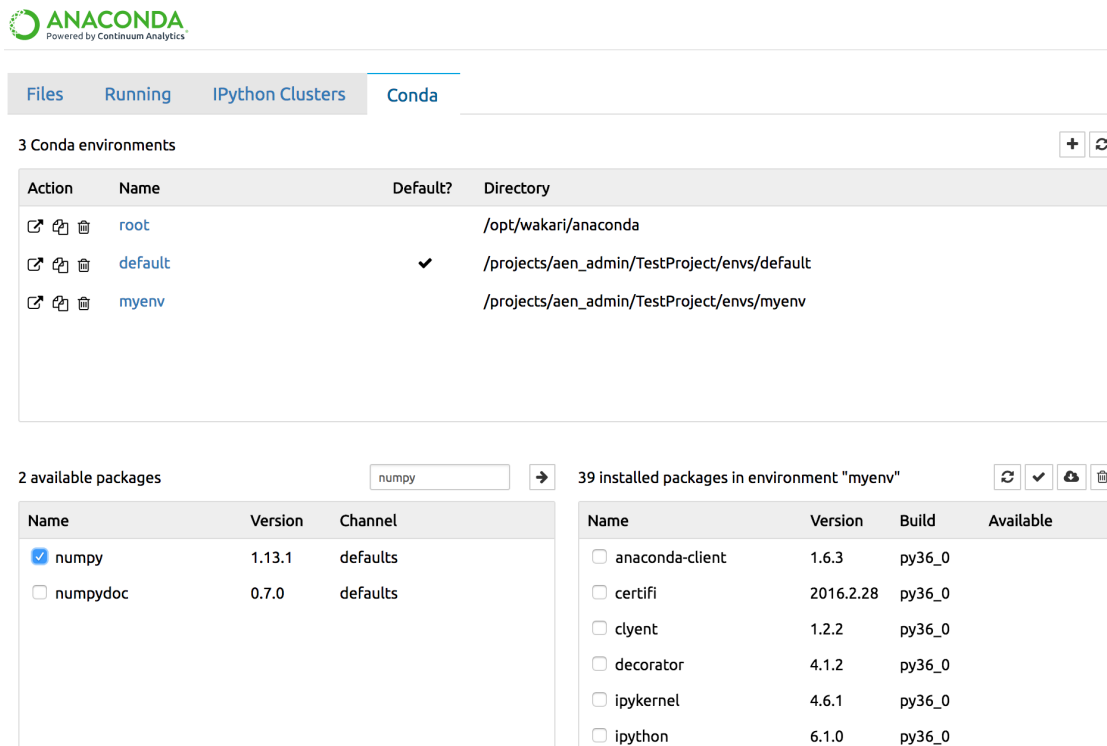
To create a new environment:

1. From your project home page, click the Jupyter Notebooks icon.
2. On the File View page, click the **Conda** tab.
3. To add a new conda environment, on the top right of the **Conda** tab, click the + icon.
4. Type a name for your environment.
5. Select Python 2, Python 3 or R language kernel.
6. Click the Create button.
7. To activate your new environment, click its name.

The packages that are available and installed in your new environment are displayed.

### Adding SciPy and Numpy packages

1. In the available packages section, search for the package name `numpy`—all lower case.
2. In the results section, next to `numpy`, select the checkbox.



The screenshot shows the Anaconda web interface. At the top, the 'Conda' tab is selected. Below the tabs, there are three sections:

- 3 Conda environments:** A table listing environments: 'root' (default), 'default' (checked), and 'myenv'.
- 2 available packages:** A search bar contains 'numpy'. Below it, a table lists available packages: 'numpy' (checked) and 'numpydoc'.
- 39 installed packages in environment "myenv":** A table listing installed packages like 'anaconda-client', 'certifi', 'clyent', 'decorator', 'ipykernel', and 'ipython'.

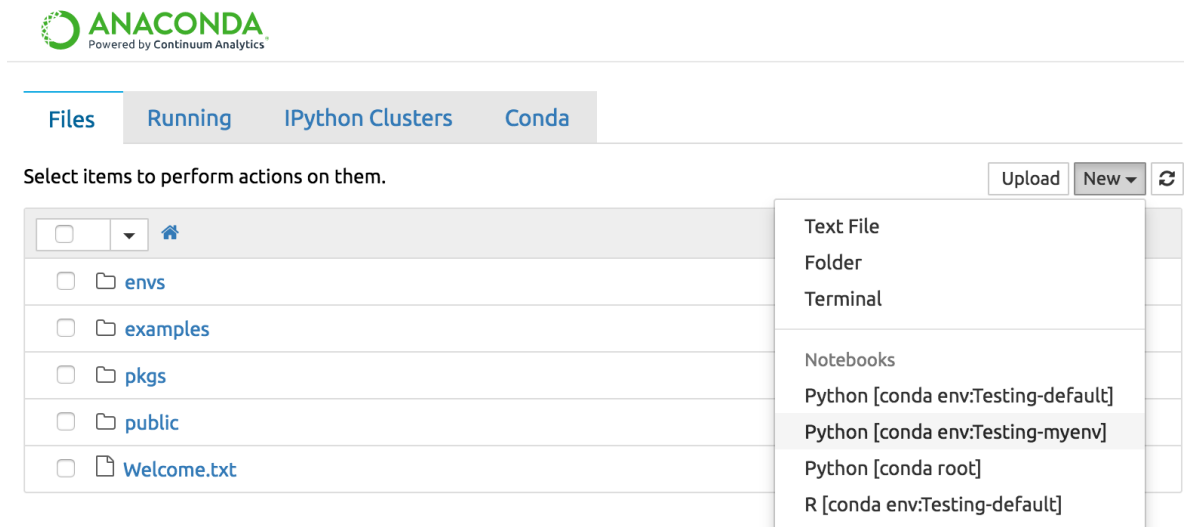
1. Click the Install icon.
2. To confirm your installation, click the Install button.

Numpy is displayed in the installed packages section—if not, click the Refresh button. Repeat these steps to install the SciPy package—searching for `scipy` in step 1.

TIP: You can return to this screen at any time to add additional packages to this environment.

### Creating a new notebook in your environment

1. From the AEN homepage, click the **Files** tab.
2. On the top right of the **Files** tab, click the New button.
3. Under Notebooks, select the Python environment with the name you entered while *creating a new environment*.



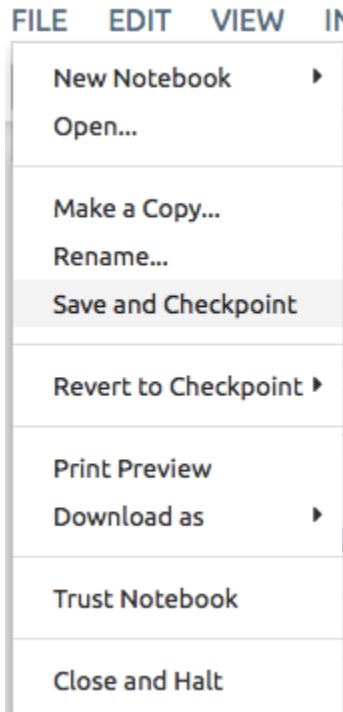
NOTE: If you do not see your new environment listed under Notebooks, next to the New button, click the Refresh button.

A new locked notebook is displayed. Paste or write some code to execute when you are ready.

### 6. Create checkpoints for version control

Whether you are exploring an existing notebook, or creating a new one, you can easily create checkpoints, return to an earlier version, compare two different versions and save them for reference.

To create a checkpoint, in the **File** menu, select Save and Checkpoint:



To revert your notebook to a previous checkpoint, in the **File** menu, select Revert to Checkpoint.

NOTE: For more information about revision control features, including creating commits and comparing differences, see [Using the Revision Control Mechanism extension](#).

## 7. Share your notebook and environment with others

See [Sharing projects and notebooks](#).

## 8. See what to do next

Now that you have completed the Getting Started guide, you are ready to move on to [basic tasks](#) and [advanced tasks](#).

### Basic tasks

This section contains information and tasks that use the web browser to manage projects and is best-suited for any beginning AEN user:

### Working with projects

Almost everything in AEN starts by opening an existing project or creating a new one.

After that, you can set up a special environment with the packages you want, set their access permissions and modify your project settings.

### Searching for a project or file

To search for projects and files, use the Search box in the AEN navigation bar. The search provides different results depending on which page you search from:

- On a project home page, search results include any files that match your search criteria within the current project.
- On any other AEN page, search results include any files that match your search criteria within all projects.

**TIP:** Your search results include only files and projects that you can view: public projects, and private projects to which you have a minimum of view access.

### Types of files searched

The following types of files are included in search results:

- `.py`—Python source files.
- `.ipynb`—IPython/Jupyter notebooks.
- `.txt`—plain text files.
- `.md`—Markdown files.

### Search indexing

Files that are modified while a project is running are automatically re-indexed shortly after the files are modified. If you create or update a large number of files—such as cloning a git repository or copying a directory—search results may take several minutes to update.

Files that are modified while the project is not running are re-indexed only after the project is started.

## Using search constructs

You can use the following search constructs:

- Ordinary words will match the full-text contents of any file.
- Wildcards are permitted.  
EXAMPLE: `John*` will match John and Johnny. These are glob patterns and are similar to their usage in the command line.
- Combine queries using AND or OR, and group them using parentheses ().

Regular expression patterns can be embedded in the query string by wrapping them in forward-slashes (/):

```
name:/joh?n(ath[oa]n)/
```

The supported regular expression syntax is explained in [the Elasticsearch reference](#).

NOTE: Wildcards apply inside a regular expression. A query string such as `/.*n/` would force the search to visit every term in the index.

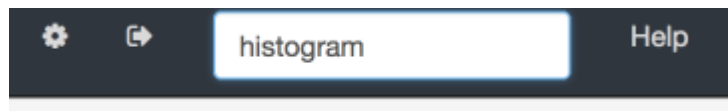
## Searching metadata fields

You can search in specific metadata fields:

- `imports:name`—matches files that import the module name.
- `uses:name`—matches files that reference the identifier name. Referenced names include any functions and globals imported from other modules, as well as the names of any methods invoked on any object.
- `defines:name`—matches files that define the identifier name. Defined names include functions defined at global scope, class names, and method names within classes.
- `acl:user`—matches files in which the named user has read access or higher.

## Searching a project

1. In the Search box, type a string of text:























TIP: Search by glob patterns, which are similar to file matching in the command line.

EXAMPLE: To find projects in the test family that are numbered from 00 to 99, search for `Test-??`. To find all projects whose name ends with “Stats,” search for `*Stats`.

2. Press Enter.
3. In the search results, click the plus + icon above a project name to show a list of matching files in the selected project:

Projects matching 'iris' ([save this search](#))

	 <b>testuser / TestProject</b> NotebookApp	 0 
	 <b>AnacondaEN / AEN11_0</b> No Summary	 0 
	 <b>Rida / ABC</b> No Summary	 0 
	 <b>Rida / Testing</b> No Summary	 0 
	 <b>testuser / TestProject1</b> NotebookApp	 0 

TIP: Click the project name to open the project's home page.

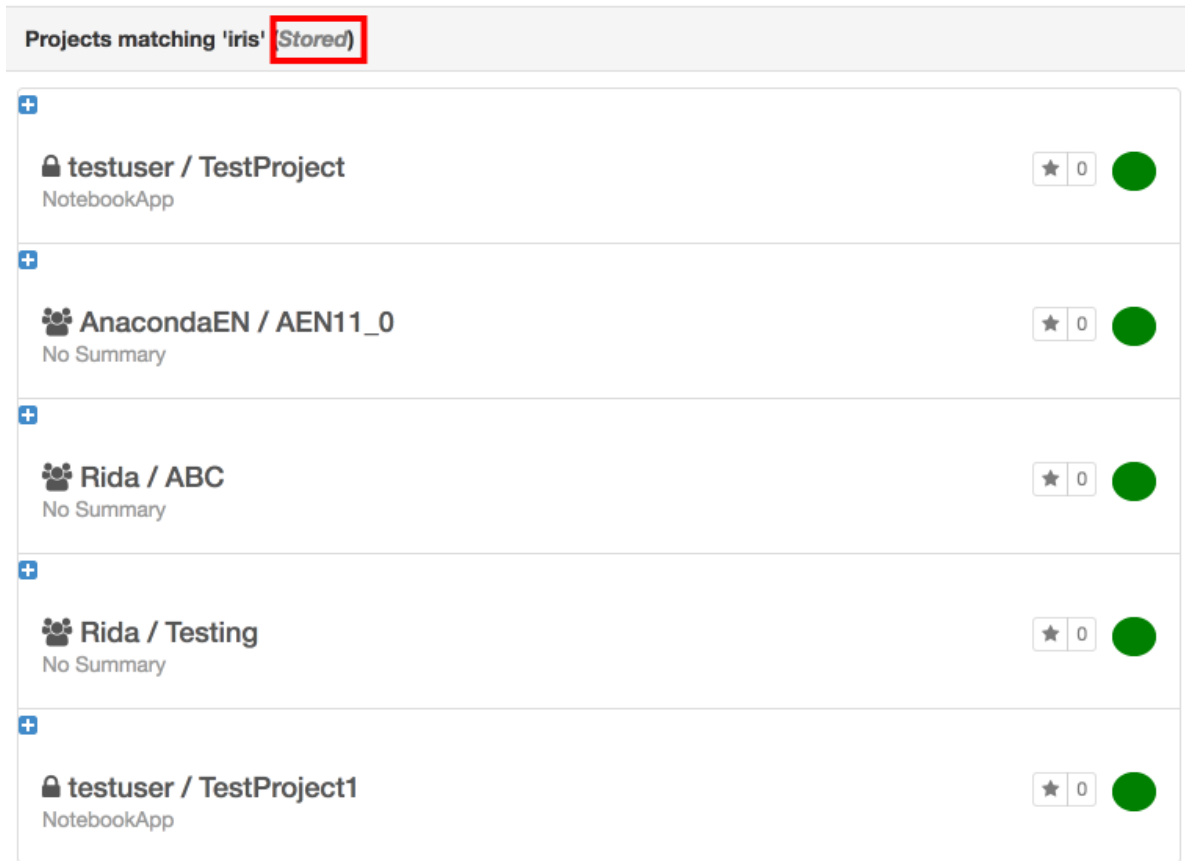
4. To view a file, click its file name in the matching files list:

Found 1 files matching 'histogram' in user02/Public\_project. ([save this search](#))

File	Relevance
<a href="#">/examples/histograms.ipynb</a>	42

## Saving a search

1. At the top of the search results, click Save this search:



The “save this search” text changes to “stored” and your search is saved. Your saved searches are listed on your home page.

## Removing a saved search

On your home page, in the Saved searches section, click X next the saved search that you want to remove:

Projects (2)

New project

testuser / TestProject

NotebookApp

★ 0

testuser / TestProject1

NotebookApp

★ 0

Contributing (0)

Not currently contributing to any projects.

Top Tags

!@#\$\$%^&*()_+~	1
Abc	1
_))((	1

Top Collaborators

aen_admin	1
-----------	---

Top Rated

Project	1
Testing	0
AEN11_0	0
ABC	0
TestProject	0

Saved searches

iris	✕
------	---

## Adding and removing team members on a project

1. On the project home page, click the Project Settings icon to open the Project Settings page.

ANACONDA

testuser

+

⚙

↗

Search this project...

Help

testuser / TestProject

NotebookApp

⚙ ☆ 0

2. In the **Settings** menu, select Team.

testuser / TestProject

NotebookApp

Settings

Project

Team

Admin

Info

Team

Add

Team members will be granted full access to your applications, files, and services.

aen\_admin (remove)



### Adding a team member

1. In the username box, type in the first few letters of the username for the team member you want to add to the project.
2. In the list of usernames that displays, click the user to add.
3. Click the Add button.

### Removing a team member

Click the red Remove link next to the name of the user you want to remove from the project.

### Controlling access to your project

#### Controlling team member access

By default, all of the team members on a project have read and write access permissions for all project assets.

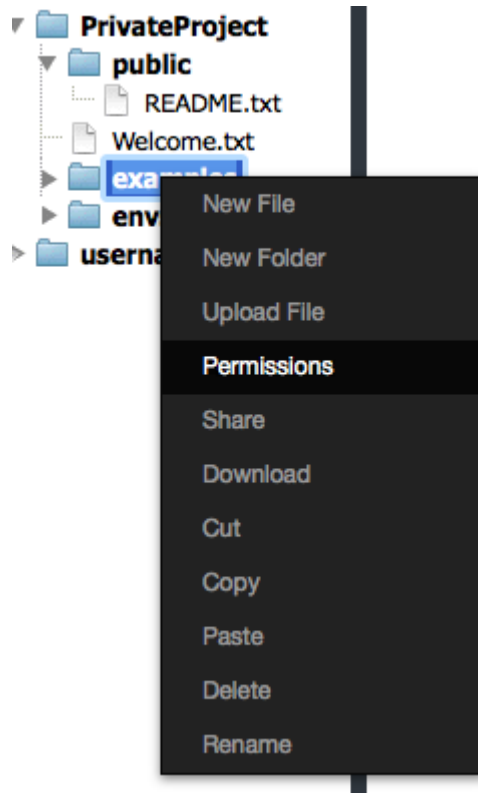
The available permissions are read, write and execute. If you remove all individual or group permissions for a project asset, team members will not be able to access that asset.

To change a project's permissions:

1. Open the project's home page.
2. Click the Workbench icon.
3. In the Workbench app, right-click the file or folder you want to limit access to.

NOTE: When you change a folder's permissions, the permissions of files and folders inside it do not change. You may change the permissions of those files and folders manually.

4. In the menu that displays, select Permissions:



A list of owners and team members who have access to your project is displayed.

5. Find the team member you want to change access for:

Permissions for examples

Owner 
Group

Who	Type	Read	Write	Execute
owner		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
group		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
others		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mask		true	true	true
<input type="text" value="username"/>	User <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username"/>	Group <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	User <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	Group <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	User <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	Group <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Next to the team member's name, select or deselect the permissions for that user.

NOTE: You can add a team member and set their access at the same time by typing their name in a username box, setting their permissions, and then clicking the Add button.

- Click the Submit button.

The selected permissions are added, and the deselected permissions are removed.

NOTE: If a team member is in the Workbench application when you give them access, they must refresh their browser window to see their current permissions.

### Controlling non-team member access

You can choose to grant file or folder access to someone who is not part of the project team, as long as that person has an AEN account.

Sharing with individuals outside the team is a four step process:

- Copy or move the file or folder to your home directory.*
- Give the user read and execute access to your home directory.*
- Add the user to the file's permissions.*

4. *Have the user add your directory to their workbench.*

### Copying a file or folder to your home directory

Your home directory is displayed at the bottom of the File Manager pane in the Workbench.

To protect the other files and folders in your home directory—those you are not providing permissions to a user to access—we recommended that you:

1. Create a sub-folder.
2. Rename the folder with the name of the user you are granting access to.
3. Copy or move the file you want to grant permissions for to the renamed folder.

The file is copied or moved to the new location and is ready for you to update the file permissions.

### Granting file access

You must select read and execute access for a user to be able to view, but not edit, the files or folders.

1. Right-click the name of the file or folder you are granting access to.
2. In the menu that is displayed, select Permissions.
3. Click the Add button.
4. Type the username of the user to whom you are granting file access and press Enter.

**TIP:** If you grant access to a folder instead of a specific file, you only have to set permissions the first time you share the folder with each user, unless you need to update the permissions.

### Adding file permissions for a user

Once a user is included in your Permissions list, you must *add the correct permissions* for the user, in the same way as you would for a team member.

Once complete, depending on the access granted, the user will be able to view, read, change, and execute the file.

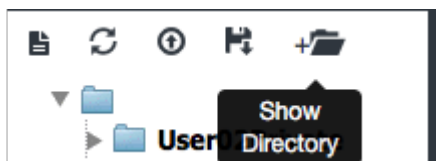
**NOTE:** If you change permissions for a folder instead of a file, the user will be able to see and access any files within that folder.

### Adding a directory to a user's workbench

The user can now add your home directory to their Workbench File Manager.

To add your home directory to another user's workbench, have the other user follow these steps:

1. Click the Show Directory button at the top of the Workbench File Manager:



The Show Directories dialog box displays.

- In the text box, type `/home/[yourusername]`.

NOTE: Replace `[yourusername]` with your AEN username.

### Show Directories



Enter the full path to an existing directory that you would like to see in the file browser. For example, if the project node has a directory with a path of `/data/2010` that contains data files from 2010 that you want to browse, enter `/data/2010` and click on the Show button.

- Click the Show button.
- Verify that the folder is now displayed below the text box:

### Show Directories

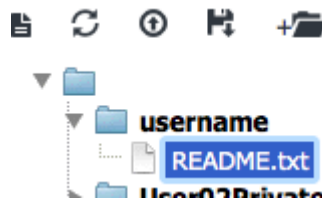


Enter the full path to an existing directory that you would like to see in the file browser. For example, if the project node has a directory with a path of `/data/2010` that contains data files from 2010 that you want to browse, enter `/data/2010` and click on the Show button.


- Close the Show Directories dialog box by clicking the X in the upper-right corner or by clicking anywhere outside the box.
- Click the Refresh button.

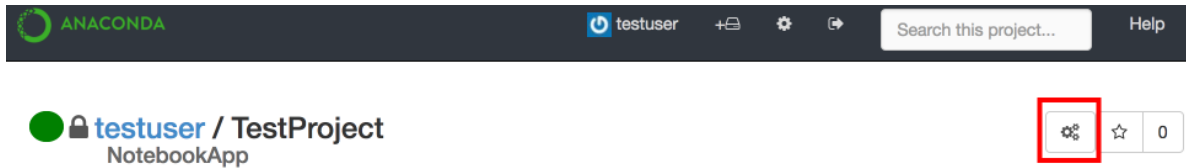
The shared file is displayed in the File Manager:



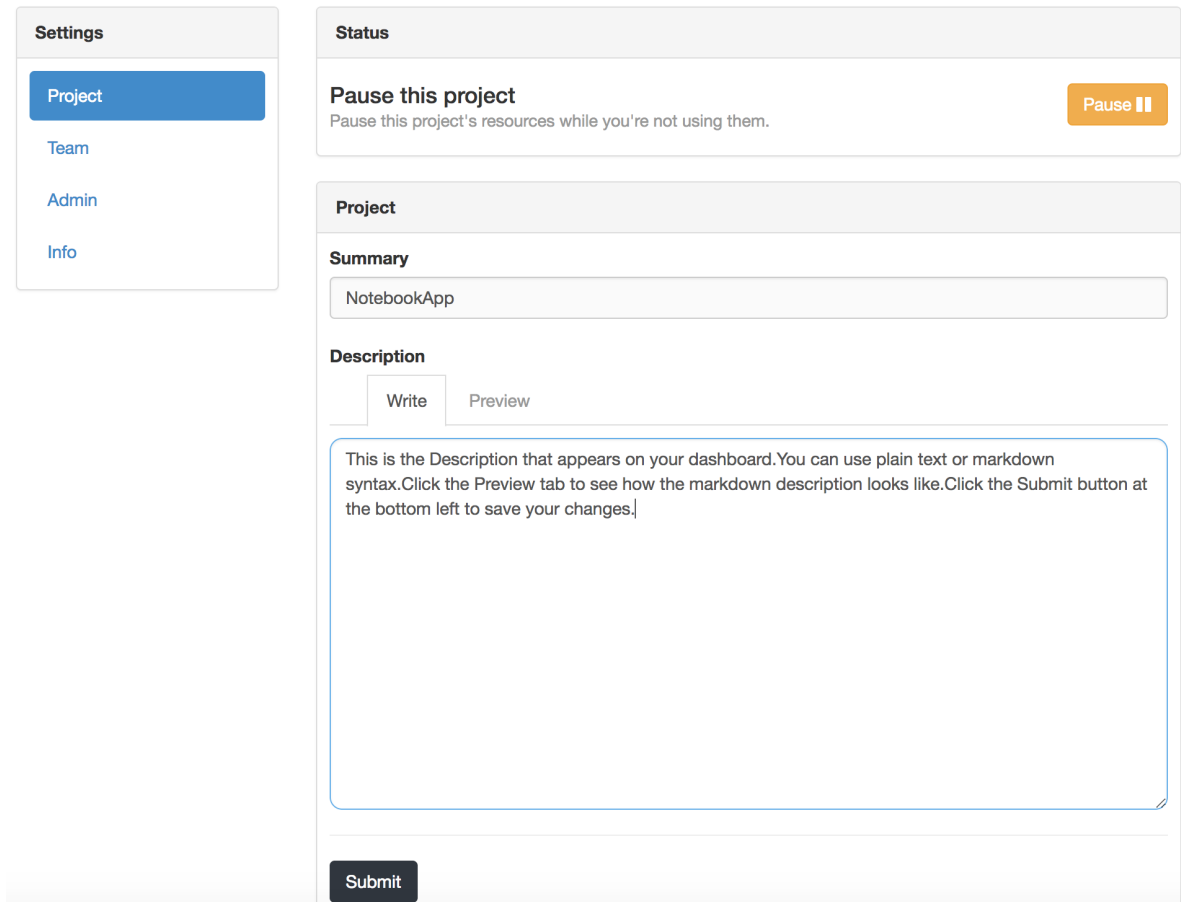
## Starting and stopping a project

TIP: Stopping a project stops all the applications launched for that project that use resources when running, such as memory and compute cycles. It is best to stop projects when they are not in use.

1. On the project home page, click the Project Settings icon to open the Project Settings page.



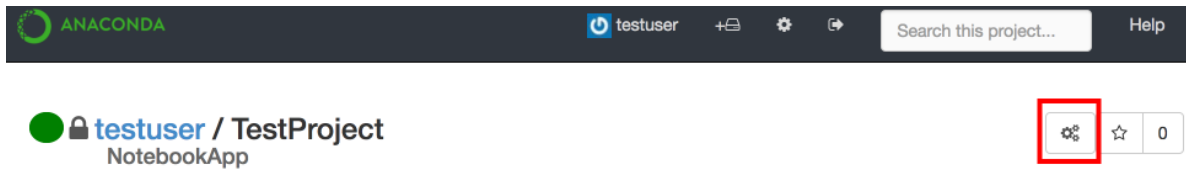
2. In the **Settings** menu, select Project.



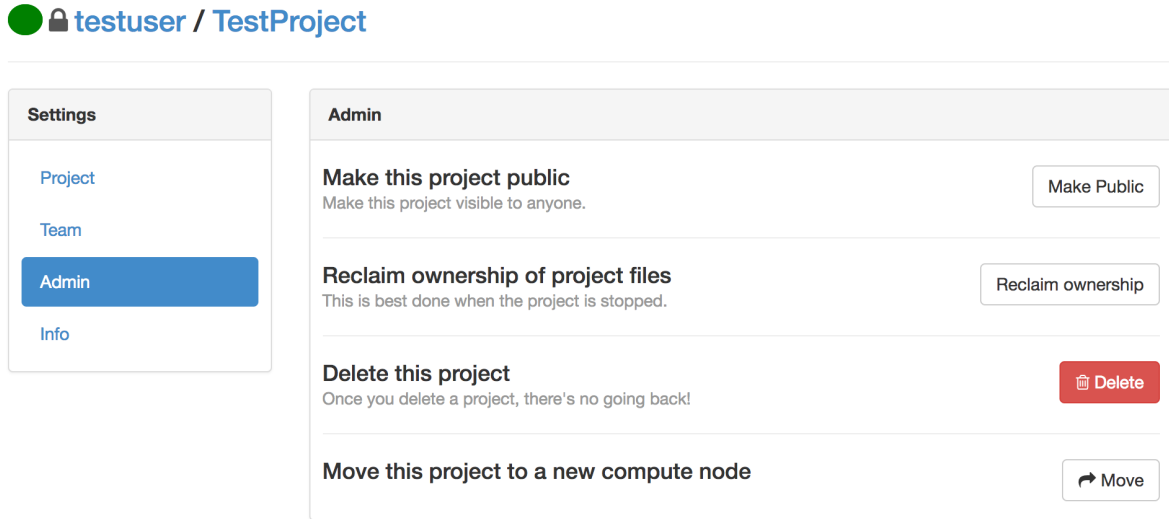
3. In the Status section, click the Start or Stop button to toggle between manually starting and stopping your project.

## Making a project public or private

1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Admin.



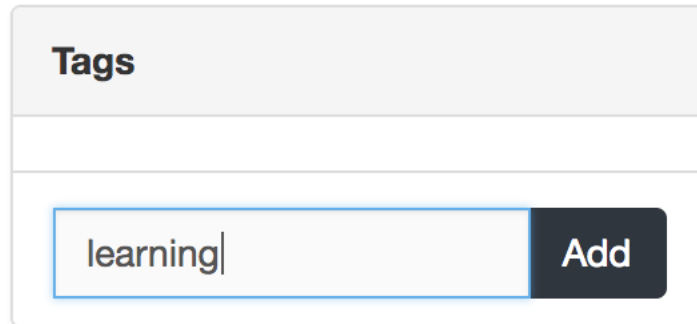
3. Click the Make Public button.
4. If the project is already public and you want to make it private, click the Make Private button.

## Tagging a project

Existing tags assigned to a project are listed in the Tags section on the project's home page.

## Adding a tag

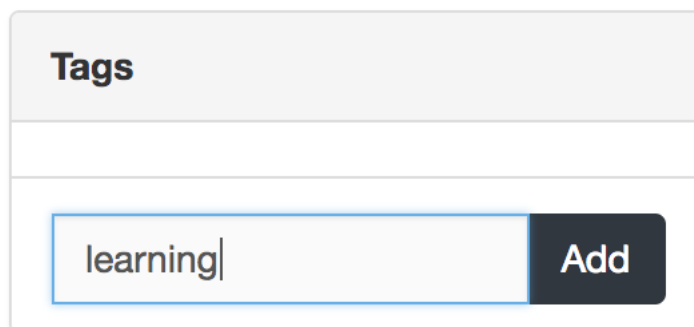
1. In the Tags box, type the name of the tag you want to add:



A screenshot of a web interface showing a 'Tags' section. Below the title, there is a text input field containing the word 'learning' and a dark grey 'Add' button to its right. The input field has a blue border, and the 'Add' button is highlighted with a dark grey background.

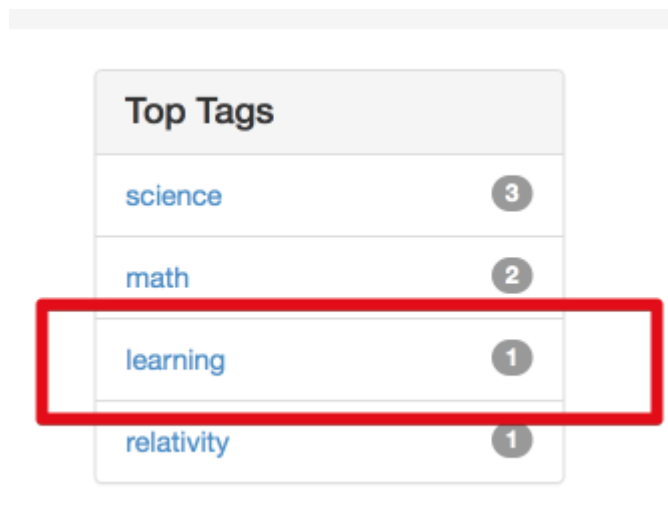
2. Click the Add button.

The new tag is added to the Tags list:



A screenshot of a web interface showing a 'Tags' section. Below the title, there is a text input field containing the word 'learning' and a dark grey 'Add' button to its right. The input field has a blue border, and the 'Add' button is highlighted with a dark grey background.

If the tag was not already in the Top Tags list on your user home page, it is added. If the tag was already listed because another project used it, the number next to the tag is incremented:



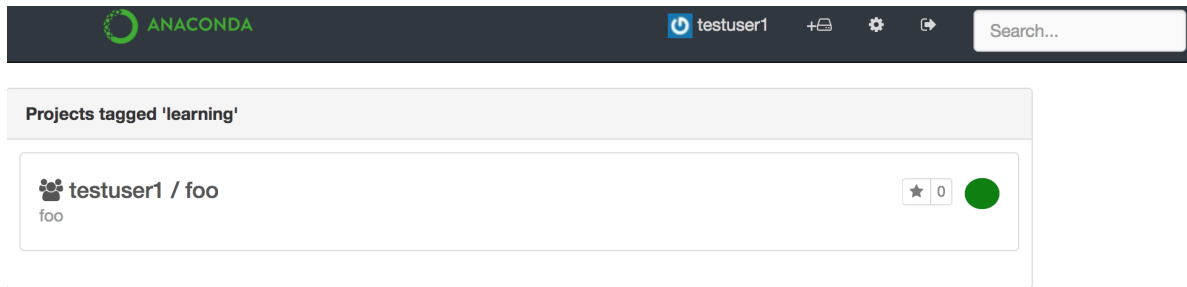
A screenshot of a 'Top Tags' list. The list contains four tags: 'science' (3), 'math' (2), 'learning' (1), and 'relativity' (1). The 'learning' tag and its count are highlighted by a red rectangular box.

Top Tags	
science	3
math	2
learning	1
relativity	1



## Removing a tag

1. On your user home page, in the Top Tags list, click the tag name.



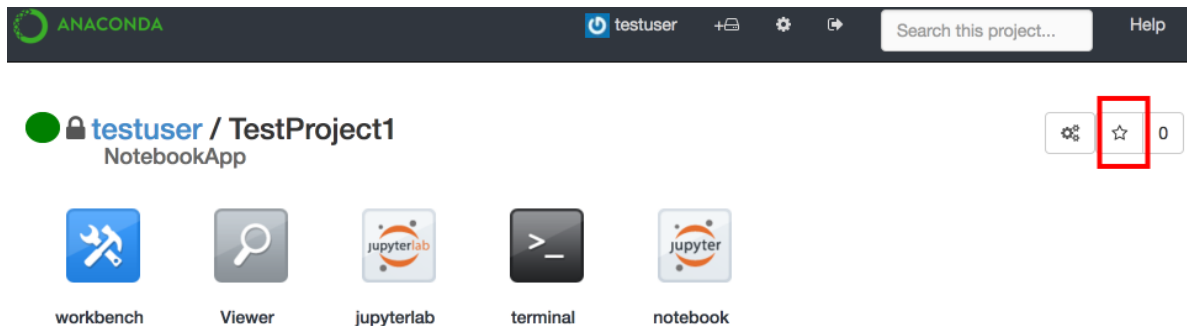
2. In the Tags list, click the X button next to tag name.

## Starring a project (rating)

Starring a project makes it appear on your user home page in the Top Rated list.

Adding or removing stars for a project does not affect the stars added by other users.

1. Open the project that you want to star.
2. On the project home page, click the Star icon at the upper right:

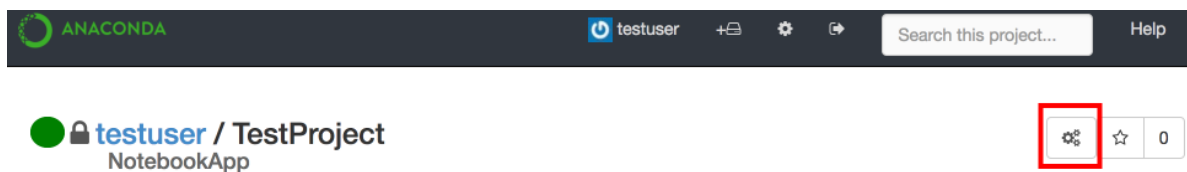


3. To unstar a project, click the Star icon again.

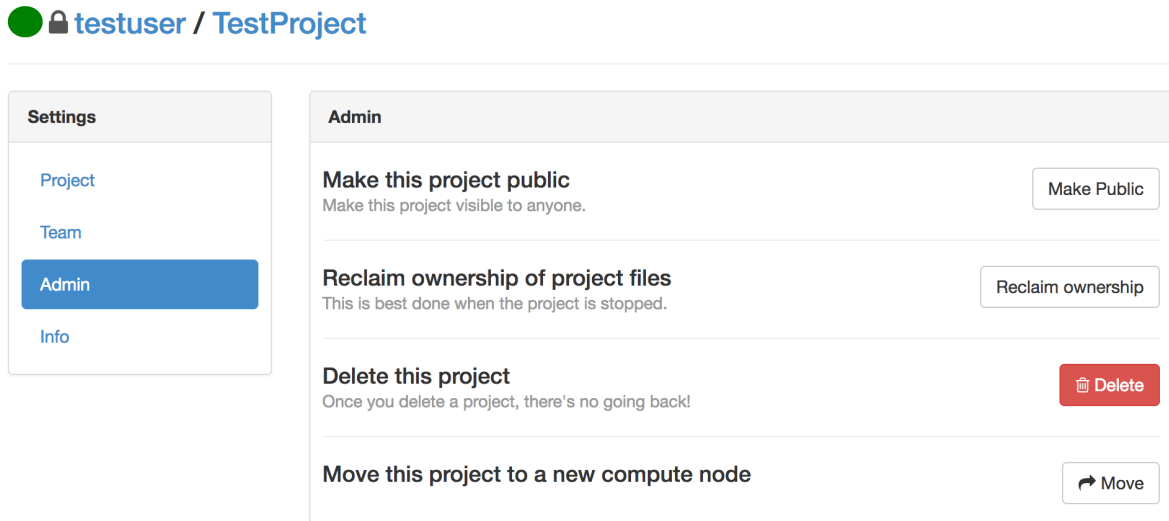
## Claim ownership of a project

When you claim ownership of a project, ownership of all files and folders created by the team members on the project is transferred to you. Project files and folders are copied and renamed.

1. *Stop the project* to prevent team members from making changes while you are changing ownership.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



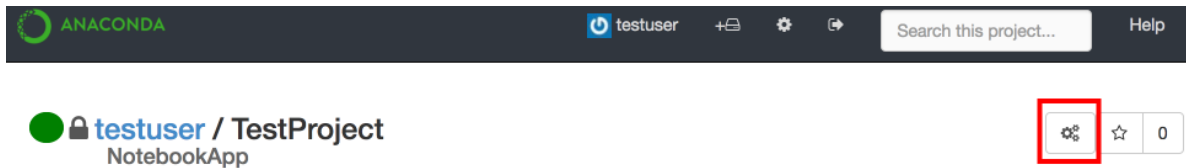
3. In the **Settings** menu, select Admin.



4. Click the Reclaim ownership button.

## Changing a project's summary or description

1. On the project home page, click the Project Settings icon to open the Project Settings page.

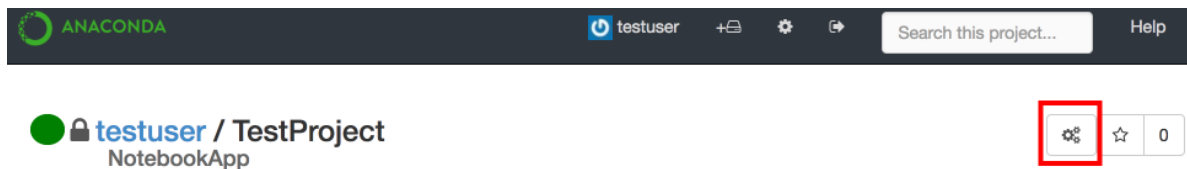


2. In the **Settings** menu, select Project.

3. Update your project's summary using plain text or its description using Markdown syntax.
4. Click the **Preview** tab to see a preview of the Markdown description.
5. Click the Submit button.

### Viewing a project's status

1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Info.

  testuser / TestProject

**Settings**

[Project](#)  
[Team](#)  
[Admin](#)  
**Info**

**Info**

**Status**  
running  
**Created**  
Mon Sep 25 20:43:56 2017  
**Last Heartbeat**  
Mon Sep 25 20:43:56 2017

**Data Center**

**Name**  
Gateway  
**Provider**  
Enterprise Resources  
**Summary**  
Gateway

On the Info page, you can see:

- Whether the project is currently running or stopped.
- When the project was created.
- When the project was last accessed.
- The data center in which the project is running.

## Viewing related projects

Related projects are listed on a project's home page.

Team

Add

user02 (owner)

user01 (remove)

Related Projects

user01 / TestProject2

No Summary

user02 / User02Private

No Summary

user01 / TestProject

No Summary

These are projects that contain fields that are most similar to the current project.

TIP: You will only see projects to which you have been granted access: public projects, and private projects on which you are a team member.

### How related projects are identified

To determine which projects should be listed in Related Projects:

1. The recommendation engine scans the current project's files and weights the terms found to determine which of them to use for the likeness search.
2. The engine performs a search, with extra weight given to the "uses" and "imports" keywords.
3. The engine finds the files and projects that are most similar to the current project and scores the results.
4. The top-scoring matches are displayed in Related Projects. Only public projects and private projects to which you have access are included.

## Viewing top-rated projects

Top-rated projects are listed on your home page:

Top Rated	
einstein	2
euler	1
laplace	1
plank	1
Public_project	1

The number next to a project represents the number of stars that have been given to that project.

Click a project name to view the project's home page.

## Using tags to find a project


The top tags used on your projects are listed on your home page:

ANACONDA

NewUser2

Search...

Help

 **NewUser2**

Joined on Oct 20, 2016  
newuser@mycompany.com  
1 Projects

Projects (1)

New project

NewUser2 / NewProject

Woo hoo! I finally get to play with notebooks!

★ 0

Contributing (0)

Not currently contributing to any projects.

Top Tags

Fun fun fun 1

Test project 1

Top Collaborators

Top Rated

test1 0









test2 0

NewProject 0

To list all projects that share a specific tag, click the tag name:

Top Tags	
science	4
math	2
learning	1
relativity	1

A list of projects with the selected tag is displayed:

Projects tagged 'science'	
 malev / euler euler	★ 1 
 malev / einstein einstein	★ 2 
 malev / plank quantum theory	★ 0 
 user01 / User01Private_2 No Summary	★ 0 

TIP: The list includes only projects that you have access to: public projects, and private projects on which you are a team member.

Click a project name to open the project's home page.

### Viewing your top collaborators

Your top collaborators are listed on your home page:

Top Collaborators	
trento	1
user01	1

These are the team members who have the most projects in common with you.

To view a collaborator's home page—where you can see all public projects and the private projects they have shared with you—click the collaborator's name.

### Sharing projects and notebooks

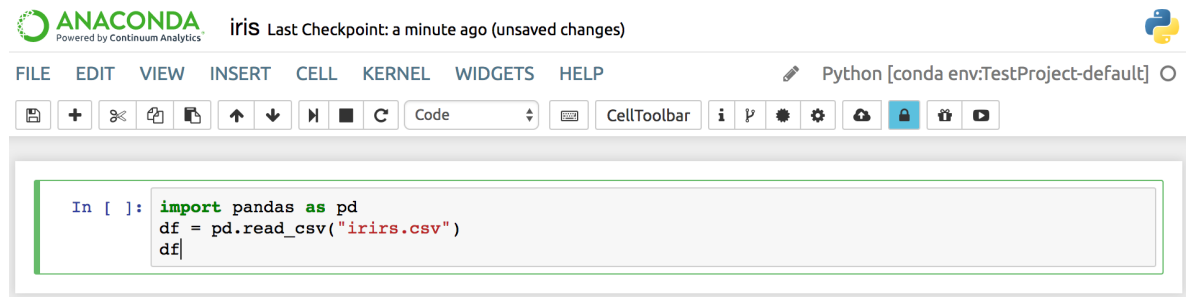
For information on sharing projects via the project settings and access control, see [Sharing projects](#).

To upload a Jupyter Notebook to Anaconda Repository:

1. Log in to Repository by running the `anaconda login` command or by using the login user interface provided by the [nbextension](#).

CAUTION: If you are not using a secure connection, we strongly recommended that you use the command line to log in.

2. To share your notebook environment, select the Attach conda environment checkbox. This ensures that your team members will have the right environment for your notebook.
3. Click the Upload button to upload your notebook to your local Repository or to [Anaconda.org](#), depending on how your administrator has set up AEN:



NOTE: If you have not yet logged into Repository or Anaconda Cloud, or have not created an account, you will be asked to do so.

### Other ways to share a notebook

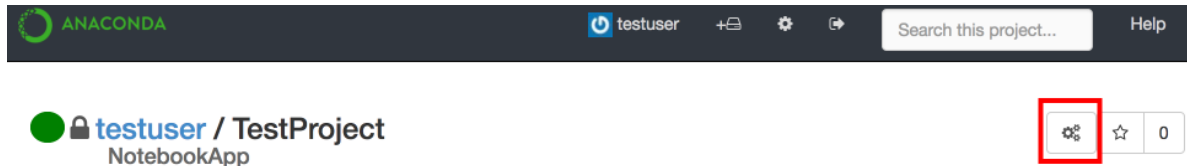
- Print—In the **File** menu, select Print.
- Download and share—In the **File** menu, select one of the following options:
  - Download as Notebook.
  - Download as Python.
  - Download as HTML.
  - Download as Markdown.
  - Download as ReStructured Text.
  - Download as PDF.
- Share and control team members' direct access to read, write and/or execute your notebook file or folder. For more information, see [Controlling access to your project](#).
- Share and control non-team members' file or folder access. For more information, see [Controlling access to your project](#).
- Create a presentation with [NBPresent 4.1](#).



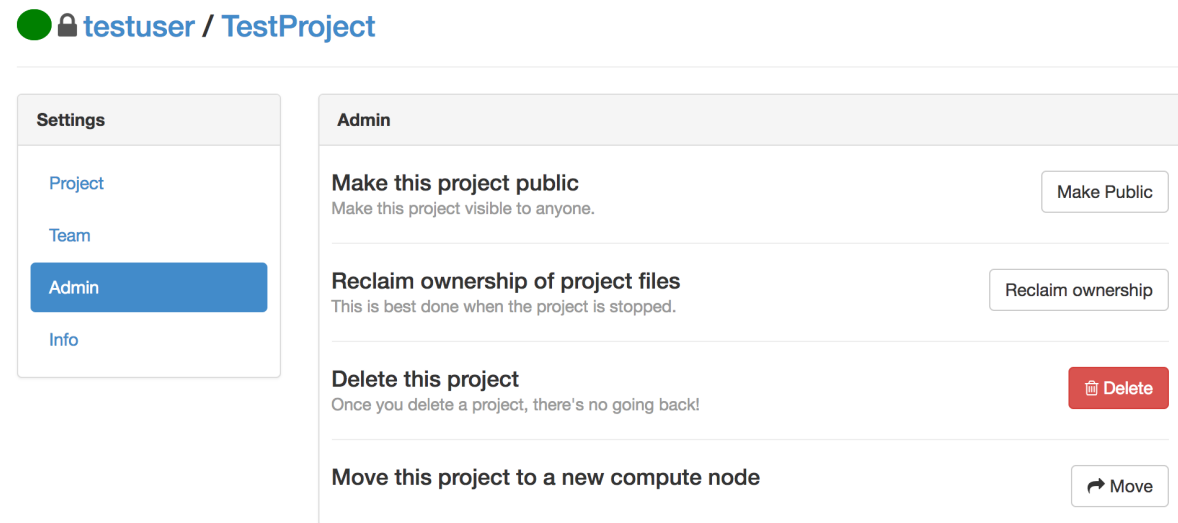
## Deleting a project

CAUTION: Deleting a project deletes all project files and information! There is no undo option.

1. Download a copy of any project files that you need to save.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



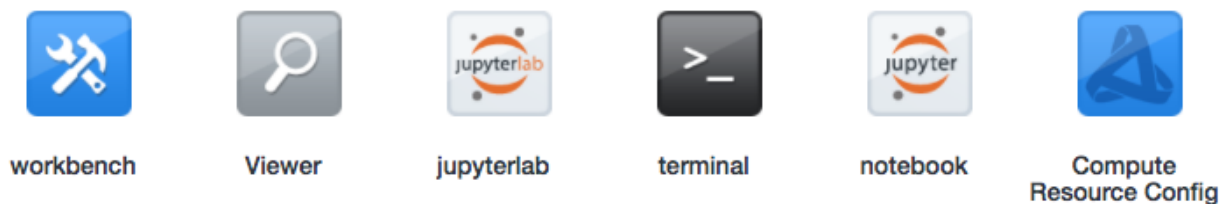
4. Click the Delete button.

## Using AEN applications

The applications in your project make it easy for you to interact with your files and data, manage your project's resources and to customize your AEN experience.

To use applications, log in to AEN, then select the project you want to work on or create a new project and open it.

On the project home page, the following application icons are displayed:



TIP: Each application opens in a new browser tab. You can run multiple applications at the same time in your project.

For more information on each AEN application, see:

- [Using Workbench](#)—File viewer and manager, including permissions settings.

- *Using Viewer*—View-only versions of notebooks and other text files.
- *Using JupyterLab*—Alpha preview of the next generation notebook.
- *Using Terminal*—Basic bash shell Terminal.
- *Using Jupyter Notebook*—Jupyter Notebooks with extensions.
- *Using Compute Resource Configuration*—Project information, view and manage applications.

## Using Workbench

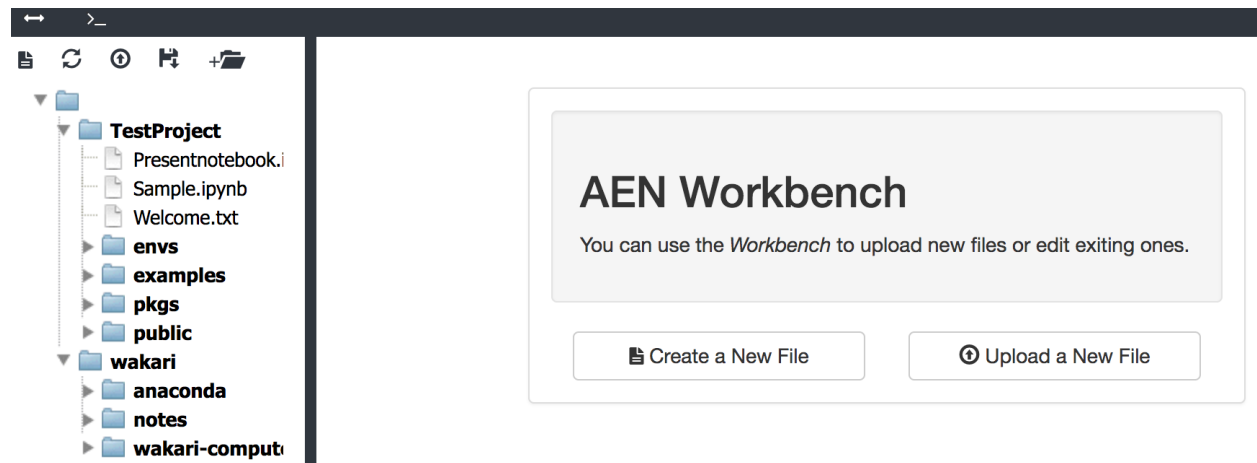
Workbench is a file viewer and manager that includes a file editor and file permissions manager.

You can use Workbench to:

- Upload and download files using the *File Manager*.
- Create new files and folders using the *File Manager*.
- Copy and move files to new locations using the *File Manager*.
- Rename files and/or folders using the *File Manager*.
- Manage the *access permissions* of team members.
- Grant or revoke *access to non-team members*.

Workbench also includes a simple Terminal application, which is convenient because the File Manager is always visible, making navigation simple.

When you first open Workbench, the File Manager is displayed in the left pane, and the Create a New File and Upload a New File buttons are in the right pane:



When you open a file or Workbench Terminal, it is displayed in the right pane. To make the Create or Upload a file options re-appear, refresh your browser window.

Two small icons are displayed in the black navigation bar at the top of the Workbench page. Hovering over them displays tool tips that describe their use:

- The Toggle icon displays or hides the File Manager.
- The Terminal icon opens a simple terminal window.

## Opening Workbench

To open Workbench:

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Workbench icon:



workbench

Workbench opens in a new browser window.

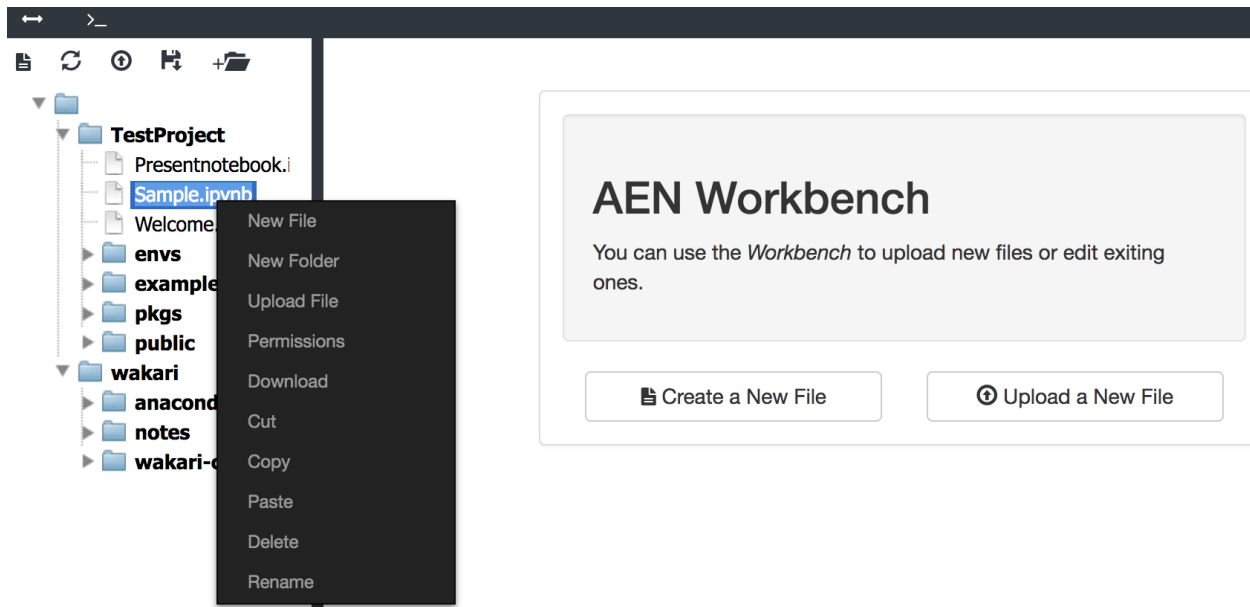
## Using File Manager

The File Manager is an intuitive way to interact with your files and folders.

## Using the options drop-down menu

To perform any of the actions described below:

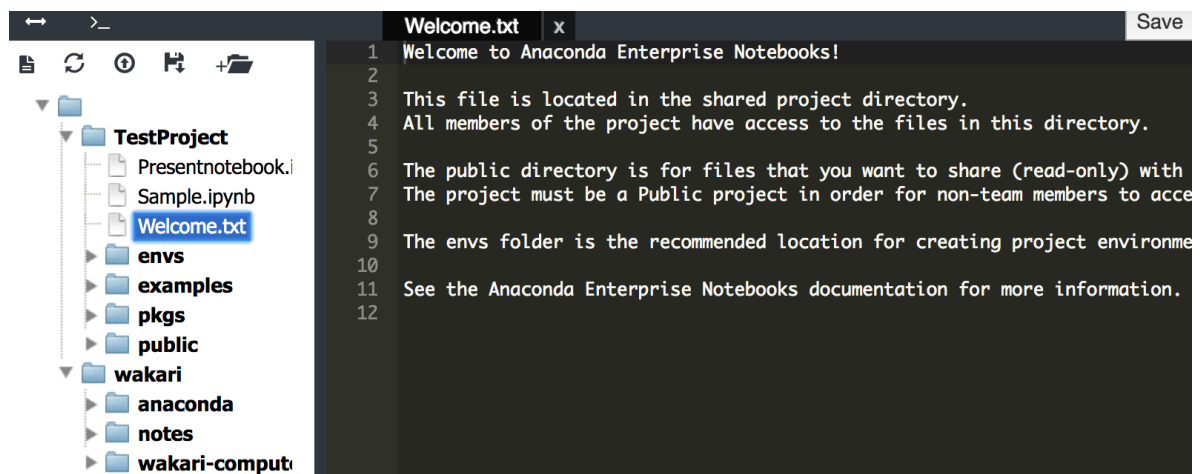
1. Right-click on any folder to display the options drop-down menu.
2. Select one of the following options:
  - New File—Create and edit a new file.
  - New Folder—Create a new folder.
  - Upload File—Upload a file to the selected folder. You can also drag a file to the folder.
  - Permissions—*Control access to files and folders.*
  - Cut—Cut the selected file or folder.
  - Copy—Copy the selected file or folder.
  - Paste—Paste a previously cut or copied file or folder.
  - Delete—Delete the highlighted file or folder.
  - Rename—Rename the highlighted file or folder.



## Editing files using the File Editor

1. Double-click any text file in the File Manager.

The File Editor opens in the right pane:

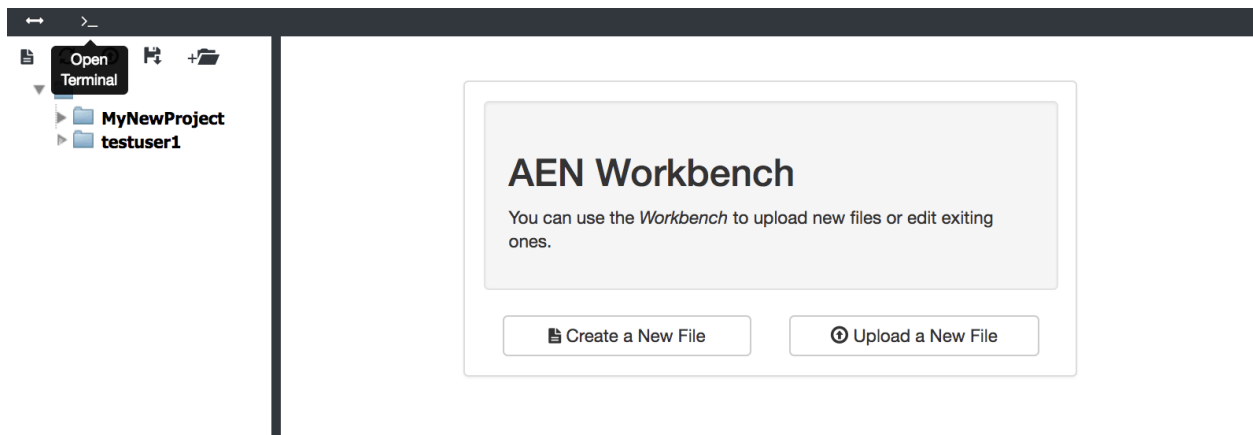


2. When you finish editing the file, click the Save button.

NOTE: To close the file without saving, click the X at the top of the page under the file name.

## Opening the Workbench terminal

In the navigation bar, click the Open terminal icon:



A Terminal—bash shell—is displayed in the right pane.

**TIP:** You can open additional terminals by clicking the Open terminal icon again, or by clicking the Plus + icon at the top of an open terminal.

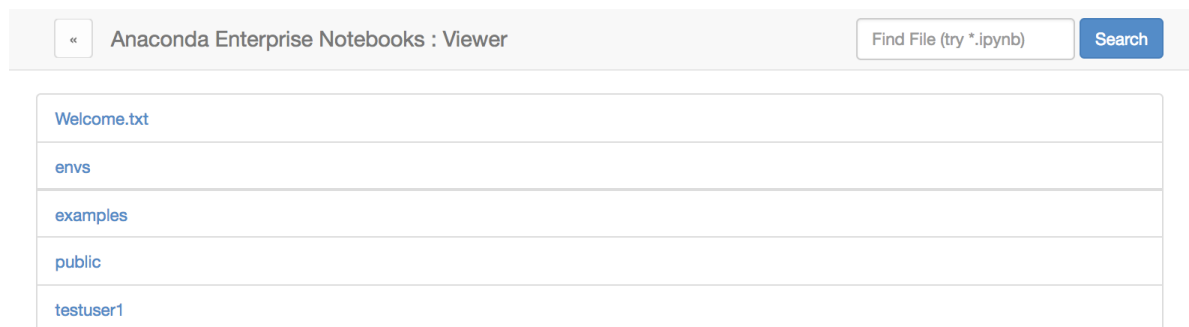
To move between terminal windows, click the **Terminal** tab in the navigation bar, then select the number of the terminal window you want to work in.

## Using Viewer

The Viewer application displays a static, view-only version of your notebooks and other text files by rendering the text files directly and using the NBConvert tool to convert notebooks to static HTML.

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Viewer icon.

Viewer opens in a new browser window:



4. Click any folder to view its contents, or click any filename to view the file.
5. To search for a file or folder name, type text in the Find File box, then press the Enter key. This is not a full-text search, but wildcards are permitted.

## Using JupyterLab

JupyterLab is an early alpha-preview of the next generation of the Jupyter Notebook. It is included so that you can take a tour and play with its capabilities.

CAUTION: JupyterLab is experimental. It is not yet intended for production work.

JupyterLab does not include any of the notebook extensions that are available in the *Jupyter Notebook app*.

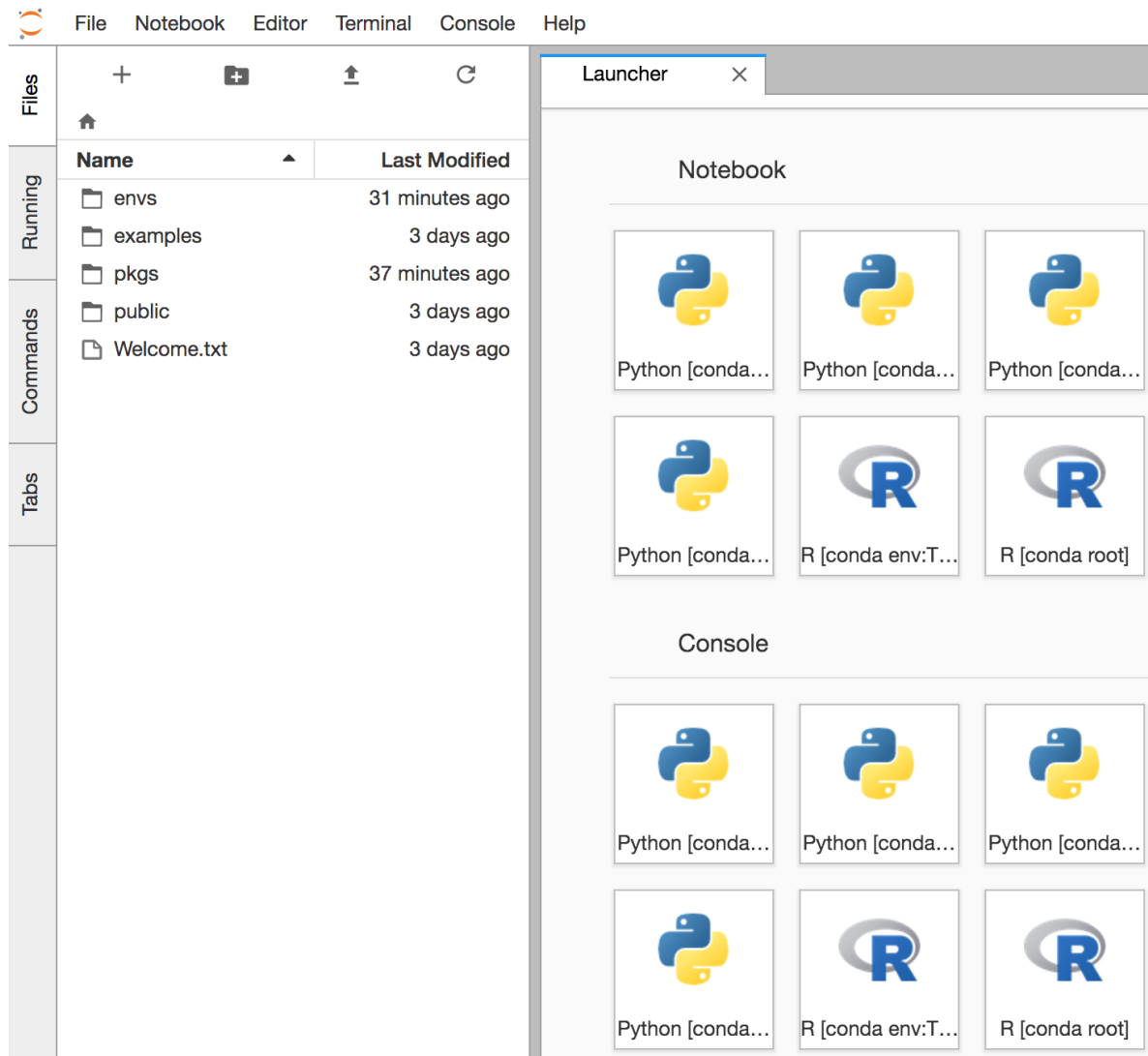
For more information about JupyterLab, see the [documentation](#).

You can also download and print a `Jupyter cheat sheet` on using Jupyter Notebook and the new JupyterLab.

To open JupyterLab:

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click on the JupyterLab icon.

JupyterLab opens in a new browser window:



Experiment with the application on your own, using the **Notebook**, **Editor**, **Terminal** and **Console** menus.

To review a guided tour of all of the features JupyterLab will contain when it is ready for production, click the Take a tour link in the right pane.

## Using Terminal

The Terminal application is a simple bash shell terminal that runs in your browser:

```
+ 1 bash
(/projects/aen_admin/TestProject/envs/default) ls
envs  examples  pkgs  Presentnotebook.ipynb  public  Sample.ipynb  Welcome
(/projects/aen_admin/TestProject/envs/default) █
```

Using Terminal, you can:

- Access your home directory and your project drive.
- Open multiple shells within one instance of Terminal.
- Open multiple instances of Terminal in the same browser window.

1. Log in to AEN.
2. Select a project you want to work on, or create a new project and open it.
3. On the project home page, click the Terminal icon:



Terminal

Terminal opens the project directory in a new browser window.

By default, the project directory is `/projects/username/project-name`.

EXAMPLE: `/projects/TestUser/MyFirstNotebook`

4. To see the physical path of your directory, run the Print Working Directory command `pwd -P`.

TIP: The physical path `-P` is important because project attaches data to the beginning of your virtual path to keep your project files together.

5. To navigate out of your project directory to your home directory, run the command `cd`.
6. To return to your project directory, run the command `cd/projects/username/project-name`.

TIP: If you are new to navigating in a terminal, you may want to use [the Workbench terminal](#), which includes a visual navigation tree in the File Manager.

## Using multiple Terminals

You can open as many terminals as you want.

To open another shell in the terminal, in the upper left of the pane, click the plus + icon.



A corresponding number appears after the plus + icon and 1.

To move to another Terminal, click the corresponding number.

The color of the number tab changes to show which terminal is currently selected.

## Using Jupyter Notebook

The Jupyter Notebook application allows you to create and edit documents that display the input and output of a Python or R language script. Once saved, you can share these files with others.

NOTE: Python and R language are included by default, but with customization, Notebook can run several other kernel environments.

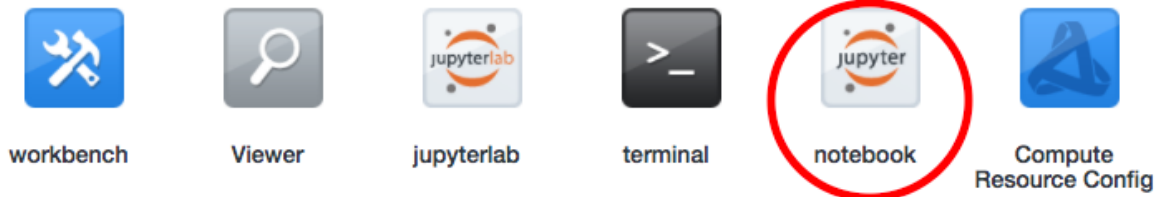
This page provides a brief introduction to Jupyter Notebooks for AEN users.

For the official Jupyter Notebook user instructions, see [Jupyter documentation](#).

For information on the notebook extensions available in AEN, see [Using Jupyter Notebook extensions](#).

## Opening the Jupyter Notebook application

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Jupyter Notebook icon:



Jupyter Notebook opens in a new browser window:





TIP: You can see the same *File Manager* in the Terminal, Workbench, and Viewer applications.

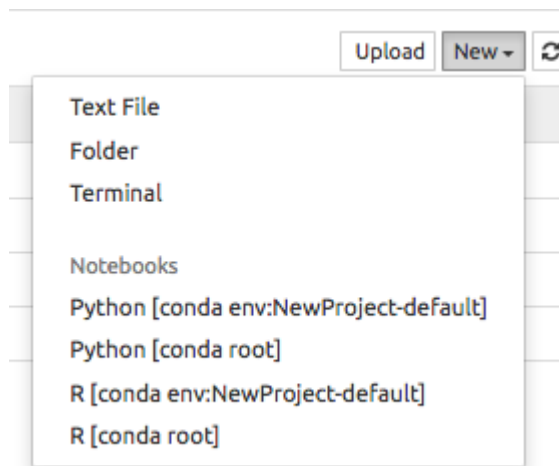
## Using example notebooks

The `Examples` folder in Jupyter Notebook contains several types of Notebook examples created in Python—and one with R language—kernel environments.

Open any example notebook to experiment and see how it works.

## Creating a new Jupyter Notebook

1. An the top right of the **Files** tab, click the New button.



2. Select the kernel environment to create your new notebook in.

NOTE: Customizable Python and R Language kernel environments are automatically created for you during project creation.

- Your project's default conda env kernels are a cloned copy of the root environment. You can customize them and install and delete additional packages.
- Root environment is managed by your Administrator. You cannot make or save any changes to it.

- You can switch between Python, R language and any other custom kernels in the notebook as you work in your notebook. For more information, see [Using the Synchronize Environments extension](#).

The new notebook is saved in the related project directory and displayed.

## Using Jupyter Notebook extensions

The following extensions are available for use with AEN's Jupyter Notebook application:

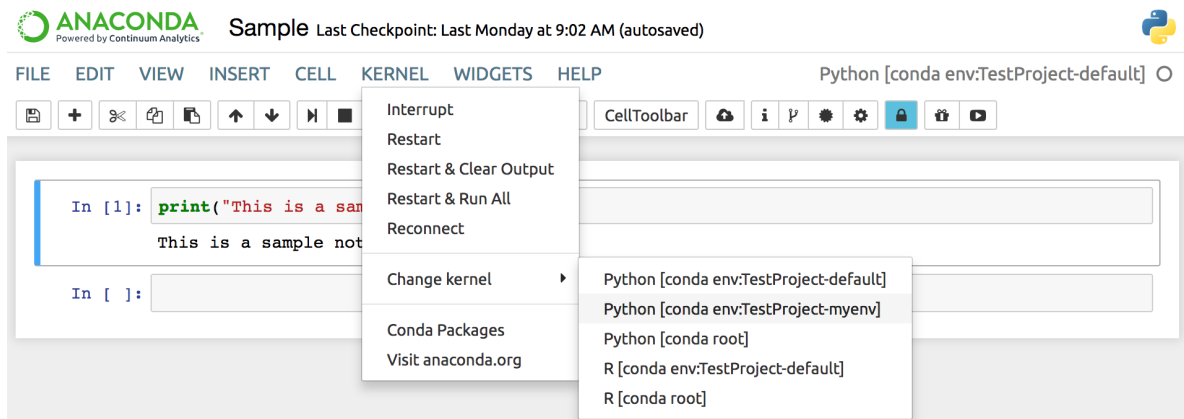
- [Synchronize Environments](#) with Jupyter from the **Kernel** menu.
- [Locking](#) adds multi-user capability from the Lock button.
- [Revision Control Mechanism \(RCM\)](#) adds Status, Checkout and Commit buttons.
- [Conda environment and package management](#) tab.
- [Conda notebook](#) adds conda management inside Notebook from the Kernel > Conda Packages menu option.
- [Anaconda Cloud integration](#) from the Publish to cloud button.
- [Notebook Present](#) turns your notebook into a PowerPoint-style presentation.

## Using the Synchronize Environments extension

The Synchronize Environments extension allows you to apply a Python, R language or any other custom environment inside your current notebook session, without needing to start up several Notebook instances using each of the selected environments.

To change environments:

1. Open the **Kernel** menu.



2. Click the Change kernel option.
3. From the list, select the environment to use.

NOTE: In AEN 4.1+ the default kernel for projects is default. In versions prior to 4.0, the default kernel for projects is root Python.

## Using the Locking extension

Multi-user capabilities are engaged in AEN when multiple users work in the same notebook file.

The Locking extension allows you to lock a notebook to prevent multiple team members from making changes at the same time. Notebooks are automatically locked when you open them.

If team members open a notebook and make changes while it is locked, their save capability is disabled, and they cannot overwrite the notebook.

To override the lock, they must actively take control of the locked file by clicking the Lock icon in the Notebook menu bar:



NOTE: This is a soft locking model. Team members can choose to override your lock to save their work. If you give team members write access to your files, confirm that they understand that they should never unlock your file unless they are making meaningful, non-destructive team contributions.

## Using the Revision Control Mechanism extension

The Revision Control Mechanism (RCM) Jupyter Notebook extension provides simple version control for notebook files. It uses the internal Jupyter functionality to perform tasks.

On the surface, RCM uses a simple linear model, but beneath that is a more complex git-based branching model. To prevent merge conflicts, this model uses a “latest wins” policy as its main merging strategy.

The RCM Jupyter Notebook extension adds four buttons:



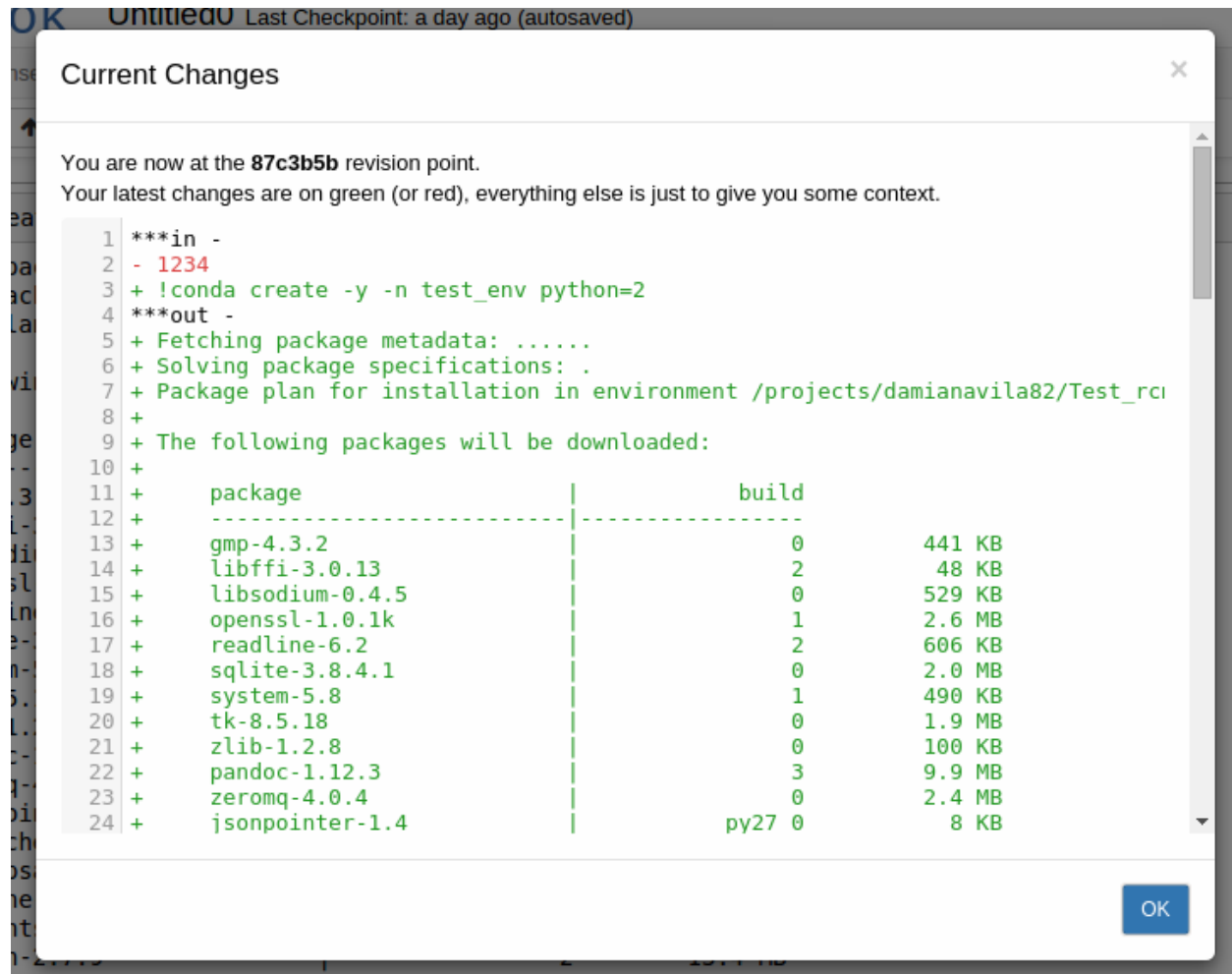
- *Status.*
- *Checkout.*
- *Commit.*
- *Configure git.*

TIP: If you do not see the RCM buttons, see *Setting up RCM for the first time.*

## Using the Status button

The Status button allows you to see what revision you are on.

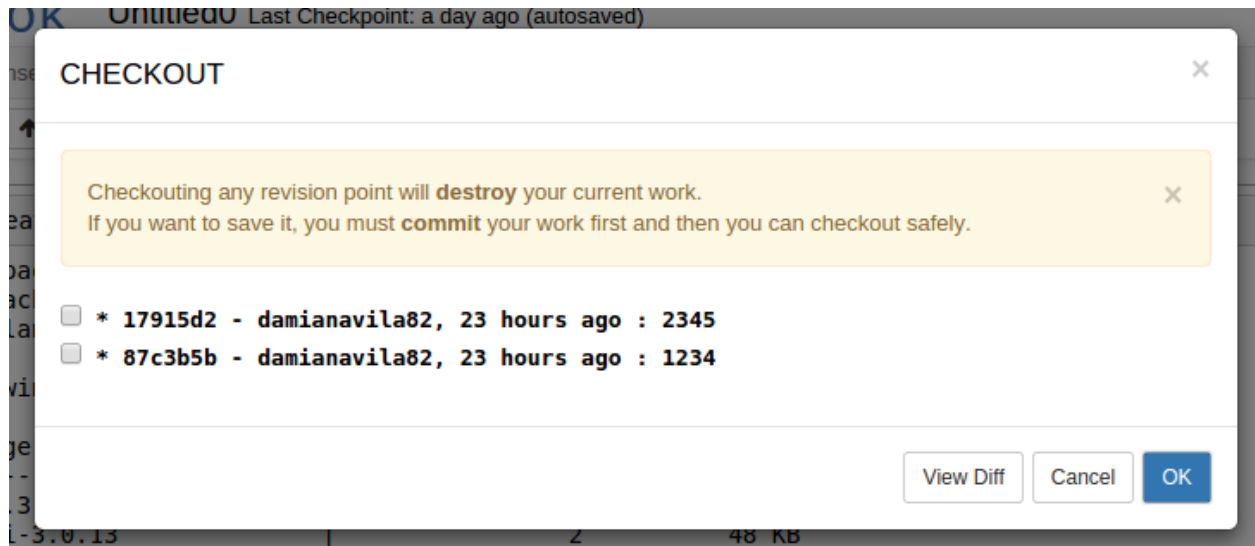
Clicking the Status button displays:



### Using the Checkout button

The Checkout button allows you to view a list of the previous revision points, check out a previous revision or compare differences between revisions.

Clicking the Checkout button displays:



### Checking out a previous revision

To checkout a notebook at an earlier revision point:

1. Select the checkbox next to the desired revision point.
2. Click the OK button.

A copy of the notebook at the selected revision point is displayed.

NOTE: If you have not saved the work in your current project window, checking out a previous revision destroys it. If in doubt, click the Cancel button and save your work before reverting to a previous revision point.

### Comparing revisions

To compare 2 previous revision points:

1. Select the checkboxes of the revision points to compare.
2. Click the View Diff button.

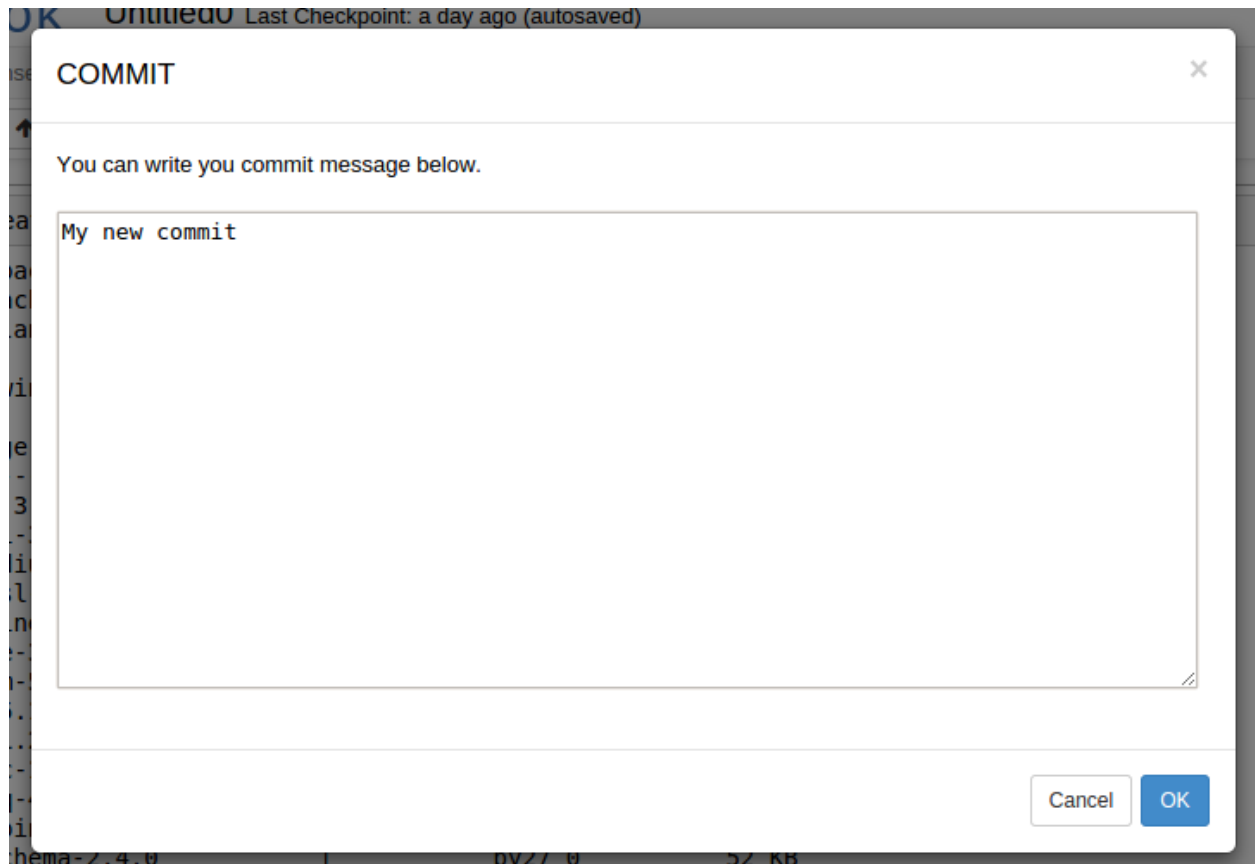
A side-by-side comparison is displayed.

Click the Cancel button to close the differences window.

### Using the Commit button

The Commit button allows you to save or persist the current changes, keeping a permanent record of any changes that are introduced, so that you do not have to worry about losing important data.

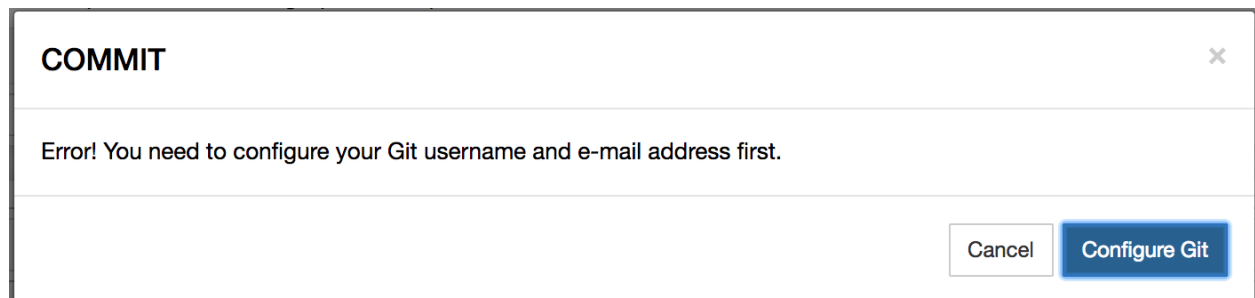
Clicking the Commit button displays:



1. Enter a description of the changes in the commit as a reminder in case you need to revert back to it later.
2. Click the OK button.

Your changes are committed and a revision point is created.

If Git user name and user email are not set, the following window appears:




Configure Git and then try to commit again.

TIP: You can roll back committed changes by *checking out a previous version*.

## Using the Configure git button

The Configure git button allows you to configure Git user name and email values.

After clicking the Configure Git button, the following window appears:

A screenshot of a 'Git Configuration' dialog box. The dialog has a title bar with a close button (X) in the top right corner. Inside, there are two sections: 'Username' and 'Email'. The 'Username' section has a text input field containing 'John Doe'. The 'Email' section has a text input field containing 'johndoe@example.com'. At the bottom right of the dialog, there are two buttons: 'Cancel' and 'Save'.

Enter user name and e-mail address. Click the OK button when finished.

## Setting up RCM for the first time

If you do not see the RCM buttons in your notebook:

1. Go to the project home page.
2. Open the Terminal application.
3. In the terminal window, run:

```
git config --global user.email "you@example.com"  
git config --global user.name "Your Name"
```

NOTE: Change `you@example.com` to your email address, and `Your Name` to your actual name.

4. Open Jupyter Notebook and refresh the page.

## Using the NBConda extension

The NBConda extension adds a Conda tab to your notebook for easy environment and package management from within the notebook.



Files Running IPython Clusters **Conda**

2 Conda environments



Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default

1143 available packages

Search...



376 installed packages in environment "default"



Name	Version	Channel
<input type="checkbox"/> _license	1.1	defaults
<input type="checkbox"/> _nb_ext_conf	0.4.0	defaults
<input type="checkbox"/> abstract-rendering	0.5.1	defaults
<input type="checkbox"/> accelerate	2.3.1	defaults
<input type="checkbox"/> accelerate_cudalib	2.0	defaults
<input type="checkbox"/> aen-app-jupyterlab	0.4.0	wakari

Name	Version	Build	Available
<input type="checkbox"/> _license	1.1	py27_1	
<input type="checkbox"/> alabaster	0.7.10	py27_0	
<input type="checkbox"/> anaconda	custom	py27_0	
<input type="checkbox"/> anaconda-client	1.5.1	py27_0	
<input type="checkbox"/> anaconda-project	0.6.0	py27_0	
<input type="checkbox"/> asn1crypto	0.22.0	py27_0	

Click the Conda tab in a notebook to display:

- Conda environments list—export, clone or delete an environment in the action column, or create a new environment by clicking the plus + icon. Switch to an environment by clicking it; packages for that environment are displayed below in the installed packages list.
- Conda available packages list—for the selected environment in currently configured channels, search for packages and click a package name to install it.
- Installed packages list—in the selected environment, check for updates, update or delete selected packages.

**TIP:** While you are in any notebook, you can jump to the NBConda extension for that environment by clicking the **Kernel** menu and selecting Conda Packages:

iris Last Checkpoint: a minute ago (unsaved changes)

FILE EDIT VIEW INSERT CELL KERNEL WIDGETS HELP
Python [conda env:TestProject-default] ○

```
In [ ]: import pandas as pd
df = pd.read_csv("irirs.csv")
df
```



## Using the Conda Notebook extension

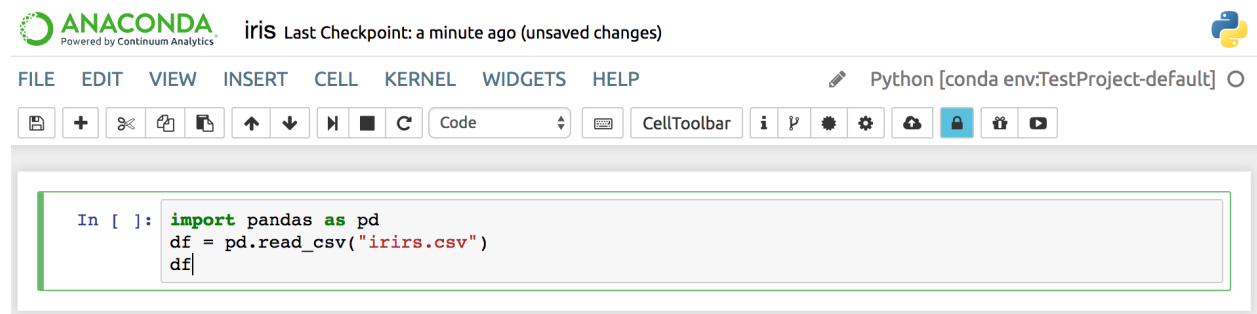
The Conda Notebook extension adds the Conda Packages option to the **Kernel** menu.

Select the Conda Packages option to display a list of all of the Conda packages that are currently used in the environment associated with the running kernel, as well as any available packages.

From the Conda Packages option, you can perform all of the tasks available in the [Conda tab](#), but they will only apply to the current environment.

## Using the Anaconda Cloud extension

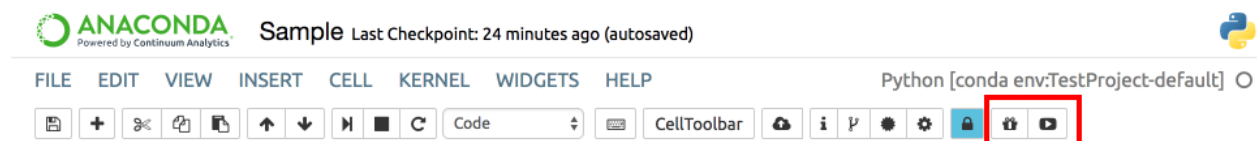
The Anaconda Cloud extension adds the Cloud button to your notebook, allowing you to easily upload your notebook to Cloud:



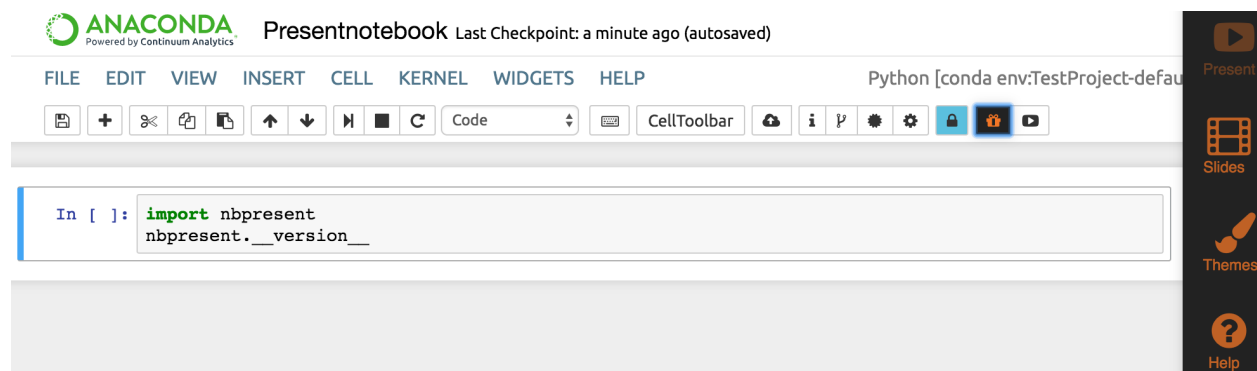
## Using the Notebook Present extension

The AEN Notebook Present extension turns your notebook into a Microsoft PowerPoint-style presentation.

The Present extension adds 2 buttons to Notebook's menu bar—Edit Presentation and Show Presentation:



To begin using Notebook Present, click the Edit Presentation button.

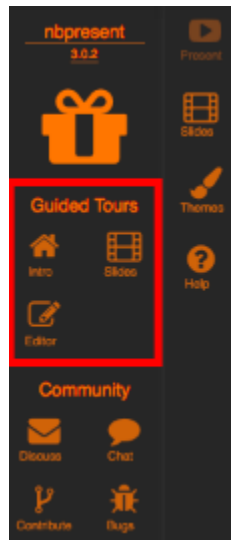


The Notebook Present sidebar is displayed on the right side of your browser:

Clicking each icon changes the menu and layout of your notebook.

Clicking the Help icon displays 3 tours—demonstrations—of the main features of Present:

- *Intro tour.*
- *Slides tour.*
- *Editor tour.*



Select one of the tours to view a short presentation regarding the specifics of that feature.

### Intro tour

The Intro tour is a 2-minute presentation that explains how to use the main features of Present, including a description of each button's purpose.

NOTE: At any time, you can pause, go back to the previous or move forward to the next slide.

The following information is covered in the Intro tour:

- App Bar—When Authoring, this allows you control the content and style of your presentation. It also can be used to activate several keyboard shortcuts for editing:

## Keyboard shortcuts



The Jupyter Notebook has two different keyboard input modes. **Edit mode** allows you to type code/text into a cell and is indicated by a green cell border. **Command mode** binds the keyboard to notebook level actions and is indicated by a grey cell border with a blue left margin.

Mac OS X modifier keys:

: Command

: Control

: Option

: Shift

: Return

: Space

: Tab

### Command Mode (press to enable)

: find and replace

: previous slide

: next slide

: next slide

: enter edit mode

: open the command palette

: run cell, select below

: run selected cells

: run cell, insert below

: to code

: to markdown

: extend selected cells above

: extend selected cells above

: extend selected cells below

: extend selected cells below

: insert cell above

: insert cell below

: cut selected cells

: copy selected cells

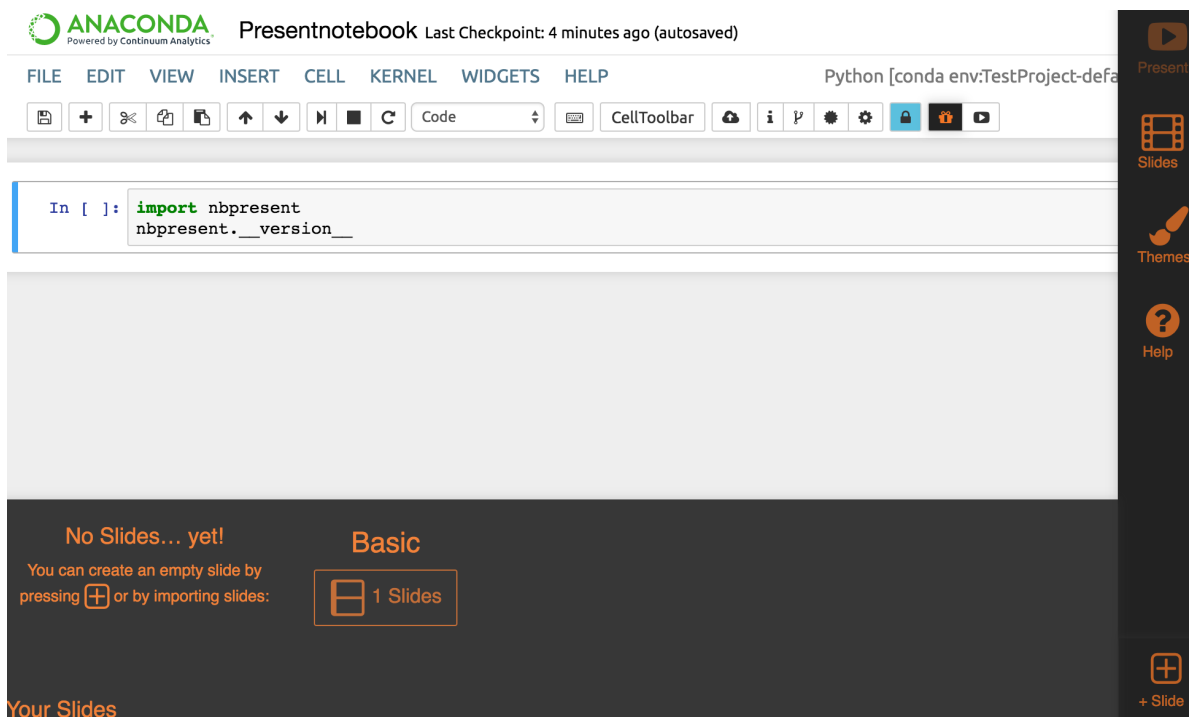
: paste cells above

: paste cells below

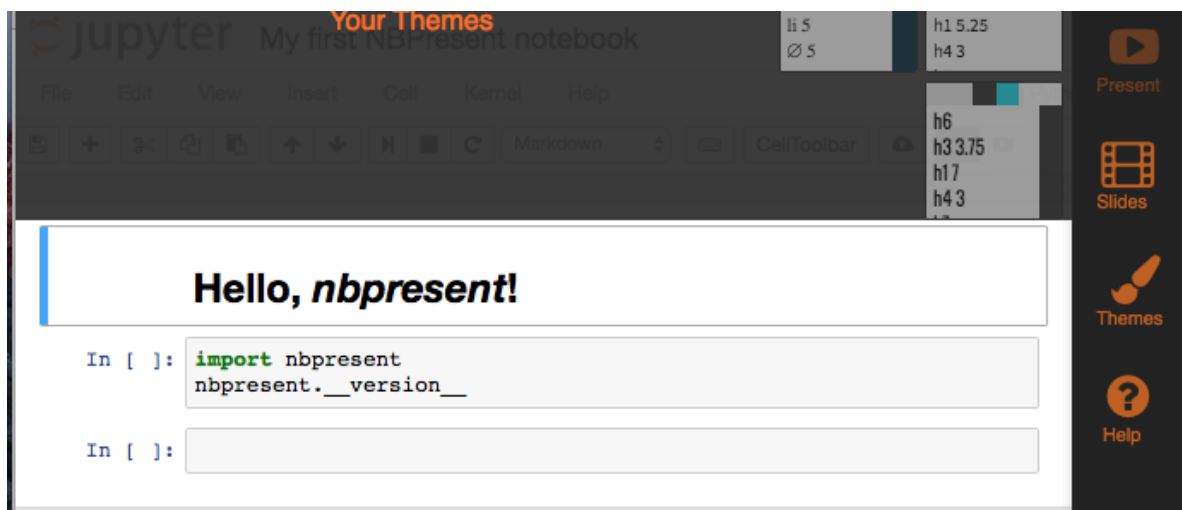
: undo cell deletion

Close

- **Stop Authoring**—Clicking the Edit Presentation button again stops Authoring, and removes all keyboard shortcuts.
- **Show Presentation**—If you just want to run your presentation without using any Authoring tools, just click the Show Presentation button.
- **Presenting/Authoring**—Once you've made some slides, start Presenting, where you can use most Notebook functions with the Theme we have defined, as well as customize slides on the fly.
- **Slides button**—Slides, made of Regions linked to Cell Parts are the bread and butter of any presentation, and can be imported, created, linked, reordered, and edited here.



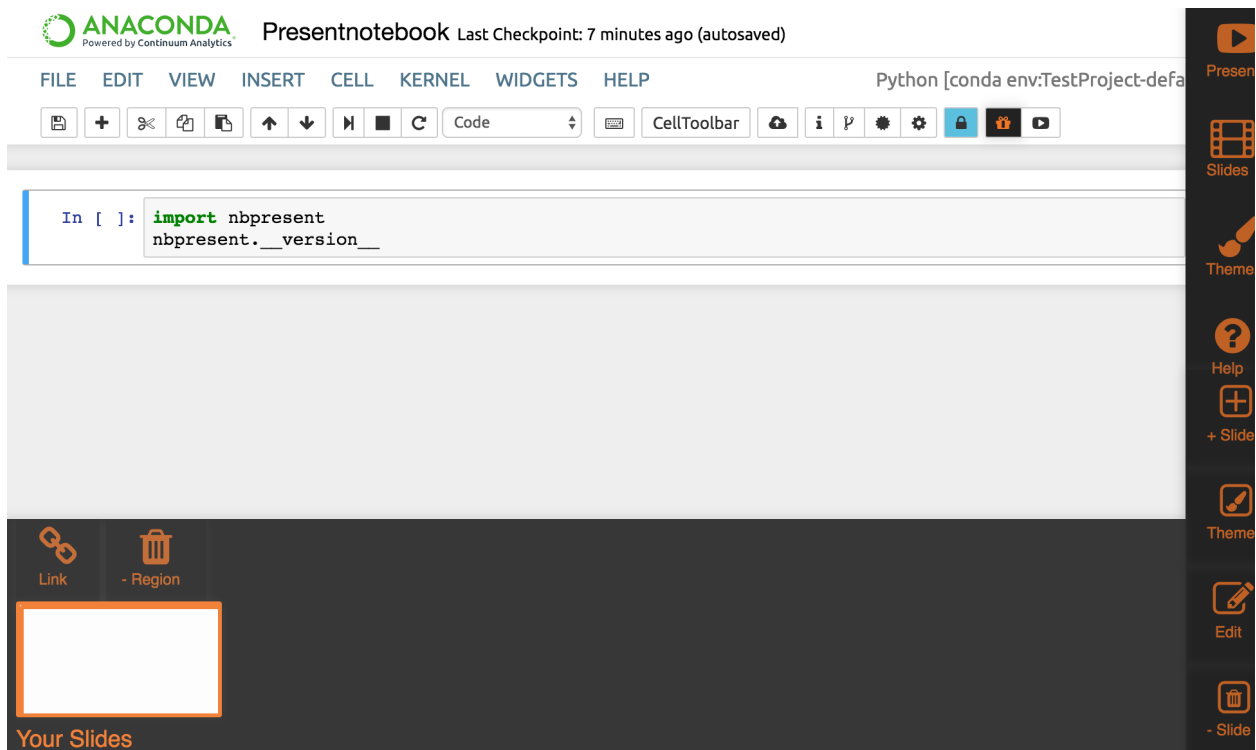
- Theming—Theming lets you select from existing colors, typography, and backgrounds to make distinctive presentations. The first theme you select will become the default, while you can choose custom themes for a particular slide, like a title.



- Saving—Whenever you save your Notebook, all your presentation data will be stored right in the Notebook .ipynb file.
- Downloading—After you've made a presentation, you can download it as an HTML page by choosing Download → Download As: Presentation (.html) in the menu.
- Help—Activate Help at any time to try other tours, connect with the Present developers and community, and other information.

## Slides tour

Slides make up a presentation. Clicking Slides toggles the sorter view and the Slide Toolbar on and off:



The Slides tour explains how to create and manage slides, including the following information:

- Slide Toolbar—Create a new slide. Clicking + Slide will offer some choices for creating your new slide.
- Import—The quickest way to create a presentation is to import each cell as a slide. If you’ve already created slides with the official slideshow cell toolbar or RISE, you can import most of that content.
- Template Library—You can create a presentation from an existing template.
  - Reuse Slide as Template—You can create a presentation based on an existing slide.
  - Simple Template—A common template is the Quad Chart, with four pieces of content arranged in a grid.
- Region—The Quad Chart has four Regions. To select a region, click it.
  - Link a Region to a Cell Part—Each Region can be linked to a single Cell Part using the Link Overlay, which shows all of the parts available.
    - \* Cell Part: Source (blue)—Source, such as code and Markdown text.
    - \* Cell Part: Outputs (red)—Outputs, such as rich figures and script results.
    - \* Cell Part: Widgets (purple)—Jupyter widgets, interactive widgets that provide both visualization and user input.
    - \* Cell Part: Whole (orange)—Finally, a Whole Cell, including its Source, Widgets and Outputs can be linked to a single region.
  - Unlink a region from a Cell Part—Unlinking removes the connection between a region and a cell part, without deleting either one.
  - Region: Trashing—Trashing a Region permanently deletes it, without affecting any linked Cell Part.

- Part Thumbnail—We'll try to draw a part thumbnail. It can only be reliably updated when a linked Cell Part is on-screen when you mouse over it, but you should usually be able to get an idea of what you're seeing. The colors of the regions correspond to the cell types.
- Presenting—Clicking the Present button while editing brings up the Presenter with editing mode still enabled:
  - Linked inputs and widgets are still interactive.
  - Go forward—Click to go to the next slide
  - Go back—Click to go back to the previous slide
  - Go back to the beginning—Click to go back to the first slide
  - My work is done here—Click to go back to the Notebook.

### Editor tour

Once you've made a few slides, you'll likely want to customize them. The Editor tour explains how to edit your notebook, including the following information:

- Editing Slides—Activate the Slide Editor by double-clicking it, or by clicking Edit Slide.
- Region Editor—Click to drag Regions around and resize them.
- Region Tree—Reorder Regions and see the details of how Regions will show their linked Parts.
- Add Region—Add new regions.
- Attribute Editor—Edit the properties of a region.
- Data Layouts—In addition to manually moving regions, you can apply these layouts to automatically fill your slides.
- More Regions—Add more regions—with a weight of 1.
- Tree Weight—Make a Region bigger or smaller, based on its relative weight.
- 12 Grid—A compromise between the Free and Treemap layouts, the 12 Grid option rounds all of the values in a layout to a factor of 12.

### Using Compute Resource Configuration

The Compute Resource Configuration (CRC) application displays information about the current project and allows you to set a custom project environment and view and manage your other AEN applications, including stopping, starting, restarting and viewing the logs of each.

The CRC application screen contains 3 sections:

- *Info.*
- *Conda environment.*
- *Running apps.*



### Info

**Hostname**  
davila-aen-test  
**Project Home**  
/projects/testuser1/demo  
**Project RC file**  
/projects/testuser1/demo/.projectrc

### Conda Environment

/projects/testuser1/demo/envs/default

Setting the default environment for this project will affect all users by modifying the **.projectrc** file.  
All running apps will be shutdown.  
Make sure **No one working on this project** has any unsaved documents!

Set Project Environment

### Running Apps

User	Application	Status	Last Seen	Terminate	Relaunch	Logs
testuser1	terminal	running	1 hours ago	Terminate	Relaunch	

## Info

The Info section displays:

- Hostname—IP address of the host computer.
- Project Home—File path to the project home.
- Project RC file—File path to the project runtime configuration file **.projectrc**. This file is sourced when a user opens any AEN application. It sets several AEN internal environment variables, sets up the project environment and sets additional user environment variables for the project.

### Conda environment

This section displays the path to the default conda environment.

**CAUTION:** Changing the default environment will affect all users. Be sure that no team members have any unsaved documents before changing the project environment.

To change the default conda environment location:

1. Edit the path to point to your preferred conda environment.
2. Click the Set Project Environment button.

Your `.projectrc` file is modified.

### Running apps

The Running Apps section displays a list of users and the applications that are in use, as well as when the app was last modified.

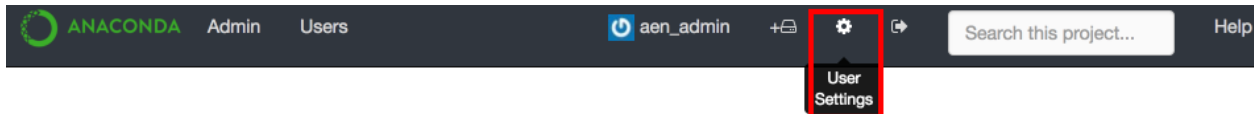
To terminate any individual application, click the Terminate button.

To stop and re-launch any individual application, click the Relaunch button.

To review the run logs of any active application, which may be useful for troubleshooting, click the Logs button.

### Managing your account

To access your account information, click the User Settings icon in the AEN navigation bar:



### Updating your public profile

Your public profile is made up of a name, a personal URL, your company and location.

1. In the left navigation pane, click the **Public Profile** tab.
2. To update your profile picture, create a [Gravatar](#) that is associated with the email address you used to create your AEN account. The gravatar will automatically appear.

### Changing your password

1. In the left navigation pane, click the **Account Settings** tab.



Deleting your AEN account

- 1. In the left navigation pane, click the **Account Settings** tab.

Viewing account operations

- 1. In the left navigation pane, click the **Security Log** tab to view a list of operations performed on your account.

# Settings

Change your account and profile settings.

Public Profile

Account Settings

Security Log

Applications

Security Log

	aen_admin	oauth.authenticate	2017-09-25 04:52:06.713000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.954000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.720000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.490000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.259000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.033000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:57.802000+00:00

- 2. For more information about an operation, click the Eye icon to the left of the the operation name.

Registering an application

If you want to create an application for AEN or have already done so, you must register your application.

- 1. In the left navigation pane, click the **Applications** tab.

# Settings

Change your account and profile settings.

Public Profile

Account Settings

Security Log

Applications

Developer Applications

Register New Application

These are applications you have registered to use the Anaconda Enterprise Notebooks API.

Gateway ()

Authorized applications

Gateway ()

revoke

- 2. Click the Register New Application button to open a form for registering your application.

### Advanced tasks

Advanced tasks are best-suited for users who are comfortable working in a Terminal.

### Working with environments

AEN runs on conda, a package management system and environment management system for installing multiple versions of software packages and their dependencies and switching easily between them.

A conda environment usually includes 1 version of Python or R language and some packages.

The ability to have a custom project environment is one of the most powerful features of AEN. Your project environment is integrated so that all of your project applications recognize it and all of your team members have access to it.

This section contains information about:

- *Creating a default conda environment using the Jupyter Notebook application*
- *Creating a default conda environment using the Jupyter Notebook application*
- *Using your conda environment in a notebook*
- *Customizing your conda environment*
- *Installing a conda package using Terminal*
- *Installing a conda package using Notebook*
- *Uninstalling a conda package*

NOTE: This conda environments guide is specific to AEN. For full conda documentation—including cheat sheets, a conda test drive, and command reference—see the [conda documentation](#).

### Creating a default conda environment using the Jupyter Notebook application

You can create, activate, and install packages and deactivate environments from within the Notebook menu bar.

To install from the Notebook menu bar:

1. Click the **Conda** tab and select the plus sign icon.
2. Search for `numpy` in the package search box.
3. Select `numpy` from the search results.



Files
Running
IPython Clusters
Conda

3 Conda environments

Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default
	myenv		/projects/aen_admin/TestProject/envs/myenv

2 available packages

→

39 installed packages in environment "myenv"

Name	Version	Channel
<input checked="" type="checkbox"/> numpy	1.13.1	defaults
<input type="checkbox"/> numpydoc	0.7.0	defaults

Name	Version	Build	Available
<input type="checkbox"/> anaconda-client	1.6.3	py36_0	
<input type="checkbox"/> certifi	2016.2.28	py36_0	
<input type="checkbox"/> clyent	1.2.2	py36_0	
<input type="checkbox"/> decorator	4.1.2	py36_0	
<input type="checkbox"/> ipykernel	4.6.1	py36_0	
<input type="checkbox"/> ipython	6.1.0	py36_0	

1. Click the Install button.

The environment is added to the project's `env` directory.

## Creating a default conda environment using Terminal

In AEN, all new environments created with conda automatically include Python, Jupyter Notebooks and pip. You can specify any other packages you want included in your new environment.

**TIP:** By default, conda creates a new environment in your project's `env` directory—so that all team members have access to the environment. For information about limiting your team member's read, write or execute permissions, see [Workbench](#).

To create a new environment within your AEN account, run the command `conda` in a [Terminal](#) application.

**EXAMPLE:** To create a new environment named `WeatherModel` that contains Python, NumPy, pip and Jupyter Notebooks in your project's `env` directory:

1. Log in to AEN.
2. Open a project.
3. On the project home page, click the Terminal application icon to open a Terminal.
4. Create the environment:

```
conda create -n WeatherModel numpy
```

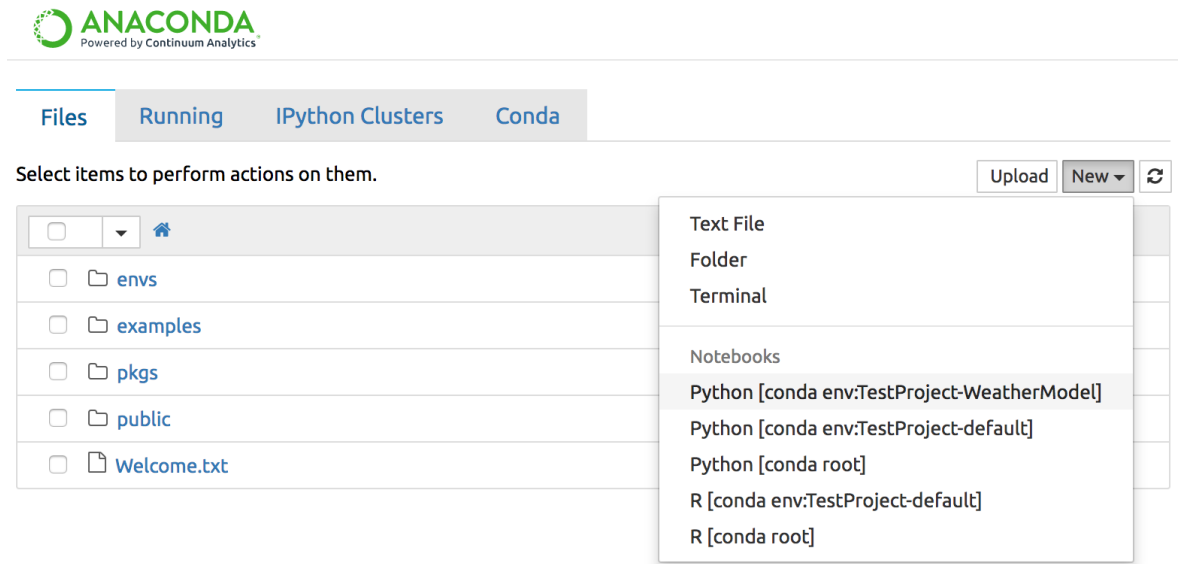
**TIP:** Python, pip and Jupyter Notebooks are automatically installed in each new environment. You only need to specify NumPy in this command.

5. Make the new environment your default:

```
source activate WeatherModel
```

6. To use your new environment with Jupyter Notebooks, open the Notebook application.
7. Click the New button to open a new notebook. In the drop-down menu under Notebooks, the environment you just created is displayed.
8. To activate that environment, select it.

The environment is added to the project's `env` directory.



NOTE: You can deactivate the new environment when you are finished with your notebook by opening the Terminal application and running the command `source deactivate`.

## Using your conda environment in a notebook

Whether you have created an environment using conda in a terminal, or from the **Conda** tab in a notebook, you can use the conda environment in the same way.

When working in a notebook, to select the environment you have created and want to use with that notebook, in the **Kernel** menu, select Change Kernel.

EXAMPLE: If you have an environment named `my_env` in a project named `test1` that includes NumPy and SciPy and you want to use that environment in your notebook, in the **Kernel** menu, select `Python [conda env:test1-my_env]`.

The notebook code will run in that environment and can import NumPy and SciPy functions.

## Customizing your conda environment

If you need a Python package that AEN doesn't include by default, you can install additional packages into your AEN environment.

**TIP:** You cannot install packages into the default Anaconda environment. You must create your own environment before installing a new package into that environment.

AEN is built on Anaconda, so you can install additional Python packages using conda or pip—both of which are included with Anaconda.

## Installing a conda package using Terminal

To install a conda package using the Terminal application:

1. Create and activate the environment using the steps in *Creating a default conda environment using the Jupyter Notebook application*.
2. In your Terminal application, run the command `conda install <packagename>`.

**NOTE:** Be sure to specify the Python version you want when using conda to create the environment, or it will use the same version as root.

**EXAMPLE:**

```
conda create -n mypy3 python=3 numpy scipy
```

A conda environment named mypy3, running on Python 3 and containing NumPy and SciPy is created. All subsequent packages added to this environment will be the Python 3 compatible versions.

## Installing a conda package using Notebook

You can also install the package within your notebook without using the terminal app:

1. From the Notebook application, click the **Conda** tab.
2. Select the environment you wish to use.
3. Search for the package you want to add.
4. Click the Install button.

## Uninstalling a conda package

To uninstall a package using this method, run the command `conda remove <packagename>`.

**NOTE:** Replace <packagename> with the name of the package you are uninstalling.

## Using visualization packages

AEN supports multiple visualization packages for Python and R language.

For Python, the default environment has *Matplotlib* and *Bokeh* installed.

For R language, the default environment has *r-ggplot2* and *r-bokeh* installed.

### Matplotlib

Matplotlib is a Python 2D and 3D plotting and visualization library that produces publication-quality figures in a variety of hardcopy formats and interactive environments across platforms.

To display Matplotlib figures in the output cells of a notebook running the default environment, run:

```
import matplotlib.pyplot as plt
%matplotlib inline
```

Any Matplotlib figures in the notebook are displayed in it's output cells.

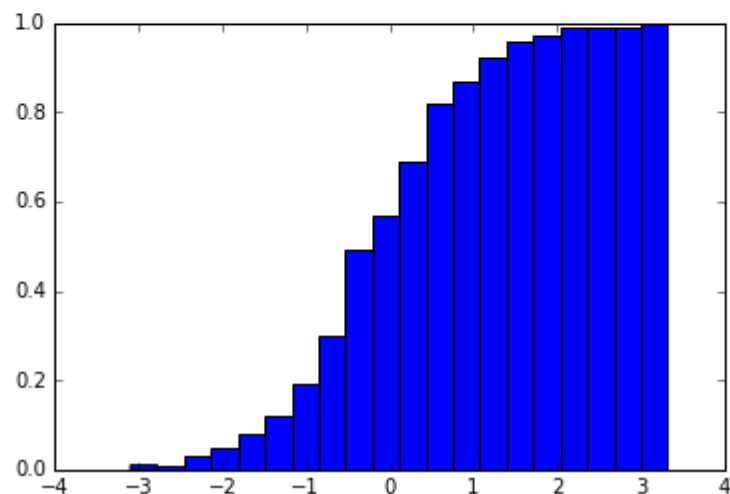
EXAMPLE: The following screenshot is of a cumulative density function (CDF) plot using values taken from a normal distribution:

```
In [1]: import matplotlib.pyplot as plt
%matplotlib inline
```

```
In [2]: import numpy as np

x = np.random.normal(size=100)
```

```
In [3]: plt.hist(x, normed=True, cumulative=True, bins=20);
```



For more information, including a [gallery](#), [examples](#), [documentation](#) and a [list of plotting commands](#), see the [Matplotlib website](#).

## Bokeh

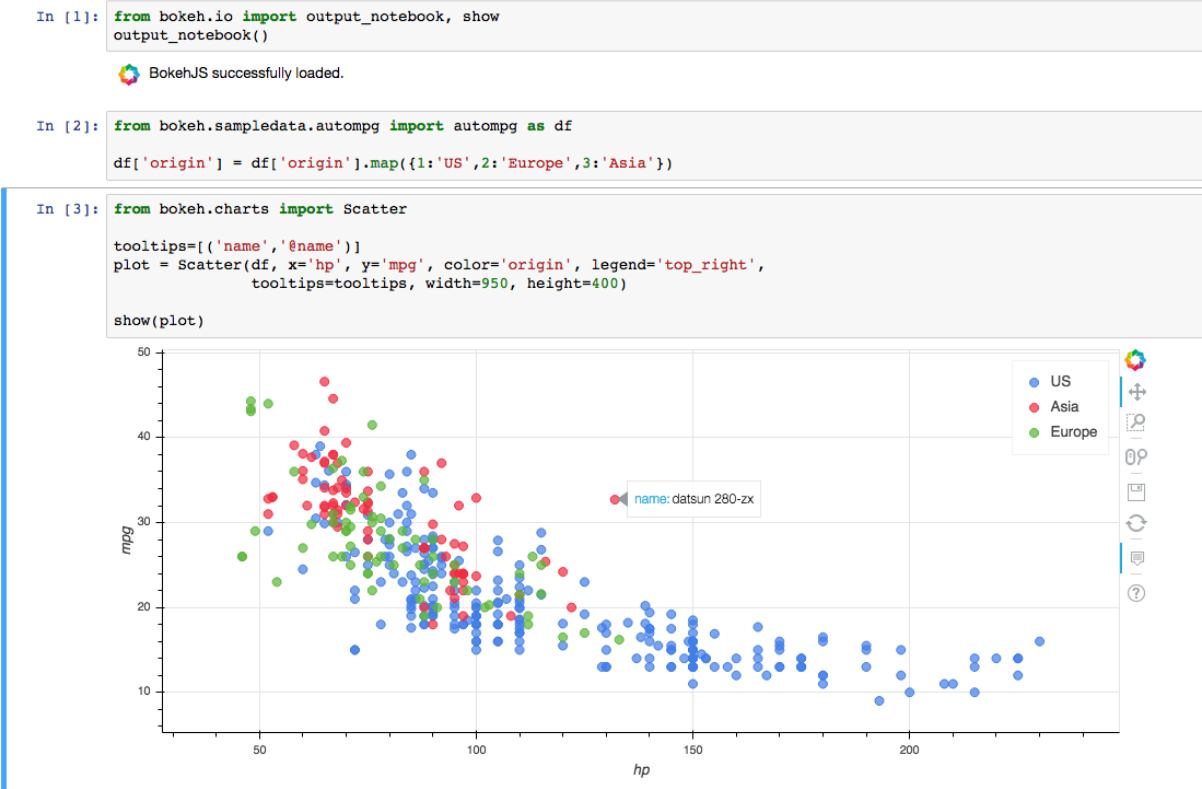
**Bokeh** is an interactive visualization library that targets modern web browsers to provide elegant, concise construction of novel graphics.

To display Bokeh figures in the output cells of a notebook running the default environment, run:

```
from bokeh.io import output_notebook, show
output_notebook()
```

Any Bokeh figures in the notebook are displayed in its output cells.

The following screenshot is of a scatter plot of miles-per-gallon vs. horsepower for 392 automobiles using the `autompg` sample dataset:



## ggplot2

**Ggplot2** is a plotting system for R language which is based on the grammar of graphics. Ggplot2 tries to take only the good parts of base and lattice graphics and none of the bad parts.

To use ggplot2 with AEN:

1. Open a new Notebook using the R kernel.
2. Load the ggplot2 library with the following code:

```
library(ggplot2)
```

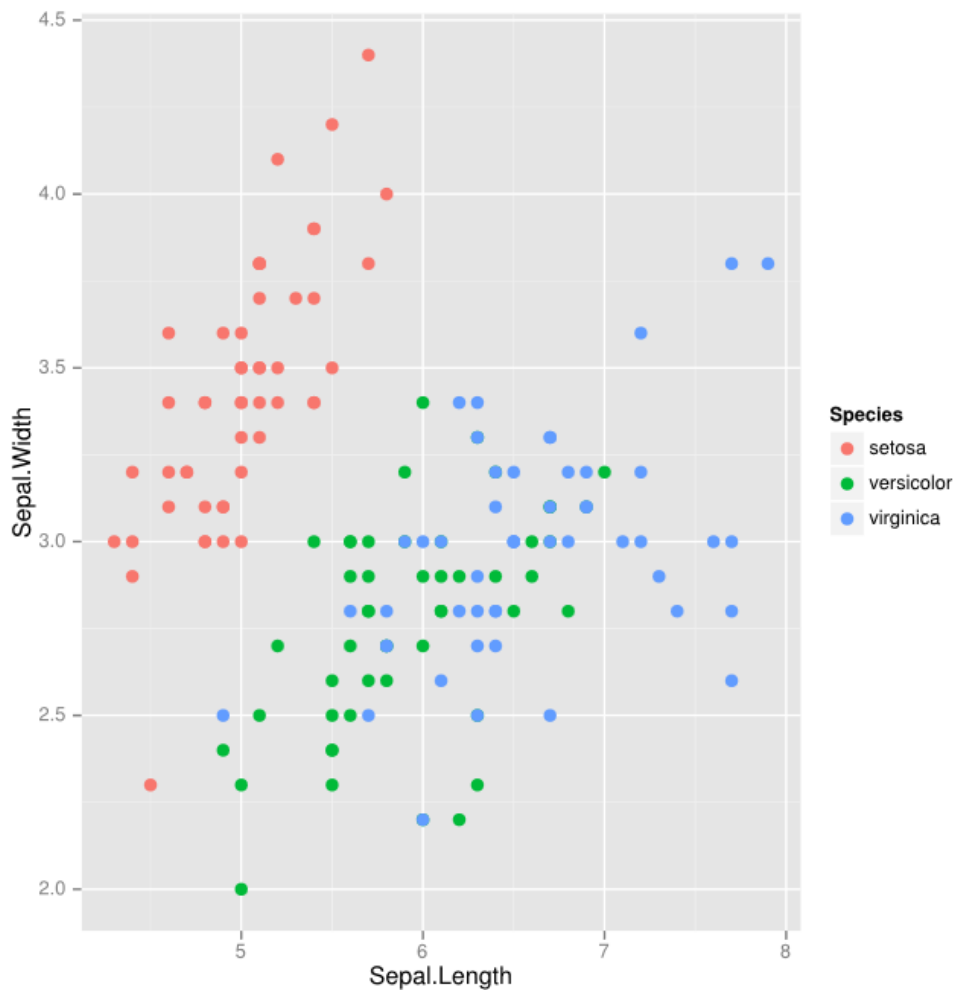
The ggplot2 library is loaded and ready for use in AEN.

The following screenshot is of a scatter plot of sepal width vs sepal length using the `iris` dataset provided by the `dplyr` library:

```
In [5]: library(dplyr)
```

```
In [6]: library(ggplot2)
```

```
In [7]: ggplot(data=iris, aes(x=Sepal.Length, y=Sepal.Width, color=Species)) + geom_point(size=3)
```



## Using environment variables

Some Python packages depend on environment variables for correct operation.

EXAMPLE: Theano requires that the directory containing the CUDA compiler is included in the `$PATH` environment variable in order for GPU acceleration to be enabled.

To change environment variables for all AEN applications, modify the project runtime configuration file `.projectrc`. For more information, see [Using Compute Resource Configuration](#).

`.projectrc` sets several AEN internal environment variables, sets up the project environment and can set additional user environment variables for that project. This file is sourced when a user opens any AEN application—including Jupyter Notebook—and Jupyter kernels will be able to read the included environment variables.



## Cheat sheet

See the [Anaconda Enterprise Notebooks cheat sheet PDF](#) (232 KB) for a single-page summary of the most important information about using AEN.

## Troubleshooting

This troubleshooting guide provides you with ways to deal with issues that may occur with your AEN installation.

### AEN application not working properly

An AEN application is not working as expected.

#### Cause

There are several reasons an application may not work as expected.

#### Solution

Most AEN application issues can be resolved by following these steps:

1. Refresh the page.
2. If the issue is not resolved, close and open the application.
3. If the issue is not resolved, *stop and restart your project*.
4. If the issue is not resolved, check that you are using the latest version of your web browser—Chrome, Safari, Edge, or Firefox.
5. Log out of AEN.
6. Restart your browser, and log back in.

If you continue to have issues, then please contact your administrator or enterprise support representative.

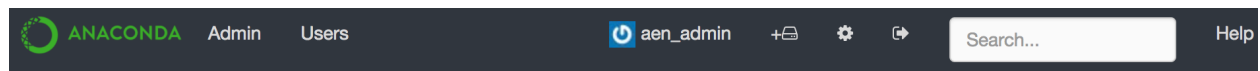
## Admin guide

This administrator guide provides information about the administration of an AEN installation.

Most AEN system management is done from the administrative user interface (admin UI). Some advanced tasks are done *using the command line*.

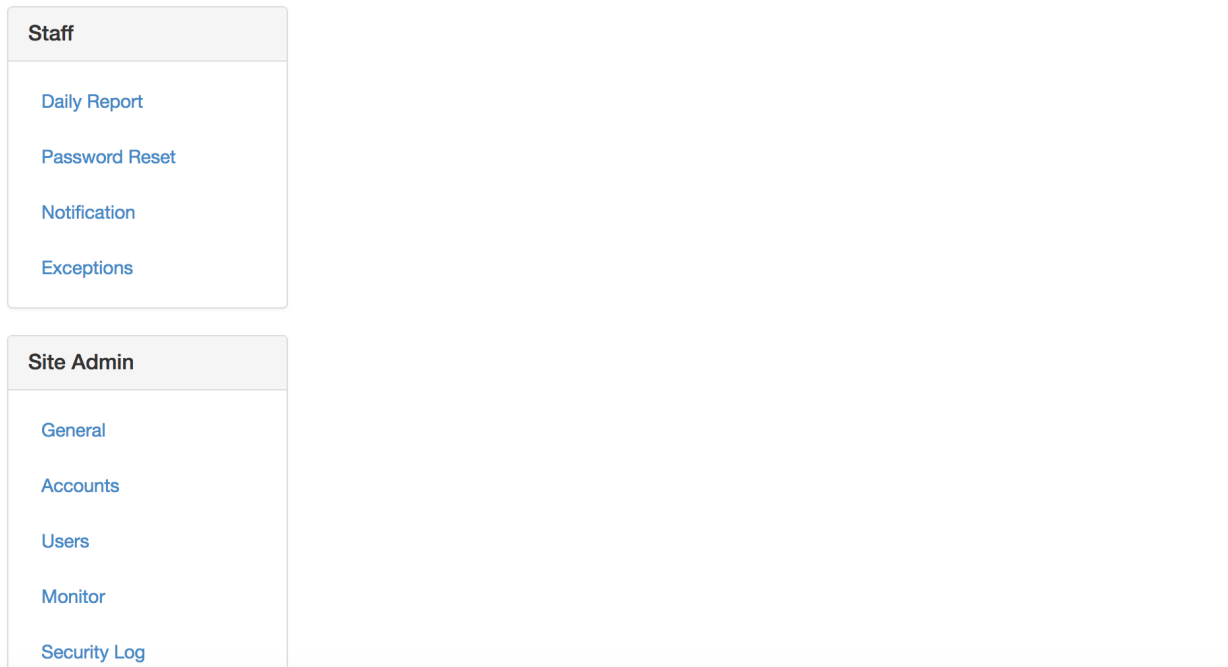
Any AEN user account can be *upgraded to an administrator account* to have both user and administrator privileges.

Administrators see two additional links in the AEN Navigation bar—Admin and Users:



# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the system administrator.



All of the other navigation bar items are the same as for a user account.

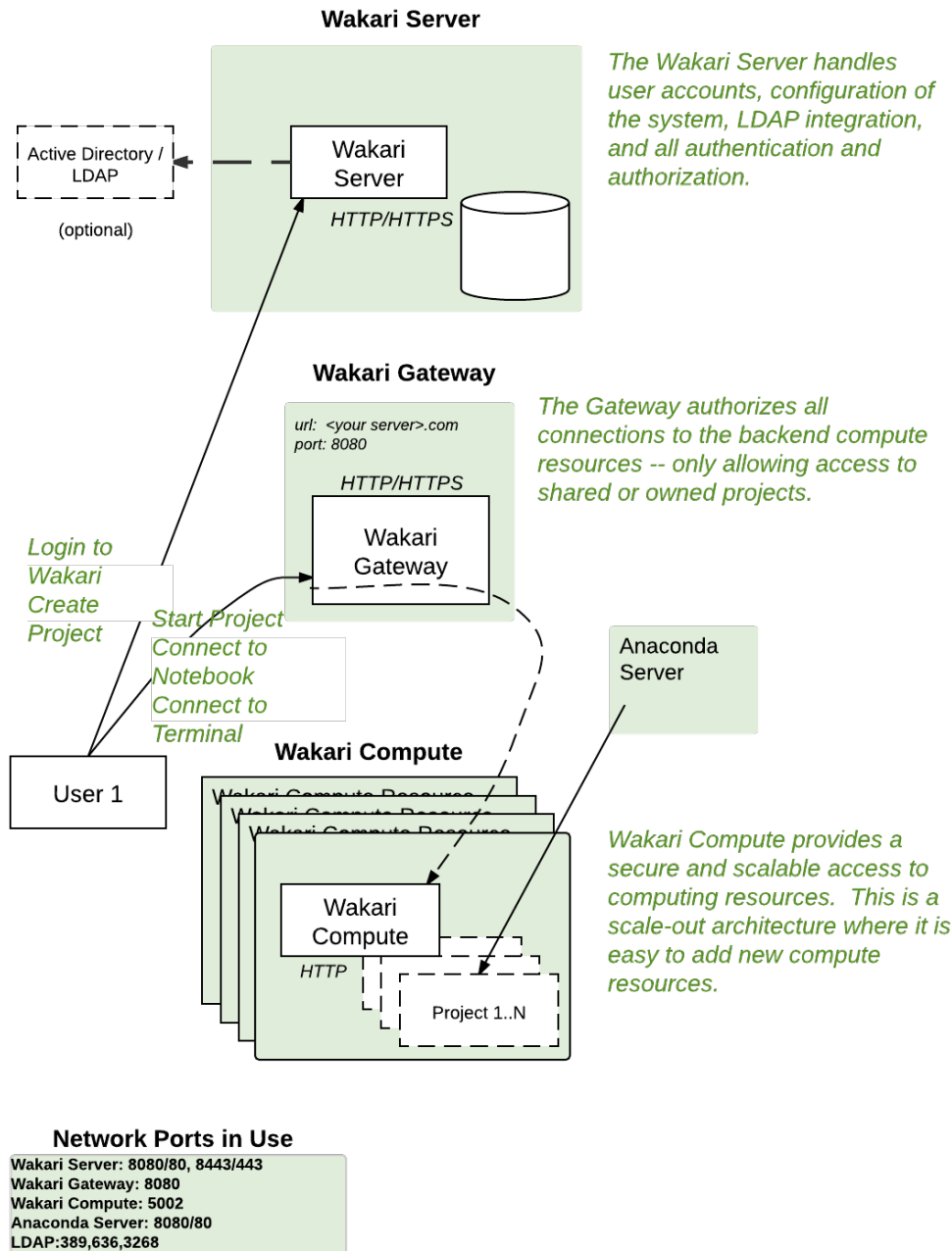
## Concepts

### System overview

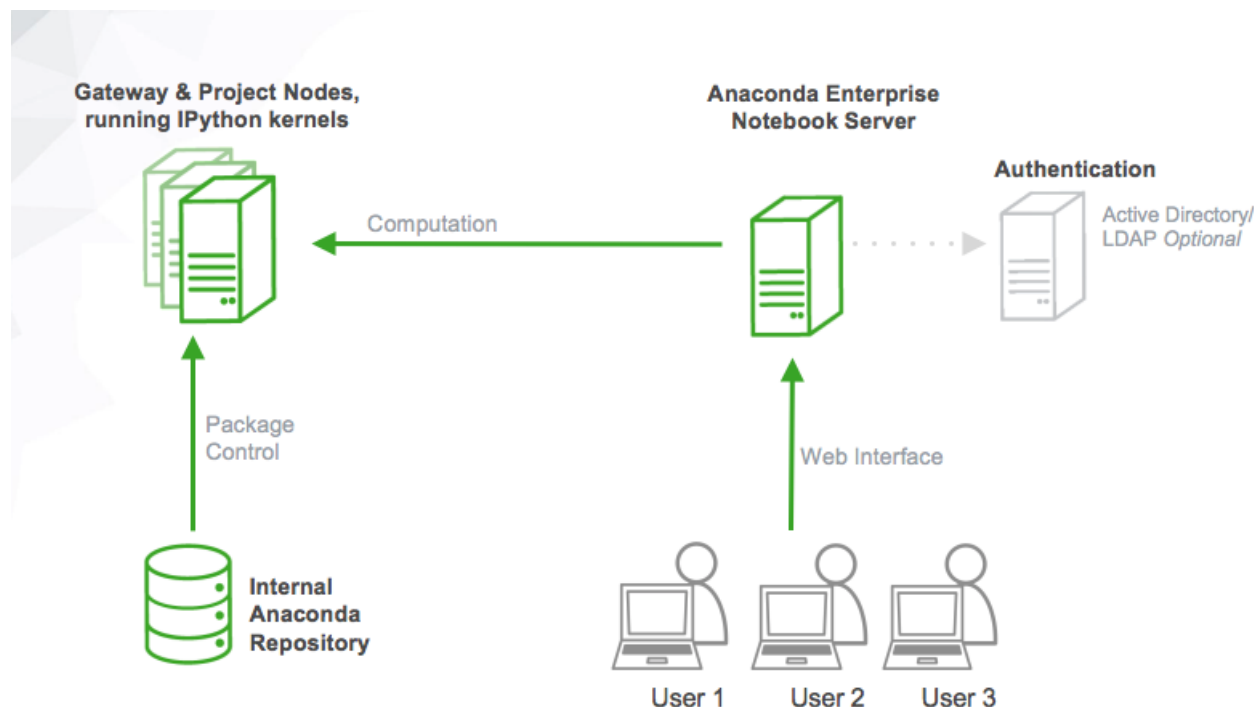
The Anaconda Enterprise Notebooks platform consists of 3 main service groups: AEN server, AEN gateway and AEN compute, which are called “nodes”:

- *Server node*—The administrative front-end to the system where users login, user accounts are stored, and administrators manage the system.
- *Gateway node(s)*—A reverse proxy that authenticates users and directs them to the proper compute node for their project. Users will not notice this node after installation as it automatically routes them.
- *Compute nodes*—Where projects are stored and run.

## Anaconda Enterprise Notebooks



These services can be run on a single machine or distributed across multiple servers.



Organizationally, each AEN installation has exactly 1 server instance and 1 or more gateway instances. Each compute node can only be connected to a single gateway. The collection of compute nodes served by a single gateway is called a **data center**. You can add data centers to the AEN installation at any time.

EXAMPLE: An AEN deployment with 2 data centers, where 1 gateway has a cluster of 20 physical computers, and the second gateway has 30 virtual machines, must have the following services installed and running:

- 1 AEN server instance
- 2 AEN gateway instances
- 50 AEN compute instances (20 + 30)

Nodes must be configured and maintained separately.

## Server node

The server node controls login, accounts, admin, project creation and management as well as interfacing with the database. It is the main entry point to AEN for all users. The server node handles project setup and ensures that users are sent to the correct project data center.

Since AEN is web-based, it uses the standard HTTP port 80 or HTTPS port 443 on the server.

AEN uses MongoDB for its internal data persistency. It is typically run on the same host as the server but can also be *installed* on a separate host.

Server nodes use NGINX to handle the user-facing AEN web interface. NGINX acts as a request proxy for the actual server web-process which runs on a high numbered port that only listens on localhost. NGINX is also responsible for static content.

Server is installed in the `/opt/wakari/wakari-server` directory.

## Server processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manage wakari-worker, multiple processes of wk-server.
user	wakari
configuration	/opt/wakari/wakari-server/etc/supervisord.conf
log	/opt/wakari/wakari-server/var/log/supervisord.log
control	service wakari-server
ports	none

wk-server	details
description	Handles user interaction and passing jobs on to the wakari gateway. Access to it is managed by NGINX.
user	wakari
command	/opt/wakari/wakari-server/bin/wk-server
configuration	/opt/wakari/wakari-server/etc/wakari/
control	service wakari-server
logs	/opt/wakari/wakari-server/var/log/wakari/server.log
ports	Not used in versions after 4.1.2 *

\* AEN 4.1.2 and earlier use port 5000. This port is used only on localhost. Later versions of AEN use Unix sockets instead. The Unix socket path is: `unix:/opt/wakari/wakari-server/var/run/wakari-server.sock`

wakari-worker	details
description	Asynchronously executes tasks from wk-server.
user	wakari
logs	/opt/wakari/wakari-server/var/log/wakari/worker.log
control	service wakari-server

nginx	details
description	Serves static files and acts as proxy for all other requests passed to wk-server process. *
user	nginx
configuration	/etc/nginx/nginx.conf /opt/wakari/wakari-server/etc/conf.d/www.enterprise.conf
logs	/var/log/nginx/woc.log /var/log/nginx/woc-error.log
control	service nginx status
port	80

\* In AEN 4.1.2 and earlier the wk-server process runs on port 5000 on localhost only. In later versions of AEN the wk-server process uses the Unix socket path `unix:/opt/wakari/wakari-server/var/run/wakari-server.sock`.

NGINX runs at least two processes:

- Master process running as root user.
- Worker processes running as nginx user.

## Gateway node

The gateway node serves as an access point for a given group of compute nodes. It acts as a proxy service and manages the authorization and mapping of URLs and ports to services that are running on those nodes. The gateway nodes provide a consistent uniform interface for the user.

NOTE: The gateway may also be referred to as a data center because it serves as the proxy for a collection of compute nodes.

You can put a gateway in each data center in a tiered scale-out fashion.

AEN gateway is installed in the `/opt/wakari/wakari-gateway` directory.

## Gateway processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manages the wk-gateway process.
user	wakari
configuration	/opt/wakari/wakari-gateway/etc/supervisord.conf
log	/opt/wakari/wakari-gateway/var/log/supervisord.log
control	service wakari-gateway
ports	none

wakari-gateway	details
description	Passes requests from the AEN Server to the Compute nodes.
user	wakari
configuration	/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
logs	/opt/wakari/wakari-gateway/var/log/wakari/gateway.application.log /opt/wakari/wakari-gateway/var/log/wakari/gateway.log
working dir	/ (root)
port	8089 (webcache)

## Compute node(s)

Compute nodes are where applications such as Jupyter Notebook and Workbench actually run. They are also the hosts that a user sees when using the Terminal app or when using SSH to access a node. Compute nodes contain all user-visible programs.

Compute nodes only need to communicate with a gateway, so they can be completely isolated by a firewall.

Each project is associated with one or more compute nodes that are part of a single data center.

AEN compute nodes are installed in the `/opt/wakari/wakari-compute` directory.

Each compute node in the AEN system requires a compute launcher service to mediate access to the server and gateway.

## Compute processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manages the wk-compute process.
user	wakari
configuration	/opt/wakari/wakari-compute/etc/supervisord.conf
log	/opt/wakari/wakari-compute/var/log/supervisord.log
control	service wakari-compute
working dir	/opt/wakari/wakari-compute/etc
ports	none

wk-compute	details
de-scrip-tion	Launches compute processes.
user	wakari
config-uration	/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json      /opt/wakari/wakari-compute/etc/wakari/scripts/config.json
logs	/opt/wakari/wakari-compute/var/log/wakari/compute-launcher.application.log      /opt/wakari/wakari-compute/var/log/wakari/compute-launcher.log
work-ing dir	/ (root)
control	service wakari-compute
port	5002 (rfe)

Wk-compute loads each of the following configuration files, in this order:

- /etc/wakari/config.json.
- /etc/wakari/compute-launcher-config.json.
- ./compute-launcher-config.json.
- Any configuration file specified by the -c option.

If an option is specified in multiple files, the last one encountered takes precedence.

## Supervisor and supervisord

AEN uses a process control system called “Supervisor” to run its services. Supervisor is run by the AEN Service Account user, usually wakari or aen\_admin.

The Supervisor daemon process is called “supervisord”. It runs in the background and should rarely need to be restarted.

### Service Account

AEN must be installed and executed by a Linux account called the AEN Service Account. The username of the AEN Service Account is called the AEN Functional ID (NFI). The AEN Service Account is created during AEN installation—if it does not exist—and is used to run all AEN services.

The default NFI username is `wakari`. Another popular choice is `aen_admin`.

**WARNING:** The Service Account should only be used for administrative tasks, and should not be used for operating AEN the way an ordinary user would. If the Service Account creates or starts projects, the permissions on the AEN package cache will be reset to match the Service Account, which will interfere with the normal operation of AEN for all other users.

### Anaconda environments

Each project has an associated conda environment containing the packages needed for that project. When a project is first started, AEN clones a default environment with the name “default” into the project directory.

Each release of AEN 4 includes specific tested versions of conda and the conda packages included with AEN. These tested conda packages include Python, R, and other packages, and these tested conda packages include all of the packages in Anaconda.

If you upgrade or install different versions of conda or different versions of any of these conda packages, the new packages will not have been tested as part of the AEN 4 release.

These different packages will usually work, especially if they are newer versions, but they are not tested or guaranteed to work, and in some cases they may break product functionality.

You can use a new conda environment to test a new version of a package before installing it in your existing environments.

If using conda to change the version of a package breaks product functionality, you can use conda to change the version of the package back to the version known to work.

For more information about environments, see [Working with environments](#).

### Projects and permissions

AEN users interact with the system predominantly through [projects](#).

Projects are associated with a single data center within the AEN environment. The team of users includes one owner, which is the user that created the project.

Projects live in the `projectRoot` folder on the compute node—by default, `/projects`.

The project directory is created the first time a project is started. The `start-project` script clones it from `/opt/wakari/wakari-compute/lib/node_modules/wakari-compute-launcher/skeleton`.

Project directory permissions are:

```
owner: rwx, user who created the project
group: rwx, group of the owner
other: --x, to allow access to the Public folder
ACL: rwx for any other team members
```

Files and subdirectories within the project directory have the same permissions as the project directory, except:

- The public folder and everything in it are open to anyone.



- Any files hardlinked into the root anaconda environment—`/opt/wakari/anaconda`—are owned by the root or wakari users.

Project file and directory permissions are maintained by the `start-project` script. All files and directories in the project will have their permissions set when the project is started, except for files owned by root or the `AEN_SRVC_ACCT` user—by default, wakari or `aen_admin`.

The permissions set for files owned by root or the `AEN_SRVC_ACCT` user are not changed to avoid changing the permissions settings of any linked files in the `/opt/wakari/anaconda` directory.

CAUTION: Do not start a project as the `AEN_SRVC_ACCT` user. The permissions system does not correctly manage project files owned by this user.

## Installation

### Installation requirements

#### Hardware requirements

AEN server—At least:

- 2+GB RAM.
- 2+CPU cores.
- 20GB storage.

AEN gateway—At least:

- 2 GB RAM.
- 2 CPU cores.

AEN compute (N-machines)—Configured to meet the needs of the projects. At least:

- 2GB RAM.
- 2 CPU cores.
- 20 GB.

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda env directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

#### Software requirements

- RHEL/CentOS on all nodes. Versions from 6.5 through 7.4 are supported. Other operating systems are supported. However, this document assumes RHEL or CentOS.
- Linux home directories—Jupyter looks in `$HOME` for profiles and extensions.
- Ability to install in AEN directory `/opt/wakari` with at least 10 GB of storage.
- Ability to install in Projects directory `/projects` with at least 20 GB of storage. Size depends on number and size of projects.

NOTE: To install AEN in a different location see [\*Installing AEN in a custom location\*](#).

## Linux system accounts

Some Linux system accounts (UIDs) are added to the system during installation.

If your organization requires special actions, the following list is available:

- mongod (RHEL) or mongod (Ubuntu/Debian)—created by the RPM or deb package.
- elasticsearch—created by RPM or deb package.
- nginx—created by RPM or deb package.
- AEN\_SRVC\_ACCT—created during installation of AEN, and defaults to wakari.
- ANON\_USER—An account such as “public” or “anonymous” on the compute node.

NOTE: If ANON\_USER is not found, AEN\_SRVC\_ACCT will attempt to create it. If it fails, the project(s) will fail to start.

- ACL directories need the filesystem mounted with Posix ACL support (Posix.1e).

NOTE: You can verify ACL from the command line by running `mount` and `tune2fs -l /path/to/filesystem | grep options`.

## Software prerequisites

- AEN server:
  - Mongo—Equal to or higher than version 2.6.8 and lower than version 3.0.
  - NGINX—Equal to or higher than version 1.6.2.
  - Elasticsearch—Equal to or higher than version 1.7.2.
  - Oracle JRE version 7 or 8.
  - bzip2.
- AEN Gateway:
  - bzip2.
- AEN compute:
  - git
  - bzip2
  - bash or zsh
  - X Window System

NOTE: If you don’t want to install the whole X Window System, you must install the following packages to have R plotting support:

```
sudo yum install -y libXrender libXext libXdmcp libSM libICE libXt \
dejavu-sans-fonts dejavu-serif-fonts dejavu-fonts-common \
fontpackages-filesystem
```

## Security requirements

- Root or sudo access.
- File permissions: `umask 0022` is required during the installation.
- SELinux in permissive or disabled mode.

Edit the following file using either root or sudo access:

```
/etc/sysconfig/selinux
```

Edit the following:

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.

SELINUX=enforcing

# SELINUXTYPE= can take one of these two values:
#   targeted - Targeted processes are protected,
#   mls - Multi Level Security protection.

SELINUXTYPE=targeted
```

NOTE: You must reboot for the changes to take effect.

Verify changes with `getenforce`.

## Network requirements

TCP Ports:

Direction	Type	Default Port	Protocol	Optional	Configurable	Comments
Inbound	TCP	80	HTTP or HTTPS	No	Yes	Server
Inbound	TCP	8089	HTTP or HTTPS	No	Yes	Gateway
Inbound	TCP	5002	HTTP	No	Yes	Compute

## Other requirements

As long as the above requirements are met, there are no additional dependencies for AEN.

See also *system requirements for Anaconda Repository and Anaconda Scale*.

## What's next

*Prepare for installation.*

## Preparing for installation

### Downloading AEN installers

Download the installers and copy them to the corresponding servers.

```
SRPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
→com"
curl -O $SRPM_CDN/aen-server-4.3.3-Linux-x86_64.sh
curl -O $SRPM_CDN/aen-gateway-4.3.3-Linux-x86_64.sh
curl -O $SRPM_CDN/aen-compute-4.3.3-Linux-x86_64.sh
```

NOTE: The current \$SRPM\_CDN server will be confirmed in an email provided by your sales rep.

NOTE: These instructions use *curl* or *wget* to download packages, but you may use other means to move the necessary files into the installation directory.

### Gathering IP addresses or FQDNs

AEN is very sensitive to the IP address or domain name used to connect to the server and gateway nodes. If users will be using the domain name, you should install the nodes using the domain name instead of the IP addresses. The authentication system requires the proper hostnames when authenticating users between the services.

Print this page and fill in the domain names or IP addresses of the nodes below and record the user name and auto-generated password for the administrative user account in the box below after installing the AEN server node:

Node   Name or IP address	Port Number	Username   Password	
AEN server			
AEN gateway			
AEN compute			

NOTE: The values of these IP entries or DNS entries are referred to as <AEN\_SERVER\_IP> or <AEN\_SERVER\_FQDN>, particularly in examples of shell commands. Consider actually assigning those values to environment variables with similar names.

### Set up variables

Certain variables need to have values assigned to them before you start the installation.

## AEN server address

To define an environment variable for the AEN server address—FQDN or IP:

```
export AEN_SERVER=<AEN_SERVER_IP> # <from table above>
```

NOTE: The address—FQDN or IP—specified for the AEN server must be resolvable by your intended AEN users' web clients.

To verify your hostname, run `echo $AEN_SERVER`.

## AEN functional ID

AEN must be installed and executed by a Linux account called the AEN Service Account. The username of the AEN Service Account is called the AEN Functional ID (NFI). The AEN Service Account is created during AEN installation—if it does not exist—and is used to run all AEN services.

The default NFI username is `wakari`. Another popular choice is `aen_admin`.

To set the environment variable `AEN_SRVC_ACCT` to `wakari` or your chosen name before installation, run `export AEN_SRVC_ACCT="aen_admin"`.

This name is now the username of the AEN Service Account and of the AEN administrator account.

When upgrading AEN, set the NFI to the NFI of the current installation.

WARNING: The Service Account should only be used for administrative tasks, and should not be used for operating AEN the way an ordinary user would. If the Service Account creates or starts projects, the permissions on the AEN package cache will be reset to match the Service Account, which will interfere with the normal operation of AEN for all other users.

## AEN functional group

The AEN Functional Group (NFG) may be given any name. Most often, it is set to `aen_admin` or `wakari`. This Linux group includes the AEN service account, so all files and directories that have the owner NFI also have the group NFG.

When upgrading AEN, set the NFG to the NFG of the current installation.

To set the NFG before installation, run:

```
export AEN_SRVC_GRP="<NFG>"
```

NOTE: Replace `<NFG>` with your NFG name.

## AEN install sudo command

During AEN installation the installers perform various operations that require root level privileges. By default, the installers use the `sudo` command to perform these operations.

Before installation, set the `AEN_SUDO_CMD_INSTALL` environment variable to perform root level operations. You can also set it to no command at all if the user running the installer(s) has root privileges and the `sudo` command is not needed or is not available.

EXAMPLES:

```
export AEN_SUDO_CMD_INSTALL=""  
export AEN_SUDO_CMD_INSTALL="sudo2"
```

## AEN sudo command

By default the AEN services uses `sudo -u` to perform operations on behalf of other users—including `mkdir`, `chmod`, `cp` and `mv`.

To override the default `sudo` command when `sudo` is not available on the system, before installing, set the `AEN_SUDO_CMD` environment variable.

AEN must have the ability to perform operations on behalf of other users. Therefore, this environment variable cannot be set to an empty string or to `null`.

CAUTION: Any command that replaces `AEN_SUDO_CMD` must support the `-u` command line parameter—similarly to the `sudo` command.

EXAMPLE:

```
export AEN_SUDO_CMD="sudo2"
```

The optional environmental variable `AEN_SUDO_SH` is another way to customize AEN sudo operations. When AEN executes any `sudo` command, it will include the value of `AEN_SUDO_SH`, if it is set.

EXAMPLE: If your username is “jsmith” and the values are set as:

```
AEN_SUDO_CMD=sudo  
OWNER=jsmith  
AEN_SUDO_SH=sudologger  
PROJECT_HOME=/projects/jsmith/myproj
```

Then AEN will resolve:

```
$AEN_SUDO_CMD -u ${OWNER} $AEN_SUDO_SH rm -rf $PROJECT_HOME
```

As:

```
sudo -u jsmith sudologger rm -rf /projects/jsmith/myproj
```

In this case the `sudologger` utility could be a pass-through utility that logs all `sudo` usage and then executes the remaining parameters.

## Post-installation Sudo configuration

While `root/sudo` privileges are required during installation, `root/sudo` privileges are not required during normal operations after install, if user accounts are managed outside the software. However `root/sudo` privileges are required to start the services, thus in the service config files there may still need to be an `AEN_SUDO_CMD` entry.

For more information, see *Configuring sudo customizations*.

## AEN remote database settings

By default AEN server uses a local database. To override the default database location, see *Install AEN connected to a remote Mongo DB instance*.

## What's next

*Install the AEN server.*

## Installing the AEN server

The AEN server is the administrative front end to the system. This is where users log in to the system, where user accounts are stored, and where admins can manage the system.

Server is installed in the `/opt/wakari/wakari-server` directory.

## Installing the bzip2 package

Be sure you have the `bzip2` package installed. If this package is not installed on your system, install it:

```
sudo yum install bzip2
```

## Downloading prerequisite RPMs

To install AEN on a CentOS 6 server:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
↪com"
curl -O $RPM_CDN/nginx-1.6.2-1.el6ngx.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-tools-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-shell-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-server-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-mongos-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/elasticsearch-1.7.2.noarch.rpm
curl -O $RPM_CDN/jre-8u65-linux-x64.rpm
```

To install AEN on a CentOS 7 server:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
↪com"
curl -O $RPM_CDN/nginx-1.10.2-1.el7ngx.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-tools-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-shell-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-server-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-mongos-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/jre-8u112-linux-x64.rpm
curl -O $RPM_CDN/elasticsearch-1.7.6.noarch.rpm
```

### Installing prerequisite RPMs

Run:

```
sudo yum install -y *.rpm
sudo service mongod start
sudo chkconfig --add elasticsearch
```

### Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

### Running the AEN server installer

Run:

```
sudo -E ./aen-server-4.3.3-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-server
Logging to /tmp/wakari_server.log
Checking server name
Ready for pre-install steps
Installing miniconda
...
...
Checking server name
Loading config from /opt/wakari/wakari-server/etc/wakari/config.json
Loading config from /opt/wakari/wakari-server/etc/wakari/wk-server-config.json

=====

Created password '<RANDOM_PASSWORD>' for user 'aen_admin'

=====

Starting Wakari daemons...
installation finished.
```

After successfully completing the installation script, the installer creates the administrator account—AEN\_SRVC\_ACCT user—and assigns it a password.

EXAMPLE:



```
Created password '<RANDOM_PASSWORD>' for user 'aen_admin'
```

TIP: Record this password. It will be needed in the following steps. It is also available in the installation log file `/tmp/wakari_server.log`.

## Starting NGINX and Elasticsearch

When SELinux is enabled, it blocks NGINX from connecting to the socket created by Gunicorn. If you have SELinux enabled, run these commands to correct these permissions and allow connections between NGINX and Gunicorn:

```
sudo semanage fcontext -a -t httpd_var_run_t "/opt/wakari/wakari-server/var/run/wakari-  
↪server.sock"  
sudo restorecon -r /opt/wakari/wakari-server/var/run
```

To start NGINX and Elasticsearch to read the new config file:

```
sudo service nginx start  
sudo service elasticsearch start
```

TIP: If the AEN web page shows an NGINX 404 error, restart NGINX:

```
sudo nginx -s stop  
sudo nginx
```

## Testing AEN server installation

Visit `http://\protect\TI\textdollarAEN_SERVER`.

The License expired page is displayed.

No license found!

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**Upload License File**


**License File**

No file selected.

## Updating your license

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 **ANACONDA**

Login Help

License Successfully Updated

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Password must contain a minimum of 7 characters. One uppercase, one lowercase and one number.

## What's next

*Install the AEN gateway.*

## Installing the AEN gateway

The gateway is a reverse proxy that authenticates users and automatically directs them to the proper AEN compute node for their project. Users will not notice this node as it automatically routes them.

Gateway is installed in the `/opt/wakari/wakari-gateway` directory.

## Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
export AEN_GATEWAY_PORT=8089
export AEN_GATEWAY=<FQDN HOSTNAME OR IP ADDRESS> # will be needed shortly
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change `<FQDN HOSTNAME OR IP ADDRESS>` to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists. If the terminal is closed before successful installation, export the variables to continue with the installation.

## Running the AEN gateway installer

Run:

```
sudo -E ./aen-gateway-4.3.3-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-gateway
Logging to /tmp/wakari_gateway.log
...
...
Checking server name
Please restart the Gateway after running the following command
to connect this Gateway to the AEN Server
...
```

### Registering your gateway

The gateway needs to register with the AEN server.

This needs to be authenticated, so the NFI user's credentials created during the AEN server install must be used.

To write the configuration file `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`, run the following as `sudo` or `root`:

```
sudo /opt/wakari/wakari-gateway/bin/wk-gateway-configure \  
--server http://$AEN_SERVER --host $AEN_GATEWAY \  
--port $AEN_GATEWAY_PORT --name Gateway --protocol http \  
--summary Gateway --username $AEN_SRVC_ACCT \  
--password '<NFI USER PASSWORD>'
```

NOTE: replace `<NFI USER PASSWORD>` with the password of the NFI user that was generated during *server installation*.

### Setting permissions

Run:

```
sudo chown $AEN_SRVC_ACCT /opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
```

### Starting the gateway

Run:

```
sudo service wakari-gateway start
```

### Verifying your gateway registration

1. Log in to the AEN server using the Chrome or Firefox browser and the `AEN_SRVC_ACCT` user.
2. In the AEN navigation bar, click **Admin** to open the Admin Settings page.
3. In the **Site Admin** menu, select **Data Centers**:

The screenshot shows the Anaconda web interface. On the left, there are two vertical menus. The top menu, titled 'Staff', contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom menu, titled 'Site Admin', contains links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', and 'Data Centers'. The 'Data Centers' link is highlighted with a blue background. On the right, there is a 'Data Centers' section with a header 'Data Centers' and a list containing one entry: 'Gateway (ec2-52-90-133-17.compute-1.amazonaws.com:8089)'. Below the list is a green button with a plus icon and the text 'Add DataCenter'.

4. Click your data center:

The screenshot shows the Anaconda web interface. On the left, there are two vertical menus. The top menu, titled 'Staff', contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom menu, titled 'Site Admin', contains links for 'General', 'Accounts', 'Users', 'Security Log', and 'Data Centers'. The 'Data Centers' link is highlighted with a grey background. On the right, there is a 'Data Centers' section with a header 'Data Centers' and a list containing one entry: 'Gateway (54.208.221.207:8080)'. Below the list is a green button with a plus icon and the text 'Add DataCenter'.

5. Verify that your data center is registered and the status is `{"status": "ok", "messages": []}`:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)
[Task Queue](#)

Datacenter Gateway

Edit

Provider

wk\_server.plugins.providers.enterprise

Client ID

59c119cd3f94c30fe45ff5db

Client Secret

50cc629d-4e8e-44a5-9a2e-a46fee7c1921

Redirect URIs

http://ec2-52-90-133-17.compute-1.amazonaws.com:8089/login/authorized

wk-gateway-config.json

```
{
  "CDN": "http://ec2-204-236-198-47.compute-1.amazonaws.com/static/",
  "SUBDOMAIN_ROUTING": false,
  "client_id": "59c119cd3f94c30fe45ff5db",
  "client_secret": "50cc629d-4e8e-44a5-9a2e-a46fee7c1921",
  "WAKARI_SERVER": "http://ec2-204-236-198-47.compute-1.amazonaws.com",
  "port": 8089
}
```

status

```
{"status": "ok", "messages": []}
```

Back

Remove

## What's next

*Install the AEN compute node(s).*

## Installing the AEN compute node(s)

Compute nodes are where projects are stored and run.

Adding multiple AEN compute machines allows you to scale-out horizontally to increase capacity. Projects can be created on individual compute nodes to spread the load.

Repeat this procedure on each compute machine.

## Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists.

## Running the AEN compute installer

Run:

```
sudo -E ./aen-compute-4.3.3-Linux-x86_64.sh -w $AEN_SERVER
...
...
PREFIX=/opt/wakari/wakari-compute
Logging to /tmp/wakari_compute.log
Checking server name
...
...
Initial clone of root environment...
Starting Wakari daemons...
installation finished.
Do you wish the installer to prepend the wakari-compute install location
to PATH in your /root/.bashrc ? [yes|no]
[no] >>> yes
```

## Restart the AEN Server

Once configured, restart the AEN server:

```
sudo service wakari-server restart
```

## Configuring your compute node(s)

Once installed, you must configure the compute launcher on your server:

1. In your browser, go to your AEN server.
2. Log in as the AEN\_SRVC\_ACCT user.
3. In the AEN navigation bar, click Admin to open the Admin Settings page.
4. In the **Providers** menu, select Enterprise Resources:

Staff	Resources
<a href="#">Daily Report</a>	<a href="#">Add Resource</a>
<a href="#">Password Reset</a>	<b>Gateway</b>
<a href="#">Notification</a>	<a href="#">ec2-54-210-232-251.compute-1.amazonaws.com</a> <a href="#">remove</a>
<a href="#">Exceptions</a>	

Site Admin
<a href="#">General</a>
<a href="#">Accounts</a>
<a href="#">Users</a>
<a href="#">Monitor</a>
<a href="#">Security Log</a>
<a href="#">Data Centers</a>
<a href="#">Task Queue</a>
<a href="#">License</a>

Providers
<a href="#">Enterprise Resources</a>

5. Click the Add Resource button to open the new resource form.
6. Select the data center to associate this compute node with.



**Resources / new**

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
Compute Node1

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**  
Configuring Compute Node

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Add Resource

7. In the URL box, type: `http://$AEN_COMPUTE:5002`.

NOTE: If the compute launcher is located on the same box as the gateway, we recommended that you type `http://localhost:5002` instead.

8. Type a Name and Description for the compute node.
9. Click the Add Resource button to save the changes.

Your AEN compute node is configured.

### What's next

*Configure conda to use your local on-site AEN repository.*

### Configuring conda to use your local on-site AEN repository

You can configure AEN to use a local on-site Anaconda Repository server instead of Anaconda.org.

To configure AEN to use a local on-site Repository, you must:

1. *Edit conda on the compute node.*
2. *Configure the Anaconda client.*

### Editing conda on the compute node

NOTE: If there are channels that you haven't mirrored, you must remove them from the configuration.

Edit the file `.condarc` to match the following:

```
#/opt/wakari/anaconda/.condarc
channels:
  - defaults

create_default_packages:
  - anaconda-client
  - ipykernel

# Default channels is needed for when users override the system .condarc
# with ~/.condarc. This ensures that "defaults" maps to your Anaconda Repository and not
# repo.anaconda.com
default_channels:
  - http://<your Anaconda Repository name>:8080/conda/anaconda
  - http://<your Anaconda Repository name>:8080/conda/wakari
  - http://<your Anaconda Repository name>:8080/conda/r-channel

# Note: You must add the "conda" subdirectory to the end
channel_alias: http://<your Anaconda Repository name>:8080/conda
```

NOTE: Replace `<your Anaconda Repository name>` with the actual name or IP address of your local Anaconda Repository installation.

### Configuring the Anaconda client

Anaconda client lets users work with Repository from the command-line—including searching for packages, logging in, uploading packages, and more.

To set the default configuration of `anaconda-client` for all users on your compute node:

```
sudo /opt/wakari/anaconda/bin/anaconda config --set url http://<your Anaconda Repository>
↪:8080/api -s
```

NOTE: Sudo is required because the configuration file is written to the root file system: `/etc/xdg/binstar/config.yaml`.

NOTE: Replace `<your Anaconda Repository>` with the actual name or IP address of your local Anaconda Repository installation.

## What's next

Review the *optional configuration* tasks to see if any apply to your system.

## Optional configuration

### Using configuration files

The default locations for each component's configuration files are:

- Server—`/opt/wakari/wakari-server/etc/wakari/config.json`.
- Gateway—`/opt/wakari/wakari-gateway/etc/wakari/config.json`.
- Compute—`/opt/wakari/wakari-compute/etc/wakari/config.json`.

Additionally, service-specific configuration files may also be present in the following locations:

- Server—`/opt/wakari/wakari-server/etc/wakari/wk-server-config.json`.
- Gateway—`/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`.
- Compute—`/opt/wakari/wakari-compute/etc/wakari/wk-compute-config.json`.

Each service loads each of the configuration files in the following order and updates the AEN configuration at each step:

1. `/etc/wakari/config.json`.
2. `/etc/wakari/wk-gateway-config.json`.
3. `/opt/wakari/wakari-SERVICE/etc/wakari/config.json`.
4. `/opt/wakari/wakari-SERVICE/etc/wakari/wk-SERVICE-config.json`.
5. `./config.json`.
6. `./wk-gateway-config.json`.

## AEN configuration keys

The following is a list of AEN supported configuration keys:

Table 11: Server Configuration Keys

Key	Default	Description
CDN	<code>\$WAKARI_SERVER/static/</code>	The location of static assets.
MONGO_DB	<code>wakari</code>	The name of the AEN database in mongodb.
MONGO_URL	<code>mongodb://localhost/</code>	The URL of your AEN server's mongodb instance. Format: <code>mongodb://&lt;username&gt;:&lt;password&gt;@&lt;host&gt;:&lt;port&gt;/</code>

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Table 11 – continued from previous page

Key	Default	Description
WAKARI_SERVER		The URL of this AEN server.
DEFAULT_PRIVACY	public	The default project privacy setting—can be either <b>public</b> or <b>private</b> .
SESSION_COOKIE_NAME	wakari. enterprise. session	The Cookie name used to maintain Anaconda Enterprise Notebooks Enterprise login sessions.
SESSION_COOKIE_SECURE	False	This key is automatically set to true when SSL is enabled. It will default to false when SSL is not enabled. Manually changing this value may cause the system to malfunction if it's not configured properly.
PERMANENT_SESSION	True`	Sets cookie session to permanent. This will keep the session open after the browser is closed. The session will still expire after the number of minutes set in the SESSION_LIFETIME key.
SESSION_LIFETIME	120	Time in minutes until the session expires. The counter resets with each request.
USE_SES	false	Sets whether AEN will use Amazon SES to send emails.
SMTP		Sets the SMTP email settings.
- host		A SMTP subkey—the SMTP mail server hostname.
- user		SMTP subkey—the username for SMTP server authentication.
- password		SMTP subkey—the password for SMTP server authentication.
- from_addr		SMTP subkey—the From address for emails sent through SMTP.
verify_gateway_certificate	true	A boolean setting that indicates whether your AEN server should verify the gateway SSL certificate.
accounts	wk_server. plugins accounts.cloud	The account provider class. For LDAP, this should be set to wk_server.plugins.accounts.ldap_accounts.
uniqueEmail	true	A boolean setting that indicates whether unique user email addresses are required. See <a href="#">note below</a> about updating the database when setting uniqueEmail.
has_internet	true	Boolean for retrieving the avatar from the gravatar URL. If false a local default is used instead.
LDAP	389	LDAP configurations.
- SERVER		LDAP subkey—A list of LDAP servers. At least one server name must be listed. The primary server should be listed first. All secondary or fail-over servers should be listed after the primary.
- PORT	389	LDAP subkey—The LDAP port on the LDAP server.
- AUTH_TYPE		LDAP subkey—LDAP Authentication types. <b>simple</b> —no encryption not secure. ``TLS``—encrypted secure requires the TLS_CERT to be set.
- TLS_CERT		LDAP subkey—the full path to the TLS certificate file. The certificate file must also be provided by the Enterprise.
- BASEDN		LDAP subkey—the LDAP Base DN value.
- OU		LDAP subkey—a list of Organizational Units. Some Enterprises group users by OUs in their LDAP server records. AEN will loop over the list of OUs when authenticating a user. The OU value is a list of lists to support multiple OUs where each OU is a single name or a hierarchy of names.

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Table 11 – continued from previous page

Key	Default	Description
ANON_USER	anonymous	Username—such as <code>public</code> or <code>anonymous</code> —assigned users who are not logged in to access projects. To disable public access use the special value <code>disabled</code> . For more information, see <a href="#">Configuring sudo customizations</a> .
SEARCH_ENABLED	true	Boolean indicating whether ElasticSearch is enabled
SEARCH_SERVER	'localhost:9200'	IP address or domain name and port of ElasticSearch server
LOG_LEVEL	'DEBUG'	Log verbosity. One of: 'ERROR' 'WARN' 'INFO' 'DEBUG'

NOTE: If you set `uniqueEmail` to `false`, you must drop the existing index in the database. EXAMPLE: If the index name is `email_1`, run `db.users.dropIndex("email_1")`.

Table 12: Gateway Configuration Keys

Key	Default	Description
WAKARI_SERVER		The URL of the AEN WAKARI_SERVER.
port	8089	The Port number used by the gateway application. Must be a non-privileged port ( $\geq 1024$ ).
client_id		The client ID assigned to this gateway by the server during <code>wk-gateway-configure</code> .
client_secret		The Client secret assigned to this gateway by the server during <code>wk-gateway-configure</code> .
httpTimeout	600	Timeout in seconds. The default is 10 minutes to allow project creation.
logLevel	info	Log verbosity. One of: 'error' 'warn' 'info' 'debug'.
https		Enable SSL encryption. For more information, see <a href="#">Configuring SSL</a> .
- key		A https subkey—Path to gateway key.
- cert		A https subkey—Path to gateway cert.
- ca		A https subkey—Required if cert was signed by a private root CA or signed by an intermediate authority. It must contain separate values for the paths to the CA root, any intermediates and the certificate for the Server.
- passphrase		A https subkey—Passphrase required to decrypt SSL certs.

Table 13: Compute Node Configuration Keys

Key	Default	Description
WAKARI_SERVER		The URL of the AEN WAKARI_SERVER.
MANAGE_ACCOUNTS	true	A boolean setting that indicates whether AEN should manage system user accounts. Set to false for LDAP installations.
identicalGID	false	<b>To make the AEN compute service create groups with the same uid. Set to true If the /projects folder resides on an NFSv3 volume.</b> For more information, see <i>Group and user permissions for NFS</i> .
port	2227	The port number used by the compute-launcher application. Note that individual applications use dynamic ports.
projectRoot	/projects	The location of project file storage.
logLevel	info	Log verbosity. One of: 'error' 'warn' 'info' 'debug'
logMaxSize	10000000	Max size in bytes of the logfile. Default is 10 MB. If the size is exceeded then a new file is created and a counter will become a suffix of the log file.
logMaxFiles	30	Limit the number of files created when the size of the logfile is exceeded
appIdleTime	172800000 (48 hours)	The amount of idle time before applications will be auto-terminated (in msec).
idleCheckInterval	3600000 (1 hour)	The frequency of idle checks.
numericUsernames	false	A boolean setting that indicates whether numeric usernames are permitted.
httpTimeout	600	The time before a timeout—in seconds. The default is 10 minutes—600 seconds—to allow time for project creation.
ANON_USER	anonymous	Username such as public or anonymous for users who are not logged in to access projects. To disable public access use the special value disabled. For more information, see <i>Configuring sudo customizations</i> .
projDirsAsHome	false	A boolean setting. When false AEN apps use /home/<username> as HOME. When true AEN apps use /projects/<username> as HOME.
emptyDefaultChannels	true	A boolean setting. When true AEN sets default_channels to be an empty list on the project's .condarc preventing the search of packages from the free channel. If you set this option as false, and if you already started a project with this setting as true, you will need to modify the existing project's .condarc and remove the default_channels: [] line.

Table 14: Server Internal Configuration Keys - Do not change

Key	Default	Description
PROVIDERS	["wk_server. plugins providers. enterprise"]	A list of compute provider classes.
MONGO_ACTION_LOG_SIZE	262144000	The size of the Mongo action log in bytes.
SITE_ADMINS		A list of site administrator email addresses—used for crash notifications and LDAP password reset requests.
FROM_EMAIL_ADDR		The From address for notification emails sent by AEN.
uniqueUserName	true	A boolean setting that indicates whether unique usernames are required.

Table 15: Gateway Internal Configuration Keys - Do not change

Key	Default	Description
CDN	\$WAKARI_SERVER/ static/	The location of static assets.
SUBDOMAIN_ROUTING	false	A boolean that indicates whether subdomains are being used.
refreshTokenExpiration	500000	Idle time in milliseconds before the Gateway session expires.

Table 16: Compute Node Internal Configuration Keys - Do not change

Key	Default	Description
CDN	\$WAKARI_SERVER/ static/	The location of static assets.
USE_SES	false	Sets whether AEN will use Amazon SES to send emails.
multiUser	true	A boolean that indicates whether multi-user support is enabled.
multiProject	true	A boolean that indicates whether multi-project support is enabled.
ANACONDA_ROOT	/opt/wakari/ anaconda	The location of your Anaconda installation.
appLogs	/opt/wakari/ wakari- compute/ var/log/wakari/ compute-launcher-apps	The directory where application logs are stored.
appPIDs	/opt/wakari/ wakari-compute/ var/run/ compute-launcher-apps	The directory where application PID files are stored.
applicationLog	/opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher. application.log	The path to the compute launcher log.
accessLog	opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher. access.log	Path to compute launcher access log

## Checking configuration file syntax

To verify that the configuration file contains valid JSON, run:

```

root@server # python -m json.tool /opt/wakari/wakari-server/etc/wakari/*.json
root@gateway # python -m json.tool /opt/wakari/wakari-gateway/etc/wakari/*.json
root@compute # python -m json.tool /opt/wakari/wakari-compute/etc/wakari/*.json

```

If the file is correct, the contents are displayed.

If there is a syntax error in the file, a “No JSON object could be decoded” message is displayed instead.

To fix any errors, edit the configuration file and verify that it contains the correct JSON syntax.



## Increasing HTTP timeout between gateway and compute nodes

The default HTTP timeout is 600 seconds (10 minutes).

This setting works for HTTP timeout only, not HTTPS.

To modify the HTTP timeout setting:

1. Open the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file and modify the `httpTimeout` key:

```
"httpTimeout": 600
```

2. Update the gateway node by modifying the `httpTimeout` key in the `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json` file to match the above settings.
3. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Installing AEN in a custom location

To install AEN in a custom location:

1. Make the custom install folder owned by `$AEN_SRVC_ACCT`. EXAMPLE: `/data/aen/`.
2. Make a symlink from `/opt/wakari` to `/data/aen`.
3. Run the installers.
4. Move the folder from `/projects` to your chosen custom location. EXAMPLE: `/data/aen/projects`.
5. Make a symlink from `/projects` to `/data/aen/projects`.

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda environment directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

## Changing where projects are stored

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda env directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

To make aen-compute service use a different directory than `/projects` to store your AEN projects:

1. Modify the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file:

```
"projectRoot" : "/nfs/storage/services/wakari/projects",
```

NOTE: The directory `/nfs/storage/services/wakari/projects` specified as `projectRoot` must already exist for this command to resolve properly.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Group and user permissions for NFS

To install AEN with multiple compute nodes and a `/projects` folder on an NFSv3 volume, manually pre-create both the anonymous user and the `$AEN_SRVC_ACCOUNT` user on all nodes. Each of these users must have the same user identity number (UID) and group identity number (GID) on all nodes.

By default AEN creates local users with a different GID on each node. To make the AEN compute service create groups with the same GID:

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, change the `identicalGID` key value to `true`:

```
, "identicalGID": true
```

If you don't see the `identicalGID` key, add it.

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Using numeric usernames

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, change the `numericUsernames` key value to `true`.

```
, "numericUsernames": true
```

If you don't see the `numericUsernames` key, add it.

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Using project directories as home directories

The `projDirsAsHome` option changes the AEN home directories from the standard `/home/<username>` location to the project directories and the location `/projects/<username>/<project_name>/<username>/`. This ensures that AEN and AEN apps will not be affected by configuration files in a user's home directory, such as `.bashrc` or configuration files in subdirectories such as `.ipython` and `.jupyter`.

## Package cache locations

AEN version 4.1.3 stores the cache of packages in `/home/<username>`, while AEN versions 4.2.0 and higher store the cache of packages in `/projects/<username>/<project_name>/<username>/`. By moving the package cache to the same filesystem as the project, AEN versions 4.2.0 and higher can use hardlinks and save disk space and time when creating or cloning environments.

These package cache locations are not affected by the `projDirsAsHome` option.

After upgrading from AEN 4.1.3 to AEN 4.2.0 or higher, existing projects will still use the package cache in `/home/<username>`. Do not remove this cache, or the existing projects will break.

When users create new projects or install packages, the newly installed packages will use the new cache location.

If you wish to remove the older package cache in `/home/<username>`:

- Upgrade AEN to 4.2.0 or higher.
- Use `conda remove` to remove every non-default package in every project.
- Use `conda install` to replace them. The replaced packages will link to the new package cache in `/projects/<username>/<project_name>/<username>/`.
- You can now safely remove the older package cache.

## Enabling `projDirsAsHome`

NOTE: The `projDirsAsHome` option should be enabled immediately after performing the installation process and before any users have logged in to AEN. This ensures that users will not have home directories in different places due to some creating their home directories when the option was disabled and others creating their home directories when the option was enabled.

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, add the `projDirsAsHome` key value and set it to `true`.

```
, "projDirsAsHome": true
```

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Setting up a default project environment

AEN includes a full installation of the Anaconda Python distribution—along with several additional packages—located within the root conda environment in `/opt/wakari/anaconda`.

The first time any new AEN project is started, this default project environment is cloned into the new project's workspace.

To configure a different set of packages than the default:

1. Create a new conda environment in the `/opt/wakari/anaconda/envs/default` directory.

EXAMPLE: Using a Python 3.4 base environment, run:

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \  
create -p /opt/wakari/anaconda/envs/default python=3.4
```

2. Use conda to install any additional packages into the environment.
3. After the environment is created, clone it to ensure that it works correctly:

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \  
create -p /opt/wakari/testenv --clone /opt/wakari/anaconda/envs/default  
sudo -u $AEN_SRVC_ACCT rm -rf /opt/wakari/testenv
```

## Converting an existing project

1. Run the following command to clone the environment:

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \  
create -n /projects/owner/project/envs/<ENV_NAME> \  
--clone /opt/wakari/anaconda/envs/default
```

NOTE: Replace `/projects/owner/project/envs/<ENV_NAME>` with the path to the new environment you would like to create within the project.

2. Open the *Compute Resource Configuration application* for your project and set the project environment path there as well.

## Install AEN connected to a remote Mongo DB instance

To install AEN with a remote database:

1. Connect to the Mongodb instance and create the user for AEN:

```
> user = { user: "<username>",  
  pwd: "<super-secure-password>",  
  roles: [  
    { role: "dbOwner", db: "<db_name>" },  
    { role: "dbOwner", db: "<db_name>_mq" }  
  ]  
}  
> db.createUser(user)  
Successfully added user: { ... }
```

2. Before installing AEN-server export the database URL and name:

```
$ export MONGO_URL="mongodb://<username>:<password>@<host>:<port>/"  
$ export MONGO_DB="<database_name>"
```

3. Continue the installation process: *Install the AEN server*.

## Migrate from local to remote MongoDB

To configure your remote database to work with an already installed AEN server:

1. Stop the server, gateway and compute nodes:

```
sudo service wakari-server stop
sudo service wakari-gateway stop
sudo service wakari-compute stop
```

2. Open the `/opt/wakari/wakari-server/etc/wakari/config.json` file and create the `MONGO_URL` key. For the value parameter, add the database information.

The final file should read:

```
{
  "MONGO_URL": "mongodb://MONGO-USER:MONGO-PASSWORD@MONGO-URL:MONGO-PORT",
  "MONGO_DB": "MONGO-DB-NAME",
  "WAKARI_SERVER": "http://YOUR-IP",
  "USE_SES": false,
  "CDN": "http://YOUR-IP/static/",
  "ANON_USER": "anonymous"
}
```

For more information about configuration keys, see *Using configuration files*.

3. Migrate the data from the former database into the new one. For more information, see the [MongoDB documentation website](#).
4. After migration, restart the nodes:

```
sudo service wakari-server start
sudo service wakari-gateway start
sudo service wakari-compute start
```

## Running SELinux in enforcing mode

To run SELinux in Enforcing mode, a few ports must be set up using the `semanage port` command.

The `semanage` command relies on `policycoreutils-python`. To install `policycoreutils-python`, if needed, run:

```
sudo yum -y install policycoreutils-python
```

Enable ports 9200 and 9300 for Elasticsearch:

```
sudo semanage port -a -t http_port_t -p tcp 9200
sudo semanage port -a -t http_port_t -p tcp 9300
```

## Changing server hostnames

It is possible to change the domain names (hostnames) of the various AEN nodes by updating the configuration files.

NOTE: After the configuration files are updated, the associated nodes need to be restarted.

To edit the information for all of the data centers that you are changing the base domain name for:

1. Go to the Site Admin section of the Admin Settings page.
2. In the Data Centers section, click the Edit button.
3. Make any necessary updates.

NOTE: This must include the service port if it is different from the default—80 for HTTP and 443 for HTTPS.

4. In the Enterprise Resources sub-section of the Providers section, edit each compute node that has a changed domain name.

NOTE: These URLs should include the protocol, hostname and port.

## Authenticating with LDAP

Anaconda Enterprise Notebooks performs local authentication against accounts in the AEN database by default.

To configure AEN to authenticate against accounts in an LDAP (Lightweight Directory Access Protocol) server, follow the instructions below.

## Installing OpenLDAP libraries

The system needs OpenLDAP libraries to be installed and accessible by AEN. AEN uses the OpenLDAP libraries to establish an LDAP connection to your LDAP servers.

To install OpenLDAP on CentOS or Redhat:

```
sudo yum install openldap
```

To install OpenLDAP on Ubuntu or Debian, follow the official [OpenLDAP installation instructions](#).

## Configuring OpenLDAP

1. Open the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file.
2. Add the following LDAP settings:

```
{
  "accounts": "wk_server.plugins.accounts.ldap2",
  "LDAP" : {
    "URI": "ldap://openldap.EXAMPLE.COM",
    "BIND_DN": "cn=Bob Jones,ou=Users,DC=EXAMPLE,DC=COM",
    "BIND_AUTH": "secretpass",
    "USER_SEARCH": {"base": "DC=EXAMPLE,DC=COM",
                    "filter": "(| (& (ou=Payroll)
                                   (uid=%(username)s))
                               (& (ou=Facilities)
                                   (uid=%(username)s)))"
  }
}
```

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```

        },
        "KEY_MAP": {"email": "mail",
                    "name": "cn"}
    }
}

```

- URI—The IP address or hostname of your OpenLDAP server. For SSL/TLS, use the `ldaps://` prefix and specify a `TLS_CACERT` as described in the SSL/TLS configuration section below.
- BIND\_DN—The full directory path of the user you want AEN server to bind as.
- BIND\_AUTH—The password of the BIND\_DN user.
- USER\_SEARCH:
  - base—The level at which you want to start the search.
  - filter—The default is to search for the `sAMAccountName` attribute, and use its value for the AEN server username field.
- KEY\_MAP—Maps user attributes in AEN server to LDAP user attributes.

EXAMPLE: The `mail` attribute in LDAP maps to the `email` attribute in AEN server.

3. Restart AEN server to load new settings.
4. Log in with the admin account. This creates the admin user in the local database.
5. As soon as LDAP is installed, LDAP authentication takes over, so you need to add your admin account again:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add "jsmith"
```

## Configuring Active Directory

Microsoft Active Directory is a server program that provides directory services and uses the open industry standard Lightweight Directory Access Protocol (LDAP).

To enable Active Directory support:

1. Open the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file.
2. Add the following LDAP settings:

```

{
    "accounts": "wk_server.plugins.accounts.ldap2",
    "LDAP" : {
        "URI": "ldap://<ad.EXAMPLE.COM>",
        "BIND_DN": "CN=Bind User,CN=Users,DC=EXAMPLE,DC=COM",
        "BIND_AUTH": "secretpass",
        "USER_SEARCH": {"base": "CN=Users,DC=EXAMPLE,DC=COM",
                       "filter": "sAMAccountName=%(username)s"}
    },
    "KEY_MAP": {"email": "mail",
                "name": "cn"}
}

```

- **URI**—The IP address or hostname of your Active Directory server. Replace `<ad.EXAMPLE.COM>` with the actual URI. For SSL/TLS, use the `ldaps://` prefix and specify a `TLS_CACERT` as described in the SSL/TLS configuration section below.
- **BIND\_DN**—The full directory path of the user you want AEN server to bind as.
- **BIND\_AUTH**—The password of the `BIND_DN` user.
- **USER\_SEARCH**:
  - **base**—the level at which you want to start the search.
  - **filter**—default is to search for the `sAMAccountName` attribute, and use its value for the AEN server `username` field.
- **KEY\_MAP**—Maps user attributes in AEN server to LDAP user attributes.

EXAMPLE: The `mail` attribute in LDAP maps to the `email` attribute in AEN server.

3. Restart AEN server to load new settings.
4. Log in with the admin account. This creates the admin user in the local database.
5. As soon as LDAP is installed, LDAP authentication takes over, so you need to add your admin account again:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add "jsmith"
```

## Configuring SSL/TLS

AEN uses system-wide LDAP settings, including SSL/TLS support.

- On Redhat/CentOS systems, these settings are located in the `/etc/openldap/ldap.conf` file.
- On Ubuntu/Debian systems, these settings are located in the `/etc/ldap/ldap.conf` file.

Typically, the only configuration necessary is updating the file to read:

```
TLS_CACERT /path/to/CA.cert
```

NOTE: `CA.cert` is the Certificate Authority used to sign the LDAP server's SSL certificate. In the case of a self-signed SSL certificate, this is the path to the SSL certificate itself.

## Testing LDAP configuration

Test your LDAP configuration using `flask-ldap-login-check`:

```
/opt/wakari/wakari-server/bin/flask-ldap-login-check \  
wk_server.wsgi:app \  
-u [username] \  
-p [password]
```

NOTE: `username` is the username of a valid user and `password` is that user's `BIND_AUTH` password.



## Authenticating with PAM

To configure AEN to authenticate with PAM, you need to have LDAP in place and pre-populated with your users. With LDAP, pam does not require to read `/etc/shadow` and it can authenticate successfully without root privileges.

NOTE: PAM on the linux machine needs to be tied to LDAP (`pam_ldap`). You cannot use PAM with local unix accounts because `/etc/shadow` is only readable by the root user, but `pam_ldap` can authenticated against LDAP (non-root).

### Steps

1. Stop the wakari server:

```
sudo service wakari-server stop
```

2. update the configuration file `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` with the PAM authentication method. Change the entry for the line `"accounts"`: with:

```
"accounts": "wk_server.plugins.accounts.pam",
```

3. Restart the wakari server:

```
sudo service wakari-server start
```

4. In your browser navigate to Anaconda Enterprise Notebooks and attempt to login as a PAM-based user – create and start a project, then open a Jupyter Notebook.
5. Logout then login as an administrator and go to the *Admin* view. Attempt to list users.

### Testing

You can test PAM directly from the Python CLI

```
su - $AEN_USER/opt/wakari/wakari-server/bin/python
```

```
p = pam.pam()
p.authenticate("<username>", "<password>")
True
```

### Troubleshooting

If the server throws an `import` error for the `pam` module, please make sure that the `python-pam==1.8.2` module is installed. If the `.condarc` file includes the `wakari` channel then `python-pam==1.8.2` will be installed automatically.

## Configuring sudo customizations

If your organization's IT security policy does not allow root access or has restrictions on the use of sudo, after AEN installation, you may customize AEN to meet their requirements.

Your organization may choose to implement any or all of the following:

- *Remove root access* for AEN service account (Note: this restricts AEN from managing user accounts).
- *Configurable sudo command*.
- *Restrict sudo access to all processes*.

These customizations must be done in a terminal window after copying the files to the server node.

## Removing all root access from the service account

Because root access is required for useradd, the following process restricts AEN from managing user accounts.

1. Modify the `/etc/sudoers.d/wakari_sudo` file to read:

```
Defaults:wakari !requiretty, visiblepw
Runas_Alias    OP = ALL,!root
wakari ALL=(OP) NOPASSWD: ALL
```

NOTE: If you used a service account name other than wakari, enter that name instead of wakari.

2. Modify the `/opt/wakari/wakari-compute/etc/wakari/config.json` file to read:

```
"MANAGE_ACCOUNTS": false,
```

Using this option means that your IT department must create and manage all user accounts at the OS level.

After an OS-level account exists, you may create on the main AEN web page an AEN account using the same name. The password you choose is not linked in any way to the OS-level password for the account.

Alternatively, you can configure the system to *use LDAP for authenticating users*.

## Allowing public users to have access to your AEN projects

A public account is visible to anyone who can access the AEN server. The name of this account can be configured to any name you wish. For example, `public` or `anonymous`. To disable this feature use the special value `disabled`.

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, modify the `ANON_USER` line to read:

```
"ANON_USER": "public"
```

2. Restart AEN compute node:

```
sudo service wakari-compute restart
```

3. In the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file, modify the `ANON_USER` line to read:

```
"ANON_USER": "public"
```

4. Restart AEN server:

```
sudo service wakari-server restart
```

For more information about configuration keys, see *Using configuration files*.

## Using a sudo alternative

You can use a sudo alternative as long as it supports the same execution semantics as the original sudo. The alternative must be configured to give the service account permission to run commands on behalf of AEN users.

1. In your terminal window, open the `/opt/wakari/wakari-compute/etc/wakari/config.json` file.
2. Modify the `AEN_SUDO_CMD` line to read:

```
"AEN_SUDO_CMD": "/path/to/alternative/sudo",
```

NOTE: If the alternate sudo command is available on PATH, then the full path is not required.

## Restricting sudo access to a single gatekeeper

By default, sudoers is configured to allow AEN to run any command as a particular user which allows the platform to initiate processes as the logged-in end user. If more restrictive control is required, it should be implemented using a suitable sudoers policy. If that is not possible or practical, it is also possible to route all AEN ID-changing operations through a single gatekeeper.

This gatekeeper wraps the desired executable and provides an alternate way to log, monitor, or control which processes can be initiated by AEN on behalf of a user.

CAUTION: Gatekeeper is a special case configuration and should only be used if required.

To configure an AEN gatekeeper:

1. Modify the `/etc/sudoers.d/wakari_sudo` file to contain:

```
Defaults:wakari !requiretty, visiblepw
Runas_Alias    OP = ALL,!root
wakari ALL=(OP) NOPASSWD: /path/to/gatekeeper
```

2. In the `/opt/wakari/wakari-compute/etc/wakari/config.json` file, modify the `AEN_SUDO_SH` line to read:

```
"AEN_SUDO_SH": "/path/to/gatekeeper"
```

EXAMPLE: The gatekeeper can be as simple as a script with contents such as:

```
#!/bin/bash
first_cmd=$1
if [ 'bash' == $1 ]; then
    shift
    export HOME=~
    export SHELL=/bin/bash
    export PATH=$PATH:/opt/wakari/anaconda/bin
    bash "$@"
else
    exec $@
fi
```

## Configuring SSL

The server node uses NGINX to proxy all incoming http(s) requests to the server running on a local port, and uses NGINX for SSL termination. The default setup uses http—non-SSL—since cert files are required to configure SSL and each enterprise will have their own cert files.

The `www.enterprise.conf` file is the default `nginx.conf` file used for AEN. It is copied to the `/etc/nginx/conf.d` directory during server installation.

NOTE: This section describes setting up SSL after your gateway node has been installed and registered with the server node.

### Copying the required files

To configure SSL on AEN, you will need the following files:

- Server certificate and key
- Server CA bundle
- Gateway certificate and key
- Gateway CA bundle

Configure SSL on AEN:

1. Copy the Gateway certificate and key to `/opt/wakari/wakari-gateway/etc/` on the Gateway as `gateway.crt` and `gateway.key`.
2. Copy the Gateway CA bundle to `/opt/wakari/wakari-server/etc/` on the Server.
3. Copy the Server certificate and key to `/etc/nginx` on the Server as `server.crt` and `server.key`.
4. Copy the Server CA bundle to `/opt/wakari/wakari-gateway/etc/` on the Gateway.

If you have a certificate that was signed by a private root CA and/or an intermediate authority:

- The Gateway CA bundle must contain the full chain: root CA, any intermediate authority and the certificate.

```
cat gateway.crt intermediate.crt root.crt >> gateway-crt-int-root.crt
```

- The Server CA bundle must be separated into individual files for the root CA, any intermediate and the certificate.

### Configuring SSL on the server node

The `www.enterprise.https.conf` is an NGINX configuration file for SSL. It is set up to use the `server.crt` and `server.key` cert files.

CAUTION: You must change these values to point to the signed cert files for your domain.

NOTE: Self-signed certs or those signed by a private root CA require additional configuration.

Perform the following steps as root:

1. Stop NGINX:

```
service nginx stop
```

2. Move the `/etc/nginx/conf.d/www.enterprise.conf` file to a backup directory.

- Copy the `/opt/wakari/wakari-server/etc/nginx/conf.d/www.enterprise.https.conf` file to `/etc/nginx/conf.d`.

NOTE: `/etc/nginx/conf.d` may have `www.enterprise.conf` or `www.enterprise.https.conf` but it may not have both.

- Edit the `/etc/nginx/conf.d/www.enterprise.https.conf` file and change the `server.crt` and `server.key` values to the names of the real cert and key files if they are different.
- Restart NGINX by running:

```
service nginx start
```

- Update the WAKARI\_SERVER and CDN settings to use https instead of http in the following configuration files:

```
/opt/wakari/wakari-server/etc/wakari/config.json
/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
/opt/wakari/wakari-compute/etc/wakari/config.json
```

- Copy the gateway certificate, `gateway.crt` to `/opt/wakari/wakari-server/etc/`.
- In an editor, open `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` and add:

```
"verify_gateway_certificate": "/opt/wakari/wakari-server/etc/gateway.crt"
```

- Restart AEN services on the server by running:

```
service wakari-server restart
```

NOTE: This step may return an error since the gateway has not yet been configured for SSL.

- In AEN, verify that the browser uses https. On the Admin Settings page, under Data Centers, click Gateway, then select https:

## Admin Settings

Anaconda Enterprise Notebooks settings accessible only by th

Staff	Data Centers / Register a datacenter
<a href="#">Daily Report</a> <a href="#">Password Reset</a> <a href="#">Notification</a>	<p><b>Name</b></p> <p>Gateway 1</p> <p><input type="checkbox"/> Subdomain Routing</p> <p><input checked="" type="checkbox"/> <b>Https</b></p>

## Configuring SSL on the gateway

1. For all types of SSL certificates, in `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt"
  }
}
```

2. For a server certificate signed by a private root CA or signed by an intermediate authority, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "ca": ["/opt/wakari/wakari-gateway/etc/server.crt"]
  }
}
```

NOTE: When the certificate chain has more than one intermediate cert signed by a higher root CA authority, you must manually break up the certs in the chain into individual files, and enumerate them in the `ca` key:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "ca": ["/opt/wakari/wakari-gateway/etc/server1.crt",
          "/opt/wakari/wakari-gateway/etc/server2.crt",
          "/opt/wakari/wakari-gateway/etc/server3.crt"]
  }
}
```

3. For a gateway certificate that is encrypted using a passphrase, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "passphrase": "mysecretpassphrase"
  }
}
```

NOTE: Alternatively, the passphrase can be passed using an environment variable or entered when the wakari-gateway service is manually started.

EXAMPLES:

```
# using an environment variable
AEN_GATEWAY_SSL_PASSPHRASE='mysecretpassphrase' wk-gateway
```

```
# starting wakari-gateway manually
sudo service wakari-gateway start --ask-for-passphrase
Passphrase?
```

4. Restart the gateway:

```
sudo service wakari-gateway restart
```

## Configuring SSL on compute nodes

Anaconda Enterprise does not support direct SSL on Compute Nodes. If you need SSL on Compute Nodes, you must install each Compute Node on the same server as a Gateway using `http://localhost:5002` for the URL value while adding it as a resource, and you must use a Gateway for each and every Compute Node.

## Security reminder

The permissions on the cert files must be set correctly to prevent them from being read by others. Since NGINX is run by the root user, only the root user needs read access to the cert files.

EXAMPLE: If the cert files are called `server.crt` and `server.key`, then use the root account to set permissions:

```
chmod 600 server.key
chmod 600 server.crt
```

## Enabling or disabling the Strict-Transport-Security header

By default, Strict-Transport-Security (STS) is enabled in the `www.enterprise.https.conf` file:

```
add_header Strict-Transport-Security max-age=31536000;
```

It can remain enabled if either of the following is true:

- The gateway is running on a different host than the server.
- or
- SSL has been enabled for the gateway.

You must comment out this line if both of the following are true:

- The gateway is running on the same host as the server.
- and
- SSL has not been enabled for the gateway.

Leaving STS enabled when these conditions are true will cause a mismatch in protocols between the server and gateway, causing your apps to fail to launch correctly.

## Configuring single sign-on

AEN's single sign-on (SSO) capability creates a new authentication provider that defers to your Anaconda Repository for login and authentication cookies.

To enable SSO:

1. Deploy AEN and Repository on the same machine.
2. In the `/opt/wakari/wakari-server/etc/wakari/config.json` file, add:

```
{
  EXISTING_CONFIGURATION,
  "SECRET_KEY": "<repo signing secret>",
  "REPO_LOGIN_URL":
    "http://example_repo.com:8080/account/login?next=http://example_repo.com/"
}
```

3. Copy the `SECRET_KEY` from the Repository configuration file.
4. In the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file, modify:

```
{
  EXISTING_CONFIGURATION,
  "accounts": "wk_server.plugins.accounts.repo",
}
```

5. If you are using Repository version 2.33.3 through 2.33.10, set `USE_SERVER_BASED_SESSIONS: false` in the Repository configuration.

This setting affects the network security properties of AEN and Repository. Specifically, if `USE_SERVER_BASED_SESSIONS` is set to `false`, and if a new cross-site scripting (XSS) vulnerability is discovered, it could expose an additional server fixation vulnerability. Please discuss this with your Anaconda representative and be sure the feature is compatible with your network requirements before setting `USE_SERVER_BASED_SESSIONS: false`.

6. To activate the changes restart `wakari-server`:

```
sudo service wakari-server restart
```

SSO is enabled.

## Adding a third-party extension

Anaconda officially supports and tests functionality of the default environment(s) only for those extensions that ship with AEN.

It is possible to add third-party and custom extensions from `conda-forge` or `pip`, but doing so may cause instability in your default project environments or kernels.

**CAUTION:** Anaconda does not officially support third-party extensions. This section is informational only.



## Installing unofficial Jupyter Notebook extensions for AEN

**TIP:** Always back up and verify your complete system before installing extensions.

The jupyter-contrib-nbextensions extensions are installed on a compute node.

The default conda executable directory for AEN is `/opt/wakari/anaconda/bin/conda`. If you are installing a Jupyter extension, it must be installed in the `wakari-compute` directory.

**EXAMPLE:** Run:

```
/opt/wakari/anaconda/bin/conda install -p /opt/wakari/wakari-compute/ -c conda-forge ↵
↵ jupyter_contrib_nbextension
```

For more information, see [Unofficial Jupyter Notebook Extensions](#).

## Configure search indexing

For search indexing to work correctly, verify that the AEN Compute node can communicate with the AEN Server.

```
curl -m 5 $AEN_SERVER > /dev/null
```

There must be at least one `inotify` watch available for the number of subdirectories within the project root filesystem. Some Linux distributions default to a low number of watches, which can prevent the search indexer from monitoring project directories for changes.

```
cat /proc/sys/fs/inotify/max_user_watches
```

If necessary, increase the number of max user watches with the following command:

```
echo fs.inotify.max_user_watches=1000000 | sudo tee -a /etc/sysctl.conf && sudo sysctl -p
```

There must be at least one `inotify` user instance available per project.

```
cat /proc/sys/fs/inotify/max_user_instances
```

If necessary, this can be increased with the following command:

```
echo fs.inotify.max_user_instances=1000 | sudo tee -a /etc/sysctl.conf && sudo sysctl -p
```

## Create custom Jupyter kernel for Pyspark

These instructions add a custom Jupyter Notebook option to allow users to select PySpark as the kernel.

## Install Spark

The easiest way to install Spark is with [Cloudera CDH](#).

You will use YARN as a resource manager. After installing Cloudera CDH, [install Spark](#). Spark comes with a PySpark shell.

## Create a notebook kernel for PySpark

You may create the kernel as an administrator or as a regular user. Read the instructions below to help you choose which method to use.

### 1. As an administrator

Create a new kernel and point it to the root env in each project. To do so create a directory ‘pyspark’ in `/opt/wakari/wakari-compute/share/jupyter/kernels/`.

Create the following kernel.json file:

```
{ "argv": [ "/opt/wakari/anaconda/bin/python",  
  "-m", "ipykernel", "-f", "connection_file", "--profile", "pyspark"],  
  "display_name": "PySpark", "language": "python" }
```

You may choose any name for the ‘display\_name’.

This configuration is pointing to the python executable in the root environment. Since that environment is under admin control, users cannot add new packages to the environment. They will need an admin to help update the environment.

### 2. As an administrator without IPython profile

To have an admin level PySpark kernel without the user .ipython space:

```
{ "argv":  
  [ "/opt/wakari/wakari-compute/etc/ipython/pyspark.sh", "-f", "{connection_file}" ],  
  "display_name": "PySpark", "language": "python" }
```

NOTE: The pyspark.sh script is defined in *Without IPython profile* section below.

### 3. As a regular user

Create a new directory in the user’s home directory: `.local/share/jupyter/kernels/pyspark/`. This way the user will be using the default environment and able to upgrade or install new packages.

Create the following kernel.json file:

```
{ "argv": [ "/projects/<username>/<project_name>/envs/default/bin/python",  
  "-m", "ipykernel", "-f", "connection_file", "--profile", "pyspark"],  
  "display_name": "PySpark", "language": "python" }
```

NOTE: Replace “<username>” with the correct user name and “<project\_name>” with the correct project name.

You may choose any name for the ‘display\_name’.

## Create an IPython profile

The above profile call from the kernel requires that we define a particular PySpark profile. This profile should be created for each user that logs in to AEN to use the PySpark kernel.

In the user's home, create the directory and file `~/ipython/profile_pyspark/startup/00-pyspark-setup.py` with the file contents:

```
import os
import sys

# The place where CDH installed spark, if the user installed Spark locally it can be
↪ changed here.
# Optionally we can check if the variable can be retrieved from environment.

os.environ["SPARK_HOME"] = "/usr/lib/spark"

os.environ["PYSPARK_PYTHON"] = "/opt/wakari/anaconda/bin/python"

# And Python path
os.environ["PYLIB"] = os.environ["SPARK_HOME"] + "/python/lib"
sys.path.insert(0, os.environ["PYLIB"] + "/py4j-0.9-src.zip") #10.4-src.zip")
sys.path.insert(0, os.environ["PYLIB"] + "/pyspark.zip")

os.environ["PYSPARK_SUBMIT_ARGS"] = "--name yarn pyspark-shell"
```

Now log in using the user account that has the PySpark profile.

## Without IPython profile

If it is necessary to avoid creating a local profile for the users, a script can be made to be called from the kernel. Create a bash script that will load the environment variables:

```
sudo -u $AEN_SRVC_ACCT mkdir /opt/wakari/wakari-compute/etc/ipython
sudo -u $AEN_SRVC_ACCT touch /opt/wakari/wakari-compute/etc/ipython/pyspark.sh
sudo -u $AEN_SRVC_ACCT chmod a+x /opt/wakari/wakari-compute/etc/ipython/pyspark.sh
```

The contents of the file should look like:

```
#!/usr/bin/env bash
# setup environment variable, etc.

export PYSPARK_PYTHON="/opt/wakari/anaconda/bin/python"
export SPARK_HOME="/usr/lib/spark"

# And Python path
export PYLIB=$SPARK_HOME:/python/lib
export PYTHONPATH=$PYTHONPATH:$PYLIB:/py4j-0.9-src.zip
export PYTHONPATH=$PYTHONPATH:$PYLIB:/pyspark.zip

export PYSPARK_SUBMIT_ARGS="--name yarn pyspark-shell"
```

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```
# run the ipykernel
exec /opt/wakari/anaconda/bin/python -m ipykernel $@
```

## Using PySpark

When creating a new notebook in a project, now there will be the option to select PySpark as the kernel. When creating such a notebook you'll be able to import pyspark and start using it:

```
from pyspark import SparkConf
from pyspark import SparkContext
```

NOTE: You can always add those lines and any other command you may use frequently in the PySpark setup file `00-pyspark-setup.py` as shown above.

## Enabling server-side session management

By default, AEN uses client-side session management which is vulnerable to session replay attacks if an attacker manages to steal a valid session ID of a user.

To enable server-side session management:

1. Modify the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file:

```
"USE_SERVER_BASED_SESSIONS": true,
```

2. Restart the AEN server service:

```
sudo service wakari-server restart
```

## Terminate terminal sessions on logout

By default, when a user logs out, their open terminal sessions will remain active.

To disable this behavior:

1. Modify the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file:

```
"TERMINATE_TERMINALS_ON_LOGOUT": true,
```

2. Modify the `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json` file:

```
"TERMINATE_TERMINALS_ON_LOGOUT": true,
```

3. Restart the AEN server service:

```
sudo service wakari-server restart
```

4. Restart the AEN gateway service:

```
sudo service wakari-gateway restart
```

## Upgrading AEN

**CAUTION:** These instructions are for upgrading AEN to the current version 4.3.3 from 4.3.2 ONLY. Each version must be upgraded iteratively from the previous version. Do not skip versions.

Upgrade instructions for previous versions:

- [AEN 4.3.2 upgrade instructions](#)
- [AEN 4.3.1 upgrade instructions](#)
- [AEN 4.3.0 upgrade instructions](#)
- [AEN 4.2.2 upgrade instructions](#)
- [AEN 4.2.1 upgrade instructions](#)
- [AEN 4.2.0 upgrade instructions](#)
- [AEN 4.1.3 upgrade instructions](#)
- [AEN 4.1.2 upgrade instructions](#)

For upgrades from versions before those listed above, please contact your enterprise support representative.

**NOTE:** Named Service Account functionality is available with AEN 4.0.0+ for new installations only. It is not available for upgraded installations. Contact your enterprise support representative for more information.

An AEN platform update requires that each instance of the 3 node types be upgraded individually:

- AEN Server
- AEN Gateway
- AEN Compute

The upgrade process requires that all AEN service instances be stopped, upgraded, and then restarted.

**NOTE:** Any commands that call for the root user can also be done using `sudo`.

If you encounter any difficulty during the upgrade process, see [Troubleshooting](#) which provides guidance on:

- processes
- configuration files
- log files
- ports

If you are unable to resolve an installation or upgrade problem, please contact your enterprise support representative.

## Before you upgrade

**CAUTION:** Make a tested backup of your installation before starting the upgrade. Upgrading to a higher version of AEN is not reversible. Any errors during the upgrade procedure may result in partial or complete data loss and require restoring data from backups.

**CAUTION:** Terminate all AEN applications and stop all projects before starting the upgrade process.

Before upgrading each service on each host:

1. Suspend the services on each of the nodes:

```
sudo service wakari-server stop
sudo service wakari-gateway stop
sudo service wakari-compute stop
```

2. Set the AEN Functional ID (“NFI”) and AEN Functional Group (“NFG”) to the NFI and NFG of the current installation:

```
export AEN_SRVC_ACCT="wakari"
export AEN_SRVC_GRP="wakari"
```

NOTE: The default NFI is wakari, but aen\_admin or any other name may be used instead.

For more information on NFI and NFG, see the *installation instructions*.

3. Install wget:

```
yum install wget
```

4. Update .condarc files:

/opt/wakari/miniconda/.condarc should be updated with the following content:

```
channels:
- r
- https://conda.anaconda.org/wakari
- http://repo.continuum.io/pkgs/main/
- defaults

create_default_packages:
- anaconda-client
- ipykernel=4.10.0
```

and /opt/wakari/anaconda/.condarc should be updated with the following content:

```
channels:
- r
- https://conda.anaconda.org/wakari
- http://repo.continuum.io/pkgs/main/
- defaults
create_default_packages:
- anaconda-client
- ipykernel=4.10.0
auto_update_conda: false
```

NOTE: Both contents are similar but different ones, be sure to update them as indicated.

## Upgrading the AEN server node

NOTE: If you are using LDAP-based authentication, back up the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` configuration file. After the server has been upgraded, copy that file back into the same location as before the upgrade.

Complete the following steps on the server host:

1. Stop the Elasticsearch service:

```
sudo service elasticsearch stop
```

2. Remove any previous index:

```
sudo rm -rf /var/lib/elasticsearch/*
```

NOTE: You can choose to keep the old index, but if you detect any issues with the search capabilities after the upgrade, you will need to run the following to start with a clean index:

```
sudo service wakari-server stop
sudo service elasticsearch stop
sudo rm -rf /var/lib/elasticsearch/*
sudo service elasticsearch start
sudo service wakari-server start
```

3. Upgrade the server:

```
pushd /tmp
wget http://j.mp/aen-server-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-server \
    --file aen-server-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-server \
    --no-deps \
    wakari-enterprise-server-conf-update=2.0.13

popd
```

4. Start Elasticsearch:

```
sudo service elasticsearch start
```

Or, if you do not want to use the search features, edit your server's `/opt/wakari/wakari-server/etc/wakari/config.json` file by adding the line `"SEARCH_ENABLED": false`.

5. Restart the NGINX server:

AEN server version `>= 4.1.3` uses Unix sockets for communication with NGINX. Restart NGINX to load this new configuration:

```
sudo service nginx restart
```

Alternatively, you can restart NGINX with:

```
sudo nginx -s stop
sudo nginx
```

6. Start the server:

```
sudo service wakari-server start
```

7. Check that the server is running properly:

```
sudo service wakari-server status
```

8. If you see NGINX errors, please check the configuration at `/opt/wakari/wakari-server/etc/nginx/conf.d/www.enterprise.conf:18`.
9. Connect to AEN server using your web browser with the correct protocol (http or https), hostname and port number.

## Upgrading the AEN gateway node

Complete the following steps on each gateway host:

1. Upgrade the gateway:

```
pushd /tmp
wget http://j.mp/aen-gateway-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-gateway \
    --file aen-gateway-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-gateway \
    --no-deps \
    wakari-enterprise-gateway-conf-update=2.0.13

popd
```

2. Start the gateway:

```
sudo service wakari-gateway start
```

3. Check that the gateway is running properly:

```
sudo service wakari-gateway status
```

4. Connect to the gateway using your web browser with the correct http/https, hostname and port number.



## Upgrading AEN compute nodes

Complete the following steps on each host where an AEN compute service is running:

1. Check for any `wakari-indexer` processes running:

```
ps aux | grep wakari-indexer
```

NOTE: If you stopped all the projects, you will not see any `wakari-indexer` processes running.

Terminate any remaining `wakari-indexer` processes:

```
sudo killall wakari-indexer
```

NOTE: The processes killed with `killall` are run by the `$AEN_SRVC_ACCT` user, so they can be killed as root with `sudo killall` or killed as the `$AEN_SRVC_ACCT` user with `sudo -u $AEN_SRVC_ACCT killall`. Example commands show the `sudo killall` option.

2. Check for any AEN applications processes running—Workbench, Viewer, Terminal or Notebook:

```
ps aux | grep wk-app-gateone
ps aux | grep wk-app-workbench
ps aux | grep wk-app-viewer
ps aux | grep wk-app-terminal
ps aux | grep jupyter-notebook
```

NOTE: If you stopped all the projects, you will not see any AEN app processes running.

Terminate any remaining AEN application processes by running one or more of the following:

```
sudo killall wk-app-gateone
sudo killall wk-app-workbench
sudo killall wk-app-viewer
sudo killall wk-app-terminal
sudo killall jupyter-notebook
```

3. Verify the contents of `/opt/wakari/anaconda/.condarc`. Modify it to contain the following entries, and possibly others if you customized the `.condarc` file.

NOTE: Modify the file as the `AEN_SRVC_ACCT` user (or be sure to keep the same ownership).

```
channels:
- https://conda.anaconda.org/t/<TOKEN>/anaconda-nb-extensions
- r
- https://conda.anaconda.org/wakari
- http://repo.continuum.io/pkgs/main/
- defaults
create_default_packages:
- anaconda-client
- ipykernel=4.10.0
auto_update_conda: false
```

NOTE: Contact your enterprise support representative to get your token for the Anaconda channel referenced above. Replace `<TOKEN>` with the actual token from your enterprise support representative.

4. Upgrade *Anaconda* in the root environment:

```

pushd /tmp
wget http://j.mp/aen-anaconda-update-4_3_3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda remove -p /opt/wakari/
↳ anaconda geotiff --yes

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda remove -p /opt/wakari/
↳ anaconda iopro --yes

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda remove -p /opt/wakari/
↳ anaconda libthrift --yes

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda remove -p /opt/wakari/
↳ anaconda basemap --yes

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/anaconda \
    --file aen-anaconda-update-4_3_3

popd

```

5. Upgrade each compute service:

```

pushd /tmp
wget http://j.mp/aen-compute-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/wakari-compute \
    --file aen-compute-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    --no-deps \
    -p /opt/wakari/wakari-compute \
    wakari-enterprise-compute-conf-update=2.0.17

popd

```

NOTE: When upgrading the wakari-compute environment, you may see *ImportError* warnings with some nbextensions. As long as the Validating message is OK, the ImportError warnings are harmless—a consequence of the post-link presence on those packages.

6. Initialize the root environment to prime the package cache:

```

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenv \
    --clone root

```

7. Test the offline cloning step:

```

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenvoffline \
    --clone root --offline

```

8. Remove the test environments:

```
sudo rm -rf /opt/wakari/testenv
sudo rm -rf /opt/wakari/testenvoffline
```

9. Install necessary dependencies:

NOTE: Skip this step if you already have these dependencies installed from previous installations.

```
sudo yum groupinstall "X Window System" -y
sudo yum install git -y
```

NOTE: If you don't want to install the whole X Window System, you must install the following packages to have R plotting support:

```
sudo yum install -y libXrender libXext libXdmp libSM libICE libXt \
dejavu-sans-fonts dejavu-serif-fonts dejavu-fonts-common \
fontpackages-filesystem
```

10. Start the compute service:

```
sudo service wakari-compute start
```

11. Verify the compute service is running properly:

```
sudo service wakari-compute status
```

12. Restart the AEN Server with:

```
sudo service wakari-server restart
```

13. Repeat this upgrade procedure for all compute nodes in your Data Center.

## After upgrading

1. Restart the projects and start using AEN applications.
2. If you have a *customized default environment*, you may choose to upgrade it depending on the needs of your users.

Upgrade the customized default environment at `/opt/wakari/anaconda/envs/default` with the `$AEN_SRVC_ACCT` user:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
  -p /opt/wakari/anaconda/envs/default \
  --file aen-anaconda-update-4.3.3
popd
```

To upgrade the customized default environments for every user and every project at `/projects/<USER>/<PROJECT>/envs/default`, run these commands for **every** user as that user:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4.3.3
```

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```
sudo -E -u <USER> /opt/wakari/anaconda/bin/conda install \  
-p /projects/<USER>/<PROJECT>/envs/default \  
--file aen-anaconda-update-4.3.3  
popd
```

NOTE: Replace <USER> with the user's name. Replace <PROJECT> with the project name.

NOTE: Upgrading the default environment at /opt/wakari/anaconda/envs/default does NOT automatically upgrade the default environment in the users pre-existing projects. For pre-existing projects, the upgrade, if requested, should be done on a per-user basis.

NOTE: These commands update packages listed in aen-anaconda-update-4.3.3 and do not update any other package.

3. If you did not stop all your projects before upgrading, then the first time you start an application you will see an error page requesting that you restart the application.
4. Restart the application to complete the upgrade.
5. If you still see old applications or icons after restart, reload the page to reset the browser cache.

## Uninstalling AEN

Each AEN node must be uninstalled separately.

Begin by setting the AEN Functional ID (NFI). The NFI is the username of the AEN Service Account which is used to run all AEN services and is also the username of the AEN Admin account. The NFI may be any name. The default NFI is `wakari`. The NFI is also often set to `aen_admin`. The NFI (and AEN Functional Group or NFG) are described in *the installation instructions*.

Set the NFI with this command:

```
export AEN_SRVC_ACCT="aen_admin"
```

Replace the name `aen_admin` with the NFI that was set in your installation of Anaconda Enterprise Notebooks.

## Uninstalling a server node

To remove a server node, run the following commands as root or sudo on the server node's host system:

1. Stop the server processes:

```
service wakari-server stop
```

2. Stop MongoDB:

```
service mongod stop
```

3. Remove AEN server software, AEN database files and NGINX configuration:

```
rm -Rf /opt/wakari/wakari-server  
rm -Rf /opt/wakari/miniconda  
rm -Rf /var/lib/mongo/wakari*  
rm -Rf /etc/nginx/conf.d/www.enterprise.conf
```

NOTE: Remove `/etc/nginx/conf.d/www.enterprise.https.conf` if SSL is enabled on the Server node.

- Restart MongoDB and NGINX:

```
service mongod restart
service nginx restart
```

- Check for any outstanding server processes and stop them:

```
ps -ef | grep -e wakari-server -e wk-server
```

- Remove the AEN Service Account:

```
userdel $AEN_SRVC_ACCT
```

- Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc
grep -i wakari ~/.condarc
```

## Uninstalling a gateway node

To uninstall a gateway node, run the following commands as root or sudo on the gateway host system:

- Stop the gateway processes:

```
service wakari-gateway stop
```

- Remove gateway software:

```
rm -Rf /opt/wakari/wakari-gateway
```

- Check for any outstanding gateway processes and stop them:

```
ps -ef | grep -e wakari-gateway -e wk-gateway
```

- Remove the AEN Service Account:

```
userdel $AEN_SRVC_ACCT
```

- Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc
grep -i wakari ~/.condarc
```

## Uninstalling a compute node

To remove a compute node, run the following commands as root or sudo on each compute node host system:

1. Stop the compute processes:

```
service wakari-compute stop
```

2. Remove the compute software:

```
rm -Rf /opt/wakari/wakari-compute
rm -Rf /opt/wakari/miniconda
rm -Rf /opt/wakari/anaconda
```

3. Check for any outstanding compute processes and stop them:

```
ps -ef | grep -e wakari-compute -e wk-compute
```

4. Remove the AEN Service Account:

```
userdel $AEN_SRV_ACCT
```

5. Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc
grep -i wakari ~/.condarc
```

## OPTIONAL: Removing projects from compute nodes

**CAUTION:** This is an extreme measure and is not necessary in most instances. We recommend you create and verify a backup before doing this or any other file removal.

To remove all AEN projects from all of your compute nodes:

```
rm -Rf /projects
```

This is a step-by-step guide to installing an Anaconda Enterprise Notebooks system comprised of a front-end server, a gateway and compute machines.

If you have any questions about these instructions or you encounter any issues while installing AEN, please contact your sales representative or Priority Support team.

When you have completed the installation process, review the [optional configuration tasks](#) to see if any are appropriate for your system.

## Distributed install

In a distributed install the server and gateway run on separate hosts.

## Single-box install

In a single-box install, both the server and the gateway need separate external ports since they are independent services that are running on the same host in the single-box installation.

Both port 80 and port 8089 must be open on the firewall for a single-box install.

The compute node only receives connections from the gateway and server nodes and typically runs on port 80 or port 443.

## User management

### Adding or removing an administrative user

An administrator can make any other user an administrator—or remove their administrator permissions—by using administrator commands in the Terminal application.

A user can also be designated as a superuser or as staff, giving them greater administrative privileges within the system.

### Designating a user as an administrator/superuser

To designate a user as an administrator and superuser:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add <username>
```

NOTE: Replace <username> with the actual username.

EXAMPLE: To give administrative privileges to the user named “jsmith” and set them as a superuser, run:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add jsmith
```

### Removing an administrator/superuser

To remove a user’s administrative privileges:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --remove <username>
```

NOTE: Replace <username> with the actual username.

### Allowing and restricting new user registration

When Open Registration is enabled, anyone who has access to the URL of your AEN server can create their own account.

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Accounts.

The screenshot shows the Admin Settings page with a left sidebar and a main content area. The sidebar has two sections: 'Staff' and 'Site Admin'. The 'Staff' section contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section contains links for 'General' and 'Accounts'. The main content area is titled 'Cloud Registration' and contains a checkbox labeled 'Open Registration' with the text 'Allow new user signups' below it. A green 'Update' button is at the bottom of the main content area.

3. To open user registration, select the Open Registration checkbox. To close registration, clear the checkbox.
4. Click the Update button.

## Resetting a user password

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Password Reset:

Anaconda Enterprise Notebooks settings accessible only by the system administrator.

The screenshot shows the Admin Settings page with a left sidebar and a main content area. The sidebar has a 'Staff' section with links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The main content area is titled 'Password Reset' and contains a text input field with the value 'guest'. Below the input field is a button labeled 'Generate URL'.

3. Enter the username of the user whose password needs to be reset.
4. Click the Generate URL button.

A password reset link is generated that you can email to the user.

Alternatively you may use the command line interface:

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin reset-password -u SOME_USER -p SOME_
↵PASSWORD
```

NOTE: Replace SOME\_USER with the username and SOME\_PASSWORD with the password.

3. Log in to AEN as the user.



## Managing permissions

This page explains the admin commands used to manage user permissions.

### Checking file ownership

To verify that all files in the `/opt/wakari/anaconda` directory are owned by the `wakari` user or group:

```
root@server # find /opt/wakari/anaconda \! -user wakari -print
root@server # find /opt/wakari/anaconda \! -group wakari -print
```

### Fixing file ownership settings

To fix the ownership settings of any files that are listed in the output:

```
chown -R wakari:wakari /opt/wakari/anaconda
```

### Setting a file owner and permissions

To set a file owner and set its permissions:

```
chown wakari:wakari /opt/wakari/wakari-server/bin/wk-*
chmod 700 /opt/wakari/wakari-server/bin/wk-*
```

### Verifying that POSIX ACLs are enabled

The `acl` option must be enabled on the file system that contains the project root directory.

NOTE: By default, the project root directory is `/projects`.

To determine the project root directory where a custom `projectRoot` is configured:

```
root@compute # grep projectRoot /opt/wakari/wakari-compute/etc/wakari/config.json
```

The mount options or default options listed by `tune2fs` should indicate that the `acl` option is enabled.

EXAMPLE:

```
root@compute # fs=`df /projects | tail -1 | cut -d " " -f 1`
root@compute # mount | grep $fs
/dev/vda on / type ext4 (rw)
root@compute # tune2fs -l $fs | grep options
Default mount options:    user_xattr acl
```

## Viewing a list of users

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Users:

Staff

Daily Report

Password Reset

Notification

Exceptions

Site Admin

General

Accounts

Users

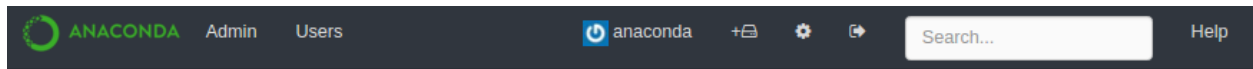
Users

Username	Projects	Last Seen
<a href="#">aen_admin</a>	6	Sep 25, 2017 10:05:58 CDT

The Users section lists the all users who are signed up, the number of projects they have created and the last time they logged on to AEN.

## Viewing a list of currently active users

In the AEN navigation bar, click Users.



# Users

List of currently active users in the system.

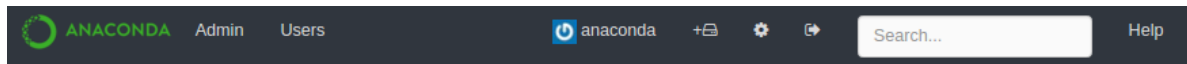
 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

Click a username to open the user's profile page.

## Viewing a user profile

A user's profile page includes a summary of the projects created by that user and a list of projects on which the user is a team member.

1. In the AEN navigation bar, click Users to see a list of users who are currently logged into the system.
2. On the Users page, click the username of the user whose profile page you want to view.



# Users

List of currently active users in the system.

 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

## Sending a system message

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Notification:

**Staff**

- Daily Report
- Password Reset
- Notification
- Exceptions

**Site Admin**

- General
- Accounts
- Users
- Security Log
- Data Centers
- Task Queue
- License

**Providers**

- Enterprise Resources

**Notification Settings**

☒ **Off**  
No email notification will be sent

☐ **SES - Amazon Simple Email Service**  
This requires a .boto file in the wakari home dir

☐ **SMTP Email Server**

**SMTP Settings**

**SMTP Hostname**

**SMTP Username (optional)**

**SMTP Password (optional)**

**SMTP From Address (optional)**

**Update**

The Notification Settings section allows you to create a system message that can be relayed to users.

By default, notifications are off.

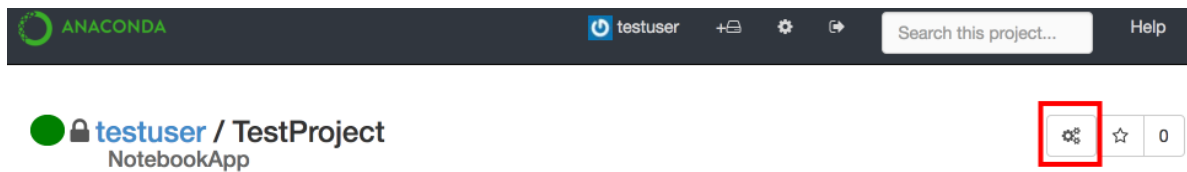
- To turn on email notifications, select the radio button for the type of email service to use:
  - SES to use Amazon Simple Email Service (SES).
  - SMTP Email Server.
- If you select SMTP Email Server, complete the SMTP Settings.

NOTE: If you get an error message after changing the SMTP settings, you may need to restart the server.

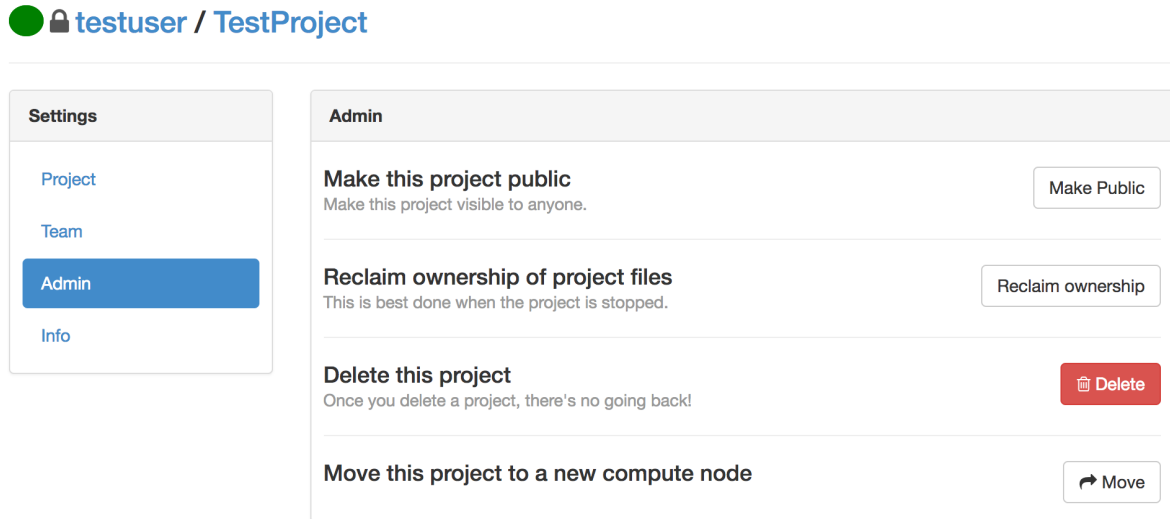
### Moving a project to another compute node

If you have multiple compute nodes available and want to move a project from one to another, the project must exist on both nodes.

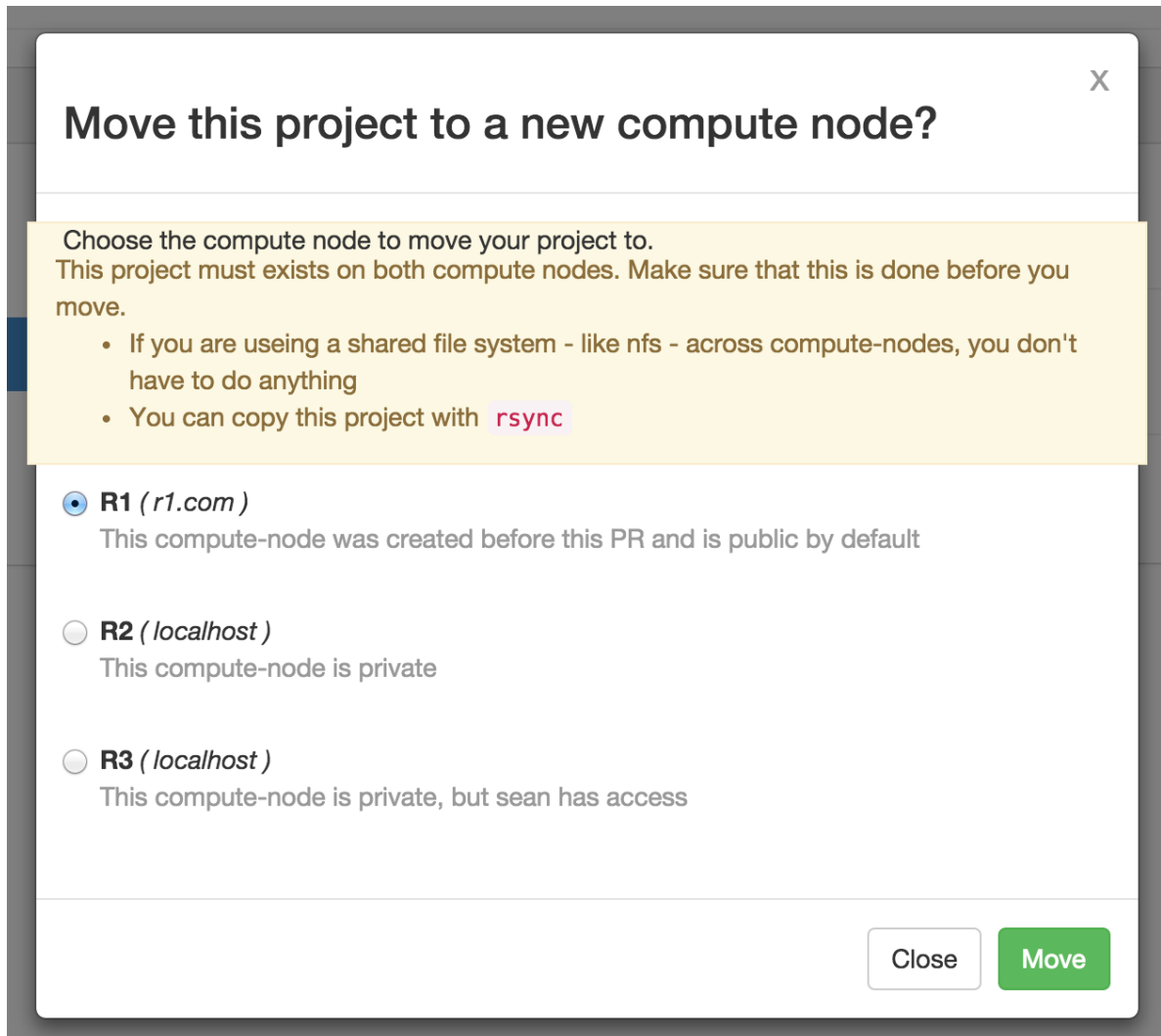
- Verify that the project has been created on both compute nodes. You can use `rsync` for this job unless you have a shared file system like `nfs`.
- On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



4. Click the Move button.
5. In the move dialog box, click to choose the compute node destination, and click the Move button.



## Deleting a user

To remove a user from the AEN database:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-user <username>
```

NOTE: Replace <username> with the actual username.

NOTE: Changing the owner of a project requires that both the previous owner and the new owner are still AEN users. Before deleting a user, *change the owner* of that user's projects.

## Deleting a project

To remove a project from the AEN database:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-project <username> <projectname>
```

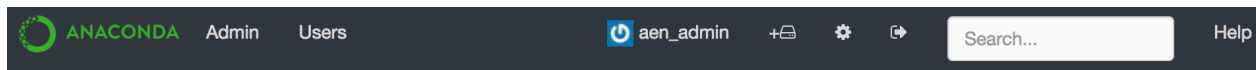
NOTE: Replace <username> with the actual username and <projectname> with the actual project name you are removing.

## System management

### Opening the Admin dashboard

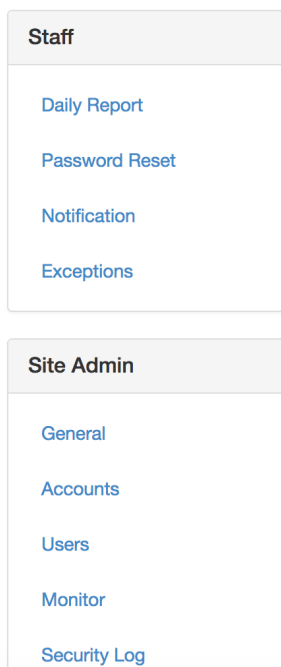
If you have administrator privileges, you see two additional links in the AEN navigation bar—Admin and Users:

To open the Admin dashboard, click the Admin link.



# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the system administrator.





## Backing up and restoring AEN

### Document purpose

This document lays out the steps to backup and restore Anaconda Enterprise Notebooks (AEN) for Disaster Recovery. It is not intended to provide High Availability. Each of the components (Server, Gateway and Compute) has its own instructions and each may be done individually as needed. The steps primarily involve creating tar files of important configuration files and data.

This document is written for a system administrator who is comfortable with basic Linux command line navigation and usage.

To migrate to a new cluster, use these backup and restore instructions to back up the system from the old cluster and restore it to the new cluster.

### Important notes

Review the [Concepts](#) page to become familiar with the different components and how they work together.

Root or sudo access is required for some commands.

**CAUTION:** All commands **MUST** be run by \$AEN\_SRV\_ACCT (the account used to run AEN) except for those commands explicitly indicated to run as root or sudo. If the commands are not run by the correct user, the installation will not work, and a full uninstallation and reinstallation will be required!

These instructions assume that the fully qualified domain name (FQDN) has not changed for any of the component nodes. If any of the FQDNs are not the same, additional steps will be needed.

### Server component steps

#### Backup

##### Mongo database

This will create a single tar file called `aen_mongo_backup.tar` that includes only the database named “wakari” that is used by AEN. It also generates a log of the database backup.

NOTE: These commands must be run by \$AEN\_SRV\_ACCT.

```
mongodump -db wakari -o aen_main >> mongo_backup.log
tar -cvf aen_mongo_backup.tar aen_main
```

##### AEN Server config files (including License file)

Create a tar file of all of the configuration files, including any license files.

NOTE: This command must be run by \$AEN\_SRV\_ACCT.

```
tar -cvf aen_server_config.tar -C /opt/wakari/ wakari-server/etc/wakari/
```

### Nginx config (if needed)

Make a copy of the nginx configuration file if it has been customized. The default configuration for the AEN server is a symlink.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
/etc/nginx/conf.d/www.enterprise.conf -> /opt/wakari/wakari-server/etc/nginx/conf.d/www.  
↪enterprise.conf
```

### SSL certificates (if needed)

Make a copy of the SSL certificates files (certfiles) for the server, including the key file, and a copy of the certfile for the gateway, which is needed for verification if using self-signed or private CA signed certs.

### Restore

#### Reinstall AEN-Server

See *the instructions for installing the current version of AEN-Server*.

It is not necessary to upload the license, because it will be restored with the config files.

NOTE: The new installation will generate a new password for the local \$AEN\_SRVC\_ACCT account.

#### Restore Mongo database

This assumes that mongo was reinstalled as part of the reinstallation of the server component. Untar the mongo database and restore it.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_mongo_backup.tar  
mongorestore --drop aen_main
```

NOTE: The --drop option resets the \$AEN\_SRVC\_ACCT user password and restores the database to the exact state it was in at the time of backup. Please see the [MongoDB documentation](#) for more information about mongorestore options for Mongo 2.6.

NOTE: AEN uses Mongo 2.6 by default. If you are using a different version, consult the documentation for your version.

#### AEN Server config files (including License file)

Untar the tar file of all of the configuration files, including any license files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_server_config.tar -C /opt/wakari/
```

Make sure the files are in /opt/wakari/wakari-server/etc/wakari/ and are owned by the \$AEN\_SRVC\_ACCT.

### Nginx config (if needed)

Make sure any modifications to the nginx configuration are either in `/etc/nginx/conf.d` or in `/opt/wakari/wakari-server/etc/nginx/conf.d/` with a proper symlink.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
/etc/nginx/conf.d/www.enterprise.conf -> /opt/wakari/wakari-server/etc/nginx/conf.d/www.  
↪enterprise.conf
```

### SSL certificates (if needed)

Move any SSL certificate files to the locations indicated in the config files.

### Restart server

Restart the server application.

NOTE: This command must be run as root or with sudo.

```
service wakari-server restart
```

## Gateway component steps

### Backup

### Config files

Create a tar file of all of the configuration files.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
tar -cvf aen_gateway_config.tar -C /opt/wakari/ wakari-gateway/etc/wakari/
```

### Custom .condarc file (if needed)

Make a copy of any `/opt/wakari/miniconda/.condarc` if it has been modified.

### SSL certificates (if needed)

Make a copy of SSL certificate files for the gateway (including the key file) and the certfile for the server (needed for verification if using self-signed or private CA signed certs).

### Restore

### Reinstall AEN-Gateway

#### Setting variables and changing permissions

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
export AEN_GATEWAY_PORT=8089
export AEN_GATEWAY=<FQDN HOSTNAME OR IP ADDRESS> # will be needed shortly
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists. If the terminal is closed before successful installation, export the variables to continue with the installation.

#### Running the AEN gateway installer

Run:

```
sudo -E ./aen-gateway-4.3.3-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-gateway
Logging to /tmp/wakari_gateway.log
...
...
Checking server name
Please restart the Gateway after running the following command
to connect this Gateway to the AEN Server
...
```

#### Config files

Untar the configuration files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_gateway_config.tar -C /opt/wakari
```

Verify that the files are in /opt/wakari/wakari-gateway/etc/wakari/ and are owned by the \$AEN\_SRVC\_ACCT.

### Custom .condarc file (if needed)

Move the custom .condarc file to /opt/wakari/miniconda/.condarc.

### SSL certificates (if needed)

Move any SSL certificate files to the locations indicated in the config files.

### Restart gateway

Restart the gateway application.

NOTE: This command must be run as root or with sudo.

```
service wakari-gateway restart
```

### Compute component steps

#### Backup

#### Config files

Create a tar file of all of the configuration files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -cvf aen_compute_config.tar -C /opt/wakari/ wakari-compute/etc/wakari
```

### Custom Changes (rare)

Manually backup any custom changes that were applied to the code. One change might be additional files in the skeleton folder:

```
/opt/wakari/wakari-compute/lib/node_modules/wakari-compute-launcher/skeleton
```

### Create user list

AEN uses POSIX access control lists (ACLs) for project sharing, so the backup must preserve the ACL information. This is done with a script that creates a file named `users.lst` containing a list of all users that have access to projects on a given compute node. Download and run the script.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
wget https://s3.amazonaws.com/continuum-airgap/misc/wk-compute-get-acl-users.py
chmod 755 wk-compute-get-acl-users.py
./wk-compute-get-acl-users.py
```

### Project files

Create a tar of the projects directory with ACLs enabled. The default projects base location is `/projects`.

NOTE: This command must be run as root or with sudo.

```
tar --acls -cpvf projects.tar -C <projects base location>/*
```

### Full Anaconda (option 1)

If any changes have been made to the default Anaconda installation (additional packages installed or packages removed), it is necessary to backup the entire Anaconda installation.

NOTE: This command must be run by `$AEN_SRV_ACCT`.

```
tar -cvf aen_anaconda.tar -C /opt/wakari/anaconda/*
```

If no changes have been made to the default installation of Anaconda, you may just backup the `.condarc` file and any custom environments.

### Partial Anaconda (option 2)

#### Custom `.condarc` file

Make a copy of `/opt/wakari/anaconda/.condarc`.

#### Custom environments (if needed)

Create a tar file of any custom shared environments.

NOTE: This command must be run by `$AEN_SRV_ACCT`.

```
tar -cvf aen_compute_envs.tar -C /opt/wakari/ anaconda/envs
```

NOTE: If no custom shared environments have been created, the `envs` folder will not be present.

### Restore

#### Reinstall AEN-Compute

#### Setting variables and changing permissions

NOTE: These commands must be run by `$AEN_SRV_ACCT`.

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change `<FQDN HOSTNAME OR IP ADDRESS>` to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists.

## Running the AEN compute installer

Run:

```
sudo -E ./aen-compute-4.3.3-Linux-x86_64.sh -w $AEN_SERVER
...
...
PREFIX=/opt/wakari/wakari-compute
Logging to /tmp/wakari_compute.log
Checking server name
...
...
Initial clone of root environment...
Starting Wakari daemons...
installation finished.
Do you wish the installer to prepend the wakari-compute install location
to PATH in your /root/.bashrc ? [yes|no]
[no] >>> yes
```

## Config files

Untar the config files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_compute_config.tar -C /opt/wakari
```

NOTE: Verify that they are located in /opt/wakari/wakari-compute/etc/wakari and are owned by the \$AEN\_SRVC\_ACCT.

## Custom changes (rare)

Manually restore any custom changes you saved in the backup section. If there are changes in the skeleton directory, these files must be world readable or projects will refuse to start.

## Create users

NOTE: Only create users with these instructions if your Linux machine is not bound to LDAP.

In order for the ACLs to be set properly on restore, all users that have permissions to the files must be available on the machine. Ask your system administrator for the proper way to do this for your system, such as using the “useradd” tool. A list of users that are needed was created in the backup process as a file named `users.lst`.

A process similar to the following `useradd` example will be suitable for most Linux systems.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
xargs -0 -n 1 useradd --user-group < users.lst
```

### Project files

Create the projects directory in the location specified in projectRoot in wk-compute-launcher-config.json.

NOTE: By default this directory is /projects.

Then untar the projects directory with ACLs.

NOTE: This command must be run as root or with sudo:

```
tar --acls -xpvf projects.tar -C <projects base location>
```

### Full Anaconda (option 1)

If you did a full backup of the full Anaconda installation, untar this file to /opt/wakari/anaconda.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_anaconda.tar -C /opt/wakari
```

### Partial Anaconda (option 2)

Restore the custom .condarc file.

If you did a partial backup of the Anaconda installation, move the copy of the .condarc file to /opt/wakari/anaconda/.condarc.

### Custom environments (if needed)

Untar any custom environments that were created to /opt/wakari/anaconda/envs.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_compute_envs.tar -C /opt/wakari
```

### Restart compute node

Restart the compute-launcher application.

NOTE: This command must be run as root or with sudo.

```
service wakari-compute restart
```



## Viewing a list of admin commands

A user who is promoted to administrator can access administrator commands to perform advanced administrator tasks.

NOTE: Utility files are owned by, and should only be executed by, the AEN user who owns the files.

To display a list of all administrator commands:

```
ls -al /opt/wakari/wakari-server/bin/wk-*
```

## Viewing help for admin commands

To view help information for command, run the command followed by `-h` or `--help`.

EXAMPLE: To view help for the `remove-user` command:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-user -h  
/opt/wakari/wakari-server/bin/wk-server-admin remove-project -h
```

## Running daily reports

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Daily Report:

Staff

[Daily Report](#)

[Password Reset](#)

[Notification](#)

[Exceptions](#)

Site Admin

[General](#)

[Accounts](#)

[Users](#)

[Monitor](#)

[Security Log](#)

[Data Centers](#)

[Task Queue](#)

[License](#)

Providers

[Enterprise Resources](#)

## Report

[Today](#)
[Yesterday](#)
[This Week](#)
[This Month](#)

**From:**  
Sun Sep 24 15:09:03 2017

**Until:**  
Mon Sep 25 15:09:03 2017

**Date Range**  
1 day, 0:00:00

### Users

	New	Total
<b>Users</b>	0	1
<b>Projects</b>	0	6

### New User Emails

Username	Email
----------	-------

### Actions

Count	Action
82	<a href="#">oauth.authenticate</a>

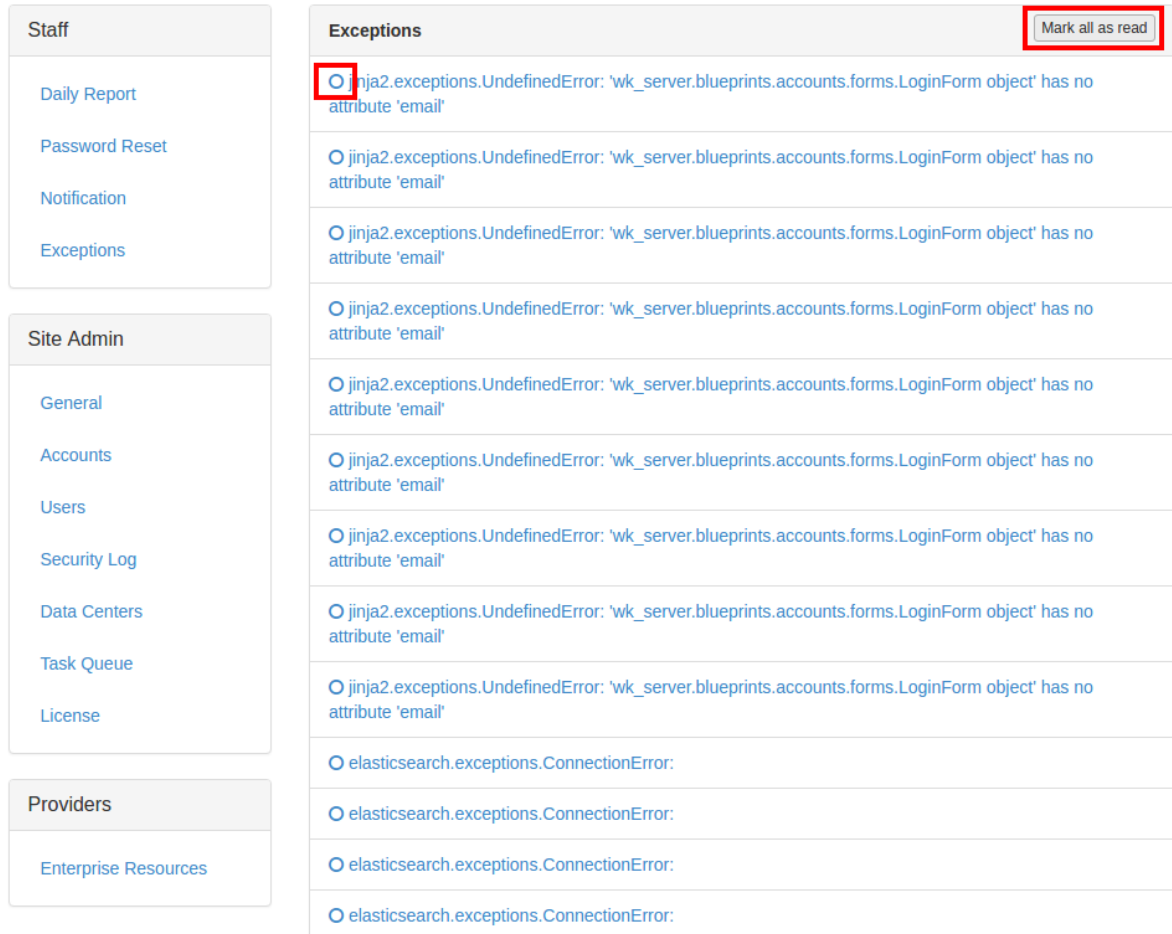
The Report section displays the following:

- Users—The number of users and projects.
- New User Emails—If *open registration is enabled*, the user names and emails for new users.
- Actions—The actions—projects created, projects updated, user authentications and added users—that have occurred in during the selected time frame—today, yesterday, this week, or this month.

## Viewing system errors

When an error occurs, a red dot is displayed in the AEN navigation bar next to the Admin link. The red dot is removed when all exceptions are marked as “read.”

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Exceptions:















The screenshot shows the AEN Admin Settings interface. On the left, there are three main navigation sections: **Staff**, **Site Admin**, and **Providers**. Under **Staff**, the **Exceptions** link is highlighted. Under **Site Admin**, the **Security Log** link is visible. Under **Providers**, the **Enterprise Resources** link is visible. The main content area displays the **Exceptions** list. At the top right of this list is a button labeled **Mark all as read**. The list contains several entries, each with a radio button and a description of the error. The first entry is selected, and its radio button is highlighted with a red box. The error messages are: 'jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'', 'elasticsearch.exceptions.ConnectionError:', and 'jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email''.

The Exceptions section lists all errors that have occurred while AEN is running.

3. To see the details of an error, click the radio button next to the error. This also marks the error as “read.”
4. To mark all errors as read without reviewing each one, click the Mark all as read button.

## Viewing security errors

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Security Log:

Staff	Security Log
<a href="#">Daily Report</a> <a href="#">Password Reset</a> <a href="#">Notification</a> <a href="#">Exceptions</a>	View   Actor   Action   Date
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 09:46:09 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 09:39:17 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 09:22:04 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 09:10:31 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 08:45:50 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 08:43:12 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 08:10:30 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 08:09:38 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 24, 2017 23:52:06 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 24, 2017 23:51:58 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 24, 2017 23:51:58 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 24, 2017 23:51:58 CDT

The Security Log section lists all errors that have occurred that could potentially affect AEN security.

- To view a user's profile page, click their username in the Actor column.
- To see the details of an error, click the Eye icon next to the error.

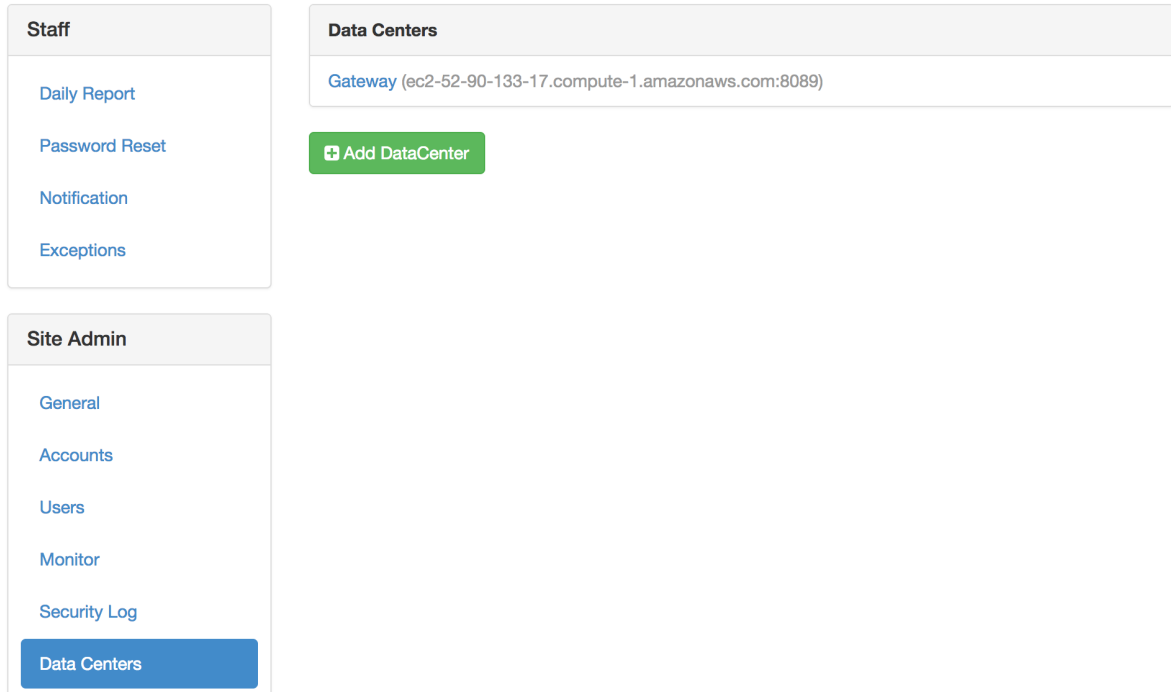
The error details are displayed:

<a href="#">Public Profile</a> <a href="#">Account Settings</a> <a href="#">Security Log</a> <a href="#">Applications</a>	oauth.authenticate
	_id   59c907f03f94c30fe45ffb9e
	action   oauth.authenticate
	actor_id   59c069b1ae55d1b3fe9fa45e
	actor_username   aen_admin
	client_id   59c119cd3f94c30fe45ff5db
	remote_addr   None
	time   2017-09-25 13:43:12.479000+00:00
	token_id   59c907f03f94c30fe45ffb9d
	<a href="#">⏪ Back</a>

- To close the error details, click the Back link.

## Managing data centers

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Data Centers:



The Data Centers section displays current data center information.

## Adding a data center

1. Click the Add DataCenter button to display the Register a datacenter form.
2. In the Name box, type a Name for the new data center:

**Data Centers / Register a datacenter**

**Name**

☐ Subdomain Routing  
☐ Https

**Base Domain Name**

**summary**

**Provider**

3. Select the Subdomain Routing and/or Https checkboxes.
4. In the Base Domain Name box, type the base domain name.
5. In the Summary box, type a description of the data center.
6. In the Provider list, select a provider.
7. Click the Submit button.

## Managing enterprise resources

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Providers** menu, select Enterprise Resources:

The screenshot displays the Anaconda web interface. On the left, there are three vertical navigation menus. The top menu, titled 'Staff', contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The middle menu, titled 'Site Admin', contains links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and 'License'. The bottom menu, titled 'Providers', contains a link for 'Enterprise Resources'. On the right side of the interface, there is a 'Resources' section. At the top of this section is a green button labeled 'Add Resource'. Below this is a table with one row. The row has a header 'Gateway' and a data cell containing the URL 'ec2-54-210-232-251.compute-1.amazonaws.com'. To the right of the URL is a red button labeled 'remove'.

Staff	
Daily Report	
Password Reset	
Notification	
Exceptions	

Site Admin	
General	
Accounts	
Users	
Monitor	
Security Log	
Data Centers	
Task Queue	
License	

Providers	
Enterprise Resources	

Resources	
Gateway	
ec2-54-210-232-251.compute-1.amazonaws.com	remove

The Resources section lists your existing cloud and local resources.

### Adding a resource

1. Click the Add Resource button to open the new resource form.
2. Complete the form:

**Resources** / new

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
Compute Node1

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**  
Configuring Compute Node

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Add Resource

3. Click the Add Resource button.

## Viewing or changing the resource details

1. Click a resource name to open the Local Resource form.
2. If necessary, change the resource details:



**Data Center**

Gateway 59c119cd3f94c30fe45ff5db

**Name**

ec2-54-210-232-251.compute-1.amazonaws.com

**URL**

http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

**Update**

**status**

{"status": "ok", "messages": []}

3. Click the Update button.

## Making a node public or private

1. Click the resource name to open the Local Resource form.
2. Select or clear the Public checkbox:

**Data Center**

Gateway 59c119cd3f94c30fe45ff5db

**Name**

ec2-54-210-232-251.compute-1.amazonaws.com

**URL**

http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**

{"status": "ok", "messages": []}

3. Click the Update button.

## Removing a resource

Click the Remove button next to the resource you want to remove.

NOTE: When you remove a resource assigned to a project, the project becomes orphaned. To fix an orphaned project, *move the project to a valid Compute Resource*.

## Managing services

The tasks on this page assume that the 3 AEN nodes are installed in the following locations:

- Server—/opt/wakari/wakari-server/.
- Gateway—/opt/wakari/wakari-gateway/.
- Compute-Launcher—/opt/wakari/wakari-compute/.

## Checking the status of server node processes

1. Run:

```
# service wakari-server status
wk-server          RUNNING    pid 20758, uptime 5 days, 0:30:23
worker             RUNNING    pid 20757, uptime 5 days, 0:30:23
```

OR

```
root@server # ps -Hu wakari
  PID TTY          TIME CMD
 20756 ?           00:02:26 .supervisord
 20757 ?           00:05:58  mtq-worker
 20758 ?           00:00:08  wk-server
 20765 ?           00:02:00  wk-server
 20766 ?           00:01:55  wk-server
 20767 ?           00:02:20  wk-server
 20770 ?           00:02:02  wk-server
```

2. Run:

```
root@server # service nginx status
nginx (pid 26303) is running...
```

For more information on server processes, see [Server processes](#).

## Checking the status of gateway node processes

Run:

```
# service wakari-gateway status
wk-gateway                RUNNING    pid 1137, uptime 5 days, 1:59:28
```

OR

```
root@gateway # ps -Hu wakari
  PID TTY          TIME CMD
 1136 ?            00:01:59 .supervisord
 1137 ?            00:00:02  wk-gateway
```

For more information on gateway processes, see [Gateway processes](#).

## Checking the status of compute node processes

Run:

```
# service wakari-compute status
wk-compute                RUNNING    pid 22050, uptime 3 days, 1:03:19
```

OR

```
root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?            00:02:01 .supervisord
 1152 ?            00:00:01  wk-compute
```

For more information on compute node processes, see [Compute processes](#).

## Starting AEN services

Services should start automatically both when they are first installed and at any point when the system is restarted.

If you need to manually start an AEN service, you must start each node independently, because they may be running on separate machines.

NOTE: The process is basically the same for each node, but the path to the correct commands vary.

To manually start a service:

- On the server node, run:

```
service wakari-server start
```

- On the gateway node, run:

```
service wakari-gateway start
```

- On a compute node, run:

```
service wakari-compute start
```

## Verifying that AEN services are set to start with the system

To verify that AEN services are set up to start automatically:

1. Run the following command on each node:

```
chkconfig --list | grep wakari
```

2. If services are missing, add them:

```
chkconfig --add [wakari-server|wakari-gateway|wakari-compute]
```

3. *Restart the services.*

## Stopping AEN services

CAUTION: Do not stop or kill supervisord without first stopping wk-compute and any other processes that use it.

You must stop services on each node independently, because they may be running on separate machines.

To stop an AEN service:

- On the server node, run:

```
service wakari-server stop
```

- On the gateway node, run:

```
service wakari-gateway stop
```

- On a compute node, run:

```
service wakari-compute stop
```

Compute nodes may have running processes that are not automatically stopped. To stop them, run:

```
sudo /opt/wakari/wakari-compute/bin/wk-compute-apps kill-all
```

## Restarting AEN services

- On the server node, run:

```
service wakari-server restart
```

- On the gateway node, run:

```
service wakari-gateway restart
```

- On a compute node, run:

```
service wakari-compute restart
```

## Identifying extraneous processes

To get a complete list of the processes running under the wakari user account, run `ps -Hu wakari`.

EXAMPLE:

```
root@server # ps -Hu wakari
  PID TTY          TIME CMD
 20756 ?           00:02:26 .supervisord
 20757 ?           00:05:58 mtq-worker
 20758 ?           00:00:08 wk-server
 20765 ?           00:02:00 wk-server
 20766 ?           00:01:55 wk-server
 20767 ?           00:02:20 wk-server
 20770 ?           00:02:02 wk-server

root@server # ps -f -C nginx
UID      PID  PPID  C  STIME TTY          TIME CMD
root    26303      1   0  12:18 ?        00:00:00 nginx: master process /usr/sbin/nginx -c /etc/
↪nginx/nginx.conf
nginx   26305 26303   0  12:18 ?        00:00:00 nginx: worker process

root@gateway # ps -Hu wakari
  PID TTY          TIME CMD
 1136 ?           00:01:59 .supervisord
 1137 ?           00:00:02 wk-gateway

root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?           00:02:01 .supervisord
 1152 ?           00:00:01 wk-compute
```

- wk-server, wk-gateway and wk-compute should have PIDs reported by supervisorctl.
- The nginx master process should have a PID reported by service nginx status.
- If you have installed more than one AEN node on a single machine, the processes from all of the installed nodes should be displayed for that machine.
- On compute node(s), any AEN applications currently being run by users will be present.

EXAMPLE:

```
root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?           00:00:00 .supervisord
 1152 ?           00:00:00 wk-compute
 1340 ?           00:00:00 bash
 1341 ?           00:00:00 notebookwrapper
```

## Removing extraneous processes

If extra `wk-server`, `wk-gateway`, `wk-compute`, or `supervisord` processes are present, use the `kill` command to remove them to prevent issues with AEN.

You can safely *restart* any process that you remove in error.

## Making sure NGINX and MongoDB are running

In order for AEN to run, the dependencies `mongodb` and `nginx` must be up and running. If either of these fail to start, AEN will not be served on port 80.

Check if `nginx` and `mongod` are both running (RHEL 6x):

```
$ sudo service nginx status
nginx (pid 25956) is running...
```

```
$ sudo service mongod status
mongod (pid 25928) is running...
```

If either of these failed to start, tail the log files. The default location of log files is:

```
$ tail -n 50 /var/log/mongodb/mongod.log

# nginx errors reported in error.log
$ tail -n 50 /var/log/nginx/error.log
```

## Viewing, terminating, and relaunching applications

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Monitor:

Running Apps								
User	Project	Application	Status	Node	Last Seen	Terminate	Relaunch	Logs
aen_admin	asd	notebook	running	localhost	Jul 24, 2017 15:15:24 CDT	<a href="#">Terminate</a>	<a href="#">Relaunch</a>	<a href="#">Logs</a>
aen_admin	Test	notebook	running	localhost	Jul 25, 2017 11:54:05 CDT	<a href="#">Terminate</a>	<a href="#">Relaunch</a>	<a href="#">Logs</a>

The Monitor menu lists started applications by user and project.

The list includes columns for the application name, current running status, running node and last seen date.

3. Use the buttons to terminate or relaunch an application.

4. To view an application's logs, click the Logs button with the document icon.

## Viewing the task queue

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Task Queue:

The screenshot shows the 'Task Queue' page. On the left is a navigation sidebar with two main sections: 'Staff' and 'Site Admin'. The 'Staff' section includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section includes links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', and a highlighted 'Task Queue' button. The main content area is titled 'Task Queue' and contains two sections: 'Workers' and 'Queues'. The 'Workers' section shows a single worker with ID 'ip-172-31-10-196.4053' and three priority buttons: 'high' (selected), 'default', and 'low'. The 'Queues' section lists two queues: 'high' with a backlog of 0 and 1 failed task, and 'default' with a backlog of 0 and 3 failed tasks.

Staff
<a href="#">Daily Report</a>
<a href="#">Password Reset</a>
<a href="#">Notification</a>
<a href="#">Exceptions</a>

Site Admin
<a href="#">General</a>
<a href="#">Accounts</a>
<a href="#">Users</a>
<a href="#">Monitor</a>
<a href="#">Security Log</a>
<a href="#">Data Centers</a>
<a href="#">Task Queue</a>

### Task Queue

Workers
ip-172-31-10-196.4053   <span>high</span> <span>default</span> <span>low</span>

Queues
<b>high</b> Backlog: 0 Failed: 1
<b>default</b> Backlog: 0 Failed: 3

The Workers section lists the workers in the task queue and whether each worker is set at high, default or low priority.

The Queues section provides information on the default and high priority queues.

3. To view all the tasks in a particular queue, in the Queues section, click the queue name.

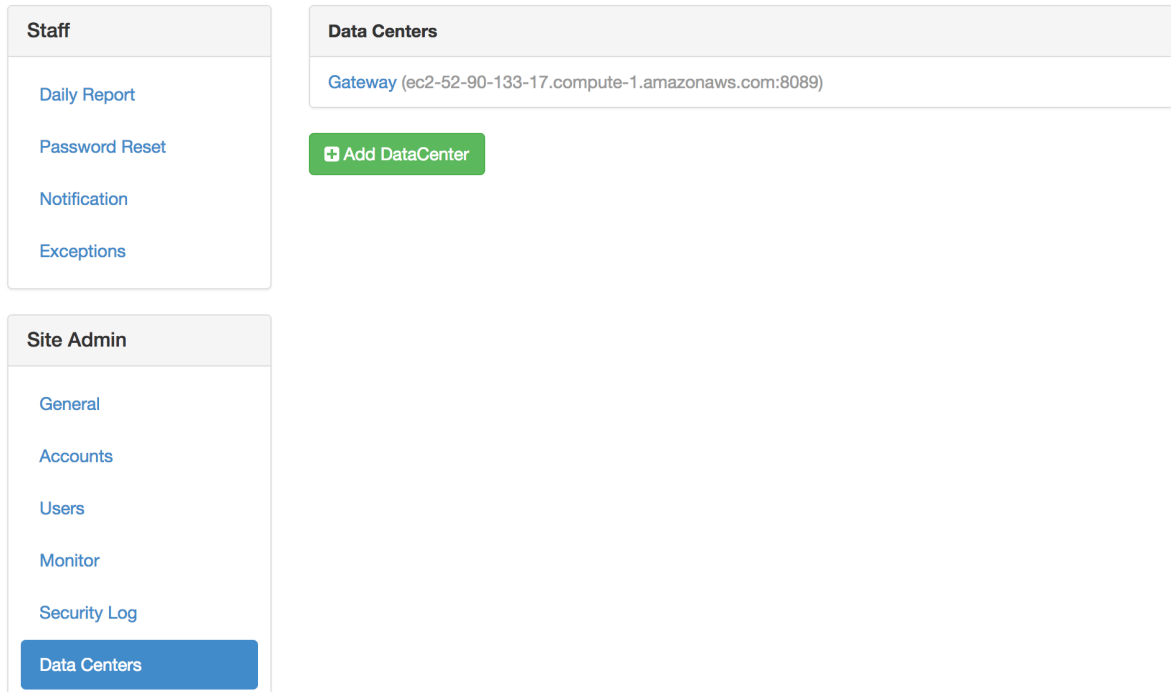


## Checking node connections

When the AEN nodes cannot communicate with each other as intended, it can cause issues with your AEN platform installation.

### Verifying server to gateway connectivity

1. On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Data Centers:



3. For each data center in the list, check connectivity from the server to that gateway.

EXAMPLE: The gateway in this example is `http://gateway.example.com:8089`:

```
root@server # curl --connect-timeout 5 http://gateway.example.com:8089 > /dev/null
```

### Verifying gateway to compute node connectivity

1. On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Providers** menu, select Enterprise Resources:

**Staff**

[Daily Report](#)  
[Password Reset](#)  
[Notification](#)  
[Exceptions](#)

**Site Admin**

[General](#)  
[Accounts](#)  
[Users](#)  
[Monitor](#)  
[Security Log](#)  
[Data Centers](#)  
[Task Queue](#)  
[License](#)

**Providers**

[Enterprise Resources](#)

**Resources** [+ Add Resource](#)

**Gateway**  

[ec2-54-210-232-251.compute-1.amazonaws.com](#) [remove](#)

3. Open each compute node in the Resources section.
4. Verify that the contents of the URL field begin with either `http` or `https`.

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
ec2-54-210-232-251.compute-1.amazonaws.com

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**  
{"status": "ok", "messages": []}

5. Check connectivity to that URL from the corresponding gateway.

EXAMPLE: The gateway in this example is `http://gateway.example.com:8089`:

```
root@gateway # curl --connect-timeout 5 http://compute.example.com:5002 > /dev/null
```

## Verifying gateway to server connectivity

The gateway-to-server path is used by the gateway configuration command `wk-gateway-configure`.

1. Verify that the gateway is linked to the correct server in the configuration file.
2. Verify that the full server URL is specified.
3. Check connectivity to the server:

```
root@gateway # grep WAKARI_SERVER /opt/wakari/wakari-gateway/etc/wakari/wk-gateway-
↪config.json
"WAKARI_SERVER": "http://wakari.example.com",

root@gateway # curl --connect-timeout 5 http://wakari.example.com > /dev/null
root@gateway # curl --connect-timeout 5 http://error.example.com > /dev/null
curl: (7) Failed to connect to error.example.com port 80: Connection refused
```

4. If a connection fails:
  1. Ensure that gateways (data centers) and compute nodes (Enterprise Resources) are correctly configured on the server.
  2. Verify that processes are listening on the configured ports:

```
$ sudo netstat -nplt
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address   Foreign Address State  PID/Program
tcp        0      0 *:80            *:.*           LISTEN 26409/nginx
tcp        0      0 *:22            *:.*           LISTEN 986/sshd
tcp        0      0 127.0.0.1:25    *:.*           LISTEN 1063/master
tcp        0      0 *:5000          *:.*           LISTEN 26192/python
tcp        0      0 127.0.0.1:27017 *:.*           LISTEN 29261/mongod
tcp        0      0 *:22            *:.*           LISTEN 986/sshd
tcp        0      0 127.0.0.1:25    *:.*           LISTEN 1063/master
```

3. Check the firewall setting and logs on both hosts to ensure that packets are not being blocked or discarded.

## Verifying and tuning search indexing

For search indexing to work correctly, a compute node must be able to communicate with the server. To verify this:

1. Run:

```
curl -m 5 $AEN_SERVER > /dev/null
```

2. Verify that there are sufficient inotify watches available for the number of subdirectories within the project root file system:

```
cat /proc/sys/fs/inotify/max_user_watches
```

NOTE: Some Linux distributions default to a low number of watches, which may prevent the search indexer from monitoring project directories for changes.

3. If necessary, increase the number of watches:

```
echo fs.inotify.max_user_watches=100000 | sudo tee -a /etc/sysctl.conf && sudo
↵ sysctl -p
```

4. Verify that there are sufficient inotify user instances available—at least one per project:

```
cat /proc/sys/fs/inotify/max_user_instances
```

5. If necessary, increase the number of inotify user instances:

```
echo fs.inotify.max_user_instances=1000 | sudo tee -a /etc/sysctl.conf && sudo
↵ sysctl -p
```

## Changing the AEN server URL

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

<p><b>Staff</b></p> <ul style="list-style-type: none"> <li>Daily Report</li> <li>Password Reset</li> <li>Notification</li> <li>Exceptions</li> </ul> <p><b>Site Admin</b></p> <ul style="list-style-type: none"> <li><b>General</b></li> <li>Accounts</li> <li>Users</li> <li>Monitor</li> <li>Security Log</li> <li>Data Centers</li> <li>Task Queue</li> <li>License</li> </ul> <p><b>Providers</b></p>	<p><b>General Admin Settings</b></p> <p><b>Wakari Server</b> Set the main URL where this site will be accessed</p> <input type="text" value="http://anaconda-enterprise.trl"/> <p><b>Static URL</b> Set static URL where the js can be accessed</p> <input type="text" value="http://anaconda-enterprise.trl/static/"/> <p><b>Default Project Access</b> This will be the default when a user creates a project</p> <p><input type="radio"/> <b>Public</b> Anyone can see this project. Collaborators have write access</p> <p><input checked="" type="radio"/> <b>Private</b> No one can see this project except collaborators.</p> <p><b>Account Type</b></p> <input type="text" value="wk_server;plugins.accounts.cloud"/> <p><input type="button" value="Update"/></p> <p><b>Config Files</b></p>
---	---

3. In the Wakari Server box, type the main URL where the site can be viewed.
4. Click the Update button.

## Changing the static URL for JavaScript files

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

The screenshot shows the Admin Settings page with the 'General' tab selected under 'Site Admin'. The left sidebar contains navigation links for Staff, Site Admin, and Providers. The main content area is titled 'General Admin Settings' and includes sections for 'Wakari Server', 'Static URL', 'Default Project Access', and 'Account Type'. The 'Static URL' field is highlighted, showing the current value 'http://anaconda-enterprise.trl/static/'. An 'Update' button is visible at the bottom of the settings area.

Staff	General Admin Settings
Daily Report	<b>Wakari Server</b> Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	<b>Static URL</b> Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	<b>Default Project Access</b> This will be the default when a user creates a project  <input type="radio"/> <b>Public</b> Anyone can see this project. Collaborators have write access  <input checked="" type="radio"/> <b>Private</b> No one can see this project except collaborators.
Exceptions	<b>Account Type</b> <input type="text" value="wk_server.plugins.accounts.cloud"/>
	<input type="button" value="Update"/>

Site Admin	Config Files
General	
Accounts	
Users	
Monitor	
Security Log	
Data Centers	
Task Queue	
License	

Providers

3. In the Static URL box, type the static URL where JavaScript files can be accessed.
4. Click the Update button.

## Changing the AEN account type

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

<div>Staff</div> <div>Daily Report</div> <div>Password Reset</div> <div>Notification</div> <div>Exceptions</div>	<div>General Admin Settings</div> <div> <b>Wakari Server</b>  Set the main URL where this site will be accessed  <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> <b>Static URL</b>  Set static URL where the js can be accessed  <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> <b>Default Project Access</b>  This will be the default when a user creates a project  <div> <input type="radio"/> <b>Public</b>  Anyone can see this project. Collaborators have write access </div> <div> <input checked="" type="radio"/> <b>Private</b>  No one can see this project except collaborators. </div> </div> <div> <b>Account Type</b>  <input type="text" value="wk_server.plugins.accounts.cloud"/> </div> <div>Update</div>
<div>Site Admin</div> <div>General</div> <div>Accounts</div> <div>Users</div> <div>Monitor</div> <div>Security Log</div> <div>Data Centers</div> <div>Task Queue</div> <div>License</div>	<div>Providers</div> <div>Config Files</div>

3. In the Account Type box, select the account type—cloud or LDAP.
4. Click the Update button.

### Changing the default for project access

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

The screenshot shows the Anaconda Enterprise Admin interface. On the left is a sidebar with three main sections: 'Staff' (containing links for Daily Report, Password Reset, Notification, and Exceptions), 'Site Admin' (containing links for General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License), and 'Providers'. The 'General' link under 'Site Admin' is selected. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' with a text input field containing 'http://anaconda-enterprise.trl', 'Static URL' with a text input field containing 'http://anaconda-enterprise.trl/static/', and 'Default Project Access' with two radio button options: 'Public' (described as 'Anyone can see this project. Collaborators have write access') and 'Private' (selected, described as 'No one can see this project except collaborators.'). Below these is an 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the settings area is a green 'Update' button. A 'Config Files' section is partially visible at the bottom of the main content area.

3. Under Default Project Access, select the default access type for new projects: Public or Private.
4. Click the Update button.

## Changing the owner of a project

To change the owner of a project:

1. Collect the project name, the user name of the previous owner, and the user name of the new owner.
2. Run the `wakari-server` executable command `wk-server-admin`:

```
/opt/wakari/wakari-server/bin/wk-server-admin project-owner --project PROJECT --old_
OLD_OWNER --new NEW_OWNER --delete --keep-owner
```

- **PROJECT:** The project name.
- **OLD\_OWNER:** The user name of the previous owner.
- **NEW\_OWNER:** The user name of the new owner.
- **--delete:** An optional flag that deletes the old project directory in the `projects` directory of `OLD_OWNER`. If this flag is not used, the old project directory is preserved but no longer used.
- **--keep-owner:** An optional flag that makes `OLD_OWNER` a collaborator of the project after it is transferred to `NEW_OWNER`. If this flag is not used, `OLD_OWNER` will no longer have collaborator access to the project.



NOTE: The OLD\_OWNER user must still exist when the project's owner is changed. Before deleting any user, be sure to change the owner of the user's projects.

## Editing configuration files

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General.

The screenshot shows the Admin Settings page with the 'General' tab selected under the 'Site Admin' menu. The left sidebar contains navigation links for Staff, Site Admin, and Providers. The main content area is titled 'General Admin Settings' and includes sections for 'Wakari Server', 'Static URL', 'Default Project Access', and 'Account Type'. The 'Wakari Server' section has a text input field with the value 'http://anaconda-enterprise.trl'. The 'Static URL' section has a text input field with the value 'http://anaconda-enterprise.trl/static/'. The 'Default Project Access' section has two radio buttons: 'Public' (unselected) and 'Private' (selected). The 'Account Type' section has a dropdown menu with the value 'wk\_server.plugins.accounts.cloud'. An 'Update' button is located at the bottom of the settings area.

Staff	General Admin Settings
<a href="#">Daily Report</a> <a href="#">Password Reset</a> <a href="#">Notification</a> <a href="#">Exceptions</a>	<b>Wakari Server</b> Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
	<b>Static URL</b> Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
	<b>Default Project Access</b> This will be the default when a user creates a project <input type="radio"/> Public Anyone can see this project. Collaborators have write access <input checked="" type="radio"/> Private No one can see this project except collaborators.
	<b>Account Type</b> <input type="text" value="wk_server.plugins.accounts.cloud"/>
	<input type="button" value="Update"/>
<b>Site Admin</b> General <a href="#">Accounts</a> <a href="#">Users</a> <a href="#">Monitor</a> <a href="#">Security Log</a> <a href="#">Data Centers</a> <a href="#">Task Queue</a> <a href="#">License</a>	
<b>Providers</b>	<b>Config Files</b>

3. In the Config Files section, change the configuration settings for your AEN installation. For more information on configuration files, see [Using configuration files](#).
4. Click the Update button.

## Managing your AEN license

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select License:

The screenshot shows the Anaconda Admin dashboard. On the left, there are two vertical menus. The top menu, titled 'Staff', contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom menu, titled 'Site Admin', contains links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and a highlighted 'License' button. The main content area is divided into two sections. The top section, 'Current License', has a light blue header. Below it, a light blue box contains the text 'You have 166 days remaining on your current license.' and a 'Renew your license' button. Below this box is a table of license details. The bottom section, 'Upload New License', has a light gray header. Below it, there is a 'License File' section with a 'Choose File' button and the text 'No file chosen'. At the bottom of this section is a green 'Update' button.

<b>product</b>	Anaconda Enterprise Notebooks
<b>vendor</b>	Continuum Analytics, Inc.
<b>name</b>	Continuum Development
<b>end_date</b>	2018-03-10
<b>issued</b>	2017-03-10
<b>company</b>	Continuum Analytics
<b>type</b>	undefined
<b>email</b>	dev@continuum.io

The Current License section displays information regarding your AEN license, including the name of the product, vendor, license holder's name, end and issued dates, company name, license type, and contact email.

## Renewing your AEN license

1. Click the Renew your license button.
2. In the Upload New License section, click the Choose File button.
3. Select the new license file.
4. Click the Open button.
5. Click the Update button.

Your renewed license information is displayed.

## Cheat sheet

The Admin dashboard includes three menus in the left column: **Staff**, **Site Admin** and **Providers**.

## Staff menu

- Daily Report—See the number of users and projects.
- Password Reset—Reset a user password.
- Notification—Send system messages to users via SES or SMTP.
- Exceptions—If errors are raised while AEN is running, a red dot appears in the AEN navigation bar. Review errors and mark them as read.

## Site Admin menu

- General—Change the configuration settings for your AE Notebook server installation.
- Accounts—Turns on or off Open Registration.
- Users—View usernames, number of projects and last logins.
- Monitor—View status of applications with related data, terminate or restart
- Security Log—View errors that could affect security.
- Data Centers—View current data centers and add a new data center.
- Task Queue—View workers in the task queue and priority.
- License—View current AEN license or upload a new license.

## Providers menu

Enterprise Resources—View, add or remove local or cloud services and designate public or private to control access to a compute node.

## Troubleshooting

This troubleshooting guide provides you with ways to deal with issues that may occur with your AEN installation.

### General troubleshooting steps

1. Clear browser cookies. When you change the AEN configuration or upgrade AEN, cookies remaining in the browser can cause issues. Clearing cookies and logging in again can help to resolve problems.
2. *Make sure NGINX and MongoDB are running.*
3. Make sure that AEN services are *set to start at boot*, on all nodes.
4. *Make sure that services are running* as expected. If any services are not running or are missing, *restart them*.
5. *Check for and remove extraneous processes.*
6. *Check the connectivity between nodes.*
7. *Check the configuration file syntax.*
8. *Check file ownership.*
9. *Verify that POSIX ACLs are enabled.*

### Browser error: too many redirects

#### Cause

Browser cookies are out of date.

#### Solution

1. Log out.
2. Clear the browser's cookies.
3. Clear the browser cache.
4. Log in.

### Browser error: too many redirects when starting project apps

Browser shows “Too many redirects” when the user tries to start an application.

#### Cause

The project's Compute Resource is invalid or was deleted.

#### Solution

*Move the project to a valid Compute Resource.*

### Exception: `exceptions.TypeError: 'NoneType' object has no attribute '__getitem__'`

This exception appears on the Admin > Exceptions page when a project does not have a Compute Resource assigned.

#### Cause

The project's Compute Resource is invalid or was deleted.

#### Solution

*Move the project to a valid Compute Resource.*

**Error: unix:///opt/wakari/wakari-server/etc/supervisor.sock no such file**

This is a supervisorctl error.

**Cause**

supervisord is not running on the Server.

**Solution**

Ensure that supervisord is included in the crontab. Then restart supervisord manually.

**Error: “Data Center Not Found” when deleting a project****Cause**

The data center has been removed.

**Solution**

As root, run:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-project --db-only <user> <project>
```

**Forgotten administrator password**

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin reset-password -u SOME_USER -p SOME_
↪PASSWORD
```

NOTE: Replace SOME\_USER with the administrator username and SOME\_PASSWORD with the password.

3. Log in to AEN as the administrator user with the new password.

Alternatively you may add an administrator user:

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin add-user SOME_USER --admin -p SOME_
↪PASSWORD -e YOUR_EMAIL
```

NOTE: Replace SOME\_USER with the username, replace SOME\_PASSWORD with the password, and replace YOUR\_EMAIL with your email address.

3. Log in to AEN as the administrator user with the new password.

### Log files being deleted

Log files are being deleted.

NOTE: Locations of AEN log files for each process and application are shown in the node sections in *Concepts*.

### Cause

AEN installers log in to `/tmp/wakari\_server,gateway,compute}.log`. If the log files grow too large, they might be deleted.

### Solution

To set the logs to be more or less verbose, Jupyter Notebooks uses `Application.log_level`.

To make the logs less verbose than the default, but still informative, set `Application.log_level` to `ERROR`.

### Error: This socket is closed

You receive the “This socket is closed” error message when you try to start an application.

### Cause

When the `supervisord` process is killed, information sent to the standard output `stdout` and the standard error `stderr` is held in a pipe that will eventually fill up.

Once full, attempting to start any application will cause the “This socket is closed” error.

### Solution

To prevent this issue:

- Follow the instructions in *Managing services* to stop and restart processes.
- Do not stop or kill `supervisord` without first stopping `wk-compute` and any other processes that use it.

To resolve the “This socket is closed” error:

1. Stop `wk-compute` by running `sudo kill -9`.
2. Restart the `supervisord` and `wk-compute` processes:

```
sudo /etc/init.d/wakari-compute stop
sudo /etc/init.d/wakari-compute start
```

## Service error 502: Cannot connect to the application manager

Gateway node displays “Service Error 502: Can not connect to the application manager.”

### Cause

A compute node is not responding because the wk-compute process has stopped.

### Solution

Stop and then restart the supervisord and wk-compute processes:

```
sudo /etc/init.d/wakari-compute stop
sudo /etc/init.d/wakari-compute start
```

## 502 communication error on Amazon web services (AWS)

You receive the “502 Communication Error: This gateway could not communicate with the Wakari server” error message.

### Cause

An AEN gateway cannot communicate with the Wakari server on AWS. There may be an issue with the IP address of the Wakari server.

### Solution

Configure your AEN gateway to use the DNS hostname of the server. On AWS this is the DNS hostname of the Amazon Elastic Compute Cloud (EC2) instance.

## Invalid username

### Cause

The username does not follow 1 or more of these rules:

- Must be at least 3 characters and no more than 25 characters.
- The first character must be a letter (A-Z) or a digit (0-9).
- Other characters can be a letter, digit, period (.), underscore (\_) or hyphen (-).
- The [POSIX standard](#) specifies that these characters are the portable filename character set, and that portable usernames have the same character set.

### Solution

Follow the above rules for usernames.

### Notebook Error: Cannot download notebook as PDF via LaTeX

#### Cause

LaTeX is not properly installed.

#### CentOS/6 Solution

1. Install TeXLive from the [TUG site](#). Follow the described steps. The installation may take some time.
2. Add the installation to the PATH in the file `/etc/profile.d/latex.sh`. Add the following, replacing the year and architecture as needed:

```
PATH=/usr/local/texlive/2017/bin/x86_64-linux:$PATH
```

3. Restart the compute node.

#### CentOS/7 Solution

1. Install the missing packages running the command:

```
yum install texlive texlive-xetex texlive-xetexconfig texlive-xetex-def texlive-  
↪adjustbox texlive-upquote texlive-ulem
```

### Unresponsive wk-server thread without error messages

#### Cause

Two things can cause the `wk-server` thread to freeze without error messages:

- LDAP freezing
- MongoDB freezing

If LDAP or MongoDB are configured with a long timeout, Gunicorn can time out first and kill the LDAP or MongoDB process. Then the LDAP or MongoDB process dies without logging a timeout error.



## Solution

1. Check for frozen LDAP or MongoDB server processes.
2. You may also wish to configure the Gunicorn timeout to more than 30 seconds.

## Unresponsive wk-gateway thread without error messages

### Cause

If TLS is configured with a passphrase protected private key, wk-gateway will freeze without any error messages.

### Solution

Update the TLS configuration so that it does not use a passphrase protected private key.

## Error starting projects

Project's status page shows "There was an error starting this project".

### Cause

Lack of disk space in compute nodes prevents projects from starting.

### Solution

1. Verify that the project node meets the *system requirements*.
2. Check if there is enough free space on the compute node's partition where `/projects` lives:

```
df -h /projects
```

3. Free up some disk space to meet the system requirements.
4. Restart the project.

## Changes in .condarc file are ignored

Changes applied to `.condarc` are ignored by conda.

### Cause

Conda loads its configuration by merging multiple files together.

### Solution

Check if you are applying the changes to the correct file.

To show the merged state that conda is currently using:

```
conda config --show
```

To show all config files that conda is currently reading:

```
conda config --show-sources
```

## System Requirements

If you're a user of the free Anaconda Distribution, please see the [Anaconda Distribution system requirements](#).

If you're an Anaconda Enterprise 5 customer, please see the [Anaconda Enterprise 5 installation requirements](#).

This page explains the requirements for Anaconda Enterprise 4 Repository, Anaconda Enterprise 4 Notebooks, and Anaconda Enterprise 4 Scale.

## Anaconda Enterprise 4 Repository Requirements

### Hardware requirements

- CPU: 2 x 64-bit 2.8 GHz 8.00 GT/s CPUs
- RAM: 32 GB (or 16 GB of 1600 MHz DDR3 RAM)
- Storage: 300 GB. (600 GB for air-gapped deployments.) Additional space recommended if the repository will be used to store packages built by the customer. With an empty repository, a base install requires 2 GB.
- Internet access to download the files from Anaconda.org or a USB drive containing all of the files you need with alternate instructions for air gapped installations.

### Software & system requirements

- RHEL/CentOS 6.5 to 7.4, Ubuntu 12.04+
  - Ubuntu users may need to install cURL.
- Client environment may be Windows, macOS or Linux
- MongoDB 2.6 (provided)
- Anaconda Repository license file
- Cron entry to start the repo on reboot
- Linux system accounts
  - mongod (RHEL) or mongod (Ubuntu)

- anaconda-server

## Security requirements

- Privileged access OR sudo capabilities
- Open HTTP(S) port
- SELinux policy edit privileges (SELinux does not have to be disabled for Anaconda Repository operation)
- Optional: Ability to make iptables modifications
- Optional: SSL certificate

## Network requirements (TCP ports)

- Inbound HTTP: TCP 8080, 8443 (Anaconda repository)
- Optional Inbound SSH: TCP 22 (SSH)
- Optional Outbound HTTPS: TCP 443
  - repo.anaconda.com
  - anaconda.org
  - conda.anaconda.org
  - binstar-cio-packages-prod.s3.amazonaws.com
  - 820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.com
- Optional Outbound SMTP: TCP 25 (if not using AD/LDAP) email notifications
- Optional Outbound LDAP(s): TCP 389/636 for authentication integration

## Other Requirements

- License file provided to you by Anaconda at the time of purchase
- Installation tokens for binstar and anaconda-server channels provided by Anaconda at the time of purchase. Not applicable for air gapped installs.
- Optional: Your Anaconda.org account credentials. Not applicable for air gapped installs.

## Anaconda Enterprise 4 Scale Requirements

### Hardware Recommendations

- Head and Compute nodes
  - RAM: 8+ GB
  - CPU: 8+ cores
  - Storage: 4 GB

Note: Analyses running on Compute Nodes will be primary driver of resource requirements.

### Software Requirements

- Head and Compute nodes:
  - RHEL/CentOS 6, Ubuntu 14

### Security Requirements

- One of the following configurations can be used during installation:
  - Access to the root user with the root password
  - Access to the root user with an SSH keypair
  - Passwordless SSH/sudo enabled for a user account
  - Password-based SSH and passwordless sudo enabled for a user account
- SELinux in Permissive mode (or, SELinux contexts can be configured via Anaconda Adam)

### Network Requirements

- TCP Ports
  - TCP 22 (SSH) from head node to compute nodes
  - TCP 14505, 14506 (Salt) between head node and compute nodes
  - TCP 18000 (Salt REST API) from compute nodes to head node
  - Outbound TCP 443 from all machines to local Anaconda Repo

### Anaconda Enterprise 4 Notebooks Requirements

#### Hardware Recommendations

The server and gateway can be on the same machine as Anaconda Repository.

- AEN Server
  - RAM: 2+ GB
  - CPU: 2+ cores
  - Storage: 20 GB
- AEN Gateway
  - RAM: 2 GB
  - CPU: 2 cores
  - Storage: 3 MB (minimal storage required)
- AEN Project Nodes (N-machines)
  - RAM: 2 GB
  - CPU: 2 cores
  - Storage: 3 GB/project

Note: Analyses running on Project Nodes will be primary driver of resource requirements.

## OS Requirements

- RHEL/CentOS, any version from 6.5 through 7.4
- Bash installed on Project Nodes
- /opt/wakari: Ability to install here and at least 5 GB of storage
- /projects: (only needed on Project nodes)
  - Important: This directory needs the filesystem mounted with Posix ACL support (Posix.1e)
  - Check with `mount` and `tune2fs -l /path/to/filesystem | grep options`
- Linux home directories. Jupyter looks in \$HOME for profiles and extensions.
- Linux system accounts:
  - mongod (RHEL) or mongodb (Ubuntu/Debian): Created by the RPM or deb package (AEN Server)
  - elasticsearch: Created by RPM or deb package (AEN Server)
  - nginx: Created by RPM or deb package (AEN Server)
  - aen\_admin (may also be wakari or another name): AEN Service Account, created during installation of Anaconda Enterprise Notebooks.

The AEN Service Account name is the AEN Functional ID or NFI. The NFI defaults to “wakari” and is configurable. Anaconda suggests using “aen\_admin”.

## Software Prerequisites

- MongoDB 2.6 [AEN Server]
- Nginx version:  $\geq 1.4.0$  [AEN Server]
- git [AEN Project]
- bash or zsh [AEN Project]
- bzip2 [AEN Project, AEN Server]
- ElasticSearch [AEN Server]
  - Oracle JRE 1.7 or 8 [AEN Server]
- X Windows (for R-based visualizations, not provided)

## Security Requirements

- root or sudo access at installation and runtime
- SELinux in Permissive mode - check with `getenforce`

### Network Requirements

- TCP Ports
  - Server: 80, Outbound 389/636 (LDAP)
  - Gateway (inbound): 8089
  - Project (inbound): 5002
  - All: Outbound 443 (to local Anaconda Repo)
  - Outbound TCP 443: 820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.com
- End users' browsers communicate with AEN using WebSockets.

Important note: these system requirements are suitable for the majority of implementations. Our implementation team can explain the scenarios and usage patterns that would require more resources.

Ver. 2018-09-17

### Frequently asked questions

#### What is AEN?

For information on AEN, see *Anaconda Enterprise 4 Notebooks*.

#### Can notebooks be shared with anyone?

Yes. When you share a Jupyter Notebook through AEN, it can be viewed and run without the need to install anything special, regardless of what libraries were used to create the notebook. Each notebook also includes the python environment that it needs to run in.

AEN allows users to clone a shared Jupyter Notebook into their AEN account to make whatever changes or modifications they want. The notebook's Python environment is also cloned, so it runs in the same environment as the shared Jupyter Notebook unless it is changed.

#### Can I disable the option, “publish your notebook to anaconda.org”?

Yes. The upload button in the notebook app executes the option “publish your notebook to anaconda.org”. To disable it, log in as the AEN\_SRVC\_ACCT and run these commands:

```
source activate /opt/wakari/wakari-compute
jupyter-nbextension disable nb_anacondacloud --py --sys-prefix
jupyter-serverextension disable nb_anacondacloud --py --sys-prefix
```

### How can I check the version number of my AEN server?

Go to this URL in a browser: `http://$AEN_SERVER/admin/list`

NOTE: Replace `$AEN_SERVER` with the domain name or the domain name and port number of your AEN server.

### Can I use AEN to access CSV or Amazon S3 data?

Yes. If your data is in CSV files, upload the CSV files to your AEN account using the upload controls in the File Browser of the Workbench Application or the File Transfer Application.

To access data stored on Amazon S3, use the Boto interface from AEN. See the public data files in AEN for examples of how to use Boto to pull your data from Amazon S3 into AEN. For more information, see [Boto documentation](#).

You can also use IOPro to simplify and optimize the conversion of your data into Python arrays.

### Can I install other Python packages?

Yes, by creating a custom environment for your packages within your project.

For more information, see [Using the NBConda extension](#).

### Can I create a Python environment from the command line?

Yes, you can use the `conda create` command to create custom Python environments with whatever packages you choose. All AEN environments are shared with all the team members of a project.

EXAMPLE: In this example, `myenv` is a new environment containing the NumPy package.

```
conda create -n myenv numpy
```

NOTE: Python, Jupyter Notebooks and PIP are installed by default in all new AEN environments.

To use your new environment, activate it by running `source activate myenv`.

### Can I connect to GitHub with AEN?

Yes, you have full access to GitHub through an AEN Terminal application.

To generate an SSH key from your AEN account and add it to your GitHub account:

1. [Generate a GitHub SSH key](#).
2. Copy your key by running `cat ~/.ssh/id_rsa.pub`.
3. Select and copy the contents of the `id_rsa.pub` file to the clipboard.
4. Follow [GitHub's instructions](#) to go to your GitHub account and paste it from your clipboard into the appropriate box in your GitHub settings.

### Can I print or print preview my Jupyter Notebooks?

Yes, you can print your notebooks using your browser's regular printing capabilities.

You can also preview the printed page by clicking the **File** menu and selecting Print Preview.

### Is there a set amount of storage on AEN?

No, there is no set limit for storage in AEN. You are limited only by the size of the disk where AEN is installed.

If you need more storage, contact your system administrator.

### How do I get help, give feedback, suggest features or report a bug?

See *Help and support*.

### Help and support

Priority support is included with the purchase of an Anaconda subscription.

Contact your administrator first if you are having problems. Your administrator has a service level agreement where your issue will be responded to within a specific response time, depending on type and severity.

### Training and consulting

Training and consulting is available for AEN and any other Anaconda product.

For more information, please contact your account representative or [email the sales team](#).

### Providing feedback

Your feedback is very important to us!

Please, send us any [product feedback](#) while you are thinking about it.

TIP: Be sure to select AEN as the Platform Component Name.

### Submitting feature requests

We'd love to hear your ideas for consideration in future releases!

Your ideas help us build a better product. Your administrator can submit a support ticket for you.

NOTE: You can also request new features by using the [product feedback](#) form.



## Reporting a bug

If you think you have found a bug, please contact your administrator immediately. They will open a support ticket for your issue.

## Additional resources

The following resources are useful for getting started with Jupyter Notebooks:

- [Jupyter Notebook quick start guide](#)
- [Jupyter Notebook user documentation](#)
- [GitHub](#) shows the most popular Jupyter notebooks of the [month](#), [week](#), and [day](#).

## Release notes

### v4.3.3 Nov 5th, 2019

Administrator-facing changes:

- Support fetching packages from the main channel
- Add a new configuration key `emptyDefaultChannels` to avoid searching packages from the free channel
- Documentation updates

User-facing changes:

- Remove gdal and basemap
- Update ipykernel, jupyter\_core and jupyter\_client
- Update astropy, scikit-learn, dask, numba, numpy, scipy, pandas and matplotlib

Internal Fixes:

- Update Python to version 2.7.17
- Update Angular to version 1.7.8
- Update urllib3 to version 1.25.3
- Update Node.js to version 10.15.3
- Replace pycrypto with pycryptodome 3.8.2
- Update paramiko to version 2.60
- Update jinja2 to version 2.10
- Update request to version 2.88
- Update grunt to version 1.0.4
- Update requests to version 2.22.0
- Update gunicorn to version 19.9.0
- Update openldap to version 2.4.46
- Update python-ldap to version 3.2.0
- Removed growl and superagent dependencies

- Update rbase and r-essentials to version 3.5.1

### v4.3.2 May 29, 2019

#### Internal Fixes:

- Update Bootstrap to version 4.3.1
- Update jQuery to version 3.3.1
- Update jQuery UI to version 1.12.1
- Update notebook to version 5.7.8
- Update ipywidgets to version 7.4.2
- Update ipyparallel to version 6.2.3
- Set Secure flag on xsrf, access\_token, and refresh\_token cookies

### v4.3.1 March 25, 2019

#### Administrator-facing changes:

- Add option for server-side session management
- Add option to terminate terminal sessions on logout

#### Internal Fixes:

- Set Secure and HTTPOnly flag on session cookies
- Fix XSS vulnerability

### v4.3.0 October 24, 2018

#### Administrator-facing changes:

- Fix bug where compute logging wasn't respecting the logMaxFiles key
- Log and display a descriptive error message when there is a problem creating the users index
- Log and display a descriptive error message when there is a problem creating a new user with a duplicated e-mail address when the uniqueEmail setting is enabled
- Add footer server pages with server host data (IP, AEN version and server version)
- Fix admin script to change the status of private projects
- Fix validation error when updating/editing an existing resource
- Docs: Add KB article about using MongoDB to update old projects with new Data Center information
- Docs: Add restarting service step to SSO documentation
- Docs: Add support for newer versions of MongoDB
- Docs: Add documentation on uniqueEmail
- Docs: Add projDirsAsHome key to config docs
- Docs: Rewrite the "Using project directories as home directories" section

- Docs: Add full path to admin commands
- Docs: Warn about upgrading away from tested pkgs
- Docs: Add missing steps to “Authenticating with LDAP” section
- Docs: Add troubleshooting documentation about orphaned projects
- Docs: Warn about not using IP address when you connect to AEN
- Docs: Add an entry about ‘Error starting projects’ in the troubleshooting page
- Docs: Rewrite “Group and user permissions for NFS” section and description of the `identicalGID` key in the config pages
- Docs: Add a new section about using MRO packages in AEN (Update: MRO was discontinued in 2021) (Update: MRO was discontinued in 2021)
- Docs: Preserve username capitalization when using LDAP/AD
- Docs: Add umask 0022 to security requirements
- Docs: Add new section about changing install location
- Docs: Add note about how to manually break out Root CA for the gateway
- Docs: Add note about upgrading custom environments
- Docs: Add notes about how to find conda config files inside AEN
- Docs: Add note about using `USE_SERVER_BASED_SESSIONS: false` when configuring SSO between AEN and versions 2.33.3 through 2.33.10 of the Repository

#### User-facing changes:

- Increase Workbench file upload limit
- Fix Bokeh examples
- Extend `nb_locker` to detect a server disconnection and generate an alert if it occurs
- Docs: Update the notebook app to correctly point to AEN docs
- Docs: Emphasize that permissions are not applied recursively in the workbench

#### Internal fixes:

- Update Nginx version to v1.12.2
- Remove unused server config file during the compute upgrade process
- Remove already defined compute default settings from the post-script step
- Pin `widgetsnbextension` version to prevent version mismatch issue (ipywidgets)
- Remove `--offline` flag from the conda clone operations
- Support MongoDB 3.4.14 and update pymongo to version 3.2.2
- Fix LDAP username case sensitivity
- Security fixes and enhancements

**v4.2.2 March 1, 2018**

## Administrator-facing changes:

- Add admin command to change project owner
- Server: Add ability to disable public projects
- Gateway: Add support for SSL private key passphrase
- Docs: Add backup and restore runbook to the docs
- Docs: Emphasize backups before upgrading process
- Docs: Recommend putting AEN and projects folder on the same filesystem
- Docs: Add RHEL version 7.4 to supported versions
- Docs: Add troubleshooting instructions to fix problems when downloading notebook as PDF via LaTeX

## User-facing changes:

- Upgrade bokeh to version 0.12.7
- Upgrade holoviews to version 1.8.3
- Upgrade numba to version 0.35.0
- Upgrade scikit-learn to version 0.19.0

## Internal fixes:

- Fix bug in init scripts when requiretty is enabled
- Fix bugs related to AEN\_SUDO\_SSH option
- Fix bug in fix\_ownership function when directories contain spaces
- Docs: Fix error in Active Directory configuration example
- Server: Fix bug when updating user/group in supervisor configuration files in post-install for server and gateway
- Server: Fix bug Admin reports on user totals are inconsistent
- Server: Fix error in login screen when open registration and LDAP are enabled
- Server: Fix bug in Last seen date
- Server: Fix bug Monitor Report blank
- Server: Load JS files from local CDN
- Server: Fix error when terminating or relaunching an application from Monitor
- Server: Fix error creating projects when using Internet Explorer 11
- Compute: Fix 404 errors when using pivottablesjs
- Remove Wakari Cloud leftovers

### **v4.2.1 December 18, 2017**

Administrator-facing changes:

- None

User-facing changes:

- None

Internal fixes:

- Fix undetected “ca” key when using self-signed certificates signed by a private CA
- Fix login redirects when using SSL
- Add verify gateway SSL certificate for get and post requests

### **v4.2.0 November 22, 2017**

Administrator-facing changes:

- Feature/allow remote MongoDB
- Allow for configuration for login timeout and set default
- Add verbose option to conda create clone
- Avoid duplicate name for resources / compute-nodes
- Allow renaming main and message queue databases
- PAM-based authentication module
- Change wakari logos to Anaconda logos
- Replace ‘wakari’ wording
- New config option to move the user’s home directory into the user’s project directory
- Make logging less verbose in AEN
- Documentation for PySpark kernel installation
- Improve SSL documentation

User-facing changes:

- New config option to move the user’s home directory into the user’s project directory
- Package cache was moved from user’s home directory into the user’s project directory
- Change wakari logos to Anaconda logos
- Fix error for deleting tags to work
- Define shell prompt in `.projectrc` template
- Replace ‘wakari’ wording

Internal fixes:

- Move server unix socket from `/tmp` to `/opt/wakari/wakari-server/var/run`
- Make project deletion synchronous for consistency
- Avoid storing `csrf` token in the user profile

- Expire gateway session when server logs out
- Allow log rotation in the three components
- Fix permissions on static files
- Change log level to debug in gateway
- Do not log private keys in gateway
- Save request remote address when logging action
- Unify logs formatting and timezone in compute nodes with Winston
- Several fixes and documentation improvements

### v4.1.3 August 16, 2017

- Upgrade conda to version 4.3.24
- Upgrade anaconda to version 4.4.0
- Admin application monitor
- Block access to package list view
- Add placeholders in password reset form
- Change static content location
- Fix error when checking for package updates in notebook application
- Replace slashes in project tags
- Fix submit errors in password reset form
- Replace/remove “wakari” word from multiple places
- Fix missing commands missing sudo in start-project
- Improve gateway and compute node validators
- Check if bzip2 is installed during server setup process
- Include port number in host header
- Forbid creation of empty tags
- Repair “Create Account” link in login page
- Use UTC for server logs
- Mark datacenters as trusted by default
- Disable heart beating
- Compute resource: Show full path to log file
- Improve init scripts
- Allow deleting all projects
- mtq: Implement exponential backoff on connection error to mongodb
- In the general admin display, do not show the bind password for LDAP
- The accelerate package has been removed from the installation
- Other minor bugfixes

**v4.1.2 March 29, 2017**

This is mainly a maintenance release improving internal machinery and upgrading the root packages.

- Upgrade conda to version 4.3.14
- Upgrade Anaconda to 4.3.1
- Upgrade r-base to 3.2.2
- Fixed AEN nb\_conda to be compatible with conda 4.3.x series
- Several documentation fixes
- Other minor bugfixes

**v4.1.1 December 15, 2016**

- Added CentOS 7 support
- Support dots in usernames
- More usernames validation
- Fixed creation (through nb\_conda) of single letter environment names
- Environment names (through nb\_conda) validation
- Fixed uploading of notebook using nb\_anacondacloud
- Fixed attaching of environments in published notebooks through nb\_anacondacloud
- Several documentation fixes
- Other bugfixes

**v4.1.0 October 21, 2016**

- Added JupyterLab application
- Removed GateOne terminal application
- Included additional notebook extensions (nbpresent and nb\_anaconda\_theme)
- Updated to conda 4.2.9 in default project environments
- Added HTTP timeout setting for gateway and compute launcher
- Changed default gateway port to 8089
- Added support for all-numeric usernames
- Add R channel to default conda configuration file
- Other bugfixes

### v4.0.0 June 30, 2016

- Customized installation with:
  - AEN Functional ID and Group
  - AEN (installation and run) sudo commands
  - Removal of root access from the AEN service account
  - Configurable sudo command
  - Restriction of sudo access to all the processes
- Upgrade Jupyter to 4.2
- Upgrade the anaconda-nb-extensions to the latest versions
- Upgrade Anaconda to 4.0
- Deprecate wakari-publisher
- Security enhancements
- SSL configuration documented between all AEN Server components
- Several bugfixes
- Overall documentation revision and general improvement

### v0.10.0 February 2, 2016

- New projects dashboard
- Capability to star and tag a project
- Sticky searches
- New Jupyter Notebook extensions
- Updates to all packages. Highlights: bokeh 0.11, ipython/jupyter 4.1.

### v0.9.1 October 19, 2015

- New Search capability to find projects and files within a project.
- Added “Related Projects” list to the project view, based on code similarity.
- New UI for fine-grained access control of project files in the Workbench app
- Viewer app now renders plain text files correctly
- Updated LDAP configuration docs
- Updates to all packages. Highlights: bokeh 0.10, ipython/jupyter 4.0.

**Note** ElasticSearch, and an Oracle JRE, must be installed on the server in order to use the new search features. Indexing of project files will begin when the project is started (or paused and re-started). If search features are not desired, set "SEARCH\_ENABLED": false in the server configuration file to avoid errors.



## v0.8.0 August 21, 2015

### New Features

- Updated packages based on Anaconda 2.3, and removed older packages no longer in Anaconda.
- Updated IPython to version 3.2.1
- Documentation is now installed with the server (use the Help link in the top navigation bar)
- Added the ability for the administrator to define a customized default project environment.
- The server has been updated to use python 2.7.10.
- Init scripts are now provided for each Anaconda Enterprise Notebooks service.
- Added relevant links to some error pages

### Problems Resolved in this Release

- Project status indicators (e.g. starting, pausing) now automatically update.
- If an access is unauthorized, the server now returns a 403 (Unauthorized) status code and prompts the user to log in.
- Modified nginx configuration to support running the server on non-standard ports.
- The server installation no longer uses a default password for the wakari user. A random password is generated and displayed during installation.
- Prevent double-click from attempting to create a project twice
- Removed an obsolete script reference that was causes a 404 error to be logged in the browser console when opening the Terminal app.
- The installer scripts no longer fail if the database already contains the 'wakari' user.
- Updated example notebooks to work with latest Bokeh release.
- Fixed terminal app key bindings to allow Mac command key to work normally
- Installers now indicate where the installation logs are stored
- LDAP user attributes containing binary data are now ignored.

### Documentation Updates

- Updated and consolidated Troubleshooting guide.
- Simplified some steps in the installation procedure.
- Updated notebooks in the Examples directory for use with the latest IPython Notebook and Bokeh.
- Added a section on project permissions to the Troubleshooting guide.
- Added notes on how to remove a project if the datacenter has already been removed.

### v0.7.0 June 12, 2015

#### New Features

- Updated Bokeh to v0.9
- Ability to list packages installed on the server
- Administrators now have full access to all projects.
- Added automated checking and display of connection status between server, data centers, and compute resources.
- When creating a new project, an environment for the project is automatically created as a clone of the root Anaconda environment.

#### Problems Resolved in this Release

- Problem with checking in files with revision control extension
- Revision control extension can't handle notebook names with spaces
- Problem moving files from one compute node to another if configured for LDAP
- Should default to UTF-8 encoding and warn user if no locale is detected
- Adding a compute resource via the command line admin tool does not work
- The installer now sets `umask 0022` to ensure correct file permissions

#### Documentation Updates

- Added a *Troubleshooting* section to the documentation.
- Added notes on how to configure crontab to start the Anaconda Enterprise Notebooks services at startup
- Example SSL config file now has correct log paths
- Added instructions on how to ensure that POSIX ACL support is enabled on the projects directory.
- Fixed syntax problem in sample LDAP config.json
- Added section on how to use self-signed or private CA certificates

### v0.6.3 March 27, 2015

- Updated LDAP module
- LDAP user filtering
- Added Notebook locking
- Added Notebook integrated revision control system
- Move projects between compute nodes
- User-specific binding to compute nodes (private compute nodes)
- Improved installation process and dependency checking
- Incorporated support for SSL for Server and Gateway nodes

- Improved Gateway error handling
- Fixed package dependencies for update process
- Documentation updates

## Previous versions

Documentation for previous versions is provided for users who have not yet upgraded to the current version of AEN.

## Anaconda Enterprise 4 Notebooks

*Empower the Data Science Team with cross-collaboration*

AEN is a browser-based Python data analysis environment and visualization tool from Anaconda®. AEN is a ready-to-use, powerful, fully-configured data analytics environment all in a secure, governed environment.

AEN allows data science team members to create and share private notebooks, manage access, control notebook revisions, compare and identify differences across notebook versions, search notebooks for keywords and packages, use enhanced collaborative notebook features—including revision control and locking—and to access an on-premises and/or cloud collaborative notebook server.

The current version of AEN is 4.3.3, released on November 5th, 2019.

## User guide

AEN's browser-based management of private packages, notebooks, and environments allows data science team members to:

- Create, share and manage private notebooks.
- Control notebook revisions.
- Compare and identify differences across notebook versions.
- Search notebooks for keywords and packages.
- Use enhanced collaborative notebook features including revision control and locking.
- Access on-premises and/or cloud-based collaborative notebook servers.
- Utilize multiple language kernels like Python and R language in the same notebook.
- Create new notebook environments on the fly without leaving the notebook or entering commands in a prompt.
- Publish results to business stakeholders as interactive visualizations and presentations.

To quickly get up and running with AEN, see [Getting started](#).

Download the [Cheat sheet](#) for easy reference.

### Concepts

#### Projects

AEN users interact with the system predominantly through projects.

A project is a set of conda environments, Jupyter Notebooks, and other files.

Each project has a project drive that all team members can access. The size of the drive is not limited by AEN. Contact your system administrator if you find you do not have sufficient space.

Each project has a separate project directory on the project drive.

The project directory is a directory for project files and data that is separate from the project owner's and team members' home directories, so that team members can share and have equal access.

The path to your project directory is `/projects/<project_owner>/<project_name>`.

For administrative information about projects, directories, and permissions, see [Projects and permissions](#).

#### Team collaboration

Teams collaborate in AEN using projects. Projects allow a team to easily come together by sharing the resources, applications, and environments that are necessary to collaborate effectively.

The AEN project owner and any team members connected to their project will have access to the same:

- Shared files and home directories.
- Shared Python and R environments.
- Shared nodes and hardware.
- Common applications.
- Web user interface.

For more information, see [Working with projects](#).

#### Access control

AEN access controls allow you to:

- Add and remove project access for new team members.
- Limit the access to specific folders and files to members of your project team.
- Use permissions to extend execute access to team members. By default, all of the team members on a project have read and write access to all project assets.

Access control is performed from each project's Workbench application.

For more information, see [Controlling access to your project](#).

## Sharing projects

AEN supports both public and private sharing.

A project can be “public,” which means that anyone with access to the system can view the project assets.

Any content placed in the `public` folder in a project is publicly accessible using its URL.

A project can be “private,” which means that only the project owner and team members can view the project assets.

You can also *limit who can access specific files*.

## Sharing Jupyter Notebooks

In addition to general project sharing capabilities, you can also publish Jupyter Notebooks to Anaconda Repository. This automatically versions the notebook and allows you to define who can view the notebook.

## Project tags

Tags are used to:

- Group similar or related projects.
- Identify your project so that it is easier to find.
- Let others know about your project.

You can *add and remove tags* for any project that you have access to.

## Getting started

This section contains information and tasks for first-time AEN users.

### 1. Download the AEN cheat sheet

Before you start, download and print the *AEN cheat sheet* for easy reference.

### 2. Access your user home page

After your administrator has set up your server and new Anaconda account, you will receive a welcome email.

1. Click the link in the email to open the AEN login page.

NOTE: Use the domain name and not the IP address when you connect to AEN. Using the IP address can cause TLS and security certificate errors.

2. Enter your AEN account username and password.

NOTE: Some administrators allow you to create your own account. If your administrator has allowed this, in the create a new account section, create your own username and password.

3. Click the Login button.

Your user home page, where all good things happen, is displayed:

The screenshot shows the Anaconda user profile for 'NewUser2'. The header includes the Anaconda logo, the username 'NewUser2', and a search bar. The profile information shows the user joined on Oct 20, 2016, with email 'newuser@mycompany.com' and 1 project. The 'Projects (1)' section shows a project named 'NewUser2 / NewProject' with a description 'Woo hoo! I finally get to play with notebooks!'. The 'Contributing (0)' section shows 'Not currently contributing to any projects.' The 'Top Tags' section lists 'Fun fun fun' and 'Test project'. The 'Top Collaborators' and 'Top Rated' sections are empty.

### 3. Create a new project

1. There are 2 ways to create a new project in AEN:

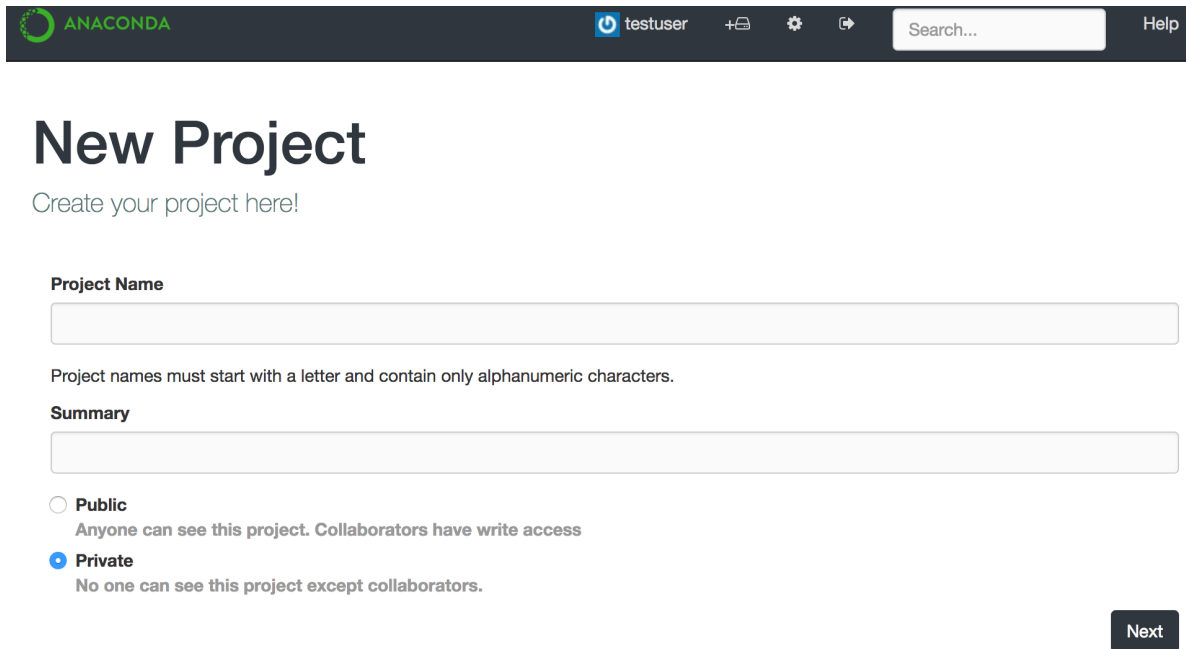
- On the right side of the AEN task bar, click on the New Project icon:



- On your home page, click the New project button:

The screenshot shows the Anaconda user profile for 'testuser'. The header includes the Anaconda logo, the username 'testuser', and a search bar. The profile information shows the user joined on Sep 21, 2017, with email 'testuser@outlook.com' and 2 projects. The 'Projects (2)' section shows two projects: 'testuser / TestProject' and 'testuser / TestProject1'. The 'New project' button is highlighted with a red circle. The 'Top Tags' section lists '!@#\$%^&\*()\_+', 'Abc', and '.)('.

2. On the Project page that is displayed, type a name for your project, such as “Testing.”



**Project Name**

Project names must start with a letter and contain only alphanumeric characters.

**Summary**

☐ **Public**  
Anyone can see this project. Collaborators have write access

☒ **Private**  
No one can see this project except collaborators.

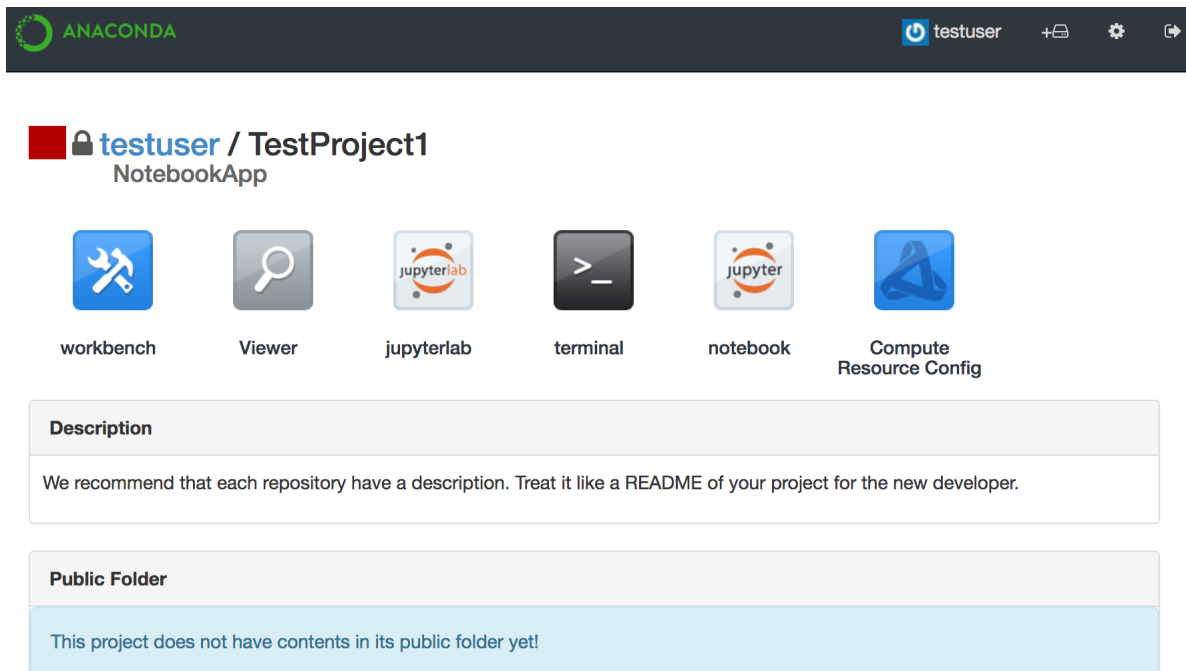
Next

3. Type a summary of the project so you can recognize it later.
4. Select whether your project will be public or private.
5. Verify that the default data center is selected.

TIP: You can update the project summary and description at any time from the **Project** menu in the Project Settings. To return to your project at any time, click the project name.

6. Click the Next button.

Your new project's home page is displayed:



**testuser / TestProject1**  
NotebookApp

workbench Viewer jupyterlab terminal notebook Compute Resource Config

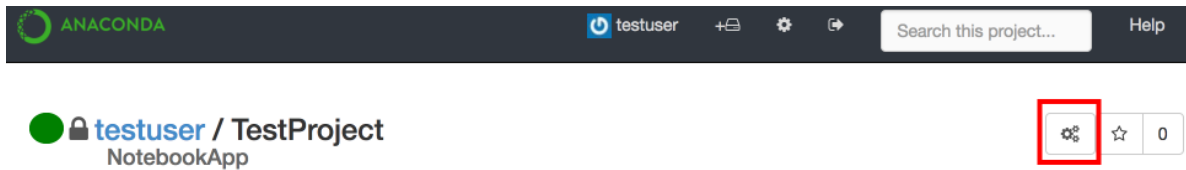
**Description**

We recommend that each repository have a description. Treat it like a README of your project for the new developer.

**Public Folder**

This project does not have contents in its public folder yet!

- To change the project settings, click the Project Settings icon on at the top right.



- Modify the summary or add a description of the project.

TIP: A project description is recommended, and may be written in Markdown syntax (plain text valid Markdown).

To see how Markdown will be displayed, in the description area, click the **Preview** tab.

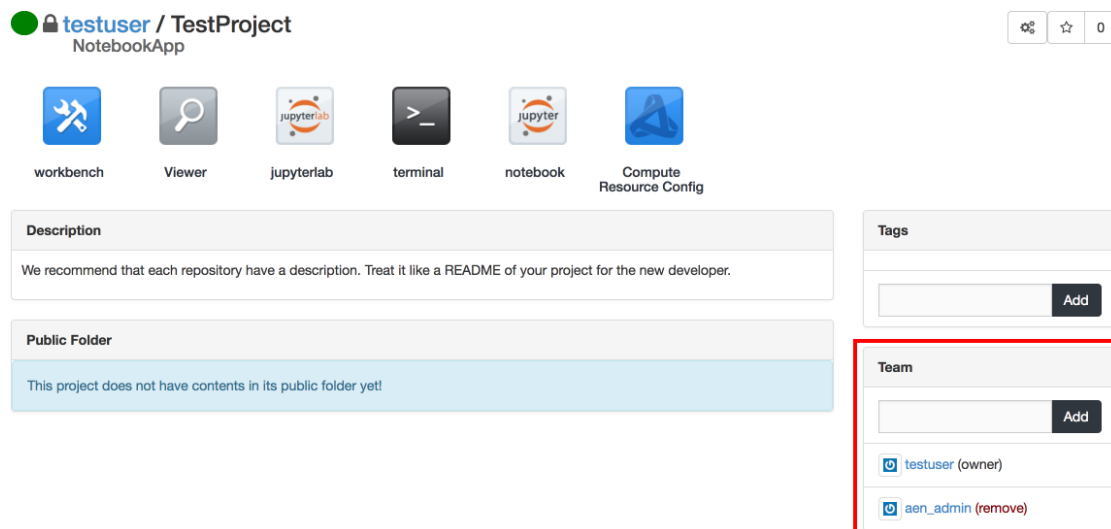
#### 4. Add collaborators

You can add team members to your project as collaborators. Adding team members to your projects makes collaboration easy because they have full access to the project's applications, files and services.

When you add team members, their home directory is mounted in the project. There is no need to download and email data or scripts—team members can work on the same files in the same environment in which you are working.

To add collaborators to your project:

- From your project home page, in the Team box, begin typing a teammate's username.
- In the list that is displayed, select the teammate's username.
- Click the Add button.



- Repeat these steps for each team member you want to add as a collaborator.

TIP: You can add or remove team members any time from the **Team** menu in Project Settings. You can also modify a team member's read, write or execute permissions at any time from the *Using Workbench*.



### 5a. Open an example notebook, OR

1. From your project home page, click the Jupyter Notebooks icon.
2. On the File View page, click the Examples folder.



3. Select any of the example notebooks.
4. To see the default results of the formulas used in the displayed notebook, in the **Cell** menu, select Run All.
5. To experiment with changing the notebook, edit any of the formulas in the notebook.
6. In the **Cell** menu, select Run All.

Any differences resulting from your edits are displayed.

### 5b. Create a new environment and notebook

If you are already familiar with creating notebooks, you can easily set up a new environment with the programs you need—like SciPy and NumPy—then open a new notebook and make your edits.


To create a new environment:

1. From your project home page, click the Jupyter Notebooks icon.
2. On the File View page, click the **Conda** tab.
3. To add a new conda environment, on the top right of the **Conda** tab, click the + icon.
4. Type a name for your environment.
5. Select Python 2, Python 3 or R language kernel.
6. Click the Create button.
7. To activate your new environment, click its name.

The packages that are available and installed in your new environment are displayed.










## Adding SciPy and Numpy packages

1. In the available packages section, search for the package name `numpy`—all lower case.
2. In the results section, next to `numpy`, select the checkbox.

 **ANACONDA**  
Powered by Continuum Analytics

Files Running IPython Clusters **Conda**

3 Conda environments + ↺

Action	Name	Default?	Directory
  	root		/opt/wakari/anaconda
  	default	✓	/projects/aen_admin/TestProject/envs/default
  	myenv		/projects/aen_admin/TestProject/envs/myenv

2 available packages  → 39 installed packages in environment "myenv" ↺ ✓ ⬇ 🗑

Name	Version	Channel
<input checked="" type="checkbox"/> numpy	1.13.1	defaults
<input type="checkbox"/> numpydoc	0.7.0	defaults

Name	Version	Build	Available
<input type="checkbox"/> anaconda-client	1.6.3	py36_0	
<input type="checkbox"/> certifi	2016.2.28	py36_0	
<input type="checkbox"/> clyent	1.2.2	py36_0	
<input type="checkbox"/> decorator	4.1.2	py36_0	
<input type="checkbox"/> ipykernel	4.6.1	py36_0	
<input type="checkbox"/> ipython	6.1.0	py36_0	

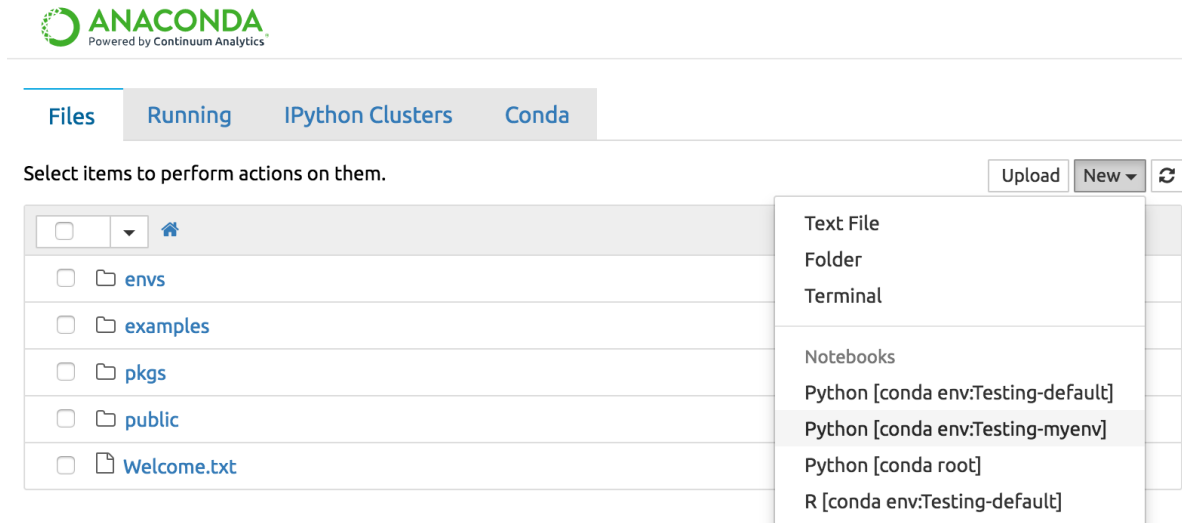
1. Click the Install icon.
2. To confirm your installation, click the Install button.

Numpy is displayed in the installed packages section—if not, click the Refresh button. Repeat these steps to install the Scipy package—searching for `scipy` in step 1.

TIP: You can return to this screen at any time to add additional packages to this environment.

## Creating a new notebook in your environment

1. From the AEN homepage, click the **Files** tab.
2. On the top right of the **Files** tab, click the New button.
3. Under Notebooks, select the Python environment with the name you entered while *creating a new environment*.



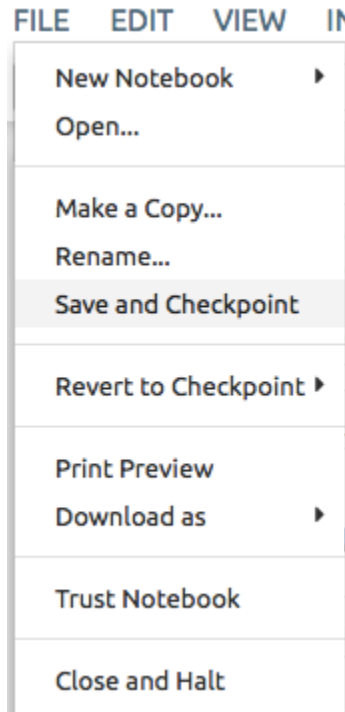
NOTE: If you do not see your new environment listed under Notebooks, next to the New button, click the Refresh button.

A new locked notebook is displayed. Paste or write some code to execute when you are ready.

## 6. Create checkpoints for version control

Whether you are exploring an existing notebook, or creating a new one, you can easily create checkpoints, return to an earlier version, compare two different versions and save them for reference.

To create a checkpoint, in the **File** menu, select Save and Checkpoint:



To revert your notebook to a previous checkpoint, in the **File** menu, select Revert to Checkpoint.

NOTE: For more information about revision control features, including creating commits and comparing differences, see [Using the Revision Control Mechanism extension](#).

## 7. Share your notebook and environment with others

See [Sharing projects and notebooks](#).

## 8. See what to do next

Now that you have completed the Getting Started guide, you are ready to move on to [basic tasks](#) and [advanced tasks](#).

## Basic tasks

This section contains information and tasks that use the web browser to manage projects and is best-suited for any beginning AEN user:

### Working with projects

Almost everything in AEN starts by opening an existing project or creating a new one.

After that, you can set up a special environment with the packages you want, set their access permissions and modify your project settings.

### Searching for a project or file

To search for projects and files, use the Search box in the AEN navigation bar. The search provides different results depending on which page you search from:

- On a project home page, search results include any files that match your search criteria within the current project.
- On any other AEN page, search results include any files that match your search criteria within all projects.

**TIP:** Your search results include only files and projects that you can view: public projects, and private projects to which you have a minimum of view access.

### Types of files searched

The following types of files are included in search results:

- `.py`—Python source files.
- `.ipynb`—IPython/Jupyter notebooks.
- `.txt`—plain text files.
- `.md`—Markdown files.

### Search indexing

Files that are modified while a project is running are automatically re-indexed shortly after the files are modified. If you create or update a large number of files—such as cloning a git repository or copying a directory—search results may take several minutes to update.

Files that are modified while the project is not running are re-indexed only after the project is started.

## Using search constructs

You can use the following search constructs:

- Ordinary words will match the full-text contents of any file.
- Wildcards are permitted.  
EXAMPLE: `John*` will match John and Johnny. These are glob patterns and are similar to their usage in the command line.
- Combine queries using AND or OR, and group them using parentheses ().

Regular expression patterns can be embedded in the query string by wrapping them in forward-slashes (/):

```
name:/joh?n(ath[oa]n)/
```

The supported regular expression syntax is explained in [the Elasticsearch reference](#).

NOTE: Wildcards apply inside a regular expression. A query string such as `/.*n/` would force the search to visit every term in the index.

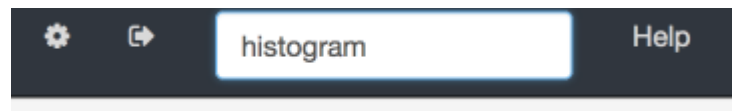
## Searching metadata fields

You can search in specific metadata fields:

- `imports:name`—matches files that import the module name.
- `uses:name`—matches files that reference the identifier name. Referenced names include any functions and globals imported from other modules, as well as the names of any methods invoked on any object.
- `defines:name`—matches files that define the identifier name. Defined names include functions defined at global scope, class names, and method names within classes.
- `acl:user`—matches files in which the named user has read access or higher.

## Searching a project

1. In the Search box, type a string of text:



TIP: Search by glob patterns, which are similar to file matching in the command line.

EXAMPLE: To find projects in the test family that are numbered from 00 to 99, search for `Test-??`. To find all projects whose name ends with “Stats,” search for `*Stats`.

2. Press Enter.
3. In the search results, click the plus + icon above a project name to show a list of matching files in the selected project:

Projects matching 'iris' ([save this search](#))

testuser / TestProject

NotebookApp

★

0

AnacondaEN / AEN11\_0

No Summary

★

0

Rida / ABC

No Summary

★

0

Rida / Testing

No Summary

★

0

testuser / TestProject1

NotebookApp

★

0

TIP: Click the project name to open the project's home page.

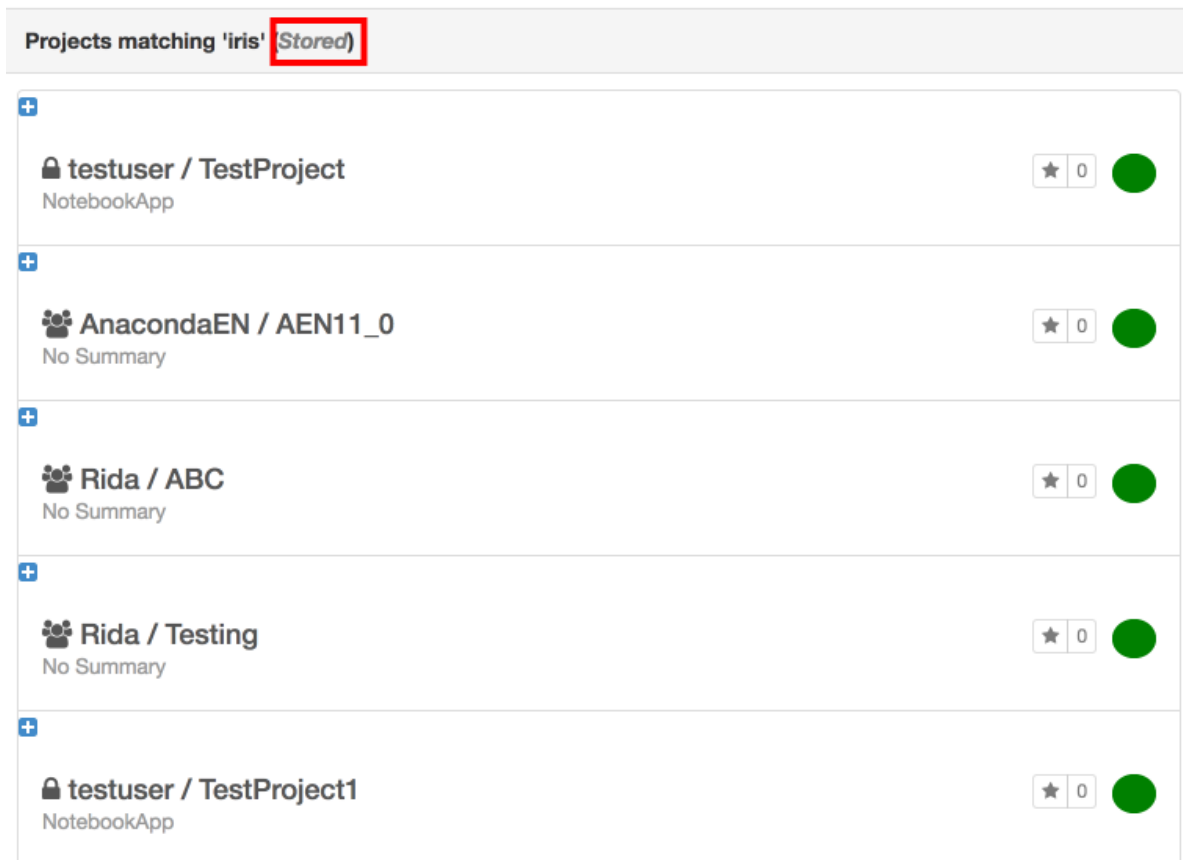
4. To view a file, click its file name in the matching files list:

Found 1 files matching 'histogram' in user02/Public\_project. ([save this search](#))

File	Relevance
<a href="#">/examples/histograms.ipynb</a>	42

## Saving a search

1. At the top of the search results, click Save this search:



The “save this search” text changes to “stored” and your search is saved. Your saved searches are listed on your home page.

## Removing a saved search

On your home page, in the Saved searches section, click X next the saved search that you want to remove:



Projects (2)

New project

testuser / TestProject

NotebookApp

★ 0

testuser / TestProject1

NotebookApp

★ 0

Contributing (0)

Not currently contributing to any projects.

Top Tags

!@#\$\$%^&*()_+~	1
Abc	1
_))((	1

Top Collaborators

aen_admin	1
-----------	---

Top Rated

Project	1
Testing	0
AEN11_0	0
ABC	0
TestProject	0

Saved searches

iris	✕
------	---

## Adding and removing team members on a project

- On the project home page, click the Project Settings icon to open the Project Settings page.

ANACONDA

testuser

+

⚙

↗

Search this project...

Help

testuser / TestProject

NotebookApp

⚙ ☆ 0

- In the **Settings** menu, select Team.

testuser / TestProject

NotebookApp

Settings

Project

Team

Admin

Info

Team

Add

Team members will be granted full access to your applications, files, and services.

testuser

aen\_admin (remove)

### Adding a team member

1. In the username box, type in the first few letters of the username for the team member you want to add to the project.
2. In the list of usernames that displays, click the user to add.
3. Click the Add button.

### Removing a team member

Click the red Remove link next to the name of the user you want to remove from the project.

### Controlling access to your project

#### Controlling team member access

By default, all of the team members on a project have read and write access permissions for all project assets.

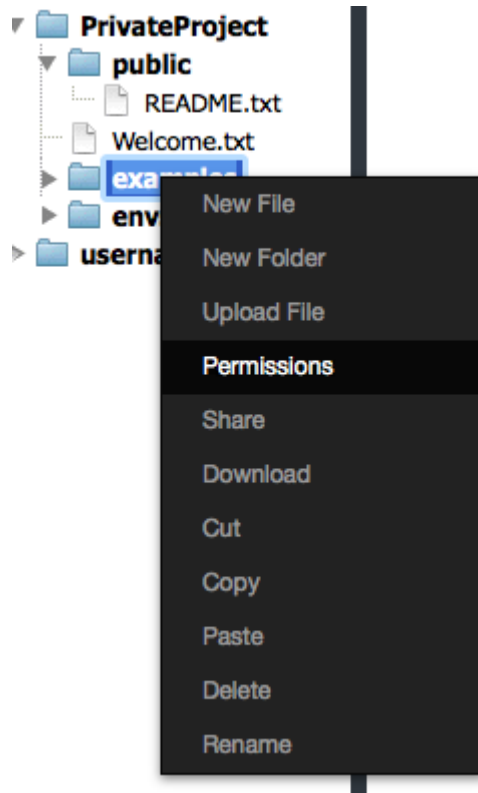
The available permissions are read, write and execute. If you remove all individual or group permissions for a project asset, team members will not be able to access that asset.

To change a project's permissions:

1. Open the project's home page.
2. Click the Workbench icon.
3. In the Workbench app, right-click the file or folder you want to limit access to.

NOTE: When you change a folder's permissions, the permissions of files and folders inside it do not change. You may change the permissions of those files and folders manually.

4. In the menu that displays, select Permissions:



A list of owners and team members who have access to your project is displayed.

5. Find the team member you want to change access for:

Permissions for examples

Owner 
Group

Who	Type	Read	Write	Execute
owner		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
group		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
others		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mask		true	true	true
<input type="text" value="username"/>	User <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username"/>	Group <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	User <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	Group <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	User <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	Group <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Next to the team member's name, select or deselect the permissions for that user.

NOTE: You can add a team member and set their access at the same time by typing their name in a username box, setting their permissions, and then clicking the Add button.

- Click the Submit button.

The selected permissions are added, and the deselected permissions are removed.

NOTE: If a team member is in the Workbench application when you give them access, they must refresh their browser window to see their current permissions.

## Controlling non-team member access

You can choose to grant file or folder access to someone who is not part of the project team, as long as that person has an AEN account.

Sharing with individuals outside the team is a four step process:

- Copy or move the file or folder to your home directory.*
- Give the user read and execute access to your home directory.*
- Add the user to the file's permissions.*

4. *Have the user add your directory to their workbench.*

### Copying a file or folder to your home directory

Your home directory is displayed at the bottom of the File Manager pane in the Workbench.

To protect the other files and folders in your home directory—those you are not providing permissions to a user to access—we recommended that you:

1. Create a sub-folder.
2. Rename the folder with the name of the user you are granting access to.
3. Copy or move the file you want to grant permissions for to the renamed folder.

The file is copied or moved to the new location and is ready for you to update the file permissions.

### Granting file access

You must select read and execute access for a user to be able to view, but not edit, the files or folders.

1. Right-click the name of the file or folder you are granting access to.
2. In the menu that is displayed, select Permissions.
3. Click the Add button.
4. Type the username of the user to whom you are granting file access and press Enter.

**TIP:** If you grant access to a folder instead of a specific file, you only have to set permissions the first time you share the folder with each user, unless you need to update the permissions.

### Adding file permissions for a user

Once a user is included in your Permissions list, you must *add the correct permissions* for the user, in the same way as you would for a team member.

Once complete, depending on the access granted, the user will be able to view, read, change, and execute the file.

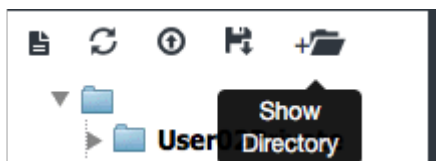
**NOTE:** If you change permissions for a folder instead of a file, the user will be able to see and access any files within that folder.

### Adding a directory to a user's workbench

The user can now add your home directory to their Workbench File Manager.

To add your home directory to another user's workbench, have the other user follow these steps:

1. Click the Show Directory button at the top of the Workbench File Manager:



The Show Directories dialog box displays.

2. In the text box, type `/home/[yourusername]`.

NOTE: Replace `[yourusername]` with your AEN username.

### Show Directories



Enter the full path to an existing directory that you would like to see in the file browser. For example, if the project node has a directory with a path of `/data/2010` that contains data files from 2010 that you want to browse, enter `/data/2010` and click on the Show button.

3. Click the Show button.
4. Verify that the folder is now displayed below the text box:

### Show Directories

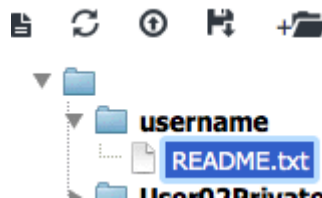


Enter the full path to an existing directory that you would like to see in the file browser. For example, if the project node has a directory with a path of `/data/2010` that contains data files from 2010 that you want to browse, enter `/data/2010` and click on the Show button.

5. Close the Show Directories dialog box by clicking the X in the upper-right corner or by clicking anywhere outside the box.
6. Click the Refresh button.

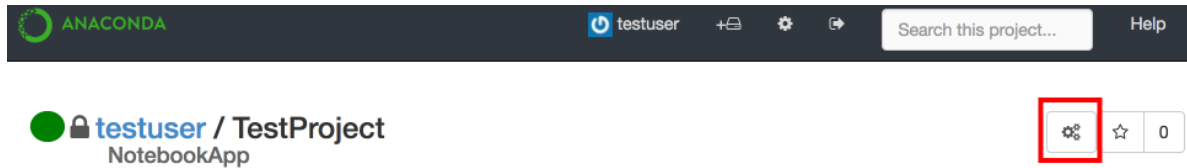
The shared file is displayed in the File Manager:



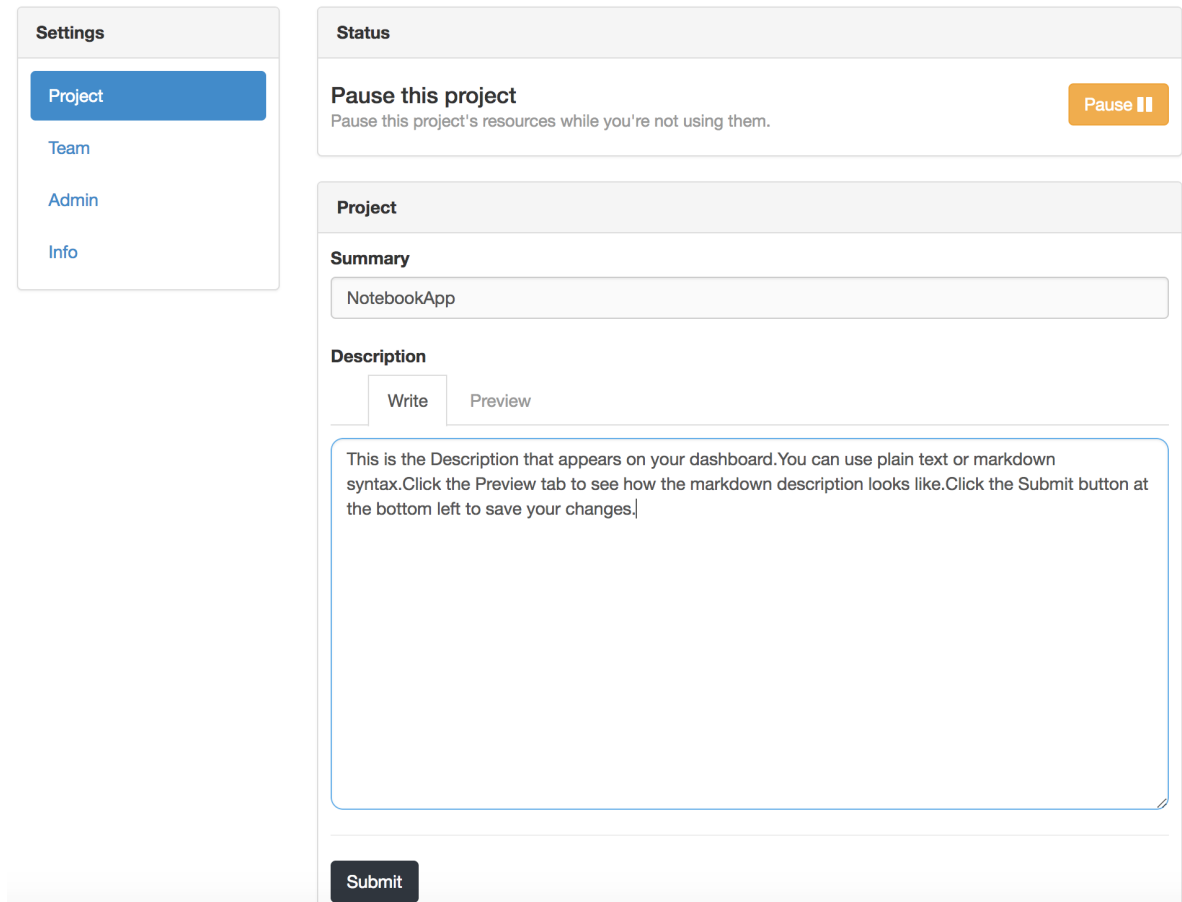
## Starting and stopping a project

**TIP:** Stopping a project stops all the applications launched for that project that use resources when running, such as memory and compute cycles. It is best to stop projects when they are not in use.

1. On the project home page, click the Project Settings icon to open the Project Settings page.



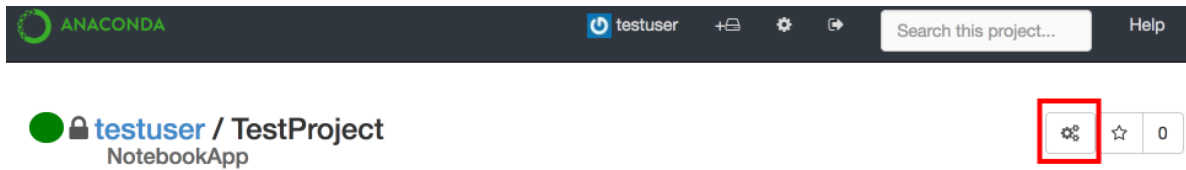
2. In the **Settings** menu, select Project.



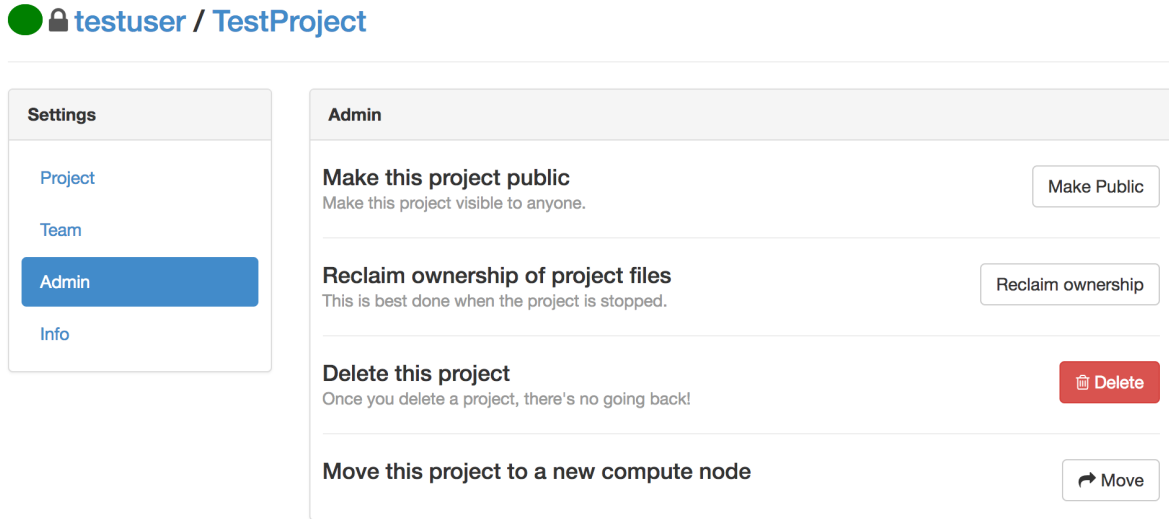
3. In the Status section, click the Start or Stop button to toggle between manually starting and stopping your project.

## Making a project public or private

1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Admin.



3. Click the Make Public button.
4. If the project is already public and you want to make it private, click the Make Private button.

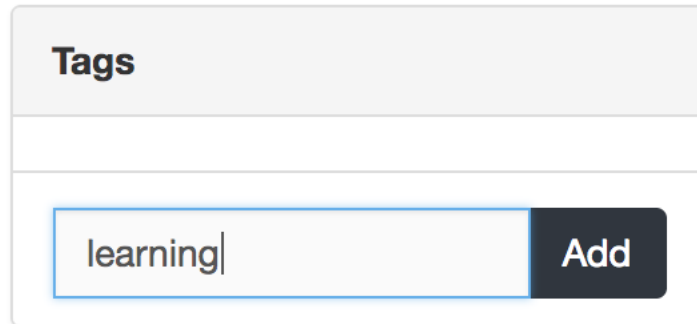
## Tagging a project

Existing tags assigned to a project are listed in the Tags section on the project's home page.



## Adding a tag

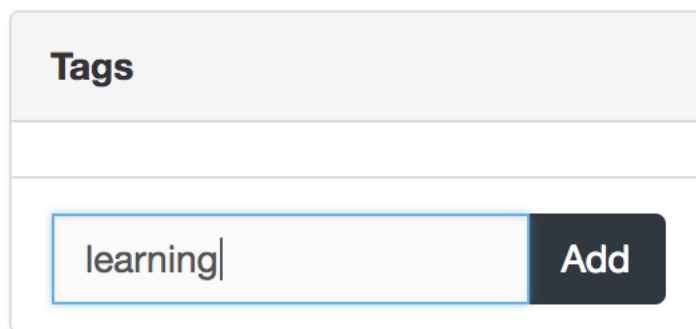
1. In the Tags box, type the name of the tag you want to add:



A screenshot of a web interface showing a 'Tags' section. It features a text input field containing the word 'learning' and a dark 'Add' button to its right.

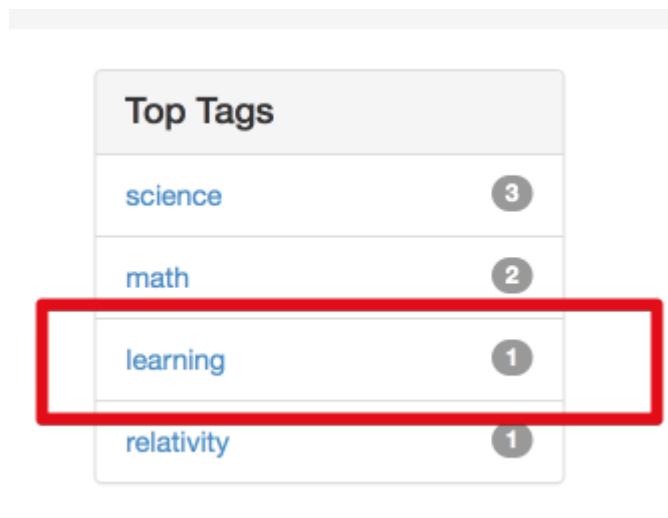
2. Click the Add button.

The new tag is added to the Tags list:



A second screenshot of the 'Tags' section, identical to the first, showing the 'learning' tag in the input field and the 'Add' button.

If the tag was not already in the Top Tags list on your user home page, it is added. If the tag was already listed because another project used it, the number next to the tag is incremented:

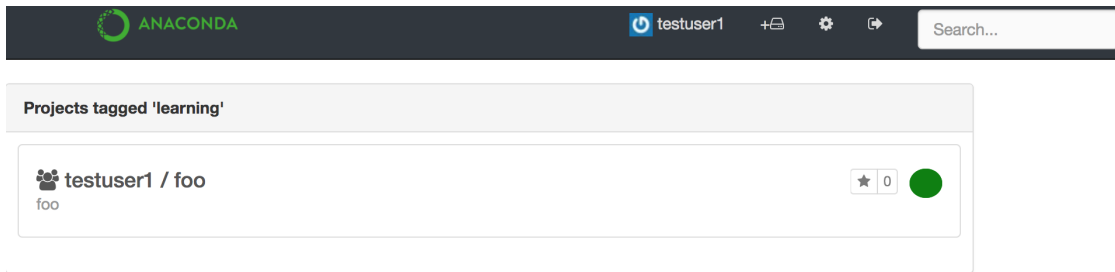


A screenshot of a 'Top Tags' list. The list contains four items: 'science' with a count of 3, 'math' with a count of 2, 'learning' with a count of 1, and 'relativity' with a count of 1. The 'learning' row is highlighted with a red rectangular box.

Top Tags	
science	3
math	2
learning	1
relativity	1

## Removing a tag

1. On your user home page, in the Top Tags list, click the tag name.



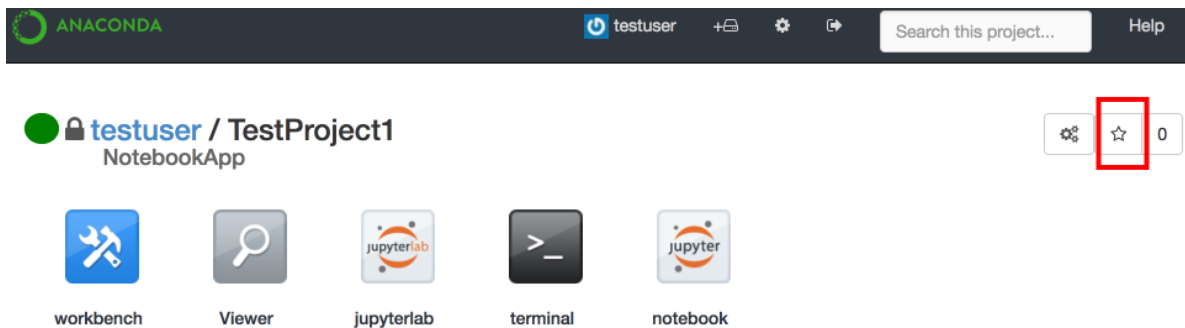
1. In the Tags list, click the X button next to tag name.

## Starring a project (rating)

Starring a project makes it appear on your user home page in the Top Rated list.

Adding or removing stars for a project does not affect the stars added by other users.

1. Open the project that you want to star.
2. On the project home page, click the Star icon at the upper right:

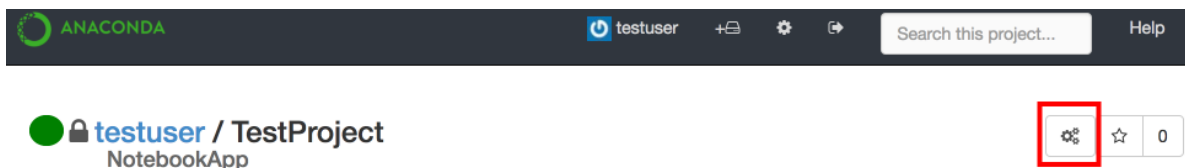


3. To unstar a project, click the Star icon again.

## Claim ownership of a project

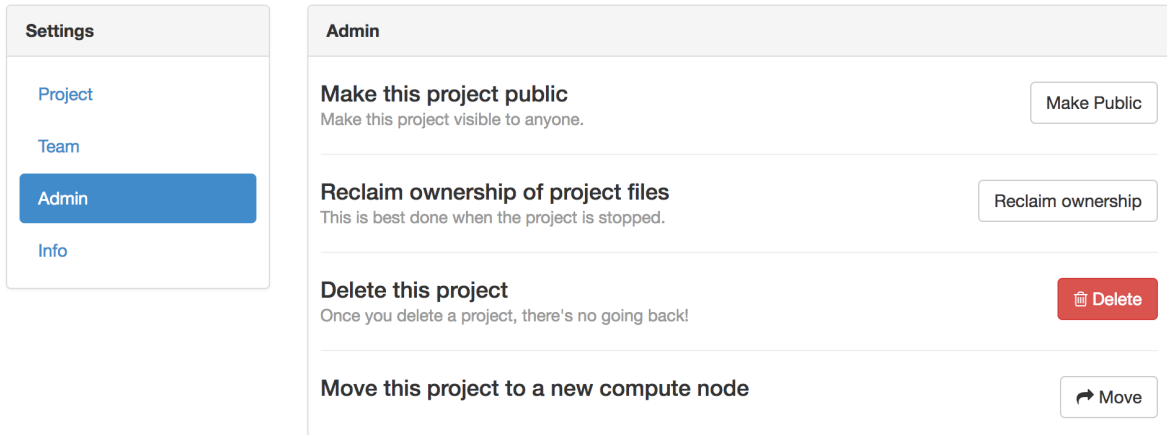
When you claim ownership of a project, ownership of all files and folders created by the team members on the project is transferred to you. Project files and folders are copied and renamed.

1. *Stop the project* to prevent team members from making changes while you are changing ownership.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.

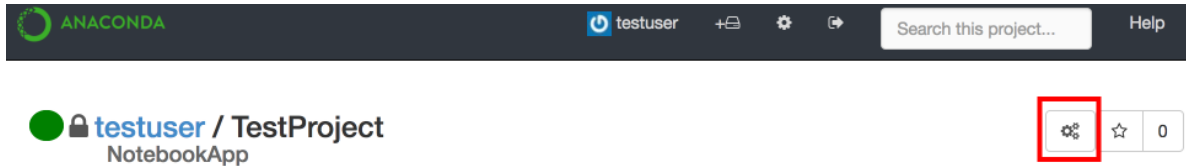
 **testuser** / TestProject



4. Click the Reclaim ownership button.

## Changing a project's summary or description

1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Project.

**Settings**

- Project
- Team
- Admin
- Info

**Status**

**Pause this project**  
Pause this project's resources while you're not using them. Pause

**Project**

**Summary**

NotebookApp

**Description**

Write Preview

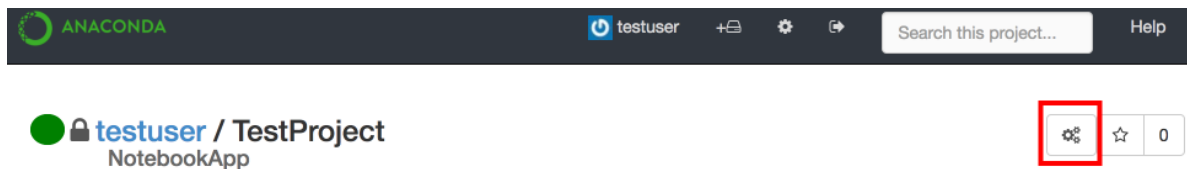
This is the Description that appears on your dashboard. You can use plain text or markdown syntax. Click the Preview tab to see how the markdown description looks like. Click the Submit button at the bottom left to save your changes.

Submit

- Update your project's summary using plain text or its description using Markdown syntax.
- Click the **Preview** tab to see a preview of the Markdown description.
- Click the Submit button.

### Viewing a project's status

- On the project home page, click the Project Settings icon to open the Project Settings page.



- In the **Settings** menu, select Info.

 **testuser / TestProject**

**Settings**  
[Project](#)  
[Team](#)  
[Admin](#)  
**Info**

**Info**  
**Status**  
running  
**Created**  
Mon Sep 25 20:43:56 2017  
**Last Heartbeat**  
Mon Sep 25 20:43:56 2017

**Data Center**  
**Name**  
Gateway  
**Provider**  
Enterprise Resources  
**Summary**  
Gateway

On the Info page, you can see:

- Whether the project is currently running or stopped.
- When the project was created.
- When the project was last accessed.
- The data center in which the project is running.

## Viewing related projects

Related projects are listed on a project's home page.

Team

Add

user02 (owner)

user01 (remove)

Related Projects

user01 / TestProject2

No Summary

user02 / User02Private

No Summary

user01 / TestProject

No Summary

These are projects that contain fields that are most similar to the current project.

TIP: You will only see projects to which you have been granted access: public projects, and private projects on which you are a team member.

### How related projects are identified

To determine which projects should be listed in Related Projects:

1. The recommendation engine scans the current project's files and weights the terms found to determine which of them to use for the likeness search.
2. The engine performs a search, with extra weight given to the "uses" and "imports" keywords.
3. The engine finds the files and projects that are most similar to the current project and scores the results.
4. The top-scoring matches are displayed in Related Projects. Only public projects and private projects to which you have access are included.

## Viewing top-rated projects

Top-rated projects are listed on your home page:

Top Rated	
einstein	2
euler	1
laplace	1
plank	1
Public_project	1

The number next to a project represents the number of stars that have been given to that project.

Click a project name to view the project's home page.

## Using tags to find a project

The top tags used on your projects are listed on your home page:

NewUser2

NewUser2

Joined on Oct 20, 2016

newuser@mycompany.com

1 Projects

Projects (1)

New project

NewUser2 / NewProject

Woo hoo! I finally get to play with notebooks!

★ 0

Contributing (0)

Not currently contributing to any projects.

Top Tags

Fun fun fun 1

Test project 1

Top Collaborators

Top Rated

test1 0









test2 0

NewProject 0

To list all projects that share a specific tag, click the tag name:

Top Tags	
science	4
math	2
learning	1
relativity	1

A list of projects with the selected tag is displayed:

Projects tagged 'science'	
 malev / euler euler	★ 1 
 malev / einstein einstein	★ 2 
 malev / plank quantum theory	★ 0 
 user01 / User01Private_2 No Summary	★ 0 

TIP: The list includes only projects that you have access to: public projects, and private projects on which you are a team member.

Click a project name to open the project's home page.

### Viewing your top collaborators

Your top collaborators are listed on your home page:

Top Collaborators	
trento	1
user01	1

These are the team members who have the most projects in common with you.



To view a collaborator's home page—where you can see all public projects and the private projects they have shared with you—click the collaborator's name.

## Sharing projects and notebooks

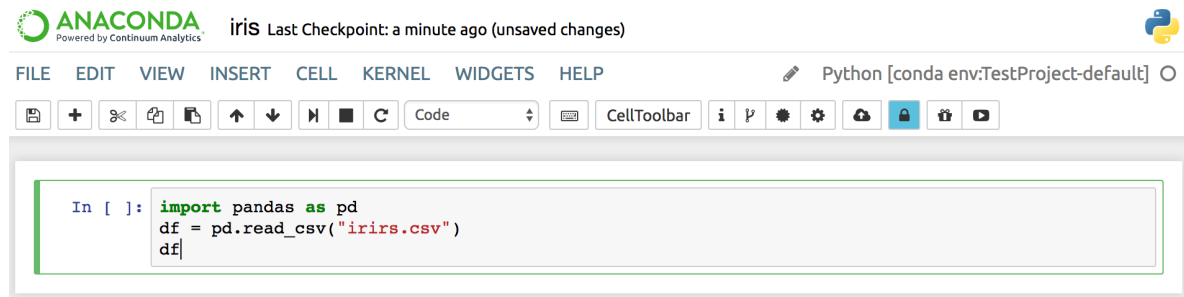
For information on sharing projects via the project settings and access control, see [Sharing projects](#).

To upload a Jupyter Notebook to Anaconda Repository:

1. Log in to Repository by running the `anaconda login` command or by using the login user interface provided by the [nbextension](#).

CAUTION: If you are not using a secure connection, we strongly recommended that you use the command line to log in.

2. To share your notebook environment, select the Attach conda environment checkbox. This ensures that your team members will have the right environment for your notebook.
3. Click the Upload button to upload your notebook to your local Repository or to [Anaconda.org](#), depending on how your administrator has set up AEN:



NOTE: If you have not yet logged into Repository or Anaconda Cloud, or have not created an account, you will be asked to do so.

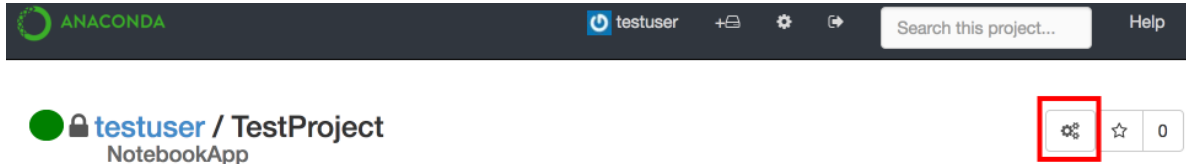
## Other ways to share a notebook

- Print—In the **File** menu, select Print.
- Download and share—In the **File** menu, select one of the following options:
  - Download as Notebook.
  - Download as Python.
  - Download as HTML.
  - Download as Markdown.
  - Download as ReStructured Text.
  - Download as PDF.
- Share and control team members' direct access to read, write and/or execute your notebook file or folder. For more information, see [Controlling access to your project](#).
- Share and control non-team members' file or folder access. For more information, see [Controlling access to your project](#).
- Create a presentation with [NBPresent 4.1](#).

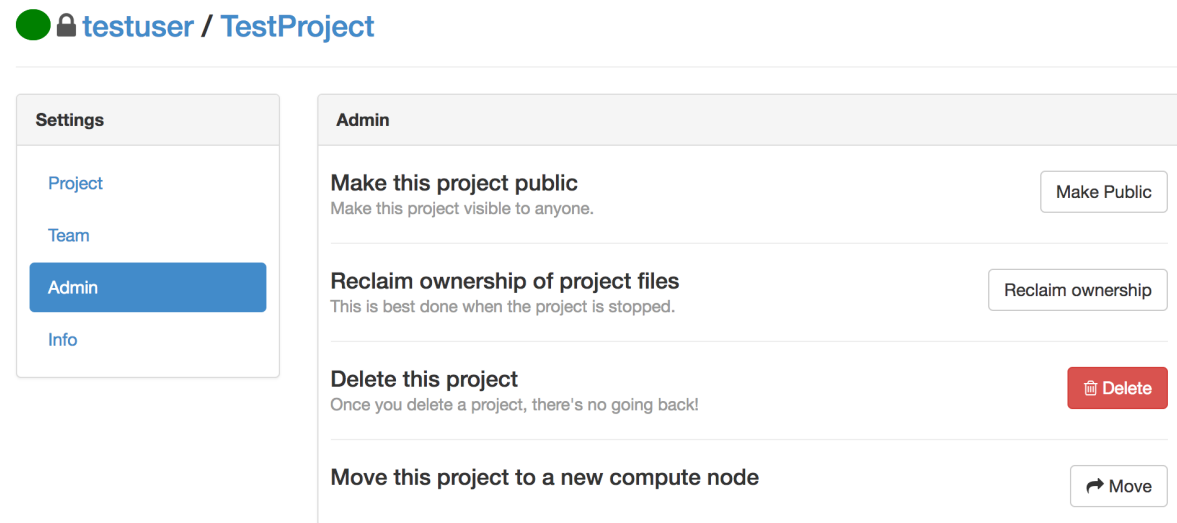
## Deleting a project

CAUTION: Deleting a project deletes all project files and information! There is no undo option.

1. Download a copy of any project files that you need to save.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



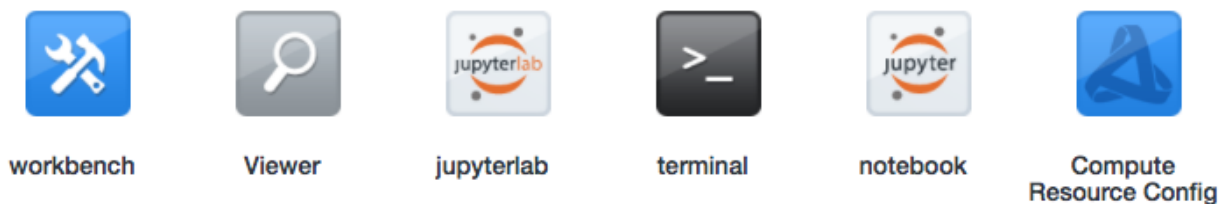
4. Click the Delete button.

## Using AEN applications

The applications in your project make it easy for you to interact with your files and data, manage your project's resources and to customize your AEN experience.

To use applications, log in to AEN, then select the project you want to work on or create a new project and open it.

On the project home page, the following application icons are displayed:



TIP: Each application opens in a new browser tab. You can run multiple applications at the same time in your project.

For more information on each AEN application, see:

- [Using Workbench](#)—File viewer and manager, including permissions settings.

- *Using Viewer*—View-only versions of notebooks and other text files.
- *Using JupyterLab*—Alpha preview of the next generation notebook.
- *Using Terminal*—Basic bash shell Terminal.
- *Using Jupyter Notebook*—Jupyter Notebooks with extensions.
- *Using Compute Resource Configuration*—Project information, view and manage applications.

## Using Workbench

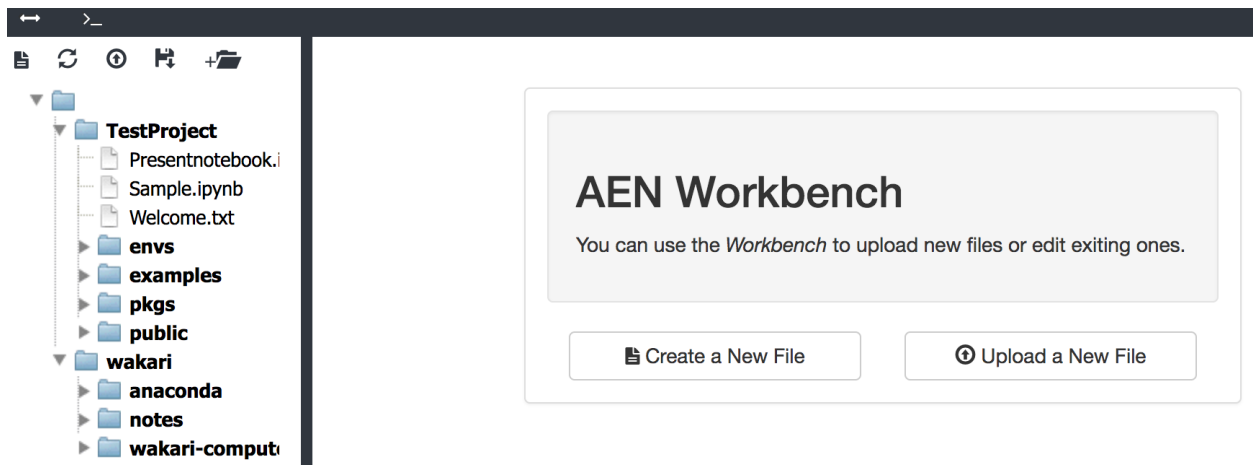
Workbench is a file viewer and manager that includes a file editor and file permissions manager.

You can use Workbench to:

- Upload and download files using the *File Manager*.
- Create new files and folders using the *File Manager*.
- Copy and move files to new locations using the *File Manager*.
- Rename files and/or folders using the *File Manager*.
- Manage the *access permissions* of team members.
- Grant or revoke *access to non-team members*.

Workbench also includes a simple Terminal application, which is convenient because the File Manager is always visible, making navigation simple.

When you first open Workbench, the File Manager is displayed in the left pane, and the Create a New File and Upload a New File buttons are in the right pane:



When you open a file or Workbench Terminal, it is displayed in the right pane. To make the Create or Upload a file options re-appear, refresh your browser window.

Two small icons are displayed in the black navigation bar at the top of the Workbench page. Hovering over them displays tool tips that describe their use:

- The Toggle icon displays or hides the File Manager.
- The Terminal icon opens a simple terminal window.

### Opening Workbench

To open Workbench:

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Workbench icon:



workbench

Workbench opens in a new browser window.

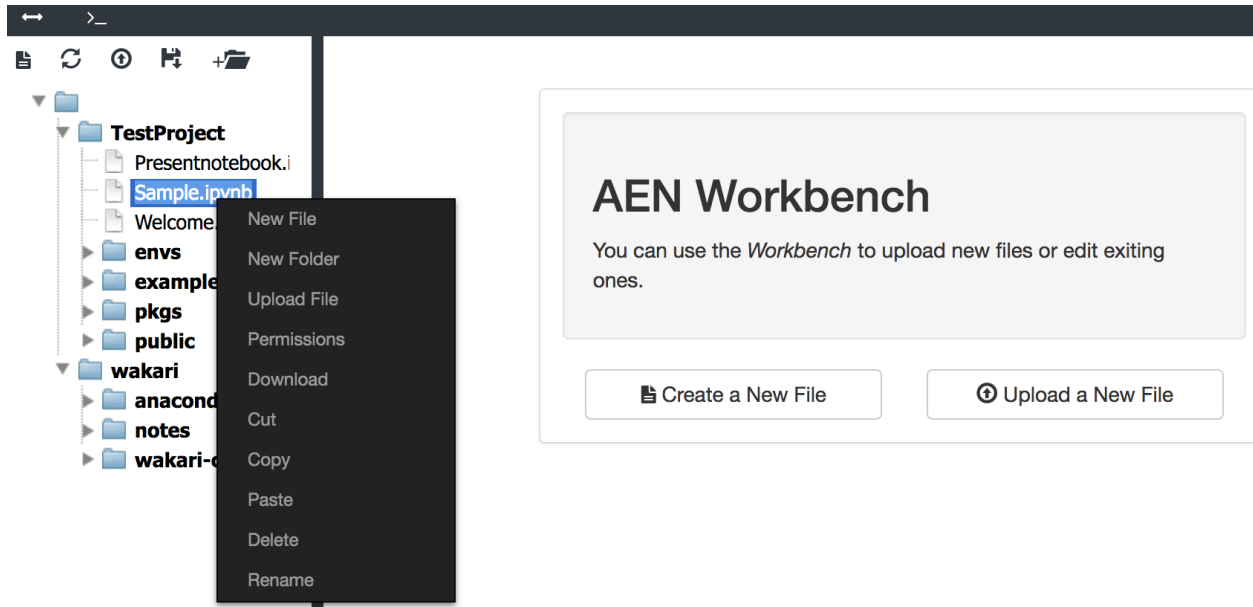
### Using File Manager

The File Manager is an intuitive way to interact with your files and folders.

### Using the options drop-down menu

To perform any of the actions described below:

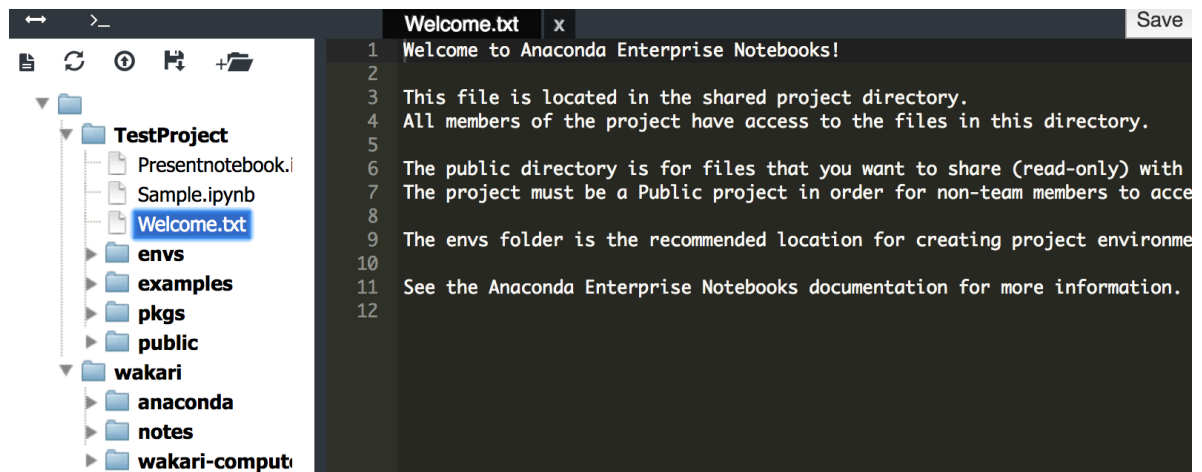
1. Right-click on any folder to display the options drop-down menu.
2. Select one of the following options:
  - New File—Create and edit a new file.
  - New Folder—Create a new folder.
  - Upload File—Upload a file to the selected folder. You can also drag a file to the folder.
  - Permissions—*Control access to files and folders.*
  - Cut—Cut the selected file or folder.
  - Copy—Copy the selected file or folder.
  - Paste—Paste a previously cut or copied file or folder.
  - Delete—Delete the highlighted file or folder.
  - Rename—Rename the highlighted file or folder.



## Editing files using the File Editor

1. Double-click any text file in the File Manager.

The File Editor opens in the right pane:

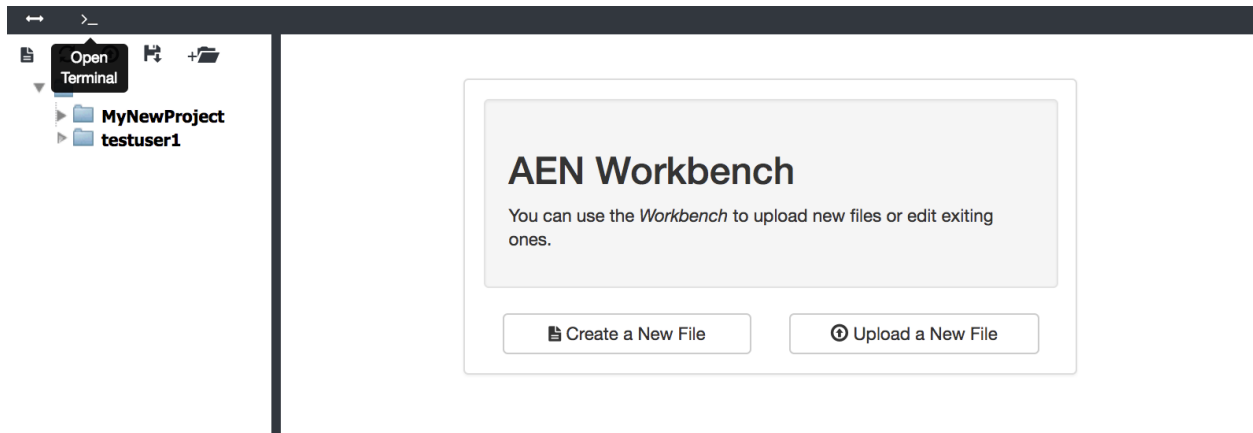


2. When you finish editing the file, click the Save button.

NOTE: To close the file without saving, click the X at the top of the page under the file name.

## Opening the Workbench terminal

In the navigation bar, click the Open terminal icon:



A Terminal—bash shell—is displayed in the right pane.

**TIP:** You can open additional terminals by clicking the Open terminal icon again, or by clicking the Plus + icon at the top of an open terminal.

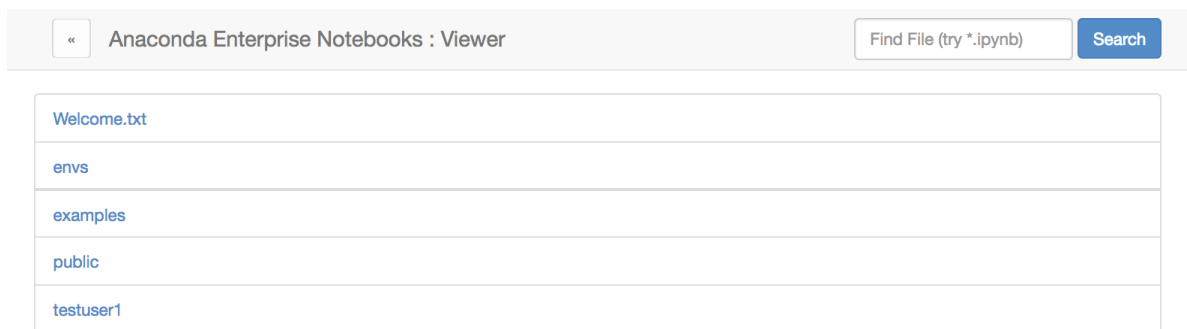
To move between terminal windows, click the **Terminal** tab in the navigation bar, then select the number of the terminal window you want to work in.

## Using Viewer

The Viewer application displays a static, view-only version of your notebooks and other text files by rendering the text files directly and using the NBConvert tool to convert notebooks to static HTML.

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Viewer icon.

Viewer opens in a new browser window:



4. Click any folder to view its contents, or click any filename to view the file.
5. To search for a file or folder name, type text in the Find File box, then press the Enter key. This is not a full-text search, but wildcards are permitted.

## Using JupyterLab

JupyterLab is an early alpha-preview of the next generation of the Jupyter Notebook. It is included so that you can take a tour and play with its capabilities.

CAUTION: JupyterLab is experimental. It is not yet intended for production work.

JupyterLab does not include any of the notebook extensions that are available in the *Jupyter Notebook app*.

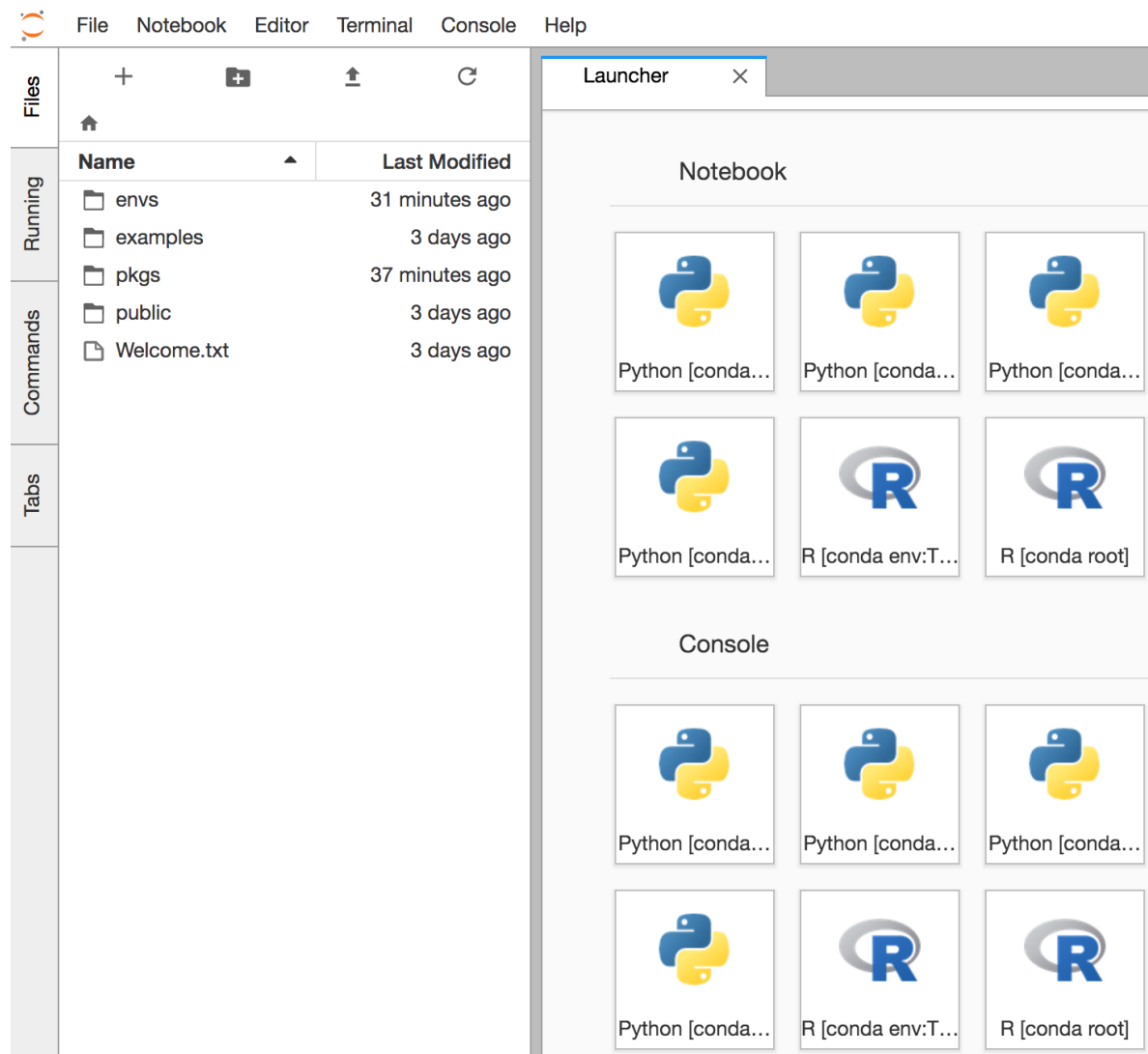
For more information about JupyterLab, see the [documentation](#).

You can also download and print a `Jupyter cheat sheet` on using Jupyter Notebook and the new JupyterLab.

To open JupyterLab:

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click on the JupyterLab icon.

JupyterLab opens in a new browser window:



Experiment with the application on your own, using the **Notebook**, **Editor**, **Terminal** and **Console** menus.

To review a guided tour of all of the features JupyterLab will contain when it is ready for production, click the Take a tour link in the right pane.

### Using Terminal

The Terminal application is a simple bash shell terminal that runs in your browser:

```
+ 1 bash
(/projects/aen_admin/TestProject/envs/default) ls
envs  examples  pkgs  Presentnotebook.ipynb  public  Sample.ipynb  Welcome
(/projects/aen_admin/TestProject/envs/default) █
```

Using Terminal, you can:

- Access your home directory and your project drive.
- Open multiple shells within one instance of Terminal.
- Open multiple instances of Terminal in the same browser window.

1. Log in to AEN.
2. Select a project you want to work on, or create a new project and open it.
3. On the project home page, click the Terminal icon:



Terminal

Terminal opens the project directory in a new browser window.

By default, the project directory is `/projects/username/project-name`.

EXAMPLE: `/projects/TestUser/MyFirstNotebook`

4. To see the physical path of your directory, run the Print Working Directory command `pwd -P`.

TIP: The physical path `-P` is important because project attaches data to the beginning of your virtual path to keep your project files together.

5. To navigate out of your project directory to your home directory, run the command `cd`.
6. To return to your project directory, run the command `cd/projects/username/project-name`.

TIP: If you are new to navigating in a terminal, you may want to use [the Workbench terminal](#), which includes a visual navigation tree in the File Manager.



## Using multiple Terminals

You can open as many terminals as you want.

To open another shell in the terminal, in the upper left of the pane, click the plus + icon.



A corresponding number appears after the plus + icon and 1.

To move to another Terminal, click the corresponding number.

The color of the number tab changes to show which terminal is currently selected.

## Using Jupyter Notebook

The Jupyter Notebook application allows you to create and edit documents that display the input and output of a Python or R language script. Once saved, you can share these files with others.

NOTE: Python and R language are included by default, but with customization, Notebook can run several other kernel environments.

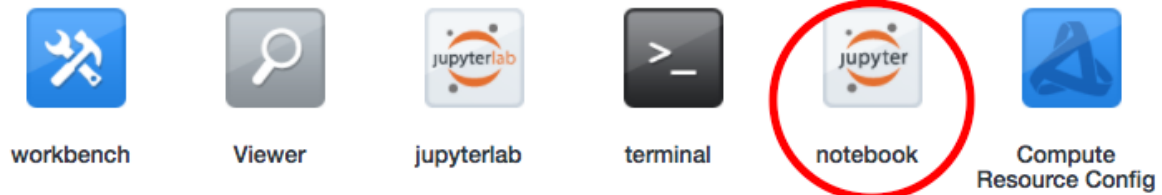
This page provides a brief introduction to Jupyter Notebooks for AEN users.

For the official Jupyter Notebook user instructions, see [Jupyter documentation](#).

For information on the notebook extensions available in AEN, see [Using Jupyter Notebook extensions](#).

## Opening the Jupyter Notebook application

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Jupyter Notebook icon:



Jupyter Notebook opens in a new browser window:



TIP: You can see the same *File Manager* in the Terminal, Workbench, and Viewer applications.

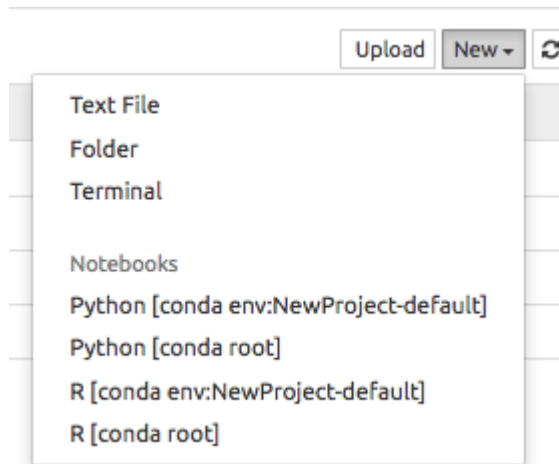
## Using example notebooks

The `Examples` folder in Jupyter Notebook contains several types of Notebook examples created in Python—and one with R language—kernel environments.

Open any example notebook to experiment and see how it works.

## Creating a new Jupyter Notebook

1. An the top right of the **Files** tab, click the New button.



2. Select the kernel environment to create your new notebook in.

NOTE: Customizable Python and R Language kernel environments are automatically created for you during project creation.

- Your project's default conda env kernels are a cloned copy of the root environment. You can customize them and install and delete additional packages.
- Root environment is managed by your Administrator. You cannot make or save any changes to it.

- You can switch between Python, R language and any other custom kernels in the notebook as you work in your notebook. For more information, see [Using the Synchronize Environments extension](#).

The new notebook is saved in the related project directory and displayed.

## Using Jupyter Notebook extensions

The following extensions are available for use with AEN's Jupyter Notebook application:

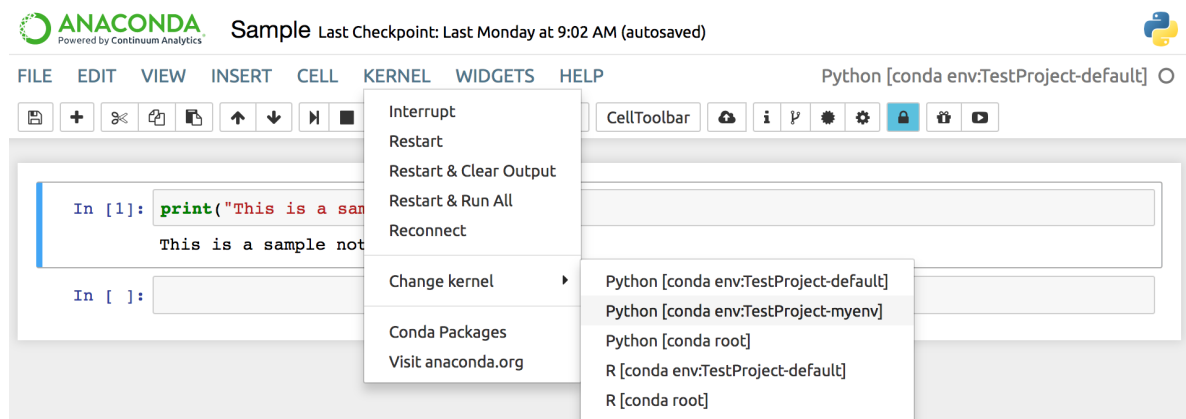
- [Synchronize Environments](#) with Jupyter from the **Kernel** menu.
- [Locking](#) adds multi-user capability from the Lock button.
- [Revision Control Mechanism \(RCM\)](#) adds Status, Checkout and Commit buttons.
- [Conda environment and package management](#) tab.
- [Conda notebook](#) adds conda management inside Notebook from the Kernel > Conda Packages menu option.
- [Anaconda Cloud integration](#) from the Publish to cloud button.
- [Notebook Present](#) turns your notebook into a PowerPoint-style presentation.

## Using the Synchronize Environments extension

The Synchronize Environments extension allows you to apply a Python, R language or any other custom environment inside your current notebook session, without needing to start up several Notebook instances using each of the selected environments.

To change environments:

1. Open the **Kernel** menu.



2. Click the Change kernel option.
3. From the list, select the environment to use.

NOTE: In AEN 4.1+ the default kernel for projects is `default`. In versions prior to 4.0, the default kernel for projects is `root Python`.

## Using the Locking extension

Multi-user capabilities are engaged in AEN when multiple users work in the same notebook file.

The Locking extension allows you to lock a notebook to prevent multiple team members from making changes at the same time. Notebooks are automatically locked when you open them.

If team members open a notebook and make changes while it is locked, their save capability is disabled, and they cannot overwrite the notebook.

To override the lock, they must actively take control of the locked file by clicking the Lock icon in the Notebook menu bar:



NOTE: This is a soft locking model. Team members can choose to override your lock to save their work. If you give team members write access to your files, confirm that they understand that they should never unlock your file unless they are making meaningful, non-destructive team contributions.

## Using the Revision Control Mechanism extension

The Revision Control Mechanism (RCM) Jupyter Notebook extension provides simple version control for notebook files. It uses the internal Jupyter functionality to perform tasks.

On the surface, RCM uses a simple linear model, but beneath that is a more complex git-based branching model. To prevent merge conflicts, this model uses a “latest wins” policy as its main merging strategy.

The RCM Jupyter Notebook extension adds four buttons:



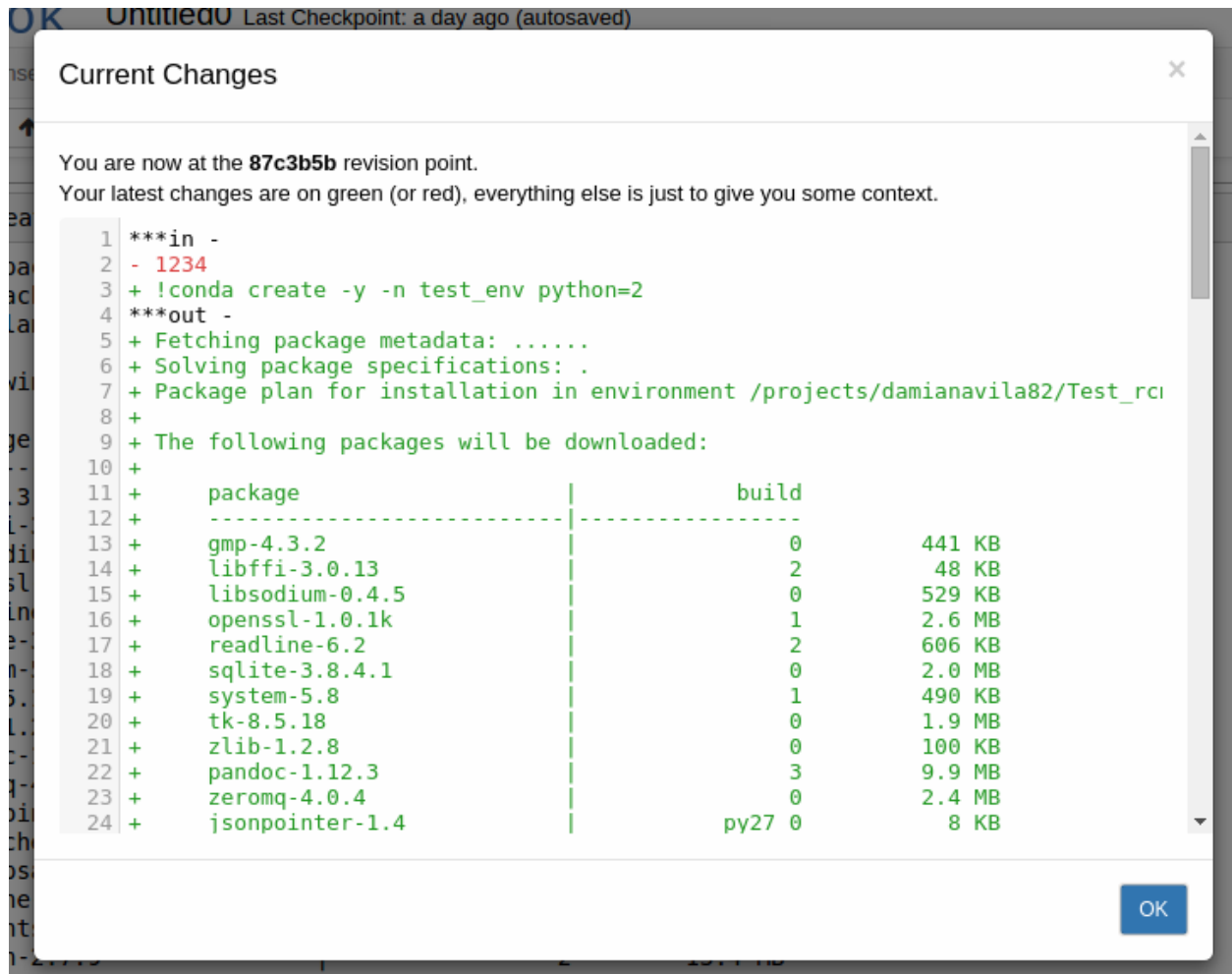
- *Status.*
- *Checkout.*
- *Commit.*
- *Configure git.*

TIP: If you do not see the RCM buttons, see *Setting up RCM for the first time.*

## Using the Status button

The Status button allows you to see what revision you are on.

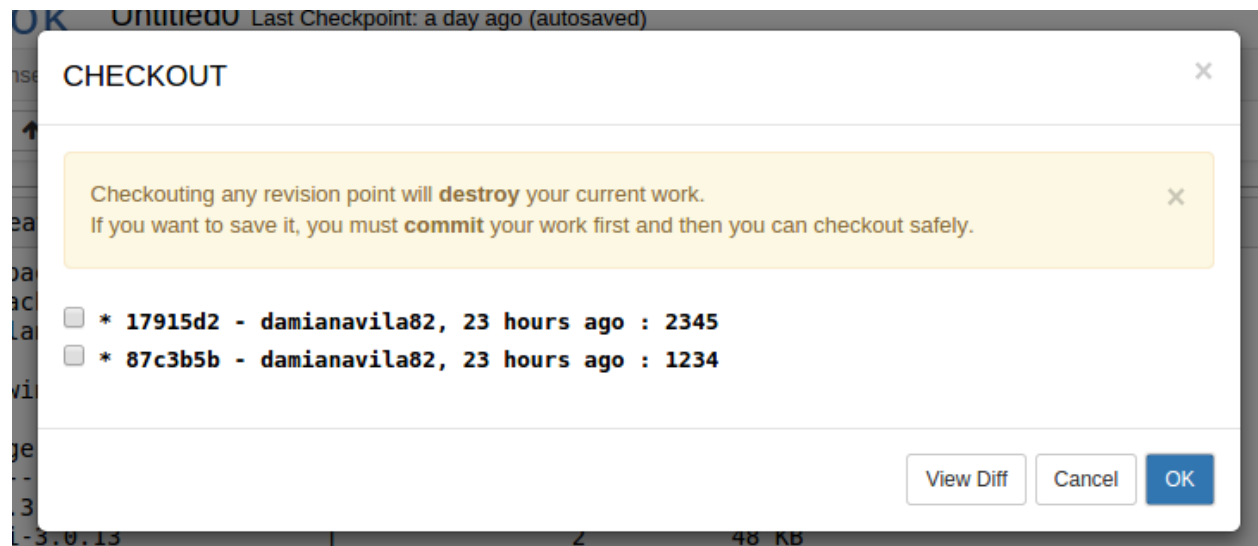
Clicking the Status button displays:



### Using the Checkout button

The Checkout button allows you to view a list of the previous revision points, check out a previous revision or compare differences between revisions.

Clicking the Checkout button displays:



## Checking out a previous revision

To checkout a notebook at an earlier revision point:

1. Select the checkbox next to the desired revision point.
2. Click the OK button.

A copy of the notebook at the selected revision point is displayed.

NOTE: If you have not saved the work in your current project window, checking out a previous revision destroys it. If in doubt, click the Cancel button and save your work before reverting to a previous revision point.

## Comparing revisions

To compare 2 previous revision points:

1. Select the checkboxes of the revision points to compare.
2. Click the View Diff button.

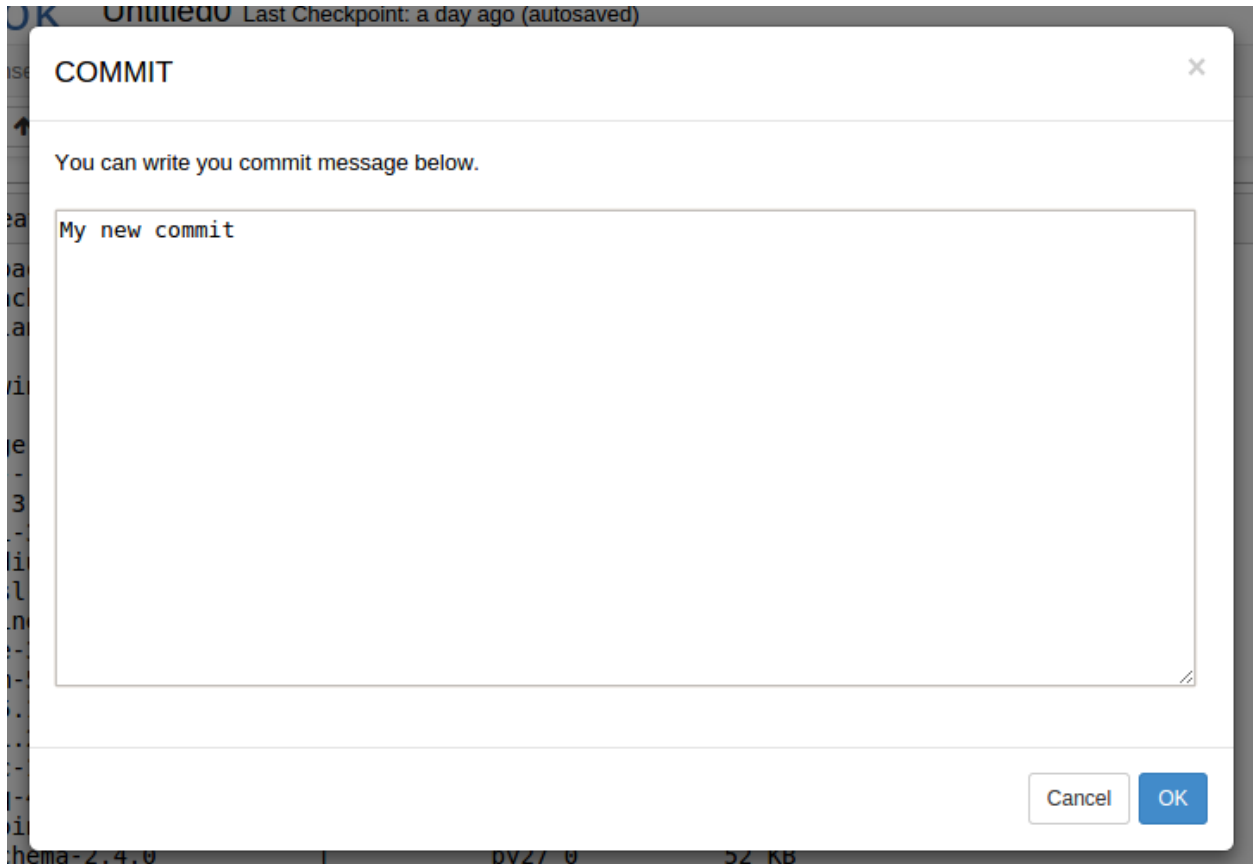
A side-by-side comparison is displayed.

Click the Cancel button to close the differences window.

## Using the Commit button

The Commit button allows you to save or persist the current changes, keeping a permanent record of any changes that are introduced, so that you do not have to worry about losing important data.

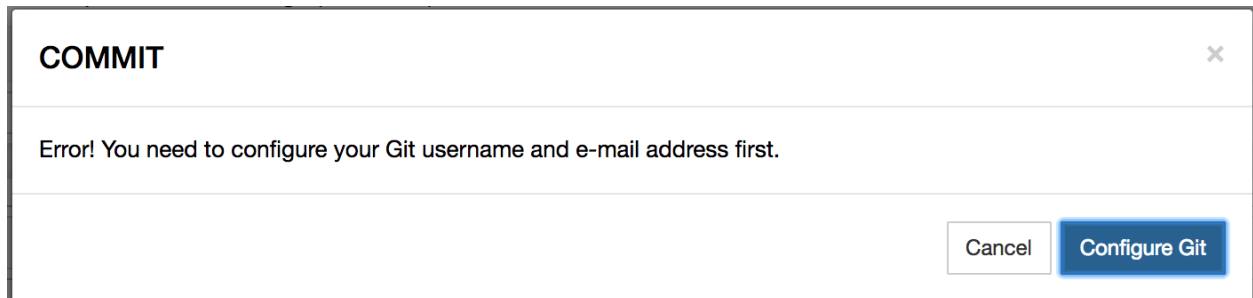
Clicking the Commit button displays:



1. Enter a description of the changes in the commit as a reminder in case you need to revert back to it later.
2. Click the OK button.

Your changes are committed and a revision point is created.

If Git user name and user email are not set, the following window appears:



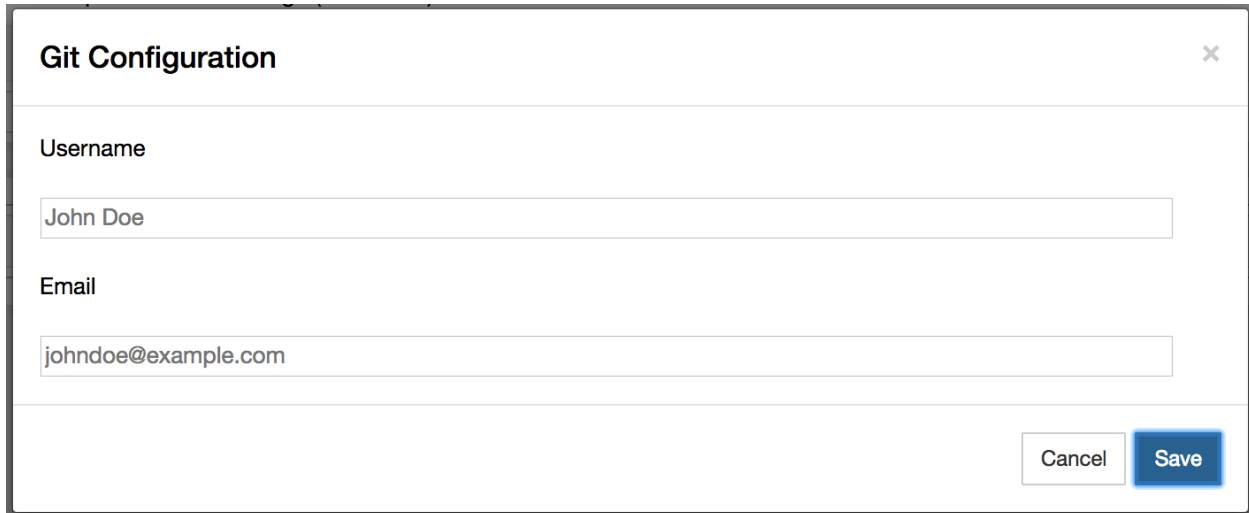
Configure Git and then try to commit again.

TIP: You can roll back committed changes by *checking out a previous version*.

## Using the Configure git button

The Configure git button allows you to configure Git user name and email values.

After clicking the Configure Git button, the following window appears:

A screenshot of a 'Git Configuration' dialog box. The dialog has a title bar with a close button (X) in the top right corner. Inside, there are two sections: 'Username' and 'Email'. The 'Username' section has a text input field containing 'John Doe'. The 'Email' section has a text input field containing 'johndoe@example.com'. At the bottom right of the dialog, there are two buttons: 'Cancel' and 'Save'.

Enter user name and e-mail address. Click the OK button when finished.

## Setting up RCM for the first time

If you do not see the RCM buttons in your notebook:

1. Go to the project home page.
2. Open the Terminal application.
3. In the terminal window, run:

```
git config --global user.email "you@example.com"  
git config --global user.name "Your Name"
```

NOTE: Change `you@example.com` to your email address, and `Your Name` to your actual name.

4. Open Jupyter Notebook and refresh the page.

## Using the NBConda extension

The NBConda extension adds a Conda tab to your notebook for easy environment and package management from within the notebook.





Files
Running
IPython Clusters
**Conda**

2 Conda environments + ↺

Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default

1143 available packages  → 376 installed packages in environment "default" ↺ ✓ ⬇ 🗑

Name	Version	Channel
<input type="checkbox"/> _license	1.1	defaults
<input type="checkbox"/> _nb_ext_conf	0.4.0	defaults
<input type="checkbox"/> abstract-rendering	0.5.1	defaults
<input type="checkbox"/> accelerate	2.3.1	defaults
<input type="checkbox"/> accelerate_cudalib	2.0	defaults
<input type="checkbox"/> aen-app-jupyterlab	0.4.0	wakari

Name	Version	Build	Available
<input type="checkbox"/> _license	1.1	py27_1	
<input type="checkbox"/> alabaster	0.7.10	py27_0	
<input type="checkbox"/> anaconda	custom	py27_0	
<input type="checkbox"/> anaconda-client	1.5.1	py27_0	
<input type="checkbox"/> anaconda-project	0.6.0	py27_0	
<input type="checkbox"/> asn1crypto	0.22.0	py27_0	

Click the Conda tab in a notebook to display:

- Conda environments list—export, clone or delete an environment in the action column, or create a new environment by clicking the plus + icon. Switch to an environment by clicking it; packages for that environment are displayed below in the installed packages list.
- Conda available packages list—for the selected environment in currently configured channels, search for packages and click a package name to install it.
- Installed packages list—in the selected environment, check for updates, update or delete selected packages.

**TIP:** While you are in any notebook, you can jump to the NBConda extension for that environment by clicking the **Kernel** menu and selecting Conda Packages:

**iris** Last Checkpoint: a minute ago (unsaved changes)

FILE
EDIT
VIEW
INSERT
CELL
**KERNEL**
WIDGETS
HELP

Python [conda env:TestProject-default]

Code CellToolbar

```
In [ ]: import pandas as pd
df = pd.read_csv("irirs.csv")
df
```

## Using the Conda Notebook extension

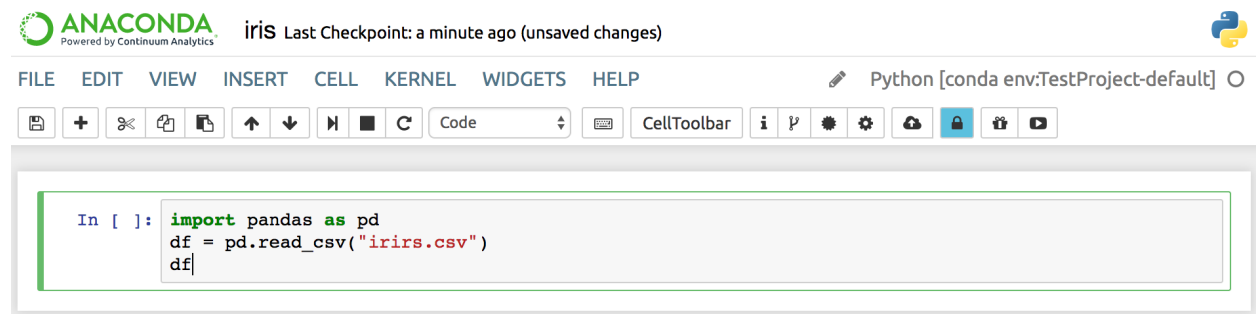
The Conda Notebook extension adds the Conda Packages option to the **Kernel** menu.

Select the Conda Packages option to display a list of all of the Conda packages that are currently used in the environment associated with the running kernel, as well as any available packages.

From the Conda Packages option, you can perform all of the tasks available in the *Conda tab*, but they will only apply to the current environment.

## Using the Anaconda Cloud extension

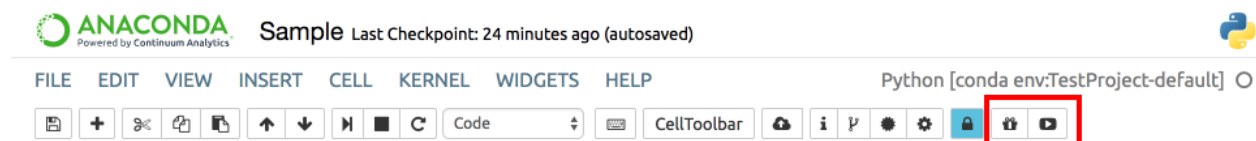
The Anaconda Cloud extension adds the Cloud button to your notebook, allowing you to easily upload your notebook to Cloud:



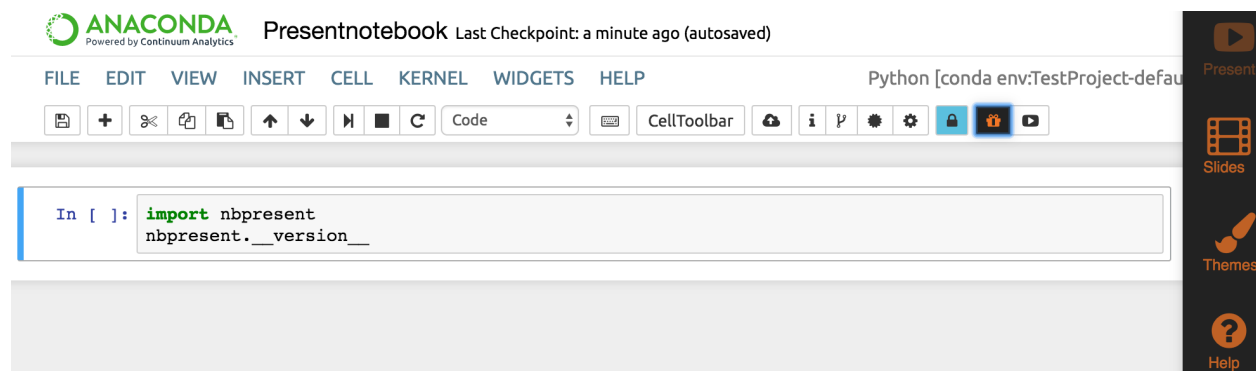
## Using the Notebook Present extension

The AEN Notebook Present extension turns your notebook into a Microsoft PowerPoint-style presentation.

The Present extension adds 2 buttons to Notebook's menu bar—Edit Presentation and Show Presentation:



To begin using Notebook Present, click the Edit Presentation button.

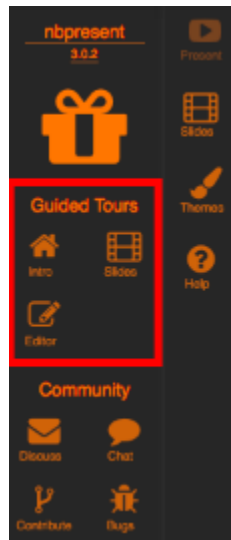


The Notebook Present sidebar is displayed on the right side of your browser:

Clicking each icon changes the menu and layout of your notebook.

Clicking the Help icon displays 3 tours—demonstrations—of the main features of Present:

- *Intro tour.*
- *Slides tour.*
- *Editor tour.*



Select one of the tours to view a short presentation regarding the specifics of that feature.

### Intro tour

The Intro tour is a 2-minute presentation that explains how to use the main features of Present, including a description of each button's purpose.

NOTE: At any time, you can pause, go back to the previous or move forward to the next slide.

The following information is covered in the Intro tour:

- App Bar—When Authoring, this allows you control the content and style of your presentation. It also can be used to activate several keyboard shortcuts for editing:

## Keyboard shortcuts



The Jupyter Notebook has two different keyboard input modes. **Edit mode** allows you to type code/text into a cell and is indicated by a green cell border. **Command mode** binds the keyboard to notebook level actions and is indicated by a grey cell border with a blue left margin.

Mac OS X modifier keys:

: Command

: Control

: Option

: Shift

: Return

: Space

: Tab

### Command Mode (press to enable)

: find and replace

: previous slide

: next slide

: next slide

: enter edit mode

: open the command palette

: run cell, select below

: run selected cells

: run cell, insert below

: to code

: to markdown

: extend selected cells above

: extend selected cells above

: extend selected cells below

: extend selected cells below

: insert cell above

: insert cell below

: cut selected cells

: copy selected cells

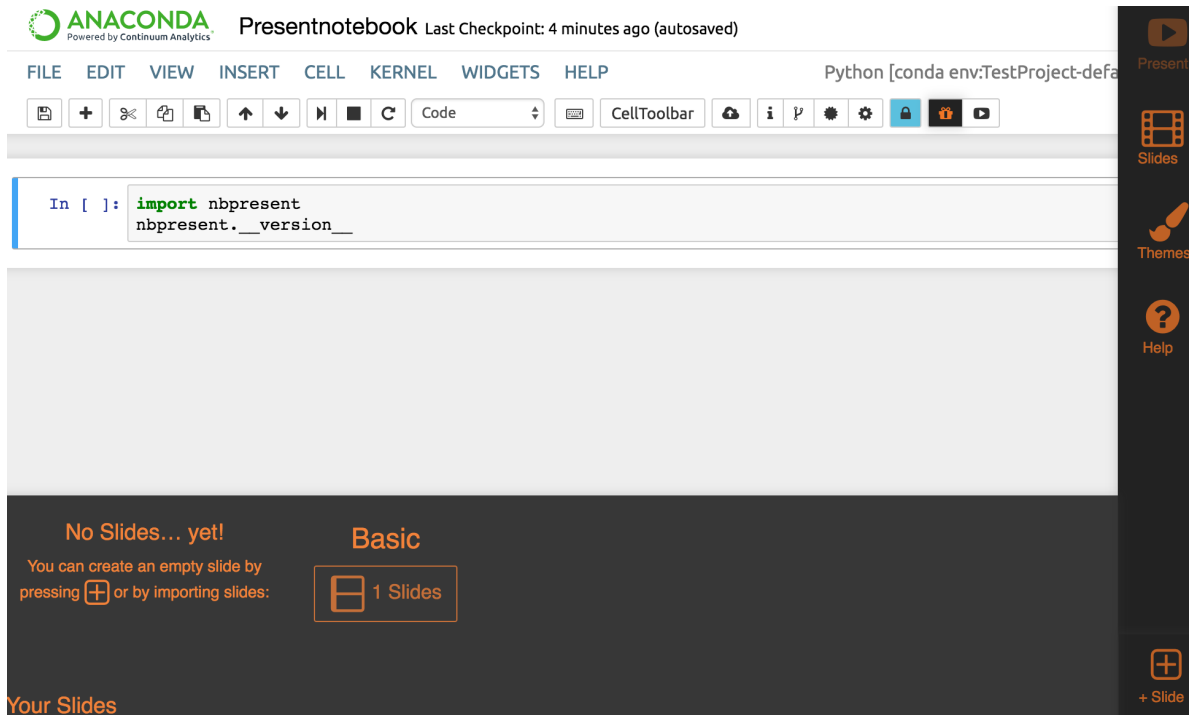
: paste cells above

: paste cells below

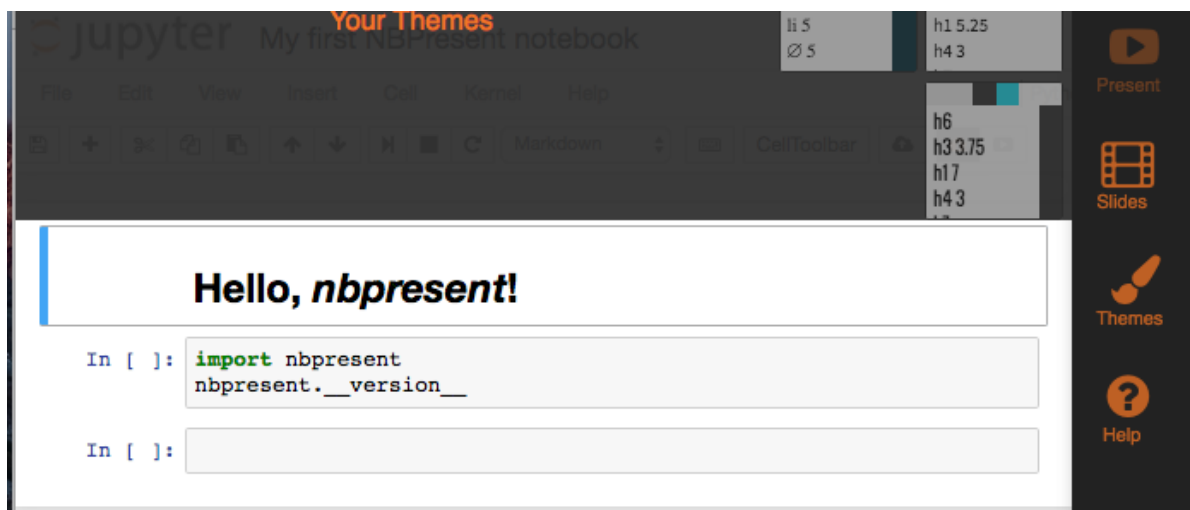
: undo cell deletion

Close

- **Stop Authoring**—Clicking the Edit Presentation button again stops Authoring, and removes all keyboard shortcuts.
- **Show Presentation**—If you just want to run your presentation without using any Authoring tools, just click the Show Presentation button.
- **Presenting/Authoring**—Once you've made some slides, start Presenting, where you can use most Notebook functions with the Theme we have defined, as well as customize slides on the fly.
- **Slides button**—Slides, made of Regions linked to Cell Parts are the bread and butter of any presentation, and can be imported, created, linked, reordered, and edited here.



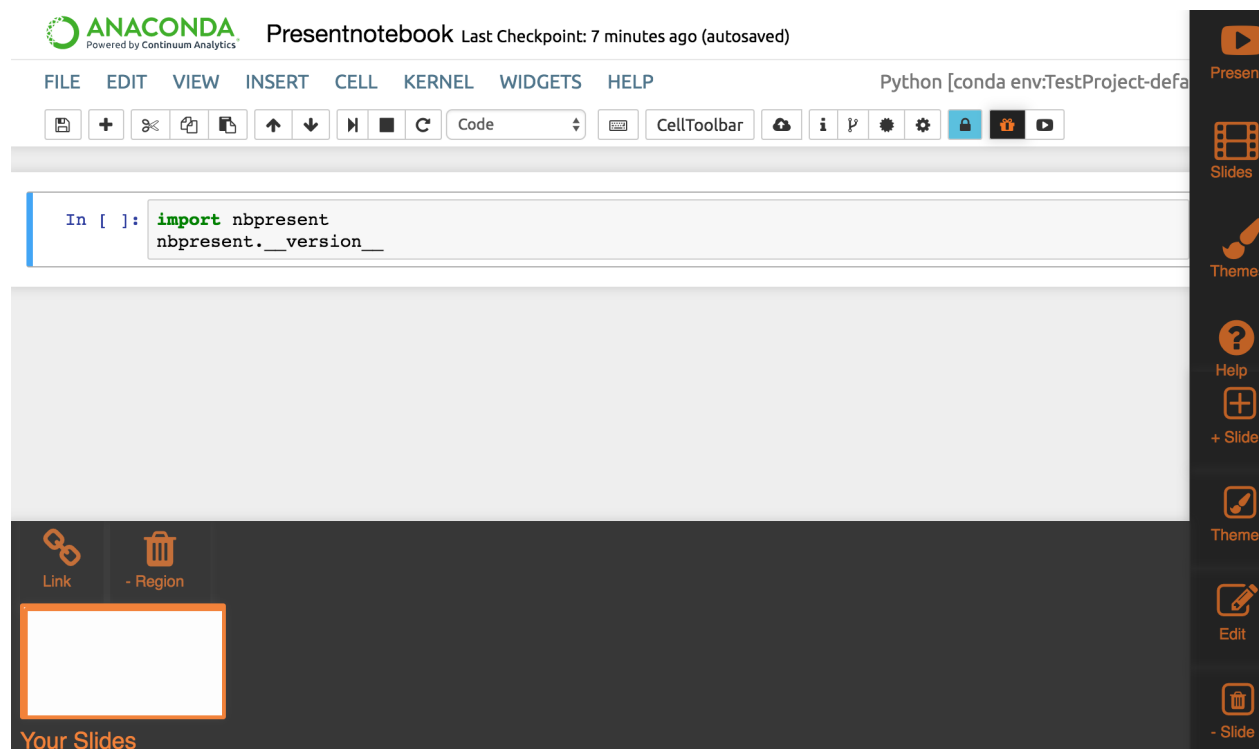
- Theming—Theming lets you select from existing colors, typography, and backgrounds to make distinctive presentations. The first theme you select will become the default, while you can choose custom themes for a particular slide, like a title.



- Saving—Whenever you save your Notebook, all your presentation data will be stored right in the Notebook .ipynb file.
- Downloading—After you've made a presentation, you can download it as an HTML page by choosing Download → Download As: Presentation (.html) in the menu.
- Help—Activate Help at any time to try other tours, connect with the Present developers and community, and other information.

## Slides tour

Slides make up a presentation. Clicking Slides toggles the sorter view and the Slide Toolbar on and off:



The Slides tour explains how to create and manage slides, including the following information:

- Slide Toolbar—Create a new slide. Clicking + Slide will offer some choices for creating your new slide.
- Import—The quickest way to create a presentation is to import each cell as a slide. If you’ve already created slides with the official slideshow cell toolbar or RISE, you can import most of that content.
- Template Library—You can create a presentation from an existing template.
  - Reuse Slide as Template—You can create a presentation based on an existing slide.
  - Simple Template—A common template is the Quad Chart, with four pieces of content arranged in a grid.
- Region—The Quad Chart has four Regions. To select a region, click it.
  - Link a Region to a Cell Part—Each Region can be linked to a single Cell Part using the Link Overlay, which shows all of the parts available.
    - \* Cell Part: Source (blue)—Source, such as code and Markdown text.
    - \* Cell Part: Outputs (red)—Outputs, such as rich figures and script results.
    - \* Cell Part: Widgets (purple)—Jupyter widgets, interactive widgets that provide both visualization and user input.
    - \* Cell Part: Whole (orange)—Finally, a Whole Cell, including its Source, Widgets and Outputs can be linked to a single region.
  - Unlink a region from a Cell Part—Unlinking removes the connection between a region and a cell part, without deleting either one.
  - Region: Trashing—Trashing a Region permanently deletes it, without affecting any linked Cell Part.

- Part Thumbnail—We'll try to draw a part thumbnail. It can only be reliably updated when a linked Cell Part is on-screen when you mouse over it, but you should usually be able to get an idea of what you're seeing. The colors of the regions correspond to the cell types.
- Presenting—Clicking the Present button while editing brings up the Presenter with editing mode still enabled:
  - Linked inputs and widgets are still interactive.
  - Go forward—Click to go to the next slide
  - Go back—Click to go back to the previous slide
  - Go back to the beginning—Click to go back to the first slide
  - My work is done here—Click to go back to the Notebook.

## Editor tour

Once you've made a few slides, you'll likely want to customize them. The Editor tour explains how to edit your notebook, including the following information:

- Editing Slides—Activate the Slide Editor by double-clicking it, or by clicking Edit Slide.
- Region Editor—Click to drag Regions around and resize them.
- Region Tree—Reorder Regions and see the details of how Regions will show their linked Parts.
- Add Region—Add new regions.
- Attribute Editor—Edit the properties of a region.
- Data Layouts—In addition to manually moving regions, you can apply these layouts to automatically fill your slides.
- More Regions—Add more regions—with a weight of 1.
- Tree Weight—Make a Region bigger or smaller, based on its relative weight.
- 12 Grid—A compromise between the Free and Treemap layouts, the 12 Grid option rounds all of the values in a layout to a factor of 12.

## Using Compute Resource Configuration

The Compute Resource Configuration (CRC) application displays information about the current project and allows you to set a custom project environment and view and manage your other AEN applications, including stopping, starting, restarting and viewing the logs of each.

The CRC application screen contains 3 sections:

- *Info.*
- *Conda environment.*
- *Running apps.*



Info

**Hostname**  
davila-aen-test

**Project Home**  
/projects/testuser1/demo

**Project RC file**  
/projects/testuser1/demo/.projectrc

Conda Environment

/projects/testuser1/demo/envs/default

Setting the default environment for this project will affect all users by modifying the **.projectrc** file.  
All running apps will be shutdown.  
Make sure **No one working on this project** has any unsaved documents!

Set Project Environment

Running Apps

User	Application	Status	Last Seen	Terminate	Relaunch	Logs
testuser1	terminal	running	1 hours ago	Terminate	Relaunch	

## Info

The Info section displays:

- Hostname—IP address of the host computer.
- Project Home—File path to the project home.
- Project RC file—File path to the project runtime configuration file **.projectrc**. This file is sourced when a user opens any AEN application. It sets several AEN internal environment variables, sets up the project environment and sets additional user environment variables for the project.



## Conda environment

This section displays the path to the default conda environment.

**CAUTION:** Changing the default environment will affect all users. Be sure that no team members have any unsaved documents before changing the project environment.

To change the default conda environment location:

1. Edit the path to point to your preferred conda environment.
2. Click the Set Project Environment button.

Your `.projectrc` file is modified.

## Running apps

The Running Apps section displays a list of users and the applications that are in use, as well as when the app was last modified.

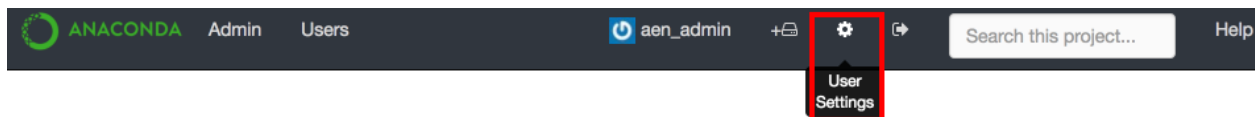
To terminate any individual application, click the Terminate button.

To stop and re-launch any individual application, click the Relaunch button.

To review the run logs of any active application, which may be useful for troubleshooting, click the Logs button.

## Managing your account

To access your account information, click the User Settings icon in the AEN navigation bar:



## Updating your public profile

Your public profile is made up of a name, a personal URL, your company and location.

1. In the left navigation pane, click the **Public Profile** tab.
2. To update your profile picture, create a [Gravatar](#) that is associated with the email address you used to create your AEN account. The gravatar will automatically appear.

## Changing your password

1. In the left navigation pane, click the **Account Settings** tab.

## Deleting your AEN account

1. In the left navigation pane, click the **Account Settings** tab.

## Viewing account operations

1. In the left navigation pane, click the **Security Log** tab to view a list of operations performed on your account.

# Settings

Change your account and profile settings.

[Public Profile](#)
[Account Settings](#)
[Security Log](#)
[Applications](#)

### Security Log

	aen_admin	oauth.authenticate	2017-09-25 04:52:06.713000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.954000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.720000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.490000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.259000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.033000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:57.802000+00:00

2. For more information about an operation, click the Eye icon to the left of the the operation name.

## Registering an application

If you want to create an application for AEN or have already done so, you must register your application.

1. In the left navigation pane, click the **Applications** tab.

# Settings

Change your account and profile settings.

[Public Profile](#)
[Account Settings](#)
[Security Log](#)
[Applications](#)

### Developer Applications

Register New Application

These are applications you have registered to use the Anaconda Enterprise Notebooks API.

Gateway ()

### Authorized applications

Gateway () revoke

2. Click the Register New Application button to open a form for registering your application.

## Advanced tasks

Advanced tasks are best-suited for users who are comfortable working in a Terminal.

## Working with environments

AEN runs on conda, a package management system and environment management system for installing multiple versions of software packages and their dependencies and switching easily between them.

A conda environment usually includes 1 version of Python or R language and some packages.

The ability to have a custom project environment is one of the most powerful features of AEN. Your project environment is integrated so that all of your project applications recognize it and all of your team members have access to it.

This section contains information about:

- *Creating a default conda environment using the Jupyter Notebook application*
- *Creating a default conda environment using the Jupyter Notebook application*
- *Using your conda environment in a notebook*
- *Customizing your conda environment*
- *Installing a conda package using Terminal*
- *Installing a conda package using Notebook*
- *Uninstalling a conda package*

NOTE: This conda environments guide is specific to AEN. For full conda documentation—including cheat sheets, a conda test drive, and command reference—see the [conda documentation](#).

## Creating a default conda environment using the Jupyter Notebook application

You can create, activate, and install packages and deactivate environments from within the Notebook menu bar.

To install from the Notebook menu bar:

1. Click the **Conda** tab and select the plus sign icon.
2. Search for `numpy` in the package search box.
3. Select `numpy` from the search results.



Files
Running
IPython Clusters
Conda

3 Conda environments

Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default
	myenv		/projects/aen_admin/TestProject/envs/myenv

2 available packages

→

39 installed packages in environment "myenv"

Name	Version	Channel
<input checked="" type="checkbox"/> numpy	1.13.1	defaults
<input type="checkbox"/> numpydoc	0.7.0	defaults

Name	Version	Build	Available
<input type="checkbox"/> anaconda-client	1.6.3	py36_0	
<input type="checkbox"/> certifi	2016.2.28	py36_0	
<input type="checkbox"/> clyent	1.2.2	py36_0	
<input type="checkbox"/> decorator	4.1.2	py36_0	
<input type="checkbox"/> ipykernel	4.6.1	py36_0	
<input type="checkbox"/> ipython	6.1.0	py36_0	

1. Click the Install button.

The environment is added to the project's `env` directory.

## Creating a default conda environment using Terminal

In AEN, all new environments created with conda automatically include Python, Jupyter Notebooks and pip. You can specify any other packages you want included in your new environment.

**TIP:** By default, conda creates a new environment in your project's `env` directory—so that all team members have access to the environment. For information about limiting your team member's read, write or execute permissions, see [Workbench](#).

To create a new environment within your AEN account, run the command `conda` in a [Terminal](#) application.

**EXAMPLE:** To create a new environment named `WeatherModel` that contains Python, NumPy, pip and Jupyter Notebooks in your project's `env` directory:

1. Log in to AEN.
2. Open a project.
3. On the project home page, click the Terminal application icon to open a Terminal.
4. Create the environment:

```
conda create -n WeatherModel numpy
```

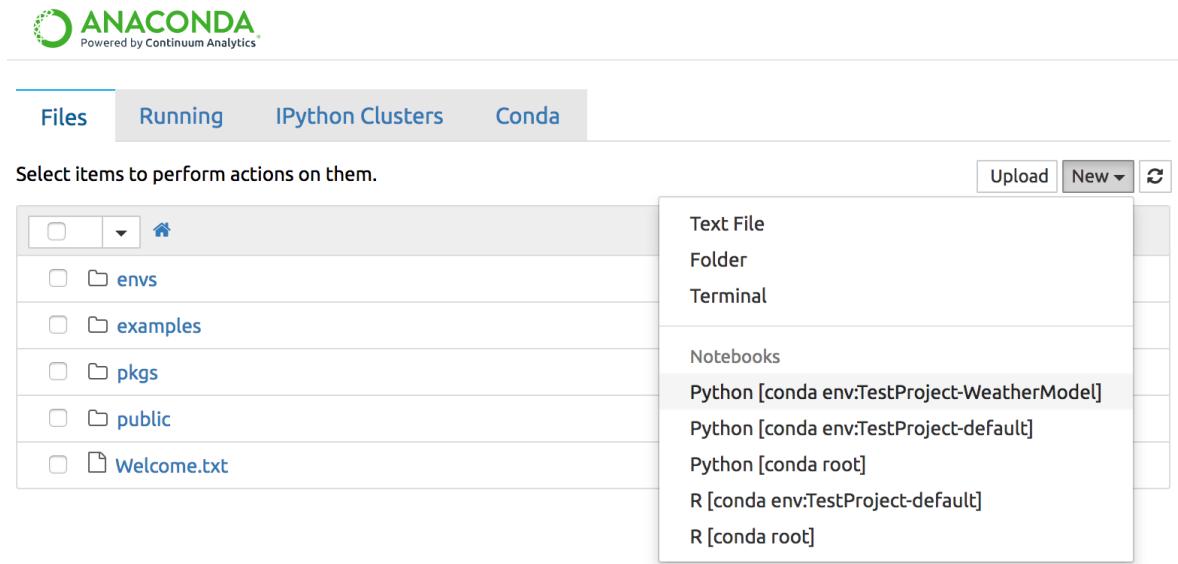
**TIP:** Python, pip and Jupyter Notebooks are automatically installed in each new environment. You only need to specify NumPy in this command.

5. Make the new environment your default:

```
source activate WeatherModel
```

6. To use your new environment with Jupyter Notebooks, open the Notebook application.
7. Click the New button to open a new notebook. In the drop-down menu under Notebooks, the environment you just created is displayed.
8. To activate that environment, select it.

The environment is added to the project's env directory.



NOTE: You can deactivate the new environment when you are finished with your notebook by opening the Terminal application and running the command `source deactivate`.

## Using your conda environment in a notebook

Whether you have created an environment using conda in a terminal, or from the **Conda** tab in a notebook, you can use the conda environment in the same way.

When working in a notebook, to select the environment you have created and want to use with that notebook, in the **Kernel** menu, select Change Kernel.

EXAMPLE: If you have an environment named `my_env` in a project named `test1` that includes NumPy and SciPy and you want to use that environment in your notebook, in the **Kernel** menu, select `Python [conda env:test1-my_env]`.

The notebook code will run in that environment and can import NumPy and SciPy functions.

### Customizing your conda environment

If you need a Python package that AEN doesn't include by default, you can install additional packages into your AEN environment.

**TIP:** You cannot install packages into the default Anaconda environment. You must create your own environment before installing a new package into that environment.

AEN is built on Anaconda, so you can install additional Python packages using conda or pip—both of which are included with Anaconda.

### Installing a conda package using Terminal

To install a conda package using the Terminal application:

1. Create and activate the environment using the steps in *Creating a default conda environment using the Jupyter Notebook application*.
2. In your Terminal application, run the command `conda install <packagename>`.

**NOTE:** Be sure to specify the Python version you want when using conda to create the environment, or it will use the same version as root.

**EXAMPLE:**

```
conda create -n mypy3 python=3 numpy scipy
```

A conda environment named mypy3, running on Python 3 and containing NumPy and SciPy is created. All subsequent packages added to this environment will be the Python 3 compatible versions.

### Installing a conda package using Notebook

You can also install the package within your notebook without using the terminal app:

1. From the Notebook application, click the **Conda** tab.
2. Select the environment you wish to use.
3. Search for the package you want to add.
4. Click the Install button.

### Uninstalling a conda package

To uninstall a package using this method, run the command `conda remove <packagename>`.

**NOTE:** Replace <packagename> with the name of the package you are uninstalling.

## Using visualization packages

AEN supports multiple visualization packages for Python and R language.

For Python, the default environment has *Matplotlib* and *Bokeh* installed.

For R language, the default environment has *r-ggplot2* and *r-bokeh* installed.

### Matplotlib

Matplotlib is a Python 2D and 3D plotting and visualization library that produces publication-quality figures in a variety of hardcopy formats and interactive environments across platforms.

To display Matplotlib figures in the output cells of a notebook running the default environment, run:

```
import matplotlib.pyplot as plt
%matplotlib inline
```

Any Matplotlib figures in the notebook are displayed in it's output cells.

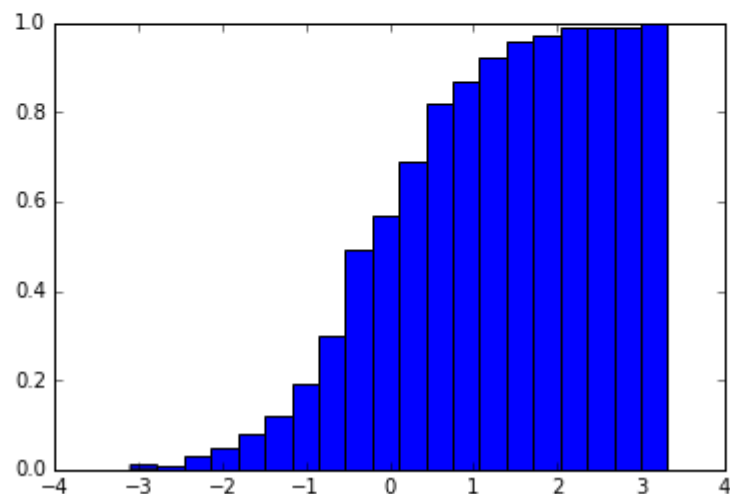
EXAMPLE: The following screenshot is of a cumulative density function (CDF) plot using values taken from a normal distribution:

```
In [1]: import matplotlib.pyplot as plt
%matplotlib inline
```

```
In [2]: import numpy as np

x = np.random.normal(size=100)
```

```
In [3]: plt.hist(x, normed=True, cumulative=True, bins=20);
```



For more information, including a [gallery](#), [examples](#), [documentation](#) and a [list of plotting commands](#), see the [Matplotlib website](#).

## Bokeh

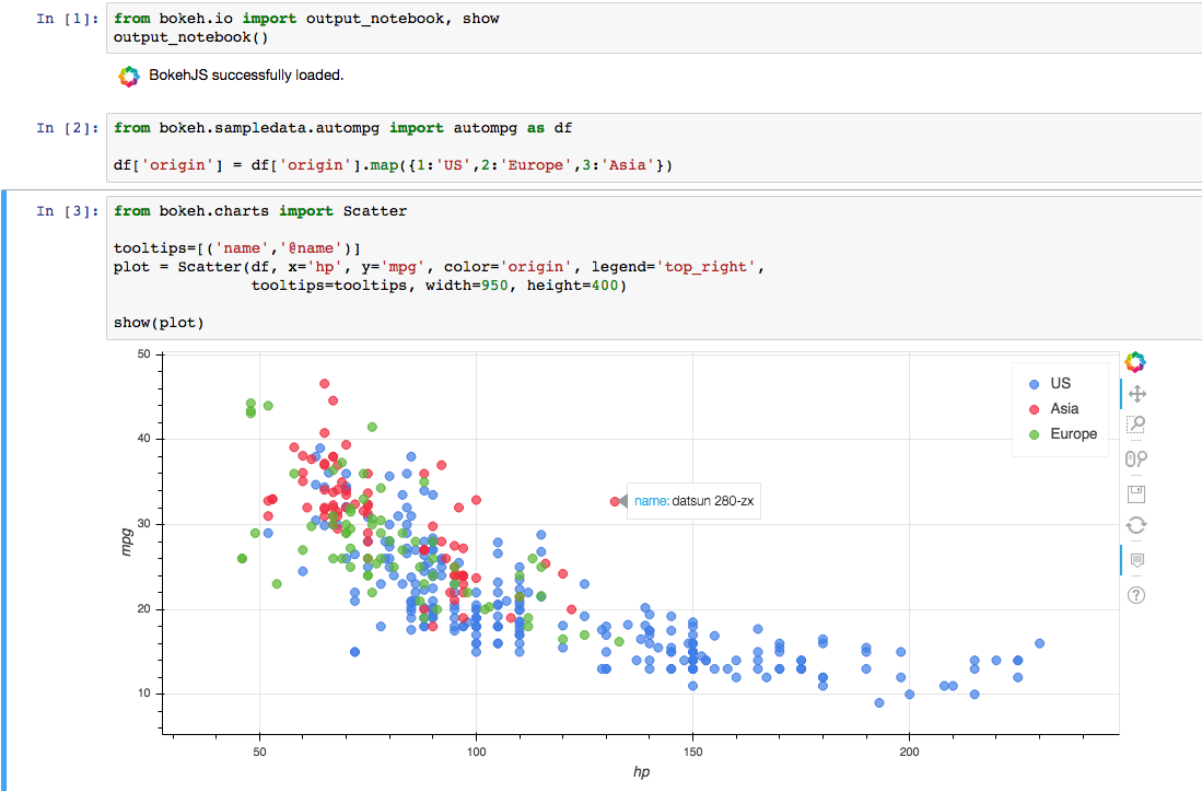
**Bokeh** is an interactive visualization library that targets modern web browsers to provide elegant, concise construction of novel graphics.

To display Bokeh figures in the output cells of a notebook running the default environment, run:

```
from bokeh.io import output_notebook, show
output_notebook()
```

Any Bokeh figures in the notebook are displayed in its output cells.

The following screenshot is of a scatter plot of miles-per-gallon vs. horsepower for 392 automobiles using the `automp` sample dataset:



## ggplot2

**Ggplot2** is a plotting system for R language which is based on the grammar of graphics. Ggplot2 tries to take only the good parts of base and lattice graphics and none of the bad parts.

To use ggplot2 with AEN:

1. Open a new Notebook using the R kernel.
2. Load the ggplot2 library with the following code:

```
library(ggplot2)
```

The ggplot2 library is loaded and ready for use in AEN.

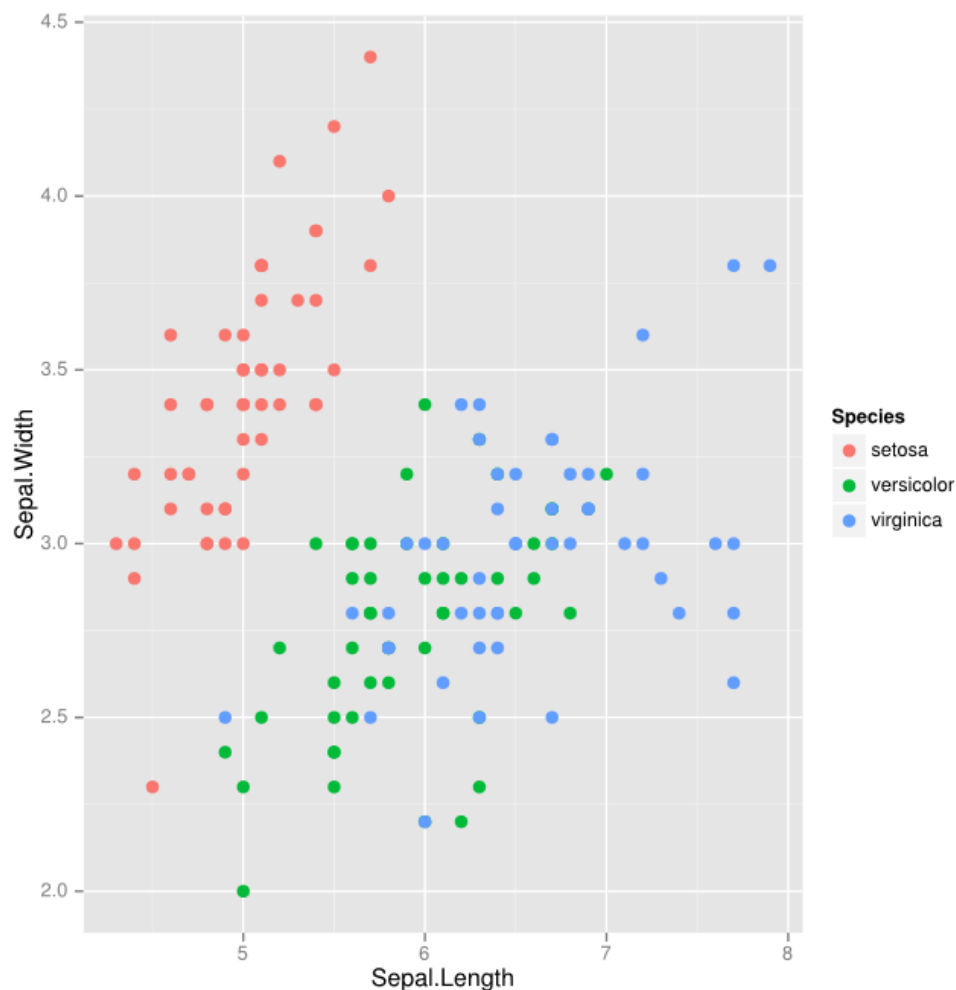


The following screenshot is of a scatter plot of sepal width vs sepal length using the `iris` dataset provided by the `dplyr` library:

```
In [5]: library(dplyr)
```

```
In [6]: library(ggplot2)
```

```
In [7]: ggplot(data=iris, aes(x=Sepal.Length, y=Sepal.Width, color=Species)) + geom_point(size=3)
```



## Using environment variables

Some Python packages depend on environment variables for correct operation.

EXAMPLE: Theano requires that the directory containing the CUDA compiler is included in the `$PATH` environment variable in order for GPU acceleration to be enabled.

To change environment variables for all AEN applications, modify the project runtime configuration file `.projectrc`. For more information, see [Using Compute Resource Configuration](#).

`.projectrc` sets several AEN internal environment variables, sets up the project environment and can set additional user environment variables for that project. This file is sourced when a user opens any AEN application—including Jupyter Notebook—and Jupyter kernels will be able to read the included environment variables.

### Cheat sheet

See the [Anaconda Enterprise Notebooks cheat sheet PDF](#) (232 KB) for a single-page summary of the most important information about using AEN.

### Troubleshooting

This troubleshooting guide provides you with ways to deal with issues that may occur with your AEN installation.

#### AEN application not working properly

An AEN application is not working as expected.

#### Cause

There are several reasons an application may not work as expected.

#### Solution

Most AEN application issues can be resolved by following these steps:

1. Refresh the page.
2. If the issue is not resolved, close and open the application.
3. If the issue is not resolved, *stop and restart your project*.
4. If the issue is not resolved, check that you are using the latest version of your web browser—Chrome, Safari, Edge, or Firefox.
5. Log out of AEN.
6. Restart your browser, and log back in.

If you continue to have issues, then please contact your administrator or enterprise support representative.

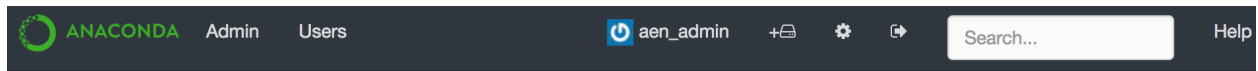
### Admin guide

This administrator guide provides information about the administration of an AEN installation.

Most AEN system management is done from the administrative user interface (admin UI). Some advanced tasks are done *using the command line*.

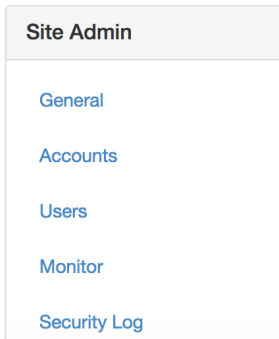
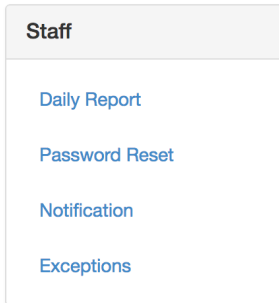
Any AEN user account can be *upgraded to an administrator account* to have both user and administrator privileges.

Administrators see two additional links in the AEN Navigation bar—Admin and Users:



# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the system administrator.



All of the other navigation bar items are the same as for a user account.

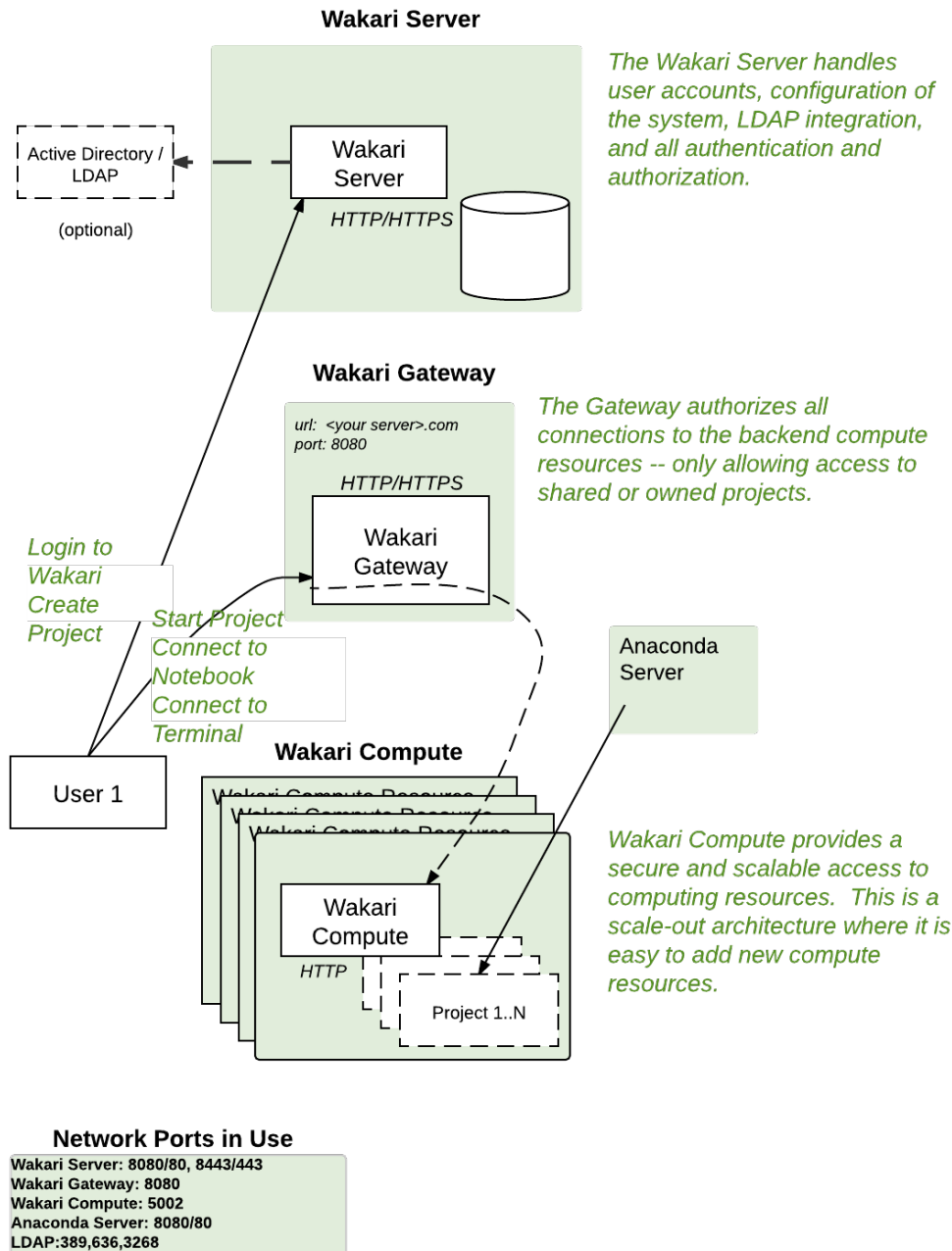
## Concepts

### System overview

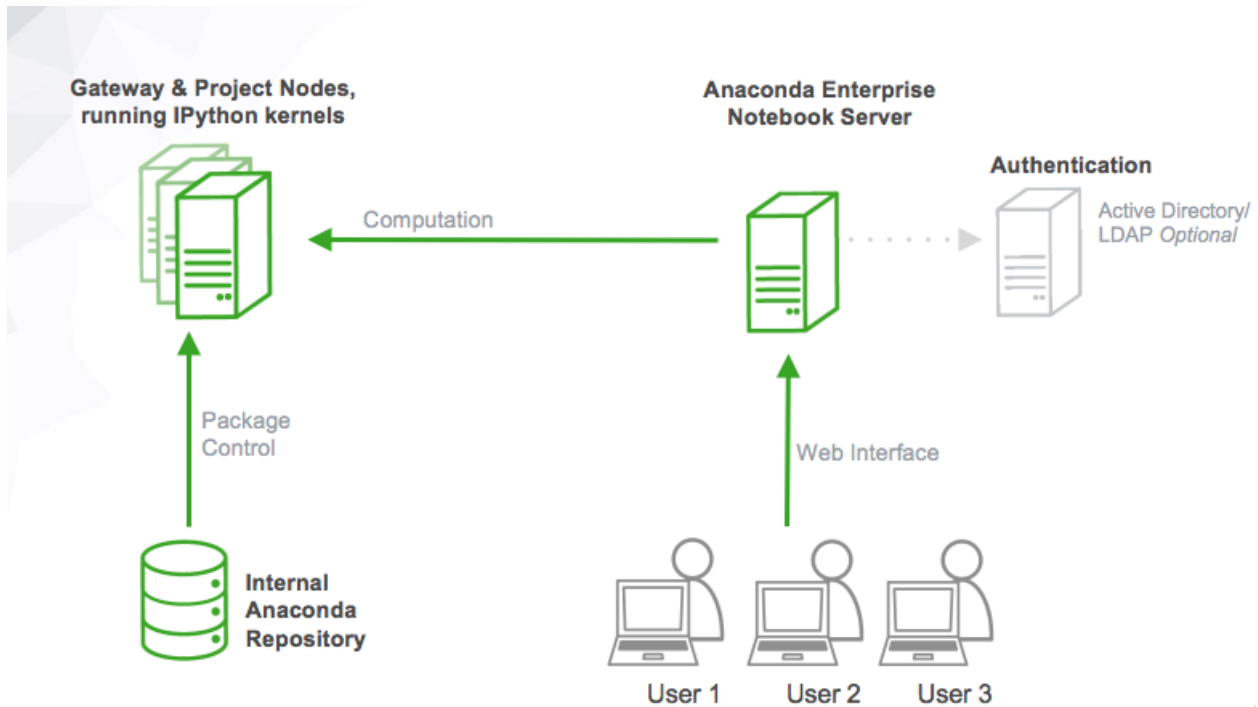
The Anaconda Enterprise Notebooks platform consists of 3 main service groups: AEN server, AEN gateway and AEN compute, which are called “nodes”:

- *Server node*—The administrative front-end to the system where users login, user accounts are stored, and administrators manage the system.
- *Gateway node(s)*—A reverse proxy that authenticates users and directs them to the proper compute node for their project. Users will not notice this node after installation as it automatically routes them.
- *Compute nodes*—Where projects are stored and run.

## Anaconda Enterprise Notebooks



These services can be run on a single machine or distributed across multiple servers.



Organizationally, each AEN installation has exactly 1 server instance and 1 or more gateway instances. Each compute node can only be connected to a single gateway. The collection of compute nodes served by a single gateway is called a **data center**. You can add data centers to the AEN installation at any time.

EXAMPLE: An AEN deployment with 2 data centers, where 1 gateway has a cluster of 20 physical computers, and the second gateway has 30 virtual machines, must have the following services installed and running:

- 1 AEN server instance
- 2 AEN gateway instances
- 50 AEN compute instances (20 + 30)

Nodes must be configured and maintained separately.

## Server node

The server node controls login, accounts, admin, project creation and management as well as interfacing with the database. It is the main entry point to AEN for all users. The server node handles project setup and ensures that users are sent to the correct project data center.

Since AEN is web-based, it uses the standard HTTP port 80 or HTTPS port 443 on the server.

AEN uses MongoDB for its internal data persistency. It is typically run on the same host as the server but can also be *installed* on a separate host.

Server nodes use NGINX to handle the user-facing AEN web interface. NGINX acts as a request proxy for the actual server web-process which runs on a high numbered port that only listens on localhost. NGINX is also responsible for static content.

Server is installed in the `/opt/wakari/wakari-server` directory.

## Server processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manage wakari-worker, multiple processes of wk-server.
user	wakari
configuration	/opt/wakari/wakari-server/etc/supervisord.conf
log	/opt/wakari/wakari-server/var/log/supervisord.log
control	service wakari-server
ports	none

wk-server	details
description	Handles user interaction and passing jobs on to the wakari gateway. Access to it is managed by NGINX.
user	wakari
command	/opt/wakari/wakari-server/bin/wk-server
configuration	/opt/wakari/wakari-server/etc/wakari/
control	service wakari-server
logs	/opt/wakari/wakari-server/var/log/wakari/server.log
ports	Not used in versions after 4.1.2 *

\* AEN 4.1.2 and earlier use port 5000. This port is used only on localhost. Later versions of AEN use Unix sockets instead. The Unix socket path is: `unix:/opt/wakari/wakari-server/var/run/wakari-server.sock`

wakari-worker	details
description	Asynchronously executes tasks from wk-server.
user	wakari
logs	/opt/wakari/wakari-server/var/log/wakari/worker.log
control	service wakari-server

nginx	details
description	Serves static files and acts as proxy for all other requests passed to wk-server process. *
user	nginx
configuration	/etc/nginx/nginx.conf /opt/wakari/wakari-server/etc/conf.d/www.enterprise.conf
logs	/var/log/nginx/woc.log /var/log/nginx/woc-error.log
control	service nginx status
port	80

\* In AEN 4.1.2 and earlier the wk-server process runs on port 5000 on localhost only. In later versions of AEN the wk-server process uses the Unix socket path `unix:/opt/wakari/wakari-server/var/run/wakari-server.sock`.

NGINX runs at least two processes:

- Master process running as root user.
- Worker processes running as nginx user.

## Gateway node

The gateway node serves as an access point for a given group of compute nodes. It acts as a proxy service and manages the authorization and mapping of URLs and ports to services that are running on those nodes. The gateway nodes provide a consistent uniform interface for the user.

NOTE: The gateway may also be referred to as a data center because it serves as the proxy for a collection of compute nodes.

You can put a gateway in each data center in a tiered scale-out fashion.

AEN gateway is installed in the `/opt/wakari/wakari-gateway` directory.

## Gateway processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manages the wk-gateway process.
user	wakari
configuration	/opt/wakari/wakari-gateway/etc/supervisord.conf
log	/opt/wakari/wakari-gateway/var/log/supervisord.log
control	service wakari-gateway
ports	none

wakari-gateway	details
description	Passes requests from the AEN Server to the Compute nodes.
user	wakari
configuration	/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
logs	/opt/wakari/wakari-gateway/var/log/wakari/gateway.application.log      /opt/wakari/wakari-gateway/var/log/wakari/gateway.log
working dir	/ (root)
port	8089 (webcache)

## Compute node(s)

Compute nodes are where applications such as Jupyter Notebook and Workbench actually run. They are also the hosts that a user sees when using the Terminal app or when using SSH to access a node. Compute nodes contain all user-visible programs.

Compute nodes only need to communicate with a gateway, so they can be completely isolated by a firewall.

Each project is associated with one or more compute nodes that are part of a single data center.

AEN compute nodes are installed in the `/opt/wakari/wakari-compute` directory.

Each compute node in the AEN system requires a compute launcher service to mediate access to the server and gateway.

## Compute processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manages the wk-compute process.
user	wakari
configuration	/opt/wakari/wakari-compute/etc/supervisord.conf
log	/opt/wakari/wakari-compute/var/log/supervisord.log
control	service wakari-compute
working dir	/opt/wakari/wakari-compute/etc
ports	none

wk-compute	details
de-scrip-tion	Launches compute processes.
user	wakari
config-uration	/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json      /opt/wakari/wakari-compute/etc/wakari/scripts/config.json
logs	/opt/wakari/wakari-compute/var/log/wakari/compute-launcher.application.log      /opt/wakari/wakari-compute/var/log/wakari/compute-launcher.log
work-ing dir	/ (root)
control	service wakari-compute
port	5002 (rfe)

Wk-compute loads each of the following configuration files, in this order:

- /etc/wakari/config.json.
- /etc/wakari/compute-launcher-config.json.
- ./compute-launcher-config.json.
- Any configuration file specified by the -c option.

If an option is specified in multiple files, the last one encountered takes precedence.

## Supervisor and supervisord

AEN uses a process control system called “Supervisor” to run its services. Supervisor is run by the AEN Service Account user, usually wakari or aen\_admin.

The Supervisor daemon process is called “supervisord”. It runs in the background and should rarely need to be restarted.



## Service Account

AEN must be installed and executed by a Linux account called the AEN Service Account. The username of the AEN Service Account is called the AEN Functional ID (NFI). The AEN Service Account is created during AEN installation—if it does not exist—and is used to run all AEN services.

The default NFI username is `wakari`. Another popular choice is `aen_admin`.

**WARNING:** The Service Account should only be used for administrative tasks, and should not be used for operating AEN the way an ordinary user would. If the Service Account creates or starts projects, the permissions on the AEN package cache will be reset to match the Service Account, which will interfere with the normal operation of AEN for all other users.

## Anaconda environments

Each project has an associated conda environment containing the packages needed for that project. When a project is first started, AEN clones a default environment with the name “default” into the project directory.

Each release of AEN 4 includes specific tested versions of conda and the conda packages included with AEN. These tested conda packages include Python, R, and other packages, and these tested conda packages include all of the packages in Anaconda.

If you upgrade or install different versions of conda or different versions of any of these conda packages, the new packages will not have been tested as part of the AEN 4 release.

These different packages will usually work, especially if they are newer versions, but they are not tested or guaranteed to work, and in some cases they may break product functionality.

You can use a new conda environment to test a new version of a package before installing it in your existing environments.

If using conda to change the version of a package breaks product functionality, you can use conda to change the version of the package back to the version known to work.

For more information about environments, see [Working with environments](#).

## Projects and permissions

AEN users interact with the system predominantly through [projects](#).

Projects are associated with a single data center within the AEN environment. The team of users includes one owner, which is the user that created the project.

Projects live in the `projectRoot` folder on the compute node—by default, `/projects`.

The project directory is created the first time a project is started. The `start-project` script clones it from `/opt/wakari/wakari-compute/lib/node_modules/wakari-compute-launcher/skeleton`.

Project directory permissions are:

```
owner: rwx, user who created the project
group: rwx, group of the owner
other: --x, to allow access to the Public folder
ACL: rwx for any other team members
```

Files and subdirectories within the project directory have the same permissions as the project directory, except:

- The public folder and everything in it are open to anyone.

- Any files hardlinked into the root anaconda environment—`/opt/wakari/anaconda`—are owned by the root or wakari users.

Project file and directory permissions are maintained by the `start-project` script. All files and directories in the project will have their permissions set when the project is started, except for files owned by root or the `AEN_SRVC_ACCT` user—by default, wakari or `aen_admin`.

The permissions set for files owned by root or the `AEN_SRVC_ACCT` user are not changed to avoid changing the permissions settings of any linked files in the `/opt/wakari/anaconda` directory.

CAUTION: Do not start a project as the `AEN_SRVC_ACCT` user. The permissions system does not correctly manage project files owned by this user.

## Installation

### Installation requirements

#### Hardware requirements

AEN server—At least:

- 2+GB RAM.
- 2+CPU cores.
- 20GB storage.

AEN gateway—At least:

- 2 GB RAM.
- 2 CPU cores.

AEN compute (N-machines)—Configured to meet the needs of the projects. At least:

- 2GB RAM.
- 2 CPU cores.
- 20 GB.

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda env directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

#### Software requirements

- RHEL/CentOS on all nodes. Versions from 6.5 through 7.4 are supported. Other operating systems are supported. However, this document assumes RHEL or CentOS.
- Linux home directories—Jupyter looks in `$HOME` for profiles and extensions.
- Ability to install in AEN directory `/opt/wakari` with at least 10 GB of storage.
- Ability to install in Projects directory `/projects` with at least 20 GB of storage. Size depends on number and size of projects.

NOTE: To install AEN in a different location see [\*Installing AEN in a custom location\*](#).

## Linux system accounts

Some Linux system accounts (UIDs) are added to the system during installation.

If your organization requires special actions, the following list is available:

- mongod (RHEL) or mongod (Ubuntu/Debian)—created by the RPM or deb package.
- elasticsearch—created by RPM or deb package.
- nginx—created by RPM or deb package.
- AEN\_SRVC\_ACCT—created during installation of AEN, and defaults to wakari.
- ANON\_USER—An account such as “public” or “anonymous” on the compute node.

NOTE: If ANON\_USER is not found, AEN\_SRVC\_ACCT will attempt to create it. If it fails, the project(s) will fail to start.

- ACL directories need the filesystem mounted with Posix ACL support (Posix.1e).

NOTE: You can verify ACL from the command line by running `mount` and `tune2fs -l /path/to/filesystem | grep options`.

## Software prerequisites

- AEN server:
  - Mongo—Equal to or higher than version 2.6.8 and lower than version 3.0.
  - NGINX—Equal to or higher than version 1.6.2.
  - Elasticsearch—Equal to or higher than version 1.7.2.
  - Oracle JRE version 7 or 8.
  - bzip2.
- AEN Gateway:
  - bzip2.
- AEN compute:
  - git
  - bzip2
  - bash or zsh
  - X Window System

NOTE: If you don’t want to install the whole X Window System, you must install the following packages to have R plotting support:

```
sudo yum install -y libXrender libXext libXdmcp libSM libICE libXt \
dejavu-sans-fonts dejavu-serif-fonts dejavu-fonts-common \
fontpackages-filesystem
```

## Security requirements

- Root or sudo access.
- File permissions: `umask 0022` is required during the installation.
- SELinux in permissive or disabled mode.

Edit the following file using either root or sudo access:

```
/etc/sysconfig/selinux
```

Edit the following:

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.

SELINUX=enforcing

# SELINUXTYPE= can take one of these two values:
#   targeted - Targeted processes are protected,
#   mls - Multi Level Security protection.

SELINUXTYPE=targeted
```

NOTE: You must reboot for the changes to take effect.

Verify changes with `getenforce`.

## Network requirements

TCP Ports:

Direction	Type	Default Port	Protocol	Optional	Configurable	Comments
Inbound	TCP	80	HTTP or HTTPS	No	Yes	Server
Inbound	TCP	8089	HTTP or HTTPS	No	Yes	Gateway
Inbound	TCP	5002	HTTP	No	Yes	Compute

## Other requirements

As long as the above requirements are met, there are no additional dependencies for AEN.

See also *system requirements for Anaconda Repository and Anaconda Scale*.

## What's next

*Prepare for installation.*

## Preparing for installation

### Downloading AEN installers

Download the installers and copy them to the corresponding servers.

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
→com"
curl -O $RPM_CDN/aen-server-4.3.3-Linux-x86_64.sh
curl -O $RPM_CDN/aen-gateway-4.3.3-Linux-x86_64.sh
curl -O $RPM_CDN/aen-compute-4.3.3-Linux-x86_64.sh
```

NOTE: The current \$RPM\_CDN server will be confirmed in an email provided by your sales rep.

NOTE: These instructions use *curl* or *wget* to download packages, but you may use other means to move the necessary files into the installation directory.

### Gathering IP addresses or FQDNs

AEN is very sensitive to the IP address or domain name used to connect to the server and gateway nodes. If users will be using the domain name, you should install the nodes using the domain name instead of the IP addresses. The authentication system requires the proper hostnames when authenticating users between the services.

Print this page and fill in the domain names or IP addresses of the nodes below and record the user name and auto-generated password for the administrative user account in the box below after installing the AEN server node:

Node   Name or IP address	Port Number	Username   Password	
AEN server			
AEN gateway			
AEN compute			

NOTE: The values of these IP entries or DNS entries are referred to as <AEN\_SERVER\_IP> or <AEN\_SERVER\_FQDN>, particularly in examples of shell commands. Consider actually assigning those values to environment variables with similar names.

### Set up variables

Certain variables need to have values assigned to them before you start the installation.

### AEN server address

To define an environment variable for the AEN server address—FQDN or IP:

```
export AEN_SERVER=<AEN_SERVER_IP> # <from table above>
```

NOTE: The address—FQDN or IP—specified for the AEN server must be resolvable by your intended AEN users' web clients.

To verify your hostname, run `echo $AEN_SERVER`.

### AEN functional ID

AEN must be installed and executed by a Linux account called the AEN Service Account. The username of the AEN Service Account is called the AEN Functional ID (NFI). The AEN Service Account is created during AEN installation—if it does not exist—and is used to run all AEN services.

The default NFI username is `wakari`. Another popular choice is `aen_admin`.

To set the environment variable `AEN_SRVC_ACCT` to `wakari` or your chosen name before installation, run `export AEN_SRVC_ACCT="aen_admin"`.

This name is now the username of the AEN Service Account and of the AEN administrator account.

When upgrading AEN, set the NFI to the NFI of the current installation.

WARNING: The Service Account should only be used for administrative tasks, and should not be used for operating AEN the way an ordinary user would. If the Service Account creates or starts projects, the permissions on the AEN package cache will be reset to match the Service Account, which will interfere with the normal operation of AEN for all other users.

### AEN functional group

The AEN Functional Group (NFG) may be given any name. Most often, it is set to `aen_admin` or `wakari`. This Linux group includes the AEN service account, so all files and directories that have the owner NFI also have the group NFG.

When upgrading AEN, set the NFG to the NFG of the current installation.

To set the NFG before installation, run:

```
export AEN_SRVC_GRP="<NFG>"
```

NOTE: Replace `<NFG>` with your NFG name.

### AEN install sudo command

During AEN installation the installers perform various operations that require root level privileges. By default, the installers use the `sudo` command to perform these operations.

Before installation, set the `AEN_SUDO_CMD_INSTALL` environment variable to perform root level operations. You can also set it to no command at all if the user running the installer(s) has root privileges and the `sudo` command is not needed or is not available.

EXAMPLES:

```
export AEN_SUDO_CMD_INSTALL=""  
export AEN_SUDO_CMD_INSTALL="sudo2"
```

## AEN sudo command

By default the AEN services uses `sudo -u` to perform operations on behalf of other users—including `mkdir`, `chmod`, `cp` and `mv`.

To override the default `sudo` command when `sudo` is not available on the system, before installing, set the `AEN_SUDO_CMD` environment variable.

AEN must have the ability to perform operations on behalf of other users. Therefore, this environment variable cannot be set to an empty string or to `null`.

CAUTION: Any command that replaces `AEN_SUDO_CMD` must support the `-u` command line parameter—similarly to the `sudo` command.

EXAMPLE:

```
export AEN_SUDO_CMD="sudo2"
```

The optional environmental variable `AEN_SUDO_SH` is another way to customize AEN sudo operations. When AEN executes any `sudo` command, it will include the value of `AEN_SUDO_SH`, if it is set.

EXAMPLE: If your username is “jsmith” and the values are set as:

```
AEN_SUDO_CMD=sudo  
OWNER=jsmith  
AEN_SUDO_SH=sudologger  
PROJECT_HOME=/projects/jsmith/myproj
```

Then AEN will resolve:

```
$AEN_SUDO_CMD -u ${OWNER} $AEN_SUDO_SH rm -rf $PROJECT_HOME
```

As:

```
sudo -u jsmith sudologger rm -rf /projects/jsmith/myproj
```

In this case the `sudologger` utility could be a pass-through utility that logs all `sudo` usage and then executes the remaining parameters.

## Post-installation Sudo configuration

While `root/sudo` privileges are required during installation, `root/sudo` privileges are not required during normal operations after install, if user accounts are managed outside the software. However `root/sudo` privileges are required to start the services, thus in the service config files there may still need to be an `AEN_SUDO_CMD` entry.

For more information, see *Configuring sudo customizations*.

### AEN remote database settings

By default AEN server uses a local database. To override the default database location, see *Install AEN connected to a remote Mongo DB instance*.

### What's next

*Install the AEN server.*

### Installing the AEN server

The AEN server is the administrative front end to the system. This is where users log in to the system, where user accounts are stored, and where admins can manage the system.

Server is installed in the `/opt/wakari/wakari-server` directory.

### Installing the bzip2 package

Be sure you have the `bzip2` package installed. If this package is not installed on your system, install it:

```
sudo yum install bzip2
```

### Downloading prerequisite RPMs

To install AEN on a CentOS 6 server:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
↪com"
curl -O $RPM_CDN/nginx-1.6.2-1.el6ngx.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-tools-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-shell-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-server-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-mongos-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/elasticsearch-1.7.2.noarch.rpm
curl -O $RPM_CDN/jre-8u65-linux-x64.rpm
```

To install AEN on a CentOS 7 server:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
↪com"
curl -O $RPM_CDN/nginx-1.10.2-1.el7ngx.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-tools-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-shell-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-server-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-mongos-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/jre-8u112-linux-x64.rpm
curl -O $RPM_CDN/elasticsearch-1.7.6.noarch.rpm
```



## Installing prerequisite RPMs

Run:

```
sudo yum install -y *.rpm
sudo service mongod start
sudo chkconfig --add elasticsearch
```

## Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

## Running the AEN server installer

Run:

```
sudo -E ./aen-server-4.3.3-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-server
Logging to /tmp/wakari_server.log
Checking server name
Ready for pre-install steps
Installing miniconda
...
...
Checking server name
Loading config from /opt/wakari/wakari-server/etc/wakari/config.json
Loading config from /opt/wakari/wakari-server/etc/wakari/wk-server-config.json

=====

Created password '<RANDOM_PASSWORD>' for user 'aen_admin'

=====

Starting Wakari daemons...
installation finished.
```

After successfully completing the installation script, the installer creates the administrator account—AEN\_SRVC\_ACCT user—and assigns it a password.

EXAMPLE:

```
Created password '<RANDOM_PASSWORD>' for user 'aen_admin'
```

TIP: Record this password. It will be needed in the following steps. It is also available in the installation log file `/tmp/wakari_server.log`.

### Starting NGINX and Elasticsearch

When SELinux is enabled, it blocks NGINX from connecting to the socket created by Gunicorn. If you have SELinux enabled, run these commands to correct these permissions and allow connections between NGINX and Gunicorn:

```
sudo semanage fcontext -a -t httpd_var_run_t "/opt/wakari/wakari-server/var/run/wakari-  
↪server.sock"  
sudo restorecon -r /opt/wakari/wakari-server/var/run
```

To start NGINX and Elasticsearch to read the new config file:

```
sudo service nginx start  
sudo service elasticsearch start
```

TIP: If the AEN web page shows an NGINX 404 error, restart NGINX:

```
sudo nginx -s stop  
sudo nginx
```

### Testing AEN server installation

Visit `http://\protect\TI\textdollarAEN_SERVER`.

The License expired page is displayed.

No license found!

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Software updates are free of charge during the initial 1-year period after the license purchase. Each subsequent update automatically terminates your rights to use the previous versions of the software. A commercial license qualifies you for unlimited access to technical support.

[Contact support for more information.](#)

**Upload License File**


**License File**

No file selected.

## Updating your license

From the License expired page, follow the onscreen instructions to upload your license file.

After your license is submitted, you will see this page:

 **ANACONDA**

Login Help

License Successfully Updated

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Your Data, Your Servers™

Browser-based Python & Linux for collaborative data analysis and visualization.

Password must contain a minimum of 7 characters. One uppercase, one lowercase and one number.

### What's next

*Install the AEN gateway.*

### Installing the AEN gateway

The gateway is a reverse proxy that authenticates users and automatically directs them to the proper AEN compute node for their project. Users will not notice this node as it automatically routes them.

Gateway is installed in the `/opt/wakari/wakari-gateway` directory.

### Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
export AEN_GATEWAY_PORT=8089
export AEN_GATEWAY=<FQDN HOSTNAME OR IP ADDRESS> # will be needed shortly
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change `<FQDN HOSTNAME OR IP ADDRESS>` to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists. If the terminal is closed before successful installation, export the variables to continue with the installation.

### Running the AEN gateway installer

Run:

```
sudo -E ./aen-gateway-4.3.3-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-gateway
Logging to /tmp/wakari_gateway.log
...
...
Checking server name
Please restart the Gateway after running the following command
to connect this Gateway to the AEN Server
...
```

## Registering your gateway

The gateway needs to register with the AEN server.

This needs to be authenticated, so the NFI user's credentials created during the AEN server install must be used.

To write the configuration file `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`, run the following as `sudo` or `root`:

```
sudo /opt/wakari/wakari-gateway/bin/wk-gateway-configure \  
--server http://$AEN_SERVER --host $AEN_GATEWAY \  
--port $AEN_GATEWAY_PORT --name Gateway --protocol http \  
--summary Gateway --username $AEN_SRVC_ACCT \  
--password '<NFI USER PASSWORD>'
```

NOTE: replace `<NFI USER PASSWORD>` with the password of the NFI user that was generated during *server installation*.

## Setting permissions

Run:

```
sudo chown $AEN_SRVC_ACCT /opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
```

## Starting the gateway

Run:

```
sudo service wakari-gateway start
```

## Verifying your gateway registration

1. Log in to the AEN server using the Chrome or Firefox browser and the `AEN_SRVC_ACCT` user.
2. In the AEN navigation bar, click **Admin** to open the Admin Settings page.
3. In the **Site Admin** menu, select **Data Centers**:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)

Data Centers

[Gateway](#) (ec2-52-90-133-17.compute-1.amazonaws.com:8089)

+ Add DataCenter

4. Click your data center:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Security Log](#)
[Data Centers](#)

Data Centers

[Gateway](#) (54.208.221.207:8080)

+ Add DataCenter

5. Verify that your data center is registered and the status is {"status": "ok", "messages": []}:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)
[Task Queue](#)

Datacenter Gateway

Edit

Provider

wk\_server.plugins.providers.enterprise

Client ID

59c119cd3f94c30fe45ff5db

Client Secret

50cc629d-4e8e-44a5-9a2e-a46fee7c1921

Redirect URIs

http://ec2-52-90-133-17.compute-1.amazonaws.com:8089/login/authorized

wk-gateway-config.json

```
{
  "CDN": "http://ec2-204-236-198-47.compute-1.amazonaws.com/static/",
  "SUBDOMAIN_ROUTING": false,
  "client_id": "59c119cd3f94c30fe45ff5db",
  "client_secret": "50cc629d-4e8e-44a5-9a2e-a46fee7c1921",
  "WAKARI_SERVER": "http://ec2-204-236-198-47.compute-1.amazonaws.com",
  "port": 8089
}
```

status

```
{"status": "ok", "messages": []}
```

Back

Remove

## What's next

*Install the AEN compute node(s).*

## Installing the AEN compute node(s)

Compute nodes are where projects are stored and run.

Adding multiple AEN compute machines allows you to scale-out horizontally to increase capacity. Projects can be created on individual compute nodes to spread the load.

Repeat this procedure on each compute machine.

## Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists.

### Running the AEN compute installer

Run:

```
sudo -E ./aen-compute-4.3.3-Linux-x86_64.sh -w $AEN_SERVER
...
...
PREFIX=/opt/wakari/wakari-compute
Logging to /tmp/wakari_compute.log
Checking server name
...
...
Initial clone of root environment...
Starting Wakari daemons...
installation finished.
Do you wish the installer to prepend the wakari-compute install location
to PATH in your /root/.bashrc ? [yes|no]
[no] >>> yes
```

### Restart the AEN Server

Once configured, restart the AEN server:

```
sudo service wakari-server restart
```

### Configuring your compute node(s)

Once installed, you must configure the compute launcher on your server:

1. In your browser, go to your AEN server.
2. Log in as the AEN\_SRVC\_ACCT user.
3. In the AEN navigation bar, click Admin to open the Admin Settings page.
4. In the **Providers** menu, select Enterprise Resources:



Staff	Resources
<a href="#">Daily Report</a>	<a href="#">Add Resource</a>
<a href="#">Password Reset</a>	<b>Gateway</b>
<a href="#">Notification</a>	<a href="#">ec2-54-210-232-251.compute-1.amazonaws.com</a> <a href="#">remove</a>
<a href="#">Exceptions</a>	

Site Admin
<a href="#">General</a>
<a href="#">Accounts</a>
<a href="#">Users</a>
<a href="#">Monitor</a>
<a href="#">Security Log</a>
<a href="#">Data Centers</a>
<a href="#">Task Queue</a>
<a href="#">License</a>

Providers
<a href="#">Enterprise Resources</a>

5. Click the Add Resource button to open the new resource form.
6. Select the data center to associate this compute node with.

**Resources / new**

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
Compute Node1

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**  
Configuring Compute Node

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Add Resource

7. In the URL box, type: `http://$AEN_COMPUTE:5002`.

NOTE: If the compute launcher is located on the same box as the gateway, we recommended that you type `http://localhost:5002` instead.

8. Type a Name and Description for the compute node.
9. Click the Add Resource button to save the changes.

Your AEN compute node is configured.

## What's next

*Configure conda to use your local on-site AEN repository.*

## Configuring conda to use your local on-site AEN repository

You can configure AEN to use a local on-site Anaconda Repository server instead of Anaconda.org.

To configure AEN to use a local on-site Repository, you must:

1. *Edit condarc on the compute node.*
2. *Configure the Anaconda client.*

## Editing condarc on the compute node

NOTE: If there are channels that you haven't mirrored, you must remove them from the configuration.

Edit the file `.condarc` to match the following:

```
#/opt/wakari/anaconda/.condarc
channels:
  - defaults

create_default_packages:
  - anaconda-client
  - ipykernel

# Default channels is needed for when users override the system .condarc
# with ~/.condarc. This ensures that "defaults" maps to your Anaconda Repository and not
# repo.anaconda.com
default_channels:
  - http://<your Anaconda Repository name>:8080/conda/anaconda
  - http://<your Anaconda Repository name>:8080/conda/wakari
  - http://<your Anaconda Repository name>:8080/conda/r-channel

# Note: You must add the "conda" subdirectory to the end
channel_alias: http://<your Anaconda Repository name>:8080/conda
```

NOTE: Replace `<your Anaconda Repository name>` with the actual name or IP address of your local Anaconda Repository installation.

## Configuring the Anaconda client

Anaconda client lets users work with Repository from the command-line—including searching for packages, logging in, uploading packages, and more.

To set the default configuration of `anaconda-client` for all users on your compute node:

```
sudo /opt/wakari/anaconda/bin/anaconda config --set url http://<your Anaconda Repository>
↪:8080/api -s
```

NOTE: Sudo is required because the configuration file is written to the root file system: `/etc/xdg/binstar/config.yaml`.

NOTE: Replace `<your Anaconda Repository>` with the actual name or IP address of your local Anaconda Repository installation.

## What's next

Review the *optional configuration* tasks to see if any apply to your system.

## Optional configuration

### Using configuration files

The default locations for each component's configuration files are:

- Server—`/opt/wakari/wakari-server/etc/wakari/config.json`.
- Gateway—`/opt/wakari/wakari-gateway/etc/wakari/config.json`.
- Compute—`/opt/wakari/wakari-compute/etc/wakari/config.json`.

Additionally, service-specific configuration files may also be present in the following locations:

- Server—`/opt/wakari/wakari-server/etc/wakari/wk-server-config.json`.
- Gateway—`/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`.
- Compute—`/opt/wakari/wakari-compute/etc/wakari/wk-compute-config.json`.

Each service loads each of the configuration files in the following order and updates the AEN configuration at each step:

1. `/etc/wakari/config.json`.
2. `/etc/wakari/wk-gateway-config.json`.
3. `/opt/wakari/wakari-SERVICE/etc/wakari/config.json`.
4. `/opt/wakari/wakari-SERVICE/etc/wakari/wk-SERVICE-config.json`.
5. `./config.json`.
6. `./wk-gateway-config.json`.

## AEN configuration keys

The following is a list of AEN supported configuration keys:

Table 17: Server Configuration Keys

Key	Default	Description
CDN	<code>\$WAKARI_SERVER/static/</code>	The location of static assets.
MONGO_DB	<code>wakari</code>	The name of the AEN database in mongodb.
MONGO_URL	<code>mongodb://localhost/</code>	The URL of your AEN server's mongodb instance. Format: <code>mongodb://&lt;username&gt;:&lt;password&gt;@&lt;host&gt;:&lt;port&gt;/</code>

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Table 17 – continued from previous page

Key	Default	Description
WAKARI_SERVER		The URL of this AEN server.
DEFAULT_PRIVACY	public	The default project privacy setting—can be either <b>public</b> or <b>private</b> .
SESSION_COOKIE_NAME	wakari. enterprise. session	The Cookie name used to maintain Anaconda Enterprise Notebooks Enterprise login sessions.
SESSION_COOKIE_SECURE	False	This key is automatically set to true when SSL is enabled. It will default to false when SSL is not enabled. Manually changing this value may cause the system to malfunction if it's not configured properly.
PERMANENT_SESSION	True`	Sets cookie session to permanent. This will keep the session open after the browser is closed. The session will still expire after the number of minutes set in the SESSION_LIFETIME key.
SESSION_LIFETIME	120	Time in minutes until the session expires. The counter resets with each request.
USE_SES	false	Sets whether AEN will use Amazon SES to send emails.
SMTP		Sets the SMTP email settings.
- host		A SMTP subkey—the SMTP mail server hostname.
- user		SMTP subkey—the username for SMTP server authentication.
- password		SMTP subkey—the password for SMTP server authentication.
- from_addr		SMTP subkey—the From address for emails sent through SMTP.
verify_gateway_certificate	true	A boolean setting that indicates whether your AEN server should verify the gateway SSL certificate.
accounts	wk_server. plugins accounts.cloud	The account provider class. For LDAP, this should be set to wk_server.plugins.accounts.ldap_accounts.
uniqueEmail	true	A boolean setting that indicates whether unique user email addresses are required. See <a href="#">note below</a> about updating the database when setting uniqueEmail.
has_internet	true	Boolean for retrieving the avatar from the gravatar URL. If false a local default is used instead.
LDAP	389	LDAP configurations.
- SERVER		LDAP subkey—A list of LDAP servers. At least one server name must be listed. The primary server should be listed first. All secondary or fail-over servers should be listed after the primary.
- PORT	389	LDAP subkey—The LDAP port on the LDAP server.
- AUTH_TYPE		LDAP subkey—LDAP Authentication types. <b>simple</b> —no encryption not secure. ``TLS``—encrypted secure requires the TLS_CERT to be set.
- TLS_CERT		LDAP subkey—the full path to the TLS certificate file. The certificate file must also be provided by the Enterprise.
- BASEDN		LDAP subkey—the LDAP Base DN value.
- OU		LDAP subkey—a list of Organizational Units. Some Enterprises group users by OUs in their LDAP server records. AEN will loop over the list of OUs when authenticating a user. The OU value is a list of lists to support multiple OUs where each OU is a single name or a hierarchy of names.

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Table 17 – continued from previous page

Key	Default	Description
ANON_USER	anonymous	Username—such as <code>public</code> or <code>anonymous</code> —assigned users who are not logged in to access projects. To disable public access use the special value <code>disabled</code> . For more information, see <a href="#">Configuring sudo customizations</a> .
SEARCH_ENABLED	true	Boolean indicating whether ElasticSearch is enabled
SEARCH_SERVER	'localhost:9200'	IP address or domain name and port of ElasticSearch server
LOG_LEVEL	'DEBUG'	Log verbosity. One of: 'ERROR' 'WARN' 'INFO' 'DEBUG'

NOTE: If you set `uniqueEmail` to `false`, you must drop the existing index in the database. EXAMPLE: If the index name is `email_1`, run `db.users.dropIndex("email_1")`.

Table 18: Gateway Configuration Keys

Key	Default	Description
WAKARI_SERVER		The URL of the AEN WAKARI_SERVER.
port	8089	The Port number used by the gateway application. Must be a non-privileged port ( $\geq 1024$ ).
client_id		The client ID assigned to this gateway by the server during <code>wk-gateway-configure</code> .
client_secret		The Client secret assigned to this gateway by the server during <code>wk-gateway-configure</code> .
httpTimeout	600	Timeout in seconds. The default is 10 minutes to allow project creation.
logLevel	info	Log verbosity. One of: 'error' 'warn' 'info' 'debug'.
https		Enable SSL encryption. For more information, see <a href="#">Configuring SSL</a> .
- key		A https subkey—Path to gateway key.
- cert		A https subkey—Path to gateway cert.
- ca		A https subkey—Required if cert was signed by a private root CA or signed by an intermediate authority. It must contain separate values for the paths to the CA root, any intermediates and the certificate for the Server.
- passphrase		A https subkey—Passphrase required to decrypt SSL certs.

Table 19: Compute Node Configuration Keys

Key	Default	Description
WAKARI_SERVER		The URL of the AEN WAKARI_SERVER.
MANAGE_ACCOUNTS	true	A boolean setting that indicates whether AEN should manage system user accounts. Set to false for LDAP installations.
identicalGID	false	<b>To make the AEN compute service create groups with the same uid. Set to true If the /projects folder resides on an NFSv3 volume.</b> For more information, see <a href="#">Group and user permissions for NFS</a> .
port	2227	The port number used by the compute-launcher application. Note that individual applications use dynamic ports.
projectRoot	/projects	The location of project file storage.
logLevel	info	Log verbosity. One of: 'error' 'warn' 'info' 'debug'
logMaxSize	10000000	Max size in bytes of the logfile. Default is 10 MB. If the size is exceeded then a new file is created and a counter will become a suffix of the log file.
logMaxFiles	30	Limit the number of files created when the size of the logfile is exceeded
appIdleTime	172800000 (48 hours)	The amount of idle time before applications will be auto-terminated (in msec).
idleCheckInterval	3600000 (1 hour)	The frequency of idle checks.
numericUsernames	false	A boolean setting that indicates whether numeric usernames are permitted.
httpTimeout	600	The time before a timeout—in seconds. The default is 10 minutes—600 seconds—to allow time for project creation.
ANON_USER	anonymous	Username such as public or anonymous for users who are not logged in to access projects. To disable public access use the special value disabled. For more information, see <a href="#">Configuring sudo customizations</a> .
projDirsAsHome	false	A boolean setting. When false AEN apps use /home/<username> as HOME. When true AEN apps use /projects/<username> as HOME.
emptyDefaultChannels	true	A boolean setting. When true AEN sets default_channels to be an empty list on the project's .condarc preventing the search of packages from the free channel. If you set this option as false, and if you already started a project with this setting as true, you will need to modify the existing project's .condarc and remove the default_channels: [] line.

Table 20: Server Internal Configuration Keys - Do not change

Key	Default	Description
PROVIDERS	["wk_server. plugins providers. enterprise"]	A list of compute provider classes.
MONGO_ACTION _LOG_SIZE	262144000	The size of the Mongo action log in bytes.
SITE_ADMINS		A list of site administrator email addresses—used for crash notifications and LDAP password reset requests.
FROM_EMAIL_ADDR		The From address for notification emails sent by AEN.
uniqueUserName	true	A boolean setting that indicates whether unique usernames are required.

Table 21: Gateway Internal Configuration Keys - Do not change

Key	Default	Description
CDN	\$WAKARI_SERVER/ static/	The location of static assets.
SUBDOMAIN_ROUTING	false	A boolean that indicates whether subdomains are being used.
refreshTokenExpiration	500000	Idle time in milliseconds before the Gateway session expires.



Table 22: Compute Node Internal Configuration Keys - Do not change

Key	Default	Description
CDN	<code>\$WAKARI_SERVER/static/</code>	The location of static assets.
USE_SES	<code>false</code>	Sets whether AEN will use Amazon SES to send emails.
multiUser	<code>true</code>	A boolean that indicates whether multi-user support is enabled.
multiProject	<code>true</code>	A boolean that indicates whether multi-project support is enabled.
ANACONDA_ROOT	<code>/opt/wakari/anaconda</code>	The location of your Anaconda installation.
appLogs	<code>/opt/wakari/wakari-compute/var/log/wakari/compute-launcher-apps</code>	The directory where application logs are stored.
appPIDs	<code>/opt/wakari/wakari-compute/var/run/compute-launcher-apps</code>	The directory where application PID files are stored.
applicationLog	<code>/opt/wakari/wakari-compute/var/log/wakari/compute-launcher.application.log</code>	The path to the compute launcher log.
accessLog	<code>opt/wakari/wakari-compute/var/log/wakari/compute-launcher.access.log</code>	Path to compute launcher access log

### Checking configuration file syntax

To verify that the configuration file contains valid JSON, run:

```
root@server # python -m json.tool /opt/wakari/wakari-server/etc/wakari/*.json
root@gateway # python -m json.tool /opt/wakari/wakari-gateway/etc/wakari/*.json
root@compute # python -m json.tool /opt/wakari/wakari-compute/etc/wakari/*.json
```

If the file is correct, the contents are displayed.

If there is a syntax error in the file, a “No JSON object could be decoded” message is displayed instead.

To fix any errors, edit the configuration file and verify that it contains the correct JSON syntax.

## Increasing HTTP timeout between gateway and compute nodes

The default HTTP timeout is 600 seconds (10 minutes).

This setting works for HTTP timeout only, not HTTPS.

To modify the HTTP timeout setting:

1. Open the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file and modify the `httpTimeout` key:

```
"httpTimeout": 600
```

2. Update the gateway node by modifying the `httpTimeout` key in the `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json` file to match the above settings.
3. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Installing AEN in a custom location

To install AEN in a custom location:

1. Make the custom install folder owned by `$AEN_SRVC_ACCT`. EXAMPLE: `/data/aen/`.
2. Make a symlink from `/opt/wakari` to `/data/aen`.
3. Run the installers.
4. Move the folder from `/projects` to your chosen custom location. EXAMPLE: `/data/aen/projects`.
5. Make a symlink from `/projects` to `/data/aen/projects`.

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda environment directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

## Changing where projects are stored

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda env directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

To make aen-compute service use a different directory than `/projects` to store your AEN projects:

1. Modify the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file:

```
"projectRoot" : "/nfs/storage/services/wakari/projects",
```

NOTE: The directory `/nfs/storage/services/wakari/projects` specified as `projectRoot` must already exist for this command to resolve properly.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Group and user permissions for NFS

To install AEN with multiple compute nodes and a `/projects` folder on an NFSv3 volume, manually pre-create both the anonymous user and the `$AEN_SRVC_ACCOUNT` user on all nodes. Each of these users must have the same user identity number (UID) and group identity number (GID) on all nodes.

By default AEN creates local users with a different GID on each node. To make the AEN compute service create groups with the same GID:

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, change the `identicalGID` key value to `true`:

```
, "identicalGID": true
```

If you don't see the `identicalGID` key, add it.

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Using numeric usernames

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, change the `numericUsernames` key value to `true`.

```
, "numericUsernames": true
```

If you don't see the `numericUsernames` key, add it.

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Using project directories as home directories

The `projDirsAsHome` option changes the AEN home directories from the standard `/home/<username>` location to the project directories and the location `/projects/<username>/<project_name>/<username>/`. This ensures that AEN and AEN apps will not be affected by configuration files in a user's home directory, such as `.bashrc` or configuration files in subdirectories such as `.ipython` and `.jupyter`.

## Package cache locations

AEN version 4.1.3 stores the cache of packages in `/home/<username>`, while AEN versions 4.2.0 and higher store the cache of packages in `/projects/<username>/<project_name>/<username>/`. By moving the package cache to the same filesystem as the project, AEN versions 4.2.0 and higher can use hardlinks and save disk space and time when creating or cloning environments.

These package cache locations are not affected by the `projDirsAsHome` option.

After upgrading from AEN 4.1.3 to AEN 4.2.0 or higher, existing projects will still use the package cache in `/home/<username>`. Do not remove this cache, or the existing projects will break.

When users create new projects or install packages, the newly installed packages will use the new cache location.

If you wish to remove the older package cache in `/home/<username>`:

- Upgrade AEN to 4.2.0 or higher.
- Use `conda remove` to remove every non-default package in every project.
- Use `conda install` to replace them. The replaced packages will link to the new package cache in `/projects/<username>/<project_name>/<username>/`.
- You can now safely remove the older package cache.

## Enabling `projDirsAsHome`

NOTE: The `projDirsAsHome` option should be enabled immediately after performing the installation process and before any users have logged in to AEN. This ensures that users will not have home directories in different places due to some creating their home directories when the option was disabled and others creating their home directories when the option was enabled.

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, add the `projDirsAsHome` key value and set it to `true`.

```
, "projDirsAsHome": true
```

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Setting up a default project environment

AEN includes a full installation of the Anaconda Python distribution—along with several additional packages—located within the root conda environment in `/opt/wakari/anaconda`.

The first time any new AEN project is started, this default project environment is cloned into the new project's workspace.

To configure a different set of packages than the default:

1. Create a new conda environment in the `/opt/wakari/anaconda/envs/default` directory.

EXAMPLE: Using a Python 3.4 base environment, run:

```
sudo -u $AEN_SRV_ACCT /opt/wakari/anaconda/bin/conda \
create -p /opt/wakari/anaconda/envs/default python=3.4
```

2. Use conda to install any additional packages into the environment.
3. After the environment is created, clone it to ensure that it works correctly:

```
sudo -u $AEN_SRV_ACCT /opt/wakari/anaconda/bin/conda \
create -p /opt/wakari/testenv --clone /opt/wakari/anaconda/envs/default
sudo -u $AEN_SRV_ACCT rm -rf /opt/wakari/testenv
```

## Converting an existing project

1. Run the following command to clone the environment:

```
sudo -u $AEN_SRV_ACCT /opt/wakari/anaconda/bin/conda \
create -n /projects/owner/project/envs/<ENV_NAME> \
--clone /opt/wakari/anaconda/envs/default
```

NOTE: Replace `/projects/owner/project/envs/<ENV_NAME>` with the path to the new environment you would like to create within the project.

2. Open the *Compute Resource Configuration application* for your project and set the project environment path there as well.

## Install AEN connected to a remote Mongo DB instance

To install AEN with a remote database:

1. Connect to the Mongodb instance and create the user for AEN:

```
> user = { user: "<username>",
  pwd: "<super-secure-password>",
  roles: [
    { role: "dbOwner", db: "<db_name>" },
    { role: "dbOwner", db: "<db_name>_mq" }
  ]
}
> db.createUser(user)
Successfully added user: { ... }
```

2. Before installing AEN-server export the database URL and name:

```
$ export MONGO_URL="mongodb://<username>:<password>@<host>:<port>/"
$ export MONGO_DB="<database_name>"
```

3. Continue the installation process: *Install the AEN server*.

## Migrate from local to remote MongoDB

To configure your remote database to work with an already installed AEN server:

1. Stop the server, gateway and compute nodes:

```
sudo service wakari-server stop
sudo service wakari-gateway stop
sudo service wakari-compute stop
```

2. Open the `/opt/wakari/wakari-server/etc/wakari/config.json` file and create the `MONGO_URL` key. For the value parameter, add the database information.

The final file should read:

```
{
  "MONGO_URL": "mongodb://MONGO-USER:MONGO-PASSWORD@MONGO-URL:MONGO-PORT",
  "MONGO_DB": "MONGO-DB-NAME",
  "WAKARI_SERVER": "http://YOUR-IP",
  "USE_SES": false,
  "CDN": "http://YOUR-IP/static/",
  "ANON_USER": "anonymous"
}
```

For more information about configuration keys, see *Using configuration files*.

3. Migrate the data from the former database into the new one. For more information, see the [MongoDB documentation website](#).
4. After migration, restart the nodes:

```
sudo service wakari-server start
sudo service wakari-gateway start
sudo service wakari-compute start
```

## Running SELinux in enforcing mode

To run SELinux in Enforcing mode, a few ports must be set up using the `semanage port` command.

The `semanage` command relies on `policycoreutils-python`. To install `policycoreutils-python`, if needed, run:

```
sudo yum -y install policycoreutils-python
```

Enable ports 9200 and 9300 for Elasticsearch:

```
sudo semanage port -a -t http_port_t -p tcp 9200
sudo semanage port -a -t http_port_t -p tcp 9300
```

## Changing server hostnames

It is possible to change the domain names (hostnames) of the various AEN nodes by updating the configuration files.

NOTE: After the configuration files are updated, the associated nodes need to be restarted.

To edit the information for all of the data centers that you are changing the base domain name for:

1. Go to the Site Admin section of the Admin Settings page.
2. In the Data Centers section, click the Edit button.
3. Make any necessary updates.

NOTE: This must include the service port if it is different from the default—80 for HTTP and 443 for HTTPS.

4. In the Enterprise Resources sub-section of the Providers section, edit each compute node that has a changed domain name.

NOTE: These URLs should include the protocol, hostname and port.

## Authenticating with LDAP

Anaconda Enterprise Notebooks performs local authentication against accounts in the AEN database by default.

To configure AEN to authenticate against accounts in an LDAP (Lightweight Directory Access Protocol) server, follow the instructions below.

## Installing OpenLDAP libraries

The system needs OpenLDAP libraries to be installed and accessible by AEN. AEN uses the OpenLDAP libraries to establish an LDAP connection to your LDAP servers.

To install OpenLDAP on CentOS or Redhat:

```
sudo yum install openldap
```

To install OpenLDAP on Ubuntu or Debian, follow the official [OpenLDAP installation instructions](#).

## Configuring OpenLDAP

1. Open the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file.
2. Add the following LDAP settings:

```
{
  "accounts": "wk_server.plugins.accounts.ldap2",
  "LDAP" : {
    "URI": "ldap://openldap.EXAMPLE.COM",
    "BIND_DN": "cn=Bob Jones,ou=Users,DC=EXAMPLE,DC=COM",
    "BIND_AUTH": "secretpass",
    "USER_SEARCH": {"base": "DC=EXAMPLE,DC=COM",
                    "filter": "(| (& (ou=Payroll)
                                   (uid=%(username)s))
                                   (& (ou=Facilities)
                                   (uid=%(username)s)))"
  }
}
```

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```

        },
        "KEY_MAP": {"email": "mail",
                    "name": "cn"}
    }
}

```

- **URI**—The IP address or hostname of your OpenLDAP server. For SSL/TLS, use the `ldaps://` prefix and specify a `TLS_CACERT` as described in the SSL/TLS configuration section below.
- **BIND\_DN**—The full directory path of the user you want AEN server to bind as.
- **BIND\_AUTH**—The password of the `BIND_DN` user.
- **USER\_SEARCH**:
  - **base**—The level at which you want to start the search.
  - **filter**—The default is to search for the `sAMAccountName` attribute, and use its value for the AEN server username field.
- **KEY\_MAP**—Maps user attributes in AEN server to LDAP user attributes.

EXAMPLE: The `mail` attribute in LDAP maps to the `email` attribute in AEN server.

3. Restart AEN server to load new settings.
4. Log in with the admin account. This creates the admin user in the local database.
5. As soon as LDAP is installed, LDAP authentication takes over, so you need to add your admin account again:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add "jsmith"
```

## Configuring Active Directory

Microsoft Active Directory is a server program that provides directory services and uses the open industry standard Lightweight Directory Access Protocol (LDAP).

To enable Active Directory support:

1. Open the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file.
2. Add the following LDAP settings:

```

{
    "accounts": "wk_server.plugins.accounts.ldap2",
    "LDAP" : {
        "URI": "ldap://<ad.EXAMPLE.COM>",
        "BIND_DN": "CN=Bind User,CN=Users,DC=EXAMPLE,DC=COM",
        "BIND_AUTH": "secretpass",
        "USER_SEARCH": {"base": "CN=Users,DC=EXAMPLE,DC=COM",
                        "filter": "sAMAccountName=%(username)s"}
    },
    "KEY_MAP": {"email": "mail",
                "name": "cn"}
}

```



- **URI**—The IP address or hostname of your Active Directory server. Replace `<ad.EXAMPLE.COM>` with the actual URI. For SSL/TLS, use the `ldaps://` prefix and specify a `TLS_CACERT` as described in the SSL/TLS configuration section below.
- **BIND\_DN**—The full directory path of the user you want AEN server to bind as.
- **BIND\_AUTH**—The password of the `BIND_DN` user.
- **USER\_SEARCH**:
  - **base**—the level at which you want to start the search.
  - **filter**—default is to search for the `sAMAccountName` attribute, and use its value for the AEN server username field.
- **KEY\_MAP**—Maps user attributes in AEN server to LDAP user attributes.

EXAMPLE: The `mail` attribute in LDAP maps to the `email` attribute in AEN server.

3. Restart AEN server to load new settings.

4. Log in with the admin account. This creates the admin user in the local database.

5. As soon as LDAP is installed, LDAP authentication takes over, so you need to add your admin account again:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add "jsmith"
```

## Configuring SSL/TLS

AEN uses system-wide LDAP settings, including SSL/TLS support.

- On Redhat/CentOS systems, these settings are located in the `/etc/openldap/ldap.conf` file.
- On Ubuntu/Debian systems, these settings are located in the `/etc/ldap/ldap.conf` file.

Typically, the only configuration necessary is updating the file to read:

```
TLS_CACERT /path/to/CA.cert
```

NOTE: `CA.cert` is the Certificate Authority used to sign the LDAP server's SSL certificate. In the case of a self-signed SSL certificate, this is the path to the SSL certificate itself.

## Testing LDAP configuration

Test your LDAP configuration using `flask-ldap-login-check`:

```
/opt/wakari/wakari-server/bin/flask-ldap-login-check \
wk_server.wsgi:app \
-u [username] \
-p [password]
```

NOTE: `username` is the username of a valid user and `password` is that user's `BIND_AUTH` password.

## Authenticating with PAM

To configure AEN to authenticate with PAM, you need to have LDAP in place and pre-populated with your users. With LDAP, pam does not require to read `/etc/shadow` and it can authenticate successfully without root privileges.

NOTE: PAM on the linux machine needs to be tied to LDAP (`pam_ldap`). You cannot use PAM with local unix accounts because `/etc/shadow` is only readable by the root user, but `pam_ldap` can authenticated against LDAP (non-root).

### Steps

1. Stop the wakari server:

```
sudo service wakari-server stop
```

1. update the configuration file `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` with the PAM authentication method. Change the entry for the line `"accounts"`: with:

```
"accounts": "wk_server.plugins.accounts.pam",
```

1. Restart the wakari server:

```
sudo service wakari-server start
```

1. In your browser navigate to Anaconda Enterprise Notebooks and attempt to login as a PAM-based user – create and start a project, then open a Jupyter Notebook.
2. Logout then login as an administrator and go to the *Admin* view. Attempt to list users.

### Testing

You can test PAM directly from the Python CLI

```
su - $AEN_USER/opt/wakari/wakari-server/bin/python
```

```
p = pam.pam()
p.authenticate("<username>", "<password>")
True
```

### Troubleshooting

If the server throws an `import` error for the `pam` module, please make sure that the `python-pam==1.8.2` module is installed. If the `.condarc` file includes the `wakari` channel then `python-pam==1.8.2` will be installed automatically.

## Configuring sudo customizations

If your organization's IT security policy does not allow root access or has restrictions on the use of sudo, after AEN installation, you may customize AEN to meet their requirements.

Your organization may choose to implement any or all of the following:

- *Remove root access* for AEN service account (Note: this restricts AEN from managing user accounts).
- *Configurable sudo command*.
- *Restrict sudo access to all processes*.

These customizations must be done in a terminal window after copying the files to the server node.

## Removing all root access from the service account

Because root access is required for useradd, the following process restricts AEN from managing user accounts.

1. Modify the `/etc/sudoers.d/wakari_sudo` file to read:

```
Defaults:wakari !requiretty, visiblepw
Runas_Alias    OP = ALL,!root
wakari ALL=(OP) NOPASSWD: ALL
```

NOTE: If you used a service account name other than wakari, enter that name instead of wakari.

2. Modify the `/opt/wakari/wakari-compute/etc/wakari/config.json` file to read:

```
"MANAGE_ACCOUNTS": false,
```

Using this option means that your IT department must create and manage all user accounts at the OS level.

After an OS-level account exists, you may create on the main AEN web page an AEN account using the same name. The password you choose is not linked in any way to the OS-level password for the account.

Alternatively, you can configure the system to *use LDAP for authenticating users*.

## Allowing public users to have access to your AEN projects

A public account is visible to anyone who can access the AEN server. The name of this account can be configured to any name you wish. For example, `public` or `anonymous`. To disable this feature use the special value `disabled`.

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, modify the `ANON_USER` line to read:

```
"ANON_USER": "public"
```

2. Restart AEN compute node:

```
sudo service wakari-compute restart
```

3. In the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file, modify the `ANON_USER` line to read:

```
"ANON_USER": "public"
```

4. Restart AEN server:

```
sudo service wakari-server restart
```

For more information about configuration keys, see *Using configuration files*.

## Using a sudo alternative

You can use a sudo alternative as long as it supports the same execution semantics as the original sudo. The alternative must be configured to give the service account permission to run commands on behalf of AEN users.

1. In your terminal window, open the `/opt/wakari/wakari-compute/etc/wakari/config.json` file.
2. Modify the `AEN_SUDO_CMD` line to read:

```
"AEN_SUDO_CMD": "/path/to/alternative/sudo",
```

NOTE: If the alternate sudo command is available on PATH, then the full path is not required.

## Restricting sudo access to a single gatekeeper

By default, sudoers is configured to allow AEN to run any command as a particular user which allows the platform to initiate processes as the logged-in end user. If more restrictive control is required, it should be implemented using a suitable sudoers policy. If that is not possible or practical, it is also possible to route all AEN ID-changing operations through a single gatekeeper.

This gatekeeper wraps the desired executable and provides an alternate way to log, monitor, or control which processes can be initiated by AEN on behalf of a user.

CAUTION: Gatekeeper is a special case configuration and should only be used if required.

To configure an AEN gatekeeper:

1. Modify the `/etc/sudoers.d/wakari_sudo` file to contain:

```
Defaults:wakari !requiretty, visiblepw
Runas_Alias    OP = ALL,!root
wakari ALL=(OP) NOPASSWD: /path/to/gatekeeper
```

2. In the `/opt/wakari/wakari-compute/etc/wakari/config.json` file, modify the `AEN_SUDO_SH` line to read:

```
"AEN_SUDO_SH": "/path/to/gatekeeper"
```

EXAMPLE: The gatekeeper can be as simple as a script with contents such as:

```
#!/bin/bash
first_cmd=$1
if [ 'bash' == $1 ]; then
    shift
    export HOME=~
    export SHELL=/bin/bash
    export PATH=$PATH:/opt/wakari/anaconda/bin
    bash "$@"
else
    exec $@
fi
```

## Configuring SSL

The server node uses NGINX to proxy all incoming http(s) requests to the server running on a local port, and uses NGINX for SSL termination. The default setup uses http—non-SSL—since cert files are required to configure SSL and each enterprise will have their own cert files.

The `www.enterprise.conf` file is the default `nginx.conf` file used for AEN. It is copied to the `/etc/nginx/conf.d` directory during server installation.

NOTE: This section describes setting up SSL after your gateway node has been installed and registered with the server node.

### Copying the required files

To configure SSL on AEN, you will need the following files:

- Server certificate and key
- Server CA bundle
- Gateway certificate and key
- Gateway CA bundle

Configure SSL on AEN:

1. Copy the Gateway certificate and key to `/opt/wakari/wakari-gateway/etc/` on the Gateway as `gateway.crt` and `gateway.key`.
2. Copy the Gateway CA bundle to `/opt/wakari/wakari-server/etc/` on the Server.
3. Copy the Server certificate and key to `/etc/nginx` on the Server as `server.crt` and `server.key`.
4. Copy the Server CA bundle to `/opt/wakari/wakari-gateway/etc/` on the Gateway.

If you have a certificate that was signed by a private root CA and/or an intermediate authority:

- The Gateway CA bundle must contain the full chain: root CA, any intermediate authority and the certificate.

```
cat gateway.crt intermediate.crt root.crt >> gateway-crt-int-root.crt
```

- The Server CA bundle must be separated into individual files for the root CA, any intermediate and the certificate.

### Configuring SSL on the server node

The `www.enterprise.https.conf` is an NGINX configuration file for SSL. It is set up to use the `server.crt` and `server.key` cert files.

CAUTION: You must change these values to point to the signed cert files for your domain.

NOTE: Self-signed certs or those signed by a private root CA require additional configuration.

Perform the following steps as root:

1. Stop NGINX:

```
service nginx stop
```

2. Move the `/etc/nginx/conf.d/www.enterprise.conf` file to a backup directory.

- Copy the `/opt/wakari/wakari-server/etc/nginx/conf.d/www.enterprise.https.conf` file to `/etc/nginx/conf.d`.

NOTE: `/etc/nginx/conf.d` may have `www.enterprise.conf` or `www.enterprise.https.conf` but it may not have both.

- Edit the `/etc/nginx/conf.d/www.enterprise.https.conf` file and change the `server.crt` and `server.key` values to the names of the real cert and key files if they are different.
- Restart NGINX by running:

```
service nginx start
```

- Update the WAKARI\_SERVER and CDN settings to use https instead of http in the following configuration files:

```
/opt/wakari/wakari-server/etc/wakari/config.json
/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
/opt/wakari/wakari-compute/etc/wakari/config.json
```

- Copy the gateway certificate, `gateway.crt` to `/opt/wakari/wakari-server/etc/`.
- In an editor, open `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` and add:

```
"verify_gateway_certificate": "/opt/wakari/wakari-server/etc/gateway.crt"
```

- Restart AEN services on the server by running:

```
service wakari-server restart
```

NOTE: This step may return an error since the gateway has not yet been configured for SSL.

- In AEN, verify that the browser uses https. On the Admin Settings page, under Data Centers, click Gateway, then select https:

## Admin Settings

Anaconda Enterprise Notebooks settings accessible only by th

Staff	Data Centers / Register a datacenter
<a href="#">Daily Report</a> <a href="#">Password Reset</a> <a href="#">Notification</a>	<p>Name</p> <p>Gateway 1</p> <p><input type="checkbox"/> Subdomain Routing</p> <p><input checked="" type="checkbox"/> Https</p>

## Configuring SSL on the gateway

1. For all types of SSL certificates, in `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt"
  }
}
```

2. For a server certificate signed by a private root CA or signed by an intermediate authority, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "ca": ["/opt/wakari/wakari-gateway/etc/server.crt"]
  }
}
```

NOTE: When the certificate chain has more than one intermediate cert signed by a higher root CA authority, you must manually break up the certs in the chain into individual files, and enumerate them in the `ca` key:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "ca": ["/opt/wakari/wakari-gateway/etc/server1.crt",
          "/opt/wakari/wakari-gateway/etc/server2.crt",
          "/opt/wakari/wakari-gateway/etc/server3.crt"]
  }
}
```

3. For a gateway certificate that is encrypted using a passphrase, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "passphrase": "mysecretpassphrase"
  }
}
```

NOTE: Alternatively, the passphrase can be passed using an environment variable or entered when the wakari-gateway service is manually started.

EXAMPLES:

```
# using an environment variable
AEN_GATEWAY_SSL_PASSPHRASE='mysecretpassphrase' wk-gateway
```

```
# starting wakari-gateway manually
sudo service wakari-gateway start --ask-for-passphrase
Passphrase?
```

4. Restart the gateway:

```
sudo service wakari-gateway restart
```

## Configuring SSL on compute nodes

Anaconda Enterprise does not support direct SSL on Compute Nodes. If you need SSL on Compute Nodes, you must install each Compute Node on the same server as a Gateway using `http://localhost:5002` for the URL value while adding it as a resource, and you must use a Gateway for each and every Compute Node.

## Security reminder

The permissions on the cert files must be set correctly to prevent them from being read by others. Since NGINX is run by the root user, only the root user needs read access to the cert files.

EXAMPLE: If the cert files are called `server.crt` and `server.key`, then use the root account to set permissions:

```
chmod 600 server.key
chmod 600 server.crt
```

## Enabling or disabling the Strict-Transport-Security header

By default, Strict-Transport-Security (STS) is enabled in the `www.enterprise.https.conf` file:

```
add_header Strict-Transport-Security max-age=31536000;
```

It can remain enabled if either of the following is true:

- The gateway is running on a different host than the server.
- or
- SSL has been enabled for the gateway.

You must comment out this line if both of the following are true:

- The gateway is running on the same host as the server.
- and
- SSL has not been enabled for the gateway.

Leaving STS enabled when these conditions are true will cause a mismatch in protocols between the server and gateway, causing your apps to fail to launch correctly.



## Configuring single sign-on

AEN's single sign-on (SSO) capability creates a new authentication provider that defers to your Anaconda Repository for login and authentication cookies.

To enable SSO:

1. Deploy AEN and Repository on the same machine.
2. In the `/opt/wakari/wakari-server/etc/wakari/config.json` file, add:

```
{
  EXISTING_CONFIGURATION,
  "SECRET_KEY": "<repo signing secret>",
  "REPO_LOGIN_URL":
    "http://example_repo.com:8080/account/login?next=http://example_repo.com/"
}
```

3. Copy the `SECRET_KEY` from the Repository configuration file.
4. In the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file, modify:

```
{
  EXISTING_CONFIGURATION,
  "accounts": "wk_server.plugins.accounts.repo",
}
```

5. If you are using Repository version 2.33.3 through 2.33.10, set `USE_SERVER_BASED_SESSIONS: false` in the Repository configuration.

This setting affects the network security properties of AEN and Repository. Specifically, if `USE_SERVER_BASED_SESSIONS` is set to `false`, and if a new cross-site scripting (XSS) vulnerability is discovered, it could expose an additional server fixation vulnerability. Please discuss this with your Anaconda representative and be sure the feature is compatible with your network requirements before setting `USE_SERVER_BASED_SESSIONS: false`.

6. To activate the changes restart `wakari-server`:

```
sudo service wakari-server restart
```

SSO is enabled.

## Adding a third-party extension

Anaconda officially supports and tests functionality of the default environment(s) only for those extensions that ship with AEN.

It is possible to add third-party and custom extensions from `conda-forge` or `pip`, but doing so may cause instability in your default project environments or kernels.

**CAUTION:** Anaconda does not officially support third-party extensions. This section is informational only.

## Installing unofficial Jupyter Notebook extensions for AEN

TIP: Always back up and verify your complete system before installing extensions.

The jupyter-contrib-nbextensions extensions are installed on a compute node.

The default conda executable directory for AEN is `/opt/wakari/anaconda/bin/conda`. If you are installing a Jupyter extension, it must be installed in the `wakari-compute` directory.

EXAMPLE: Run:

```
/opt/wakari/anaconda/bin/conda install -p /opt/wakari/wakari-compute/ -c conda-forge ↵  
↵ jupyter_contrib_nbextension
```

For more information, see [Unofficial Jupyter Notebook Extensions](#).

## Configure search indexing

For search indexing to work correctly, verify that the AEN Compute node can communicate with the AEN Server.

```
curl -m 5 $AEN_SERVER > /dev/null
```

There must be at least one `inotify` watch available for the number of subdirectories within the project root filesystem. Some Linux distributions default to a low number of watches, which can prevent the search indexer from monitoring project directories for changes.

```
cat /proc/sys/fs/inotify/max_user_watches
```

If necessary, increase the number of max user watches with the following command:

```
echo fs.inotify.max_user_watches=1000000 | sudo tee -a /etc/sysctl.conf && sudo sysctl -p
```

There must be at least one `inotify` user instance available per project.

```
cat /proc/sys/fs/inotify/max_user_instances
```

If necessary, this can be increased with the following command:

```
echo fs.inotify.max_user_instances=1000 | sudo tee -a /etc/sysctl.conf && sudo sysctl -p
```

## Create custom Jupyter kernel for Pyspark

These instructions add a custom Jupyter Notebook option to allow users to select PySpark as the kernel.

## Install Spark

The easiest way to install Spark is with [Cloudera CDH](#).

You will use YARN as a resource manager. After installing Cloudera CDH, [install Spark](#). Spark comes with a PySpark shell.

## Create a notebook kernel for PySpark

You may create the kernel as an administrator or as a regular user. Read the instructions below to help you choose which method to use.

### 1. As an administrator

Create a new kernel and point it to the root env in each project. To do so create a directory ‘pyspark’ in `/opt/wakari/wakari-compute/share/jupyter/kernels/`.

Create the following kernel.json file:

```
{
  "argv": ["/opt/wakari/anaconda/bin/python",
    "-m", "ipykernel", "-f", "connection_file", "--profile", "pyspark"],
  "display_name": "PySpark",
  "language": "python"
}
```

You may choose any name for the ‘display\_name’.

This configuration is pointing to the python executable in the root environment. Since that environment is under admin control, users cannot add new packages to the environment. They will need an admin to help update the environment.

### 2. As an administrator without IPython profile

To have an admin level PySpark kernel without the user .ipython space:

```
{
  "argv": [
    "/opt/wakari/wakari-compute/etc/ipython/pyspark.sh", "-f", "{connection_file}"
  ],
  "display_name": "PySpark",
  "language": "python"
}
```

NOTE: The pyspark.sh script is defined in *Without IPython profile* section below.

### 3. As a regular user

Create a new directory in the user’s home directory: `.local/share/jupyter/kernels/pyspark/`. This way the user will be using the default environment and able to upgrade or install new packages.

Create the following kernel.json file:

```
{
  "argv": ["/projects/<username>/<project_name>/envs/default/bin/python",
    "-m", "ipykernel", "-f", "connection_file", "--profile", "pyspark"],
  "display_name": "PySpark",
  "language": "python"
}
```

NOTE: Replace “<username>” with the correct user name and “<project\_name>” with the correct project name.

You may choose any name for the ‘display\_name’.

## Create an IPython profile

The above profile call from the kernel requires that we define a particular PySpark profile. This profile should be created for each user that logs in to AEN to use the PySpark kernel.

In the user's home, create the directory and file `~/ipython/profile_pyspark/startup/00-pyspark-setup.py` with the file contents:

```
import os
import sys

# The place where CDH installed spark, if the user installed Spark locally it can be
↪ changed here.
# Optionally we can check if the variable can be retrieved from environment.

os.environ["SPARK_HOME"] = "/usr/lib/spark"

os.environ["PYSPARK_PYTHON"] = "/opt/wakari/anaconda/bin/python"

# And Python path
os.environ["PYLIB"] = os.environ["SPARK_HOME"] + "/python/lib"
sys.path.insert(0, os.environ["PYLIB"] + "/py4j-0.9-src.zip") #10.4-src.zip")
sys.path.insert(0, os.environ["PYLIB"] + "/pyspark.zip")

os.environ["PYSPARK_SUBMIT_ARGS"] = "--name yarn pyspark-shell"
```

Now log in using the user account that has the PySpark profile.

## Without IPython profile

If it is necessary to avoid creating a local profile for the users, a script can be made to be called from the kernel. Create a bash script that will load the environment variables:

```
sudo -u $AEN_SRVC_ACCT mkdir /opt/wakari/wakari-compute/etc/ipython
sudo -u $AEN_SRVC_ACCT touch /opt/wakari/wakari-compute/etc/ipython/pyspark.sh
sudo -u $AEN_SRVC_ACCT chmod a+x /opt/wakari/wakari-compute/etc/ipython/pyspark.sh
```

The contents of the file should look like:

```
#!/usr/bin/env bash
# setup environment variable, etc.

export PYSPARK_PYTHON="/opt/wakari/anaconda/bin/python"
export SPARK_HOME="/usr/lib/spark"

# And Python path
export PYLIB=$SPARK_HOME:/python/lib
export PYTHONPATH=$PYTHONPATH:$PYLIB:/py4j-0.9-src.zip
export PYTHONPATH=$PYTHONPATH:$PYLIB:/pyspark.zip

export PYSPARK_SUBMIT_ARGS="--name yarn pyspark-shell"
```

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```
# run the ipykernel
exec /opt/wakari/anaconda/bin/python -m ipykernel $@
```

## Using PySpark

When creating a new notebook in a project, now there will be the option to select PySpark as the kernel. When creating such a notebook you'll be able to import pyspark and start using it:

```
from pyspark import SparkConf
from pyspark import SparkContext
```

NOTE: You can always add those lines and any other command you may use frequently in the PySpark setup file `00-pyspark-setup.py` as shown above.

## Enabling server-side session management

By default, AEN uses client-side session management which is vulnerable to session replay attacks if an attacker manages to steal a valid session ID of a user.

To enable server-side session management:

1. Modify the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file:

```
"USE_SERVER_BASED_SESSIONS": true,
```

2. Restart the AEN server service:

```
sudo service wakari-server restart
```

## Terminate terminal sessions on logout

By default, when a user logs out, their open terminal sessions will remain active.

To disable this behavior:

1. Modify the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file:

```
"TERMINATE_TERMINALS_ON_LOGOUT": true,
```

2. Modify the `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json` file:

```
"TERMINATE_TERMINALS_ON_LOGOUT": true,
```

3. Restart the AEN server service:

```
sudo service wakari-server restart
```

4. Restart the AEN gateway service:

```
sudo service wakari-gateway restart
```

### Upgrading AEN

**CAUTION:** These instructions are for upgrading AEN to the current version 4.3.3 from 4.3.2 ONLY. Each version must be upgraded iteratively from the previous version. Do not skip versions.

Upgrade instructions for previous versions:

- [AEN 4.3.2 upgrade instructions](#)
- [AEN 4.3.1 upgrade instructions](#)
- [AEN 4.3.0 upgrade instructions](#)
- [AEN 4.2.2 upgrade instructions](#)
- [AEN 4.2.1 upgrade instructions](#)
- [AEN 4.2.0 upgrade instructions](#)
- [AEN 4.1.3 upgrade instructions](#)
- [AEN 4.1.2 upgrade instructions](#)

For upgrades from versions before those listed above, please contact your enterprise support representative.

**NOTE:** Named Service Account functionality is available with AEN 4.0.0+ for new installations only. It is not available for upgraded installations. Contact your enterprise support representative for more information.

An AEN platform update requires that each instance of the 3 node types be upgraded individually:

- AEN Server
- AEN Gateway
- AEN Compute

The upgrade process requires that all AEN service instances be stopped, upgraded, and then restarted.

**NOTE:** Any commands that call for the root user can also be done using `sudo`.

If you encounter any difficulty during the upgrade process, see [Troubleshooting](#) which provides guidance on:

- processes
- configuration files
- log files
- ports

If you are unable to resolve an installation or upgrade problem, please contact your enterprise support representative.

### Before you upgrade

**CAUTION:** Make a tested backup of your installation before starting the upgrade. Upgrading to a higher version of AEN is not reversible. Any errors during the upgrade procedure may result in partial or complete data loss and require restoring data from backups.

**CAUTION:** Terminate all AEN applications and stop all projects before starting the upgrade process.

Before upgrading each service on each host:

1. Suspend the services on each of the nodes:

```
sudo service wakari-server stop
sudo service wakari-gateway stop
sudo service wakari-compute stop
```

2. Set the AEN Functional ID (“NFI”) and AEN Functional Group (“NFG”) to the NFI and NFG of the current installation:

```
export AEN_SRVC_ACCT="wakari"
export AEN_SRVC_GRP="wakari"
```

NOTE: The default NFI is wakari, but aen\_admin or any other name may be used instead.

For more information on NFI and NFG, see the *installation instructions*.

3. Install wget:

```
yum install wget
```

4. Update .condarc files:

/opt/wakari/miniconda/.condarc should be updated with the following content:

```
channels:
- r
- https://conda.anaconda.org/wakari
- http://repo.continuum.io/pkgs/main/
- defaults

create_default_packages:
- anaconda-client
- ipykernel=4.10.0
```

and /opt/wakari/anaconda/.condarc should be updated with the following content:

```
channels:
- r
- https://conda.anaconda.org/wakari
- http://repo.continuum.io/pkgs/main/
- defaults
create_default_packages:
- anaconda-client
- ipykernel=4.10.0
auto_update_conda: false
```

NOTE: Both contents are similar but different ones, be sure to update them as indicated.

## Upgrading the AEN server node

NOTE: If you are using LDAP-based authentication, back up the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` configuration file. After the server has been upgraded, copy that file back into the same location as before the upgrade.

Complete the following steps on the server host:

1. Stop the Elasticsearch service:

```
sudo service elasticsearch stop
```

2. Remove any previous index:

```
sudo rm -rf /var/lib/elasticsearch/*
```

NOTE: You can choose to keep the old index, but if you detect any issues with the search capabilities after the upgrade, you will need to run the following to start with a clean index:

```
sudo service wakari-server stop
sudo service elasticsearch stop
sudo rm -rf /var/lib/elasticsearch/*
sudo service elasticsearch start
sudo service wakari-server start
```

3. Upgrade the server:

```
pushd /tmp
wget http://j.mp/aen-server-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-server \
    --file aen-server-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-server \
    --no-deps \
    wakari-enterprise-server-conf-update=2.0.13

popd
```

4. Start Elasticsearch:

```
sudo service elasticsearch start
```

Or, if you do not want to use the search features, edit your server's `/opt/wakari/wakari-server/etc/wakari/config.json` file by adding the line `"SEARCH_ENABLED": false`.

5. Restart the `NGINX` server:

AEN server version `>= 4.1.3` uses Unix sockets for communication with `NGINX`. Restart `NGINX` to load this new configuration:

```
sudo service nginx restart
```

Alternatively, you can restart `NGINX` with:



```
sudo nginx -s stop
sudo nginx
```

6. Start the server:

```
sudo service wakari-server start
```

7. Check that the server is running properly:

```
sudo service wakari-server status
```

8. If you see NGINX errors, please check the configuration at `/opt/wakari/wakari-server/etc/nginx/conf.d/www.enterprise.conf:18`.
9. Connect to AEN server using your web browser with the correct protocol (http or https), hostname and port number.

## Upgrading the AEN gateway node

Complete the following steps on each gateway host:

1. Upgrade the gateway:

```
pushd /tmp
wget http://j.mp/aen-gateway-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-gateway \
    --file aen-gateway-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-gateway \
    --no-deps \
    wakari-enterprise-gateway-conf-update=2.0.13

popd
```

2. Start the gateway:

```
sudo service wakari-gateway start
```

3. Check that the gateway is running properly:

```
sudo service wakari-gateway status
```

4. Connect to the gateway using your web browser with the correct http/https, hostname and port number.

## Upgrading AEN compute nodes

Complete the following steps on each host where an AEN compute service is running:

1. Check for any `wakari-indexer` processes running:

```
ps aux | grep wakari-indexer
```

NOTE: If you stopped all the projects, you will not see any `wakari-indexer` processes running.

Terminate any remaining `wakari-indexer` processes:

```
sudo killall wakari-indexer
```

NOTE: The processes killed with `killall` are run by the `$AEN_SRVC_ACCT` user, so they can be killed as root with `sudo killall` or killed as the `$AEN_SRVC_ACCT` user with `sudo -u $AEN_SRVC_ACCT killall`. Example commands show the `sudo killall` option.

2. Check for any AEN applications processes running—Workbench, Viewer, Terminal or Notebook:

```
ps aux | grep wk-app-gateone
ps aux | grep wk-app-workbench
ps aux | grep wk-app-viewer
ps aux | grep wk-app-terminal
ps aux | grep jupyter-notebook
```

NOTE: If you stopped all the projects, you will not see any AEN app processes running.

Terminate any remaining AEN application processes by running one or more of the following:

```
sudo killall wk-app-gateone
sudo killall wk-app-workbench
sudo killall wk-app-viewer
sudo killall wk-app-terminal
sudo killall jupyter-notebook
```

3. Verify the contents of `/opt/wakari/anaconda/.condarc`. Modify it to contain the following entries, and possibly others if you customized the `.condarc` file.

NOTE: Modify the file as the `AEN_SRVC_ACCT` user (or be sure to keep the same ownership).

```
channels:
- https://conda.anaconda.org/t/<TOKEN>/anaconda-nb-extensions
- r
- https://conda.anaconda.org/wakari
- http://repo.continuum.io/pkgs/main/
- defaults
create_default_packages:
- anaconda-client
- ipykernel=4.10.0
auto_update_conda: false
```

NOTE: Contact your enterprise support representative to get your token for the Anaconda channel referenced above. Replace `<TOKEN>` with the actual token from your enterprise support representative.

4. Upgrade *Anaconda* in the root environment:

```

pushd /tmp
wget http://j.mp/aen-anaconda-update-4_3_3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda remove -p /opt/wakari/
↳ anaconda geotiff --yes

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda remove -p /opt/wakari/
↳ anaconda iopro --yes

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda remove -p /opt/wakari/
↳ anaconda libthrift --yes

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda remove -p /opt/wakari/
↳ anaconda basemap --yes

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/anaconda \
    --file aen-anaconda-update-4_3_3

popd

```

5. Upgrade each compute service:

```

pushd /tmp
wget http://j.mp/aen-compute-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/wakari-compute \
    --file aen-compute-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    --no-deps \
    -p /opt/wakari/wakari-compute \
    wakari-enterprise-compute-conf-update=2.0.17

popd

```

NOTE: When upgrading the wakari-compute environment, you may see *ImportError* warnings with some nbextensions. As long as the Validating message is OK, the ImportError warnings are harmless—a consequence of the post-link presence on those packages.

6. Initialize the root environment to prime the package cache:

```

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenv \
    --clone root

```

7. Test the offline cloning step:

```

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenvoffline \
    --clone root --offline

```

8. Remove the test environments:

```
sudo rm -rf /opt/wakari/testenv
sudo rm -rf /opt/wakari/testenvoffline
```

9. Install necessary dependencies:

NOTE: Skip this step if you already have these dependencies installed from previous installations.

```
sudo yum groupinstall "X Window System" -y
sudo yum install git -y
```

NOTE: If you don't want to install the whole X Window System, you must install the following packages to have R plotting support:

```
sudo yum install -y libXrender libXext libXdmp libSM libICE libXt \
dejavu-sans-fonts dejavu-serif-fonts dejavu-fonts-common \
fontpackages-filesystem
```

10. Start the compute service:

```
sudo service wakari-compute start
```

11. Verify the compute service is running properly:

```
sudo service wakari-compute status
```

12. Restart the AEN Server with:

```
sudo service wakari-server restart
```

13. Repeat this upgrade procedure for all compute nodes in your Data Center.

### After upgrading

1. Restart the projects and start using AEN applications.
2. If you have a *customized default environment*, you may choose to upgrade it depending on the needs of your users.

Upgrade the customized default environment at `/opt/wakari/anaconda/envs/default` with the `$AEN_SRVC_ACCT` user:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4.3.3

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/anaconda/envs/default \
    --file aen-anaconda-update-4.3.3
popd
```

To upgrade the customized default environments for every user and every project at `/projects/<USER>/<PROJECT>/envs/default`, run these commands for **every** user as that user:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4.3.3
```

(continues on next page)

(continued from previous page)

```
sudo -E -u <USER> /opt/wakari/anaconda/bin/conda install \  
-p /projects/<USER>/<PROJECT>/envs/default \  
--file aen-anaconda-update-4.3.3  
popd
```

NOTE: Replace <USER> with the user's name. Replace <PROJECT> with the project name.

NOTE: Upgrading the default environment at /opt/wakari/anaconda/envs/default does NOT automatically upgrade the default environment in the users pre-existing projects. For pre-existing projects, the upgrade, if requested, should be done on a per-user basis.

NOTE: These commands update packages listed in aen-anaconda-update-4.3.3 and do not update any other package.

3. If you did not stop all your projects before upgrading, then the first time you start an application you will see an error page requesting that you restart the application.
4. Restart the application to complete the upgrade.
5. If you still see old applications or icons after restart, reload the page to reset the browser cache.

## Uninstalling AEN

Each AEN node must be uninstalled separately.

Begin by setting the AEN Functional ID (NFI). The NFI is the username of the AEN Service Account which is used to run all AEN services and is also the username of the AEN Admin account. The NFI may be any name. The default NFI is `wakari`. The NFI is also often set to `aen_admin`. The NFI (and AEN Functional Group or NFG) are described in *the installation instructions*.

Set the NFI with this command:

```
export AEN_SRVC_ACCT="aen_admin"
```

Replace the name `aen_admin` with the NFI that was set in your installation of Anaconda Enterprise Notebooks.

## Uninstalling a server node

To remove a server node, run the following commands as root or sudo on the server node's host system:

1. Stop the server processes:

```
service wakari-server stop
```

2. Stop MongoDB:

```
service mongod stop
```

3. Remove AEN server software, AEN database files and NGINX configuration:

```
rm -Rf /opt/wakari/wakari-server  
rm -Rf /opt/wakari/miniconda  
rm -Rf /var/lib/mongo/wakari*  
rm -Rf /etc/nginx/conf.d/www.enterprise.conf
```

NOTE: Remove `/etc/nginx/conf.d/www.enterprise.https.conf` if SSL is enabled on the Server node.

- Restart MongoDB and NGINX:

```
service mongod restart
service nginx restart
```

- Check for any outstanding server processes and stop them:

```
ps -ef | grep -e wakari-server -e wk-server
```

- Remove the AEN Service Account:

```
userdel $AEN_SRVC_ACCT
```

- Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc
grep -i wakari ~/.condarc
```

## Uninstalling a gateway node

To uninstall a gateway node, run the following commands as root or sudo on the gateway host system:

- Stop the gateway processes:

```
service wakari-gateway stop
```

- Remove gateway software:

```
rm -Rf /opt/wakari/wakari-gateway
```

- Check for any outstanding gateway processes and stop them:

```
ps -ef | grep -e wakari-gateway -e wk-gateway
```

- Remove the AEN Service Account:

```
userdel $AEN_SRVC_ACCT
```

- Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc
grep -i wakari ~/.condarc
```

## Uninstalling a compute node

To remove a compute node, run the following commands as root or sudo on each compute node host system:

1. Stop the compute processes:

```
service wakari-compute stop
```

2. Remove the compute software:

```
rm -Rf /opt/wakari/wakari-compute
rm -Rf /opt/wakari/miniconda
rm -Rf /opt/wakari/anaconda
```

3. Check for any outstanding compute processes and stop them:

```
ps -ef | grep -e wakari-compute -e wk-compute
```

4. Remove the AEN Service Account:

```
userdel $AEN_SRV_ACCT
```

5. Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc
grep -i wakari ~/.condarc
```

## OPTIONAL: Removing projects from compute nodes

**CAUTION:** This is an extreme measure and is not necessary in most instances. We recommend you create and verify a backup before doing this or any other file removal.

To remove all AEN projects from all of your compute nodes:

```
rm -Rf /projects
```

This is a step-by-step guide to installing an Anaconda Enterprise Notebooks system comprised of a front-end server, a gateway and compute machines.

If you have any questions about these instructions or you encounter any issues while installing AEN, please contact your sales representative or Priority Support team.

When you have completed the installation process, review the [optional configuration tasks](#) to see if any are appropriate for your system.

## Distributed install

In a distributed install the server and gateway run on separate hosts.

### Single-box install

In a single-box install, both the server and the gateway need separate external ports since they are independent services that are running on the same host in the single-box installation.

Both port 80 and port 8089 must be open on the firewall for a single-box install.

The compute node only receives connections from the gateway and server nodes and typically runs on port 80 or port 443.

### User management

#### Adding or removing an administrative user

An administrator can make any other user an administrator—or remove their administrator permissions—by using administrator commands in the Terminal application.

A user can also be designated as a superuser or as staff, giving them greater administrative privileges within the system.

#### Designating a user as an administrator/superuser

To designate a user as an administrator and superuser:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add <username>
```

NOTE: Replace <username> with the actual username.

EXAMPLE: To give administrative privileges to the user named “jsmith” and set them as a superuser, run:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add jsmith
```

#### Removing an administrator/superuser

To remove a user’s administrative privileges:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --remove <username>
```

NOTE: Replace <username> with the actual username.

#### Allowing and restricting new user registration

When Open Registration is enabled, anyone who has access to the URL of your AEN server can create their own account.

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Accounts.



The screenshot shows the Admin Settings page with a left sidebar and a main content area. The sidebar has two sections: 'Staff' with links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'; and 'Site Admin' with links for 'General' and 'Accounts'. The main content area is titled 'Cloud Registration' and contains a checkbox labeled 'Open Registration' with the text 'Allow new user signups' below it. A green 'Update' button is at the bottom of the section.

3. To open user registration, select the Open Registration checkbox. To close registration, clear the checkbox.
4. Click the Update button.

## Resetting a user password

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Password Reset:

Anaconda Enterprise Notebooks settings accessible only by the system administrator.

The screenshot shows the Admin Settings page with the 'Staff' menu selected. The 'Password Reset' option is highlighted in the sidebar. The main content area is titled 'Password Reset' and contains a text input field with the value 'guest'. Below the input field is a button labeled 'Generate URL'.

3. Enter the username of the user whose password needs to be reset.
4. Click the Generate URL button.

A password reset link is generated that you can email to the user.

Alternatively you may use the command line interface:

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin reset-password -u SOME_USER -p SOME_
↵PASSWORD
```

NOTE: Replace SOME\_USER with the username and SOME\_PASSWORD with the password.

3. Log in to AEN as the user.

### Managing permissions

This page explains the admin commands used to manage user permissions.

#### Checking file ownership

To verify that all files in the `/opt/wakari/anaconda` directory are owned by the `wakari` user or group:

```
root@server # find /opt/wakari/anaconda \! -user wakari -print
root@server # find /opt/wakari/anaconda \! -group wakari -print
```

#### Fixing file ownership settings

To fix the ownership settings of any files that are listed in the output:

```
chown -R wakari:wakari /opt/wakari/anaconda
```

#### Setting a file owner and permissions

To set a file owner and set its permissions:

```
chown wakari:wakari /opt/wakari/wakari-server/bin/wk-*
chmod 700 /opt/wakari/wakari-server/bin/wk-*
```

#### Verifying that POSIX ACLs are enabled

The `acl` option must be enabled on the file system that contains the project root directory.

NOTE: By default, the project root directory is `/projects`.

To determine the project root directory where a custom `projectRoot` is configured:

```
root@compute # grep projectRoot /opt/wakari/wakari-compute/etc/wakari/config.json
```

The mount options or default options listed by `tune2fs` should indicate that the `acl` option is enabled.

EXAMPLE:

```
root@compute # fs=`df /projects | tail -1 | cut -d " " -f 1`
root@compute # mount | grep $fs
/dev/vda on / type ext4 (rw)
root@compute # tune2fs -l $fs | grep options
Default mount options:    user_xattr acl
```

## Viewing a list of users

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Users:

Staff

Daily Report

Password Reset

Notification

Exceptions

Site Admin

General

Accounts

Users

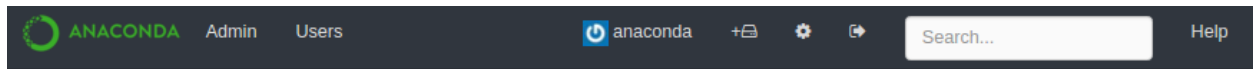
Users

Username	Projects	Last Seen
<a href="#">aen_admin</a>	6	Sep 25, 2017 10:05:58 CDT

The Users section lists the all users who are signed up, the number of projects they have created and the last time they logged on to AEN.

## Viewing a list of currently active users

In the AEN navigation bar, click Users.



# Users

List of currently active users in the system.

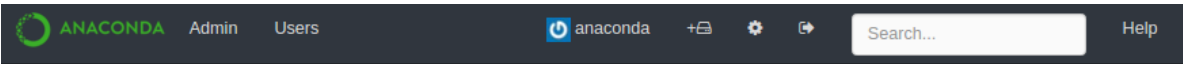
 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

Click a username to open the user's profile page.

## Viewing a user profile

A user's profile page includes a summary of the projects created by that user and a list of projects on which the user is a team member.

1. In the AEN navigation bar, click Users to see a list of users who are currently logged into the system.
2. On the Users page, click the username of the user whose profile page you want to view.



# Users

List of currently active users in the system.

 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

## Sending a system message

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Notification:

**Staff**

- Daily Report
- Password Reset
- Notification
- Exceptions

**Site Admin**

- General
- Accounts
- Users
- Security Log
- Data Centers
- Task Queue
- License

**Providers**

- Enterprise Resources

**Notification Settings**

☒ **Off**  
No email notification will be sent

☐ **SES - Amazon Simple Email Service**  
This requires a .boto file in the wakari home dir

☐ **SMTP Email Server**

**SMTP Settings**

SMTP Hostname

SMTP Username (optional)

SMTP Password (optional)

SMTP From Address (optional)

Update

The Notification Settings section allows you to create a system message that can be relayed to users.

By default, notifications are off.

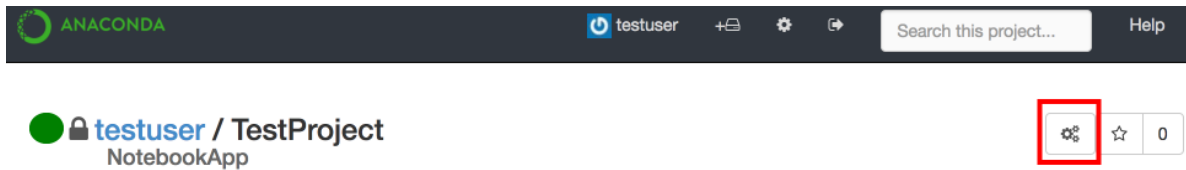
- To turn on email notifications, select the radio button for the type of email service to use:
  - SES to use Amazon Simple Email Service (SES).
  - SMTP Email Server.
- If you select SMTP Email Server, complete the SMTP Settings.

NOTE: If you get an error message after changing the SMTP settings, you may need to restart the server.

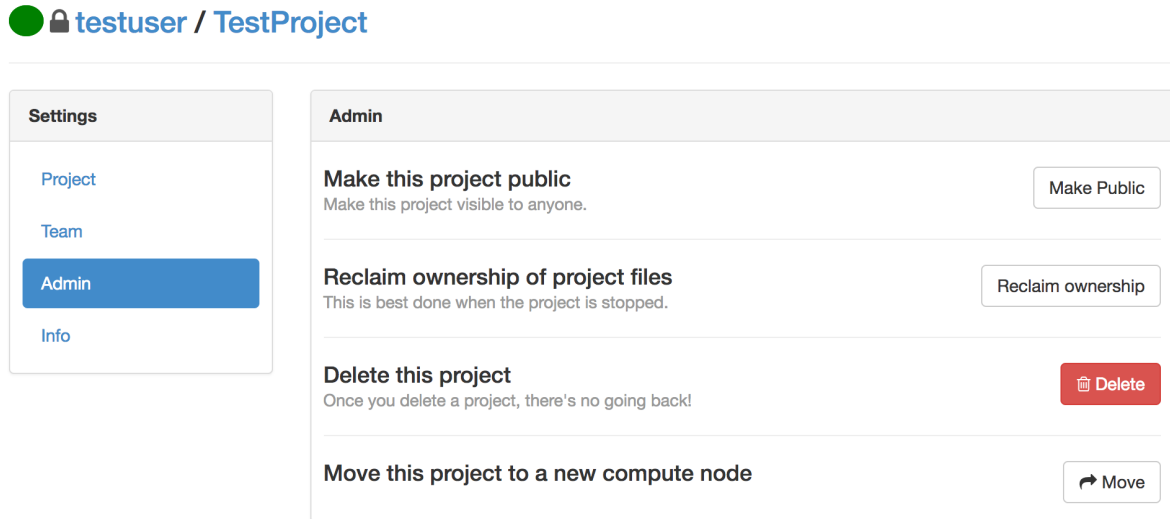
## Moving a project to another compute node

If you have multiple compute nodes available and want to move a project from one to another, the project must exist on both nodes.

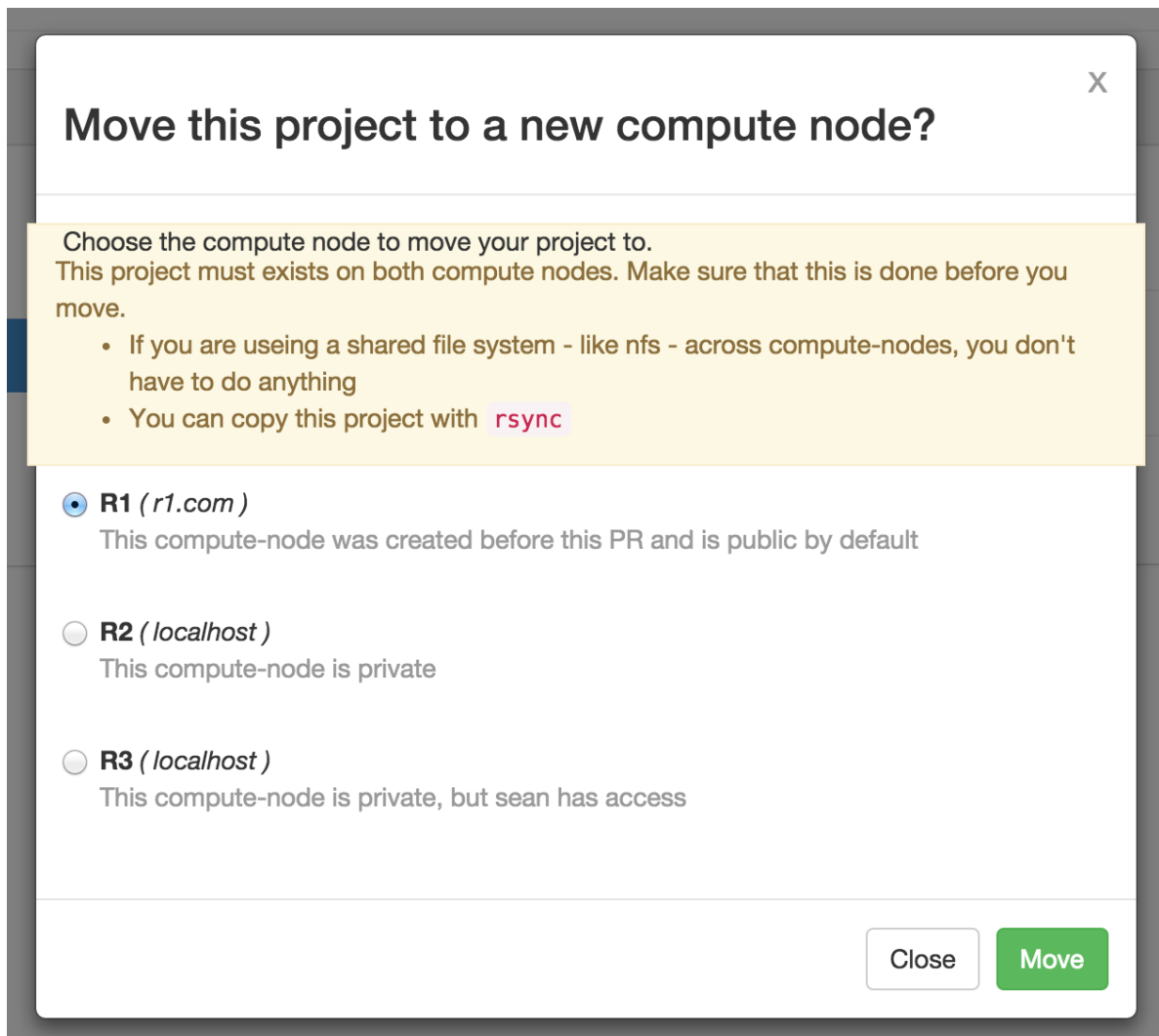
- Verify that the project has been created on both compute nodes. You can use `rsync` for this job unless you have a shared file system like `nfs`.
- On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



4. Click the Move button.
5. In the move dialog box, click to choose the compute node destination, and click the Move button.



### Deleting a user

To remove a user from the AEN database:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-user <username>
```

NOTE: Replace <username> with the actual username.

NOTE: Changing the owner of a project requires that both the previous owner and the new owner are still AEN users. Before deleting a user, *change the owner* of that user's projects.



## Deleting a project

To remove a project from the AEN database:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-project <username> <projectname>
```

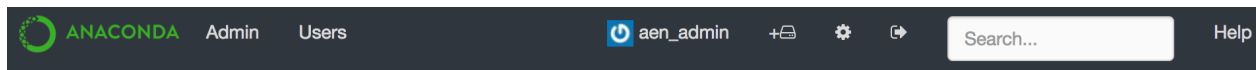
NOTE: Replace <username> with the actual username and <projectname> with the actual project name you are removing.

## System management

### Opening the Admin dashboard

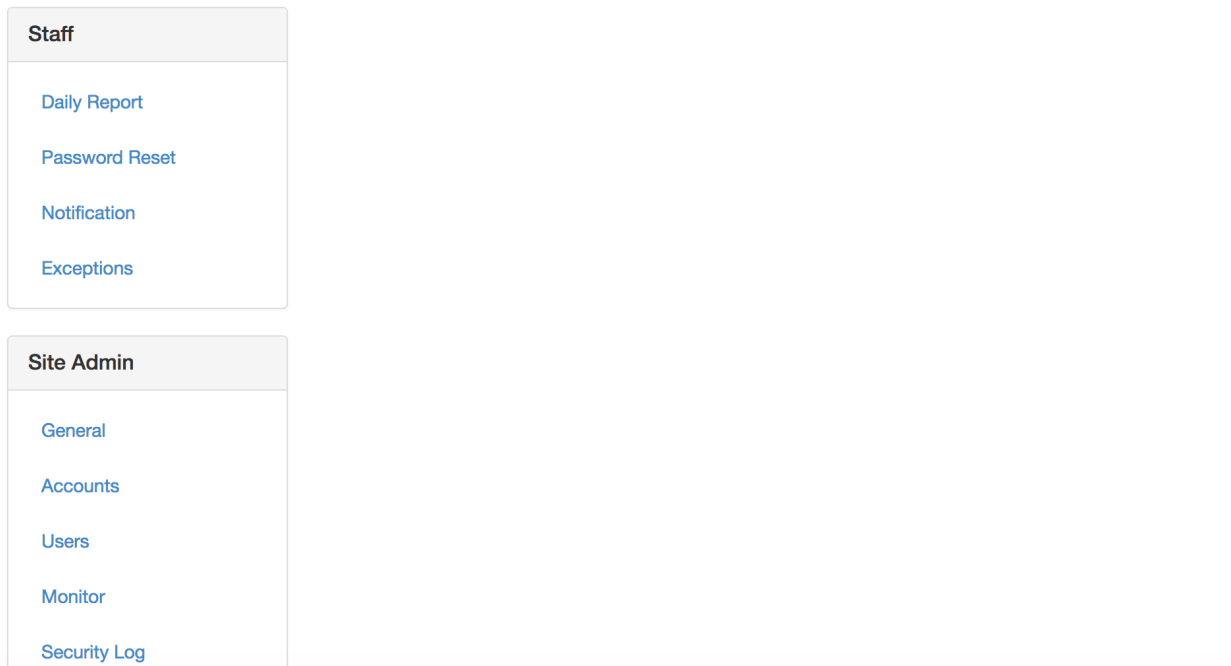
If you have administrator privileges, you see two additional links in the AEN navigation bar—Admin and Users:

To open the Admin dashboard, click the Admin link.



# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the system administrator.



## Backing up and restoring AEN

### Document purpose

This document lays out the steps to backup and restore Anaconda Enterprise Notebooks (AEN) for Disaster Recovery. It is not intended to provide High Availability. Each of the components (Server, Gateway and Compute) has its own instructions and each may be done individually as needed. The steps primarily involve creating tar files of important configuration files and data.

This document is written for a system administrator who is comfortable with basic Linux command line navigation and usage.

To migrate to a new cluster, use these backup and restore instructions to back up the system from the old cluster and restore it to the new cluster.

### Important notes

Review the [Concepts](#) page to become familiar with the different components and how they work together.

Root or sudo access is required for some commands.

**CAUTION:** All commands **MUST** be run by \$AEN\_SRVC\_ACCT (the account used to run AEN) except for those commands explicitly indicated to run as root or sudo. If the commands are not run by the correct user, the installation will not work, and a full uninstallation and reinstallation will be required!

These instructions assume that the fully qualified domain name (FQDN) has not changed for any of the component nodes. If any of the FQDNs are not the same, additional steps will be needed.

### Server component steps

#### Backup

##### Mongo database

This will create a single tar file called `aen_mongo_backup.tar` that includes only the database named “wakari” that is used by AEN. It also generates a log of the database backup.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
mongodump -db wakari -o aen_main >> mongo_backup.log
tar -cvf aen_mongo_backup.tar aen_main
```

##### AEN Server config files (including License file)

Create a tar file of all of the configuration files, including any license files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -cvf aen_server_config.tar -C /opt/wakari/ wakari-server/etc/wakari/
```

### Nginx config (if needed)

Make a copy of the nginx configuration file if it has been customized. The default configuration for the AEN server is a symlink.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
/etc/nginx/conf.d/www.enterprise.conf -> /opt/wakari/wakari-server/etc/nginx/conf.d/www.  
↪enterprise.conf
```

### SSL certificates (if needed)

Make a copy of the SSL certificates files (certfiles) for the server, including the key file, and a copy of the certfile for the gateway, which is needed for verification if using self-signed or private CA signed certs.

### Restore

#### Reinstall AEN-Server

See *the instructions for installing the current version of AEN-Server*.

It is not necessary to upload the license, because it will be restored with the config files.

NOTE: The new installation will generate a new password for the local \$AEN\_SRVC\_ACCT account.

#### Restore Mongo database

This assumes that mongo was reinstalled as part of the reinstallation of the server component. Untar the mongo database and restore it.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_mongo_backup.tar  
mongorestore --drop aen_main
```

NOTE: The --drop option resets the \$AEN\_SRVC\_ACCT user password and restores the database to the exact state it was in at the time of backup. Please see the [MongoDB documentation](#) for more information about mongorestore options for Mongo 2.6.

NOTE: AEN uses Mongo 2.6 by default. If you are using a different version, consult the documentation for your version.

#### AEN Server config files (including License file)

Untar the tar file of all of the configuration files, including any license files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_server_config.tar -C /opt/wakari/
```

Make sure the files are in /opt/wakari/wakari-server/etc/wakari/ and are owned by the \$AEN\_SRVC\_ACCT.

### Nginx config (if needed)

Make sure any modifications to the nginx configuration are either in `/etc/nginx/conf.d` or in `/opt/wakari/wakari-server/etc/nginx/conf.d/` with a proper symlink.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
/etc/nginx/conf.d/www.enterprise.conf -> /opt/wakari/wakari-server/etc/nginx/conf.d/www.  
↪enterprise.conf
```

### SSL certificates (if needed)

Move any SSL certificate files to the locations indicated in the config files.

### Restart server

Restart the server application.

NOTE: This command must be run as root or with `sudo`.

```
service wakari-server restart
```

## Gateway component steps

### Backup

### Config files

Create a tar file of all of the configuration files.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
tar -cvf aen_gateway_config.tar -C /opt/wakari/ wakari-gateway/etc/wakari/
```

### Custom .condarc file (if needed)

Make a copy of any `/opt/wakari/miniconda/.condarc` if it has been modified.

### SSL certificates (if needed)

Make a copy of SSL certificate files for the gateway (including the key file) and the certfile for the server (needed for verification if using self-signed or private CA signed certs).

## Restore

### Reinstall AEN-Gateway

#### Setting variables and changing permissions

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
export AEN_GATEWAY_PORT=8089
export AEN_GATEWAY=<FQDN HOSTNAME OR IP ADDRESS> # will be needed shortly
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists. If the terminal is closed before successful installation, export the variables to continue with the installation.

#### Running the AEN gateway installer

Run:

```
sudo -E ./aen-gateway-4.3.3-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-gateway
Logging to /tmp/wakari_gateway.log
...
...
Checking server name
Please restart the Gateway after running the following command
to connect this Gateway to the AEN Server
...
```

#### Config files

Untar the configuration files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_gateway_config.tar -C /opt/wakari
```

Verify that the files are in /opt/wakari/wakari-gateway/etc/wakari/ and are owned by the \$AEN\_SRVC\_ACCT.

### Custom .condarc file (if needed)

Move the custom .condarc file to /opt/wakari/miniconda/.condarc.

### SSL certificates (if needed)

Move any SSL certificate files to the locations indicated in the config files.

### Restart gateway

Restart the gateway application.

NOTE: This command must be run as root or with sudo.

```
service wakari-gateway restart
```

### Compute component steps

#### Backup

#### Config files

Create a tar file of all of the configuration files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -cvf aen_compute_config.tar -C /opt/wakari/ wakari-compute/etc/wakari
```

### Custom Changes (rare)

Manually backup any custom changes that were applied to the code. One change might be additional files in the skeleton folder:

```
/opt/wakari/wakari-compute/lib/node_modules/wakari-compute-launcher/skeleton
```

### Create user list

AEN uses POSIX access control lists (ACLs) for project sharing, so the backup must preserve the ACL information. This is done with a script that creates a file named `users.lst` containing a list of all users that have access to projects on a given compute node. Download and run the script.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
wget https://s3.amazonaws.com/continuum-airgap/misc/wk-compute-get-acl-users.py
chmod 755 wk-compute-get-acl-users.py
./wk-compute-get-acl-users.py
```

## Project files

Create a tar of the projects directory with ACLs enabled. The default projects base location is `/projects`.

NOTE: This command must be run as root or with `sudo`.

```
tar --acls -cpvf projects.tar -C <projects base location>/*
```

## Full Anaconda (option 1)

If any changes have been made to the default Anaconda installation (additional packages installed or packages removed), it is necessary to backup the entire Anaconda installation.

NOTE: This command must be run by `$AEN_SRV_ACCT`.

```
tar -cvf aen_anaconda.tar -C /opt/wakari/anaconda/*
```

If no changes have been made to the default installation of Anaconda, you may just backup the `.condarc` file and any custom environments.

## Partial Anaconda (option 2)

### Custom `.condarc` file

Make a copy of `/opt/wakari/anaconda/.condarc`.

### Custom environments (if needed)

Create a tar file of any custom shared environments.

NOTE: This command must be run by `$AEN_SRV_ACCT`.

```
tar -cvf aen_compute_envs.tar -C /opt/wakari/ anaconda/envs
```

NOTE: If no custom shared environments have been created, the `envs` folder will not be present.

## Restore

### Reinstall AEN-Compute

### Setting variables and changing permissions

NOTE: These commands must be run by `$AEN_SRV_ACCT`.

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change `<FQDN HOSTNAME OR IP ADDRESS>` to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists.

## Running the AEN compute installer

Run:

```
sudo -E ./aen-compute-4.3.3-Linux-x86_64.sh -w $AEN_SERVER
...
...
PREFIX=/opt/wakari/wakari-compute
Logging to /tmp/wakari_compute.log
Checking server name
...
...
Initial clone of root environment...
Starting Wakari daemons...
installation finished.
Do you wish the installer to prepend the wakari-compute install location
to PATH in your /root/.bashrc ? [yes|no]
[no] >>> yes
```

## Config files

Untar the config files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_compute_config.tar -C /opt/wakari
```

NOTE: Verify that they are located in /opt/wakari/wakari-compute/etc/wakari and are owned by the \$AEN\_SRVC\_ACCT.

## Custom changes (rare)

Manually restore any custom changes you saved in the backup section. If there are changes in the skeleton directory, these files must be world readable or projects will refuse to start.

## Create users

NOTE: Only create users with these instructions if your Linux machine is not bound to LDAP.

In order for the ACLs to be set properly on restore, all users that have permissions to the files must be available on the machine. Ask your system administrator for the proper way to do this for your system, such as using the “useradd” tool. A list of users that are needed was created in the backup process as a file named `users.lst`.

A process similar to the following `useradd` example will be suitable for most Linux systems.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
xargs -0 -n 1 useradd --user-group < users.lst
```



## Project files

Create the projects directory in the location specified in projectRoot in wk-compute-launcher-config.json.

NOTE: By default this directory is /projects.

Then untar the projects directory with ACLs.

NOTE: This command must be run as root or with sudo:

```
tar --acls -xpvf projects.tar -C <projects base location>
```

## Full Anaconda (option 1)

If you did a full backup of the full Anaconda installation, untar this file to /opt/wakari/anaconda.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_anaconda.tar -C /opt/wakari
```

## Partial Anaconda (option 2)

Restore the custom .condarc file.

If you did a partial backup of the Anaconda installation, move the copy of the .condarc file to /opt/wakari/anaconda/.condarc.

## Custom environments (if needed)

Untar any custom environments that were created to /opt/wakari/anaconda/envs.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_compute_envs.tar -C /opt/wakari
```

## Restart compute node

Restart the compute-launcher application.

NOTE: This command must be run as root or with sudo.

```
service wakari-compute restart
```

### Viewing a list of admin commands

A user who is promoted to administrator can access administrator commands to perform advanced administrator tasks.

NOTE: Utility files are owned by, and should only be executed by, the AEN user who owns the files.

To display a list of all administrator commands:

```
ls -al /opt/wakari/wakari-server/bin/wk-*
```

### Viewing help for admin commands

To view help information for command, run the command followed by `-h` or `--help`.

EXAMPLE: To view help for the `remove-user` command:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-user -h  
/opt/wakari/wakari-server/bin/wk-server-admin remove-project -h
```

### Running daily reports

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Daily Report:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)
[Task Queue](#)
[License](#)

Providers

[Enterprise Resources](#)

## Report

[Today](#)
[Yesterday](#)
[This Week](#)
[This Month](#)

**From:**  
Sun Sep 24 15:09:03 2017  
**Until:**  
Mon Sep 25 15:09:03 2017  
**Date Range**  
1 day, 0:00:00

### Users

	New	Total
<b>Users</b>	0	1
<b>Projects</b>	0	6

### New User Emails

Username	Email
----------	-------

### Actions

Count	Action
82	<a href="#">oauth.authenticate</a>

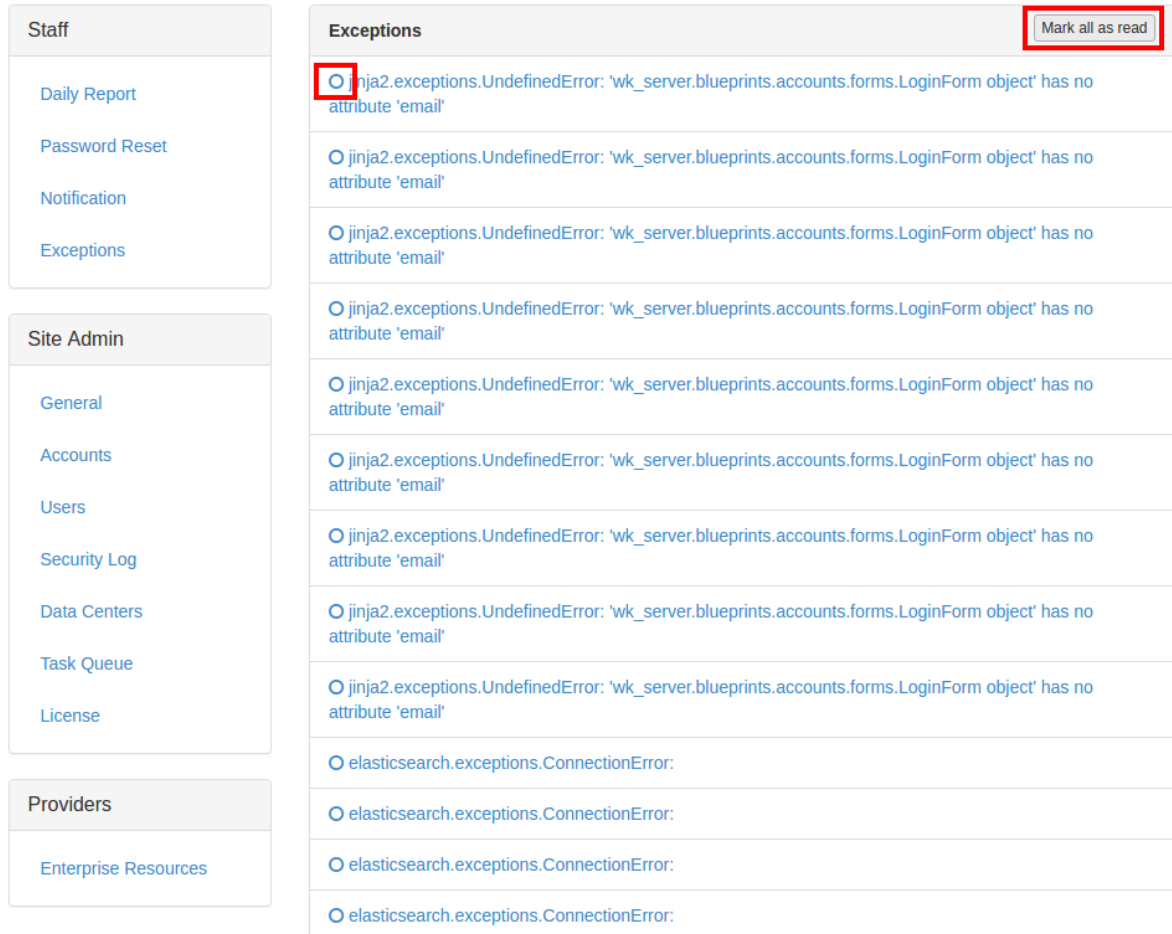
The Report section displays the following:

- Users—The number of users and projects.
- New User Emails—If *open registration is enabled*, the user names and emails for new users.
- Actions—The actions—projects created, projects updated, user authentications and added users—that have occurred in during the selected time frame—today, yesterday, this week, or this month.

## Viewing system errors

When an error occurs, a red dot is displayed in the AEN navigation bar next to the Admin link. The red dot is removed when all exceptions are marked as “read.”

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Exceptions:



The screenshot shows the AEN Admin Settings interface. On the left, there are three main navigation sections: **Staff**, **Site Admin**, and **Providers**. Under **Staff**, the **Exceptions** link is highlighted. The main content area displays a table of exceptions. The first exception is a Jinja2 UndefinedError, and its radio button is selected. A 'Mark all as read' button is located in the top right corner of the exceptions table.

Exceptions		Mark all as read
<input checked="" type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	elasticsearch.exceptions.ConnectionError:	
<input type="radio"/>	elasticsearch.exceptions.ConnectionError:	
<input type="radio"/>	elasticsearch.exceptions.ConnectionError:	
<input type="radio"/>	elasticsearch.exceptions.ConnectionError:	

The Exceptions section lists all errors that have occurred while AEN is running.

3. To see the details of an error, click the radio button next to the error. This also marks the error as “read.”
4. To mark all errors as read without reviewing each one, click the Mark all as read button.

## Viewing security errors

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Security Log:

Staff		Security Log			
Daily Report		View	Actor	Action	Date
Password Reset			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 09:46:09 CDT
Notification			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 09:39:17 CDT
Exceptions			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 09:22:04 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 09:10:31 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 08:45:50 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 08:43:12 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 08:10:30 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 08:09:38 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 24, 2017 23:52:06 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 24, 2017 23:51:58 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 24, 2017 23:51:58 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 24, 2017 23:51:58 CDT

The Security Log section lists all errors that have occurred that could potentially affect AEN security.

- To view a user's profile page, click their username in the Actor column.
- To see the details of an error, click the Eye icon next to the error.

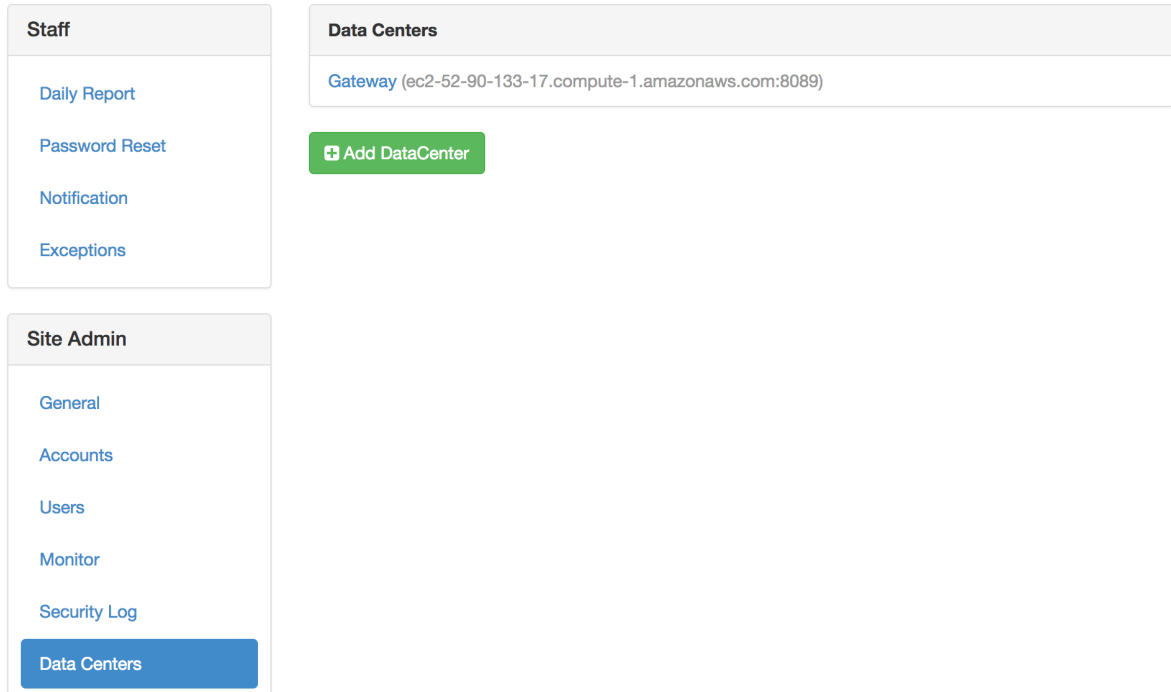
The error details are displayed:

Public Profile	<b>oauth.authenticate</b>	
Account Settings	_id	59c907f03f94c30fe45ffb9e
Security Log	action	oauth.authenticate
Applications	actor_id	59c069b1ae55d1b3fe9fa45e
	actor_username	aen_admin
	client_id	59c119cd3f94c30fe45ff5db
	remote_addr	None
	time	2017-09-25 13:43:12.479000+00:00
	token_id	59c907f03f94c30fe45ffb9d
	<a href="#">⏪ Back</a>	

- To close the error details, click the Back link.

## Managing data centers

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Data Centers:



The Data Centers section displays current data center information.

## Adding a data center

1. Click the Add DataCenter button to display the Register a datacenter form.
2. In the Name box, type a Name for the new data center:

**Data Centers / Register a datacenter**

**Name**

☐ Subdomain Routing  
☐ Https

**Base Domain Name**

**summary**

**Provider**

3. Select the Subdomain Routing and/or Https checkboxes.
4. In the Base Domain Name box, type the base domain name.
5. In the Summary box, type a description of the data center.
6. In the Provider list, select a provider.
7. Click the Submit button.

## Managing enterprise resources

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Providers** menu, select Enterprise Resources:

Staff

[Daily Report](#)  
[Password Reset](#)  
[Notification](#)  
[Exceptions](#)

Site Admin

[General](#)  
[Accounts](#)  
[Users](#)  
[Monitor](#)  
[Security Log](#)  
[Data Centers](#)  
[Task Queue](#)  
[License](#)

Providers

[Enterprise Resources](#)

Resources

Add Resource

Gateway

ec2-54-210-232-251.compute-1.amazonaws.com

remove

The Resources section lists your existing cloud and local resources.

### Adding a resource

1. Click the Add Resource button to open the new resource form.
2. Complete the form:



**Resources / new**

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
Compute Node1

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**  
Configuring Compute Node

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Add Resource

3. Click the Add Resource button.

### Viewing or changing the resource details

1. Click a resource name to open the Local Resource form.
2. If necessary, change the resource details:

**Data Center**

Gateway 59c119cd3f94c30fe45ff5db

**Name**

ec2-54-210-232-251.compute-1.amazonaws.com

**URL**

http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**

```
{"status": "ok", "messages": []}
```

- Click the Update button.

## Making a node public or private

1. Click the resource name to open the Local Resource form.
2. Select or clear the Public checkbox:

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
ec2-54-210-232-251.compute-1.amazonaws.com

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**  
{"status": "ok", "messages": []}

3. Click the Update button.

## Removing a resource

Click the Remove button next to the resource you want to remove.

NOTE: When you remove a resource assigned to a project, the project becomes orphaned. To fix an orphaned project, *move the project to a valid Compute Resource*.

## Managing services

The tasks on this page assume that the 3 AEN nodes are installed in the following locations:

- Server—/opt/wakari/wakari-server/.
- Gateway—/opt/wakari/wakari-gateway/.
- Compute-Launcher—/opt/wakari/wakari-compute/.

## Checking the status of server node processes

1. Run:

```
# service wakari-server status
wk-server          RUNNING    pid 20758, uptime 5 days, 0:30:23
worker             RUNNING    pid 20757, uptime 5 days, 0:30:23
```

OR

```
root@server # ps -Hu wakari
  PID TTY          TIME CMD
 20756 ?            00:02:26 .supervisord
 20757 ?            00:05:58 mtq-worker
 20758 ?            00:00:08 wk-server
 20765 ?            00:02:00 wk-server
 20766 ?            00:01:55 wk-server
 20767 ?            00:02:20 wk-server
 20770 ?            00:02:02 wk-server
```

2. Run:

```
root@server # service nginx status
nginx (pid 26303) is running...
```

For more information on server processes, see *Server processes*.

## Checking the status of gateway node processes

Run:

```
# service wakari-gateway status
wk-gateway                RUNNING    pid 1137, uptime 5 days, 1:59:28
```

OR

```
root@gateway # ps -Hu wakari
  PID TTY          TIME CMD
 1136 ?            00:01:59 .supervisord
 1137 ?            00:00:02  wk-gateway
```

For more information on gateway processes, see [Gateway processes](#).

## Checking the status of compute node processes

Run:

```
# service wakari-compute status
wk-compute                RUNNING    pid 22050, uptime 3 days, 1:03:19
```

OR

```
root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?            00:02:01 .supervisord
 1152 ?            00:00:01  wk-compute
```

For more information on compute node processes, see [Compute processes](#).

## Starting AEN services

Services should start automatically both when they are first installed and at any point when the system is restarted.

If you need to manually start an AEN service, you must start each node independently, because they may be running on separate machines.

NOTE: The process is basically the same for each node, but the path to the correct commands vary.

To manually start a service:

- On the server node, run:

```
service wakari-server start
```

- On the gateway node, run:

```
service wakari-gateway start
```

- On a compute node, run:

```
service wakari-compute start
```

## Verifying that AEN services are set to start with the system

To verify that AEN services are set up to start automatically:

1. Run the following command on each node:

```
chkconfig --list | grep wakari
```

2. If services are missing, add them:

```
chkconfig --add [wakari-server|wakari-gateway|wakari-compute]
```

3. *Restart the services.*

## Stopping AEN services

CAUTION: Do not stop or kill supervisord without first stopping wk-compute and any other processes that use it.

You must stop services on each node independently, because they may be running on separate machines.

To stop an AEN service:

- On the server node, run:

```
service wakari-server stop
```

- On the gateway node, run:

```
service wakari-gateway stop
```

- On a compute node, run:

```
service wakari-compute stop
```

Compute nodes may have running processes that are not automatically stopped. To stop them, run:

```
sudo /opt/wakari/wakari-compute/bin/wk-compute-apps kill-all
```

## Restarting AEN services

- On the server node, run:

```
service wakari-server restart
```

- On the gateway node, run:

```
service wakari-gateway restart
```

- On a compute node, run:

```
service wakari-compute restart
```

## Identifying extraneous processes

To get a complete list of the processes running under the wakari user account, run `ps -Hu wakari`.

EXAMPLE:

```
root@server # ps -Hu wakari
  PID TTY          TIME CMD
 20756 ?           00:02:26 .supervisord
 20757 ?           00:05:58 mtq-worker
 20758 ?           00:00:08 wk-server
 20765 ?           00:02:00 wk-server
 20766 ?           00:01:55 wk-server
 20767 ?           00:02:20 wk-server
 20770 ?           00:02:02 wk-server

root@server # ps -f -C nginx
UID      PID  PPID  C  STIME TTY          TIME CMD
root    26303      1  0  12:18 ?        00:00:00 nginx: master process /usr/sbin/nginx -c /etc/
↪nginx/nginx.conf
nginx   26305 26303  0  12:18 ?        00:00:00 nginx: worker process

root@gateway # ps -Hu wakari
  PID TTY          TIME CMD
 1136 ?           00:01:59 .supervisord
 1137 ?           00:00:02 wk-gateway

root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?           00:02:01 .supervisord
 1152 ?           00:00:01 wk-compute
```

- wk-server, wk-gateway and wk-compute should have PIDs reported by supervisorctl.
- The nginx master process should have a PID reported by service nginx status.
- If you have installed more than one AEN node on a single machine, the processes from all of the installed nodes should be displayed for that machine.
- On compute node(s), any AEN applications currently being run by users will be present.

EXAMPLE:

```
root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?           00:00:00 .supervisord
 1152 ?           00:00:00 wk-compute
 1340 ?           00:00:00 bash
 1341 ?           00:00:00 notebookwrapper
```

## Removing extraneous processes

If extra `wk-server`, `wk-gateway`, `wk-compute`, or `supervisord` processes are present, use the `kill` command to remove them to prevent issues with AEN.

You can safely *restart* any process that you remove in error.

## Making sure NGINX and MongoDB are running

In order for AEN to run, the dependencies `mongodb` and `nginx` must be up and running. If either of these fail to start, AEN will not be served on port 80.

Check if `nginx` and `mongod` are both running (RHEL 6x):

```
$ sudo service nginx status
nginx (pid 25956) is running...
```

```
$ sudo service mongod status
mongod (pid 25928) is running...
```

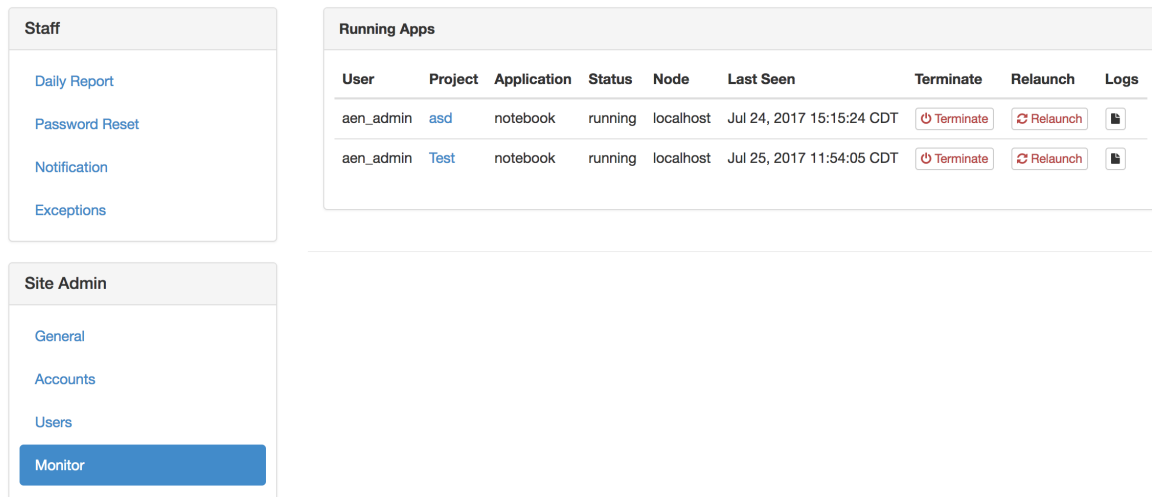
If either of these failed to start, tail the log files. The default location of log files is:

```
$ tail -n 50 /var/log/mongodb/mongod.log

# nginx errors reported in error.log
$ tail -n 50 /var/log/nginx/error.log
```

## Viewing, terminating, and relaunching applications

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Monitor:



The screenshot shows the AEN Admin Settings page. On the left, there is a 'Staff' menu with options: Daily Report, Password Reset, Notification, and Exceptions. Below it is a 'Site Admin' menu with options: General, Accounts, Users, and Monitor (highlighted in blue). On the right, there is a 'Running Apps' table with columns: User, Project, Application, Status, Node, Last Seen, Terminate, Relaunch, and Logs.

User	Project	Application	Status	Node	Last Seen	Terminate	Relaunch	Logs
aen_admin	asd	notebook	running	localhost	Jul 24, 2017 15:15:24 CDT	<a href="#">Terminate</a>	<a href="#">Relaunch</a>	<a href="#">Logs</a>
aen_admin	Test	notebook	running	localhost	Jul 25, 2017 11:54:05 CDT	<a href="#">Terminate</a>	<a href="#">Relaunch</a>	<a href="#">Logs</a>

The Monitor menu lists started applications by user and project.

The list includes columns for the application name, current running status, running node and last seen date.

3. Use the buttons to terminate or relaunch an application.



4. To view an application's logs, click the Logs button with the document icon.

## Viewing the task queue

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Task Queue:

The screenshot shows the 'Task Queue' page. On the left is a navigation sidebar with two main sections: 'Staff' and 'Site Admin'. The 'Staff' section includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section includes links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', and a highlighted 'Task Queue' button. The main content area is titled 'Task Queue' and contains two sections: 'Workers' and 'Queues'. The 'Workers' section shows a single worker with ID 'ip-172-31-10-196.4053' and three priority buttons: 'high' (selected), 'default', and 'low'. The 'Queues' section lists two queues: 'high' with a backlog of 0 and 1 failed task, and 'default' with a backlog of 0 and 3 failed tasks.

Staff
<a href="#">Daily Report</a>
<a href="#">Password Reset</a>
<a href="#">Notification</a>
<a href="#">Exceptions</a>

Site Admin
<a href="#">General</a>
<a href="#">Accounts</a>
<a href="#">Users</a>
<a href="#">Monitor</a>
<a href="#">Security Log</a>
<a href="#">Data Centers</a>
<a href="#">Task Queue</a>

### Task Queue

Workers
ip-172-31-10-196.4053   <span>high</span> <span>default</span> <span>low</span>

Queues
<b>high</b> Backlog: 0 Failed: 1
<b>default</b> Backlog: 0 Failed: 3

The Workers section lists the workers in the task queue and whether each worker is set at high, default or low priority.

The Queues section provides information on the default and high priority queues.

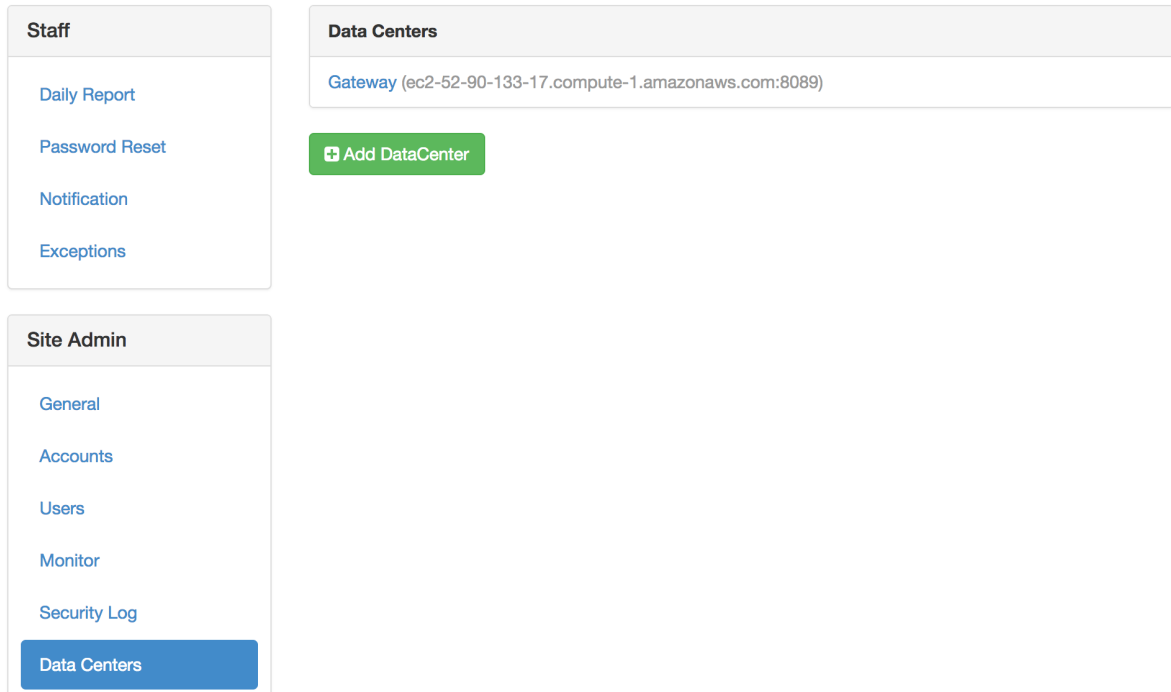
3. To view all the tasks in a particular queue, in the Queues section, click the queue name.

## Checking node connections

When the AEN nodes cannot communicate with each other as intended, it can cause issues with you AEN platform installation.

### Verifying server to gateway connectivity

1. On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Data Centers:



3. For each data center in the list, check connectivity from the server to that gateway.

EXAMPLE: The gateway in this example is `http://gateway.example.com:8089`:

```
root@server # curl --connect-timeout 5 http://gateway.example.com:8089 > /dev/null
```

### Verifying gateway to compute node connectivity

1. On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Providers** menu, select Enterprise Resources:

The screenshot displays the Anaconda Enterprise web interface. On the left, there is a sidebar with three main sections: 'Staff', 'Site Admin', and 'Providers'. The 'Staff' section includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section includes links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and 'License'. The 'Providers' section has a button for 'Enterprise Resources'. The main content area is titled 'Resources' and features a green '+ Add Resource' button in the top right corner. Below this, there is a 'Gateway' section containing a single resource entry with the URL 'ec2-54-210-232-251.compute-1.amazonaws.com' and a red 'remove' button to its right.

Staff
<a href="#">Daily Report</a>
<a href="#">Password Reset</a>
<a href="#">Notification</a>
<a href="#">Exceptions</a>

Site Admin
<a href="#">General</a>
<a href="#">Accounts</a>
<a href="#">Users</a>
<a href="#">Monitor</a>
<a href="#">Security Log</a>
<a href="#">Data Centers</a>
<a href="#">Task Queue</a>
<a href="#">License</a>

Providers
<a href="#">Enterprise Resources</a>

Resources
<a href="#">+ Add Resource</a>
<b>Gateway</b>
<a href="#">ec2-54-210-232-251.compute-1.amazonaws.com</a> <a href="#">remove</a>

3. Open each compute node in the Resources section.
4. Verify that the contents of the URL field begin with either `http` or `https`.

**Data Center**

Gateway 59c119cd3f94c30fe45ff5db

**Name**

ec2-54-210-232-251.compute-1.amazonaws.com

**URL**

http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**

{"status": "ok", "messages": []}

5. Check connectivity to that URL from the corresponding gateway.

EXAMPLE: The gateway in this example is `http://gateway.example.com:8089`:

```
root@gateway # curl --connect-timeout 5 http://compute.example.com:5002 > /dev/null
```

## Verifying gateway to server connectivity

The gateway-to-server path is used by the gateway configuration command `wk-gateway-configure`.

1. Verify that the gateway is linked to the correct server in the configuration file.
2. Verify that the full server URL is specified.
3. Check connectivity to the server:

```
root@gateway # grep WAKARI_SERVER /opt/wakari/wakari-gateway/etc/wakari/wk-gateway-
↪config.json
"WAKARI_SERVER": "http://wakari.example.com",

root@gateway # curl --connect-timeout 5 http://wakari.example.com > /dev/null
root@gateway # curl --connect-timeout 5 http://error.example.com > /dev/null
curl: (7) Failed to connect to error.example.com port 80: Connection refused
```

4. If a connection fails:
  1. Ensure that gateways (data centers) and compute nodes (Enterprise Resources) are correctly configured on the server.
  2. Verify that processes are listening on the configured ports:

```
$ sudo netstat -nplt
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address   Foreign Address State  PID/Program
tcp        0      0 *:80            *:.*           LISTEN 26409/nginx
tcp        0      0 *:22            *:.*           LISTEN 986/sshd
tcp        0      0 127.0.0.1:25    *:.*           LISTEN 1063/master
tcp        0      0 *:5000          *:.*           LISTEN 26192/python
tcp        0      0 127.0.0.1:27017 *:.*           LISTEN 29261/mongod
tcp        0      0 *:22            *:.*           LISTEN 986/sshd
tcp        0      0 127.0.0.1:25    *:.*           LISTEN 1063/master
```

3. Check the firewall setting and logs on both hosts to ensure that packets are not being blocked or discarded.

## Verifying and tuning search indexing

For search indexing to work correctly, a compute node must be able to communicate with the server. To verify this:

1. Run:

```
curl -m 5 $AEN_SERVER > /dev/null
```

2. Verify that there are sufficient inotify watches available for the number of subdirectories within the project root file system:

```
cat /proc/sys/fs/inotify/max_user_watches
```

NOTE: Some Linux distributions default to a low number of watches, which may prevent the search indexer from monitoring project directories for changes.

3. If necessary, increase the number of watches:

```
echo fs.inotify.max_user_watches=100000 | sudo tee -a /etc/sysctl.conf && sudo
↩ sysctl -p
```

4. Verify that there are sufficient inotify user instances available—at least one per project:

```
cat /proc/sys/fs/inotify/max_user_instances
```

5. If necessary, increase the number of inotify user instances:

```
echo fs.inotify.max_user_instances=1000 | sudo tee -a /etc/sysctl.conf && sudo
↩ sysctl -p
```

## Changing the AEN server URL

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

<div>Staff</div> <div>Daily Report</div> <div>Password Reset</div> <div>Notification</div> <div>Exceptions</div>	<div>General Admin Settings</div> <div> <b>Wakari Server</b>  Set the main URL where this site will be accessed  <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> <b>Static URL</b>  Set static URL where the js can be accessed  <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> <b>Default Project Access</b>  This will be the default when a user creates a project  <div> <input type="radio"/> <b>Public</b>  Anyone can see this project. Collaborators have write access </div> <div> <input checked="" type="radio"/> <b>Private</b>  No one can see this project except collaborators. </div> </div> <div> <b>Account Type</b>  <input type="text" value="wk_server;plugins.accounts.cloud"/> </div> <div> <input type="button" value="Update"/> </div>
<div>Site Admin</div> <div>General</div> <div>Accounts</div> <div>Users</div> <div>Monitor</div> <div>Security Log</div> <div>Data Centers</div> <div>Task Queue</div> <div>License</div>	<div>Providers</div> <div>Config Files</div>

3. In the Wakari Server box, type the main URL where the site can be viewed.
4. Click the Update button.

## Changing the static URL for JavaScript files

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

The screenshot shows the Admin Settings page with a left sidebar and a main content area. The sidebar has three sections: 'Staff' (Daily Report, Password Reset, Notification, Exceptions), 'Site Admin' (General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, License), and 'Providers'. The 'General' option under 'Site Admin' is selected. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' (Set the main URL where this site will be accessed, with a text box containing 'http://anaconda-enterprise.trl'), 'Static URL' (Set static URL where the js can be accessed, with a text box containing 'http://anaconda-enterprise.trl/static/'), and 'Default Project Access' (This will be the default when a user creates a project, with radio buttons for 'Public' and 'Private' (selected), and descriptive text for each). Below these is an 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the main content area is a green 'Update' button. The bottom of the sidebar shows a 'Providers' section and a 'Config Files' section.

3. In the Static URL box, type the static URL where JavaScript files can be accessed.
4. Click the Update button.

## Changing the AEN account type

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

The screenshot shows the 'General Admin Settings' page in the Anaconda Enterprise Admin interface. On the left is a navigation sidebar with three main sections: 'Staff' (containing links for Daily Report, Password Reset, Notification, and Exceptions), 'Site Admin' (containing links for General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License), and 'Providers'. The 'General' link under 'Site Admin' is selected and highlighted in blue. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' with a text input field containing 'http://anaconda-enterprise.trl'; 'Static URL' with a text input field containing 'http://anaconda-enterprise.trl/static/'; and 'Default Project Access' with two radio button options: 'Public' (unselected) and 'Private' (selected). Below these is an 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the settings area is a green 'Update' button. A 'Config Files' section is partially visible at the very bottom of the page.

Staff	General Admin Settings
<a href="#">Daily Report</a>	<b>Wakari Server</b> Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
<a href="#">Password Reset</a>	<b>Static URL</b> Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
<a href="#">Notification</a>	<b>Default Project Access</b> This will be the default when a user creates a project  <input type="radio"/> <b>Public</b> Anyone can see this project. Collaborators have write access  <input checked="" type="radio"/> <b>Private</b> No one can see this project except collaborators.
<a href="#">Exceptions</a>	<b>Account Type</b> <input type="text" value="wk_server.plugins.accounts.cloud"/>
	<input type="button" value="Update"/>
	<b>Config Files</b>

3. In the Account Type box, select the account type—cloud or LDAP.
4. Click the Update button.

### Changing the default for project access

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:



The screenshot shows the Anaconda Enterprise Admin interface. On the left is a sidebar with three main sections: 'Staff' (containing links for Daily Report, Password Reset, Notification, and Exceptions), 'Site Admin' (containing links for General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License), and 'Providers'. The 'General' link under 'Site Admin' is selected. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' with a text input field containing 'http://anaconda-enterprise.trl', 'Static URL' with a text input field containing 'http://anaconda-enterprise.trl/static/', and 'Default Project Access' with two radio button options: 'Public' (unselected) and 'Private' (selected). Below these is an 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the settings section is a green 'Update' button. Below the settings section is a 'Config Files' section.

3. Under Default Project Access, select the default access type for new projects: Public or Private.
4. Click the Update button.

## Changing the owner of a project

To change the owner of a project:

1. Collect the project name, the user name of the previous owner, and the user name of the new owner.
2. Run the `wakari-server` executable command `wk-server-admin`:

```
/opt/wakari/wakari-server/bin/wk-server-admin project-owner --project PROJECT --old_
↪OLD_OWNER --new NEW_OWNER --delete --keep-owner
```

- **PROJECT**: The project name.
- **OLD\_OWNER**: The user name of the previous owner.
- **NEW\_OWNER**: The user name of the new owner.
- **--delete**: An optional flag that deletes the old project directory in the `projects` directory of **OLD\_OWNER**. If this flag is not used, the old project directory is preserved but no longer used.
- **--keep-owner**: An optional flag that makes **OLD\_OWNER** a collaborator of the project after it is transferred to **NEW\_OWNER**. If this flag is not used, **OLD\_OWNER** will no longer have collaborator access to the project.

**NOTE:** The **OLD\_OWNER** user must still exist when the project's owner is changed. Before deleting any user, be sure to change the owner of the user's projects.

## Editing configuration files

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General.

The screenshot shows the AEN Admin Settings interface. On the left is a navigation sidebar with three main sections: 'Staff' (containing links for Daily Report, Password Reset, Notification, and Exceptions), 'Site Admin' (containing links for General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License), and 'Providers'. The 'General' link under 'Site Admin' is highlighted. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' with a text input field containing 'http://anaconda-enterprise.trl'; 'Static URL' with a text input field containing 'http://anaconda-enterprise.trl/static/'; and 'Default Project Access' with two radio button options: 'Public' (unselected) and 'Private' (selected). Below these is an 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the settings area is a green 'Update' button. Below the settings area is a 'Config Files' section.

Staff	General Admin Settings
Daily Report	<b>Wakari Server</b> Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	<b>Static URL</b> Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	<b>Default Project Access</b> This will be the default when a user creates a project  <input type="radio"/> <b>Public</b> Anyone can see this project. Collaborators have write access  <input checked="" type="radio"/> <b>Private</b> No one can see this project except collaborators.
Exceptions	<b>Account Type</b> <input type="text" value="wk_server.plugins.accounts.cloud"/>
	<input type="button" value="Update"/>
	<b>Config Files</b>

3. In the Config Files section, change the configuration settings for your AEN installation. For more information on configuration files, see [Using configuration files](#).
4. Click the Update button.

## Managing your AEN license

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select License:

The screenshot shows the Admin Settings page with a left sidebar and a main content area. The sidebar has two sections: 'Staff' and 'Site Admin'. The 'Staff' section includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section includes links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and a highlighted 'License' button. The main content area is titled 'Current License' and displays a message: 'You have 166 days remaining on your current license.' with a 'Renew your license' button. Below this is a table of license details. At the bottom of the main content area is the 'Upload New License' section, which includes a 'License File' input field with a 'Choose File' button and an 'Update' button.

Current License	
You have <b>166 days</b> remaining on your current license.	
<a href="#">Renew your license</a>	
<b>product</b>	Anaconda Enterprise Notebooks
<b>vendor</b>	Continuum Analytics, Inc.
<b>name</b>	Continuum Development
<b>end_date</b>	2018-03-10
<b>issued</b>	2017-03-10
<b>company</b>	Continuum Analytics
<b>type</b>	undefined
<b>email</b>	dev@continuum.io

Upload New License	
<b>License File</b>	
<a href="#">Choose File</a>	No file chosen
<a href="#">Update</a>	

The Current License section displays information regarding your AEN license, including the name of the product, vendor, license holder's name, end and issued dates, company name, license type, and contact email.

## Renewing your AEN license

1. Click the Renew your license button.
2. In the Upload New License section, click the Choose File button.
3. Select the new license file.
4. Click the Open button.
5. Click the Update button.

Your renewed license information is displayed.

### Cheat sheet

The Admin dashboard includes three menus in the left column: **Staff**, **Site Admin** and **Providers**.

#### Staff menu

- Daily Report—See the number of users and projects.
- Password Reset—Reset a user password.
- Notification—Send system messages to users via SES or SMTP.
- Exceptions—If errors are raised while AEN is running, a red dot appears in the AEN navigation bar. Review errors and mark them as read.

#### Site Admin menu

- General—Change the configuration settings for your AE Notebook server installation.
- Accounts—Turns on or off Open Registration.
- Users—View usernames, number of projects and last logins.
- Monitor—View status of applications with related data, terminate or restart
- Security Log—View errors that could affect security.
- Data Centers—View current data centers and add a new data center.
- Task Queue—View workers in the task queue and priority.
- License—View current AEN license or upload a new license.

#### Providers menu

Enterprise Resources—View, add or remove local or cloud services and designate public or private to control access to a compute node.

### Troubleshooting

This troubleshooting guide provides you with ways to deal with issues that may occur with your AEN installation.

#### General troubleshooting steps

1. Clear browser cookies. When you change the AEN configuration or upgrade AEN, cookies remaining in the browser can cause issues. Clearing cookies and logging in again can help to resolve problems.
2. *Make sure NGINX and MongoDB are running.*
3. Make sure that AEN services are *set to start at boot*, on all nodes.
4. *Make sure that services are running* as expected. If any services are not running or are missing, *restart them*.
5. *Check for and remove extraneous processes.*
6. *Check the connectivity between nodes.*

7. *Check the configuration file syntax.*
8. *Check file ownership.*
9. *Verify that POSIX ACLs are enabled.*

### **Browser error: too many redirects**

#### **Cause**

Browser cookies are out of date.

#### **Solution**

1. Log out.
2. Clear the browser's cookies.
3. Clear the browser cache.
4. Log in.

### **Browser error: too many redirects when starting project apps**

Browser shows “Too many redirects” when the user tries to start an application.

#### **Cause**

The project's Compute Resource is invalid or was deleted.

#### **Solution**

*Move the project to a valid Compute Resource.*

### **Exception: exceptions.TypeError: 'NoneType' object has no attribute '\_\_getitem\_\_'**

This exception appears on the Admin > Exceptions page when a project does not have a Compute Resource assigned.

#### **Cause**

The project's Compute Resource is invalid or was deleted.

### Solution

*Move the project to a valid Compute Resource.*

### Error: `unix:///opt/wakari/wakari-server/etc/supervisor.sock` no such file

This is a supervisorctl error.

### Cause

supervisord is not running on the Server.

### Solution

Ensure that supervisord is included in the crontab. Then restart supervisord manually.

### Error: “Data Center Not Found” when deleting a project

### Cause

The data center has been removed.

### Solution

As root, run:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-project --db-only <user> <project>
```

### Forgotten administrator password

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin reset-password -u SOME_USER -p SOME_
↪PASSWORD
```

NOTE: Replace SOME\_USER with the administrator username and SOME\_PASSWORD with the password.

3. Log in to AEN as the administrator user with the new password.

Alternatively you may add an administrator user:

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin add-user SOME_USER --admin -p SOME_
↪PASSWORD -e YOUR_EMAIL
```

NOTE: Replace SOME\_USER with the username, replace SOME\_PASSWORD with the password, and replace YOUR\_EMAIL with your email address.

3. Log in to AEN as the administrator user with the new password.

### Log files being deleted

Log files are being deleted.

NOTE: Locations of AEN log files for each process and application are shown in the node sections in *Concepts*.

### Cause

AEN installers log in to `/tmp/wakari\_{server,gateway,compute}.log`. If the log files grow too large, they might be deleted.

### Solution

To set the logs to be more or less verbose, Jupyter Notebooks uses `Application.log_level`.

To make the logs less verbose than the default, but still informative, set `Application.log_level` to `ERROR`.

### Error: This socket is closed

You receive the “This socket is closed” error message when you try to start an application.

### Cause

When the supervisord process is killed, information sent to the standard output `stdout` and the standard error `stderr` is held in a pipe that will eventually fill up.

Once full, attempting to start any application will cause the “This socket is closed” error.

### Solution

To prevent this issue:

- Follow the instructions in *Managing services* to stop and restart processes.
- Do not stop or kill supervisord without first stopping `wk-compute` and any other processes that use it.

To resolve the “This socket is closed” error:

1. Stop `wk-compute` by running `sudo kill -9`.
2. Restart the supervisord and `wk-compute` processes:

```
sudo /etc/init.d/wakari-compute stop
sudo /etc/init.d/wakari-compute start
```

### Service error 502: Cannot connect to the application manager

Gateway node displays “Service Error 502: Can not connect to the application manager.”

#### Cause

A compute node is not responding because the wk-compute process has stopped.

#### Solution

Stop and then restart the supervisord and wk-compute processes:

```
sudo /etc/init.d/wakari-compute stop
sudo /etc/init.d/wakari-compute start
```

### 502 communication error on Amazon web services (AWS)

You receive the “502 Communication Error: This gateway could not communicate with the Wakari server” error message.

#### Cause

An AEN gateway cannot communicate with the Wakari server on AWS. There may be an issue with the IP address of the Wakari server.

#### Solution

Configure your AEN gateway to use the DNS hostname of the server. On AWS this is the DNS hostname of the Amazon Elastic Compute Cloud (EC2) instance.

### Invalid username

#### Cause

The username does not follow 1 or more of these rules:

- Must be at least 3 characters and no more than 25 characters.
- The first character must be a letter (A-Z) or a digit (0-9).
- Other characters can be a letter, digit, period (.), underscore (\_) or hyphen (-).
- The [POSIX standard](#) specifies that these characters are the portable filename character set, and that portable usernames have the same character set.



## Solution

Follow the above rules for usernames.

## Notebook Error: Cannot download notebook as PDF via LaTeX

### Cause

LaTeX is not properly installed.

### CentOS/6 Solution

1. Install TeXLive from the [TUG site](#). Follow the described steps. The installation may take some time.
2. Add the installation to the PATH in the file `/etc/profile.d/latex.sh`. Add the following, replacing the year and architecture as needed:

```
PATH=/usr/local/texlive/2017/bin/x86_64-linux:$PATH
```

3. Restart the compute node.

### CentOS/7 Solution

1. Install the missing packages running the command:

```
yum install texlive texlive-xetex texlive-xetexconfig texlive-xetex-def texlive-  
↪adjustbox texlive-upquote texlive-ulem
```

## Unresponsive wk-server thread without error messages

### Cause

Two things can cause the `wk-server` thread to freeze without error messages:

- LDAP freezing
- MongoDB freezing

If LDAP or MongoDB are configured with a long timeout, Gunicorn can time out first and kill the LDAP or MongoDB process. Then the LDAP or MongoDB process dies without logging a timeout error.

### Solution

1. Check for frozen LDAP or MongoDB server processes.
2. You may also wish to configure the Gunicorn timeout to more than 30 seconds.

### Unresponsive wk-gateway thread without error messages

#### Cause

If TLS is configured with a passphrase protected private key, wk-gateway will freeze without any error messages.

#### Solution

Update the TLS configuration so that it does not use a passphrase protected private key.

### Error starting projects

Project's status page shows "There was an error starting this project".

#### Cause

Lack of disk space in compute nodes prevents projects from starting.

#### Solution

1. Verify that the project node meets the *system requirements*.
2. Check if there is enough free space on the compute node's partition where `/projects` lives:

```
df -h /projects
```

3. Free up some disk space to meet the system requirements.
4. Restart the project.

### Changes in .condarc file are ignored

Changes applied to `.condarc` are ignored by conda.

## Cause

Conda loads its configuration by merging multiple files together.

## Solution

Check if you are applying the changes to the correct file.

To show the merged state that conda is currently using:

```
conda config --show
```

To show all config files that conda is currently reading:

```
conda config --show-sources
```

## Frequently asked questions

### What is AEN?

For information on AEN, see *Anaconda Enterprise 4 Notebooks*.

### Can notebooks be shared with anyone?

Yes. When you share a Jupyter Notebook through AEN, it can be viewed and run without the need to install anything special, regardless of what libraries were used to create the notebook. Each notebook also includes the python environment that it needs to run in.

AEN allows users to clone a shared Jupyter Notebook into their AEN account to make whatever changes or modifications they want. The notebook's Python environment is also cloned, so it runs in the same environment as the shared Jupyter Notebook unless it is changed.

### Can I disable the option, “publish your notebook to anaconda.org”?

Yes. The upload button in the notebook app executes the option “publish your notebook to anaconda.org”. To disable it, log in as the AEN\_SRVC\_ACCT and run these commands:

```
source activate /opt/wakari/wakari-compute
jupyter-nbextension disable nb_anacondacloud --py --sys-prefix
jupyter-serverextension disable nb_anacondacloud --py --sys-prefix
```

### How can I check the version number of my AEN server?

Go to this URL in a browser: `http://$AEN_SERVER/admin/list`

NOTE: Replace `$AEN_SERVER` with the domain name or the domain name and port number of your AEN server.

### Can I use AEN to access CSV or Amazon S3 data?

Yes. If your data is in CSV files, upload the CSV files to your AEN account using the upload controls in the File Browser of the Workbench Application or the File Transfer Application.

To access data stored on Amazon S3, use the Boto interface from AEN. See the public data files in AEN for examples of how to use Boto to pull your data from Amazon S3 into AEN. For more information, see [Boto documentation](#).

You can also use IOPro to simplify and optimize the conversion of your data into Python arrays.

### Can I install other Python packages?

Yes, by creating a custom environment for your packages within your project.

For more information, see [Using the NBConda extension](#).

### Can I create a Python environment from the command line?

Yes, you can use the `conda create` command to create custom Python environments with whatever packages you choose. All AEN environments are shared with all the team members of a project.

EXAMPLE: In this example, `myenv` is a new environment containing the NumPy package.

```
conda create -n myenv numpy
```

NOTE: Python, Jupyter Notebooks and PIP are installed by default in all new AEN environments.

To use your new environment, activate it by running `source activate myenv`.

### Can I connect to GitHub with AEN?

Yes, you have full access to GitHub through an AEN Terminal application.

To generate an SSH key from your AEN account and add it to your GitHub account:

1. [Generate a GitHub SSH key](#).
2. Copy your key by running `cat ~/.ssh/id_rsa.pub`.
3. Select and copy the contents of the `id_rsa.pub` file to the clipboard.
4. Follow [GitHub's instructions](#) to go to your GitHub account and paste it from your clipboard into the appropriate box in your GitHub settings.

### Can I print or print preview my Jupyter Notebooks?

Yes, you can print your notebooks using your browser's regular printing capabilities.

You can also preview the printed page by clicking the **File** menu and selecting Print Preview.

### Is there a set amount of storage on AEN?

No, there is no set limit for storage in AEN. You are limited only by the size of the disk where AEN is installed.

If you need more storage, contact your system administrator.

### How do I get help, give feedback, suggest features or report a bug?

See *Help and support*.

### Help and support

Priority support is included with the purchase of an Anaconda subscription.

Contact your administrator first if you are having problems. Your administrator has a service level agreement where your issue will be responded to within a specific response time, depending on type and severity.

### Training and consulting

Training and consulting is available for AEN and any other Anaconda product.

For more information, please contact your account representative or [email the sales team](#).

### Providing feedback

Your feedback is very important to us!

Please, send us any [product feedback](#) while you are thinking about it.

TIP: Be sure to select AEN as the Platform Component Name.

### Submitting feature requests

We'd love to hear your ideas for consideration in future releases!

Your ideas help us build a better product. Your administrator can submit a support ticket for you.

NOTE: You can also request new features by using the [product feedback](#) form.

### Reporting a bug

If you think you have found a bug, please contact your administrator immediately. They will open a support ticket for your issue.

### Additional resources

The following resources are useful for getting started with Jupyter Notebooks:

- [Jupyter Notebook quick start guide](#)
- [Jupyter Notebook user documentation](#)
- [GitHub](#) shows the most popular Jupyter notebooks of the [month](#), [week](#), and [day](#).

### Release notes

#### v4.3.3 Nov 5th, 2019

Administrator-facing changes:

- Support fetching packages from the main channel
- Add a new configuration key `emptyDefaultChannels` to avoid searching packages from the free channel
- Documentation updates

User-facing changes:

- Remove gdal and basemap
- Update ipykernel, jupyter\_core and jupyter\_client
- Update astropy, scikit-learn, dask, numba, numpy, scipy, pandas and matplotlib

Internal Fixes:

- Update Python to version 2.7.17
- Update Angular to version 1.7.8
- Update urllib3 to version 1.25.3
- Update Node.js to version 10.15.3
- Replace pycrypto with pycryptodome 3.8.2
- Update paramiko to version 2.60
- Update jinja2 to version 2.10
- Update request to version 2.88
- Update grunt to version 1.0.4
- Update requests to version 2.22.0
- Update gunicorn to version 19.9.0
- Update openldap to version 2.4.46
- Update python-ldap to version 3.2.0
- Removed growl and superagent dependencies

- Update rbase and r-essentials to version 3.5.1

### **v4.3.2 May 29, 2019**

#### Internal Fixes:

- Update Bootstrap to version 4.3.1
- Update jQuery to version 3.3.1
- Update jQuery UI to version 1.12.1
- Update notebook to version 5.7.8
- Update ipywidgets to version 7.4.2
- Update ipyparallel to version 6.2.3
- Set Secure flag on xsrf, access\_token, and refresh\_token cookies

### **v4.3.1 March 25, 2019**

#### Administrator-facing changes:

- Add option for server-side session management
- Add option to terminate terminal sessions on logout

#### Internal Fixes:

- Set Secure and HTTPOnly flag on session cookies
- Fix XSS vulnerability

### **v4.3.0 October 24, 2018**

#### Administrator-facing changes:

- Fix bug where compute logging wasn't respecting the logMaxFiles key
- Log and display a descriptive error message when there is a problem creating the users index
- Log and display a descriptive error message when there is a problem creating a new user with a duplicated e-mail address when the uniqueEmail setting is enabled
- Add footer server pages with server host data (IP, AEN version and server version)
- Fix admin script to change the status of private projects
- Fix validation error when updating/editing an existing resource
- Docs: Add KB article about using MongoDB to update old projects with new Data Center information
- Docs: Add restarting service step to SSO documentation
- Docs: Add support for newer versions of MongoDB
- Docs: Add documentation on uniqueEmail
- Docs: Add projDirsAsHome key to config docs
- Docs: Rewrite the "Using project directories as home directories" section

- Docs: Add full path to admin commands
- Docs: Warn about upgrading away from tested pkgs
- Docs: Add missing steps to “Authenticating with LDAP” section
- Docs: Add troubleshooting documentation about orphaned projects
- Docs: Warn about not using IP address when you connect to AEN
- Docs: Add an entry about ‘Error starting projects’ in the troubleshooting page
- Docs: Rewrite “Group and user permissions for NFS” section and description of the `identicalGID` key in the config pages
- Docs: Add a new section about using MRO packages in AEN (Update: MRO was discontinued in 2021)
- Docs: Preserve username capitalization when using LDAP/AD
- Docs: Add umask 0022 to security requirements
- Docs: Add new section about changing install location
- Docs: Add note about how to manually break out Root CA for the gateway
- Docs: Add note about upgrading custom environments
- Docs: Add notes about how to find conda config files inside AEN
- Docs: Add note about using `USE_SERVER_BASED_SESSIONS: false` when configuring SSO between AEN and versions 2.33.3 through 2.33.10 of the Repository

User-facing changes:

- Increase Workbench file upload limit
- Fix Bokeh examples
- Extend `nb_locker` to detect a server disconnection and generate an alert if it occurs
- Docs: Update the notebook app to correctly point to AEN docs
- Docs: Emphasize that permissions are not applied recursively in the workbench

Internal fixes:

- Update Nginx version to v1.12.2
- Remove unused server config file during the compute upgrade process
- Remove already defined compute default settings from the post-script step
- Pin `widgetsnbextension` version to prevent version mismatch issue (ipywidgets)
- Remove `--offline` flag from the conda clone operations
- Support MongoDB 3.4.14 and update pymongo to version 3.2.2
- Fix LDAP username case sensitivity
- Security fixes and enhancements



**v4.2.2 March 1, 2018**

## Administrator-facing changes:

- Add admin command to change project owner
- Server: Add ability to disable public projects
- Gateway: Add support for SSL private key passphrase
- Docs: Add backup and restore runbook to the docs
- Docs: Emphasize backups before upgrading process
- Docs: Recommend putting AEN and projects folder on the same filesystem
- Docs: Add RHEL version 7.4 to supported versions
- Docs: Add troubleshooting instructions to fix problems when downloading notebook as PDF via LaTeX

## User-facing changes:

- Upgrade bokeh to version 0.12.7
- Upgrade holoviews to version 1.8.3
- Upgrade numba to version 0.35.0
- Upgrade scikit-learn to version 0.19.0

## Internal fixes:

- Fix bug in init scripts when requiretty is enabled
- Fix bugs related to AEN\_SUDO\_SSH option
- Fix bug in fix\_ownership function when directories contain spaces
- Docs: Fix error in Active Directory configuration example
- Server: Fix bug when updating user/group in supervisor configuration files in post-install for server and gateway
- Server: Fix bug Admin reports on user totals are inconsistent
- Server: Fix error in login screen when open registration and LDAP are enabled
- Server: Fix bug in Last seen date
- Server: Fix bug Monitor Report blank
- Server: Load JS files from local CDN
- Server: Fix error when terminating or relaunching an application from Monitor
- Server: Fix error creating projects when using Internet Explorer 11
- Compute: Fix 404 errors when using pivottablesjs
- Remove Wakari Cloud leftovers

### v4.2.1 December 18, 2017

Administrator-facing changes:

- None

User-facing changes:

- None

Internal fixes:

- Fix undetected “ca” key when using self-signed certificates signed by a private CA
- Fix login redirects when using SSL
- Add verify gateway SSL certificate for get and post requests

### v4.2.0 November 22, 2017

Administrator-facing changes:

- Feature/allow remote MongoDB
- Allow for configuration for login timeout and set default
- Add verbose option to conda create clone
- Avoid duplicate name for resources / compute-nodes
- Allow renaming main and message queue databases
- PAM-based authentication module
- Change wakari logos to Anaconda logos
- Replace ‘wakari’ wording
- New config option to move the user’s home directory into the user’s project directory
- Make logging less verbose in AEN
- Documentation for PySpark kernel installation
- Improve SSL documentation

User-facing changes:

- New config option to move the user’s home directory into the user’s project directory
- Package cache was moved from user’s home directory into the user’s project directory
- Change wakari logos to Anaconda logos
- Fix error for deleting tags to work
- Define shell prompt in `.projectrc` template
- Replace ‘wakari’ wording

Internal fixes:

- Move server unix socket from `/tmp` to `/opt/wakari/wakari-server/var/run`
- Make project deletion synchronous for consistency
- Avoid storing `csrf` token in the user profile

- Expire gateway session when server logs out
- Allow log rotation in the three components
- Fix permissions on static files
- Change log level to debug in gateway
- Do not log private keys in gateway
- Save request remote address when logging action
- Unify logs formatting and timezone in compute nodes with Winston
- Several fixes and documentation improvements

### **v4.1.3 August 16, 2017**

- Upgrade conda to version 4.3.24
- Upgrade anaconda to version 4.4.0
- Admin application monitor
- Block access to package list view
- Add placeholders in password reset form
- Change static content location
- Fix error when checking for package updates in notebook application
- Replace slashes in project tags
- Fix submit errors in password reset form
- Replace/remove “wakari” word from multiple places
- Fix missing commands missing sudo in start-project
- Improve gateway and compute node validators
- Check if bzip2 is installed during server setup process
- Include port number in host header
- Forbid creation of empty tags
- Repair “Create Account” link in login page
- Use UTC for server logs
- Mark datacenters as trusted by default
- Disable heart beating
- Compute resource: Show full path to log file
- Improve init scripts
- Allow deleting all projects
- mtq: Implement exponential backoff on connection error to mongodb
- In the general admin display, do not show the bind password for LDAP
- The accelerate package has been removed from the installation
- Other minor bugfixes

### **v4.1.2 March 29, 2017**

This is mainly a maintenance release improving internal machinery and upgrading the root packages.

- Upgrade conda to version 4.3.14
- Upgrade Anaconda to 4.3.1
- Upgrade r-base to 3.2.2
- Fixed AEN nb\_conda to be compatible with conda 4.3.x series
- Several documentation fixes
- Other minor bugfixes

### **v4.1.1 December 15, 2016**

- Added CentOS 7 support
- Support dots in usernames
- More usernames validation
- Fixed creation (through nb\_conda) of single letter environment names
- Environment names (through nb\_conda) validation
- Fixed uploading of notebook using nb\_anacondacloud
- Fixed attaching of environments in published notebooks through nb\_anacondacloud
- Several documentation fixes
- Other bugfixes

### **v4.1.0 October 21, 2016**

- Added JupyterLab application
- Removed GateOne terminal application
- Included additional notebook extensions (nbpresent and nb\_anaconda\_theme)
- Updated to conda 4.2.9 in default project environments
- Added HTTP timeout setting for gateway and compute launcher
- Changed default gateway port to 8089
- Added support for all-numeric usernames
- Add R channel to default conda configuration file
- Other bugfixes

### **v4.0.0 June 30, 2016**

- Customized installation with:
  - AEN Functional ID and Group
  - AEN (installation and run) sudo commands
  - Removal of root access from the AEN service account
  - Configurable sudo command
  - Restriction of sudo access to all the processes
- Upgrade Jupyter to 4.2
- Upgrade the anaconda-nb-extensions to the latest versions
- Upgrade Anaconda to 4.0
- Deprecate wakari-publisher
- Security enhancements
- SSL configuration documented between all AEN Server components
- Several bugfixes
- Overall documentation revision and general improvement

### **v0.10.0 February 2, 2016**

- New projects dashboard
- Capability to star and tag a project
- Sticky searches
- New Jupyter Notebook extensions
- Updates to all packages. Highlights: bokeh 0.11, ipython/jupyter 4.1.

### **v0.9.1 October 19, 2015**

- New Search capability to find projects and files within a project.
- Added “Related Projects” list to the project view, based on code similarity.
- New UI for fine-grained access control of project files in the Workbench app
- Viewer app now renders plain text files correctly
- Updated LDAP configuration docs
- Updates to all packages. Highlights: bokeh 0.10, ipython/jupyter 4.0.

**Note** ElasticSearch, and an Oracle JRE, must be installed on the server in order to use the new search features. Indexing of project files will begin when the project is started (or paused and re-started). If search features are not desired, set "SEARCH\_ENABLED": false in the server configuration file to avoid errors.

### v0.8.0 August 21, 2015

#### New Features

- Updated packages based on Anaconda 2.3, and removed older packages no longer in Anaconda.
- Updated IPython to version 3.2.1
- Documentation is now installed with the server (use the Help link in the top navigation bar)
- Added the ability for the administrator to define a customized default project environment.
- The server has been updated to use python 2.7.10.
- Init scripts are now provided for each Anaconda Enterprise Notebooks service.
- Added relevant links to some error pages

#### Problems Resolved in this Release

- Project status indicators (e.g. starting, pausing) now automatically update.
- If an access is unauthorized, the server now returns a 403 (Unauthorized) status code and prompts the user to log in.
- Modified nginx configuration to support running the server on non-standard ports.
- The server installation no longer uses a default password for the wakari user. A random password is generated and displayed during installation.
- Prevent double-click from attempting to create a project twice
- Removed an obsolete script reference that was causes a 404 error to be logged in the browser console when opening the Terminal app.
- The installer scripts no longer fail if the database already contains the ‘wakari’ user.
- Updated example notebooks to work with latest Bokeh release.
- Fixed terminal app key bindings to allow Mac command key to work normally
- Installers now indicate where the installation logs are stored
- LDAP user attributes containing binary data are now ignored.

#### Documentation Updates

- Updated and consolidated Troubleshooting guide.
- Simplified some steps in the installation procedure.
- Updated notebooks in the Examples directory for use with the latest IPython Notebook and Bokeh.
- Added a section on project permissions to the Troubleshooting guide.
- Added notes on how to remove a project if the datacenter has already been removed.

## v0.7.0 June 12, 2015

### New Features

- Updated Bokeh to v0.9
- Ability to list packages installed on the server
- Administrators now have full access to all projects.
- Added automated checking and display of connection status between server, data centers, and compute resources.
- When creating a new project, an environment for the project is automatically created as a clone of the root Anaconda environment.

### Problems Resolved in this Release

- Problem with checking in files with revision control extension
- Revision control extension can't handle notebook names with spaces
- Problem moving files from one compute node to another if configured for LDAP
- Should default to UTF-8 encoding and warn user if no locale is detected
- Adding a compute resource via the command line admin tool does not work
- The installer now sets `umask 0022` to ensure correct file permissions

### Documentation Updates

- Added a *Troubleshooting* section to the documentation.
- Added notes on how to configure crontab to start the Anaconda Enterprise Notebooks services at startup
- Example SSL config file now has correct log paths
- Added instructions on how to ensure that POSIX ACL support is enabled on the projects directory.
- Fixed syntax problem in sample LDAP config.json
- Added section on how to use self-signed or private CA certificates

## v0.6.3 March 27, 2015

- Updated LDAP module
- LDAP user filtering
- Added Notebook locking
- Added Notebook integrated revision control system
- Move projects between compute nodes
- User-specific binding to compute nodes (private compute nodes)
- Improved installation process and dependency checking
- Incorporated support for SSL for Server and Gateway nodes

- Improved Gateway error handling
- Fixed package dependencies for update process
- Documentation updates

### Previous versions

Documentation for previous versions of AEN is provided for users who have not yet upgraded to the latest version. See the sidebar for links to other documentation versions.

### Anaconda Enterprise 4 Notebooks

*Empower the Data Science Team with cross-collaboration*

AEN is a browser-based Python data analysis environment and visualization tool from Anaconda®. AEN is a ready-to-use, powerful, fully-configured data analytics environment all in a secure, governed environment.

AEN allows data science team members to create and share private notebooks, manage access, control notebook revisions, compare and identify differences across notebook versions, search notebooks for keywords and packages, use enhanced collaborative notebook features—including revision control and locking—and to access an on-premises and/or cloud collaborative notebook server.

The current version of AEN is 4.3.1, released March 25, 2019.

### User guide

AEN's browser-based management of private packages, notebooks, and environments allows data science team members to:

- Create, share and manage private notebooks.
- Control notebook revisions.
- Compare and identify differences across notebook versions.
- Search notebooks for keywords and packages.
- Use enhanced collaborative notebook features including revision control and locking.
- Access on-premises and/or cloud-based collaborative notebook servers.
- Utilize multiple language kernels like Python and R language in the same notebook.
- Create new notebook environments on the fly without leaving the notebook or entering commands in a prompt.
- Publish results to business stakeholders as interactive visualizations and presentations.

To quickly get up and running with AEN, see [Getting started](#).

Download the [Cheat sheet](#) for easy reference.



## Concepts

### Projects

AEN users interact with the system predominantly through projects.

A project is a set of conda environments, Jupyter Notebooks, and other files.

Each project has a project drive that all team members can access. The size of the drive is not limited by AEN. Contact your system administrator if you find you do not have sufficient space.

Each project has a separate project directory on the project drive.

The project directory is a directory for project files and data that is separate from the project owner's and team members' home directories, so that team members can share and have equal access.

The path to your project directory is `/projects/<project_owner>/<project_name>`.

For administrative information about projects, directories, and permissions, see [Projects and permissions](#).

### Team collaboration

Teams collaborate in AEN using projects. Projects allow a team to easily come together by sharing the resources, applications, and environments that are necessary to collaborate effectively.

The AEN project owner and any team members connected to their project will have access to the same:

- Shared files and home directories.
- Shared Python and R environments.
- Shared nodes and hardware.
- Common applications.
- Web user interface.

For more information, see [Working with projects](#).

### Access control

AEN access controls allow you to:

- Add and remove project access for new team members.
- Limit the access to specific folders and files to members of your project team.
- Use permissions to extend execute access to team members. By default, all of the team members on a project have read and write access to all project assets.

Access control is performed from each project's Workbench application.

For more information, see [Controlling access to your project](#).

### Sharing projects

AEN supports both public and private sharing.

A project can be “public,” which means that anyone with access to the system can view the project assets.

Any content placed in the `public` folder in a project is publicly accessible using its URL.

A project can be “private,” which means that only the project owner and team members can view the project assets.

You can also *limit who can access specific files*.

### Sharing Jupyter Notebooks

In addition to general project sharing capabilities, you can also publish Jupyter Notebooks to Anaconda Repository. This automatically versions the notebook and allows you to define who can view the notebook.

### Project tags

Tags are used to:

- Group similar or related projects.
- Identify your project so that it is easier to find.
- Let others know about your project.

You can *add and remove tags* for any project that you have access to.

### Getting started

This section contains information and tasks for first-time AEN users.

#### 1. Download the AEN cheat sheet

Before you start, download and print the *AEN cheat sheet* for easy reference.

#### 2. Access your user home page

After your administrator has set up your server and new Anaconda account, you will receive a welcome email.

1. Click the link in the email to open the AEN login page.

NOTE: Use the domain name and not the IP address when you connect to AEN. Using the IP address can cause TLS and security certificate errors.

2. Enter your AEN account username and password.

NOTE: Some administrators allow you to create your own account. If your administrator has allowed this, in the create a new account section, create your own username and password.

3. Click the Login button.

Your user home page, where all good things happen, is displayed:

The screenshot shows the Anaconda user profile for 'NewUser2'. The header includes the Anaconda logo, the username 'NewUser2', and a search bar. The profile information shows the user joined on Oct 20, 2016, with email 'newuser@mycompany.com' and 1 project. The 'Projects (1)' section shows a project named 'NewUser2 / NewProject' with a description 'Woo hoo! I finally get to play with notebooks!'. The 'Contributing (0)' section shows 'Not currently contributing to any projects.' The 'Top Tags' section lists 'Fun fun fun' and 'Test project'. The 'Top Collaborators' and 'Top Rated' sections are empty.

### 3. Create a new project

1. There are 2 ways to create a new project in AEN:

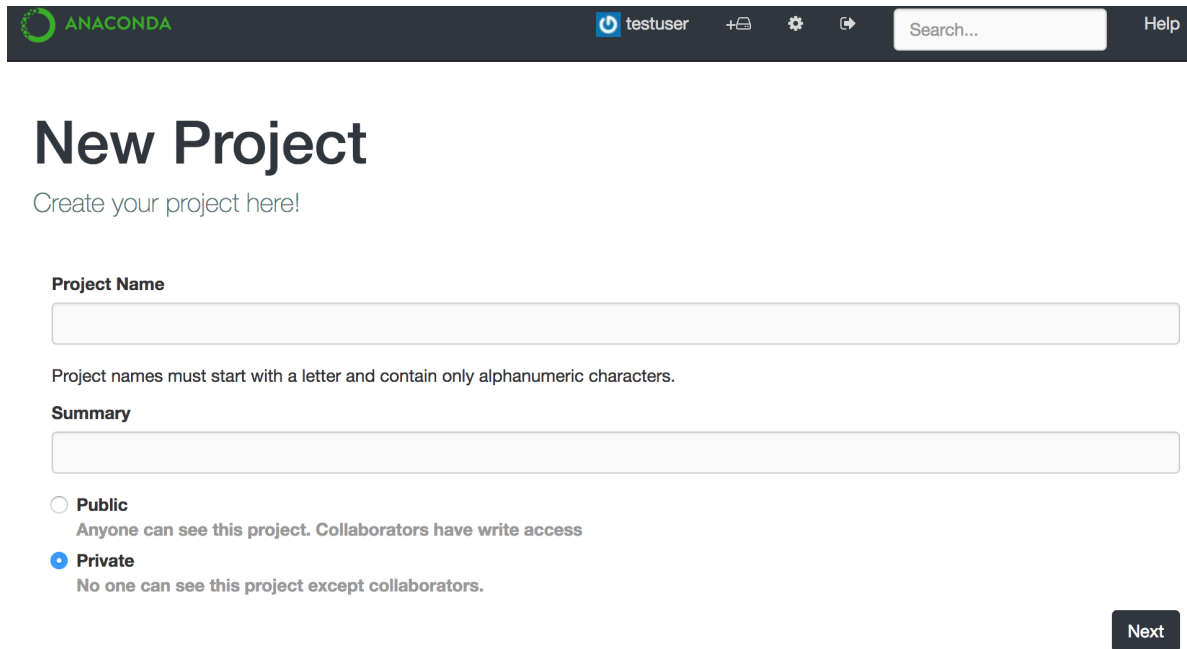
- On the right side of the AEN task bar, click on the New Project icon:



- On your home page, click the New project button:

The screenshot shows the Anaconda user profile for 'testuser'. The header includes the Anaconda logo, the username 'testuser', and a search bar. The profile information shows the user joined on Sep 21, 2017, with email 'testuser@outlook.com' and 2 projects. The 'Projects (2)' section shows two projects: 'testuser / TestProject' and 'testuser / TestProject1'. The 'New project' button is highlighted with a red circle. The 'Top Tags' section lists '!@#\$\$%^&\*()\_+', 'Abc', and '.)('.

2. On the Project page that is displayed, type a name for your project, such as “Testing.”



**Project Name**

Project names must start with a letter and contain only alphanumeric characters.

**Summary**

☐ **Public**  
Anyone can see this project. Collaborators have write access

☒ **Private**  
No one can see this project except collaborators.

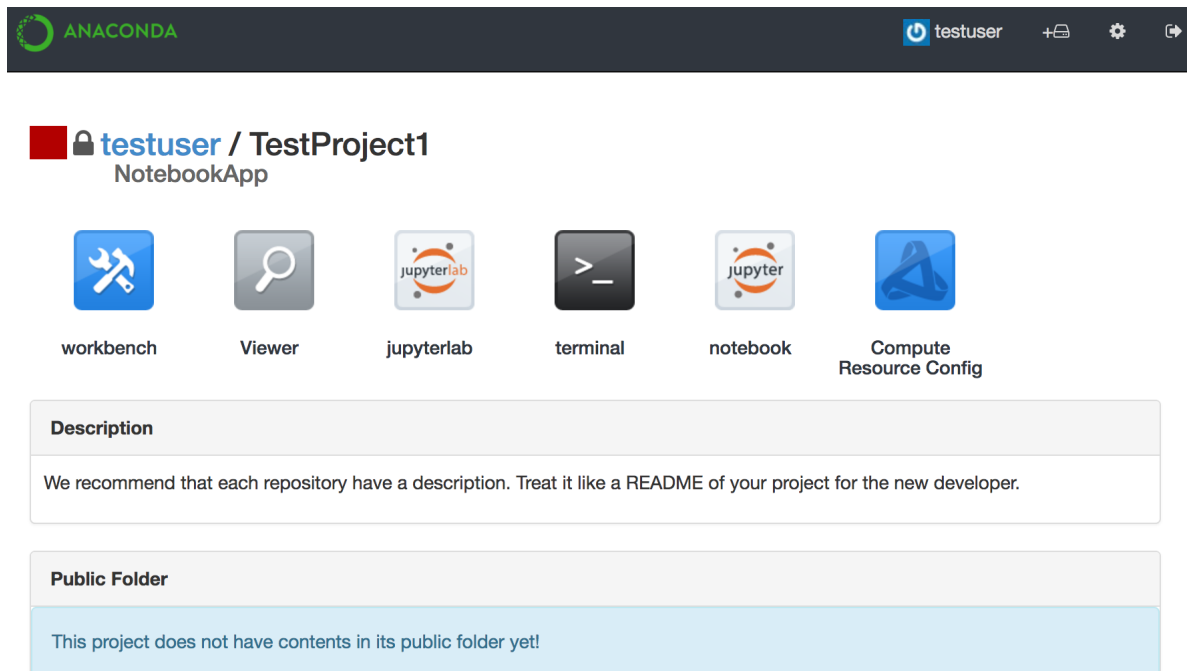
Next

3. Type a summary of the project so you can recognize it later.
4. Select whether your project will be public or private.
5. Verify that the default data center is selected.

TIP: You can update the project summary and description at any time from the **Project** menu in the Project Settings. To return to your project at any time, click the project name.

6. Click the Next button.

Your new project's home page is displayed:



**testuser / TestProject1**  
NotebookApp

workbench Viewer jupyterlab terminal notebook Compute Resource Config

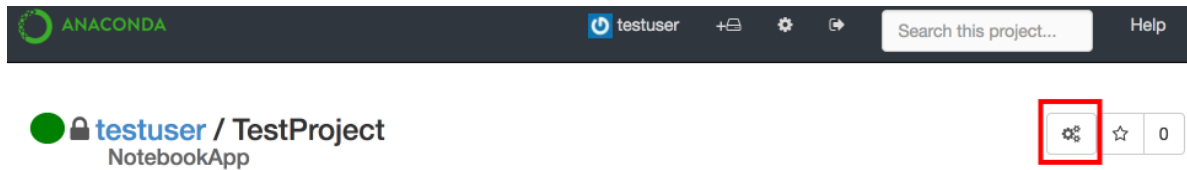
**Description**

We recommend that each repository have a description. Treat it like a README of your project for the new developer.

**Public Folder**

This project does not have contents in its public folder yet!

7. To change the project settings, click the Project Settings icon on at the top right.



8. Modify the summary or add a description of the project.

TIP: A project description is recommended, and may be written in Markdown syntax (plain text valid Markdown).

To see how Markdown will be displayed, in the description area, click the **Preview** tab.

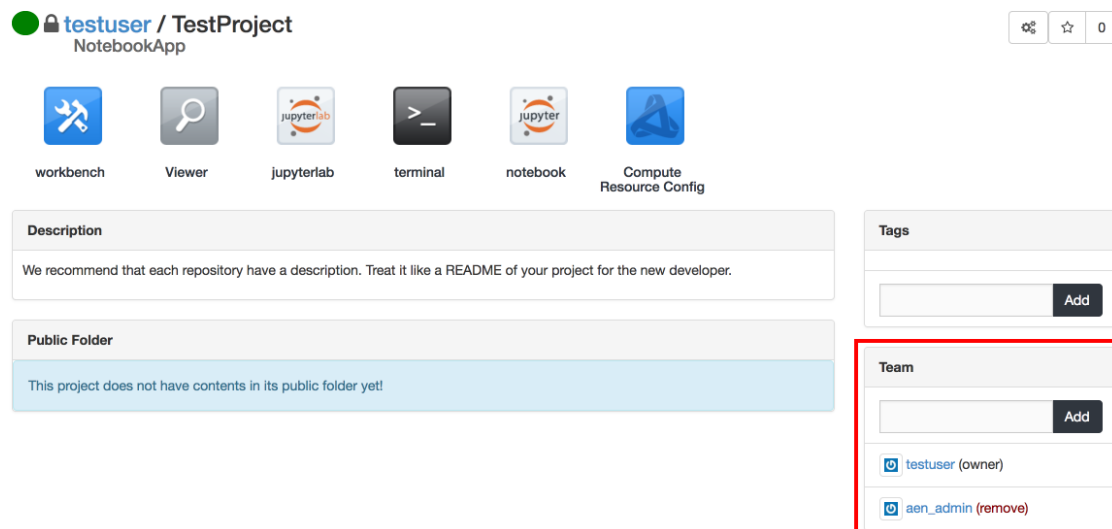
#### 4. Add collaborators

You can add team members to your project as collaborators. Adding team members to your projects makes collaboration easy because they have full access to the project's applications, files and services.

When you add team members, their home directory is mounted in the project. There is no need to download and email data or scripts—team members can work on the same files in the same environment in which you are working.

To add collaborators to your project:

1. From your project home page, in the Team box, begin typing a teammate's username.
2. In the list that is displayed, select the teammate's username.
3. Click the Add button.



1. Repeat these steps for each team member you want to add as a collaborator.

TIP: You can add or remove team members any time from the **Team** menu in Project Settings. You can also modify a team member's read, write or execute permissions at any time from the *Using Workbench*.

### 5a. Open an example notebook, OR

1. From your project home page, click the Jupyter Notebooks icon.
2. On the File View page, click the Examples folder.



3. Select any of the example notebooks.
4. To see the default results of the formulas used in the displayed notebook, in the **Cell** menu, select Run All.
5. To experiment with changing the notebook, edit any of the formulas in the notebook.
6. In the **Cell** menu, select Run All.

Any differences resulting from your edits are displayed.

### 5b. Create a new environment and notebook

If you are already familiar with creating notebooks, you can easily set up a new environment with the programs you need—like SciPy and NumPy—then open a new notebook and make your edits.


To create a new environment:

1. From your project home page, click the Jupyter Notebooks icon.
2. On the File View page, click the **Conda** tab.
3. To add a new conda environment, on the top right of the **Conda** tab, click the + icon.
4. Type a name for your environment.
5. Select Python 2, Python 3 or R language kernel.
6. Click the Create button.
7. To activate your new environment, click its name.

The packages that are available and installed in your new environment are displayed.










## Adding SciPy and Numpy packages

1. In the available packages section, search for the package name `numpy`—all lower case.
2. In the results section, next to `numpy`, select the checkbox.

 **ANACONDA**  
Powered by Continuum Analytics

Files Running IPython Clusters **Conda**

3 Conda environments + ↺

Action	Name	Default?	Directory
  	root		/opt/wakari/anaconda
  	default	✓	/projects/aen_admin/TestProject/envs/default
  	myenv		/projects/aen_admin/TestProject/envs/myenv

2 available packages  → 39 installed packages in environment "myenv" ↺ ✓ ⬇ 🗑

Name	Version	Channel
<input checked="" type="checkbox"/> numpy	1.13.1	defaults
<input type="checkbox"/> numpydoc	0.7.0	defaults

Name	Version	Build	Available
<input type="checkbox"/> anaconda-client	1.6.3	py36_0	
<input type="checkbox"/> certifi	2016.2.28	py36_0	
<input type="checkbox"/> clyent	1.2.2	py36_0	
<input type="checkbox"/> decorator	4.1.2	py36_0	
<input type="checkbox"/> ipykernel	4.6.1	py36_0	
<input type="checkbox"/> ipython	6.1.0	py36_0	

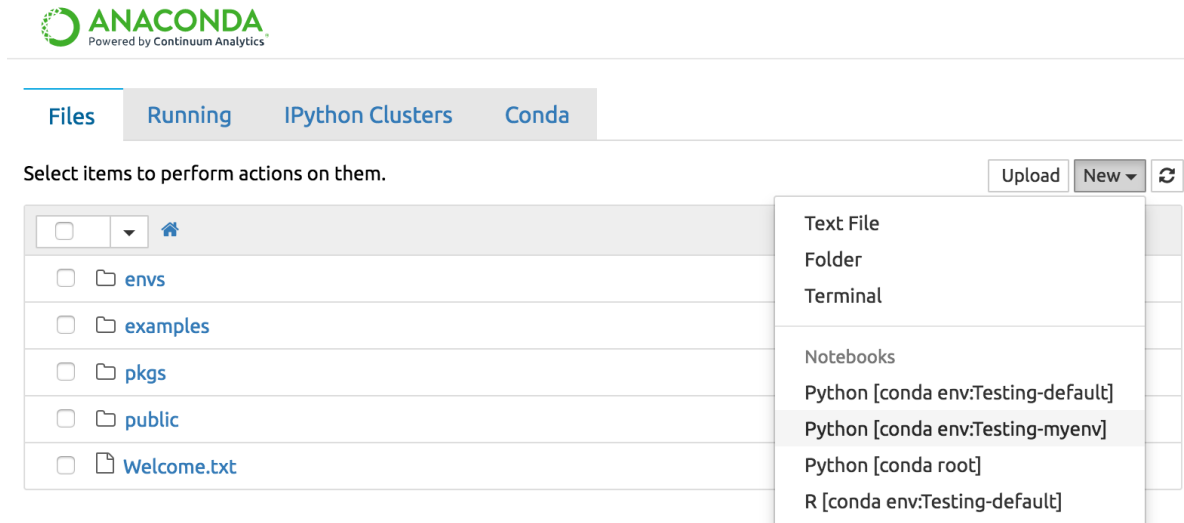
1. Click the Install icon.
2. To confirm your installation, click the Install button.

Numpy is displayed in the installed packages section—if not, click the Refresh button. Repeat these steps to install the Scipy package—searching for `scipy` in step 1.

**TIP:** You can return to this screen at any time to add additional packages to this environment.

## Creating a new notebook in your environment

1. From the AEN homepage, click the **Files** tab.
2. On the top right of the **Files** tab, click the New button.
3. Under Notebooks, select the Python environment with the name you entered while *creating a new environment*.



NOTE: If you do not see your new environment listed under Notebooks, next to the New button, click the Refresh button.

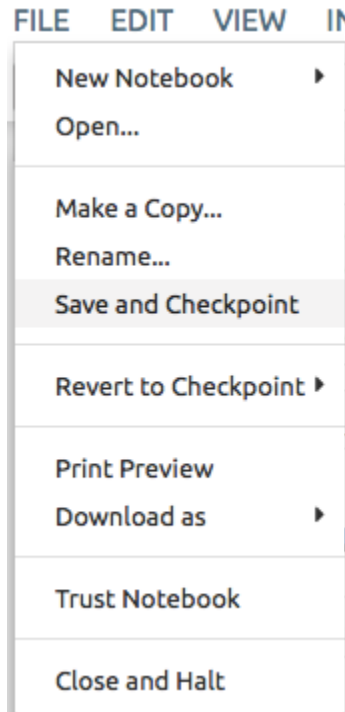
A new locked notebook is displayed. Paste or write some code to execute when you are ready.

## 6. Create checkpoints for version control

Whether you are exploring an existing notebook, or creating a new one, you can easily create checkpoints, return to an earlier version, compare two different versions and save them for reference.

To create a checkpoint, in the **File** menu, select Save and Checkpoint:





To revert your notebook to a previous checkpoint, in the **File** menu, select Revert to Checkpoint.

NOTE: For more information about revision control features, including creating commits and comparing differences, see *Using the Revision Control Mechanism extension*.

## 7. Share your notebook and environment with others

See *Sharing projects and notebooks*.

## 8. See what to do next

Now that you have completed the Getting Started guide, you are ready to move on to *basic tasks* and *advanced tasks*.

### Basic tasks

This section contains information and tasks that use the web browser to manage projects and is best-suited for any beginning AEN user:

### Working with projects

Almost everything in AEN starts by opening an existing project or creating a new one.

After that, you can set up a special environment with the packages you want, set their access permissions and modify your project settings.

### Searching for a project or file

To search for projects and files, use the Search box in the AEN navigation bar. The search provides different results depending on which page you search from:

- On a project home page, search results include any files that match your search criteria within the current project.
- On any other AEN page, search results include any files that match your search criteria within all projects.

**TIP:** Your search results include only files and projects that you can view: public projects, and private projects to which you have a minimum of view access.

### Types of files searched

The following types of files are included in search results:

- `.py`—Python source files.
- `.ipynb`—IPython/Jupyter notebooks.
- `.txt`—plain text files.
- `.md`—Markdown files.

### Search indexing

Files that are modified while a project is running are automatically re-indexed shortly after the files are modified. If you create or update a large number of files—such as cloning a git repository or copying a directory—search results may take several minutes to update.

Files that are modified while the project is not running are re-indexed only after the project is started.

## Using search constructs

You can use the following search constructs:

- Ordinary words will match the full-text contents of any file.
- Wildcards are permitted.  
EXAMPLE: `John*` will match John and Johnny. These are glob patterns and are similar to their usage in the command line.
- Combine queries using AND or OR, and group them using parentheses ().

Regular expression patterns can be embedded in the query string by wrapping them in forward-slashes (/):

```
name:/joh?n(ath[oa]n)/
```

The supported regular expression syntax is explained in [the Elasticsearch reference](#).

NOTE: Wildcards apply inside a regular expression. A query string such as `/. *n/` would force the search to visit every term in the index.

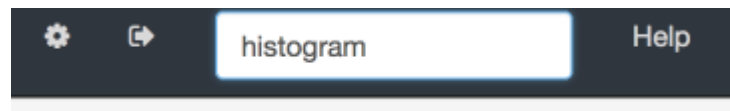
## Searching metadata fields

You can search in specific metadata fields:

- `imports:name`—matches files that import the module name.
- `uses:name`—matches files that reference the identifier name. Referenced names include any functions and globals imported from other modules, as well as the names of any methods invoked on any object.
- `defines:name`—matches files that define the identifier name. Defined names include functions defined at global scope, class names, and method names within classes.
- `acl:user`—matches files in which the named user has read access or higher.

## Searching a project

1. In the Search box, type a string of text:







TIP: Search by glob patterns, which are similar to file matching in the command line.


EXAMPLE: To find projects in the test family that are numbered from 00 to 99, search for `Test-??`. To find all projects whose name ends with “Stats,” search for `*Stats`.




2. Press Enter.
3. In the search results, click the plus + icon above a project name to show a list of matching files in the selected project:


Projects matching 'iris' ([save this search](#))







 **testuser / TestProject**  
NotebookApp  0 







 **AnacondaEN / AEN11\_0**  
No Summary  0 






 **Rida / ABC**  
No Summary  0 



 **Rida / Testing**  
No Summary  0 



 **testuser / TestProject1**  
NotebookApp  0 

TIP: Click the project name to open the project's home page.

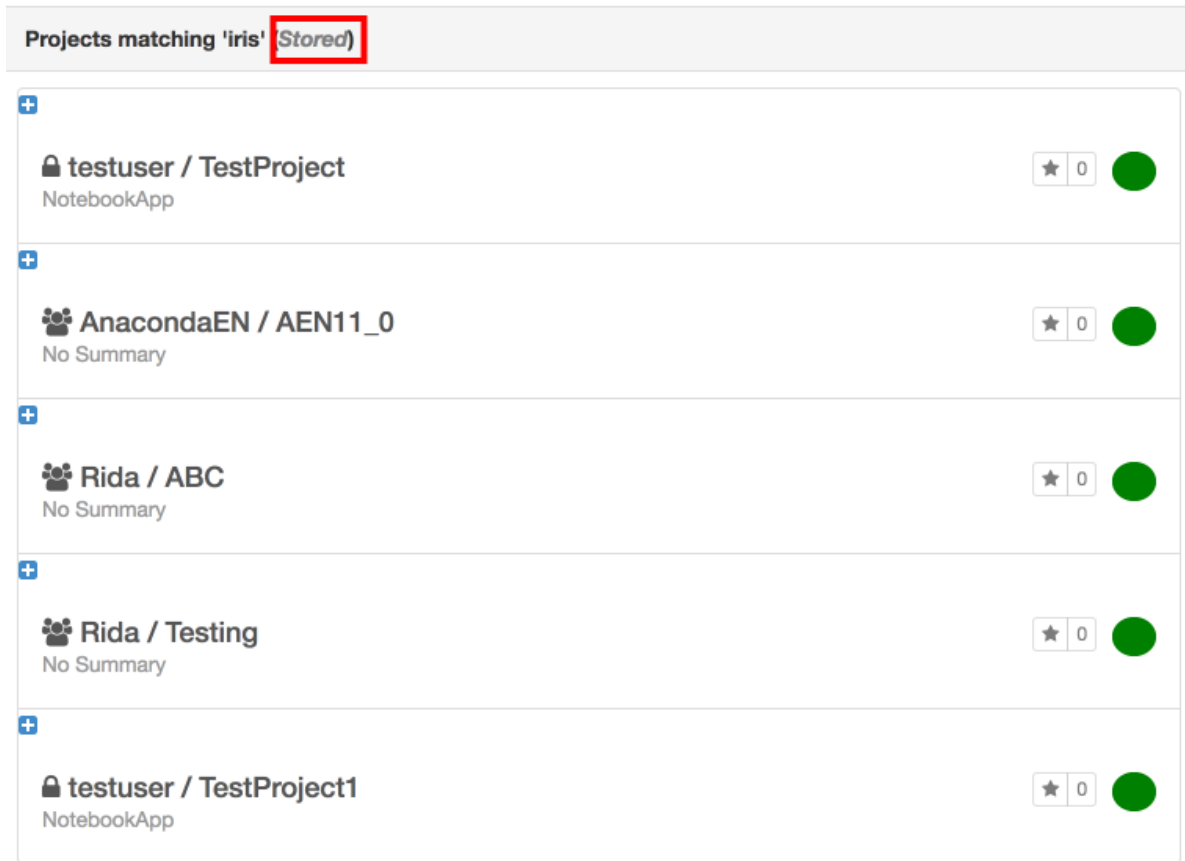
4. To view a file, click its file name in the matching files list:

Found 1 files matching 'histogram' in user02/Public\_project. ([save this search](#))

File	Relevance
<a href="#">/examples/histograms.ipynb</a>	42

## Saving a search

1. At the top of the search results, click Save this search:



The “save this search” text changes to “stored” and your search is saved. Your saved searches are listed on your home page.

## Removing a saved search

On your home page, in the Saved searches section, click X next the saved search that you want to remove:

Projects (2)

New project

testuser / TestProject

NotebookApp

★ 0

testuser / TestProject1

NotebookApp

★ 0

Contributing (0)

Not currently contributing to any projects.

Top Tags

!@#\$\$%^&*()_+~	1
Abc	1
_))((	1

Top Collaborators

aen_admin	1
-----------	---

Top Rated

Project	1
Testing	0
AEN11_0	0
ABC	0
TestProject	0

Saved searches

iris	✕
------	---

## Adding and removing team members on a project

1. On the project home page, click the Project Settings icon to open the Project Settings page.

ANACONDA

testuser

+

⚙

↔

Search this project...

Help

testuser / TestProject

NotebookApp

⚙ ☆ 0

2. In the **Settings** menu, select Team.

testuser / TestProject

NotebookApp

Settings

Project

Team

Admin

Info

Team

Add

Team members will be granted full access to your applications, files, and services.

aen\_admin (remove)

### Adding a team member

1. In the username box, type in the first few letters of the username for the team member you want to add to the project.
2. In the list of usernames that displays, click the user to add.
3. Click the Add button.

### Removing a team member

Click the red Remove link next to the name of the user you want to remove from the project.

### Controlling access to your project

#### Controlling team member access

By default, all of the team members on a project have read and write access permissions for all project assets.

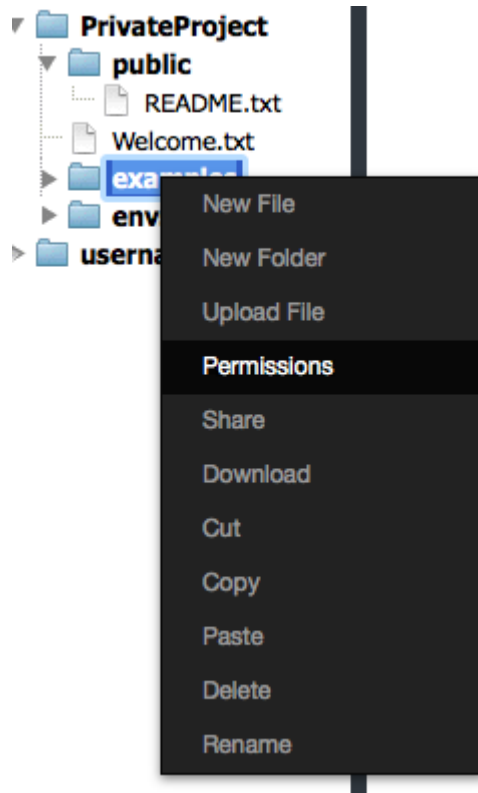
The available permissions are read, write and execute. If you remove all individual or group permissions for a project asset, team members will not be able to access that asset.

To change a project's permissions:

1. Open the project's home page.
2. Click the Workbench icon.
3. In the Workbench app, right-click the file or folder you want to limit access to.

NOTE: When you change a folder's permissions, the permissions of files and folders inside it do not change. You may change the permissions of those files and folders manually.

4. In the menu that displays, select Permissions:



A list of owners and team members who have access to your project is displayed.

5. Find the team member you want to change access for:



Permissions for examples

Owner 
Group

Who	Type	Read	Write	Execute
owner		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
group		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
others		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mask		true	true	true
<input type="text" value="username"/>	User <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username"/>	Group <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	User <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	Group <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	User <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	Group <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Next to the team member's name, select or deselect the permissions for that user.

NOTE: You can add a team member and set their access at the same time by typing their name in a username box, setting their permissions, and then clicking the Add button.

- Click the Submit button.

The selected permissions are added, and the deselected permissions are removed.

NOTE: If a team member is in the Workbench application when you give them access, they must refresh their browser window to see their current permissions.

### Controlling non-team member access

You can choose to grant file or folder access to someone who is not part of the project team, as long as that person has an AEN account.

Sharing with individuals outside the team is a four step process:

- Copy or move the file or folder to your home directory.*
- Give the user read and execute access to your home directory.*
- Add the user to the file's permissions.*

4. *Have the user add your directory to their workbench.*

## Copying a file or folder to your home directory

Your home directory is displayed at the bottom of the File Manager pane in the Workbench.

To protect the other files and folders in your home directory—those you are not providing permissions to a user to access—we recommended that you:

1. Create a sub-folder.
2. Rename the folder with the name of the user you are granting access to.
3. Copy or move the file you want to grant permissions for to the renamed folder.

The file is copied or moved to the new location and is ready for you to update the file permissions.

## Granting file access

You must select read and execute access for a user to be able to view, but not edit, the files or folders.

1. Right-click the name of the file or folder you are granting access to.
2. In the menu that is displayed, select Permissions.
3. Click the Add button.
4. Type the username of the user to whom you are granting file access and press Enter.

**TIP:** If you grant access to a folder instead of a specific file, you only have to set permissions the first time you share the folder with each user, unless you need to update the permissions.

## Adding file permissions for a user

Once a user is included in your Permissions list, you must *add the correct permissions* for the user, in the same way as you would for a team member.

Once complete, depending on the access granted, the user will be able to view, read, change, and execute the file.

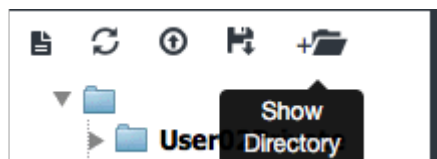
**NOTE:** If you change permissions for a folder instead of a file, the user will be able to see and access any files within that folder.

## Adding a directory to a user's workbench

The user can now add your home directory to their Workbench File Manager.

To add your home directory to another user's workbench, have the other user follow these steps:

1. Click the Show Directory button at the top of the Workbench File Manager:



The Show Directories dialog box displays.

- In the text box, type `/home/[yourusername]`.

NOTE: Replace `[yourusername]` with your AEN username.

### Show Directories



Enter the full path to an existing directory that you would like to see in the file browser. For example, if the project node has a directory with a path of `/data/2010` that contains data files from 2010 that you want to browse, enter `/data/2010` and click on the Show button.

- Click the Show button.
- Verify that the folder is now displayed below the text box:

### Show Directories

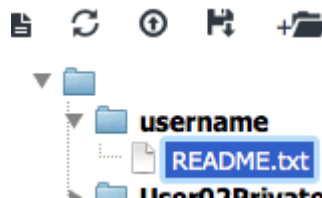


Enter the full path to an existing directory that you would like to see in the file browser. For example, if the project node has a directory with a path of `/data/2010` that contains data files from 2010 that you want to browse, enter `/data/2010` and click on the Show button.


- Close the Show Directories dialog box by clicking the X in the upper-right corner or by clicking anywhere outside the box.
- Click the Refresh button.

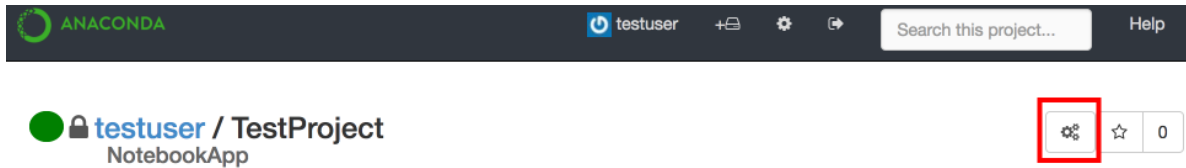
The shared file is displayed in the File Manager:



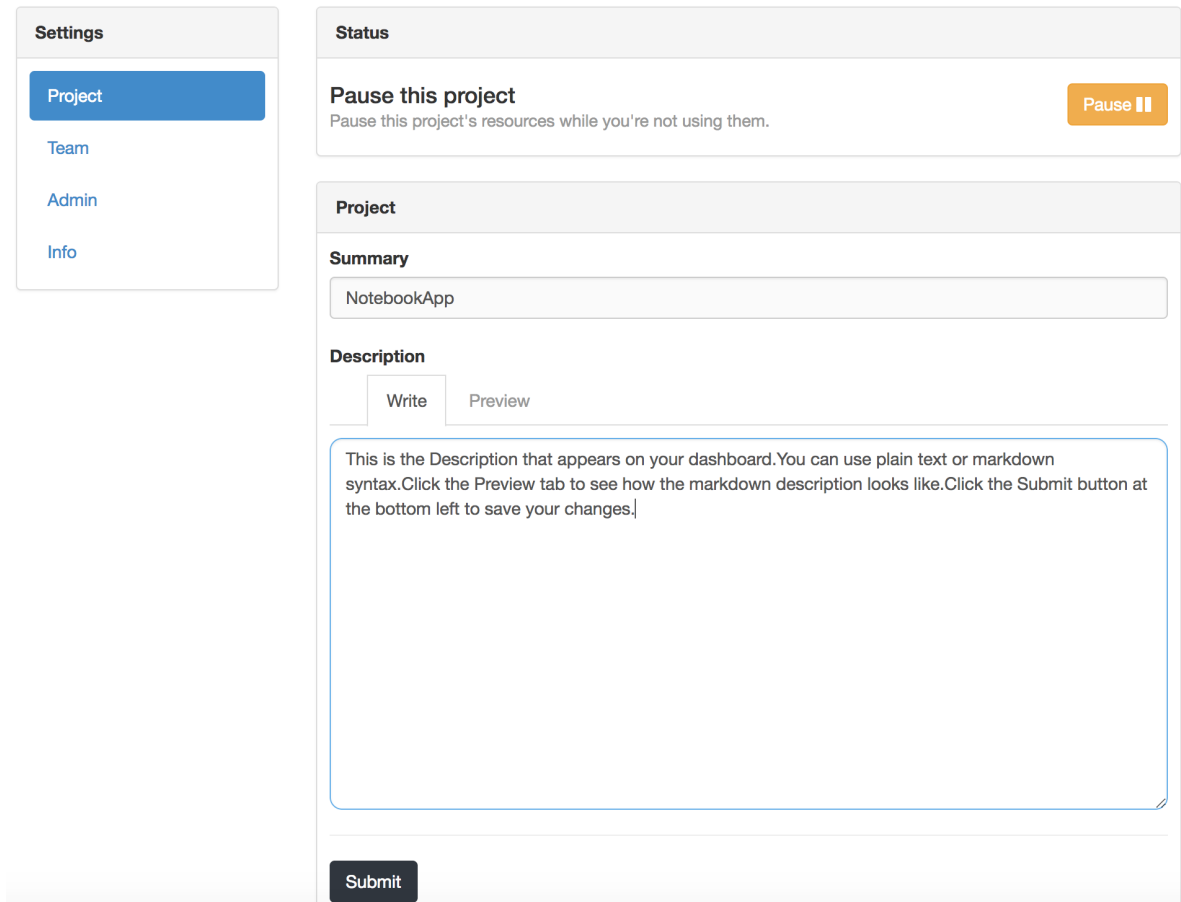
## Starting and stopping a project

TIP: Stopping a project stops all the applications launched for that project that use resources when running, such as memory and compute cycles. It is best to stop projects when they are not in use.

1. On the project home page, click the Project Settings icon to open the Project Settings page.



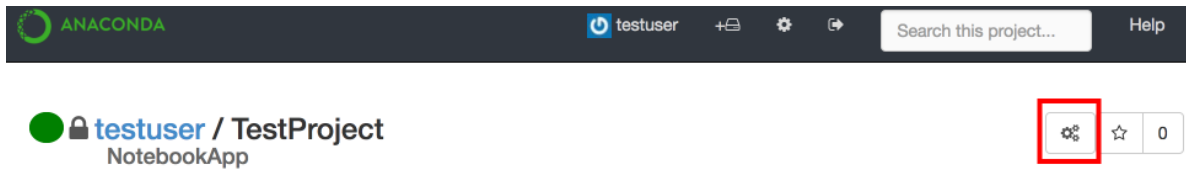
2. In the **Settings** menu, select Project.



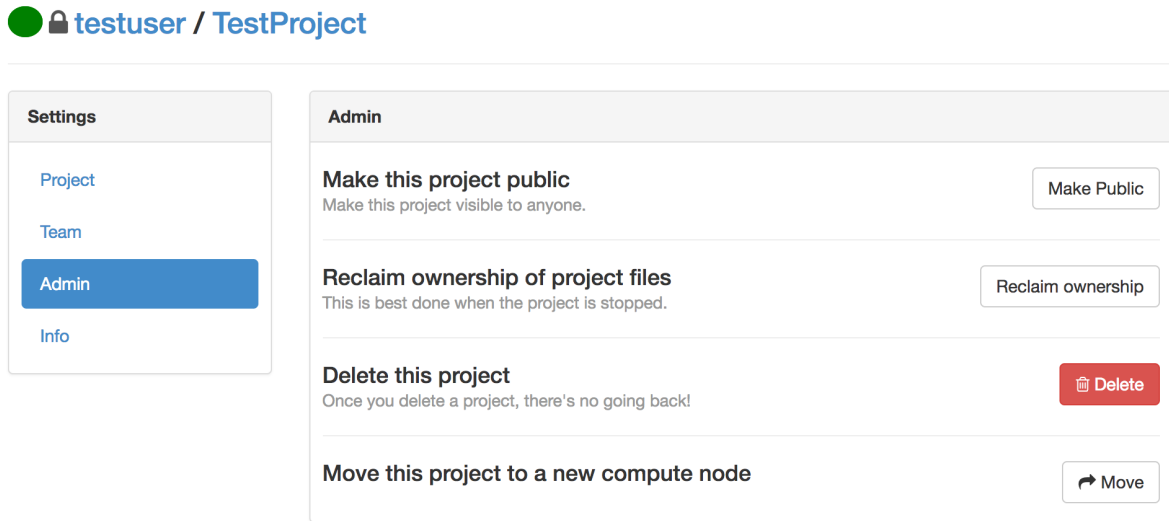
3. In the Status section, click the Start or Stop button to toggle between manually starting and stopping your project.

## Making a project public or private

1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Admin.



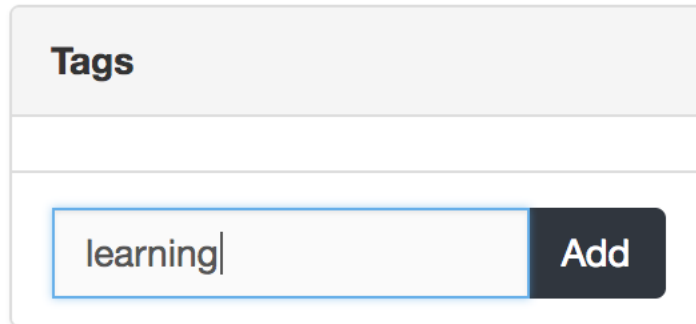
3. Click the Make Public button.
4. If the project is already public and you want to make it private, click the Make Private button.

## Tagging a project

Existing tags assigned to a project are listed in the Tags section on the project's home page.

### Adding a tag

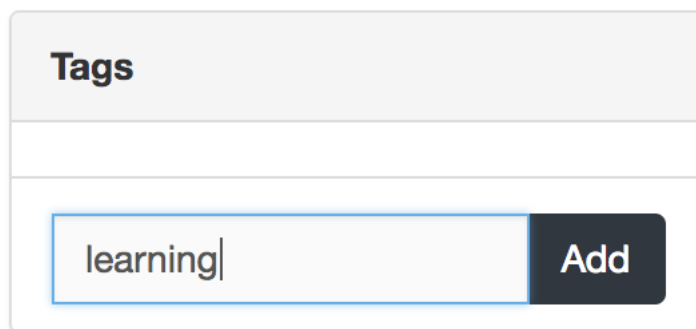
1. In the Tags box, type the name of the tag you want to add:



A screenshot of a web interface showing a 'Tags' section. It features a text input field containing the word 'learning' and a dark 'Add' button to its right. The entire section is enclosed in a light gray border.

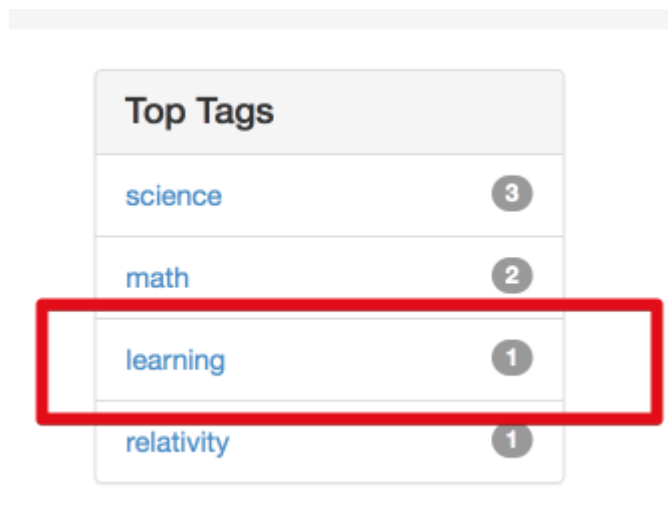
2. Click the Add button.

The new tag is added to the Tags list:



An identical screenshot to the previous one, showing the 'Tags' section with 'learning' in the input field and the 'Add' button.

If the tag was not already in the Top Tags list on your user home page, it is added. If the tag was already listed because another project used it, the number next to the tag is incremented:

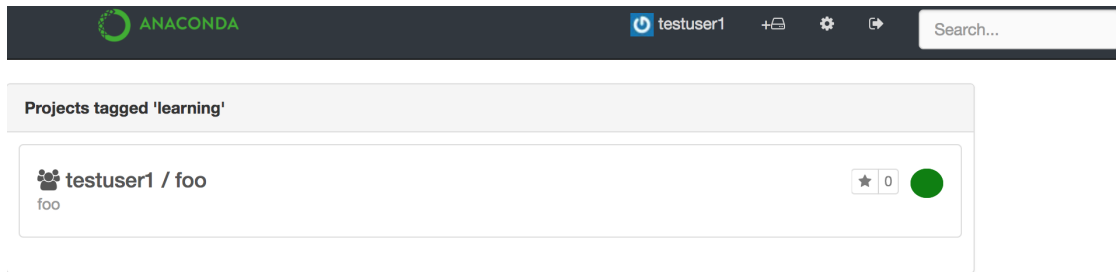


A screenshot of a 'Top Tags' list. The list contains four items: 'science' with a count of 3, 'math' with a count of 2, 'learning' with a count of 1, and 'relativity' with a count of 1. The 'learning' row is highlighted with a red rectangular box.

Top Tags	
science	3
math	2
learning	1
relativity	1

## Removing a tag

1. On your user home page, in the Top Tags list, click the tag name.



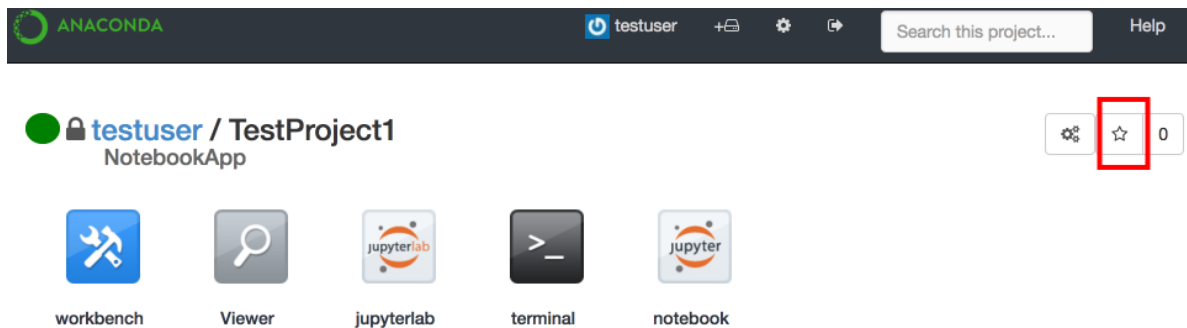
1. In the Tags list, click the X button next to tag name.

## Starring a project (rating)

Starring a project makes it appear on your user home page in the Top Rated list.

Adding or removing stars for a project does not affect the stars added by other users.

1. Open the project that you want to star.
2. On the project home page, click the Star icon at the upper right:

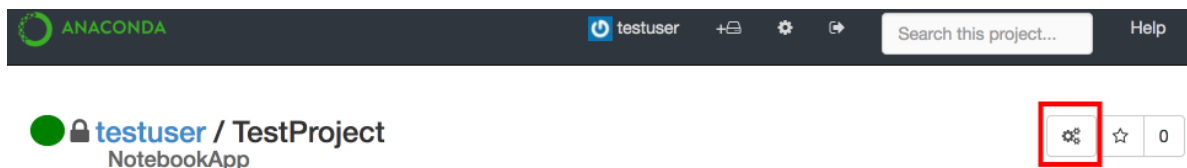


3. To unstar a project, click the Star icon again.

## Claim ownership of a project

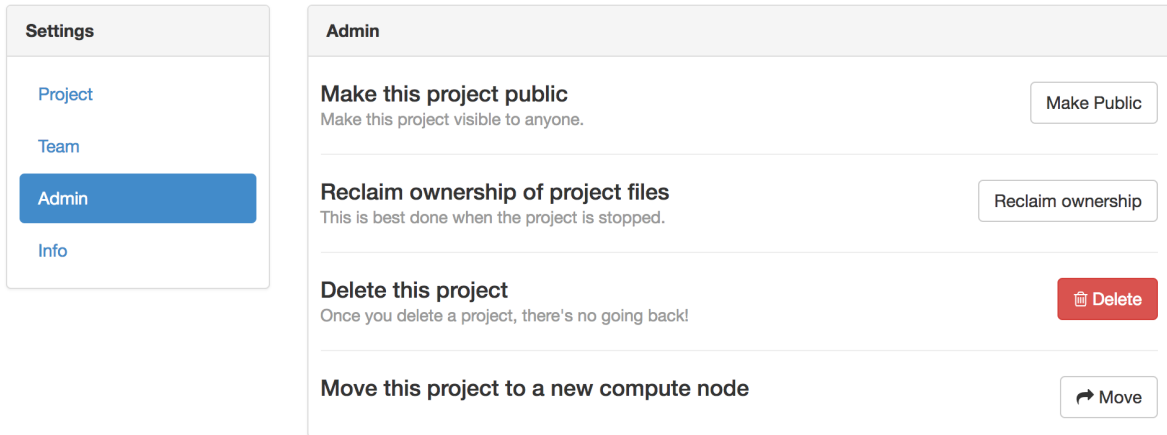
When you claim ownership of a project, ownership of all files and folders created by the team members on the project is transferred to you. Project files and folders are copied and renamed.

1. *Stop the project* to prevent team members from making changes while you are changing ownership.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.

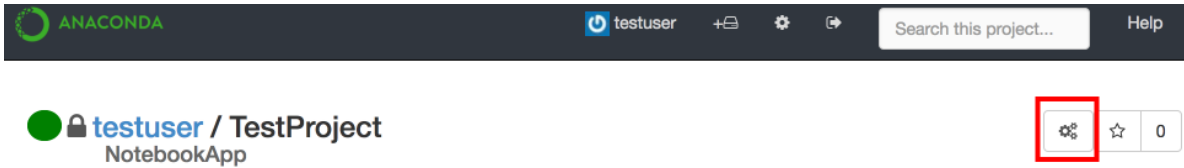
 testuser / TestProject



4. Click the Reclaim ownership button.

## Changing a project's summary or description

1. On the project home page, click the Project Settings icon to open the Project Settings page.



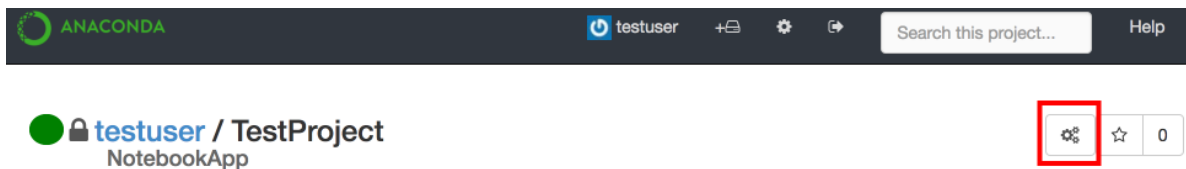
2. In the **Settings** menu, select Project.



3. Update your project's summary using plain text or its description using Markdown syntax.
4. Click the **Preview** tab to see a preview of the Markdown description.
5. Click the Submit button.

### Viewing a project's status

1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Info.

 **testuser** / **TestProject**

**Settings**

[Project](#)  
[Team](#)  
[Admin](#)  
[Info](#)

**Info**

**Status**  
running  
**Created**  
Mon Sep 25 20:43:56 2017  
**Last Heartbeat**  
Mon Sep 25 20:43:56 2017

**Data Center**

**Name**  
Gateway  
**Provider**  
Enterprise Resources  
**Summary**  
Gateway

On the Info page, you can see:

- Whether the project is currently running or stopped.
- When the project was created.
- When the project was last accessed.
- The data center in which the project is running.

## Viewing related projects

Related projects are listed on a project's home page.

Team

Add

user02 (owner)

user01 (remove)

Related Projects

user01 / TestProject2

No Summary

user02 / User02Private

No Summary

user01 / TestProject

No Summary

These are projects that contain fields that are most similar to the current project.

TIP: You will only see projects to which you have been granted access: public projects, and private projects on which you are a team member.

### How related projects are identified

To determine which projects should be listed in Related Projects:

1. The recommendation engine scans the current project's files and weights the terms found to determine which of them to use for the likeness search.
2. The engine performs a search, with extra weight given to the "uses" and "imports" keywords.
3. The engine finds the files and projects that are most similar to the current project and scores the results.
4. The top-scoring matches are displayed in Related Projects. Only public projects and private projects to which you have access are included.

## Viewing top-rated projects

Top-rated projects are listed on your home page:

Top Rated	
einstein	2
euler	1
laplace	1
plank	1
Public_project	1

The number next to a project represents the number of stars that have been given to that project.

Click a project name to view the project's home page.

## Using tags to find a project


The top tags used on your projects are listed on your home page:

ANACONDA

NewUser2

Search...

Help

 **NewUser2**

Joined on Oct 20, 2016  
newuser@mycompany.com  
1 Projects

Projects (1)

New project

NewUser2 / NewProject

Woo hoo! I finally get to play with notebooks!

★ 0

Contributing (0)

Not currently contributing to any projects.

Top Tags

Fun fun fun 1

Test project 1

Top Collaborators

Top Rated

test1 0









test2 0

NewProject 0

To list all projects that share a specific tag, click the tag name:

Top Tags	
science	4
math	2
learning	1
relativity	1

A list of projects with the selected tag is displayed:

Projects tagged 'science'	
 malev / euler euler	★ 1 
 malev / einstein einstein	★ 2 
 malev / plank quantum theory	★ 0 
 user01 / User01Private_2 No Summary	★ 0 

TIP: The list includes only projects that you have access to: public projects, and private projects on which you are a team member.

Click a project name to open the project's home page.

## Viewing your top collaborators

Your top collaborators are listed on your home page:

Top Collaborators	
trento	1
user01	1

These are the team members who have the most projects in common with you.

To view a collaborator's home page—where you can see all public projects and the private projects they have shared with you—click the collaborator's name.

### Sharing projects and notebooks

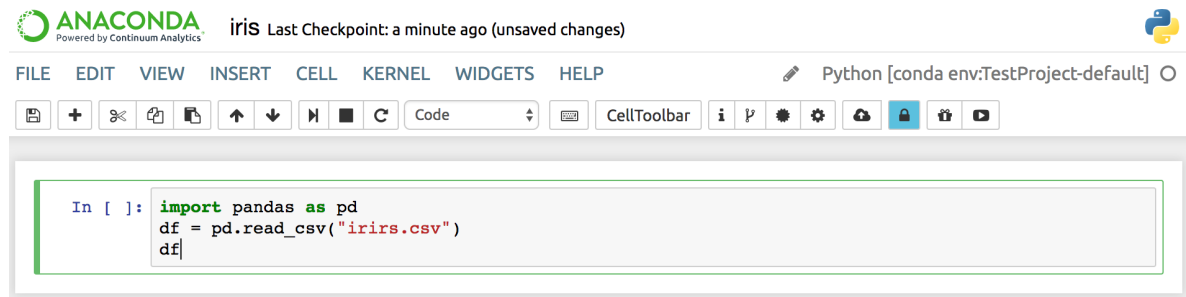
For information on sharing projects via the project settings and access control, see [Sharing projects](#).

To upload a Jupyter Notebook to Anaconda Repository:

1. Log in to Repository by running the `anaconda login` command or by using the login user interface provided by the [nbextension](#).

CAUTION: If you are not using a secure connection, we strongly recommended that you use the command line to log in.

2. To share your notebook environment, select the Attach conda environment checkbox. This ensures that your team members will have the right environment for your notebook.
3. Click the Upload button to upload your notebook to your local Repository or to [Anaconda.org](#), depending on how your administrator has set up AEN:



NOTE: If you have not yet logged into Repository or Anaconda Cloud, or have not created an account, you will be asked to do so.

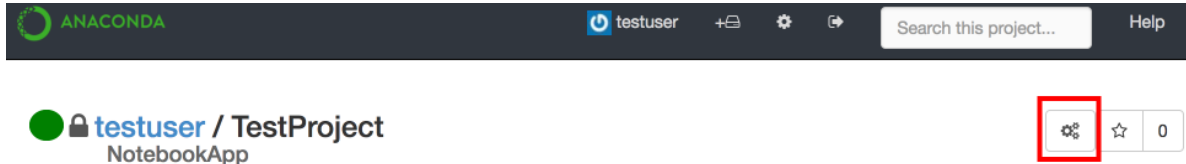
### Other ways to share a notebook

- Print—In the **File** menu, select Print.
- Download and share—In the **File** menu, select one of the following options:
  - Download as Notebook.
  - Download as Python.
  - Download as HTML.
  - Download as Markdown.
  - Download as ReStructured Text.
  - Download as PDF.
- Share and control team members' direct access to read, write and/or execute your notebook file or folder. For more information, see [Controlling access to your project](#).
- Share and control non-team members' file or folder access. For more information, see [Controlling access to your project](#).
- Create a presentation with [NBPresent 4.1](#).

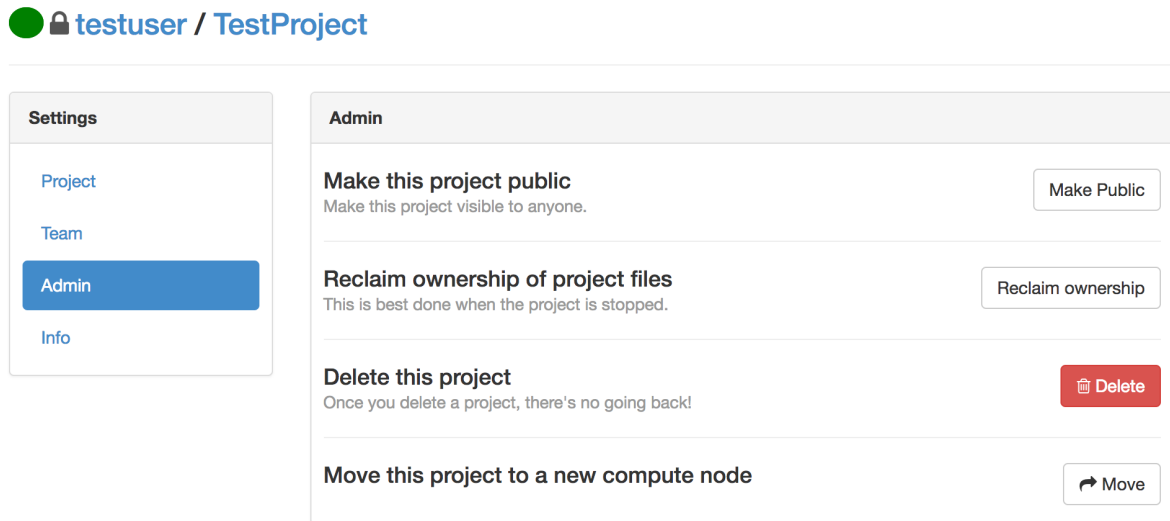
## Deleting a project

CAUTION: Deleting a project deletes all project files and information! There is no undo option.

1. Download a copy of any project files that you need to save.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



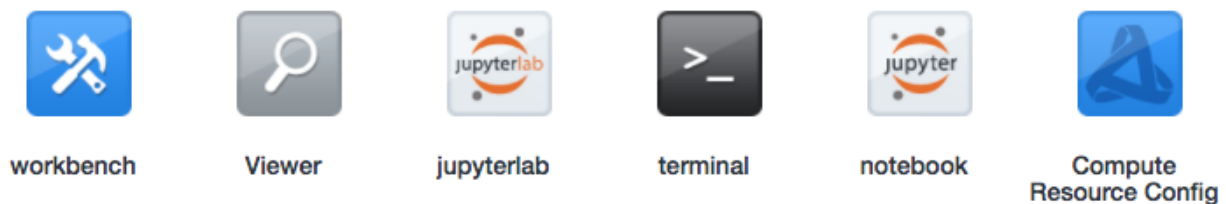
4. Click the Delete button.

## Using AEN applications

The applications in your project make it easy for you to interact with your files and data, manage your project's resources and to customize your AEN experience.

To use applications, log in to AEN, then select the project you want to work on or create a new project and open it.

On the project home page, the following application icons are displayed:



TIP: Each application opens in a new browser tab. You can run multiple applications at the same time in your project.

For more information on each AEN application, see:

- [Using Workbench](#)—File viewer and manager, including permissions settings.

- *Using Viewer*—View-only versions of notebooks and other text files.
- *Using JupyterLab*—Alpha preview of the next generation notebook.
- *Using Terminal*—Basic bash shell Terminal.
- *Using Jupyter Notebook*—Jupyter Notebooks with extensions.
- *Using Compute Resource Configuration*—Project information, view and manage applications.

## Using Workbench

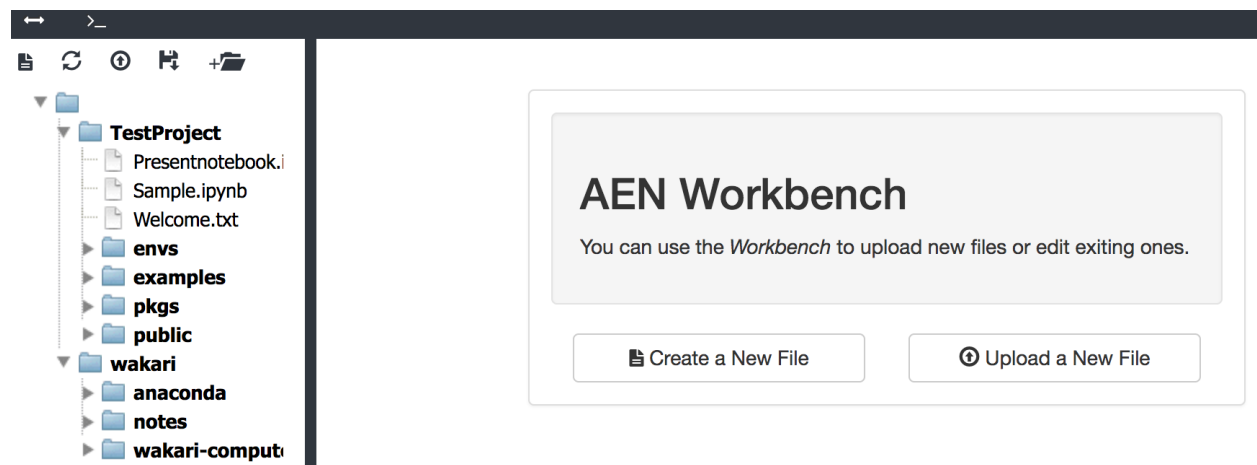
Workbench is a file viewer and manager that includes a file editor and file permissions manager.

You can use Workbench to:

- Upload and download files using the *File Manager*.
- Create new files and folders using the *File Manager*.
- Copy and move files to new locations using the *File Manager*.
- Rename files and/or folders using the *File Manager*.
- Manage the *access permissions* of team members.
- Grant or revoke *access to non-team members*.

Workbench also includes a simple Terminal application, which is convenient because the File Manager is always visible, making navigation simple.

When you first open Workbench, the File Manager is displayed in the left pane, and the Create a New File and Upload a New File buttons are in the right pane:



When you open a file or Workbench Terminal, it is displayed in the right pane. To make the Create or Upload a file options re-appear, refresh your browser window.

Two small icons are displayed in the black navigation bar at the top of the Workbench page. Hovering over them displays tool tips that describe their use:

- The Toggle icon displays or hides the File Manager.
- The Terminal icon opens a simple terminal window.



## Opening Workbench

To open Workbench:

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Workbench icon:



workbench

Workbench opens in a new browser window.

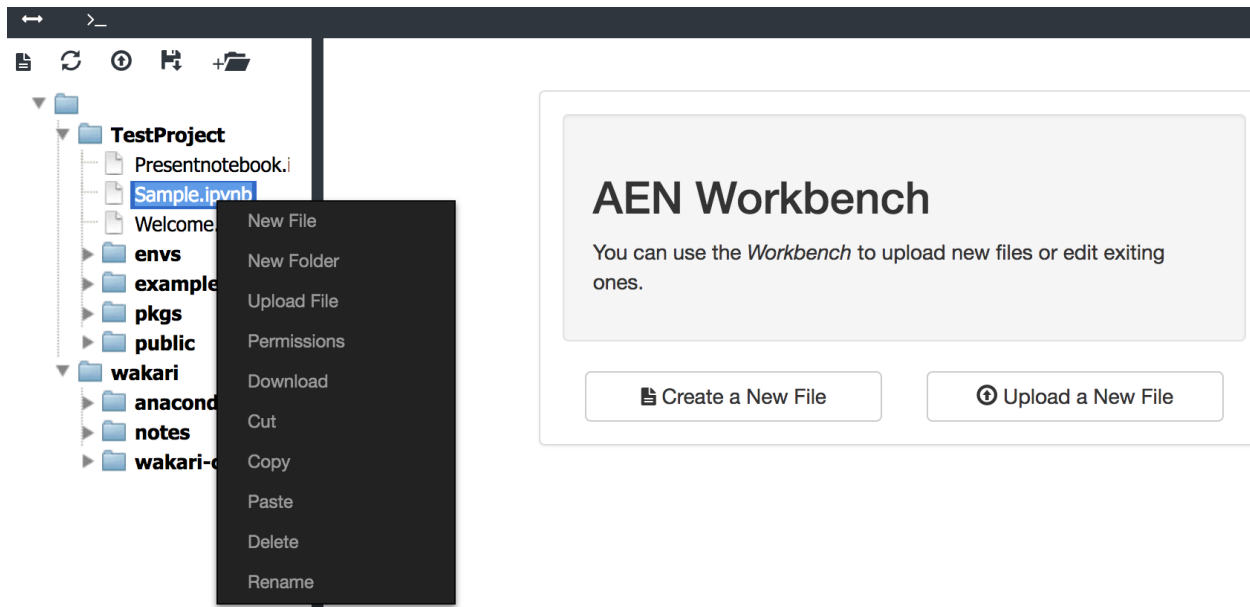
## Using File Manager

The File Manager is an intuitive way to interact with your files and folders.

## Using the options drop-down menu

To perform any of the actions described below:

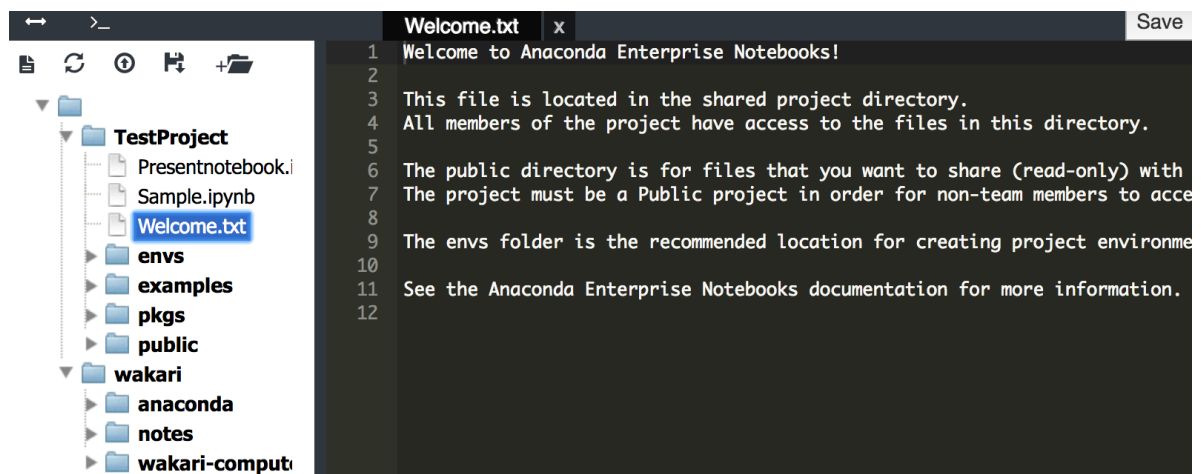
1. Right-click on any folder to display the options drop-down menu.
2. Select one of the following options:
  - New File—Create and edit a new file.
  - New Folder—Create a new folder.
  - Upload File—Upload a file to the selected folder. You can also drag a file to the folder.
  - Permissions—*Control access to files and folders.*
  - Cut—Cut the selected file or folder.
  - Copy—Copy the selected file or folder.
  - Paste—Paste a previously cut or copied file or folder.
  - Delete—Delete the highlighted file or folder.
  - Rename—Rename the highlighted file or folder.



## Editing files using the File Editor

1. Double-click any text file in the File Manager.

The File Editor opens in the right pane:

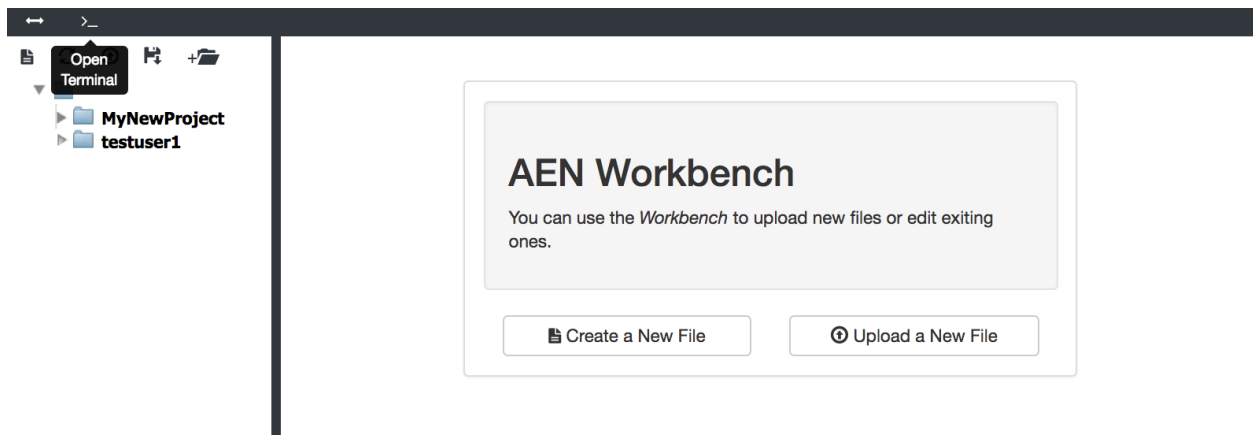


2. When you finish editing the file, click the Save button.

NOTE: To close the file without saving, click the X at the top of the page under the file name.

## Opening the Workbench terminal

In the navigation bar, click the Open terminal icon:



A Terminal—bash shell—is displayed in the right pane.

**TIP:** You can open additional terminals by clicking the Open terminal icon again, or by clicking the Plus + icon at the top of an open terminal.

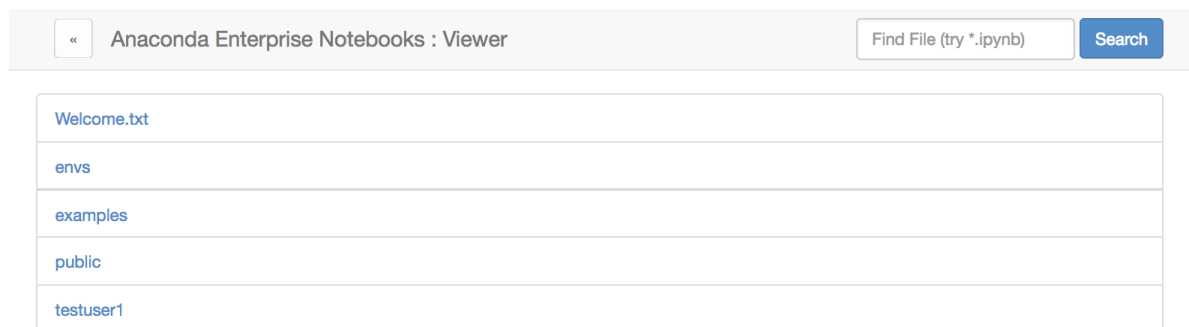
To move between terminal windows, click the **Terminal** tab in the navigation bar, then select the number of the terminal window you want to work in.

## Using Viewer

The Viewer application displays a static, view-only version of your notebooks and other text files by rendering the text files directly and using the NBConvert tool to convert notebooks to static HTML.

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Viewer icon.

Viewer opens in a new browser window:



4. Click any folder to view its contents, or click any filename to view the file.
5. To search for a file or folder name, type text in the Find File box, then press the Enter key. This is not a full-text search, but wildcards are permitted.

## Using JupyterLab

JupyterLab is an early alpha-preview of the next generation of the Jupyter Notebook. It is included so that you can take a tour and play with its capabilities.

CAUTION: JupyterLab is experimental. It is not yet intended for production work.

JupyterLab does not include any of the notebook extensions that are available in the *Jupyter Notebook app*.

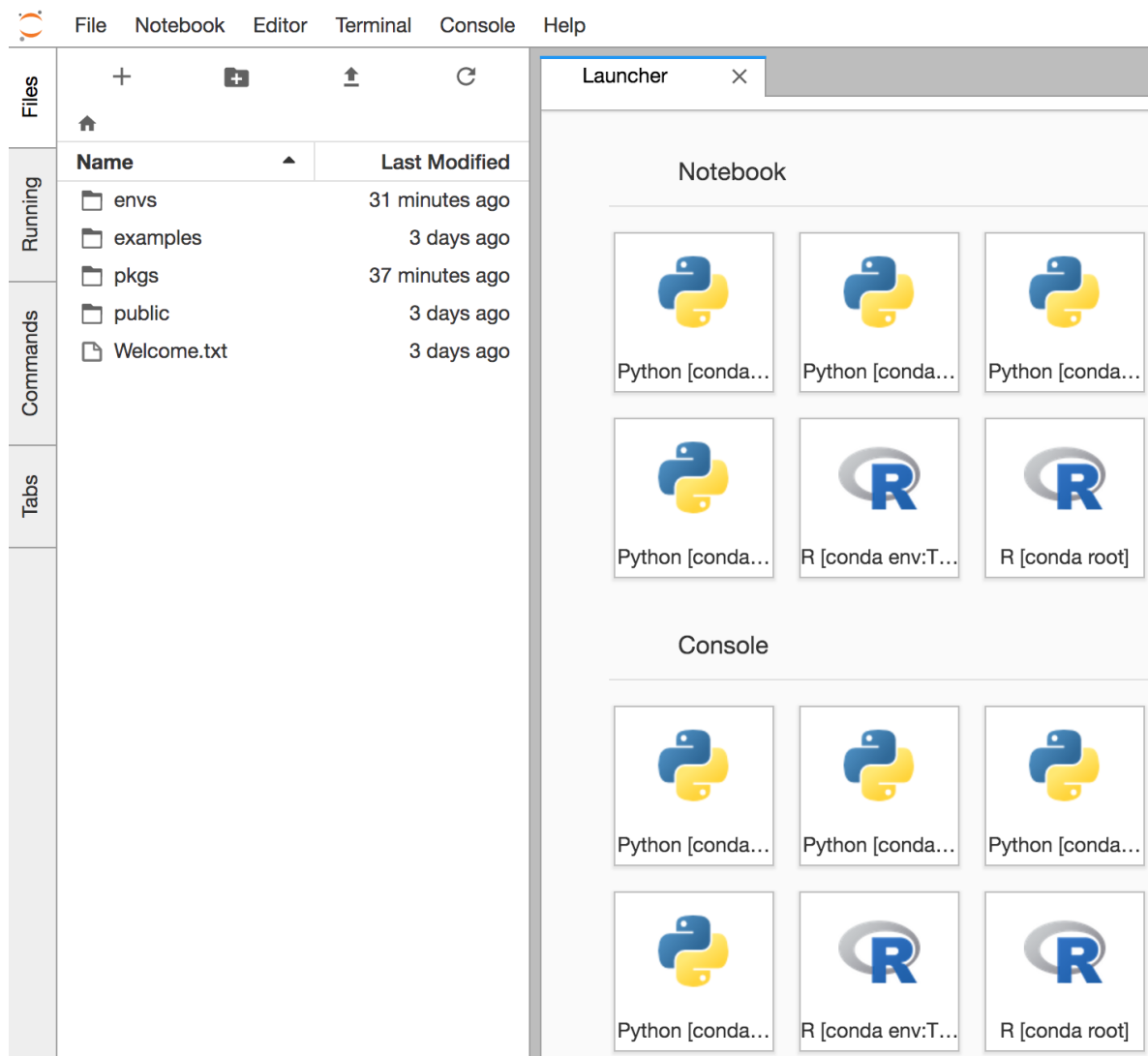
For more information about JupyterLab, see the [documentation](#).

You can also download and print a `Jupyter cheat sheet` on using Jupyter Notebook and the new JupyterLab.

To open JupyterLab:

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click on the JupyterLab icon.

JupyterLab opens in a new browser window:



Experiment with the application on your own, using the **Notebook**, **Editor**, **Terminal** and **Console** menus.

To review a guided tour of all of the features JupyterLab will contain when it is ready for production, click the Take a tour link in the right pane.

## Using Terminal

The Terminal application is a simple bash shell terminal that runs in your browser:

```
+ 1 bash
(/projects/aen_admin/TestProject/envs/default) ls
envs  examples  pkgs  Presentnotebook.ipynb  public  Sample.ipynb  Welcome
(/projects/aen_admin/TestProject/envs/default) █
```

Using Terminal, you can:

- Access your home directory and your project drive.
- Open multiple shells within one instance of Terminal.
- Open multiple instances of Terminal in the same browser window.

1. Log in to AEN.
2. Select a project you want to work on, or create a new project and open it.
3. On the project home page, click the Terminal icon:



Terminal

Terminal opens the project directory in a new browser window.

By default, the project directory is `/projects/username/project-name`.

EXAMPLE: `/projects/TestUser/MyFirstNotebook`

4. To see the physical path of your directory, run the Print Working Directory command `pwd -P`.

TIP: The physical path `-P` is important because project attaches data to the beginning of your virtual path to keep your project files together.

5. To navigate out of your project directory to your home directory, run the command `cd`.
6. To return to your project directory, run the command `cd/projects/username/project-name`.

TIP: If you are new to navigating in a terminal, you may want to use [the Workbench terminal](#), which includes a visual navigation tree in the File Manager.

## Using multiple Terminals

You can open as many terminals as you want.

To open another shell in the terminal, in the upper left of the pane, click the plus + icon.



A corresponding number appears after the plus + icon and 1.

To move to another Terminal, click the corresponding number.

The color of the number tab changes to show which terminal is currently selected.

## Using Jupyter Notebook

The Jupyter Notebook application allows you to create and edit documents that display the input and output of a Python or R language script. Once saved, you can share these files with others.

NOTE: Python and R language are included by default, but with customization, Notebook can run several other kernel environments.

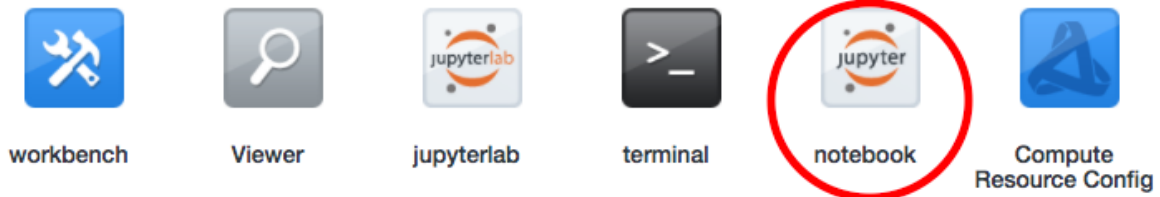
This page provides a brief introduction to Jupyter Notebooks for AEN users.

For the official Jupyter Notebook user instructions, see [Jupyter documentation](#).

For information on the notebook extensions available in AEN, see [Using Jupyter Notebook extensions](#).

## Opening the Jupyter Notebook application

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Jupyter Notebook icon:



Jupyter Notebook opens in a new browser window:



TIP: You can see the same *File Manager* in the Terminal, Workbench, and Viewer applications.

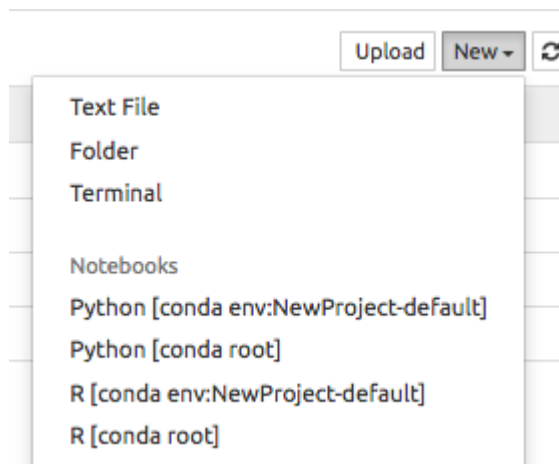
## Using example notebooks

The `Examples` folder in Jupyter Notebook contains several types of Notebook examples created in Python—and one with R language—kernel environments.

Open any example notebook to experiment and see how it works.

## Creating a new Jupyter Notebook

1. An the top right of the **Files** tab, click the New button.



2. Select the kernel environment to create your new notebook in.

NOTE: Customizable Python and R Language kernel environments are automatically created for you during project creation.

- Your project's default conda env kernels are a cloned copy of the root environment. You can customize them and install and delete additional packages.
- Root environment is managed by your Administrator. You cannot make or save any changes to it.

- You can switch between Python, R language and any other custom kernels in the notebook as you work in your notebook. For more information, see [Using the Synchronize Environments extension](#).

The new notebook is saved in the related project directory and displayed.

## Using Jupyter Notebook extensions

The following extensions are available for use with AEN's Jupyter Notebook application:

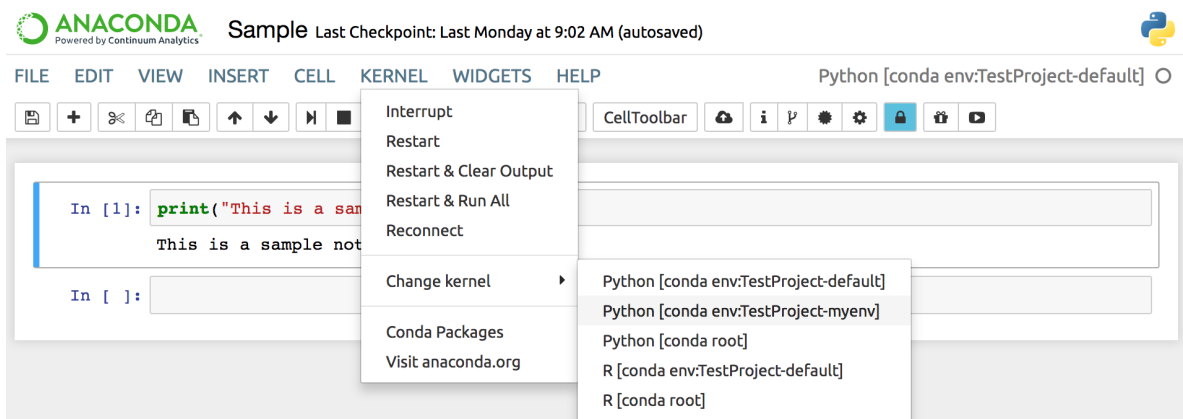
- [Synchronize Environments](#) with Jupyter from the **Kernel** menu.
- [Locking](#) adds multi-user capability from the Lock button.
- [Revision Control Mechanism \(RCM\)](#) adds Status, Checkout and Commit buttons.
- [Conda environment and package management](#) tab.
- [Conda notebook](#) adds conda management inside Notebook from the Kernel > Conda Packages menu option.
- [Anaconda Cloud integration](#) from the Publish to cloud button.
- [Notebook Present](#) turns your notebook into a PowerPoint-style presentation.

## Using the Synchronize Environments extension

The Synchronize Environments extension allows you to apply a Python, R language or any other custom environment inside your current notebook session, without needing to start up several Notebook instances using each of the selected environments.

To change environments:

1. Open the **Kernel** menu.



2. Click the Change kernel option.
3. From the list, select the environment to use.

NOTE: In AEN 4.1+ the default kernel for projects is `default`. In versions prior to 4.0, the default kernel for projects is `root Python`.



## Using the Locking extension

Multi-user capabilities are engaged in AEN when multiple users work in the same notebook file.

The Locking extension allows you to lock a notebook to prevent multiple team members from making changes at the same time. Notebooks are automatically locked when you open them.

If team members open a notebook and make changes while it is locked, their save capability is disabled, and they cannot overwrite the notebook.

To override the lock, they must actively take control of the locked file by clicking the Lock icon in the Notebook menu bar:



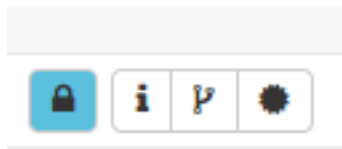
NOTE: This is a soft locking model. Team members can choose to override your lock to save their work. If you give team members write access to your files, confirm that they understand that they should never unlock your file unless they are making meaningful, non-destructive team contributions.

## Using the Revision Control Mechanism extension

The Revision Control Mechanism (RCM) Jupyter Notebook extension provides simple version control for notebook files. It uses the internal Jupyter functionality to perform tasks.

On the surface, RCM uses a simple linear model, but beneath that is a more complex git-based branching model. To prevent merge conflicts, this model uses a “latest wins” policy as its main merging strategy.

The RCM Jupyter Notebook extension adds four buttons:



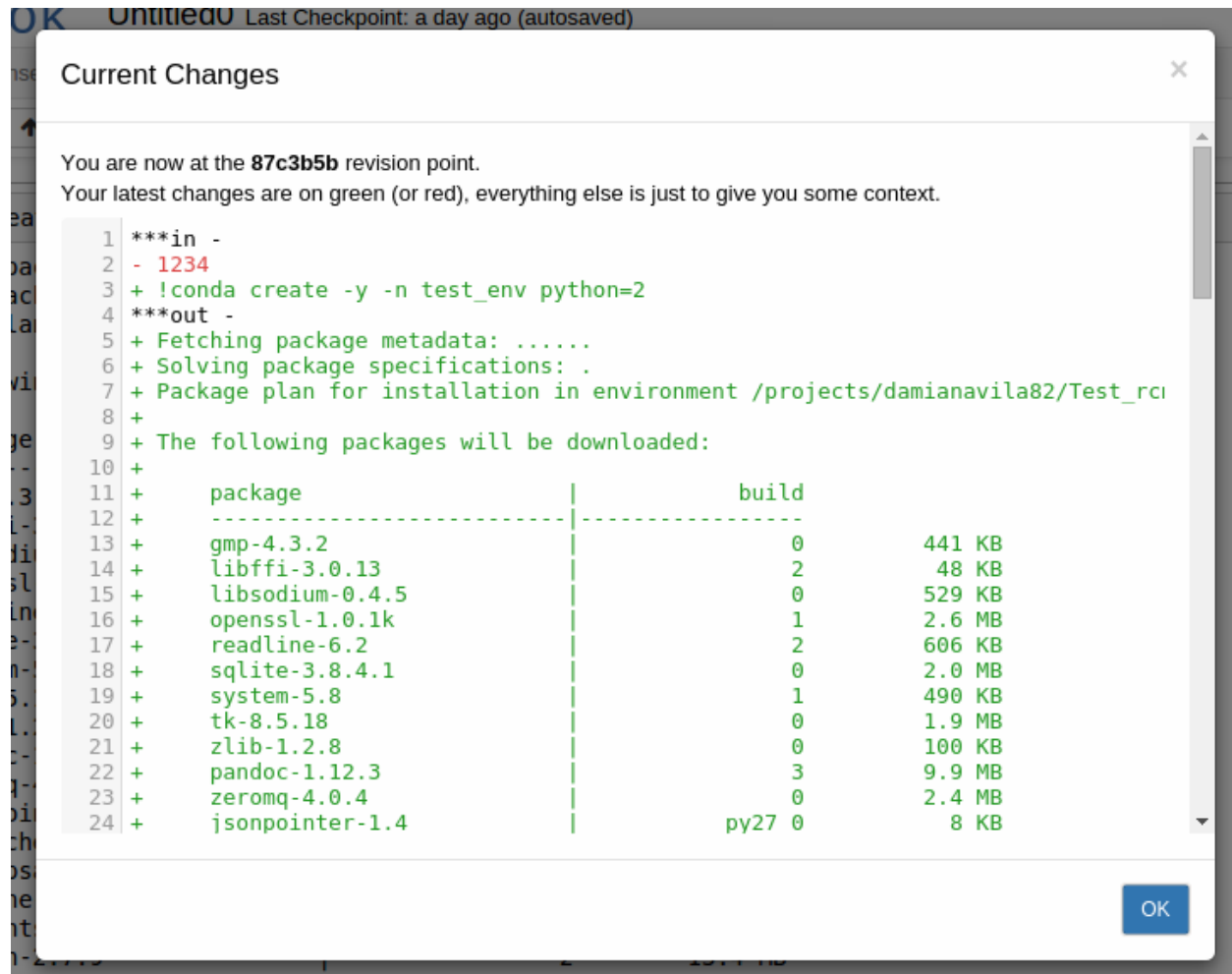
- *Status.*
- *Checkout.*
- *Commit.*
- *Configure git.*

TIP: If you do not see the RCM buttons, see *Setting up RCM for the first time.*

## Using the Status button

The Status button allows you to see what revision you are on.

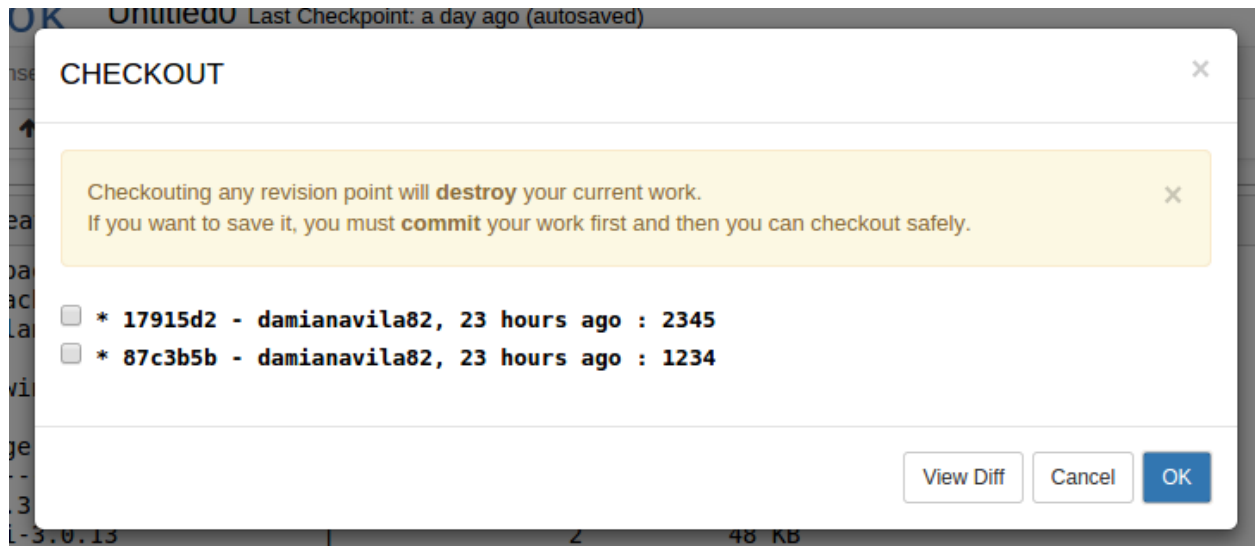
Clicking the Status button displays:



### Using the Checkout button

The Checkout button allows you to view a list of the previous revision points, check out a previous revision or compare differences between revisions.

Clicking the Checkout button displays:



### Checking out a previous revision

To checkout a notebook at an earlier revision point:

1. Select the checkbox next to the desired revision point.
2. Click the OK button.

A copy of the notebook at the selected revision point is displayed.

NOTE: If you have not saved the work in your current project window, checking out a previous revision destroys it. If in doubt, click the Cancel button and save your work before reverting to a previous revision point.

### Comparing revisions

To compare 2 previous revision points:

1. Select the checkboxes of the revision points to compare.
2. Click the View Diff button.

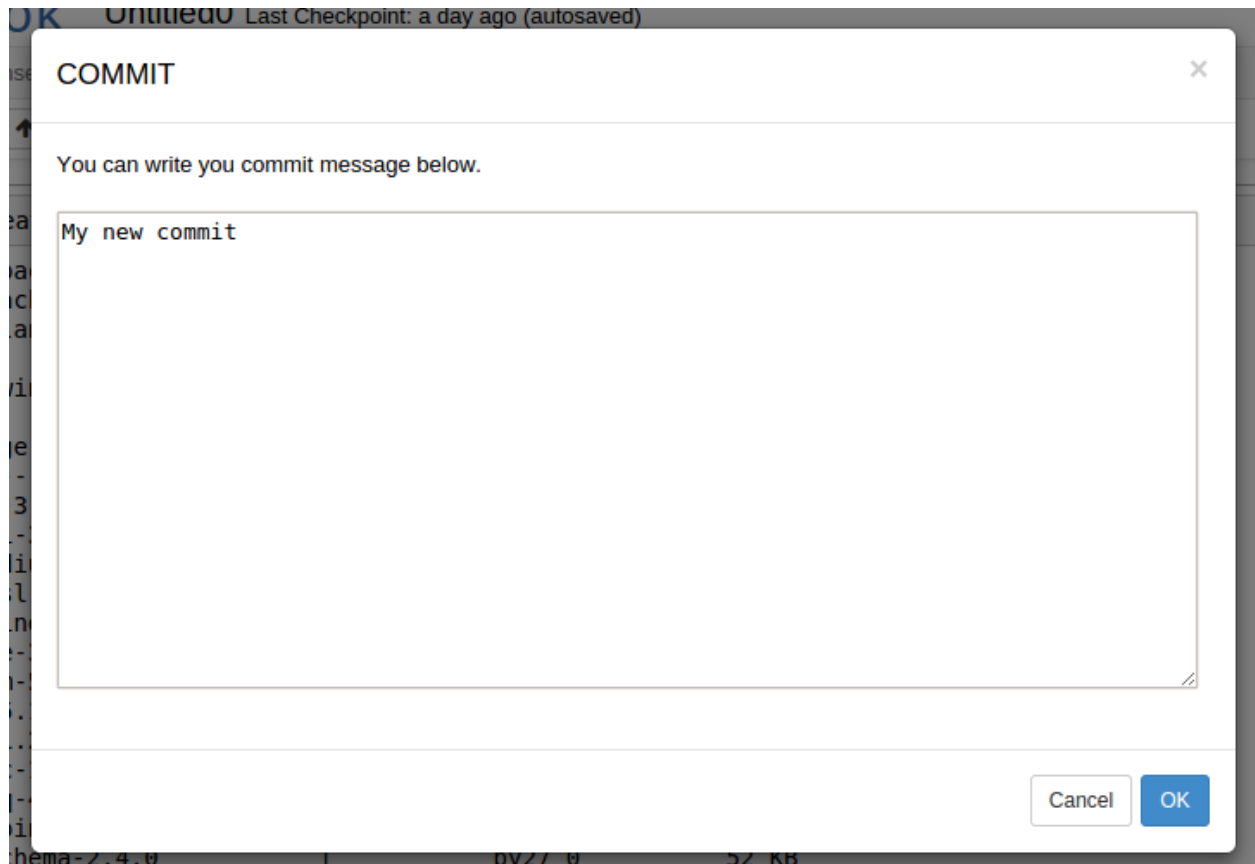
A side-by-side comparison is displayed.

Click the Cancel button to close the differences window.

### Using the Commit button

The Commit button allows you to save or persist the current changes, keeping a permanent record of any changes that are introduced, so that you do not have to worry about losing important data.

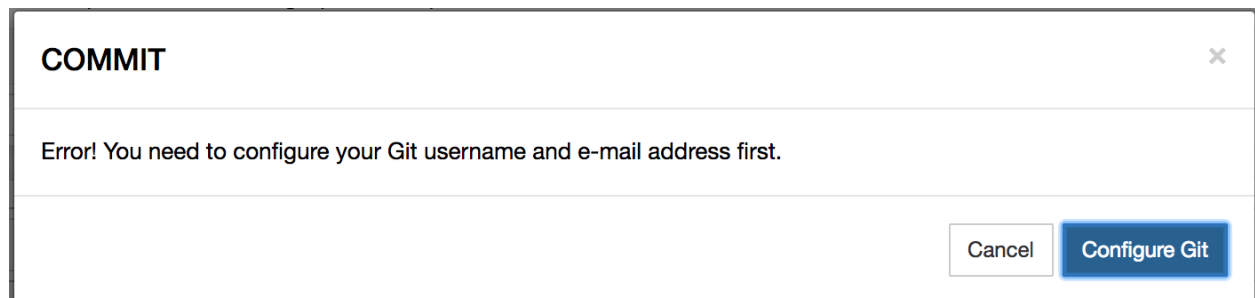
Clicking the Commit button displays:



1. Enter a description of the changes in the commit as a reminder in case you need to revert back to it later.
2. Click the OK button.

Your changes are committed and a revision point is created.

If Git user name and user email are not set, the following window appears:



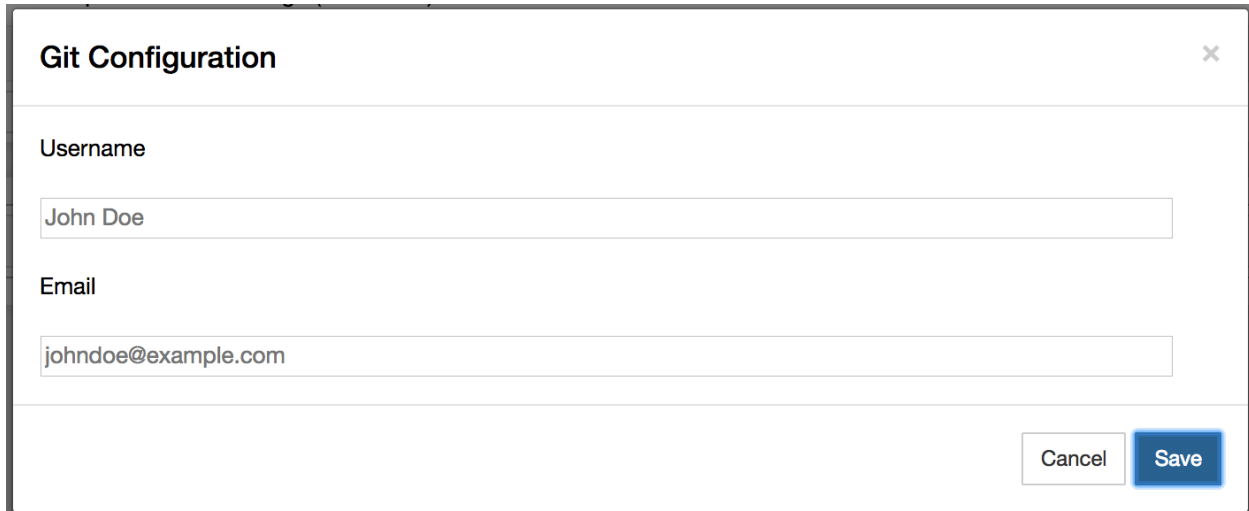
Configure Git and then try to commit again.

TIP: You can roll back committed changes by *checking out a previous version*.

## Using the Configure git button

The Configure git button allows you to configure Git user name and email values.

After clicking the Configure Git button, the following window appears:

A screenshot of a 'Git Configuration' dialog box. The dialog has a title bar with a close button (X). It contains two text input fields. The first field is labeled 'Username' and contains the text 'John Doe'. The second field is labeled 'Email' and contains the text 'johndoe@example.com'. At the bottom right of the dialog, there are two buttons: 'Cancel' and 'Save'.

Enter user name and e-mail address. Click the OK button when finished.

## Setting up RCM for the first time

If you do not see the RCM buttons in your notebook:

1. Go to the project home page.
2. Open the Terminal application.
3. In the terminal window, run:

```
git config --global user.email "you@example.com"  
git config --global user.name "Your Name"
```

NOTE: Change `you@example.com` to your email address, and `Your Name` to your actual name.

4. Open Jupyter Notebook and refresh the page.

## Using the NBConda extension

The NBConda extension adds a Conda tab to your notebook for easy environment and package management from within the notebook.



Files Running IPython Clusters **Conda**

2 Conda environments



Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default

1143 available packages

Search...



376 installed packages in environment "default"



Name	Version	Channel
<input type="checkbox"/> _license	1.1	defaults
<input type="checkbox"/> _nb_ext_conf	0.4.0	defaults
<input type="checkbox"/> abstract-rendering	0.5.1	defaults
<input type="checkbox"/> accelerate	2.3.1	defaults
<input type="checkbox"/> accelerate_cudalib	2.0	defaults
<input type="checkbox"/> aen-app-jupyterlab	0.4.0	wakari

Name	Version	Build	Available
<input type="checkbox"/> _license	1.1	py27_1	
<input type="checkbox"/> alabaster	0.7.10	py27_0	
<input type="checkbox"/> anaconda	custom	py27_0	
<input type="checkbox"/> anaconda-client	1.5.1	py27_0	
<input type="checkbox"/> anaconda-project	0.6.0	py27_0	
<input type="checkbox"/> asn1crypto	0.22.0	py27_0	

Click the Conda tab in a notebook to display:

- Conda environments list—export, clone or delete an environment in the action column, or create a new environment by clicking the plus + icon. Switch to an environment by clicking it; packages for that environment are displayed below in the installed packages list.
- Conda available packages list—for the selected environment in currently configured channels, search for packages and click a package name to install it.
- Installed packages list—in the selected environment, check for updates, update or delete selected packages.

**TIP:** While you are in any notebook, you can jump to the NBConda extension for that environment by clicking the **Kernel** menu and selecting Conda Packages:

iris Last Checkpoint: a minute ago (unsaved changes)

FILE EDIT VIEW INSERT CELL KERNEL WIDGETS HELP
Python [conda env:TestProject-default] ○

```
In [ ]: import pandas as pd
df = pd.read_csv("irirs.csv")
df
```

## Using the Conda Notebook extension

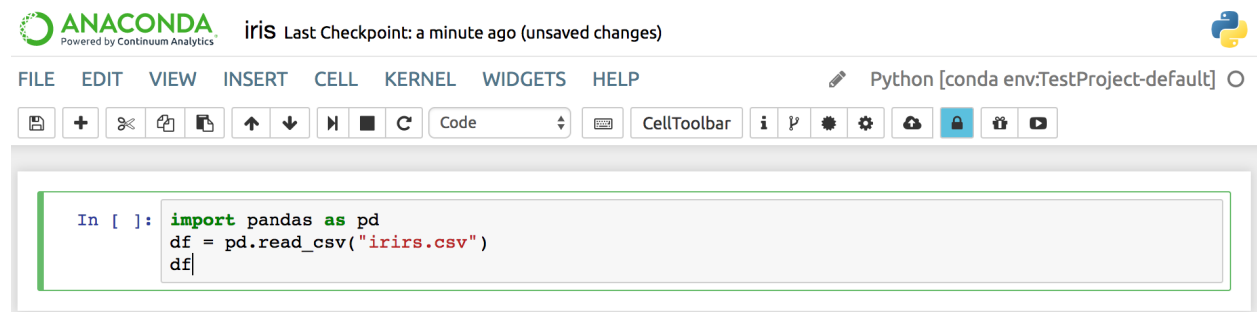
The Conda Notebook extension adds the Conda Packages option to the **Kernel** menu.

Select the Conda Packages option to display a list of all of the Conda packages that are currently used in the environment associated with the running kernel, as well as any available packages.

From the Conda Packages option, you can perform all of the tasks available in the *Conda tab*, but they will only apply to the current environment.

## Using the Anaconda Cloud extension

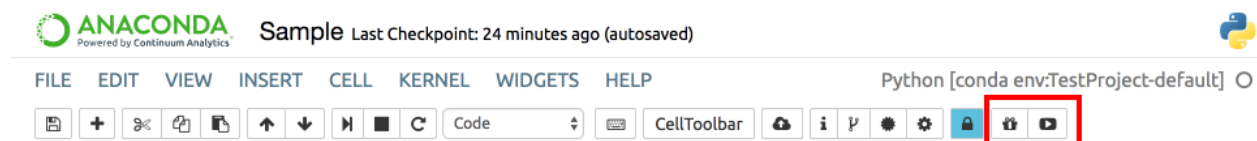
The Anaconda Cloud extension adds the Cloud button to your notebook, allowing you to easily upload your notebook to Cloud:



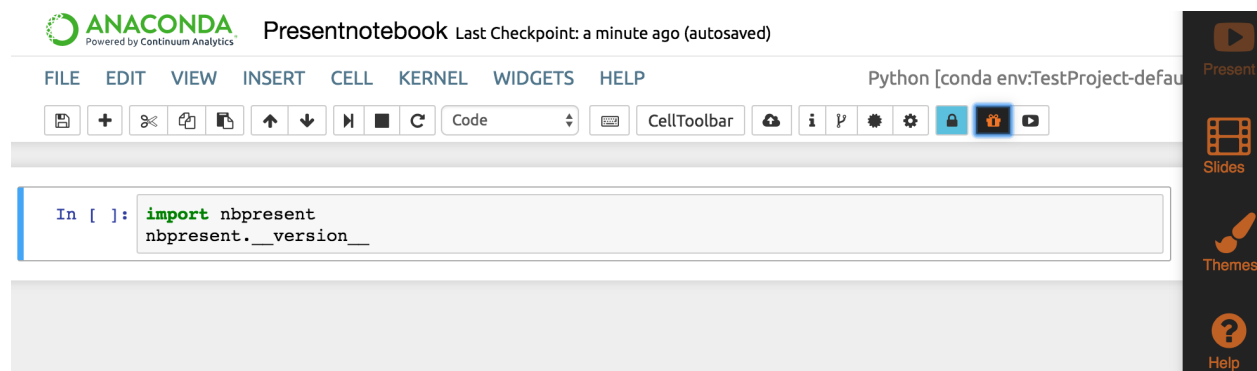
## Using the Notebook Present extension

The AEN Notebook Present extension turns your notebook into a Microsoft PowerPoint-style presentation.

The Present extension adds 2 buttons to Notebook's menu bar—Edit Presentation and Show Presentation:



To begin using Notebook Present, click the Edit Presentation button.

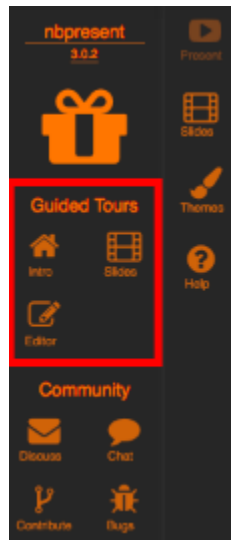


The Notebook Present sidebar is displayed on the right side of your browser:

Clicking each icon changes the menu and layout of your notebook.

Clicking the Help icon displays 3 tours—demonstrations—of the main features of Present:

- *Intro tour.*
- *Slides tour.*
- *Editor tour.*



Select one of the tours to view a short presentation regarding the specifics of that feature.

### Intro tour

The Intro tour is a 2-minute presentation that explains how to use the main features of Present, including a description of each button's purpose.

NOTE: At any time, you can pause, go back to the previous or move forward to the next slide.

The following information is covered in the Intro tour:

- App Bar—When Authoring, this allows you control the content and style of your presentation. It also can be used to activate several keyboard shortcuts for editing:



## Keyboard shortcuts



The Jupyter Notebook has two different keyboard input modes. **Edit mode** allows you to type code/text into a cell and is indicated by a green cell border. **Command mode** binds the keyboard to notebook level actions and is indicated by a grey cell border with a blue left margin.

Mac OS X modifier keys:

: Command

: Control

: Option

: Shift

: Return

: Space

: Tab

### Command Mode (press to enable)

: find and replace

: previous slide

: next slide

: next slide

: enter edit mode

: open the command palette

: run cell, select below

: run selected cells

: run cell, insert below

: to code

: to markdown

: extend selected cells above

: extend selected cells above

: extend selected cells below

: extend selected cells below

: insert cell above

: insert cell below

: cut selected cells

: copy selected cells

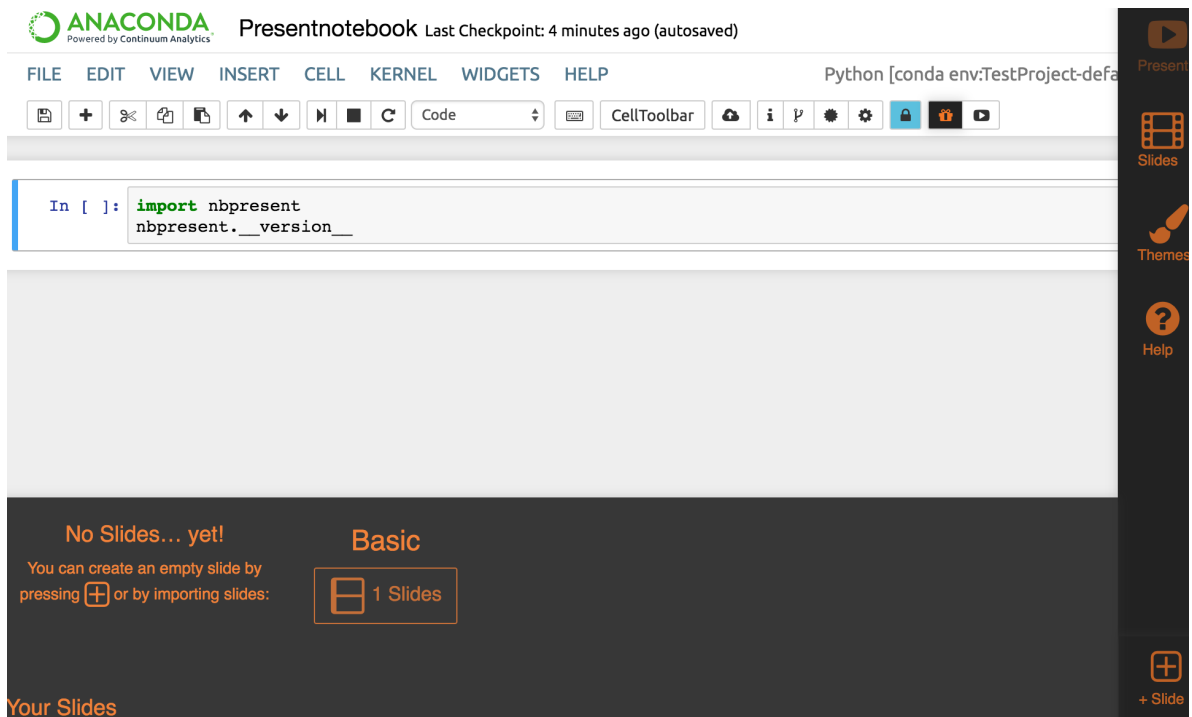
: paste cells above

: paste cells below

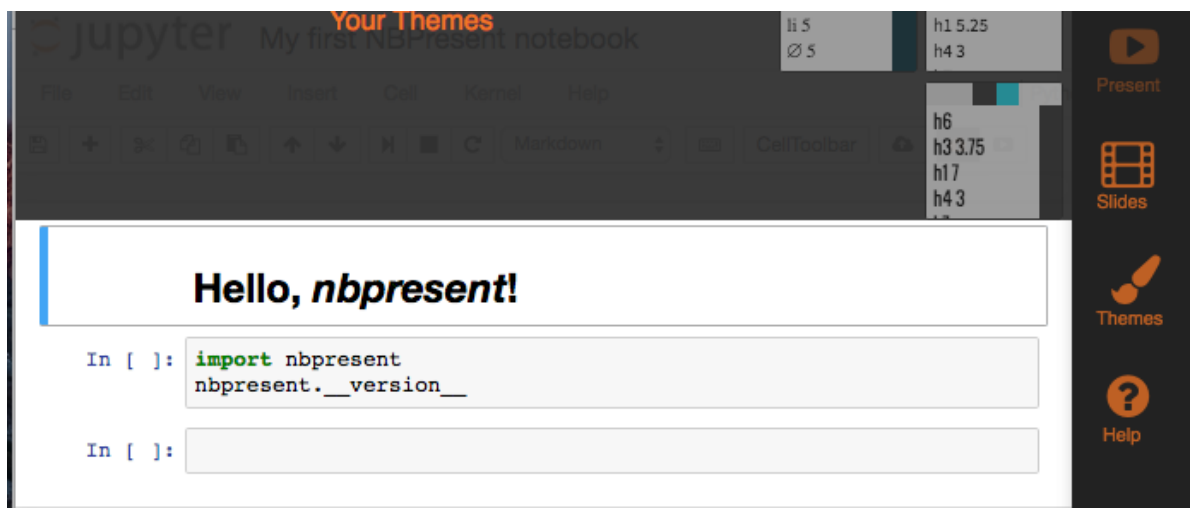
: undo cell deletion

Close

- **Stop Authoring**—Clicking the Edit Presentation button again stops Authoring, and removes all keyboard shortcuts.
- **Show Presentation**—If you just want to run your presentation without using any Authoring tools, just click the Show Presentation button.
- **Presenting/Authoring**—Once you’ve made some slides, start Presenting, where you can use most Notebook functions with the Theme we have defined, as well as customize slides on the fly.
- **Slides button**—Slides, made of Regions linked to Cell Parts are the bread and butter of any presentation, and can be imported, created, linked, reordered, and edited here.



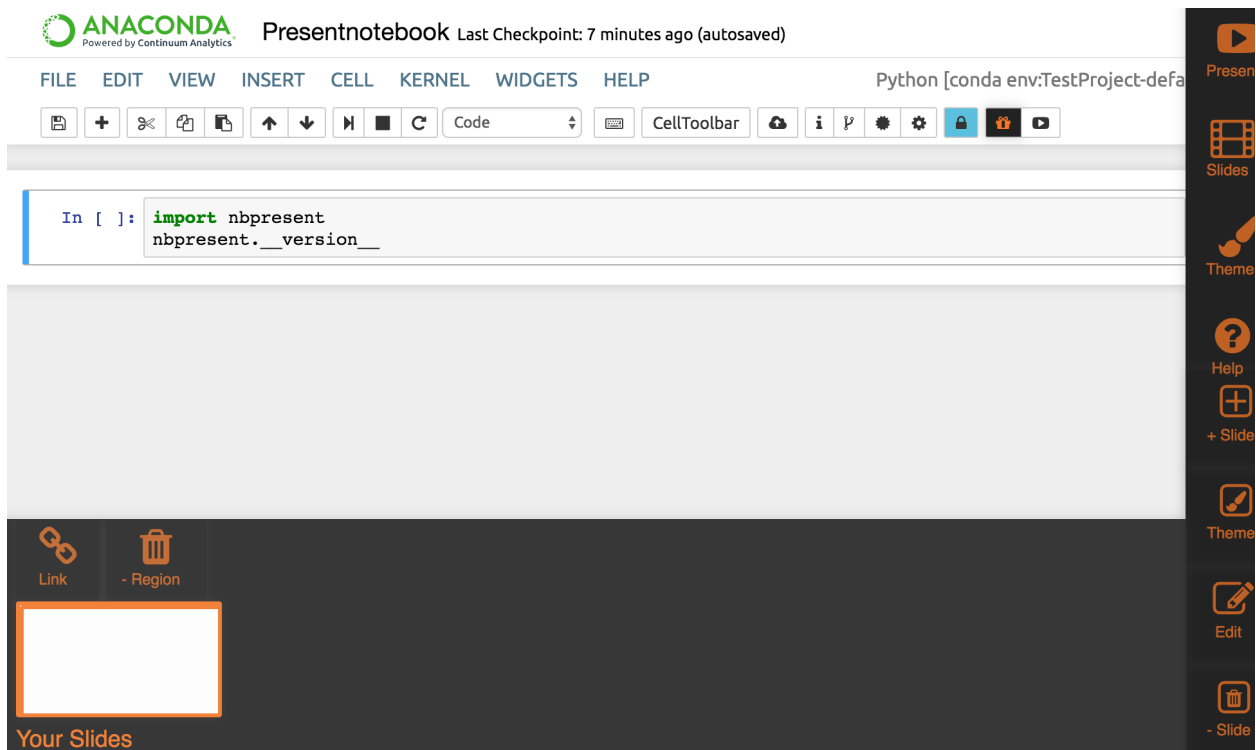
- Theming—Theming lets you select from existing colors, typography, and backgrounds to make distinctive presentations. The first theme you select will become the default, while you can choose custom themes for a particular slide, like a title.



- Saving—Whenever you save your Notebook, all your presentation data will be stored right in the Notebook .ipynb file.
- Downloading—After you've made a presentation, you can download it as an HTML page by choosing Download → Download As: Presentation (.html) in the menu.
- Help—Activate Help at any time to try other tours, connect with the Present developers and community, and other information.

## Slides tour

Slides make up a presentation. Clicking Slides toggles the sorter view and the Slide Toolbar on and off:



The Slides tour explains how to create and manage slides, including the following information:

- Slide Toolbar—Create a new slide. Clicking + Slide will offer some choices for creating your new slide.
- Import—The quickest way to create a presentation is to import each cell as a slide. If you’ve already created slides with the official slideshow cell toolbar or RISE, you can import most of that content.
- Template Library—You can create a presentation from an existing template.
  - Reuse Slide as Template—You can create a presentation based on an existing slide.
  - Simple Template—A common template is the Quad Chart, with four pieces of content arranged in a grid.
- Region—The Quad Chart has four Regions. To select a region, click it.
  - Link a Region to a Cell Part—Each Region can be linked to a single Cell Part using the Link Overlay, which shows all of the parts available.
    - \* Cell Part: Source (blue)—Source, such as code and Markdown text.
    - \* Cell Part: Outputs (red)—Outputs, such as rich figures and script results.
    - \* Cell Part: Widgets (purple)—Jupyter widgets, interactive widgets that provide both visualization and user input.
    - \* Cell Part: Whole (orange)—Finally, a Whole Cell, including its Source, Widgets and Outputs can be linked to a single region.
  - Unlink a region from a Cell Part—Unlinking removes the connection between a region and a cell part, without deleting either one.
  - Region: Trashing—Trashing a Region permanently deletes it, without affecting any linked Cell Part.

- Part Thumbnail—We'll try to draw a part thumbnail. It can only be reliably updated when a linked Cell Part is on-screen when you mouse over it, but you should usually be able to get an idea of what you're seeing. The colors of the regions correspond to the cell types.
- Presenting—Clicking the Present button while editing brings up the Presenter with editing mode still enabled:
  - Linked inputs and widgets are still interactive.
  - Go forward—Click to go to the next slide
  - Go back—Click to go back to the previous slide
  - Go back to the beginning—Click to go back to the first slide
  - My work is done here—Click to go back to the Notebook.

### Editor tour

Once you've made a few slides, you'll likely want to customize them. The Editor tour explains how to edit your notebook, including the following information:


- Editing Slides—Activate the Slide Editor by double-clicking it, or by clicking Edit Slide.
- Region Editor—Click to drag Regions around and resize them.
- Region Tree—Reorder Regions and see the details of how Regions will show their linked Parts.
- Add Region—Add new regions.
- Attribute Editor—Edit the properties of a region.
- Data Layouts—In addition to manually moving regions, you can apply these layouts to automatically fill your slides.
- More Regions—Add more regions—with a weight of 1.
- Tree Weight—Make a Region bigger or smaller, based on its relative weight.
- 12 Grid—A compromise between the Free and Treemap layouts, the 12 Grid option rounds all of the values in a layout to a factor of 12.

### Using Compute Resource Configuration

The Compute Resource Configuration (CRC) application displays information about the current project and allows you to set a custom project environment and view and manage your other AEN applications, including stopping, starting, restarting and viewing the logs of each.

The CRC application screen contains 3 sections:

- *Info.*
- *Conda environment.*
- *Running apps.*


**ANACONDA**

### Info

**Hostname**  
davila-aen-test

**Project Home**  
/projects/testuser1/demo

**Project RC file**  
/projects/testuser1/demo/.projectrc

### Conda Environment

/projects/testuser1/demo/envs/default

Setting the default environment for this project will affect all users by modifying the **.projectrc** file.  
All running apps will be shutdown.  
Make sure **No one working on this project** has any unsaved documents!

Set Project Environment

### Running Apps

User	Application	Status	Last Seen	Terminate	Relaunch	Logs
testuser1	terminal	running	1 hours ago	Terminate	Relaunch	

### Info

The Info section displays:

- Hostname—IP address of the host computer.
- Project Home—File path to the project home.
- Project RC file—File path to the project runtime configuration file **.projectrc**. This file is sourced when a user opens any AEN application. It sets several AEN internal environment variables, sets up the project environment and sets additional user environment variables for the project.

### Conda environment

This section displays the path to the default conda environment.

**CAUTION:** Changing the default environment will affect all users. Be sure that no team members have any unsaved documents before changing the project environment.

To change the default conda environment location:

1. Edit the path to point to your preferred conda environment.
2. Click the Set Project Environment button.

Your `.projectrc` file is modified.

### Running apps

The Running Apps section displays a list of users and the applications that are in use, as well as when the app was last modified.

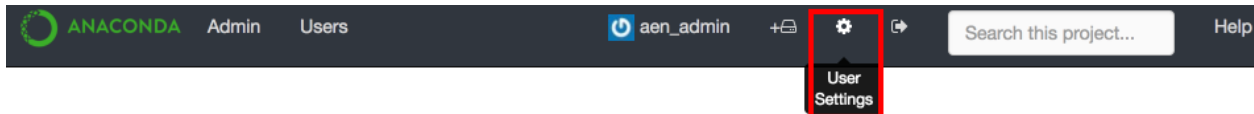
To terminate any individual application, click the Terminate button.

To stop and re-launch any individual application, click the Relaunch button.

To review the run logs of any active application, which may be useful for troubleshooting, click the Logs button.

### Managing your account

To access your account information, click the User Settings icon in the AEN navigation bar:



### Updating your public profile

Your public profile is made up of a name, a personal URL, your company and location.

1. In the left navigation pane, click the **Public Profile** tab.
2. To update your profile picture, create a [Gravatar](#) that is associated with the email address you used to create your AEN account. The gravatar will automatically appear.

### Changing your password

1. In the left navigation pane, click the **Account Settings** tab.

Deleting your AEN account

- 1. In the left navigation pane, click the **Account Settings** tab.

Viewing account operations

- 1. In the left navigation pane, click the **Security Log** tab to view a list of operations performed on your account.

# Settings

Change your account and profile settings.

Public Profile

Account Settings

Security Log

Applications

Security Log

	aen_admin	oauth.authenticate	2017-09-25 04:52:06.713000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.954000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.720000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.490000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.259000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.033000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:57.802000+00:00

- 2. For more information about an operation, click the Eye icon to the left of the the operation name.

Registering an application

If you want to create an application for AEN or have already done so, you must register your application.

- 1. In the left navigation pane, click the **Applications** tab.

# Settings

Change your account and profile settings.

Public Profile

Account Settings

Security Log

Applications

Developer Applications

Register New Application

These are applications you have registered to use the Anaconda Enterprise Notebooks API.

Gateway ()

Authorized applications

Gateway ()

revoke

- 2. Click the Register New Application button to open a form for registering your application.

### Advanced tasks

Advanced tasks are best-suited for users who are comfortable working in a Terminal.

### Working with environments

AEN runs on conda, a package management system and environment management system for installing multiple versions of software packages and their dependencies and switching easily between them.

A conda environment usually includes 1 version of Python or R language and some packages.

The ability to have a custom project environment is one of the most powerful features of AEN. Your project environment is integrated so that all of your project applications recognize it and all of your team members have access to it.

This section contains information about:

- *Creating a default conda environment using the Jupyter Notebook application*
- *Creating a default conda environment using the Jupyter Notebook application*
- *Using your conda environment in a notebook*
- *Customizing your conda environment*
- *Installing a conda package using Terminal*
- *Installing a conda package using Notebook*
- *Uninstalling a conda package*

NOTE: This conda environments guide is specific to AEN. For full conda documentation—including cheat sheets, a conda test drive, and command reference—see the [conda documentation](#).

### Creating a default conda environment using the Jupyter Notebook application

You can create, activate, and install packages and deactivate environments from within the Notebook menu bar.

To install from the Notebook menu bar:

1. Click the **Conda** tab and select the plus sign icon.
2. Search for `numpy` in the package search box.
3. Select `numpy` from the search results.





Files
Running
IPython Clusters
Conda

3 Conda environments

Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default
	myenv		/projects/aen_admin/TestProject/envs/myenv

2 available packages

→

39 installed packages in environment "myenv"

Name	Version	Channel
<input checked="" type="checkbox"/> numpy	1.13.1	defaults
<input type="checkbox"/> numpydoc	0.7.0	defaults

Name	Version	Build	Available
<input type="checkbox"/> anaconda-client	1.6.3	py36_0	
<input type="checkbox"/> certifi	2016.2.28	py36_0	
<input type="checkbox"/> clyent	1.2.2	py36_0	
<input type="checkbox"/> decorator	4.1.2	py36_0	
<input type="checkbox"/> ipykernel	4.6.1	py36_0	
<input type="checkbox"/> ipython	6.1.0	py36_0	

1. Click the Install button.

The environment is added to the project's env directory.

## Creating a default conda environment using Terminal

In AEN, all new environments created with conda automatically include Python, Jupyter Notebooks and pip. You can specify any other packages you want included in your new environment.

**TIP:** By default, conda creates a new environment in your project's env directory—so that all team members have access to the environment. For information about limiting your team member's read, write or execute permissions, see [Workbench](#).

To create a new environment within your AEN account, run the command conda in a [Terminal](#) application.

**EXAMPLE:** To create a new environment named WeatherModel that contains Python, NumPy, pip and Jupyter Notebooks in your project's env directory:

1. Log in to AEN.
2. Open a project.
3. On the project home page, click the Terminal application icon to open a Terminal.
4. Create the environment:

```
conda create -n WeatherModel numpy
```

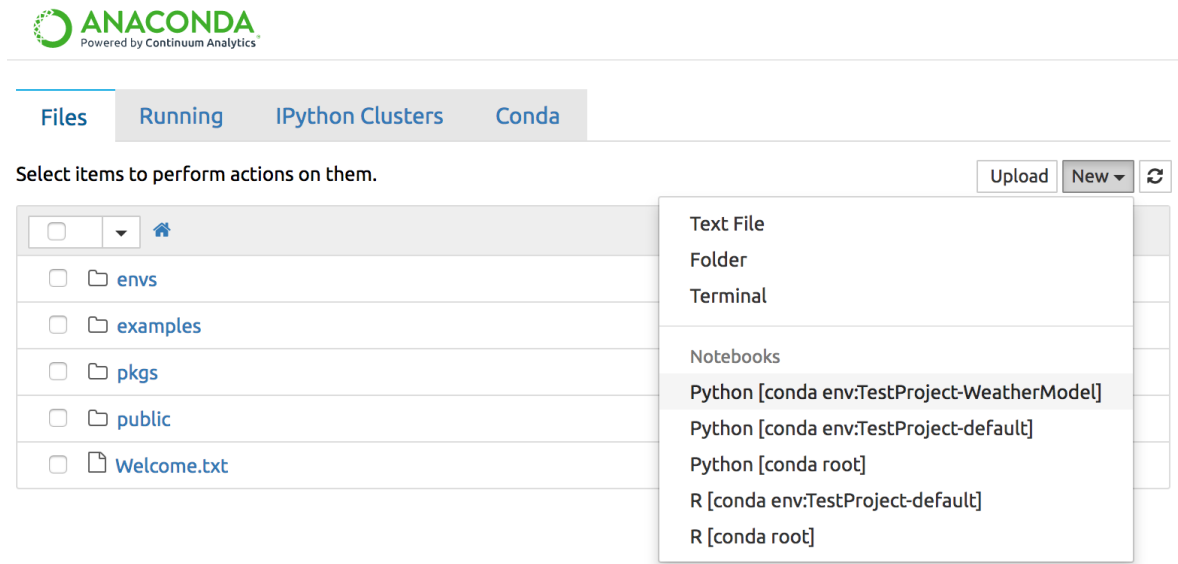
**TIP:** Python, pip and Jupyter Notebooks are automatically installed in each new environment. You only need to specify NumPy in this command.

5. Make the new environment your default:

```
source activate WeatherModel
```

6. To use your new environment with Jupyter Notebooks, open the Notebook application.
7. Click the New button to open a new notebook. In the drop-down menu under Notebooks, the environment you just created is displayed.
8. To activate that environment, select it.

The environment is added to the project's `env` directory.



NOTE: You can deactivate the new environment when you are finished with your notebook by opening the Terminal application and running the command `source deactivate`.

## Using your conda environment in a notebook

Whether you have created an environment using conda in a terminal, or from the **Conda** tab in a notebook, you can use the conda environment in the same way.

When working in a notebook, to select the environment you have created and want to use with that notebook, in the **Kernel** menu, select Change Kernel.

EXAMPLE: If you have an environment named `my_env` in a project named `test1` that includes NumPy and SciPy and you want to use that environment in your notebook, in the **Kernel** menu, select `Python [conda env:test1-my_env]`.

The notebook code will run in that environment and can import NumPy and SciPy functions.

## Customizing your conda environment

If you need a Python package that AEN doesn't include by default, you can install additional packages into your AEN environment.

**TIP:** You cannot install packages into the default Anaconda environment. You must create your own environment before installing a new package into that environment.

AEN is built on Anaconda, so you can install additional Python packages using conda or pip—both of which are included with Anaconda.

## Installing a conda package using Terminal

To install a conda package using the Terminal application:

1. Create and activate the environment using the steps in *Creating a default conda environment using the Jupyter Notebook application*.
2. In your Terminal application, run the command `conda install <packagename>`.

**NOTE:** Be sure to specify the Python version you want when using conda to create the environment, or it will use the same version as root.

**EXAMPLE:**

```
conda create -n mypy3 python=3 numpy scipy
```

A conda environment named mypy3, running on Python 3 and containing NumPy and SciPy is created. All subsequent packages added to this environment will be the Python 3 compatible versions.

## Installing a conda package using Notebook

You can also install the package within your notebook without using the terminal app:

1. From the Notebook application, click the **Conda** tab.
2. Select the environment you wish to use.
3. Search for the package you want to add.
4. Click the Install button.

## Uninstalling a conda package

To uninstall a package using this method, run the command `conda remove <packagename>`.

**NOTE:** Replace <packagename> with the name of the package you are uninstalling.

## Using visualization packages

AEN supports multiple visualization packages for Python and R language.

For Python, the default environment has *Matplotlib* and *Bokeh* installed.

For R language, the default environment has *r-ggplot2* and *r-bokeh* installed.

### Matplotlib

Matplotlib is a Python 2D and 3D plotting and visualization library that produces publication-quality figures in a variety of hardcopy formats and interactive environments across platforms.

To display Matplotlib figures in the output cells of a notebook running the default environment, run:

```
import matplotlib.pyplot as plt
%matplotlib inline
```

Any Matplotlib figures in the notebook are displayed in it's output cells.

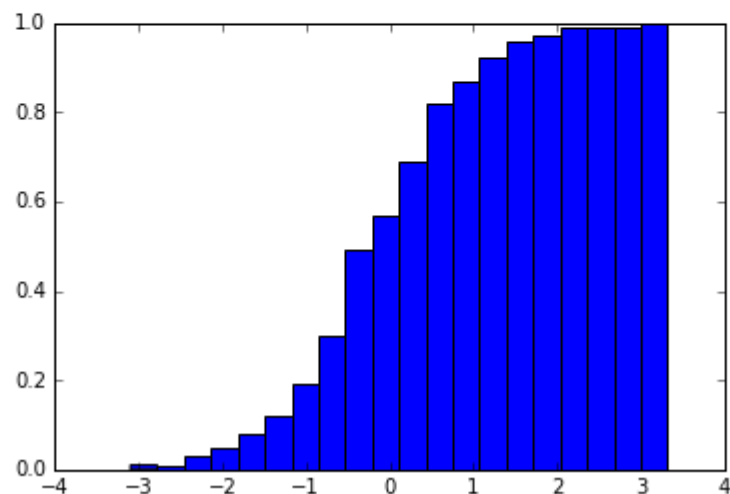
EXAMPLE: The following screenshot is of a cumulative density function (CDF) plot using values taken from a normal distribution:

```
In [1]: import matplotlib.pyplot as plt
%matplotlib inline
```

```
In [2]: import numpy as np

x = np.random.normal(size=100)
```

```
In [3]: plt.hist(x, normed=True, cumulative=True, bins=20);
```



For more information, including a [gallery](#), [examples](#), [documentation](#) and a [list of plotting commands](#), see the [Matplotlib website](#).

## Bokeh

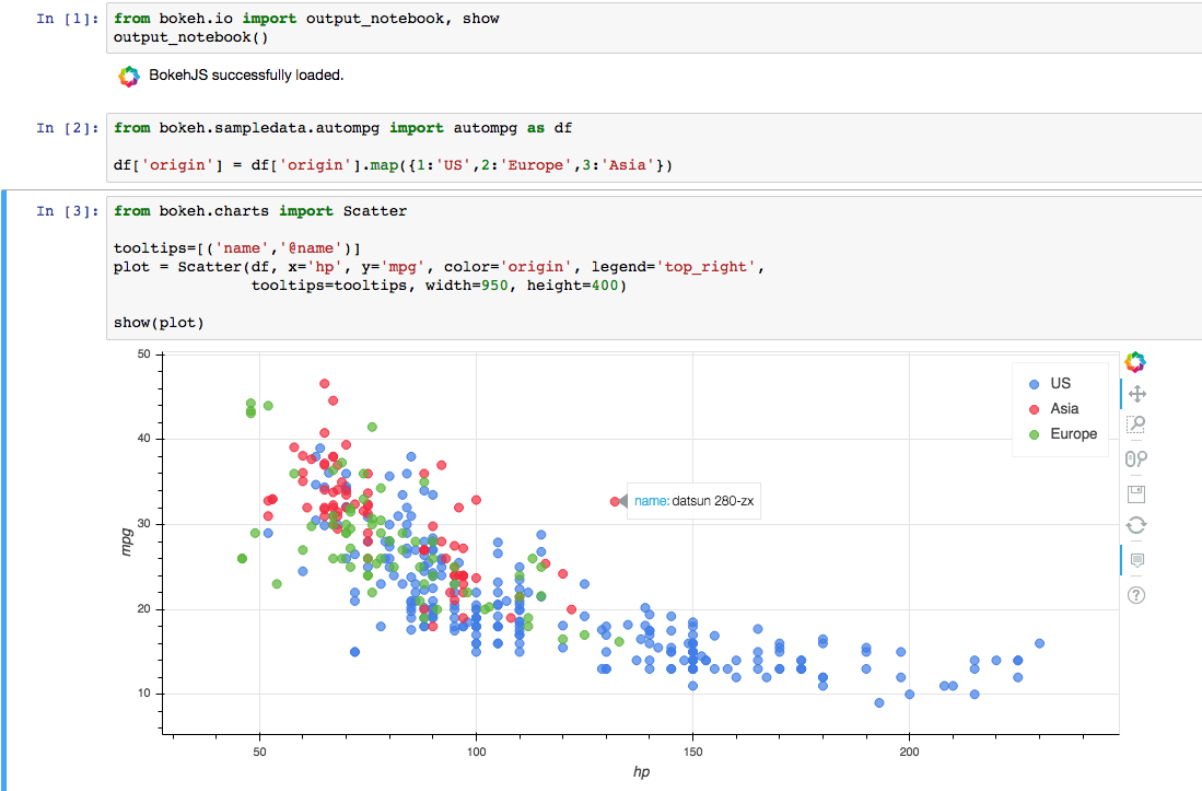
**Bokeh** is an interactive visualization library that targets modern web browsers to provide elegant, concise construction of novel graphics.

To display Bokeh figures in the output cells of a notebook running the default environment, run:

```
from bokeh.io import output_notebook, show
output_notebook()
```

Any Bokeh figures in the notebook are displayed in its output cells.

The following screenshot is of a scatter plot of miles-per-gallon vs. horsepower for 392 automobiles using the `autompg` sample dataset:



## ggplot2

**Ggplot2** is a plotting system for R language which is based on the grammar of graphics. Ggplot2 tries to take only the good parts of base and lattice graphics and none of the bad parts.

To use ggplot2 with AEN:

1. Open a new Notebook using the R kernel.
2. Load the ggplot2 library with the following code:

```
library(ggplot2)
```

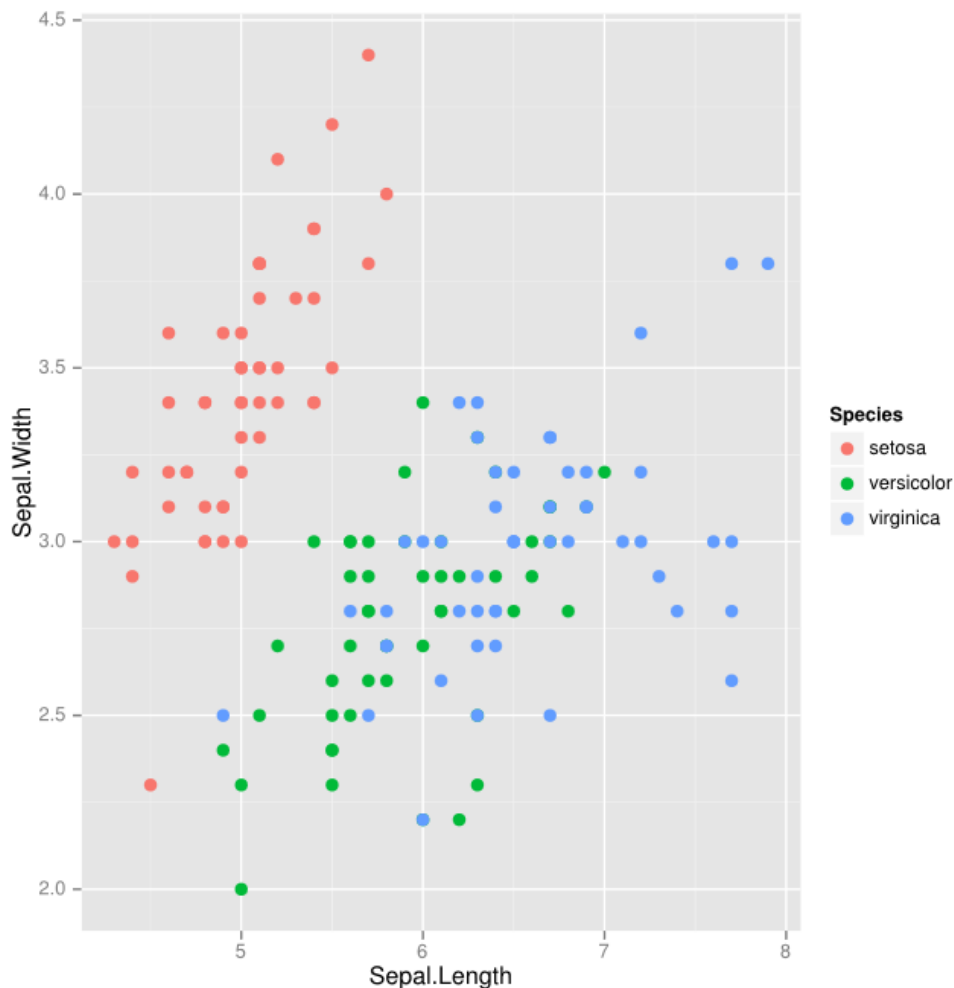
The ggplot2 library is loaded and ready for use in AEN.

The following screenshot is of a scatter plot of sepal width vs sepal length using the `iris` dataset provided by the `dplyr` library:

```
In [5]: library(dplyr)
```

```
In [6]: library(ggplot2)
```

```
In [7]: ggplot(data=iris, aes(x=Sepal.Length, y=Sepal.Width, color=Species)) + geom_point(size=3)
```



## Using environment variables

Some Python packages depend on environment variables for correct operation.

EXAMPLE: Theano requires that the directory containing the CUDA compiler is included in the `$PATH` environment variable in order for GPU acceleration to be enabled.

To change environment variables for all AEN applications, modify the project runtime configuration file `.projectrc`. For more information, see [Using Compute Resource Configuration](#).

`.projectrc` sets several AEN internal environment variables, sets up the project environment and can set additional user environment variables for that project. This file is sourced when a user opens any AEN application—including Jupyter Notebook—and Jupyter kernels will be able to read the included environment variables.

## Cheat sheet

See the [Anaconda Enterprise Notebooks cheat sheet PDF](#) (232 KB) for a single-page summary of the most important information about using AEN.

## Troubleshooting

This troubleshooting guide provides you with ways to deal with issues that may occur with your AEN installation.

### AEN application not working properly

An AEN application is not working as expected.

#### Cause

There are several reasons an application may not work as expected.

#### Solution

Most AEN application issues can be resolved by following these steps:

1. Refresh the page.
2. If the issue is not resolved, close and open the application.
3. If the issue is not resolved, *stop and restart your project*.
4. If the issue is not resolved, check that you are using the latest version of your web browser—Chrome, Safari, Edge, or Firefox.
5. Log out of AEN.
6. Restart your browser, and log back in.

If you continue to have issues, then please contact your administrator or enterprise support representative.

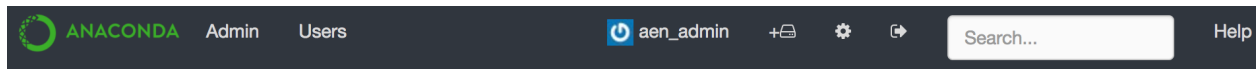
## Admin guide

This administrator guide provides information about the administration of an AEN installation.

Most AEN system management is done from the administrative user interface (admin UI). Some advanced tasks are done *using the command line*.

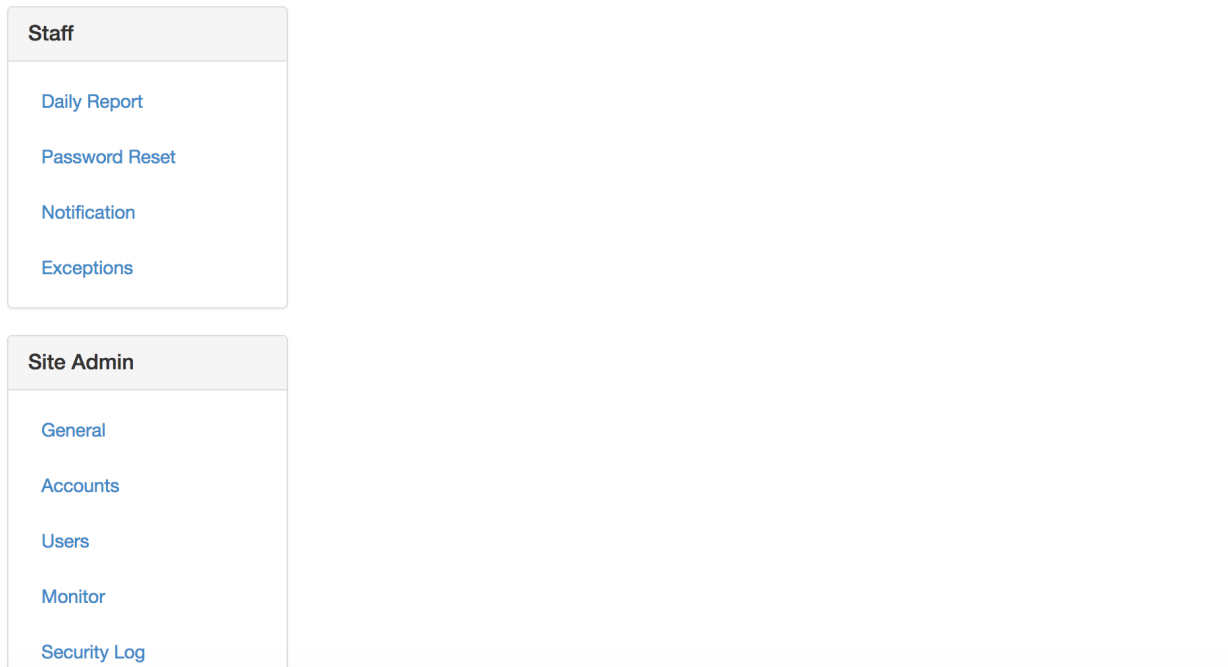
Any AEN user account can be *upgraded to an administrator account* to have both user and administrator privileges.

Administrators see two additional links in the AEN Navigation bar—Admin and Users:



# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the system administrator.



All of the other navigation bar items are the same as for a user account.

## Concepts

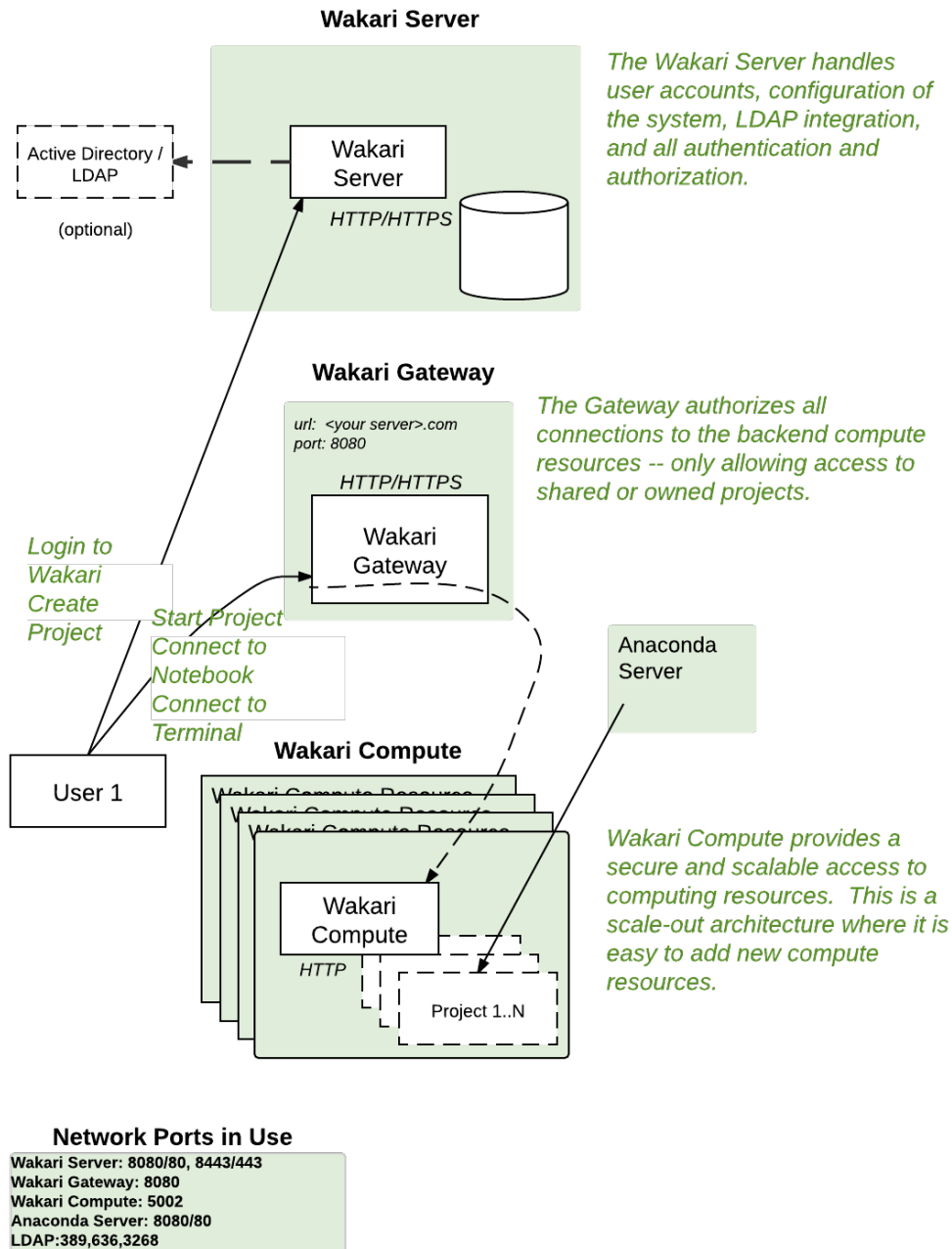
### System overview

The Anaconda Enterprise Notebooks platform consists of 3 main service groups: AEN server, AEN gateway and AEN compute, which are called “nodes”:

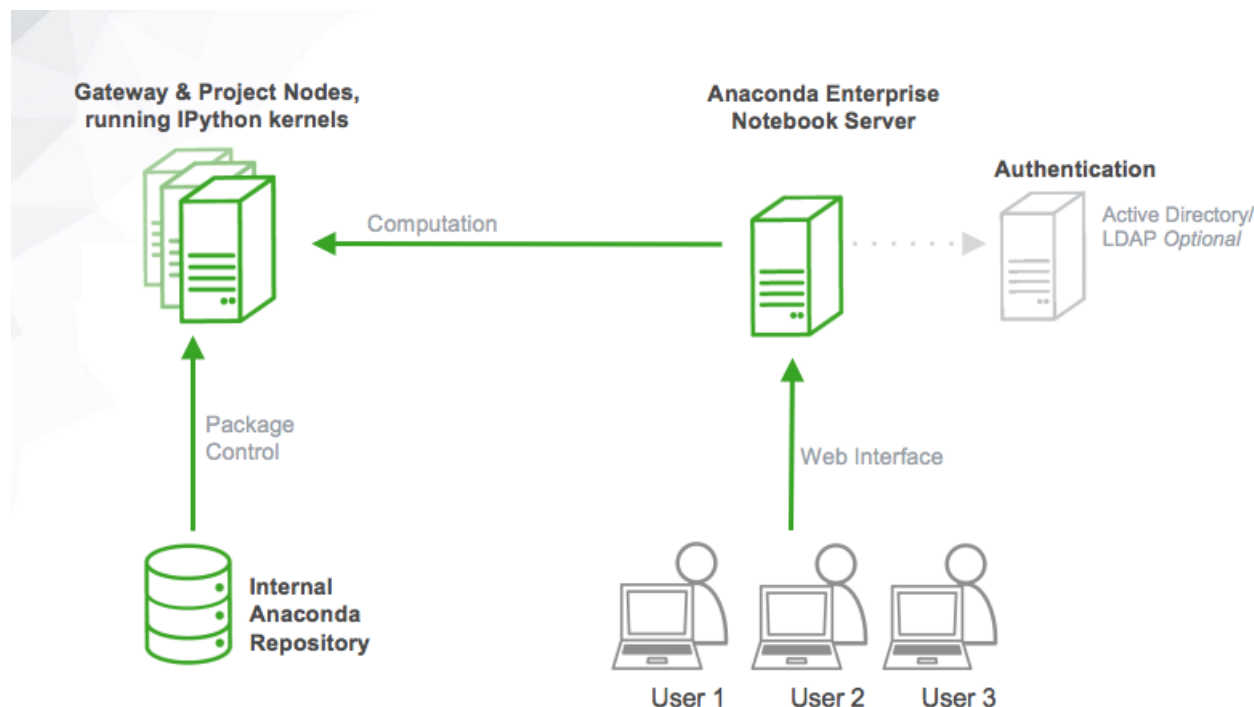
- *Server node*—The administrative front-end to the system where users login, user accounts are stored, and administrators manage the system.
- *Gateway node(s)*—A reverse proxy that authenticates users and directs them to the proper compute node for their project. Users will not notice this node after installation as it automatically routes them.
- *Compute nodes*—Where projects are stored and run.



## Anaconda Enterprise Notebooks



These services can be run on a single machine or distributed across multiple servers.



Each AEN installation has exactly 1 server instance and 1 or more gateway instances. Each compute node can only be connected to a single gateway. The collection of compute nodes served by a single gateway is called a **data center**. You can add data centers to the AEN installation at any time.

EXAMPLE: An AEN deployment with 2 data centers, where 1 gateway has a cluster of 20 physical computers, and the second gateway has 30 virtual machines, must have the following services installed and running:

- 1 AEN server instance
- 2 AEN gateway instances
- 50 AEN compute instances (20 + 30)

Nodes must be configured and maintained separately.

## Server node

The server node controls login, accounts, admin, project creation and management as well as interfacing with the database. It is the main entry point to AEN for all users. The server node handles project setup, and ensures that users are sent to the correct project data center.

Since AEN is web-based, it uses the standard HTTP port 80 or HTTPS port 443 on the server.

AEN uses MongoDB for internal data persistency. It is typically run on the same host as the server, but can also be *installed on a separate host*.

Server nodes use NGINX to handle the user-facing AEN web interface. NGINX acts as a request proxy for the actual server web process, which runs on a high-numbered port that only listens on localhost. NGINX is also responsible for static content.

AEN server is installed in the `/opt/wakari/wakari-server` directory.

## Server processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manage wakari-worker, multiple processes of wk-server.
user	wakari
configuration	/opt/wakari/wakari-server/etc/supervisord.conf
log	/opt/wakari/wakari-server/var/log/supervisord.log
control	service wakari-server
ports	none

wk-server	details
description	Handles user interaction and passing jobs on to the wakari gateway. Access to it is managed by NGINX.
user	wakari
command	/opt/wakari/wakari-server/bin/wk-server
configuration	/opt/wakari/wakari-server/etc/wakari/
control	service wakari-server
logs	/opt/wakari/wakari-server/var/log/wakari/server.log
ports	Not used in versions after 4.1.2 *

\* AEN 4.1.2 and earlier use port 5000. This port is used only on localhost. Later versions of AEN use Unix sockets instead. The Unix socket path is `unix:/opt/wakari/wakari-server/var/run/wakari-server.sock`

wakari-worker	details
description	Asynchronously executes tasks from wk-server.
user	wakari
logs	/opt/wakari/wakari-server/var/log/wakari/worker.log
control	service wakari-server

nginx	details
description	Serves static files and acts as proxy for all other requests passed to wk-server process. *
user	nginx
configuration	/etc/nginx/nginx.conf /opt/wakari/wakari-server/etc/conf.d/www.enterprise.conf
logs	/var/log/nginx/woc.log /var/log/nginx/woc-error.log
control	service nginx status
port	80

\* In AEN 4.1.2 and earlier the wk-server process runs on port 5000 on localhost only. In later versions of AEN the wk-server process uses the Unix socket path `unix:/opt/wakari/wakari-server/var/run/wakari-server.sock`.

NGINX runs at least two processes:

- Master process running as root user.
- Worker processes running as nginx user.

## Gateway node

The gateway node serves as an access point for a given group of compute nodes. It acts as a proxy service, and manages the authorization and mapping of URLs and ports to services that are running on those nodes. The gateway nodes provide a consistent uniform interface for the user.

**NOTE:** The gateway may also be referred to as a data center because it serves as the proxy for a collection of compute nodes.

You can put a gateway in each data center in a tiered scale-out fashion.

AEN gateway is installed in the `/opt/wakari/wakari-gateway` directory.

## Gateway processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manages the wk-gateway process.
user	wakari
configuration	/opt/wakari/wakari-gateway/etc/supervisord.conf
log	/opt/wakari/wakari-gateway/var/log/supervisord.log
control	service wakari-gateway
ports	none

wakari-gateway	details
description	Passes requests from the AEN Server to the Compute nodes.
user	wakari
configuration	/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
logs	/opt/wakari/wakari-gateway/var/log/wakari/gateway.application.log /opt/wakari/wakari-gateway/var/log/wakari/gateway.log
working dir	/ (root)
port	8089 (webcache)

## Compute node(s)

Compute nodes are where applications such as Jupyter Notebook and Workbench actually run. They are also the hosts that a user sees when using the Terminal app, or when using SSH to access a node. Compute nodes contain all user-visible programs.

Compute nodes only need to communicate with a gateway, so they can be completely isolated by a firewall.

Each project is associated with one or more compute nodes that are part of a single data center.

AEN compute nodes are installed in the `/opt/wakari/wakari-compute` directory.

Each compute node in the AEN system requires a compute launcher service to mediate access to the server and gateway.

## Compute processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manages the wk-compute process.
user	wakari
configuration	/opt/wakari/wakari-compute/etc/supervisord.conf
log	/opt/wakari/wakari-compute/var/log/supervisord.log
control	service wakari-compute
working dir	/opt/wakari/wakari-compute/etc
ports	none

wk-compute	details
de-scrip-tion	Launches compute processes.
user	wakari
config-uration	/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json      /opt/wakari/wakari-compute/etc/wakari/scripts/config.json
logs	/opt/wakari/wakari-compute/var/log/wakari/compute-launcher.application.log      /opt/wakari/wakari-compute/var/log/wakari/compute-launcher.log
work-ing dir	/ (root)
control	service wakari-compute
port	5002 (rfe)

wk-compute loads each of the following configuration files, in this order:

- /etc/wakari/config.json.
- /etc/wakari/compute-launcher-config.json.
- ./compute-launcher-config.json.
- Any configuration file specified by the -c option.

If an option is specified in multiple files, the last one encountered takes precedence.

## Supervisor and supervisord

AEN uses a process control system called “Supervisor” to run its services. Supervisor is run by the AEN Service Account user, usually wakari or aen\_admin.

The Supervisor daemon process is called `supervisord`. It runs in the background, and should rarely need to be restarted.

### Service Account

AEN must be installed and executed by a Linux account called the AEN Service Account. The username of the AEN Service Account is called the AEN Functional ID (NFI). The AEN Service Account is created during AEN installation—if it does not exist—and is used to run all AEN services.

The default NFI username is `wakari`. Another popular choice is `aen_admin`.

**WARNING:** The Service Account should be used for administrative tasks only, and should not be used for operating AEN the way an ordinary user would. If the Service Account creates or starts projects, the permissions on the AEN package cache will be reset to match the Service Account, which will interfere with the normal operation of AEN for all other users.

### Anaconda environments

Each project has an associated conda environment containing the packages needed for that project. When a project is first started, AEN clones a default environment with the name `default` into the project directory.

Each release of AEN 4 includes specific tested versions of conda and the conda packages included with AEN. These tested conda packages include Python, R, and other packages, and these tested conda packages include all of the packages in Anaconda.

If you upgrade or install different versions of conda or different versions of any of these conda packages, the new packages will not have been tested as part of the AEN 4 release.

These different packages will usually work, especially if they are newer versions, but they are not tested or guaranteed to work, and in some cases they may break product functionality.

We recommend you use a new conda environment to test a new version of a package, before installing it in your existing environments.

If using conda to change the version of a package breaks product functionality, you can use conda to change the version of the package back to the version known to work.

For more information about environments, see [Working with environments](#).

### Projects and permissions

AEN users interact with the system predominantly through [projects](#).

Projects are associated with a single data center within the AEN environment. The team of users includes one owner, which is the user that created the project.

Projects live in the `projectRoot` folder on the compute node—by default, `/projects`.

The project directory is created the first time a project is started. The `start-project` script clones it from `/opt/wakari/wakari-compute/lib/node_modules/wakari-compute-launcher/skeleton`.

Project directory permissions are:

```
owner: rwx, user who created the project
group: rwx, group of the owner
other: --x, to allow access to the Public folder
ACL: rwx for any other team members
```

Files and subdirectories within the project directory have the same permissions as the project directory, except:

- The public folder and everything in it are open to anyone.

- Any files hardlinked into the root anaconda environment—`/opt/wakari/anaconda`—are owned by the root or wakari users.

Project file and directory permissions are maintained by the `start-project` script. All files and directories in the project will have their permissions set when the project is started, except for files owned by root or the `AEN_SRVC_ACCT` user—by default, wakari or `aen_admin`.

The permissions set for files owned by root or the `AEN_SRVC_ACCT` user are not changed to avoid changing the permissions settings of any linked files in the `/opt/wakari/anaconda` directory.

**CAUTION:** Do not start a project as the `AEN_SRVC_ACCT` user. The permissions system does not correctly manage project files owned by this user.

## Installation

### Installation requirements

#### Hardware requirements

AEN server—At least:

- 2+GB RAM.
- 2+CPU cores.
- 20GB storage.

AEN gateway—At least:

- 2 GB RAM.
- 2 CPU cores.

AEN compute (N-machines)—Configured to meet the needs of the projects. At least:

- 2GB RAM.
- 2 CPU cores.
- 20 GB.

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda env directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

#### Software requirements

- RHEL/CentOS on all nodes. Versions from 6.5 through 7.4 are supported. Other operating systems are supported. However, this document assumes RHEL or CentOS.
- Linux home directories—Jupyter looks in `$HOME` for profiles and extensions.
- Ability to install in AEN directory `/opt/wakari` with at least 10 GB of storage.
- Ability to install in Projects directory `/projects` with at least 20 GB of storage. Size depends on number and size of projects.

NOTE: To install AEN in a different location see [\*Installing AEN in a custom location\*](#).

## Linux system accounts

Some Linux system accounts (UIDs) are added to the system during installation.

If your organization requires special actions, the following list is available:

- mongod (RHEL) or mongod (Ubuntu/Debian)—created by the RPM or deb package.
- elasticsearch—created by RPM or deb package.
- nginx—created by RPM or deb package.
- AEN\_SRVC\_ACCT—created during installation of AEN, and defaults to wakari.
- ANON\_USER—An account such as “public” or “anonymous” on the compute node.

NOTE: If ANON\_USER is not found, AEN\_SRVC\_ACCT will attempt to create it. If it fails, the project(s) will fail to start.

- ACL directories need the filesystem mounted with Posix ACL support (Posix.1e).

NOTE: You can verify ACL from the command line by running `mount` and `tune2fs -l /path/to/filesystem | grep options`.

## Software prerequisites

- AEN server:
  - Mongo—Equal to or higher than version 2.6.8 and lower than version 3.0.
  - NGINX—Equal to or higher than version 1.6.2.
  - Elasticsearch—Equal to or higher than version 1.7.2.
  - Oracle JRE version 7 or 8.
  - bzip2.
- AEN Gateway:
  - bzip2.
- AEN compute:
  - git
  - bzip2
  - bash or zsh
  - X Window System

NOTE: If you don’t want to install the whole X Window System, you must install the following packages to have R plotting support:

```
sudo yum install -y libXrender libXext libXdmcp libSM libICE libXt \
dejavu-sans-fonts dejavu-serif-fonts dejavu-fonts-common \
fontpackages-filesystem
```



## Security requirements

- Root or sudo access.
- File permissions: `umask 0022` is required during the installation.
- SELinux in permissive or disabled mode.

Edit the following file using either root or sudo access:

```
/etc/sysconfig/selinux
```

Edit the following:

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.

SELINUX=enforcing

# SELINUXTYPE= can take one of these two values:
#   targeted - Targeted processes are protected,
#   mls - Multi Level Security protection.

SELINUXTYPE=targeted
```

NOTE: You must reboot for the changes to take effect.

Verify changes with `getenforce`.

## Network requirements

TCP Ports:

Direction	Type	Default Port	Protocol	Optional	Configurable	Comments
Inbound	TCP	80	HTTP or HTTPS	No	Yes	Server
Inbound	TCP	8089	HTTP or HTTPS	No	Yes	Gateway
Inbound	TCP	5002	HTTP	No	Yes	Compute

## Other requirements

As long as the above requirements are met, there are no additional dependencies for AEN.

See also *system requirements for Anaconda Repository and Anaconda Scale*.

## What's next

*Prepare for installation.*

## Preparing for installation

### Downloading AEN installers

Download the installers and copy them to the corresponding servers.

```
SRPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
→com"
curl -O $SRPM_CDN/aen-server-4.3.2-Linux-x86_64.sh
curl -O $SRPM_CDN/aen-gateway-4.3.2-Linux-x86_64.sh
curl -O $SRPM_CDN/aen-compute-4.3.2-Linux-x86_64.sh
```

NOTE: The current \$SRPM\_CDN server will be confirmed in an email provided by your sales rep.

NOTE: These instructions use *curl* or *wget* to download packages, but you may use other means to move the necessary files into the installation directory.

### Gathering IP addresses or FQDNs

AEN is very sensitive to the IP address or domain name used to connect to the server and gateway nodes. If users will be using the domain name, you should install the nodes using the domain name instead of the IP addresses. The authentication system requires the proper hostnames when authenticating users between the services.

Print this page and fill in the domain names or IP addresses of the nodes below and record the user name and auto-generated password for the administrative user account in the box below after installing the AEN server node:

Node   Name or IP address	Port Number	Username   Password	
AEN server			
AEN gateway			
AEN compute			

NOTE: The values of these IP entries or DNS entries are referred to as <AEN\_SERVER\_IP> or <AEN\_SERVER\_FQDN>, particularly in examples of shell commands. Consider actually assigning those values to environment variables with similar names.

### Set up variables

Certain variables need to have values assigned to them before you start the installation.

## AEN server address

To define an environment variable for the AEN server address—FQDN or IP:

```
export AEN_SERVER=<AEN_SERVER_IP> # <from table above>
```

NOTE: The address—FQDN or IP—specified for the AEN server must be resolvable by your intended AEN users' web clients.

To verify your hostname, run `echo $AEN_SERVER`.

## AEN functional ID

AEN must be installed and executed by a Linux account called the AEN Service Account. The username of the AEN Service Account is called the AEN Functional ID (NFI). The AEN Service Account is created during AEN installation—if it does not exist—and is used to run all AEN services.

The default NFI username is `wakari`. Another popular choice is `aen_admin`.

To set the environment variable `AEN_SRVC_ACCT` to `wakari` or your chosen name before installation, run `export AEN_SRVC_ACCT="aen_admin"`.

This name is now the username of the AEN Service Account and of the AEN administrator account.

When upgrading AEN, set the NFI to the NFI of the current installation.

WARNING: The Service Account should only be used for administrative tasks, and should not be used for operating AEN the way an ordinary user would. If the Service Account creates or starts projects, the permissions on the AEN package cache will be reset to match the Service Account, which will interfere with the normal operation of AEN for all other users.

## AEN functional group

The AEN Functional Group (NFG) may be given any name. Most often, it is set to `aen_admin` or `wakari`. This Linux group includes the AEN service account, so all files and directories that have the owner NFI also have the group NFG.

When upgrading AEN, set the NFG to the NFG of the current installation.

To set the NFG before installation, run:

```
export AEN_SRVC_GRP="<NFG>"
```

NOTE: Replace `<NFG>` with your NFG name.

## AEN install sudo command

During AEN installation the installers perform various operations that require root level privileges. By default, the installers use the `sudo` command to perform these operations.

Before installation, set the `AEN_SUDO_CMD_INSTALL` environment variable to perform root level operations. You can also set it to no command at all if the user running the installer(s) has root privileges and the `sudo` command is not needed or is not available.

EXAMPLES:

```
export AEN_SUDO_CMD_INSTALL=""  
export AEN_SUDO_CMD_INSTALL="sudo2"
```

## AEN sudo command

By default the AEN services uses `sudo -u` to perform operations on behalf of other users—including `mkdir`, `chmod`, `cp` and `mv`.

To override the default `sudo` command when `sudo` is not available on the system, before installing, set the `AEN_SUDO_CMD` environment variable.

AEN must have the ability to perform operations on behalf of other users. Therefore, this environment variable cannot be set to an empty string or to `null`.

CAUTION: Any command that replaces `AEN_SUDO_CMD` must support the `-u` command line parameter—similarly to the `sudo` command.

EXAMPLE:

```
export AEN_SUDO_CMD="sudo2"
```

The optional environmental variable `AEN_SUDO_SH` is another way to customize AEN sudo operations. When AEN executes any `sudo` command, it will include the value of `AEN_SUDO_SH`, if it is set.

EXAMPLE: If your username is “jsmith” and the values are set as:

```
AEN_SUDO_CMD=sudo  
OWNER=jsmith  
AEN_SUDO_SH=sudologger  
PROJECT_HOME=/projects/jsmith/myproj
```

Then AEN will resolve:

```
$AEN_SUDO_CMD -u ${OWNER} $AEN_SUDO_SH rm -rf $PROJECT_HOME
```

As:

```
sudo -u jsmith sudologger rm -rf /projects/jsmith/myproj
```

In this case the `sudologger` utility could be a pass-through utility that logs all `sudo` usage and then executes the remaining parameters.

## Post-installation Sudo configuration

While `root/sudo` privileges are required during installation, `root/sudo` privileges are not required during normal operations after install, if user accounts are managed outside the software. However `root/sudo` privileges are required to start the services, thus in the service config files there may still need to be an `AEN_SUDO_CMD` entry.

For more information, see *Configuring sudo customizations*.

## AEN remote database settings

By default AEN server uses a local database. To override the default database location, see *Install AEN connected to a remote Mongo DB instance*.

## What's next

*Install the AEN server.*

## Installing the AEN server

The AEN server is the administrative front end to the system. This is where users log in to the system, where user accounts are stored, and where admins can manage the system.

Server is installed in the `/opt/wakari/wakari-server` directory.

## Installing the bzip2 package

Be sure you have the `bzip2` package installed. If this package is not installed on your system, install it:

```
sudo yum install bzip2
```

## Downloading prerequisite RPMs

To install AEN on a CentOS 6 server:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
↪com"
curl -O $RPM_CDN/nginx-1.6.2-1.el6ngx.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-tools-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-shell-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-server-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-mongos-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/elasticsearch-1.7.2.noarch.rpm
curl -O $RPM_CDN/jre-8u65-linux-x64.rpm
```

To install AEN on a CentOS 7 server:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
↪com"
curl -O $RPM_CDN/nginx-1.10.2-1.el7ngx.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-tools-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-shell-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-server-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-mongos-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/jre-8u112-linux-x64.rpm
curl -O $RPM_CDN/elasticsearch-1.7.6.noarch.rpm
```

### Installing prerequisite RPMs

Run:

```
sudo yum install -y *.rpm
sudo service mongod start
sudo chkconfig --add elasticsearch
```

### Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

### Running the AEN server installer

Run:

```
sudo -E ./aen-server-4.3.2-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...
PREFIX=/opt/wakari/wakari-server
Logging to /tmp/wakari_server.log
Checking server name
Ready for pre-install steps
Installing miniconda
...
...
Checking server name
Loading config from /opt/wakari/wakari-server/etc/wakari/config.json
Loading config from /opt/wakari/wakari-server/etc/wakari/wk-server-config.json

=====

Created password '<RANDOM_PASSWORD>' for user 'aen_admin'

=====

Starting Wakari daemons...
installation finished.
```

After successfully completing the installation script, the installer creates the administrator account—AEN\_SRVC\_ACCT user—and assigns it a password.

EXAMPLE:

```
Created password '<RANDOM_PASSWORD>' for user 'aen_admin'
```

TIP: Record this password. It will be needed in the following steps. It is also available in the installation log file `/tmp/wakari_server.log`.

## Starting NGINX and Elasticsearch

When SELinux is enabled, it blocks NGINX from connecting to the socket created by Gunicorn. If you have SELinux enabled, run these commands to correct these permissions and allow connections between NGINX and Gunicorn:

```
sudo semanage fcontext -a -t httpd_var_run_t "/opt/wakari/wakari-server/var/run/wakari-  
↪server.sock"  
sudo restorecon -r /opt/wakari/wakari-server/var/run
```

To start NGINX and Elasticsearch to read the new config file:

```
sudo service nginx start  
sudo service elasticsearch start
```

TIP: If the AEN web page shows an NGINX 404 error, restart NGINX:

```
sudo nginx -s stop  
sudo nginx
```

## Testing AEN server installation

Visit `http://\protect\TI\textdollarAEN_SERVER`.

The License expired page is displayed.

No license found!

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**Upload License File**


**License File**

No file selected.

## Updating your license

From the License expired page, follow the onscreen instructions to upload your license file.

After your license is submitted, you will see this page:

 **ANACONDA**

Login Help

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Password must contain a minimum of 7 characters. One uppercase, one lowercase and one number.



## What's next

*Install the AEN gateway.*

## Installing the AEN gateway

The gateway is a reverse proxy that authenticates users and automatically directs them to the proper AEN compute node for their project. Users will not notice this node as it automatically routes them.

Gateway is installed in the `/opt/wakari/wakari-gateway` directory.

## Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
export AEN_GATEWAY_PORT=8089
export AEN_GATEWAY=<FQDN HOSTNAME OR IP ADDRESS> # will be needed shortly
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change `<FQDN HOSTNAME OR IP ADDRESS>` to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists. If the terminal is closed before successful installation, export the variables to continue with the installation.

## Running the AEN gateway installer

Run:

```
sudo -E ./aen-gateway-4.3.2-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-gateway
Logging to /tmp/wakari_gateway.log
...
...
Checking server name
Please restart the Gateway after running the following command
to connect this Gateway to the AEN Server
...
```

### Registering your gateway

The gateway needs to register with the AEN server.

This needs to be authenticated, so the NFI user's credentials created during the AEN server install must be used.

To write the configuration file `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`, run the following as `sudo` or `root`:

```
sudo /opt/wakari/wakari-gateway/bin/wk-gateway-configure \  
--server http://$AEN_SERVER --host $AEN_GATEWAY \  
--port $AEN_GATEWAY_PORT --name Gateway --protocol http \  
--summary Gateway --username $AEN_SRVC_ACCT \  
--password '<NFI USER PASSWORD>'
```

NOTE: replace `<NFI USER PASSWORD>` with the password of the NFI user that was generated during *server installation*.

### Setting permissions

Run:

```
sudo chown $AEN_SRVC_ACCT /opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
```

### Starting the gateway

Run:

```
sudo service wakari-gateway start
```

### Verifying your gateway registration

1. Log in to the AEN server using the Chrome or Firefox browser and the `AEN_SRVC_ACCT` user.
2. In the AEN navigation bar, click **Admin** to open the Admin Settings page.
3. In the **Site Admin** menu, select **Data Centers**:

The screenshot shows the Anaconda web interface. On the left, there are two vertical menus. The top menu, titled 'Staff', contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom menu, titled 'Site Admin', contains links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', and 'Data Centers'. The 'Data Centers' link is highlighted with a blue background. On the right, there is a section titled 'Data Centers'. It contains a single entry 'Gateway' with the IP address 'ec2-52-90-133-17.compute-1.amazonaws.com:8089'. Below this entry is a green button with a plus icon and the text 'Add DataCenter'.

4. Click your data center:

This screenshot is similar to the previous one, showing the same left-hand menus. The 'Data Centers' section on the right now displays the 'Gateway' entry with the IP address '54.208.221.207:8080'. The 'Add DataCenter' button remains visible below the entry.

5. Verify that your data center is registered and the status is `{"status": "ok", "messages": []}`:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)
[Task Queue](#)

Datacenter Gateway

Edit

Provider

wk\_server.plugins.providers.enterprise

Client ID

59c119cd3f94c30fe45ff5db

Client Secret

50cc629d-4e8e-44a5-9a2e-a46fee7c1921

Redirect URIs

http://ec2-52-90-133-17.compute-1.amazonaws.com:8089/login/authorized

wk-gateway-config.json

```
{
  "CDN": "http://ec2-204-236-198-47.compute-1.amazonaws.com/static/",
  "SUBDOMAIN_ROUTING": false,
  "client_id": "59c119cd3f94c30fe45ff5db",
  "client_secret": "50cc629d-4e8e-44a5-9a2e-a46fee7c1921",
  "WAKARI_SERVER": "http://ec2-204-236-198-47.compute-1.amazonaws.com",
  "port": 8089
}
```

status

```
{"status": "ok", "messages": []}
```

Back

Remove

## What's next

*Install the AEN compute node(s).*

## Installing the AEN compute node(s)

Compute nodes are where projects are stored and run.

Adding multiple AEN compute machines allows you to scale-out horizontally to increase capacity. Projects can be created on individual compute nodes to spread the load.

Repeat this procedure on each compute machine.

## Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists.

## Running the AEN compute installer

Run:

```
sudo -E ./aen-compute-4.3.2-Linux-x86_64.sh -w $AEN_SERVER
...
...
PREFIX=/opt/wakari/wakari-compute
Logging to /tmp/wakari_compute.log
Checking server name
...
...
Initial clone of root environment...
Starting Wakari daemons...
installation finished.
Do you wish the installer to prepend the wakari-compute install location
to PATH in your /root/.bashrc ? [yes|no]
[no] >>> yes
```

## Restart the AEN Server

Once configured, restart the AEN server:

```
sudo service wakari-server restart
```

## Configuring your compute node(s)

Once installed, you must configure the compute launcher on your server:

1. In your browser, go to your AEN server.
2. Log in as the AEN\_SRVC\_ACCT user.
3. In the AEN navigation bar, click Admin to open the Admin Settings page.
4. In the **Providers** menu, select Enterprise Resources:

Staff	Resources
<a href="#">Daily Report</a>	<a href="#">Add Resource</a>
<a href="#">Password Reset</a>	<b>Gateway</b>
<a href="#">Notification</a>	<a href="#">ec2-54-210-232-251.compute-1.amazonaws.com</a> <a href="#">remove</a>
<a href="#">Exceptions</a>	

Site Admin
<a href="#">General</a>
<a href="#">Accounts</a>
<a href="#">Users</a>
<a href="#">Monitor</a>
<a href="#">Security Log</a>
<a href="#">Data Centers</a>
<a href="#">Task Queue</a>
<a href="#">License</a>

Providers
<a href="#">Enterprise Resources</a>

5. Click the Add Resource button to open the new resource form.
6. Select the data center to associate this compute node with.

**Resources / new**

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
Compute Node1

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**  
Configuring Compute Node

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Add Resource

7. In the URL box, type: `http://$AEN_COMPUTE:5002`.

NOTE: If the compute launcher is located on the same box as the gateway, we recommended that you type `http://localhost:5002` instead.

8. Type a Name and Description for the compute node.
9. Click the Add Resource button to save the changes.

Your AEN compute node is configured.

### What's next

*Configure conda to use your local on-site AEN repository.*

### Configuring conda to use your local on-site AEN repository

You can configure AEN to use a local on-site Anaconda repository server instead of Anaconda.org.

To configure AEN to use a local on-site repository, you must:

1. *Edit conda on the compute node.*
2. *Configure the Anaconda client.*

### Editing conda on the compute node

**NOTE:** If there are channels that you haven't mirrored, you must remove them from the configuration.

Edit the file `.condarc` to match the following:

```
#/opt/wakari/anaconda/.condarc
channels:
  - defaults

create_default_packages:
  - anaconda-client
  - ipykernel

# Default channels is needed for when users override the system .condarc
# with ~/.condarc. This ensures that "defaults" maps to your Anaconda Repository and not
# repo.anaconda.com
default_channels:
  - http://<your Anaconda Repository name>:8080/conda/anaconda
  - http://<your Anaconda Repository name>:8080/conda/wakari
  - http://<your Anaconda Repository name>:8080/conda/r-channel

# Note: You must add the "conda" subdirectory to the end
channel_alias: http://<your Anaconda Repository name>:8080/conda
```

**NOTE:** Replace `<your Anaconda Repository name>` with the actual name or IP address of your local Anaconda Repository installation.

### Configuring the Anaconda client

Anaconda client lets users work with the repository from the command-line—including searching for packages, logging in, uploading packages, and more.

To set the default configuration of `anaconda-client` for all users on your compute node, run the following command, replacing `<your Anaconda Repository>` with the actual name or IP address of your local Anaconda Repository installation:

```
sudo /opt/wakari/anaconda/bin/anaconda config --set url http://<your Anaconda Repository>:8080/api -s
```



**NOTE:** Sudo access is required because the configuration file is written to the root file system: `/etc/xdg/binstar/config.yaml`.

## What's next

Review the *optional configuration* tasks to see if any apply to your system.

## Optional configuration

### Using configuration files

The default locations for each component's configuration files are:

- Server—`/opt/wakari/wakari-server/etc/wakari/config.json`.
- Gateway—`/opt/wakari/wakari-gateway/etc/wakari/config.json`.
- Compute—`/opt/wakari/wakari-compute/etc/wakari/config.json`.

Additionally, service-specific configuration files may also be present in the following locations:

- Server—`/opt/wakari/wakari-server/etc/wakari/wk-server-config.json`.
- Gateway—`/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`.
- Compute—`/opt/wakari/wakari-compute/etc/wakari/wk-compute-config.json`.

Each service loads each of the configuration files in the following order and updates the AEN configuration at each step:

1. `/etc/wakari/config.json`.
2. `/etc/wakari/wk-gateway-config.json`.
3. `/opt/wakari/wakari-SERVICE/etc/wakari/config.json`.
4. `/opt/wakari/wakari-SERVICE/etc/wakari/wk-SERVICE-config.json`.
5. `./config.json`.
6. `./wk-gateway-config.json`.

## AEN configuration keys

The following is a list of AEN supported configuration keys:

Table 23: Server Configuration Keys

Key	Default	Description
CDN	<code>\$WAKARI_SERVER/ static/</code>	The location of static assets.
MONGO_DB	<code>wakari</code>	The name of the AEN database in mongodb.
MONGO_URL	<code>mongodb:// localhost/</code>	The URL of your AEN server's mongodb instance. Format: <code>mongodb://&lt;username&gt;:&lt;password&gt;@&lt;host&gt;:&lt;port&gt;/</code>
WAKARI_SERVER		The URL of this AEN server.
DEFAULT_PRIVACY	<code>public</code>	The default project privacy setting—can be either <code>public</code> or <code>private</code> .
SESSION_COOKIE_NAME	<code>wakari. enterprise. session</code>	The Cookie name used to maintain Anaconda Enterprise Notebooks Enterprise login sessions.
PERMANENT_SESSION	<code>True</code>	Sets cookie session to permanent. This will keep the session open after the browser is closed. The session will still expire after the number of minutes set in the <code>SESSION_LIFETIME</code> key.
SESSION_LIFETIME	<code>120</code>	Time in minutes until the session expires. The counter resets with each request.
USE_SES	<code>false</code>	Sets whether AEN will use Amazon SES to send emails.
SMTP		Sets the SMTP email settings.
- host		A SMTP subkey—the SMTP mail server hostname.
- user		SMTP subkey—the username for SMTP server authentication.
- password		SMTP subkey—the password for SMTP server authentication.
- from_addr		SMTP subkey—the From address for emails sent through SMTP.
verify_gateway_certificate	<code>true</code>	A boolean setting that indicates whether your AEN server should verify the gateway SSL certificate.
accounts	<code>wk_server. plugins accounts.cloud</code>	The account provider class. For LDAP, this should be set to <code>wk_server.plugins.accounts.ldap_accounts</code> .
uniqueEmail	<code>true</code>	A boolean setting that indicates whether unique user email addresses are required. See <a href="#">note below</a> about updating the database when setting <code>uniqueEmail</code> .
has_internet	<code>true</code>	Boolean for retrieving the avatar from the gravatar URL. If false a local default is used instead.
LDAP	<code>389</code>	LDAP configurations.
- SERVER		LDAP subkey—A list of LDAP servers. At least one server name must be listed. The primary server should be listed first. All secondary or fail-over servers should be listed after the primary.
- PORT	<code>389</code>	LDAP subkey—The LDAP port on the LDAP server.
- AUTH_TYPE		LDAP subkey—LDAP Authentication types. <code>simple</code> —no encryption not secure. <code>``TLS``</code> —encrypted secure requires the <code>TLS_CERT</code> to be set.
- TLS_CERT		LDAP subkey—the full path to the TLS certificate file. The certificate file must also be provided by the Enterprise.
- BASEDN		LDAP subkey—the LDAP Base DN value.
- OU		LDAP subkey—a list of Organizational Units. Some Enterprises group users by OUs in their LDAP server records. AEN will loop over the list of OUs when authenticating a user. The OU value is a list of lists to support multiple OUs where each OU is a single name or a hierarchy of names.
ANON_USER	<code>anonymous</code>	Username—such as <code>public</code> or <code>anonymous</code> —assigned users who are not logged in to access projects. To disable public access use the special value <code>disabled</code> . For more information, see <a href="#">Configuring sudo customizations</a> .
ELASTICSEARCH_ENABLED	<code>true</code>	Boolean indicating whether ElasticSearch is enabled.
SEARCH_SERVER	<code>'localhost:9200'</code>	IP address or domain name and port of ElasticSearch server
LOG_LEVEL	<code>'DEBUG'</code>	Log verbosity. One of: <code>'ERROR'</code> <code>'WARN'</code> <code>'INFO'</code> <code>'DEBUG'</code>

NOTE: If you set `uniqueEmail` to `false`, you must drop the existing index in the database. EXAMPLE: If the index name is `email_1`, run `db.users.dropIndex("email_1")`.

Table 24: Gateway Configuration Keys

Key	Default	Description
<code>WAKARI_SERVER</code>		The URL of the AEN <code>WAKARI_SERVER</code> .
<code>port</code>	8089	The Port number used by the gateway application. Must be a non-privileged port ( $\geq 1024$ ).
<code>client_id</code>		The client ID assigned to this gateway by the server during <code>wk-gateway-configure</code> .
<code>client_secret</code>		The Client secret assigned to this gateway by the server during <code>wk-gateway-configure</code> .
<code>httpTimeout</code>	600	Timeout in seconds. The default is 10 minutes to allow project creation.
<code>logLevel</code>	info	Log verbosity. One of: 'error' 'warn' 'info' 'debug'.
<code>https</code>		Enable SSL encryption. For more information, see <a href="#">Configuring SSL</a> .
- <code>key</code>		A https subkey—Path to gateway key.
- <code>cert</code>		A https subkey—Path to gateway cert.
- <code>ca</code>		A https subkey—Required if cert was signed by a private root CA or signed by an intermediate authority. It must contain separate values for the paths to the CA root, any intermediates and the certificate for the Server.
- <code>passphrase</code>		A https subkey—Passphrase required to decrypt SSL certs.

Table 25: Compute Node Configuration Keys

Key	Default	Description
WAKARI_SERVER		The URL of the AEN WAKARI_SERVER.
MANAGE_ACCOUNTS	true	A boolean setting that indicates whether AEN should manage system user accounts. Set to false for LDAP installations.
identicalGID	false	<b>To make the AEN compute service create groups with the same uid. Set to true If the /projects folder resides on an NFSv3 volume.</b> For more information, see <a href="#">Group and user permissions for NFS</a> .
port	2227	The port number used by the compute-launcher application. Note that individual applications use dynamic ports.
projectRoot	/projects	The location of project file storage.
logLevel	info	Log verbosity. One of: 'error' 'warn' 'info' 'debug'
logMaxSize	10000000	Max size in bytes of the logfile. Default is 10 MB. If the size is exceeded then a new file is created and a counter will become a suffix of the log file.
logMaxFiles	30	Limit the number of files created when the size of the logfile is exceeded
appIdleTime	172800000 (48 hours)	The amount of idle time before applications will be auto-terminated (in msec).
idleCheckInterval	3600000 (1 hour)	The frequency of idle checks.
numericUsernames	false	A boolean setting that indicates whether numeric usernames are permitted.
httpTimeout	600	The time before a timeout—in seconds. The default is 10 minutes—600 seconds—to allow time for project creation.
ANON_USER	anonymous	Username such as public or anonymous for users who are not logged in to access projects. To disable public access use the special value disabled. For more information, see <a href="#">Configuring sudo customizations</a> .
projDirsAsHome	false	A boolean setting. When false AEN apps use /home/<username> as HOME. When true AEN apps use /projects/<username> as HOME.

Table 26: Server Internal Configuration Keys - Do not change

Key	Default	Description
PROVIDERS	["wk_server. plugins providers. enterprise"]	A list of compute provider classes.
MONGO_ACTION_LOG_SIZE	262144000	The size of the Mongo action log in bytes.
SITE_ADMINS		A list of site administrator email addresses—used for crash notifications and LDAP password reset requests.
FROM_EMAIL_ADDR		The From address for notification emails sent by AEN.
uniqueUserName	true	A boolean setting that indicates whether unique usernames are required.

Table 27: Gateway Internal Configuration Keys - Do not change

Key	Default	Description
CDN	\$WAKARI_SERVER/ static/	The location of static assets.
SUBDOMAIN_ROUTING	false	A boolean that indicates whether subdomains are being used.
refreshTokenExpiration	500000	Idle time in milliseconds before the Gateway session expires.

Table 28: Compute Node Internal Configuration Keys - Do not change

Key	Default	Description
CDN	\$WAKARI_SERVER/ static/	The location of static assets.
USE_SES	false	Sets whether AEN will use Amazon SES to send emails.
multiUser	true	A boolean that indicates whether multi-user support is enabled.
multiProject	true	A boolean that indicates whether multi-project support is enabled.
ANACONDA_ROOT	/opt/wakari/ anaconda	The location of your Anaconda installation.
appLogs	/opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher-apps	The directory where application logs are stored.
appPIDs	/opt/wakari/ wakari-compute/ var/run/ compute-launcher-apps	The directory where application PID files are stored.
applicationLog	/opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher. application.log	The path to the compute launcher log.
accessLog	opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher. access.log	Path to compute launcher access log

## Checking configuration file syntax

To verify that the configuration file contains valid JSON, run:

```
root@server # python -m json.tool /opt/wakari/wakari-server/etc/wakari/*.json
root@gateway # python -m json.tool /opt/wakari/wakari-gateway/etc/wakari/*.json
root@compute # python -m json.tool /opt/wakari/wakari-compute/etc/wakari/*.json
```

If the file is correct, the contents are displayed.

If there is a syntax error in the file, a “No JSON object could be decoded” message is displayed instead.

To fix any errors, edit the configuration file and verify that it contains the correct JSON syntax.

## Increasing HTTP timeout between gateway and compute nodes

The default HTTP timeout is 600 seconds (10 minutes).

This setting works for HTTP timeout only, not HTTPS.

To modify the HTTP timeout setting:

1. Open the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file and modify the `httpTimeout` key:

```
"httpTimeout": 600
```

2. Update the gateway node by modifying the `httpTimeout` key in the `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json` file to match the above settings.
3. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Installing AEN in a custom location

To install AEN in a custom location:

1. Make the custom install folder owned by `$AEN_SRVC_ACCT`. EXAMPLE: `/data/aen/`.
2. Make a symlink from `/opt/wakari` to `/data/aen`.
3. Run the installers.
4. Move the folder from `/projects` to your chosen custom location. EXAMPLE: `/data/aen/projects`.
5. Make a symlink from `/projects` to `/data/aen/projects`.

**NOTE:** We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda environment directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

## Changing where projects are stored

**NOTE:** We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda env directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

To make aen-compute service use a different directory than `/projects` to store your AEN projects:

1. Modify the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file:

```
"projectRoot" : "/nfs/storage/services/wakari/projects",
```

**NOTE:** The directory `/nfs/storage/services/wakari/projects` specified as `projectRoot` must already exist for this command to resolve properly.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Group and user permissions for NFS

To install AEN with multiple compute nodes and a `/projects` folder on an NFSv3 volume, manually pre-create both the anonymous user and the `$AEN_SRVC_ACCOUNT` user on all nodes. Each of these users must have the same user identity number (UID) and group identity number (GID) on all nodes.

By default AEN creates local users with a different GID on each node. To make the AEN compute service create groups with the same GID:

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, change the `identicalGID` key value to `true`:

```
, "identicalGID": true
```

If you don't see the `identicalGID` key, add it.

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Using numeric usernames

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, change the `numericUsernames` key value to `true`.

```
, "numericUsernames": true
```

If you don't see the `numericUsernames` key, add it.

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Using project directories as home directories

The `projDirsAsHome` option changes the AEN home directories from the standard `/home/<username>` location to the project directories and the location `/projects/<username>/<project_name>/<username>/`. This ensures that AEN and AEN apps will not be affected by configuration files in a user's home directory, such as `.bashrc` or configuration files in subdirectories such as `.ipython` and `.jupyter`.

## Package cache locations

AEN version 4.1.3 stores the cache of packages in `/home/<username>`, while AEN versions 4.2.0 and higher store the cache of packages in `/projects/<username>/<project_name>/<username>/`. By moving the package cache to the same filesystem as the project, AEN versions 4.2.0 and higher can use hardlinks and save disk space and time when creating or cloning environments.

These package cache locations are not affected by the `projDirsAsHome` option.

After upgrading from AEN 4.1.3 to AEN 4.2.0 or higher, existing projects will still use the package cache in `/home/<username>`. Do not remove this cache, or the existing projects will break.

When users create new projects or install packages, the newly installed packages will use the new cache location.

If you wish to remove the older package cache in `/home/<username>`:

- Upgrade AEN to 4.2.0 or higher.
- Use `conda remove` to remove every non-default package in every project.
- Use `conda install` to replace them. The replaced packages will link to the new package cache in `/projects/<username>/<project_name>/<username>/`.
- You can now safely remove the older package cache.

## Enabling `projDirsAsHome`

NOTE: The `projDirsAsHome` option should be enabled immediately after performing the installation process and before any users have logged in to AEN. This ensures that users will not have home directories in different places due to some creating their home directories when the option was disabled and others creating their home directories when the option was enabled.

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, add the `projDirsAsHome` key value and set it to `true`.

```
, "projDirsAsHome": true
```

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Setting up a default project environment

AEN includes a full installation of the Anaconda Python distribution—along with several additional packages—located within the root conda environment in `/opt/wakari/anaconda`.

The first time any new AEN project is started, this default project environment is cloned into the new project's workspace.

To configure a different set of packages than the default:

1. Create a new conda environment in the `/opt/wakari/anaconda/envs/default` directory.

EXAMPLE: Using a Python 3.4 base environment, run:



```
sudo -u $AEN_SRV_ACCT /opt/wakari/anaconda/bin/conda \
create -p /opt/wakari/anaconda/envs/default python=3.4
```

2. Use conda to install any additional packages into the environment.
3. After the environment is created, clone it to ensure that it works correctly:

```
sudo -u $AEN_SRV_ACCT /opt/wakari/anaconda/bin/conda \
create -p /opt/wakari/testenv --clone /opt/wakari/anaconda/envs/default
sudo -u $AEN_SRV_ACCT rm -rf /opt/wakari/testenv
```

## Converting an existing project

1. Run the following command to clone the environment:

```
sudo -u $AEN_SRV_ACCT /opt/wakari/anaconda/bin/conda \
create -n /projects/owner/project/envs/<ENV_NAME> \
--clone /opt/wakari/anaconda/envs/default
```

NOTE: Replace `/projects/owner/project/envs/<ENV_NAME>` with the path to the new environment you would like to create within the project.

2. Open the *Compute Resource Configuration application* for your project and set the project environment path there as well.

## Install AEN connected to a remote Mongo DB instance

To install AEN with a remote database:

1. Connect to the Mongodb instance and create the user for AEN:

```
> user = { user: "<username>",
  pwd: "<super-secure-password>",
  roles: [
    { role: "dbOwner", db: "<db_name>" },
    { role: "dbOwner", db: "<db_name>_mq" }
  ]
}
> db.createUser(user)
Successfully added user: { ... }
```

2. Before installing AEN-server export the database URL and name:

```
$ export MONGO_URL="mongodb://<username>:<password>@<host>:<port>/"
$ export MONGO_DB="<database_name>"
```

3. Continue the installation process: *Install the AEN server*.

## Migrate from local to remote MongoDB

To configure your remote database to work with an already installed AEN server:

1. Stop the server, gateway and compute nodes:

```
sudo service wakari-server stop
sudo service wakari-gateway stop
sudo service wakari-compute stop
```

2. Open the `/opt/wakari/wakari-server/etc/wakari/config.json` file and create the `MONGO_URL` key. For the value parameter, add the database information.

The final file should read:

```
{
  "MONGO_URL": "mongodb://MONGO-USER:MONGO-PASSWORD@MONGO-URL:MONGO-PORT",
  "MONGO_DB": "MONGO-DB-NAME",
  "WAKARI_SERVER": "http://YOUR-IP",
  "USE_SES": false,
  "CDN": "http://YOUR-IP/static/",
  "ANON_USER": "anonymous"
}
```

For more information about configuration keys, see *Using configuration files*.

3. Migrate the data from the former database into the new one. For more information, see the [MongoDB documentation website](#).
4. After migration, restart the nodes:

```
sudo service wakari-server start
sudo service wakari-gateway start
sudo service wakari-compute start
```

## Running SELinux in enforcing mode

To run SELinux in Enforcing mode, a few ports must be set up using the `semanage port` command.

The `semanage` command relies on `policycoreutils-python`. To install `policycoreutils-python`, if needed, run:

```
sudo yum -y install policycoreutils-python
```

Enable ports 9200 and 9300 for Elasticsearch:

```
sudo semanage port -a -t http_port_t -p tcp 9200
sudo semanage port -a -t http_port_t -p tcp 9300
```

## Changing server hostnames

It is possible to change the domain names (hostnames) of the various AEN nodes by updating the configuration files.

**NOTE:** After the configuration files are updated, the associated nodes need to be restarted.

To edit the information for all of the data centers that you are changing the base domain name for:

1. Go to the Site Admin section of the Admin Settings page.
2. In the Data Centers section, click the Edit button.
3. Make any necessary updates.

**NOTE:** This must include the service port if it is different from the default—80 for HTTP and 443 for HTTPS.

4. In the Enterprise Resources sub-section of the Providers section, edit each compute node that has a changed domain name.

**NOTE:** These URLs should include the protocol, hostname and port.

## Authenticating with LDAP

Anaconda Enterprise Notebooks performs local authentication against accounts in the AEN database by default.

To configure AEN to authenticate against accounts in an LDAP (Lightweight Directory Access Protocol) server, follow the instructions below.

## Installing OpenLDAP libraries

The system needs OpenLDAP libraries to be installed and accessible by AEN. AEN uses the OpenLDAP libraries to establish an LDAP connection to your LDAP servers.

To install OpenLDAP on CentOS or Redhat:

```
sudo yum install openldap
```

To install OpenLDAP on Ubuntu or Debian, follow the official [OpenLDAP installation instructions](#).

## Configuring OpenLDAP

1. Open the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file.
2. Add the following LDAP settings:

```
{
  "accounts": "wk_server.plugins.accounts.ldap2",
  "LDAP" : {
    "URI": "ldap://openldap.EXAMPLE.COM",
    "BIND_DN": "cn=Bob Jones,ou=Users,DC=EXAMPLE,DC=COM",
    "BIND_AUTH": "secretpass",
    "USER_SEARCH": {"base": "DC=EXAMPLE,DC=COM",
                    "filter": "(| (& (ou=Payroll)
                                   (uid=%(username)s))
                               (& (ou=Facilities)
                                   (uid=%(username)s)))"
  }
}
```

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```

    },
    "KEY_MAP": {"email": "mail",
               "name": "cn"}
  }
}

```

- **URI**—The IP address or hostname of your OpenLDAP server. For SSL/TLS, use the `ldaps://` prefix and specify a `TLS_CACERT` as described in the SSL/TLS configuration section below.
- **BIND\_DN**—The full directory path of the user you want AEN server to bind as.
- **BIND\_AUTH**—The password of the `BIND_DN` user.
- **USER\_SEARCH**:
  - **base**—The level at which you want to start the search.
  - **filter**—The default is to search for the `sAMAccountName` attribute, and use its value for the AEN server username field.
- **KEY\_MAP**—Maps user attributes in AEN server to LDAP user attributes.

EXAMPLE: The `mail` attribute in LDAP maps to the `email` attribute in AEN server.

3. Restart AEN server to load new settings.
4. Log in with the admin account. This creates the admin user in the local database.
5. As soon as LDAP is installed, LDAP authentication takes over, so you need to add your admin account again:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add "jsmith"
```

## Configuring Active Directory

Microsoft Active Directory is a server program that provides directory services and uses the open industry standard Lightweight Directory Access Protocol (LDAP).

To enable Active Directory support:

1. Open the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file.
2. Add the following LDAP settings:

```

{
  "accounts": "wk_server.plugins.accounts.ldap2",
  "LDAP" : {
    "URI": "ldap://<ad.EXAMPLE.COM>",
    "BIND_DN": "CN=Bind User,CN=Users,DC=EXAMPLE,DC=COM",
    "BIND_AUTH": "secretpass",
    "USER_SEARCH": {"base": "CN=Users,DC=EXAMPLE,DC=COM",
                   "filter": "sAMAccountName=%(username)s"}
  },
  "KEY_MAP": {"email": "mail",
             "name": "cn"}
}

```

- **URI**—The IP address or hostname of your Active Directory server. Replace `<ad.EXAMPLE.COM>` with the actual URI. For SSL/TLS, use the `ldaps://` prefix and specify a `TLS_CACERT` as described in the SSL/TLS configuration section below.
- **BIND\_DN**—The full directory path of the user you want AEN server to bind as.
- **BIND\_AUTH**—The password of the `BIND_DN` user.
- **USER\_SEARCH**:
  - **base**—the level at which you want to start the search.
  - **filter**—default is to search for the `sAMAccountName` attribute, and use its value for the AEN server username field.
- **KEY\_MAP**—Maps user attributes in AEN server to LDAP user attributes.

EXAMPLE: The `mail` attribute in LDAP maps to the `email` attribute in AEN server.

3. Restart AEN server to load new settings.
4. Log in with the admin account. This creates the admin user in the local database.
5. As soon as LDAP is installed, LDAP authentication takes over, so you need to add your admin account again:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add "jsmith"
```

## Configuring SSL/TLS

AEN uses system-wide LDAP settings, including SSL/TLS support.

- On Redhat/CentOS systems, these settings are located in the `/etc/openldap/ldap.conf` file.
- On Ubuntu/Debian systems, these settings are located in the `/etc/ldap/ldap.conf` file.

Typically, the only configuration necessary is updating the file to read:

```
TLS_CACERT /path/to/CA.cert
```

**NOTE:** `CA.cert` is the Certificate Authority used to sign the LDAP server's SSL certificate. In the case of a self-signed SSL certificate, this is the path to the SSL certificate itself.

## Testing LDAP configuration

Test your LDAP configuration using `flask-ldap-login-check`:

```
/opt/wakari/wakari-server/bin/flask-ldap-login-check \
wk_server.wsgi:app \
-u [username] \
-p [password]
```

**NOTE:** `username` is the username of a valid user and `password` is that user's `BIND_AUTH` password.

## Configuring sudo customizations

If your organization's IT security policy does not allow root access or has restrictions on the use of sudo, after AEN installation, you may customize AEN to meet their requirements.

Your organization may choose to implement any or all of the following:

- *Remove root access* for AEN service account (Note: this restricts AEN from managing user accounts).
- *Configurable sudo command*.
- *Restrict sudo access to all processes*.

These customizations must be done in a terminal window after copying the files to the server node.

## Removing all root access from the service account

Because root access is required for useradd, the following process restricts AEN from managing user accounts.

1. Modify the `/etc/sudoers.d/wakari_sudo` file to read:

```
Defaults:wakari !requiretty, visiblepw
Runas_Alias    OP = ALL,!root
wakari ALL=(OP) NOPASSWD: ALL
```

NOTE: If you used a service account name other than wakari, enter that name instead of wakari.

2. Modify the `/opt/wakari/wakari-compute/etc/wakari/config.json` file to read:

```
"MANAGE_ACCOUNTS": false,
```

Using this option means that your IT department must create and manage all user accounts at the OS level.

After an OS-level account exists, you may create on the main AEN web page an AEN account using the same name. The password you choose is not linked in any way to the OS-level password for the account.

Alternatively, you can configure the system to *use LDAP for authenticating users*.

## Allowing public users to have access to your AEN projects

A public account is visible to anyone who can access the AEN server. The name of this account can be configured to any name you wish. For example, `public` or `anonymous`. To disable this feature use the special value `disabled`.

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, modify the `ANON_USER` line to read:

```
"ANON_USER": "public"
```

2. Restart AEN compute node:

```
sudo service wakari-compute restart
```

3. In the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file, modify the `ANON_USER` line to read:

```
"ANON_USER": "public"
```

4. Restart AEN server:

```
sudo service wakari-server restart
```

For more information about configuration keys, see *Using configuration files*.

## Using a sudo alternative

You can use a sudo alternative as long as it supports the same execution semantics as the original sudo. The alternative must be configured to give the service account permission to run commands on behalf of AEN users.

1. In your terminal window, open the `/opt/wakari/wakari-compute/etc/wakari/config.json` file.
2. Modify the `AEN_SUDO_CMD` line to read:

```
"AEN_SUDO_CMD": "/path/to/alternative/sudo",
```

NOTE: If the alternate sudo command is available on PATH, then the full path is not required.

## Restricting sudo access to a single gatekeeper

By default, sudoers is configured to allow AEN to run any command as a particular user which allows the platform to initiate processes as the logged-in end user. If more restrictive control is required, it should be implemented using a suitable sudoers policy. If that is not possible or practical, it is also possible to route all AEN ID-changing operations through a single gatekeeper.

This gatekeeper wraps the desired executable and provides an alternate way to log, monitor, or control which processes can be initiated by AEN on behalf of a user.

CAUTION: Gatekeeper is a special case configuration and should only be used if required.

To configure an AEN gatekeeper:

1. Modify the `/etc/sudoers.d/wakari_sudo` file to contain:

```
Defaults:wakari !requiretty, visiblepw
Runas_Alias    OP = ALL,!root
wakari ALL=(OP) NOPASSWD: /path/to/gatekeeper
```

2. In the `/opt/wakari/wakari-compute/etc/wakari/config.json` file, modify the `AEN_SUDO_SH` line to read:

```
"AEN_SUDO_SH": "/path/to/gatekeeper"
```

EXAMPLE: The gatekeeper can be as simple as a script with contents such as:

```
#!/bin/bash
first_cmd=$1
if [ 'bash' == $1 ]; then
    shift
    export HOME=~
    export SHELL=/bin/bash
    export PATH=$PATH:/opt/wakari/anaconda/bin
    bash "$@"
else
    exec $@
fi
```

## Configuring SSL

The server node uses NGINX to proxy all incoming http(s) requests to the server running on a local port, and uses NGINX for SSL termination. The default setup uses http—non-SSL—since cert files are required to configure SSL and each enterprise will have their own cert files.

The `www.enterprise.conf` file is the default `nginx.conf` file used for AEN. It is copied to the `/etc/nginx/conf.d` directory during server installation.

NOTE: This section describes setting up SSL after your gateway node has been installed and registered with the server node.

### Copying the required files

To configure SSL on AEN, you will need the following files:

- Server certificate and key
- Server CA bundle
- Gateway certificate and key
- Gateway CA bundle

Configure SSL on AEN:

1. Copy the Gateway certificate and key to `/opt/wakari/wakari-gateway/etc/` on the Gateway as `gateway.crt` and `gateway.key`.
2. Copy the Gateway CA bundle to `/opt/wakari/wakari-server/etc/` on the Server.
3. Copy the Server certificate and key to `/etc/nginx` on the Server as `server.crt` and `server.key`.
4. Copy the Server CA bundle to `/opt/wakari/wakari-gateway/etc/` on the Gateway.

If you have a certificate that was signed by a private root CA and/or an intermediate authority:

- The Gateway CA bundle must contain the full chain: root CA, any intermediate authority and the certificate.

```
cat gateway.crt intermediate.crt root.crt >> gateway-crt-int-root.crt
```

- The Server CA bundle must be separated into individual files for the root CA, any intermediate and the certificate.

### Configuring SSL on the server node

The `www.enterprise.https.conf` is an NGINX configuration file for SSL. It is set up to use the `server.crt` and `server.key` cert files.

CAUTION: You must change these values to point to the signed cert files for your domain.

NOTE: Self-signed certs or those signed by a private root CA require additional configuration.

Perform the following steps as root:

1. Stop NGINX:

```
service nginx stop
```

2. Move the `/etc/nginx/conf.d/www.enterprise.conf` file to a backup directory.



- Copy the `/opt/wakari/wakari-server/etc/nginx/conf.d/www.enterprise.https.conf` file to `/etc/nginx/conf.d`.

NOTE: `/etc/nginx/conf.d` may have `www.enterprise.conf` or `www.enterprise.https.conf` but it may not have both.

- Edit the `/etc/nginx/conf.d/www.enterprise.https.conf` file and change the `server.crt` and `server.key` values to the names of the real cert and key files if they are different.
- Restart NGINX by running:

```
service nginx start
```

- Update the WAKARI\_SERVER and CDN settings to use https instead of http in the following configuration files:

```
/opt/wakari/wakari-server/etc/wakari/config.json
/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
/opt/wakari/wakari-compute/etc/wakari/config.json
```

- Copy the gateway certificate, `gateway.crt` to `/opt/wakari/wakari-server/etc/`.
- In an editor, open `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` and add:

```
"verify_gateway_certificate": "/opt/wakari/wakari-server/etc/gateway.crt"
```

- Restart AEN services on the server by running:

```
service wakari-server restart
```

NOTE: This step may return an error since the gateway has not yet been configured for SSL.

- In AEN, verify that the browser uses https. On the Admin Settings page, under Data Centers, click Gateway, then select https:

## Admin Settings

Anaconda Enterprise Notebooks settings accessible only by th

Staff	Data Centers / Register a datacenter
<a href="#">Daily Report</a> <a href="#">Password Reset</a> <a href="#">Notification</a>	<p><b>Name</b></p> <p>Gateway 1</p> <p><input type="checkbox"/> Subdomain Routing</p> <p><input checked="" type="checkbox"/> <b>Https</b></p>

## Configuring SSL on the gateway

1. For all types of SSL certificates, in `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt"
  }
}
```

2. For a server certificate signed by a private root CA or signed by an intermediate authority, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "ca": ["/opt/wakari/wakari-gateway/etc/server.crt"]
  }
}
```

NOTE: When the certificate chain has more than one intermediate cert signed by a higher root CA authority, you must manually break up the certs in the chain into individual files, and enumerate them in the `ca` key:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "ca": ["/opt/wakari/wakari-gateway/etc/server1.crt",
          "/opt/wakari/wakari-gateway/etc/server2.crt",
          "/opt/wakari/wakari-gateway/etc/server3.crt"]
  }
}
```

3. For a gateway certificate that is encrypted using a passphrase, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "passphrase": "mysecretpassphrase"
  }
}
```

NOTE: Alternatively, the passphrase can be passed using an environment variable or entered when the wakari-gateway service is manually started.

EXAMPLES:

```
# using an environment variable
AEN_GATEWAY_SSL_PASSPHRASE='mysecretpassphrase' wk-gateway
```

```
# starting wakari-gateway manually
sudo service wakari-gateway start --ask-for-passphrase
Passphrase?
```

4. Restart the gateway:

```
sudo service wakari-gateway restart
```

## Configuring SSL on compute nodes

Anaconda Enterprise does not support direct SSL on Compute Nodes. If you need SSL on Compute Nodes, you must install each Compute Node on the same server as a Gateway using `http://localhost:5002` for the URL value while adding it as a resource, and you must use a Gateway for each and every Compute Node.

## Security reminder

The permissions on the cert files must be set correctly to prevent them from being read by others. Since NGINX is run by the root user, only the root user needs read access to the cert files.

EXAMPLE: If the cert files are called `server.crt` and `server.key`, then use the root account to set permissions:

```
chmod 600 server.key
chmod 600 server.crt
```

## Enabling or disabling the Strict-Transport-Security header

By default, Strict-Transport-Security (STS) is enabled in the `www.enterprise.https.conf` file:

```
add_header Strict-Transport-Security max-age=31536000;
```

It can remain enabled if either of the following is true:

- The gateway is running on a different host than the server.
- or
- SSL has been enabled for the gateway.

You must comment out this line if both of the following are true:

- The gateway is running on the same host as the server.
- and
- SSL has not been enabled for the gateway.

Leaving STS enabled when these conditions are true will cause a mismatch in protocols between the server and gateway, causing your apps to fail to launch correctly.

## Configuring single sign-on

AEN's single sign-on (SSO) capability creates a new authentication provider that defers to your Anaconda Repository for login and authentication cookies.

To enable SSO:

1. Deploy AEN and Repository on the same machine.
2. In the `/opt/wakari/wakari-server/etc/wakari/config.json` file, add:

```
{
  EXISTING_CONFIGURATION,
  "SECRET_KEY": "<repo signing secret>",
  "REPO_LOGIN_URL":
    "http://example_repo.com:8080/account/login?next=http://example_repo.com/"
}
```

3. Copy the `SECRET_KEY` from the Repository configuration file.
4. In the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file, modify:

```
{
  EXISTING_CONFIGURATION,
  "accounts": "wk_server.plugins.accounts.repo",
}
```

5. If you are using Repository version 2.33.3 through 2.33.10, set `USE_SERVER_BASED_SESSIONS: false` in the Repository configuration.

This setting affects the network security properties of AEN and Repository. Specifically, if `USE_SERVER_BASED_SESSIONS` is set to `false`, and if a new cross-site scripting (XSS) vulnerability is discovered, it could expose an additional server fixation vulnerability. Please discuss this with your Anaconda representative and be sure the feature is compatible with your network requirements before setting `USE_SERVER_BASED_SESSIONS: false`.

6. To activate the changes restart `wakari-server`:

```
sudo service wakari-server restart
```

SSO is enabled.

## Adding a third-party extension

Anaconda officially supports and tests functionality of the default environment(s) only for those extensions that ship with AEN.

It is possible to add third-party and custom extensions from `conda-forge` or `pip`, but doing so may cause instability in your default project environments or kernels.

**CAUTION:** Anaconda does not officially support third-party extensions. This section is informational only.

## Installing unofficial Jupyter Notebook extensions for AEN

**TIP:** Always back up and verify your complete system before installing extensions.

The `jupyter-contrib-nbextensions` extensions are installed on a compute node.

The default conda executable directory for AEN is `/opt/wakari/anaconda/bin/conda`. If you are installing a Jupyter extension, it must be installed in the `wakari-compute` directory.

EXAMPLE: Run:

```
/opt/wakari/anaconda/bin/conda install -p /opt/wakari/wakari-compute/ -c conda-forge ↵
↵ jupyter_contrib_nbextension
```

For more information, see [Unofficial Jupyter Notebook Extensions](#).

## Configure search indexing

For search indexing to work correctly, verify that the AEN Compute node can communicate with the AEN Server.

```
curl -m 5 $AEN_SERVER > /dev/null
```

There must be at least one `inotify` watch available for the number of subdirectories within the project root filesystem. Some Linux distributions default to a low number of watches, which can prevent the search indexer from monitoring project directories for changes.

```
cat /proc/sys/fs/inotify/max_user_watches
```

If necessary, increase the number of max user watches with the following command:

```
echo fs.inotify.max_user_watches=1000000 | sudo tee -a /etc/sysctl.conf && sudo sysctl -p
```

There must be at least one `inotify` user instance available per project.

```
cat /proc/sys/fs/inotify/max_user_instances
```

If necessary, this can be increased with the following command:

```
echo fs.inotify.max_user_instances=1000 | sudo tee -a /etc/sysctl.conf && sudo sysctl -p
```

## Create custom Jupyter kernel for Pyspark

These instructions add a custom Jupyter Notebook option to allow users to select PySpark as the kernel.

## Install Spark

The easiest way to install Spark is with [Cloudera CDH](#).

You will use YARN as a resource manager. After installing Cloudera CDH, [install Spark](#). Spark comes with a PySpark shell.

## Create a notebook kernel for PySpark

You may create the kernel as an administrator or as a regular user. Read the instructions below to help you choose which method to use.

### 1. As an administrator

Create a new kernel and point it to the root env in each project. To do so create a directory ‘pyspark’ in `/opt/wakari/wakari-compute/share/jupyter/kernels/`.

Create the following kernel.json file:

```
{ "argv": [ "/opt/wakari/anaconda/bin/python",
  "-m", "ipykernel", "-f", "connection_file", "--profile", "pyspark"],
  "display_name": "PySpark", "language": "python" }
```

You may choose any name for the ‘display\_name’.

This configuration is pointing to the python executable in the root environment. Since that environment is under admin control, users cannot add new packages to the environment. They will need an admin to help update the environment.

### 2. As an administrator without IPython profile

To have an admin level PySpark kernel without the user .ipython space:

```
{ "argv":
[ "/opt/wakari/wakari-compute/etc/ipython/pyspark.sh", "-f", "{connection_file}" ],
  "display_name": "PySpark", "language": "python" }
```

NOTE: The pyspark.sh script is defined in *Without IPython profile* section below.

### 3. As a regular user

Create a new directory in the user’s home directory: `.local/share/jupyter/kernels/pyspark/`. This way the user will be using the default environment and able to upgrade or install new packages.

Create the following kernel.json file:

```
{ "argv": [ "/projects/<username>/<project_name>/envs/default/bin/python",
  "-m", "ipykernel", "-f", "connection_file", "--profile", "pyspark"],
  "display_name": "PySpark", "language": "python" }
```

NOTE: Replace “<username>” with the correct user name and “<project\_name>” with the correct project name.

You may choose any name for the ‘display\_name’.

## Create an IPython profile

The above profile call from the kernel requires that we define a particular PySpark profile. This profile should be created for each user that logs in to AEN to use the PySpark kernel.

In the user's home, create the directory and file `~/ipython/profile_pyspark/startup/00-pyspark-setup.py` with the file contents:

```
import os
import sys

# The place where CDH installed spark, if the user installed Spark locally it can be
↪ changed here.
# Optionally we can check if the variable can be retrieved from environment.

os.environ["SPARK_HOME"] = "/usr/lib/spark"

os.environ["PYSPARK_PYTHON"] = "/opt/wakari/anaconda/bin/python"

# And Python path
os.environ["PYLIB"] = os.environ["SPARK_HOME"] + "/python/lib"
sys.path.insert(0, os.environ["PYLIB"] + "/py4j-0.9-src.zip") #10.4-src.zip")
sys.path.insert(0, os.environ["PYLIB"] + "/pyspark.zip")

os.environ["PYSPARK_SUBMIT_ARGS"] = "--name yarn pyspark-shell"
```

Now log in using the user account that has the PySpark profile.

## Without IPython profile

If it is necessary to avoid creating a local profile for the users, a script can be made to be called from the kernel. Create a bash script that will load the environment variables:

```
sudo -u $AEN_SRVC_ACCT mkdir /opt/wakari/wakari-compute/etc/ipython
sudo -u $AEN_SRVC_ACCT touch /opt/wakari/wakari-compute/etc/ipython/pyspark.sh
sudo -u $AEN_SRVC_ACCT chmod a+x /opt/wakari/wakari-compute/etc/ipython/pyspark.sh
```

The contents of the file should look like:

```
#!/usr/bin/env bash
# setup environment variable, etc.

export PYSPARK_PYTHON="/opt/wakari/anaconda/bin/python"
export SPARK_HOME="/usr/lib/spark"

# And Python path
export PYLIB=$SPARK_HOME:/python/lib
export PYTHONPATH=$PYTHONPATH:$PYLIB:/py4j-0.9-src.zip
export PYTHONPATH=$PYTHONPATH:$PYLIB:/pyspark.zip

export PYSPARK_SUBMIT_ARGS="--name yarn pyspark-shell"
```

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```
# run the ipykernel
exec /opt/wakari/anaconda/bin/python -m ipykernel $@
```

## Using PySpark

When creating a new notebook in a project, now there will be the option to select PySpark as the kernel. When creating such a notebook you'll be able to import pyspark and start using it:

```
from pyspark import SparkConf
from pyspark import SparkContext
```

NOTE: You can always add those lines and any other command you may use frequently in the PySpark setup file `00-pyspark-setup.py` as shown above.

## Enabling server-side session management

By default, AEN uses client-side session management which is vulnerable to session replay attacks if an attacker manages to steal a valid session ID of a user.

To enable server-side session management:

1. Modify the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file:

```
"USE_SERVER_BASED_SESSIONS": true,
```

2. Restart the AEN server service:

```
sudo service wakari-server restart
```

## Terminate terminal sessions on logout

By default, when a user logs out, their open terminal sessions will remain active.

To disable this behavior:

1. Modify the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file:

```
"TERMINATE_TERMINALS_ON_LOGOUT": true,
```

2. Modify the `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json` file:

```
"TERMINATE_TERMINALS_ON_LOGOUT": true,
```

3. Restart the AEN server service:

```
sudo service wakari-server restart
```

4. Restart the AEN gateway service:

```
sudo service wakari-gateway restart
```



## Upgrading AEN

**CAUTION:** These instructions are for upgrading AEN to the current version 4.3.2 from 4.3.1 ONLY. Each version must be upgraded iteratively from the previous version. Do not skip versions.

Upgrade instructions for previous versions:

- [AEN 4.3.1 upgrade instructions](#)
- [AEN 4.3.0 upgrade instructions](#)
- [AEN 4.2.2 upgrade instructions](#)
- [AEN 4.2.1 upgrade instructions](#)
- [AEN 4.2.0 upgrade instructions](#)
- [AEN 4.1.3 upgrade instructions](#)
- [AEN 4.1.2 upgrade instructions](#)

For upgrades from versions before those listed above, please contact your enterprise support representative.

**NOTE:** Named Service Account functionality is available with AEN 4.0.0+ for new installations only. It is not available for upgraded installations. Contact your enterprise support representative for more information.

An AEN platform update requires that each instance of the 3 node types be upgraded individually:

- AEN Server
- AEN Gateway
- AEN Compute

The upgrade process requires that all AEN service instances be stopped, upgraded, and then restarted.

**NOTE:** Any commands that call for the root user can also be done using `sudo`.

If you encounter any difficulty during the upgrade process, see [Troubleshooting](#) which provides guidance on:

- processes
- configuration files
- log files
- ports

If you are unable to resolve an installation or upgrade problem, please contact your enterprise support representative.

## Before you upgrade

**CAUTION:** Make a tested backup of your installation before starting the upgrade. Upgrading to a higher version of AEN is not reversible. Any errors during the upgrade procedure may result in partial or complete data loss and require restoring data from backups.

**CAUTION:** Terminate all AEN applications and stop all projects before starting the upgrade process.

Before upgrading each service on each host:

1. Suspend the services on each of the nodes:

```
sudo service wakari-server stop
sudo service wakari-gateway stop
sudo service wakari-compute stop
```

2. Set the AEN Functional ID (“NFI”) and AEN Functional Group (“NFG”) to the NFI and NFG of the current installation:

```
export AEN_SRVC_ACCT="wakari"
export AEN_SRVC_GRP="wakari"
```

NOTE: The default NFI is wakari, but aen\_admin or any other name may be used instead.

For more information on NFI and NFG, see the *installation instructions*.

3. Install wget:

```
yum install wget
```

## Upgrading the AEN server node

NOTE: If you are using LDAP-based authentication, back up the /opt/wakari/wakari-server/etc/wakari/wk-server-config.json configuration file. After the server has been upgraded, copy that file back into the same location as before the upgrade.

Complete the following steps on the server host:

1. Stop the Elasticsearch service:

```
sudo service elasticsearch stop
```

2. Remove any previous index:

```
sudo rm -rf /var/lib/elasticsearch/*
```

NOTE: You can choose to keep the old index, but if you detect any issues with the search capabilities after the upgrade, you will need to run the following to start with a clean index:

```
sudo service wakari-server stop
sudo service elasticsearch stop
sudo rm -rf /var/lib/elasticsearch/*
sudo service elasticsearch start
sudo service wakari-server start
```

3. Upgrade the server:

```
pushd /tmp
wget http://j.mp/aen-server-update-4.3.2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-server \
    --file aen-server-update-4.3.2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-server \
    --no-deps \
    wakari-enterprise-server-conf-update=2.0.12
popd
```

4. Start Elasticsearch:

```
sudo service elasticsearch start
```

Or, if you do not want to use the search features, edit your server's `/opt/wakari/wakari-server/etc/wakari/config.json` file by adding the line `"SEARCH_ENABLED": false`.

- Restart the *NGINX* server:

AEN server version  $\geq 4.1.3$  uses Unix sockets for communication with NGINX. Restart NGINX to load this new configuration:

```
sudo service nginx restart
```

Alternatively, you can restart NGINX with:

```
sudo nginx -s stop
sudo nginx
```

- Start the server:

```
sudo service wakari-server start
```

- Check that the server is running properly:

```
sudo service wakari-server status
```

- If you see NGINX errors, please check the configuration at `/opt/wakari/wakari-server/etc/nginx/conf.d/www.enterprise.conf:18`.
- Connect to AEN server using your web browser with the correct protocol (http or https), hostname and port number.

## Upgrading the AEN gateway node

Complete the following steps on each gateway host:

- Upgrade the gateway:

```
pushd /tmp
wget http://j.mp/aen-gateway-update-4.3.2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-gateway \
    --file aen-gateway-update-4.3.2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-gateway \
    --no-deps \
    wakari-enterprise-gateway-conf-update=2.0.12

popd
```

- Start the gateway:

```
sudo service wakari-gateway start
```

- Check that the gateway is running properly:

```
sudo service wakari-gateway status
```

4. Connect to the gateway using your web browser with the correct http/https, hostname and port number.

## Upgrading AEN compute nodes

Complete the following steps on each host where an AEN compute service is running:

1. Check for any `wakari-indexer` processes running:

```
ps aux | grep wakari-indexer
```

NOTE: If you stopped all the projects, you will not see any `wakari-indexer` processes running.

Terminate any remaining `wakari-indexer` processes:

```
sudo killall wakari-indexer
```

NOTE: The processes killed with `killall` are run by the `$AEN_SRVC_ACCT` user, so they can be killed as root with `sudo killall` or killed as the `$AEN_SRVC_ACCT` user with `sudo -u $AEN_SRVC_ACCT killall`. Example commands show the `sudo killall` option.

2. Check for any AEN applications processes running—Workbench, Viewer, Terminal or Notebook:

```
ps aux | grep wk-app-gateone
ps aux | grep wk-app-workbench
ps aux | grep wk-app-viewer
ps aux | grep wk-app-terminal
ps aux | grep jupyter-notebook
```

NOTE: If you stopped all the projects, you will not see any AEN app processes running.

Terminate any remaining AEN application processes by running one or more of the following:

```
sudo killall wk-app-gateone
sudo killall wk-app-workbench
sudo killall wk-app-viewer
sudo killall wk-app-terminal
sudo killall jupyter-notebook
```

3. Verify the contents of `/opt/wakari/anaconda/.condarc`. Modify it to contain the following entries, and possibly others if you customized the `.condarc` file.

NOTE: Modify the file as the `AEN_SRVC_ACCT` user (or be sure to keep the same ownership).

### **channels:**

- `https://conda.anaconda.org/t/<TOKEN>/anaconda-nb-extensions`
- `r`
- `https://conda.anaconda.org/wakari`
- `defaults`

### **create\_default\_packages:**

- `anaconda-client`
- `ipykernel`

NOTE: Contact your enterprise support representative to get your token for the Anaconda channel referenced above. Replace <TOKEN> with the actual token from your enterprise support representative.

4. Upgrade *Anaconda* in the root environment:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4_3_2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/anaconda \
    --file aen-anaconda-update-4_3_2

popd
```

5. Upgrade each compute service:

```
pushd /tmp
wget http://j.mp/aen-compute-update-4.3.2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/wakari-compute \
    --file aen-compute-update-4.3.2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    --no-deps \
    -p /opt/wakari/wakari-compute \
    wakari-enterprise-compute-conf-update=2.0.16

popd
```

NOTE: When upgrading the wakari-compute environment, you may see ImportError warnings with some nbextensions. As long as the Validating message is OK, the ImportError warnings are harmless—a consequence of the post-link presence on those packages.

6. Initialize the root environment to prime the package cache:

```
sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenv \
    --clone root
```

7. Test the offline cloning step:

```
sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenvoffline \
    --clone root --offline
```

8. Remove the test environments:

```
sudo rm -rf /opt/wakari/testenv
sudo rm -rf /opt/wakari/testenvoffline
```

9. Install necessary dependencies:

NOTE: Skip this step if you already have these dependencies installed from previous installations.

```
sudo yum groupinstall "X Window System" -y
sudo yum install git -y
```

NOTE: If you don't want to install the whole X Window System, you must install the following packages to have R plotting support:

```
sudo yum install -y libXrender libXext libXdmcp libSM libICE libXt \
dejavu-sans-fonts dejavu-serif-fonts dejavu-fonts-common \
fontpackages-filesystem
```

10. Start the compute service:

```
sudo service wakari-compute start
```

11. Verify the compute service is running properly:

```
sudo service wakari-compute status
```

12. Restart the AEN Server with:

```
sudo service wakari-server restart
```

13. Repeat this upgrade procedure for all compute nodes in your Data Center.

## After upgrading

1. Restart the projects and start using AEN applications.
2. If you have a *customized default environment*, you may choose to upgrade it depending on the needs of your users.

Upgrade the customized default environment at `/opt/wakari/anaconda/envs/default` with the `$AEN_SRVC_ACCT` user:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4.3.2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
  -p /opt/wakari/anaconda/envs/default \
  --file aen-anaconda-update-4.3.2
popd
```

To upgrade the customized default environments for every user and every project at `/projects/<USER>/<PROJECT>/envs/default`, run these commands for **every** user as that user:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4.3.2

sudo -E -u <USER> /opt/wakari/anaconda/bin/conda install \
  -p /projects/<USER>/<PROJECT>/envs/default \
  --file aen-anaconda-update-4.3.2
popd
```

NOTE: Replace `<USER>` with the user's name. Replace `<PROJECT>` with the project name.

NOTE: Upgrading the default environment at `/opt/wakari/anaconda/envs/default` does NOT automatically upgrade the default environment in the users pre-existing projects. For pre-existing projects, the upgrade, if requested, should be done on a per-user basis.

NOTE: These commands update packages listed in `aen-anaconda-update-4.3.2` and do not update any other package.

3. If you did not stop all your projects before upgrading, then the first time you start an application you will see an error page requesting that you restart the application.
4. Restart the application to complete the upgrade.
5. If you still see old applications or icons after restart, reload the page to reset the browser cache.

## Uninstalling AEN

Each AEN node must be uninstalled separately.

Begin by setting the AEN Functional ID (NFI). The NFI is the username of the AEN Service Account which is used to run all AEN services and is also the username of the AEN Admin account. The NFI may be any name. The default NFI is `wakari`. The NFI is also often set to `aen_admin`. The NFI (and AEN Functional Group or NFG) are described in [the installation instructions](#).

Set the NFI with this command:

```
export AEN_SRVC_ACCT="aen_admin"
```

Replace the name `aen_admin` with the NFI that was set in your installation of Anaconda Enterprise Notebooks.

## Uninstalling a server node

To remove a server node, run the following commands as root or sudo on the server node's host system:

1. Stop the server processes:

```
service wakari-server stop
```

2. Stop MongoDB:

```
service mongod stop
```

3. Remove AEN server software, AEN database files and NGINX configuration:

```
rm -Rf /opt/wakari/wakari-server
rm -Rf /opt/wakari/miniconda
rm -Rf /var/lib/mongo/wakari*
rm -Rf /etc/nginx/conf.d/www.enterprise.conf
```

NOTE: Remove `/etc/nginx/conf.d/www.enterprise.https.conf` if SSL is enabled on the Server node.

4. Restart MongoDB and NGINX:

```
service mongod restart
service nginx restart
```

5. Check for any outstanding server processes and stop them:

```
ps -ef | grep -e wakari-server -e wk-server
```

6. Remove the AEN Service Account:

```
userdel $AEN_SRVC_ACCT
```

7. Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc  
grep -i wakari ~/.condarc
```

## Uninstalling a gateway node

To uninstall a gateway node, run the following commands as root or sudo on the gateway host system:

1. Stop the gateway processes:

```
service wakari-gateway stop
```

2. Remove gateway software:

```
rm -Rf /opt/wakari/wakari-gateway
```

3. Check for any outstanding gateway processes and stop them:

```
ps -ef | grep -e wakari-gateway -e wk-gateway
```

4. Remove the AEN Service Account:

```
userdel $AEN_SRVC_ACCT
```

5. Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc  
grep -i wakari ~/.condarc
```

## Uninstalling a compute node

To remove a compute node, run the following commands as root or sudo on each compute node host system:

1. Stop the compute processes:

```
service wakari-compute stop
```

2. Remove the compute software:

```
rm -Rf /opt/wakari/wakari-compute  
rm -Rf /opt/wakari/miniconda  
rm -Rf /opt/wakari/anaconda
```

3. Check for any outstanding compute processes and stop them:

```
ps -ef | grep -e wakari-compute -e wk-compute
```

4. Remove the AEN Service Account:



```
userdel $AEN_SRVC_ACCT
```

5. Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc  
grep -i wakari ~/.condarc
```

### OPTIONAL: Removing projects from compute nodes

CAUTION: This is an extreme measure and is not necessary in most instances. We recommend you create and verify a backup before doing this or any other file removal.

To remove all AEN projects from all of your compute nodes:

```
rm -Rf /projects
```

This is a step-by-step guide to installing an Anaconda Enterprise Notebooks system comprised of a front-end server, a gateway and compute machines.

If you have any questions about these instructions or you encounter any issues while installing AEN, please contact your sales representative or Priority Support team.

When you have completed the installation process, review the [optional configuration tasks](#) to see if any are appropriate for your system.

### Distributed install

In a distributed install the server and gateway run on separate hosts.

### Single-box install

In a single-box install, both the server and the gateway need separate external ports since they are independent services that are running on the same host in the single-box installation.

Both port 80 and port 8089 must be open on the firewall for a single-box install.

The compute node only receives connections from the gateway and server nodes and typically runs on port 80 or port 443.

### User management

#### Adding or removing an administrative user

An administrator can make any other user an administrator—or remove their administrator permissions—by using administrator commands in the Terminal application.

A user can also be designated as a superuser or as staff, giving them greater administrative privileges within the system.

## Designating a user as an administrator/superuser

To designate a user as an administrator and superuser:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add <username>
```

NOTE: Replace <username> with the actual username.

EXAMPLE: To give administrative privileges to the user named “jsmith” and set them as a superuser, run:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add jsmith
```

## Removing an administrator/superuser

To remove a user’s administrative privileges:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --remove <username>
```

NOTE: Replace <username> with the actual username.

## Allowing and restricting new user registration

When Open Registration is enabled, anyone who has access to the URL of your AEN server can create their own account.

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Accounts.

The screenshot shows the Admin Settings page. On the left, there is a navigation menu with two main sections: 'Staff' and 'Site Admin'. The 'Staff' section includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section includes links for 'General' and 'Accounts'. The 'Accounts' link is highlighted. On the right, the 'Cloud Registration' section is visible. It contains a checkbox labeled 'Open Registration' which is checked, with the text 'Allow new user signups' below it. At the bottom of this section is a green 'Update' button.

3. To open user registration, select the Open Registration checkbox. To close registration, clear the checkbox.
4. Click the Update button.

## Resetting a user password

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Password Reset:

Anaconda Enterprise Notebooks settings accessible only by the system administrator.

3. Enter the username of the user whose password needs to be reset.
4. Click the Generate URL button.

A password reset link is generated that you can email to the user.

Alternatively you may use the command line interface:

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin reset-password -u SOME_USER -p SOME_
↵PASSWORD
```

NOTE: Replace SOME\_USER with the username and SOME\_PASSWORD with the password.

3. Log in to AEN as the user.

## Managing permissions

This page explains the admin commands used to manage user permissions.

### Checking file ownership

To verify that all files in the /opt/wakari/anaconda directory are owned by the wakari user or group:

```
root@server # find /opt/wakari/anaconda \! -user wakari -print
root@server # find /opt/wakari/anaconda \! -group wakari -print
```

### Fixing file ownership settings

To fix the ownership settings of any files that are listed in the output:

```
chown -R wakari:wakari /opt/wakari/anaconda
```

### Setting a file owner and permissions

To set a file owner and set its permissions:

```
chown wakari:wakari /opt/wakari/wakari-server/bin/wk-*  
chmod 700 /opt/wakari/wakari-server/bin/wk-*
```

### Verifying that POSIX ACLs are enabled

The `acl` option must be enabled on the file system that contains the project root directory.

NOTE: By default, the project root directory is `/projects`.

To determine the project root directory where a custom `projectRoot` is configured:

```
root@compute # grep projectRoot /opt/wakari/wakari-compute/etc/wakari/config.json
```

The mount options or default options listed by `tune2fs` should indicate that the `acl` option is enabled.

EXAMPLE:

```
root@compute # fs=`df /projects | tail -1 | cut -d " " -f 1`  
root@compute # mount | grep $fs  
/dev/vda on / type ext4 (rw)  
root@compute # tune2fs -l $fs | grep options  
Default mount options:    user_xattr acl
```

### Viewing a list of users

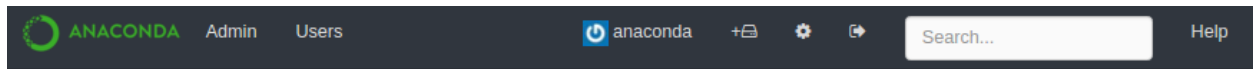
1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Users:

Staff	Users		
<a href="#">Daily Report</a>	<b>Username</b>	<b>Projects</b>	<b>Last Seen</b>
<a href="#">Password Reset</a>	<a href="#">aen_admin</a>	6	Sep 25, 2017 10:05:58 CDT
<a href="#">Notification</a>			
<a href="#">Exceptions</a>			
Site Admin			
<a href="#">General</a>			
<a href="#">Accounts</a>			
<a href="#">Users</a>			

The Users section lists the all users who are signed up, the number of projects they have created and the last time they logged on to AEN.

### Viewing a list of currently active users

In the AEN navigation bar, click Users.



# Users

List of currently active users in the system.

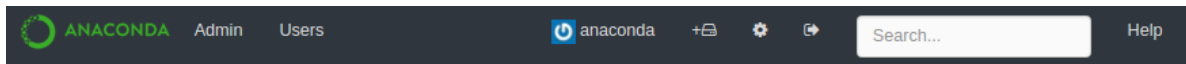
 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

Click a username to open the user's profile page.

## Viewing a user profile

A user's profile page includes a summary of the projects created by that user and a list of projects on which the user is a team member.

1. In the AEN navigation bar, click Users to see a list of users who are currently logged into the system.
2. On the Users page, click the username of the user whose profile page you want to view.



# Users

List of currently active users in the system.

 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

## Sending a system message

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Notification:

**Staff**

- Daily Report
- Password Reset
- Notification
- Exceptions

**Site Admin**

- General
- Accounts
- Users
- Security Log
- Data Centers
- Task Queue
- License

**Providers**

- Enterprise Resources

**Notification Settings**

☒ **Off**  
No email notification will be sent

☐ **SES - Amazon Simple Email Service**  
This requires a .boto file in the wakari home dir

☐ **SMTP Email Server**

**SMTP Settings**

SMTP Hostname

SMTP Username (optional)

SMTP Password (optional)

SMTP From Address (optional)

The Notification Settings section allows you to create a system message that can be relayed to users.

By default, notifications are off.

- To turn on email notifications, select the radio button for the type of email service to use:
  - SES to use Amazon Simple Email Service (SES).
  - SMTP Email Server.
- If you select SMTP Email Server, complete the SMTP Settings.

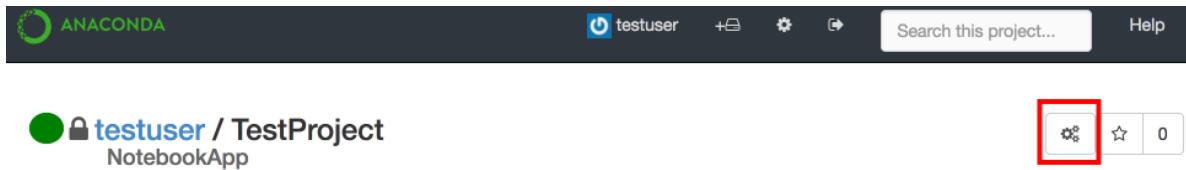
NOTE: If you get an error message after changing the SMTP settings, you may need to restart the server.

## Moving a project to another compute node

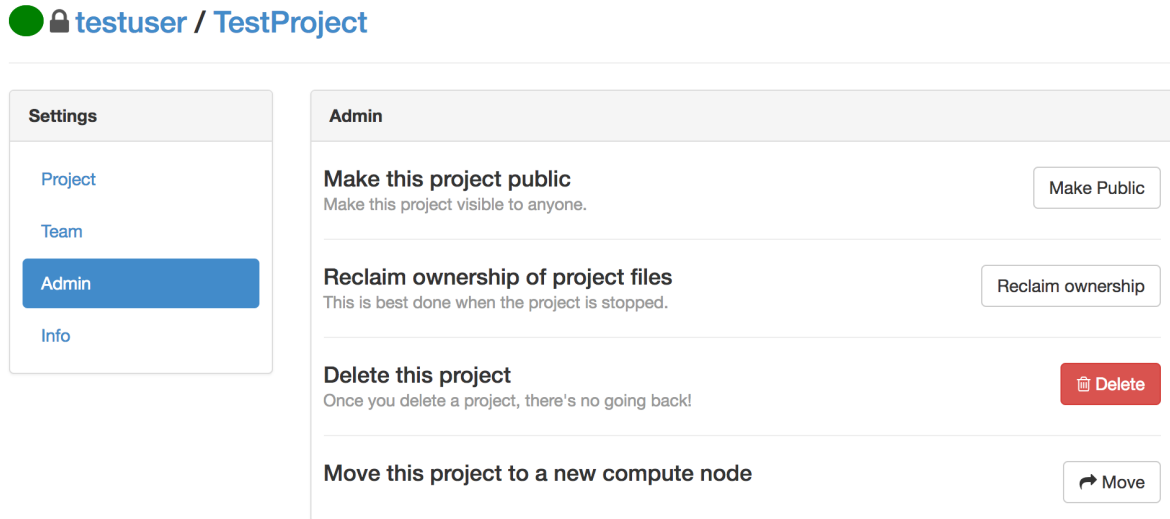
If you have multiple compute nodes available and want to move a project from one to another, the project must exist on both nodes.

- Verify that the project has been created on both compute nodes. You can use `rsync` for this job unless you have a shared file system like `nfs`.
- On the project home page, click the Project Settings icon to open the Project Settings page.

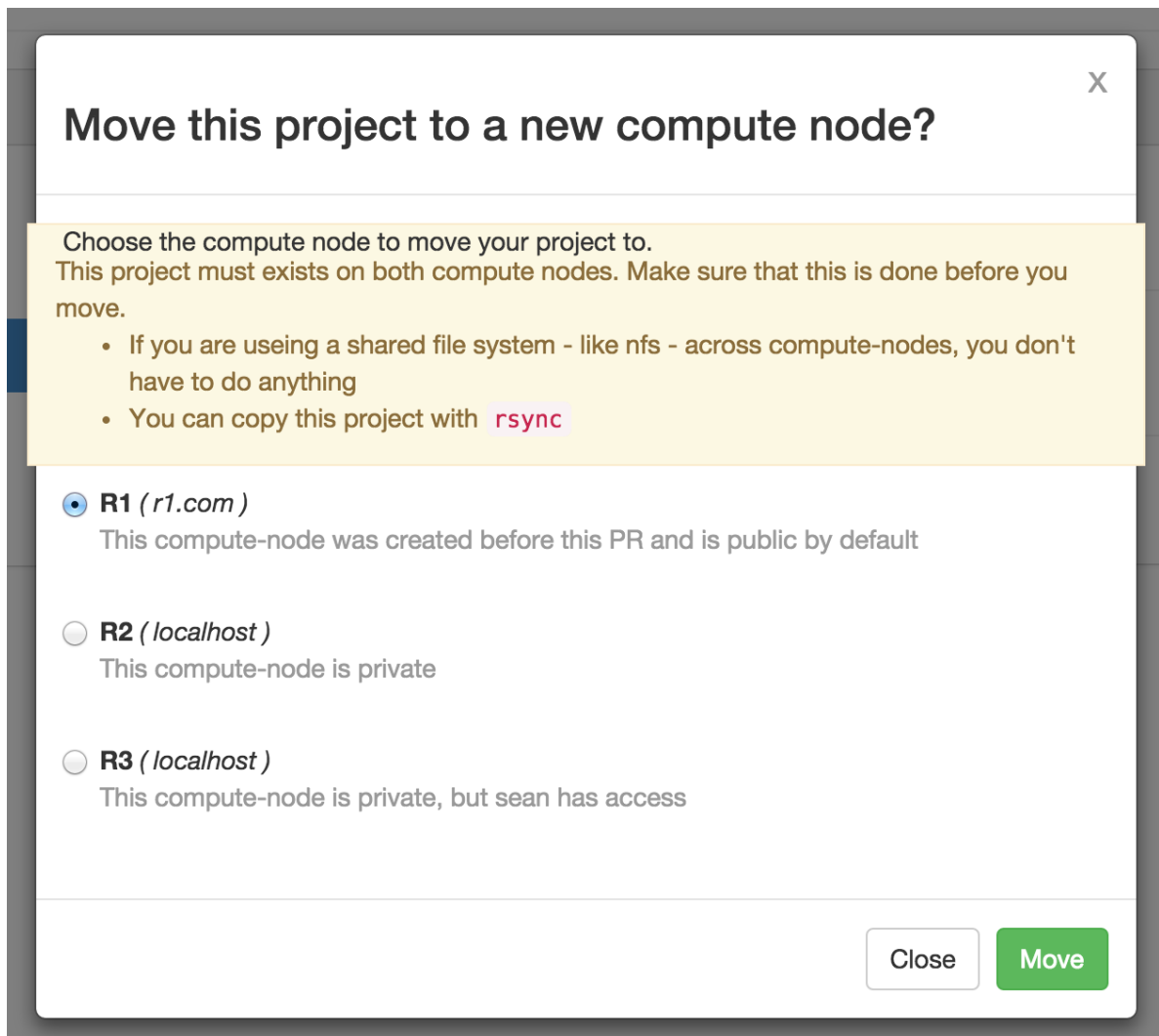




3. In the **Settings** menu, select Admin.



4. Click the Move button.
5. In the move dialog box, click to choose the compute node destination, and click the Move button.



### Deleting a user

To remove a user from the AEN database:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-user <username>
```

NOTE: Replace <username> with the actual username.

NOTE: Changing the owner of a project requires that both the previous owner and the new owner are still AEN users. Before deleting a user, *change the owner* of that user's projects.

## Deleting a project

To remove a project from the AEN database:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-project <username> <projectname>
```

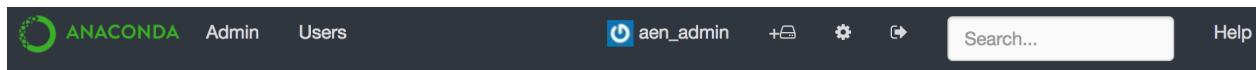
NOTE: Replace <username> with the actual username and <projectname> with the actual project name you are removing.

## System management

### Opening the Admin dashboard

If you have administrator privileges, you see two additional links in the AEN navigation bar—Admin and Users:

To open the Admin dashboard, click the Admin link.



# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the system administrator.

Staff
<a href="#">Daily Report</a>
<a href="#">Password Reset</a>
<a href="#">Notification</a>
<a href="#">Exceptions</a>

Site Admin
<a href="#">General</a>
<a href="#">Accounts</a>
<a href="#">Users</a>
<a href="#">Monitor</a>
<a href="#">Security Log</a>

### Backing up and restoring AEN

#### Document purpose

This document lays out the steps to backup and restore Anaconda Enterprise Notebooks (AEN) for Disaster Recovery. It is not intended to provide High Availability. Each of the components (Server, Gateway and Compute) has its own instructions and each may be done individually as needed. The steps primarily involve creating tar files of important configuration files and data.

This document is written for a system administrator who is comfortable with basic Linux command line navigation and usage.

To migrate to a new cluster, use these backup and restore instructions to back up the system from the old cluster and restore it to the new cluster.

#### Important notes

Review the [Concepts](#) page to become familiar with the different components and how they work together.

Root or sudo access is required for some commands.

**CAUTION:** All commands **MUST** be run by \$AEN\_SRVC\_ACCT (the account used to run AEN) except for those commands explicitly indicated to run as root or sudo. If the commands are not run by the correct user, the installation will not work, and a full uninstallation and reinstallation will be required!

These instructions assume that the fully qualified domain name (FQDN) has not changed for any of the component nodes. If any of the FQDNs are not the same, additional steps will be needed.

#### Server component steps

##### Backup

##### Mongo database

This will create a single tar file called `aen_mongo_backup.tar` that includes only the database named “wakari” that is used by AEN. It also generates a log of the database backup.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
mongodump -db wakari -o aen_main >> mongo_backup.log
tar -cvf aen_mongo_backup.tar aen_main
```

##### AEN Server config files (including License file)

Create a tar file of all of the configuration files, including any license files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -cvf aen_server_config.tar -C /opt/wakari/ wakari-server/etc/wakari/
```

### Nginx config (if needed)

Make a copy of the nginx configuration file if it has been customized. The default configuration for the AEN server is a symlink.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
/etc/nginx/conf.d/www.enterprise.conf -> /opt/wakari/wakari-server/etc/nginx/conf.d/www.  
↪enterprise.conf
```

### SSL certificates (if needed)

Make a copy of the SSL certificates files (certfiles) for the server, including the key file, and a copy of the certfile for the gateway, which is needed for verification if using self-signed or private CA signed certs.

### Restore

#### Reinstall AEN-Server

See *the instructions for installing the current version of AEN-Server*.

It is not necessary to upload the license, because it will be restored with the config files.

NOTE: The new installation will generate a new password for the local \$AEN\_SRVC\_ACCT account.

#### Restore Mongo database

This assumes that mongo was reinstalled as part of the reinstallation of the server component. Untar the mongo database and restore it.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_mongo_backup.tar  
mongorestore --drop aen_main
```

NOTE: The --drop option resets the \$AEN\_SRVC\_ACCT user password and restores the database to the exact state it was in at the time of backup. Please see the [MongoDB documentation](#) for more information about mongorestore options for Mongo 2.6.

NOTE: AEN uses Mongo 2.6 by default. If you are using a different version, consult the documentation for your version.

#### AEN Server config files (including License file)

Untar the tar file of all of the configuration files, including any license files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_server_config.tar -C /opt/wakari/
```

Make sure the files are in /opt/wakari/wakari-server/etc/wakari/ and are owned by the \$AEN\_SRVC\_ACCT.

### Nginx config (if needed)

Make sure any modifications to the nginx configuration are either in `/etc/nginx/conf.d` or in `/opt/wakari/wakari-server/etc/nginx/conf.d/` with a proper symlink.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
/etc/nginx/conf.d/www.enterprise.conf -> /opt/wakari/wakari-server/etc/nginx/conf.d/www.  
↪enterprise.conf
```

### SSL certificates (if needed)

Move any SSL certificate files to the locations indicated in the config files.

### Restart server

Restart the server application.

NOTE: This command must be run as root or with sudo.

```
service wakari-server restart
```

## Gateway component steps

### Backup

### Config files

Create a tar file of all of the configuration files.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
tar -cvf aen_gateway_config.tar -C /opt/wakari/ wakari-gateway/etc/wakari/
```

### Custom .condarc file (if needed)

Make a copy of any `/opt/wakari/miniconda/.condarc` if it has been modified.

### SSL certificates (if needed)

Make a copy of SSL certificate files for the gateway (including the key file) and the certfile for the server (needed for verification if using self-signed or private CA signed certs).

## Restore

### Reinstall AEN-Gateway

#### Setting variables and changing permissions

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
export AEN_GATEWAY_PORT=8089
export AEN_GATEWAY=<FQDN HOSTNAME OR IP ADDRESS> # will be needed shortly
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists. If the terminal is closed before successful installation, export the variables to continue with the installation.

#### Running the AEN gateway installer

Run:

```
sudo -E ./aen-gateway-4.3.2-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-gateway
Logging to /tmp/wakari_gateway.log
...
...
Checking server name
Please restart the Gateway after running the following command
to connect this Gateway to the AEN Server
...
```

#### Config files

Untar the configuration files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_gateway_config.tar -C /opt/wakari
```

Verify that the files are in /opt/wakari/wakari-gateway/etc/wakari/ and are owned by the \$AEN\_SRVC\_ACCT.

### Custom .condarc file (if needed)

Move the custom .condarc file to /opt/wakari/miniconda/.condarc.

### SSL certificates (if needed)

Move any SSL certificate files to the locations indicated in the config files.

### Restart gateway

Restart the gateway application.

NOTE: This command must be run as root or with sudo.

```
service wakari-gateway restart
```

### Compute component steps

#### Backup

#### Config files

Create a tar file of all of the configuration files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -cvf aen_compute_config.tar -C /opt/wakari/ wakari-compute/etc/wakari
```

### Custom Changes (rare)

Manually backup any custom changes that were applied to the code. One change might be additional files in the skeleton folder:

```
/opt/wakari/wakari-compute/lib/node_modules/wakari-compute-launcher/skeleton
```

### Create user list

AEN uses POSIX access control lists (ACLs) for project sharing, so the backup must preserve the ACL information. This is done with a script that creates a file named `users.lst` containing a list of all users that have access to projects on a given compute node. Download and run the script.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
wget https://s3.amazonaws.com/continuum-airgap/misc/wk-compute-get-acl-users.py
chmod 755 wk-compute-get-acl-users.py
./wk-compute-get-acl-users.py
```



## Project files

Create a tar of the projects directory with ACLs enabled. The default projects base location is `/projects`.

NOTE: This command must be run as root or with sudo.

```
tar --acls -cpvf projects.tar -C <projects base location>/*
```

## Full Anaconda (option 1)

If any changes have been made to the default Anaconda installation (additional packages installed or packages removed), it is necessary to backup the entire Anaconda installation.

NOTE: This command must be run by `$AEN_SRV_ACCT`.

```
tar -cvf aen_anaconda.tar -C /opt/wakari/anaconda/*
```

If no changes have been made to the default installation of Anaconda, you may just backup the `.condarc` file and any custom environments.

## Partial Anaconda (option 2)

### Custom `.condarc` file

Make a copy of `/opt/wakari/anaconda/.condarc`.

### Custom environments (if needed)

Create a tar file of any custom shared environments.

NOTE: This command must be run by `$AEN_SRV_ACCT`.

```
tar -cvf aen_compute_envs.tar -C /opt/wakari/ anaconda/envs
```

NOTE: If no custom shared environments have been created, the `envs` folder will not be present.

## Restore

### Reinstall AEN-Compute

### Setting variables and changing permissions

NOTE: These commands must be run by `$AEN_SRV_ACCT`.

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change `<FQDN HOSTNAME OR IP ADDRESS>` to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists.

## Running the AEN compute installer

Run:

```
sudo -E ./aen-compute-4.3.2-Linux-x86_64.sh -w $AEN_SERVER
...
...
PREFIX=/opt/wakari/wakari-compute
Logging to /tmp/wakari_compute.log
Checking server name
...
...
Initial clone of root environment...
Starting Wakari daemons...
installation finished.
Do you wish the installer to prepend the wakari-compute install location
to PATH in your /root/.bashrc ? [yes|no]
[no] >>> yes
```

## Config files

Untar the config files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_compute_config.tar -C /opt/wakari
```

NOTE: Verify that they are located in /opt/wakari/wakari-compute/etc/wakari and are owned by the \$AEN\_SRVC\_ACCT.

## Custom changes (rare)

Manually restore any custom changes you saved in the backup section. If there are changes in the skeleton directory, these files must be world readable or projects will refuse to start.

## Create users

NOTE: Only create users with these instructions if your Linux machine is not bound to LDAP.

In order for the ACLs to be set properly on restore, all users that have permissions to the files must be available on the machine. Ask your system administrator for the proper way to do this for your system, such as using the “useradd” tool. A list of users that are needed was created in the backup process as a file named `users.lst`.

A process similar to the following `useradd` example will be suitable for most Linux systems.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
xargs -0 -n 1 useradd --user-group < users.lst
```

## Project files

Create the projects directory in the location specified in projectRoot in wk-compute-launcher-config.json.

NOTE: By default this directory is /projects.

Then untar the projects directory with ACLs.

NOTE: This command must be run as root or with sudo:

```
tar --acls -xpvf projects.tar -C <projects base location>
```

## Full Anaconda (option 1)

If you did a full backup of the full Anaconda installation, untar this file to /opt/wakari/anaconda.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_anaconda.tar -C /opt/wakari
```

## Partial Anaconda (option 2)

Restore the custom .condarc file.

If you did a partial backup of the Anaconda installation, move the copy of the .condarc file to /opt/wakari/anaconda/.condarc.

## Custom environments (if needed)

Untar any custom environments that were created to /opt/wakari/anaconda/envs.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_compute_envs.tar -C /opt/wakari
```

## Restart compute node

Restart the compute-launcher application.

NOTE: This command must be run as root or with sudo.

```
service wakari-compute restart
```

### Viewing a list of admin commands

A user who is promoted to administrator can access administrator commands to perform advanced administrator tasks.

NOTE: Utility files are owned by, and should only be executed by, the AEN user who owns the files.

To display a list of all administrator commands:

```
ls -al /opt/wakari/wakari-server/bin/wk-*
```

### Viewing help for admin commands

To view help information for command, run the command followed by `-h` or `--help`.

EXAMPLE: To view help for the `remove-user` command:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-user -h  
/opt/wakari/wakari-server/bin/wk-server-admin remove-project -h
```

### Running daily reports

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Daily Report:

Staff

[Daily Report](#)

[Password Reset](#)

[Notification](#)

[Exceptions](#)

Site Admin

[General](#)

[Accounts](#)

[Users](#)

[Monitor](#)

[Security Log](#)

[Data Centers](#)

[Task Queue](#)

[License](#)

Providers

[Enterprise Resources](#)

## Report

[Today](#)
[Yesterday](#)
[This Week](#)
[This Month](#)

**From:**  
Sun Sep 24 15:09:03 2017

**Until:**  
Mon Sep 25 15:09:03 2017

**Date Range**  
1 day, 0:00:00

### Users

	New	Total
<b>Users</b>	0	1
<b>Projects</b>	0	6

### New User Emails

Username	Email
----------	-------

### Actions

Count	Action
82	<a href="#">oauth.authenticate</a>

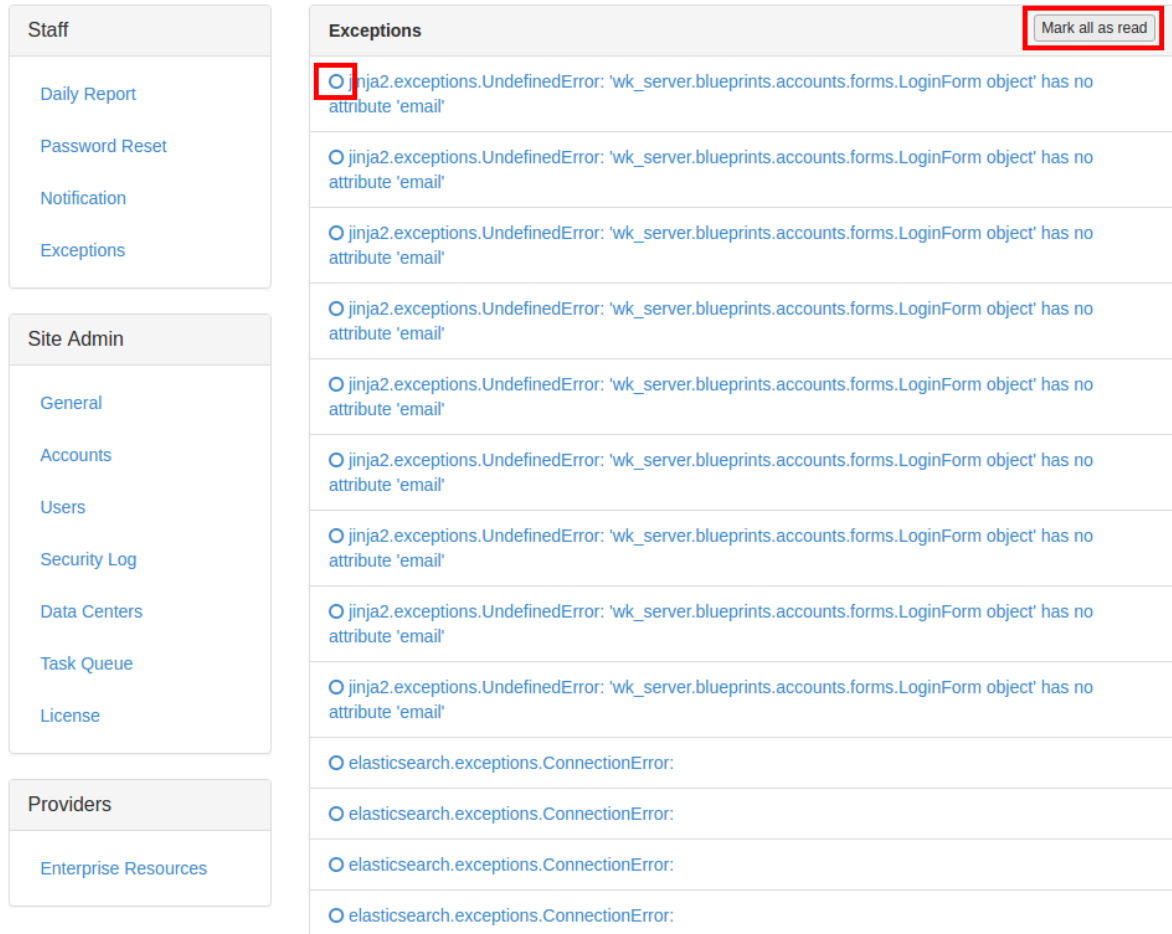
The Report section displays the following:

- Users—The number of users and projects.
- New User Emails—If *open registration is enabled*, the user names and emails for new users.
- Actions—The actions—projects created, projects updated, user authentications and added users—that have occurred in during the selected time frame—today, yesterday, this week, or this month.

## Viewing system errors

When an error occurs, a red dot is displayed in the AEN navigation bar next to the Admin link. The red dot is removed when all exceptions are marked as “read.”

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Exceptions:



Staff	Exceptions
Daily Report	<input checked="" type="radio"/> Jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
Password Reset	<input type="radio"/> Jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
Notification	<input type="radio"/> Jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
Exceptions	<input type="radio"/> Jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
	<input type="radio"/> Jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
	<input type="radio"/> Jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
	<input type="radio"/> Jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
	<input type="radio"/> Jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
	<input type="radio"/> Jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
	<input type="radio"/> Jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
	<input type="radio"/> Jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
	<input type="radio"/> elasticsearch.exceptions.ConnectionError:
	<input type="radio"/> elasticsearch.exceptions.ConnectionError:
	<input type="radio"/> elasticsearch.exceptions.ConnectionError:
	<input type="radio"/> elasticsearch.exceptions.ConnectionError:

The Exceptions section lists all errors that have occurred while AEN is running.

3. To see the details of an error, click the radio button next to the error. This also marks the error as “read.”
4. To mark all errors as read without reviewing each one, click the Mark all as read button.

## Viewing security errors

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Security Log:

Staff		Security Log			
Daily Report		View	Actor	Action	Date
Password Reset			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 09:46:09 CDT
Notification			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 09:39:17 CDT
Exceptions			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 09:22:04 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 09:10:31 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 08:45:50 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 08:43:12 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 08:10:30 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 08:09:38 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 24, 2017 23:52:06 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 24, 2017 23:51:58 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 24, 2017 23:51:58 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 24, 2017 23:51:58 CDT

Site Admin	
General	
Accounts	
Users	
Monitor	
Security Log	

The Security Log section lists all errors that have occurred that could potentially affect AEN security.

- 3. To view a user’s profile page, click their username in the Actor column.
- 4. To see the details of an error, click the Eye icon next to the error.

The error details are displayed:

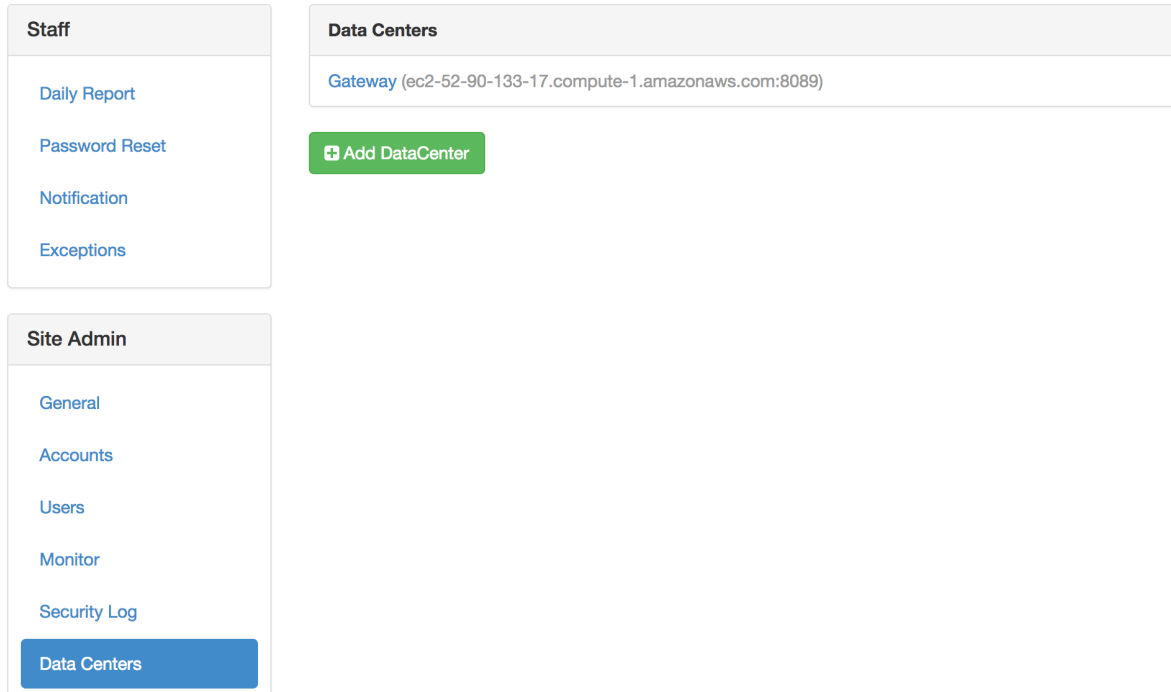
Public Profile	<b>oauth.authenticate</b>
Account Settings	
Security Log	
Applications	
	<a href="#">Back</a>

_id	59c907f03f94c30fe45ffb9e
action	oauth.authenticate
actor_id	59c069b1ae55d1b3fe9fa45e
actor_username	aen_admin
client_id	59c119cd3f94c30fe45ff5db
remote_addr	None
time	2017-09-25 13:43:12.479000+00:00
token_id	59c907f03f94c30fe45ffb9d

- 5. To close the error details, click the Back link.

## Managing data centers

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Data Centers:



The Data Centers section displays current data center information.

## Adding a data center

1. Click the Add DataCenter button to display the Register a datacenter form.
2. In the Name box, type a Name for the new data center:



**Data Centers / Register a datacenter**

**Name**

☐ Subdomain Routing  
☐ Https

**Base Domain Name**

**summary**

**Provider**

3. Select the Subdomain Routing and/or Https checkboxes.
4. In the Base Domain Name box, type the base domain name.
5. In the Summary box, type a description of the data center.
6. In the Provider list, select a provider.
7. Click the Submit button.

## Managing enterprise resources

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Providers** menu, select Enterprise Resources:

The screenshot displays the Anaconda web interface. On the left, there are three vertical navigation menus. The top menu, titled 'Staff', contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The middle menu, titled 'Site Admin', contains links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and 'License'. The bottom menu, titled 'Providers', contains a link for 'Enterprise Resources'. On the right side of the interface, there is a 'Resources' section. At the top of this section is a green button labeled '+ Add Resource'. Below this, under the heading 'Gateway', there is a single resource entry: 'ec2-54-210-232-251.compute-1.amazonaws.com'. To the right of this entry is a red button labeled 'remove'.

The Resources section lists your existing cloud and local resources.

### Adding a resource

1. Click the Add Resource button to open the new resource form.
2. Complete the form:

**Resources / new**

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
Compute Node1

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**  
Configuring Compute Node

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Add Resource

3. Click the Add Resource button.

### Viewing or changing the resource details

1. Click a resource name to open the Local Resource form.
2. If necessary, change the resource details:

**Data Center**

Gateway 59c119cd3f94c30fe45ff5db

**Name**

ec2-54-210-232-251.compute-1.amazonaws.com

**URL**

http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

**Update**

**status**

{"status": "ok", "messages": []}

3. Click the Update button.

## Making a node public or private

1. Click the resource name to open the Local Resource form.
2. Select or clear the Public checkbox:

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
ec2-54-210-232-251.compute-1.amazonaws.com

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**  
{"status": "ok", "messages": []}

3. Click the Update button.

## Removing a resource

Click the Remove button next to the resource you want to remove.

NOTE: When you remove a resource assigned to a project, the project becomes orphaned. To fix an orphaned project, *move the project to a valid Compute Resource*.

## Managing services

The tasks on this page assume that the 3 AEN nodes are installed in the following locations:

- Server—/opt/wakari/wakari-server/.
- Gateway—/opt/wakari/wakari-gateway/.
- Compute-Launcher—/opt/wakari/wakari-compute/.

## Checking the status of server node processes

1. Run:

```
# service wakari-server status
wk-server          RUNNING    pid 20758, uptime 5 days, 0:30:23
worker             RUNNING    pid 20757, uptime 5 days, 0:30:23
```

OR

```
root@server # ps -Hu wakari
  PID TTY          TIME CMD
 20756 ?           00:02:26 .supervisord
 20757 ?           00:05:58 mtq-worker
 20758 ?           00:00:08 wk-server
 20765 ?           00:02:00 wk-server
 20766 ?           00:01:55 wk-server
 20767 ?           00:02:20 wk-server
 20770 ?           00:02:02 wk-server
```

2. Run:

```
root@server # service nginx status
nginx (pid 26303) is running...
```

For more information on server processes, see *Server processes*.

## Checking the status of gateway node processes

Run:

```
# service wakari-gateway status
wk-gateway                RUNNING    pid 1137, uptime 5 days, 1:59:28
```

OR

```
root@gateway # ps -Hu wakari
  PID TTY          TIME CMD
 1136 ?            00:01:59 .supervisord
 1137 ?            00:00:02  wk-gateway
```

For more information on gateway processes, see [Gateway processes](#).

## Checking the status of compute node processes

Run:

```
# service wakari-compute status
wk-compute                RUNNING    pid 22050, uptime 3 days, 1:03:19
```

OR

```
root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?            00:02:01 .supervisord
 1152 ?            00:00:01  wk-compute
```

For more information on compute node processes, see [Compute processes](#).

## Starting AEN services

Services should start automatically both when they are first installed and at any point when the system is restarted.

If you need to manually start an AEN service, you must start each node independently, because they may be running on separate machines.

NOTE: The process is basically the same for each node, but the path to the correct commands vary.

To manually start a service:

- On the server node, run:

```
service wakari-server start
```

- On the gateway node, run:

```
service wakari-gateway start
```

- On a compute node, run:

```
service wakari-compute start
```

## Verifying that AEN services are set to start with the system

To verify that AEN services are set up to start automatically:

1. Run the following command on each node:

```
chkconfig --list | grep wakari
```

2. If services are missing, add them:

```
chkconfig --add [wakari-server|wakari-gateway|wakari-compute]
```

3. *Restart the services.*

## Stopping AEN services

CAUTION: Do not stop or kill supervisord without first stopping wk-compute and any other processes that use it.

You must stop services on each node independently, because they may be running on separate machines.

To stop an AEN service:

- On the server node, run:

```
service wakari-server stop
```

- On the gateway node, run:

```
service wakari-gateway stop
```

- On a compute node, run:

```
service wakari-compute stop
```

Compute nodes may have running processes that are not automatically stopped. To stop them, run:

```
sudo /opt/wakari/wakari-compute/bin/wk-compute-apps kill-all
```

## Restarting AEN services

- On the server node, run:

```
service wakari-server restart
```

- On the gateway node, run:

```
service wakari-gateway restart
```

- On a compute node, run:

```
service wakari-compute restart
```



## Identifying extraneous processes

To get a complete list of the processes running under the wakari user account, run `ps -Hu wakari`.

EXAMPLE:

```
root@server # ps -Hu wakari
  PID TTY          TIME CMD
 20756 ?           00:02:26 .supervisord
 20757 ?           00:05:58 mtq-worker
 20758 ?           00:00:08 wk-server
 20765 ?           00:02:00 wk-server
 20766 ?           00:01:55 wk-server
 20767 ?           00:02:20 wk-server
 20770 ?           00:02:02 wk-server

root@server # ps -f -C nginx
UID      PID  PPID  C  STIME TTY          TIME CMD
root    26303      1  0  12:18 ?        00:00:00 nginx: master process /usr/sbin/nginx -c /etc/
↪nginx/nginx.conf
nginx   26305 26303  0  12:18 ?        00:00:00 nginx: worker process

root@gateway # ps -Hu wakari
  PID TTY          TIME CMD
 1136 ?           00:01:59 .supervisord
 1137 ?           00:00:02 wk-gateway

root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?           00:02:01 .supervisord
 1152 ?           00:00:01 wk-compute
```

- wk-server, wk-gateway and wk-compute should have PIDs reported by supervisorctl.
- The nginx master process should have a PID reported by service nginx status.
- If you have installed more than one AEN node on a single machine, the processes from all of the installed nodes should be displayed for that machine.
- On compute node(s), any AEN applications currently being run by users will be present.

EXAMPLE:

```
root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?           00:00:00 .supervisord
 1152 ?           00:00:00 wk-compute
 1340 ?           00:00:00 bash
 1341 ?           00:00:00 notebookwrapper
```

## Removing extraneous processes

If extra `wk-server`, `wk-gateway`, `wk-compute`, or `supervisord` processes are present, use the `kill` command to remove them to prevent issues with AEN.

You can safely *restart* any process that you remove in error.

## Making sure NGINX and MongoDB are running

In order for AEN to run, the dependencies `mongodb` and `nginx` must be up and running. If either of these fail to start, AEN will not be served on port 80.

Check if `nginx` and `mongod` are both running (RHEL 6x):

```
$ sudo service nginx status
nginx (pid 25956) is running...
```

```
$ sudo service mongod status
mongod (pid 25928) is running...
```

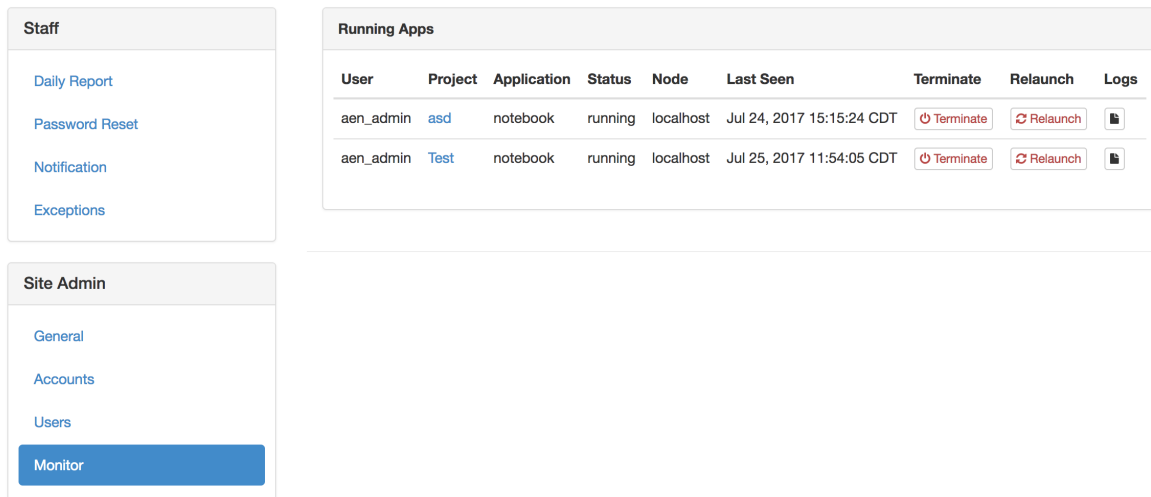
If either of these failed to start, tail the log files. The default location of log files is:

```
$ tail -n 50 /var/log/mongodb/mongod.log

# nginx errors reported in error.log
$ tail -n 50 /var/log/nginx/error.log
```

## Viewing, terminating, and relaunching applications

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Monitor:



The screenshot shows the AEN Admin Settings page. On the left, there is a 'Staff' menu with options: Daily Report, Password Reset, Notification, and Exceptions. Below it is a 'Site Admin' menu with options: General, Accounts, Users, and Monitor (highlighted in blue). On the right, there is a 'Running Apps' table with columns: User, Project, Application, Status, Node, Last Seen, Terminate, Relaunch, and Logs.

User	Project	Application	Status	Node	Last Seen	Terminate	Relaunch	Logs
aen_admin	asd	notebook	running	localhost	Jul 24, 2017 15:15:24 CDT	<a href="#">Terminate</a>	<a href="#">Relaunch</a>	<a href="#">Logs</a>
aen_admin	Test	notebook	running	localhost	Jul 25, 2017 11:54:05 CDT	<a href="#">Terminate</a>	<a href="#">Relaunch</a>	<a href="#">Logs</a>

The Monitor menu lists started applications by user and project.

The list includes columns for the application name, current running status, running node and last seen date.

3. Use the buttons to terminate or relaunch an application.

4. To view an application’s logs, click the Logs button with the document icon.

Viewing the task queue

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Task Queue:

Staff

[Daily Report](#)

[Password Reset](#)

[Notification](#)

[Exceptions](#)

Site Admin

[General](#)

[Accounts](#)

[Users](#)

[Monitor](#)

[Security Log](#)

[Data Centers](#)

Task Queue

Task Queue

Workers

ip-172-31-10-196.4053 | high default low

Queues

high

Backlog: 0

Failed: 1

default

Backlog: 0

Failed: 3

The Workers section lists the workers in the task queue and whether each worker is set at high, default or low priority.

The Queues section provides information on the default and high priority queues.

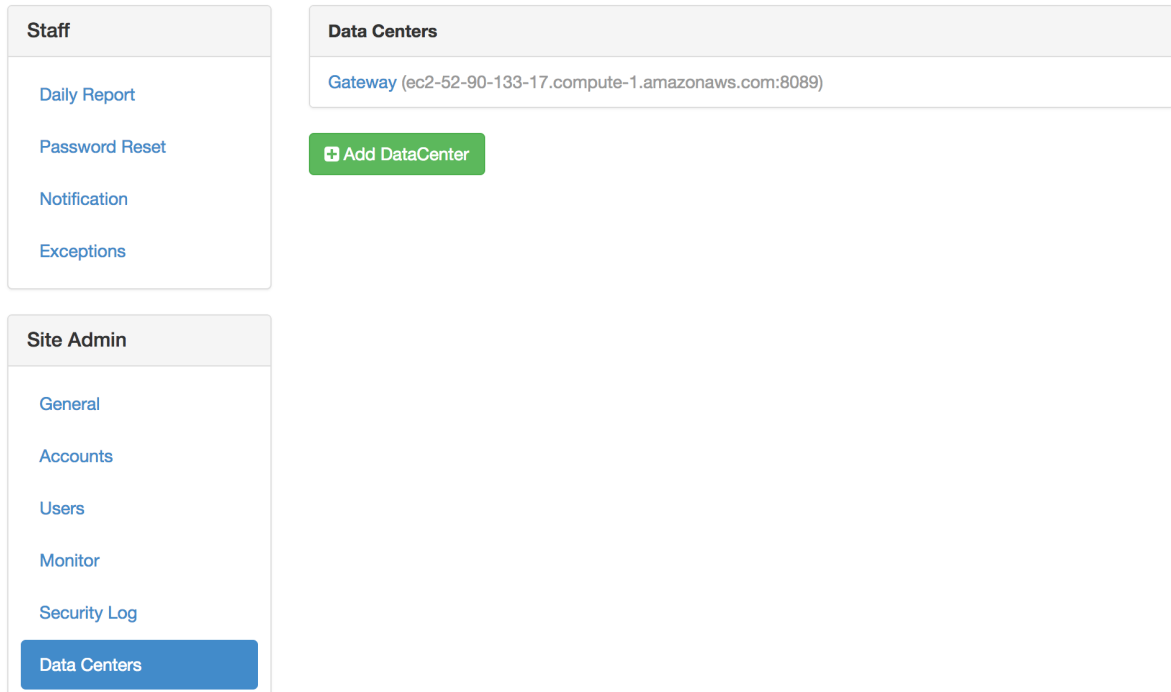
3. To view all the tasks in a particular queue, in the Queues section, click the queue name.

## Checking node connections

When the AEN nodes cannot communicate with each other as intended, it can cause issues with you AEN platform installation.

### Verifying server to gateway connectivity

1. On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Data Centers:



3. For each data center in the list, check connectivity from the server to that gateway.

EXAMPLE: The gateway in this example is `http://gateway.example.com:8089`:

```
root@server # curl --connect-timeout 5 http://gateway.example.com:8089 > /dev/null
```

### Verifying gateway to compute node connectivity

1. On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Providers** menu, select Enterprise Resources:

The screenshot displays the Anaconda Enterprise web interface. On the left, there is a sidebar with three main sections: 'Staff', 'Site Admin', and 'Providers'. The 'Staff' section includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section includes links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and 'License'. The 'Providers' section has a button for 'Enterprise Resources'. The main content area is titled 'Resources' and features a green '+ Add Resource' button in the top right corner. Below this, there is a 'Gateway' section containing a single resource entry with the URL 'ec2-54-210-232-251.compute-1.amazonaws.com' and a red 'remove' button to its right.

Staff
<a href="#">Daily Report</a>
<a href="#">Password Reset</a>
<a href="#">Notification</a>
<a href="#">Exceptions</a>

Site Admin
<a href="#">General</a>
<a href="#">Accounts</a>
<a href="#">Users</a>
<a href="#">Monitor</a>
<a href="#">Security Log</a>
<a href="#">Data Centers</a>
<a href="#">Task Queue</a>
<a href="#">License</a>

Providers
<a href="#">Enterprise Resources</a>

Resources
<a href="#">+ Add Resource</a>
<b>Gateway</b>
<a href="#">ec2-54-210-232-251.compute-1.amazonaws.com</a> <a href="#">remove</a>

3. Open each compute node in the Resources section.
4. Verify that the contents of the URL field begin with either `http` or `https`.

**Data Center**

Gateway 59c119cd3f94c30fe45ff5db

**Name**

ec2-54-210-232-251.compute-1.amazonaws.com

**URL**

http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**

{"status": "ok", "messages": []}

5. Check connectivity to that URL from the corresponding gateway.

EXAMPLE: The gateway in this example is `http://gateway.example.com:8089`:

```
root@gateway # curl --connect-timeout 5 http://compute.example.com:5002 > /dev/null
```

## Verifying gateway to server connectivity

The gateway-to-server path is used by the gateway configuration command `wk-gateway-configure`.

1. Verify that the gateway is linked to the correct server in the configuration file.
2. Verify that the full server URL is specified.
3. Check connectivity to the server:

```
root@gateway # grep WAKARI_SERVER /opt/wakari/wakari-gateway/etc/wakari/wk-gateway-
↪config.json
"WAKARI_SERVER": "http://wakari.example.com",

root@gateway # curl --connect-timeout 5 http://wakari.example.com > /dev/null
root@gateway # curl --connect-timeout 5 http://error.example.com > /dev/null
curl: (7) Failed to connect to error.example.com port 80: Connection refused
```

4. If a connection fails:
  1. Ensure that gateways (data centers) and compute nodes (Enterprise Resources) are correctly configured on the server.
  2. Verify that processes are listening on the configured ports:

```
$ sudo netstat -nplt
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address   Foreign Address State  PID/Program
tcp        0      0 *:80            *:.*            LISTEN 26409/nginx
tcp        0      0 *:22            *:.*            LISTEN 986/sshd
tcp        0      0 127.0.0.1:25    *:.*            LISTEN 1063/master
tcp        0      0 *:5000          *:.*            LISTEN 26192/python
tcp        0      0 127.0.0.1:27017 *:.*            LISTEN 29261/mongod
tcp        0      0 *:22            *:.*            LISTEN 986/sshd
tcp        0      0 127.0.0.1:25    *:.*            LISTEN 1063/master
```

3. Check the firewall setting and logs on both hosts to ensure that packets are not being blocked or discarded.

## Verifying and tuning search indexing

For search indexing to work correctly, a compute node must be able to communicate with the server. To verify this:

1. Run:

```
curl -m 5 $AEN_SERVER > /dev/null
```

2. Verify that there are sufficient inotify watches available for the number of subdirectories within the project root file system:

```
cat /proc/sys/fs/inotify/max_user_watches
```

NOTE: Some Linux distributions default to a low number of watches, which may prevent the search indexer from monitoring project directories for changes.

3. If necessary, increase the number of watches:

```
echo fs.inotify.max_user_watches=100000 | sudo tee -a /etc/sysctl.conf && sudo
↩ sysctl -p
```

4. Verify that there are sufficient inotify user instances available—at least one per project:

```
cat /proc/sys/fs/inotify/max_user_instances
```

5. If necessary, increase the number of inotify user instances:

```
echo fs.inotify.max_user_instances=1000 | sudo tee -a /etc/sysctl.conf && sudo
↩ sysctl -p
```

## Changing the AEN server URL

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

<div>Staff</div> <div>Daily Report</div> <div>Password Reset</div> <div>Notification</div> <div>Exceptions</div>	<div>General Admin Settings</div> <div> <b>Wakari Server</b>  Set the main URL where this site will be accessed  <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> <b>Static URL</b>  Set static URL where the js can be accessed  <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> <b>Default Project Access</b>  This will be the default when a user creates a project  <div> <input type="radio"/> <b>Public</b>  Anyone can see this project. Collaborators have write access </div> <div> <input checked="" type="radio"/> <b>Private</b>  No one can see this project except collaborators. </div> </div> <div> <b>Account Type</b>  <input type="text" value="wk_server;plugins.accounts.cloud"/> </div> <div> <input type="button" value="Update"/> </div>
<div>Site Admin</div> <div>General</div> <div>Accounts</div> <div>Users</div> <div>Monitor</div> <div>Security Log</div> <div>Data Centers</div> <div>Task Queue</div> <div>License</div>	<div>Providers</div> <div>Config Files</div>

3. In the Wakari Server box, type the main URL where the site can be viewed.
4. Click the Update button.



## Changing the static URL for JavaScript files

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

The screenshot shows the Admin Settings page with a left sidebar and a main content area. The sidebar has three sections: 'Staff' (Daily Report, Password Reset, Notification, Exceptions), 'Site Admin' (General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, License), and 'Providers'. The 'General' option under 'Site Admin' is selected. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' (Set the main URL where this site will be accessed, with a text box containing 'http://anaconda-enterprise.trl'), 'Static URL' (Set static URL where the js can be accessed, with a text box containing 'http://anaconda-enterprise.trl/static/'), and 'Default Project Access' (This will be the default when a user creates a project, with radio buttons for 'Public' and 'Private' (selected), and descriptive text for each). Below these is the 'Account Type' section with a dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the main content area is a green 'Update' button. The bottom of the sidebar shows 'Providers' and 'Config Files' sections.

3. In the Static URL box, type the static URL where JavaScript files can be accessed.
4. Click the Update button.

## Changing the AEN account type

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

The screenshot shows the 'General Admin Settings' page in the Anaconda Enterprise Admin interface. On the left, there is a navigation menu with three main sections: 'Staff' (containing links for Daily Report, Password Reset, Notification, and Exceptions), 'Site Admin' (containing links for General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License), and 'Providers'. The 'General' link under 'Site Admin' is selected and highlighted in blue. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' with a text input field containing 'http://anaconda-enterprise.trl'; 'Static URL' with a text input field containing 'http://anaconda-enterprise.trl/static/'; and 'Default Project Access' with two radio button options: 'Public' (unselected) and 'Private' (selected). Below these is an 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the settings area is a green 'Update' button. A 'Config Files' section is partially visible at the very bottom of the page.

Staff	General Admin Settings
<a href="#">Daily Report</a>	<b>Wakari Server</b> Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
<a href="#">Password Reset</a>	
<a href="#">Notification</a>	<b>Static URL</b> Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
<a href="#">Exceptions</a>	
	<b>Default Project Access</b> This will be the default when a user creates a project  <input type="radio"/> <b>Public</b> Anyone can see this project. Collaborators have write access  <input checked="" type="radio"/> <b>Private</b> No one can see this project except collaborators.
	<b>Account Type</b> <input type="text" value="wk_server.plugins.accounts.cloud"/>
	<input type="button" value="Update"/>
	<b>Config Files</b>

3. In the Account Type box, select the account type—cloud or LDAP.
4. Click the Update button.

### Changing the default for project access

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

The screenshot shows the Anaconda Enterprise Admin interface. On the left is a sidebar with three main sections: 'Staff' (containing links for Daily Report, Password Reset, Notification, and Exceptions), 'Site Admin' (containing links for General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License), and 'Providers'. The 'General' link under 'Site Admin' is highlighted. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' with a text input field containing 'http://anaconda-enterprise.trl'; 'Static URL' with a text input field containing 'http://anaconda-enterprise.trl/static/'; and 'Default Project Access' with two radio button options: 'Public' (unselected) and 'Private' (selected). Below these is an 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the settings area is a green 'Update' button. Below the settings area is a 'Config Files' section.

3. Under Default Project Access, select the default access type for new projects: Public or Private.
4. Click the Update button.

## Changing the owner of a project

To change the owner of a project:

1. Collect the project name, the user name of the previous owner, and the user name of the new owner.
2. Run the `wakari-server` executable command `wk-server-admin`:

```
/opt/wakari/wakari-server/bin/wk-server-admin project-owner --project PROJECT --old_
↪OLD_OWNER --new NEW_OWNER --delete --keep-owner
```

- **PROJECT**: The project name.
- **OLD\_OWNER**: The user name of the previous owner.
- **NEW\_OWNER**: The user name of the new owner.
- **--delete**: An optional flag that deletes the old project directory in the `projects` directory of **OLD\_OWNER**. If this flag is not used, the old project directory is preserved but no longer used.
- **--keep-owner**: An optional flag that makes **OLD\_OWNER** a collaborator of the project after it is transferred to **NEW\_OWNER**. If this flag is not used, **OLD\_OWNER** will no longer have collaborator access to the project.

**NOTE:** The **OLD\_OWNER** user must still exist when the project's owner is changed. Before deleting any user, be sure to change the owner of the user's projects.

## Editing configuration files

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General.

The screenshot shows the Anaconda Enterprise Admin Settings page. On the left is a navigation sidebar with three main sections: 'Staff' (containing links for Daily Report, Password Reset, Notification, and Exceptions), 'Site Admin' (containing links for General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License), and 'Providers'. The 'General' link under 'Site Admin' is highlighted. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' with a text input field containing 'http://anaconda-enterprise.trl'; 'Static URL' with a text input field containing 'http://anaconda-enterprise.trl/static/'; and 'Default Project Access' with two radio button options: 'Public' (unselected) and 'Private' (selected). Below these is an 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the settings area is a green 'Update' button. Below the settings area is a 'Config Files' section.

Staff	General Admin Settings
Daily Report	<b>Wakari Server</b> Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	<b>Static URL</b> Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	<b>Default Project Access</b> This will be the default when a user creates a project  <input type="radio"/> <b>Public</b> Anyone can see this project. Collaborators have write access  <input checked="" type="radio"/> <b>Private</b> No one can see this project except collaborators.
Exceptions	<b>Account Type</b> <input type="text" value="wk_server.plugins.accounts.cloud"/>
	<input type="button" value="Update"/>
	<b>Config Files</b>

3. In the Config Files section, change the configuration settings for your AEN installation. For more information on configuration files, see [Using configuration files](#).
4. Click the Update button.

## Managing your AEN license

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select License:

The screenshot shows the Admin Settings page with a left sidebar and a main content area. The sidebar has two sections: 'Staff' and 'Site Admin'. The 'Staff' section includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section includes links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and a highlighted 'License' button. The main content area is titled 'Current License' and displays a message: 'You have 166 days remaining on your current license.' with a 'Renew your license' button. Below this, a table lists license details: product (Anaconda Enterprise Notebooks), vendor (Continuum Analytics, Inc.), name (Continuum Development), end\_date (2018-03-10), issued (2017-03-10), company (Continuum Analytics), type (undefined), and email (dev@continuum.io). At the bottom, there is an 'Upload New License' section with a 'License File' input field containing a 'Choose File' button and the text 'No file chosen', and an 'Update' button.

Current License	
You have <b>166 days</b> remaining on your current license.	
<a href="#">Renew your license</a>	
<b>product</b>	Anaconda Enterprise Notebooks
<b>vendor</b>	Continuum Analytics, Inc.
<b>name</b>	Continuum Development
<b>end_date</b>	2018-03-10
<b>issued</b>	2017-03-10
<b>company</b>	Continuum Analytics
<b>type</b>	undefined
<b>email</b>	dev@continuum.io

Upload New License	
<b>License File</b>	
<a href="#">Choose File</a>	No file chosen
<a href="#">Update</a>	

The Current License section displays information regarding your AEN license, including the name of the product, vendor, license holder's name, end and issued dates, company name, license type, and contact email.

## Renewing your AEN license

1. Click the Renew your license button.
2. In the Upload New License section, click the Choose File button.
3. Select the new license file.
4. Click the Open button.
5. Click the Update button.

Your renewed license information is displayed.

### Cheat sheet

The Admin dashboard includes three menus in the left column: **Staff**, **Site Admin** and **Providers**.

#### Staff menu

- Daily Report—See the number of users and projects.
- Password Reset—Reset a user password.
- Notification—Send system messages to users via SES or SMTP.
- Exceptions—If errors are raised while AEN is running, a red dot appears in the AEN navigation bar. Review errors and mark them as read.

#### Site Admin menu

- General—Change the configuration settings for your AE Notebook server installation.
- Accounts—Turns on or off Open Registration.
- Users—View usernames, number of projects and last logins.
- Monitor—View status of applications with related data, terminate or restart.
- Security Log—View errors that could affect security.
- Data Centers—View current data centers and add a new data center.
- Task Queue—View workers in the task queue and priority.
- License—View current AEN license or upload a new license.

#### Providers menu

Enterprise Resources—View, add or remove local or cloud services, and designate public or private to control access to a compute node.

### Troubleshooting

This troubleshooting guide provides you with ways to deal with issues that may occur with your AEN installation.

#### General troubleshooting steps

1. Clear browser cookies. When you change the AEN configuration or upgrade AEN, cookies remaining in the browser can cause issues. Clearing cookies and logging in again can help to resolve problems.
2. *Make sure NGINX and MongoDB are running.*
3. Make sure that AEN services are *set to start at boot*, on all nodes.
4. *Make sure that services are running* as expected. If any services are not running or are missing, *restart them*.
5. *Check for and remove extraneous processes.*
6. *Check the connectivity between nodes.*

7. *Check the configuration file syntax.*
8. *Check file ownership.*
9. *Verify that POSIX ACLs are enabled.*

### **Browser error: too many redirects**

#### **Cause**

Browser cookies are out of date.

#### **Solution**

1. Log out.
2. Clear the browser's cookies.
3. Clear the browser cache.
4. Log in.

### **Browser error: too many redirects when starting project apps**

Browser shows “Too many redirects” when the user tries to start an application.

#### **Cause**

The project's Compute Resource is invalid or was deleted.

#### **Solution**

*Move the project to a valid Compute Resource.*

### **Exception: exceptions.TypeError: 'NoneType' object has no attribute '\_\_getitem\_\_'**

This exception appears on the Admin > Exceptions page when a project does not have a Compute Resource assigned.

#### **Cause**

The project's Compute Resource is invalid or was deleted.

### Solution

*Move the project to a valid Compute Resource.*

### Error: `unix:///opt/wakari/wakari-server/etc/supervisor.sock` no such file

This is a supervisorctl error.

### Cause

supervisord is not running on the Server.

### Solution

Ensure that supervisord is included in the crontab. Then restart supervisord manually.

### Error: “Data Center Not Found” when deleting a project

### Cause

The data center has been removed.

### Solution

As root, run:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-project --db-only <user> <project>
```

### Forgotten administrator password

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin reset-password -u SOME_USER -p SOME_
↪PASSWORD
```

NOTE: Replace SOME\_USER with the administrator username and SOME\_PASSWORD with the password.

3. Log in to AEN as the administrator user with the new password.

Alternatively you may add an administrator user:

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin add-user SOME_USER --admin -p SOME_
↪PASSWORD -e YOUR_EMAIL
```



NOTE: Replace SOME\_USER with the username, replace SOME\_PASSWORD with the password, and replace YOUR\_EMAIL with your email address.

3. Log in to AEN as the administrator user with the new password.

### Log files being deleted

Log files are being deleted.

NOTE: Locations of AEN log files for each process and application are shown in the node sections in *Concepts*.

### Cause

AEN installers log in to `/tmp/wakari\_{server,gateway,compute}.log`. If the log files grow too large, they might be deleted.

### Solution

To set the logs to be more or less verbose, Jupyter Notebooks uses `Application.log_level`.

To make the logs less verbose than the default, but still informative, set `Application.log_level` to `ERROR`.

### Error: This socket is closed

You receive the “This socket is closed” error message when you try to start an application.

### Cause

When the `supervisord` process is killed, information sent to the standard output `stdout` and the standard error `stderr` is held in a pipe that will eventually fill up.

Once full, attempting to start any application will cause the “This socket is closed” error.

### Solution

To prevent this issue:

- Follow the instructions in *Managing services* to stop and restart processes.
- Do not stop or kill `supervisord` without first stopping `wk-compute` and any other processes that use it.

To resolve the “This socket is closed” error:

1. Stop `wk-compute` by running `sudo kill -9`.
2. Restart the `supervisord` and `wk-compute` processes:

```
sudo /etc/init.d/wakari-compute stop
sudo /etc/init.d/wakari-compute start
```

### Service error 502: Cannot connect to the application manager

Gateway node displays “Service Error 502: Can not connect to the application manager.”

#### Cause

A compute node is not responding because the wk-compute process has stopped.

#### Solution

Stop and then restart the supervisord and wk-compute processes:

```
sudo /etc/init.d/wakari-compute stop
sudo /etc/init.d/wakari-compute start
```

### 502 communication error on Amazon web services (AWS)

You receive the “502 Communication Error: This gateway could not communicate with the Wakari server” error message.

#### Cause

An AEN gateway cannot communicate with the Wakari server on AWS. There may be an issue with the IP address of the Wakari server.

#### Solution

Configure your AEN gateway to use the DNS hostname of the server. On AWS this is the DNS hostname of the Amazon Elastic Compute Cloud (EC2) instance.

### Invalid username

#### Cause

The username does not follow 1 or more of these rules:

- Must be at least 3 characters and no more than 25 characters.
- The first character must be a letter (A-Z) or a digit (0-9).
- Other characters can be a letter, digit, period (.), underscore (\_) or hyphen (-).
- The [POSIX standard](#) specifies that these characters are the portable filename character set, and that portable usernames have the same character set.

## Solution

Follow the above rules for usernames.

## Notebook Error: Cannot download notebook as PDF via LaTeX

### Cause

LaTeX is not properly installed.

### CentOS/6 Solution

1. Install TeXLive from the [TUG site](#). Follow the described steps. The installation may take some time.
2. Add the installation to the PATH in the file `/etc/profile.d/latex.sh`. Add the following, replacing the year and architecture as needed:

```
PATH=/usr/local/texlive/2017/bin/x86_64-linux:$PATH
```

3. Restart the compute node.

### CentOS/7 Solution

1. Install the missing packages running the command:

```
yum install texlive texlive-xetex texlive-xetexconfig texlive-xetex-def texlive-  
↪adjustbox texlive-upquote texlive-ulem
```

## Unresponsive wk-server thread without error messages

### Cause

Two things can cause the `wk-server` thread to freeze without error messages:

- LDAP freezing
- MongoDB freezing

If LDAP or MongoDB are configured with a long timeout, Gunicorn can time out first and kill the LDAP or MongoDB process. Then the LDAP or MongoDB process dies without logging a timeout error.

### Solution

1. Check for frozen LDAP or MongoDB server processes.
2. You may also wish to configure the Gunicorn timeout to more than 30 seconds.

### Unresponsive wk-gateway thread without error messages

#### Cause

If TLS is configured with a passphrase protected private key, wk-gateway will freeze without any error messages.

#### Solution

Update the TLS configuration so that it does not use a passphrase protected private key.

### Error starting projects

Project's status page shows "There was an error starting this project".

#### Cause

Lack of disk space in compute nodes prevents projects from starting.

#### Solution

1. Verify that the project node meets the *system requirements*.
2. Check if there is enough free space on the compute node's partition where `/projects` lives:

```
df -h /projects
```

3. Free up some disk space to meet the system requirements.
4. Restart the project.

### Changes in .condarc file are ignored

Changes applied to `.condarc` are ignored by conda.

## Cause

Conda loads its configuration by merging multiple files together.

## Solution

Check if you are applying the changes to the correct file.

To show the merged state that conda is currently using:

```
conda config --show
```

To show all config files that conda is currently reading:

```
conda config --show-sources
```

## Frequently asked questions

### What is AEN?

For information on AEN, see *Anaconda Enterprise 4 Notebooks*.

### Can notebooks be shared with anyone?

Yes. When you share a Jupyter Notebook through AEN, it can be viewed and run without the need to install anything special, regardless of what libraries were used to create the notebook. Each notebook also includes the python environment that it needs to run in.

AEN allows users to clone a shared Jupyter Notebook into their AEN account to make whatever changes or modifications they want. The notebook's Python environment is also cloned, so it runs in the same environment as the shared Jupyter Notebook unless it is changed.

### Can I disable the option, “publish your notebook to anaconda.org”?

Yes. The upload button in the notebook app executes the option “publish your notebook to anaconda.org”. To disable it, log in as the AEN\_SRVC\_ACCT and run these commands:

```
source activate /opt/wakari/wakari-compute
jupyter-nbextension disable nb_anacondacloud --py --sys-prefix
jupyter-serverextension disable nb_anacondacloud --py --sys-prefix
```

### How can I check the version number of my AEN server?

Go to this URL in a browser: `http://$AEN_SERVER/admin/list`

NOTE: Replace `$AEN_SERVER` with the domain name or the domain name and port number of your AEN server.

### Can I use AEN to access CSV or Amazon S3 data?

Yes. If your data is in CSV files, upload the CSV files to your AEN account using the upload controls in the File Browser of the Workbench Application or the File Transfer Application.

To access data stored on Amazon S3, use the Boto interface from AEN. See the public data files in AEN for examples of how to use Boto to pull your data from Amazon S3 into AEN. For more information, see [Boto documentation](#).

You can also use IOPro to simplify and optimize the conversion of your data into Python arrays.

### Can I install other Python packages?

Yes, by creating a custom environment for your packages within your project.

For more information, see [Using the NBConda extension](#).

### Can I create a Python environment from the command line?

Yes, you can use the `conda create` command to create custom Python environments with whatever packages you choose. All AEN environments are shared with all the team members of a project.

EXAMPLE: In this example, `myenv` is a new environment containing the NumPy package.

```
conda create -n myenv numpy
```

NOTE: Python, Jupyter Notebooks and PIP are installed by default in all new AEN environments.

To use your new environment, activate it by running `source activate myenv`.

### Can I connect to GitHub with AEN?

Yes, you have full access to GitHub through an AEN Terminal application.

To generate an SSH key from your AEN account and add it to your GitHub account:

1. [Generate a GitHub SSH key](#).
2. Copy your key by running `cat ~/.ssh/id_rsa.pub`.
3. Select and copy the contents of the `id_rsa.pub` file to the clipboard.
4. Follow [GitHub's instructions](#) to go to your GitHub account and paste it from your clipboard into the appropriate box in your GitHub settings.

### Can I print or print preview my Jupyter Notebooks?

Yes, you can print your notebooks using your browser's regular printing capabilities.

You can also preview the printed page by clicking the **File** menu and selecting Print Preview.

### Is there a set amount of storage on AEN?

No, there is no set limit for storage in AEN. You are limited only by the size of the disk where AEN is installed.

If you need more storage, contact your system administrator.

### How do I get help, give feedback, suggest features or report a bug?

See *Help and support*.

### Help and support

Priority support is included with the purchase of an Anaconda subscription.

Contact your administrator first if you are having problems. Your administrator has a service level agreement where your issue will be responded to within a specific response time, depending on type and severity.

### Training and consulting

Training and consulting is available for AEN and any other Anaconda product.

For more information, please contact your account representative or [email the sales team](#).

### Providing feedback

Your feedback is very important to us!

Please, send us any [product feedback](#) while you are thinking about it.

TIP: Be sure to select AEN as the Platform Component Name.

### Submitting feature requests

We'd love to hear your ideas for consideration in future releases!

Your ideas help us build a better product. Your administrator can submit a support ticket for you.

NOTE: You can also request new features by using the [product feedback](#) form.

### Reporting a bug

If you think you have found a bug, please contact your administrator immediately. They will open a support ticket for your issue.

### Additional resources

The following resources are useful for getting started with Jupyter Notebooks:

- [Jupyter Notebook quick start guide](#)
- [Jupyter Notebook user documentation](#)
- [GitHub](#) shows the most popular Jupyter notebooks of the [month](#), [week](#), and [day](#).

### Release notes

#### v4.3.2 May 29, 2019

Internal Fixes:

- Update Bootstrap to version 4.3.1
- Update jQuery to version 3.3.1
- Update jQuery UI to version 1.12.1
- Update notebook to version 5.7.8
- Update ipywidgets to version 7.4.2
- Update ipyparallel to version 6.2.3
- Set Secure flag on `xsrftoken`, `access_token`, and `refresh_token` cookies

#### v4.3.1 March 25, 2019

Administrator-facing changes:

- Add option for server-side session management
- Add option to terminate terminal sessions on logout

Internal Fixes:

- Set Secure and HTTPOnly flag on session cookies
- Fix XSS vulnerability



## v4.3.0 October 24, 2018

### Administrator-facing changes:

- Fix bug where compute logging wasn't respecting the `logMaxFiles` key
- Log and display a descriptive error message when there is a problem creating the users index
- Log and display a descriptive error message when there is a problem creating a new user with a duplicated e-mail address when the `uniqueEmail` setting is enabled
- Add footer server pages with server host data (IP, AEN version and server version)
- Fix admin script to change the status of private projects
- Fix validation error when updating/editing an existing resource
- Docs: Add KB article about using MongoDB to update old projects with new Data Center information
- Docs: Add restarting service step to SSO documentation
- Docs: Add support for newer versions of MongoDB
- Docs: Add documentation on `uniqueEmail`
- Docs: Add `projDirsAsHome` key to config docs
- Docs: Rewrite the “Using project directories as home directories” section
- Docs: Add full path to admin commands
- Docs: Warn about upgrading away from tested pkgs
- Docs: Add missing steps to “Authenticating with LDAP” section
- Docs: Add troubleshooting documentation about orphaned projects
- Docs: Warn about not using IP address when you connect to AEN
- Docs: Add an entry about ‘Error starting projects’ in the troubleshooting page
- Docs: Rewrite “Group and user permissions for NFS” section and description of the `identicalGID` key in the config pages
- Docs: Add a new section about using MRO packages in AEN (Update: MRO was discontinued in 2021)
- Docs: Preserve username capitalization when using LDAP/AD
- Docs: Add `umask 0022` to security requirements
- Docs: Add new section about changing install location
- Docs: Add note about how to manually break out Root CA for the gateway
- Docs: Add note about upgrading custom environments
- Docs: Add notes about how to find conda config files inside AEN
- Docs: Add note about using `USE_SERVER_BASED_SESSIONS: false` when configuring SSO between AEN and versions 2.33.3 through 2.33.10 of the Repository

### User-facing changes:

- Increase Workbench file upload limit
- Fix Bokeh examples
- Extend `nb_locker` to detect a server disconnection and generate an alert if it occurs
- Docs: Update the notebook app to correctly point to AEN docs

- Docs: Emphasize that permissions are not applied recursively in the workbench

Internal fixes:

- Update Nginx version to v1.12.2
- Remove unused server config file during the compute upgrade process
- Remove already defined compute default settings from the post-script step
- Pin widgetsnbextension version to prevent version mismatch issue (ipywidgets)
- Remove `--offline` flag from the conda clone operations
- Support MongoDB 3.4.14 and update pymongo to version 3.2.2
- Fix LDAP username case sensitivity
- Security fixes and enhancements

### **v4.2.2 March 1, 2018**

Administrator-facing changes:

- Add admin command to change project owner
- Server: Add ability to disable public projects
- Gateway: Add support for SSL private key passphrase
- Docs: Add backup and restore runbook to the docs
- Docs: Emphasize backups before upgrading process
- Docs: Recommend putting AEN and projects folder on the same filesystem
- Docs: Add RHEL version 7.4 to supported versions
- Docs: Add troubleshooting instructions to fix problems when downloading notebook as PDF via LaTeX

User-facing changes:

- Upgrade bokeh to version 0.12.7
- Upgrade holoviews to version 1.8.3
- Upgrade numba to version 0.35.0
- Upgrade scikit-learn to version 0.19.0

Internal fixes:

- Fix bug in init scripts when requiretty is enabled
- Fix bugs related to AEN\_SUDO\_SSH option
- Fix bug in fix\_ownership function when directories contain spaces
- Docs: Fix error in Active Directory configuration example
- Server: Fix bug when updating user/group in supervisor configuration files in post-install for server and gateway
- Server: Fix bug Admin reports on user totals are inconsistent
- Server: Fix error in login screen when open registration and LDAP are enabled
- Server: Fix bug in Last seen date
- Server: Fix bug Monitor Report blank

- Server: Load JS files from local CDN
- Server: Fix error when terminating or relaunching an application from Monitor
- Server: Fix error creating projects when using Internet Explorer 11
- Compute: Fix 404 errors when using pivottablesjs
- Remove Wakari Cloud leftovers

#### **v4.2.1 December 18, 2017**

Administrator-facing changes:

- None

User-facing changes:

- None

Internal fixes:

- Fix undetected “ca” key when using self-signed certificates signed by a private CA
- Fix login redirects when using SSL
- Add verify gateway SSL certificate for get and post requests

#### **v4.2.0 November 22, 2017**

Administrator-facing changes:

- Feature/allow remote MongoDB
- Allow for configuration for login timeout and set default
- Add verbose option to conda create clone
- Avoid duplicate name for resources / compute-nodes
- Allow renaming main and message queue databases
- PAM-based authentication module
- Change wakari logos to Anaconda logos
- Replace ‘wakari’ wording
- New config option to move the user’s home directory into the user’s project directory
- Make logging less verbose in AEN
- Documentation for PySpark kernel installation
- Improve SSL documentation

User-facing changes:

- New config option to move the user’s home directory into the user’s project directory
- Package cache was moved from user’s home directory into the user’s project directory
- Change wakari logos to Anaconda logos
- Fix error for deleting tags to work

- Define shell prompt in `.projectrc` template
- Replace ‘wakari’ wording

Internal fixes:

- Move server unix socket from `/tmp` to `/opt/wakari/wakari-server/var/run`
- Make project deletion synchronous for consistency
- Avoid storing `csrf` token in the user profile
- Expire gateway session when server logs out
- Allow log rotation in the three components
- Fix permissions on static files
- Change log level to debug in gateway
- Do not log private keys in gateway
- Save request remote address when logging action
- Unify logs formatting and timezone in compute nodes with Winston
- Several fixes and documentation improvements

### v4.1.3 August 16, 2017

- Upgrade conda to version 4.3.24
- Upgrade anaconda to version 4.4.0
- Admin application monitor
- Block access to package list view
- Add placeholders in password reset form
- Change static content location
- Fix error when checking for package updates in notebook application
- Replace slashes in project tags
- Fix submit errors in password reset form
- Replace/remove “wakari” word from multiple places
- Fix missing commands missing `sudo` in `start-project`
- Improve gateway and compute node validators
- Check if `bzip2` is installed during server setup process
- Include port number in host header
- Forbid creation of empty tags
- Repair “Create Account” link in login page
- Use UTC for server logs
- Mark datacenters as trusted by default
- Disable heart beating
- Compute resource: Show full path to log file

- Improve init scripts
- Allow deleting all projects
- mtq: Implement exponential backoff on connection error to mongodb
- In the general admin display, do not show the bind password for LDAP
- The accelerate package has been removed from the installation
- Other minor bugfixes

#### **v4.1.2 March 29, 2017**

This is mainly a maintenance release improving internal machinery and upgrading the root packages.

- Upgrade conda to version 4.3.14
- Upgrade Anaconda to 4.3.1
- Upgrade r-base to 3.2.2
- Fixed AEN nb\_conda to be compatible with conda 4.3.x series
- Several documentation fixes
- Other minor bugfixes

#### **v4.1.1 December 15, 2016**

- Added CentOS 7 support
- Support dots in usernames
- More usernames validation
- Fixed creation (through nb\_conda) of single letter environment names
- Environment names (through nb\_conda) validation
- Fixed uploading of notebook using nb\_anacondacloud
- Fixed attaching of environments in published notebooks through nb\_anacondacloud
- Several documentation fixes
- Other bugfixes

#### **v4.1.0 October 21, 2016**

- Added JupyterLab application
- Removed GateOne terminal application
- Included additional notebook extensions (nbpresent and nb\_anaconda\_theme)
- Updated to conda 4.2.9 in default project environments
- Added HTTP timeout setting for gateway and compute launcher
- Changed default gateway port to 8089
- Added support for all-numeric usernames

- Add R channel to default conda configuration file
- Other bugfixes

### v4.0.0 June 30, 2016

- Customized installation with:
  - AEN Functional ID and Group
  - AEN (installation and run) sudo commands
  - Removal of root access from the AEN service account
  - Configurable sudo command
  - Restriction of sudo access to all the processes
- Upgrade Jupyter to 4.2
- Upgrade the anaconda-nb-extensions to the latest versions
- Upgrade Anaconda to 4.0
- Deprecate wakari-publisher
- Security enhancements
- SSL configuration documented between all AEN Server components
- Several bugfixes
- Overall documentation revision and general improvement

### v0.10.0 February 2, 2016

- New projects dashboard
- Capability to star and tag a project
- Sticky searches
- New Jupyter Notebook extensions
- Updates to all packages. Highlights: bokeh 0.11, ipython/jupyter 4.1.

### v0.9.1 October 19, 2015

- New Search capability to find projects and files within a project.
- Added “Related Projects” list to the project view, based on code similarity.
- New UI for fine-grained access control of project files in the Workbench app
- Viewer app now renders plain text files correctly
- Updated LDAP configuration docs
- Updates to all packages. Highlights: bokeh 0.10, ipython/jupyter 4.0.

**Note** ElasticSearch, and an Oracle JRE, must be installed on the server in order to use the new search features. Indexing of project files will begin when the project is started (or paused and re-started). If search features are not desired, set "SEARCH\_ENABLED": false in the server configuration file to avoid errors.

## v0.8.0 August 21, 2015

### New Features

- Updated packages based on Anaconda 2.3, and removed older packages no longer in Anaconda.
- Updated IPython to version 3.2.1
- Documentation is now installed with the server (use the Help link in the top navigation bar)
- Added the ability for the administrator to define a customized default project environment.
- The server has been updated to use python 2.7.10.
- Init scripts are now provided for each Anaconda Enterprise Notebooks service.
- Added relevant links to some error pages

### Problems Resolved in this Release

- Project status indicators (e.g. starting, pausing) now automatically update.
- If an access is unauthorized, the server now returns a 403 (Unauthorized) status code and prompts the user to log in.
- Modified nginx configuration to support running the server on non-standard ports.
- The server installation no longer uses a default password for the wakari user. A random password is generated and displayed during installation.
- Prevent double-click from attempting to create a project twice
- Removed an obsolete script reference that was causes a 404 error to be logged in the browser console when opening the Terminal app.
- The installer scripts no longer fail if the database already contains the ‘wakari’ user.
- Updated example notebooks to work with latest Bokeh release.
- Fixed terminal app key bindings to allow Mac command key to work normally
- Installers now indicate where the installation logs are stored
- LDAP user attributes containing binary data are now ignored.

### Documentation Updates

- Updated and consolidated Troubleshooting guide.
- Simplified some steps in the installation procedure.
- Updated notebooks in the Examples directory for use with the latest IPython Notebook and Bokeh.
- Added a section on project permissions to the Troubleshooting guide.
- Added notes on how to remove a project if the datacenter has already been removed.

### v0.7.0 June 12, 2015

#### New Features

- Updated Bokeh to v0.9
- Ability to list packages installed on the server
- Administrators now have full access to all projects.
- Added automated checking and display of connection status between server, data centers, and compute resources.
- When creating a new project, an environment for the project is automatically created as a clone of the root Anaconda environment.

#### Problems Resolved in this Release

- Problem with checking in files with revision control extension
- Revision control extension can't handle notebook names with spaces
- Problem moving files from one compute node to another if configured for LDAP
- Should default to UTF-8 encoding and warn user if no locale is detected
- Adding a compute resource via the command line admin tool does not work
- The installer now sets `umask 0022` to ensure correct file permissions

#### Documentation Updates

- Added a *Troubleshooting* section to the documentation.
- Added notes on how to configure crontab to start the Anaconda Enterprise Notebooks services at startup
- Example SSL config file now has correct log paths
- Added instructions on how to ensure that POSIX ACL support is enabled on the projects directory.
- Fixed syntax problem in sample LDAP config.json
- Added section on how to use self-signed or private CA certificates

### v0.6.3 March 27, 2015

- Updated LDAP module
- LDAP user filtering
- Added Notebook locking
- Added Notebook integrated revision control system
- Move projects between compute nodes
- User-specific binding to compute nodes (private compute nodes)
- Improved installation process and dependency checking
- Incorporated support for SSL for Server and Gateway nodes



- Improved Gateway error handling
- Fixed package dependencies for update process
- Documentation updates

## Previous versions

Documentation for previous versions of AEN is provided for users who have not yet upgraded to the latest version. See the sidebar for links to other documentation versions.

## Anaconda Enterprise 4 Notebooks

### *Empower the Data Science Team with cross-collaboration*

AEN is a browser-based Python data analysis environment and visualization tool from Anaconda®. AEN is a ready-to-use, powerful, fully-configured data analytics environment all in a secure, governed environment.

AEN allows data science team members to create and share private notebooks, manage access, control notebook revisions, compare and identify differences across notebook versions, search notebooks for keywords and packages, use enhanced collaborative notebook features—including revision control and locking—and to access an on-premises and/or cloud collaborative notebook server.

The current version of AEN is 4.3.1, released March 25, 2019.

## User guide

AEN's browser-based management of private packages, notebooks, and environments allows data science team members to:

- Create, share and manage private notebooks.
- Control notebook revisions.
- Compare and identify differences across notebook versions.
- Search notebooks for keywords and packages.
- Use enhanced collaborative notebook features including revision control and locking.
- Access on-premises and/or cloud-based collaborative notebook servers.
- Utilize multiple language kernels like Python and R language in the same notebook.
- Create new notebook environments on the fly without leaving the notebook or entering commands in a prompt.
- Publish results to business stakeholders as interactive visualizations and presentations.

To quickly get up and running with AEN, see [Getting started](#).

Download the [Cheat sheet](#) for easy reference.

### Concepts

#### Projects

AEN users interact with the system predominantly through projects.

A project is a set of conda environments, Jupyter Notebooks, and other files.

Each project has a project drive that all team members can access. The size of the drive is not limited by AEN. Contact your system administrator if you find you do not have sufficient space.

Each project has a separate project directory on the project drive.

The project directory is a directory for project files and data that is separate from the project owner's and team members' home directories, so that team members can share and have equal access.

The path to your project directory is `/projects/<project_owner>/<project_name>`.

For administrative information about projects, directories, and permissions, see [Projects and permissions](#).

#### Team collaboration

Teams collaborate in AEN using projects. Projects allow a team to easily come together by sharing the resources, applications, and environments that are necessary to collaborate effectively.

The AEN project owner and any team members connected to their project will have access to the same:

- Shared files and home directories.
- Shared Python and R environments.
- Shared nodes and hardware.
- Common applications.
- Web user interface.

For more information, see [Working with projects](#).

#### Access control

AEN access controls allow you to:

- Add and remove project access for new team members.
- Limit the access to specific folders and files to members of your project team.
- Use permissions to extend execute access to team members. By default, all of the team members on a project have read and write access to all project assets.

Access control is performed from each project's Workbench application.

For more information, see [Controlling access to your project](#).

## Sharing projects

AEN supports both public and private sharing.

A project can be “public,” which means that anyone with access to the system can view the project assets.

Any content placed in the `public` folder in a project is publicly accessible using its URL.

A project can be “private,” which means that only the project owner and team members can view the project assets.

You can also *limit who can access specific files*.

## Sharing Jupyter Notebooks

In addition to general project sharing capabilities, you can also publish Jupyter Notebooks to Anaconda Repository. This automatically versions the notebook and allows you to define who can view the notebook.

## Project tags

Tags are used to:

- Group similar or related projects.
- Identify your project so that it is easier to find.
- Let others know about your project.

You can *add and remove tags* for any project that you have access to.

## Getting started

This section contains information and tasks for first-time AEN users.

### 1. Download the AEN cheat sheet

Before you start, download and print the *AEN cheat sheet* for easy reference.

### 2. Access your user home page

After your administrator has set up your server and new Anaconda account, you will receive a welcome email.

1. Click the link in the email to open the AEN login page.

NOTE: Use the domain name and not the IP address when you connect to AEN. Using the IP address can cause TLS and security certificate errors.

2. Enter your AEN account username and password.

NOTE: Some administrators allow you to create your own account. If your administrator has allowed this, in the create a new account section, create your own username and password.

3. Click the Login button.

Your user home page, where all good things happen, is displayed:

The screenshot shows the Anaconda AEN user profile for 'NewUser2'. The header bar includes the Anaconda logo, the username 'NewUser2', and a search bar. The profile section shows the user's name, a power button icon, and details: 'Joined on Oct 20, 2016', email 'newuser@mycompany.com', and '1 Projects'. The 'Projects (1)' section lists 'NewUser2 / NewProject' with a description 'Woo hoo! I finally get to play with notebooks!'. The 'Contributing (0)' section states 'Not currently contributing to any projects.' On the right, there are three lists: 'Top Tags' (Fun fun fun, Test project), 'Top Collaborators', and 'Top Rated' (test1, test2, NewProject).

### 3. Create a new project

1. There are 2 ways to create a new project in AEN:

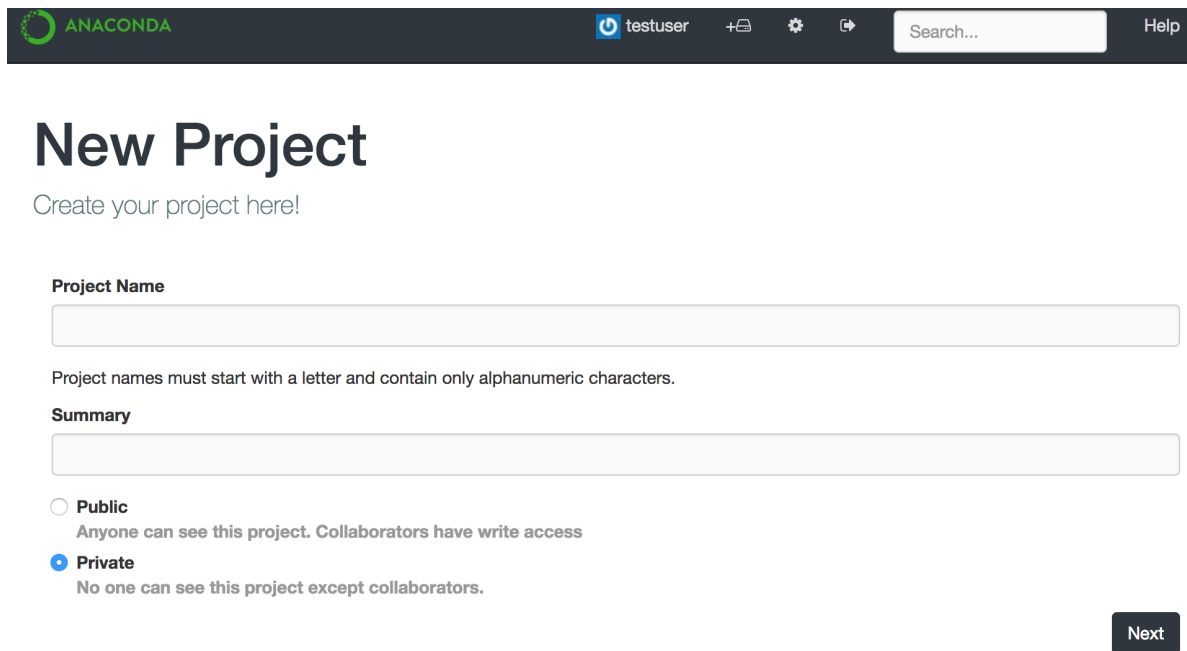
- On the right side of the AEN task bar, click on the New Project icon:



- On your home page, click the New project button:

The screenshot shows the Anaconda AEN user profile for 'testuser'. The header bar includes the Anaconda logo, the username 'testuser', and a search bar. The profile section shows the user's name, a power button icon, and details: 'Joined on Sep 21, 2017', email 'testuser@outlook.com', and '2 Projects'. The 'Projects (2)' section lists 'testuser / TestProject' and 'testuser / TestProject1', both with descriptions 'NotebookApp'. The 'New project' button in the top right of the Projects section is highlighted with a red circle. On the right, there are two lists: 'Top Tags' (!@#\$%^&\*()\_+ , Abc, \_))() ) and 'Top Collaborators'.

2. On the Project page that is displayed, type a name for your project, such as “Testing.”



**Project Name**

Project names must start with a letter and contain only alphanumeric characters.

**Summary**

☐ **Public**  
Anyone can see this project. Collaborators have write access

☒ **Private**  
No one can see this project except collaborators.

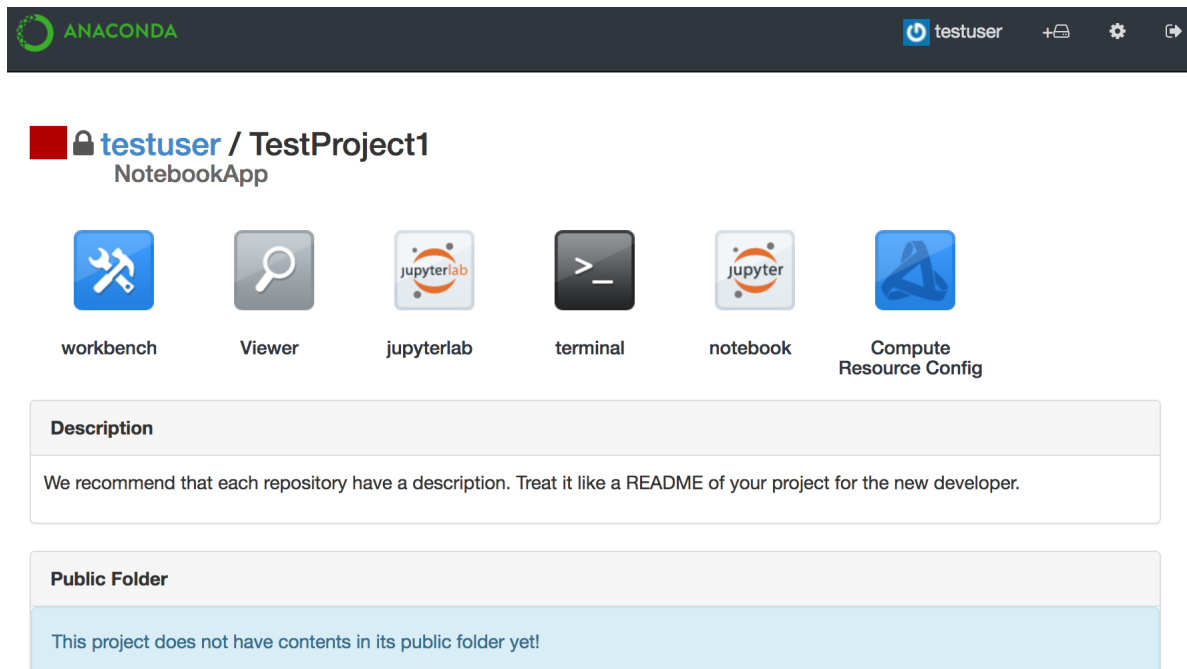
Next

3. Type a summary of the project so you can recognize it later.
4. Select whether your project will be public or private.
5. Verify that the default data center is selected.

TIP: You can update the project summary and description at any time from the **Project** menu in the Project Settings. To return to your project at any time, click the project name.

6. Click the Next button.

Your new project's home page is displayed:



**testuser / TestProject1**  
NotebookApp

workbench Viewer jupyterlab terminal notebook Compute Resource Config

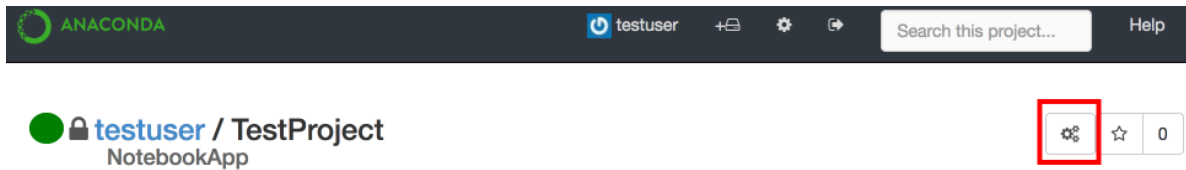
**Description**

We recommend that each repository have a description. Treat it like a README of your project for the new developer.

**Public Folder**

This project does not have contents in its public folder yet!

7. To change the project settings, click the Project Settings icon on at the top right.



8. Modify the summary or add a description of the project.

TIP: A project description is recommended, and may be written in Markdown syntax (plain text valid Markdown).

To see how Markdown will be displayed, in the description area, click the **Preview** tab.

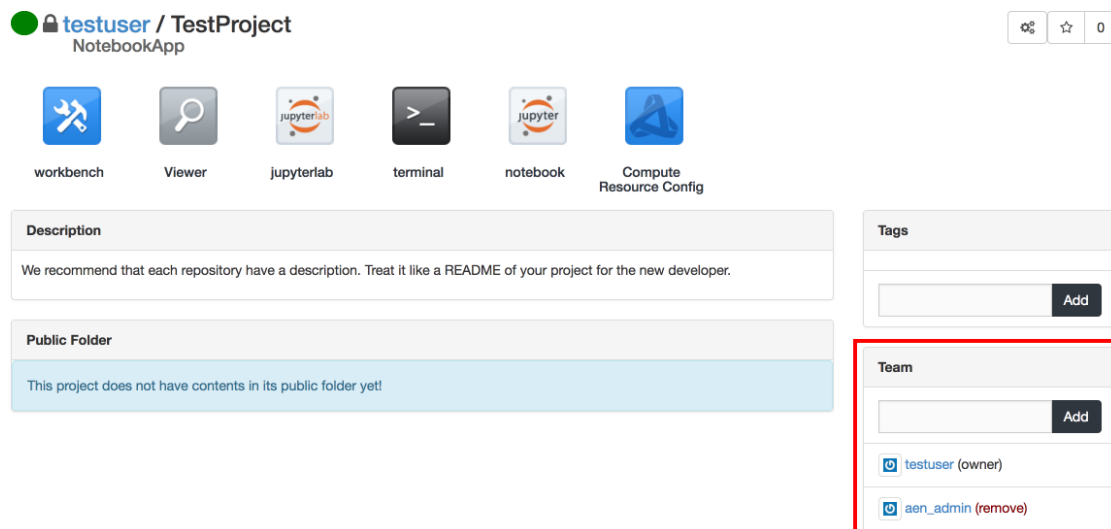
#### 4. Add collaborators

You can add team members to your project as collaborators. Adding team members to your projects makes collaboration easy because they have full access to the project's applications, files and services.

When you add team members, their home directory is mounted in the project. There is no need to download and email data or scripts—team members can work on the same files in the same environment in which you are working.

To add collaborators to your project:

1. From your project home page, in the Team box, begin typing a teammate's username.
2. In the list that is displayed, select the teammate's username.
3. Click the Add button.



1. Repeat these steps for each team member you want to add as a collaborator.

TIP: You can add or remove team members any time from the **Team** menu in Project Settings. You can also modify a team member's read, write or execute permissions at any time from the *Using Workbench*.

### 5a. Open an example notebook, OR

1. From your project home page, click the Jupyter Notebooks icon.
2. On the File View page, click the Examples folder.



3. Select any of the example notebooks.
4. To see the default results of the formulas used in the displayed notebook, in the **Cell** menu, select Run All.
5. To experiment with changing the notebook, edit any of the formulas in the notebook.
6. In the **Cell** menu, select Run All.

Any differences resulting from your edits are displayed.

### 5b. Create a new environment and notebook

If you are already familiar with creating notebooks, you can easily set up a new environment with the programs you need—like SciPy and NumPy—then open a new notebook and make your edits.


To create a new environment:

1. From your project home page, click the Jupyter Notebooks icon.
2. On the File View page, click the **Conda** tab.
3. To add a new conda environment, on the top right of the **Conda** tab, click the + icon.
4. Type a name for your environment.
5. Select Python 2, Python 3 or R language kernel.
6. Click the Create button.
7. To activate your new environment, click its name.

The packages that are available and installed in your new environment are displayed.










## Adding SciPy and Numpy packages

1. In the available packages section, search for the package name `numpy`—all lower case.
2. In the results section, next to `numpy`, select the checkbox.

 **ANACONDA**  
Powered by Continuum Analytics

Files Running IPython Clusters **Conda**

3 Conda environments + ↺

Action	Name	Default?	Directory
  	root		/opt/wakari/anaconda
  	default	✓	/projects/aen_admin/TestProject/envs/default
  	myenv		/projects/aen_admin/TestProject/envs/myenv

2 available packages  → 39 installed packages in environment "myenv" ↺ ✓ ⬇ 🗑

Name	Version	Channel
<input checked="" type="checkbox"/> numpy	1.13.1	defaults
<input type="checkbox"/> numpydoc	0.7.0	defaults

Name	Version	Build	Available
<input type="checkbox"/> anaconda-client	1.6.3	py36_0	
<input type="checkbox"/> certifi	2016.2.28	py36_0	
<input type="checkbox"/> clyent	1.2.2	py36_0	
<input type="checkbox"/> decorator	4.1.2	py36_0	
<input type="checkbox"/> ipykernel	4.6.1	py36_0	
<input type="checkbox"/> ipython	6.1.0	py36_0	

1. Click the Install icon.
2. To confirm your installation, click the Install button.

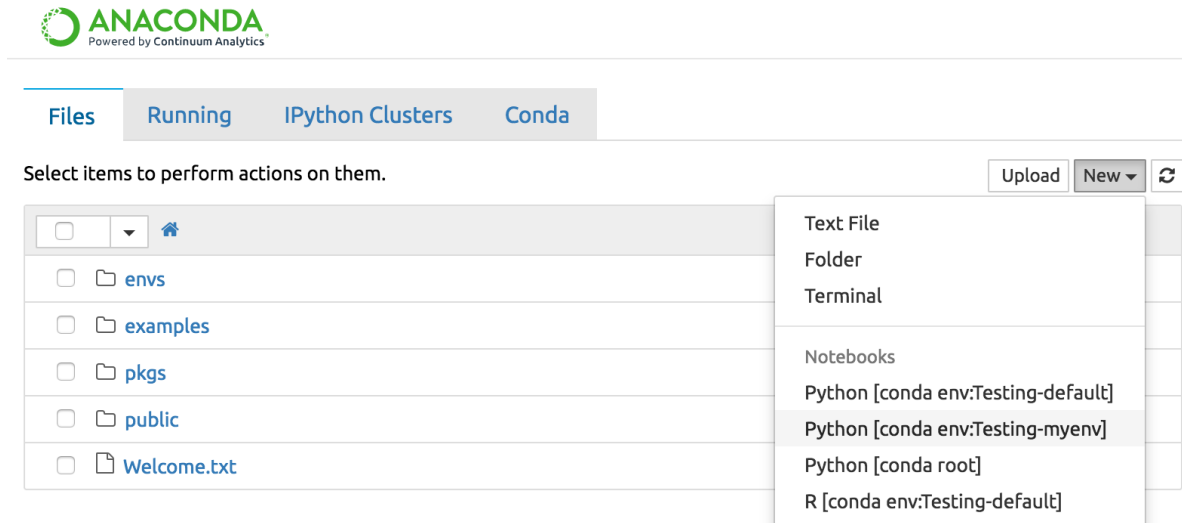
Numpy is displayed in the installed packages section—if not, click the Refresh button. Repeat these steps to install the Scipy package—searching for `scipy` in step 1.

TIP: You can return to this screen at any time to add additional packages to this environment.



## Creating a new notebook in your environment

1. From the AEN homepage, click the **Files** tab.
2. On the top right of the **Files** tab, click the New button.
3. Under Notebooks, select the Python environment with the name you entered while *creating a new environment*.



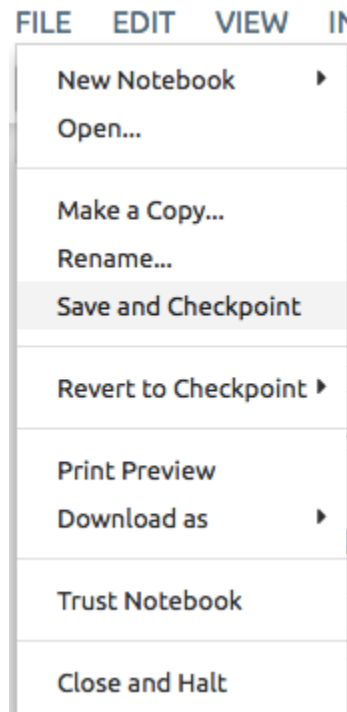
NOTE: If you do not see your new environment listed under Notebooks, next to the New button, click the Refresh button.

A new locked notebook is displayed. Paste or write some code to execute when you are ready.

## 6. Create checkpoints for version control

Whether you are exploring an existing notebook, or creating a new one, you can easily create checkpoints, return to an earlier version, compare two different versions and save them for reference.

To create a checkpoint, in the **File** menu, select Save and Checkpoint:



To revert your notebook to a previous checkpoint, in the **File** menu, select Revert to Checkpoint.

NOTE: For more information about revision control features, including creating commits and comparing differences, see *Using the Revision Control Mechanism extension*.

## 7. Share your notebook and environment with others

See *Sharing projects and notebooks*.

## 8. See what to do next

Now that you have completed the Getting Started guide, you are ready to move on to *basic tasks* and *advanced tasks*.

## Basic tasks

This section contains information and tasks that use the web browser to manage projects and is best-suited for any beginning AEN user:

### Working with projects

Almost everything in AEN starts by opening an existing project or creating a new one.

After that, you can set up a special environment with the packages you want, set their access permissions and modify your project settings.

### Searching for a project or file

To search for projects and files, use the Search box in the AEN navigation bar. The search provides different results depending on which page you search from:

- On a project home page, search results include any files that match your search criteria within the current project.
- On any other AEN page, search results include any files that match your search criteria within all projects.

**TIP:** Your search results include only files and projects that you can view: public projects, and private projects to which you have a minimum of view access.

### Types of files searched

The following types of files are included in search results:

- `.py`—Python source files.
- `.ipynb`—IPython/Jupyter notebooks.
- `.txt`—plain text files.
- `.md`—Markdown files.

### Search indexing

Files that are modified while a project is running are automatically re-indexed shortly after the files are modified. If you create or update a large number of files—such as cloning a git repository or copying a directory—search results may take several minutes to update.

Files that are modified while the project is not running are re-indexed only after the project is started.

## Using search constructs

You can use the following search constructs:

- Ordinary words will match the full-text contents of any file.
- Wildcards are permitted.

EXAMPLE: `John*` will match John and Johnny. These are glob patterns and are similar to their usage in the command line.

- Combine queries using AND or OR, and group them using parentheses ().

Regular expression patterns can be embedded in the query string by wrapping them in forward-slashes (/):

```
name:/joh?n(ath[oa]n)/
```

The supported regular expression syntax is explained in [the Elasticsearch reference](#).

NOTE: Wildcards apply inside a regular expression. A query string such as `/. *n/` would force the search to visit every term in the index.

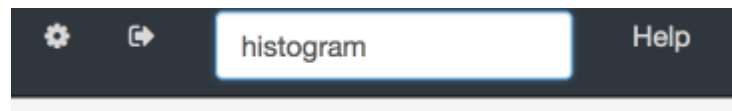
## Searching metadata fields

You can search in specific metadata fields:

- `imports:name`—matches files that import the module name.
- `uses:name`—matches files that reference the identifier name. Referenced names include any functions and globals imported from other modules, as well as the names of any methods invoked on any object.
- `defines:name`—matches files that define the identifier name. Defined names include functions defined at global scope, class names, and method names within classes.
- `acl:user`—matches files in which the named user has read access or higher.

## Searching a project

1. In the Search box, type a string of text:



TIP: Search by glob patterns, which are similar to file matching in the command line.

EXAMPLE: To find projects in the test family that are numbered from 00 to 99, search for `Test-??`. To find all projects whose name ends with “Stats,” search for `*Stats`.

2. Press Enter.
3. In the search results, click the plus + icon above a project name to show a list of matching files in the selected project:

Projects matching 'iris' ([save this search](#))

testuser / TestProject

NotebookApp

★

0

AnacondaEN / AEN11\_0

No Summary

★

0

Rida / ABC

No Summary

★

0

Rida / Testing

No Summary

★

0

testuser / TestProject1

NotebookApp

★

0

TIP: Click the project name to open the project's home page.

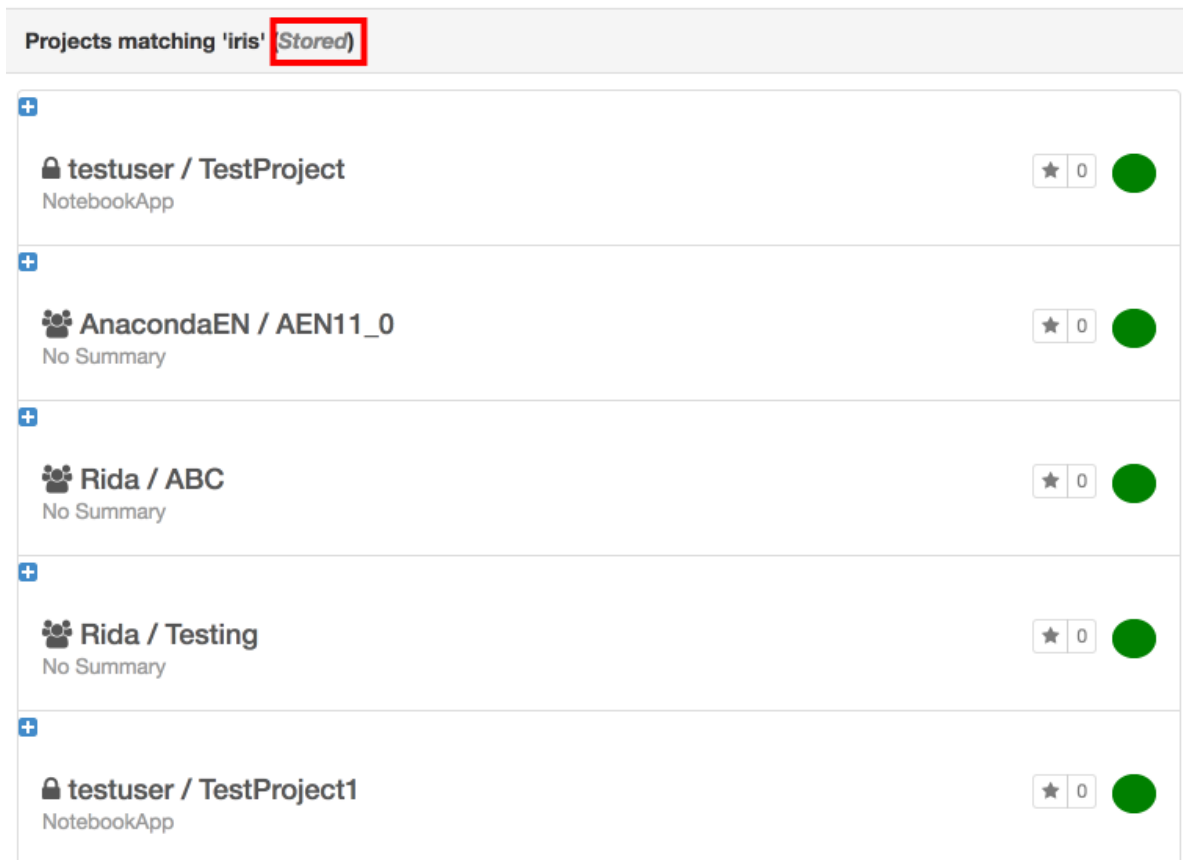
4. To view a file, click its file name in the matching files list:

Found 1 files matching 'histogram' in user02/Public\_project. ([save this search](#))

File	Relevance
<a href="#">/examples/histograms.ipynb</a>	42

## Saving a search

1. At the top of the search results, click Save this search:



The “save this search” text changes to “stored” and your search is saved. Your saved searches are listed on your home page.

## Removing a saved search

On your home page, in the Saved searches section, click X next the saved search that you want to remove:

Projects (2) New project

testuser / TestProject

NotebookApp

★ 0

testuser / TestProject1

NotebookApp

★ 0

Contributing (0)

Not currently contributing to any projects.

Top Tags

!@#\$\$%^&\*()\_+ 1

Abc 1

\_)) ( 1

Top Collaborators

aen\_admin 1

Top Rated

Project 1

Testing 0

AEN11\_0 0

ABC 0

TestProject 0

Saved searches

iris ✕

## Adding and removing team members on a project

1. On the project home page, click the Project Settings icon to open the Project Settings page.

ANACONDA

testuser

+

⚙

↔

Search this project...

Help

testuser / TestProject

NotebookApp

⚙ ☆ 0

2. In the **Settings** menu, select Team.

testuser / TestProject

Settings

Project

Team

Admin

Info

Add

Team

Team members will be granted full access to your applications, files, and services.

aen\_admin (remove)

### Adding a team member

1. In the username box, type in the first few letters of the username for the team member you want to add to the project.
2. In the list of usernames that displays, click the user to add.
3. Click the Add button.

### Removing a team member

Click the red Remove link next to the name of the user you want to remove from the project.

### Controlling access to your project

#### Controlling team member access

By default, all of the team members on a project have read and write access permissions for all project assets.

The available permissions are read, write and execute. If you remove all individual or group permissions for a project asset, team members will not be able to access that asset.

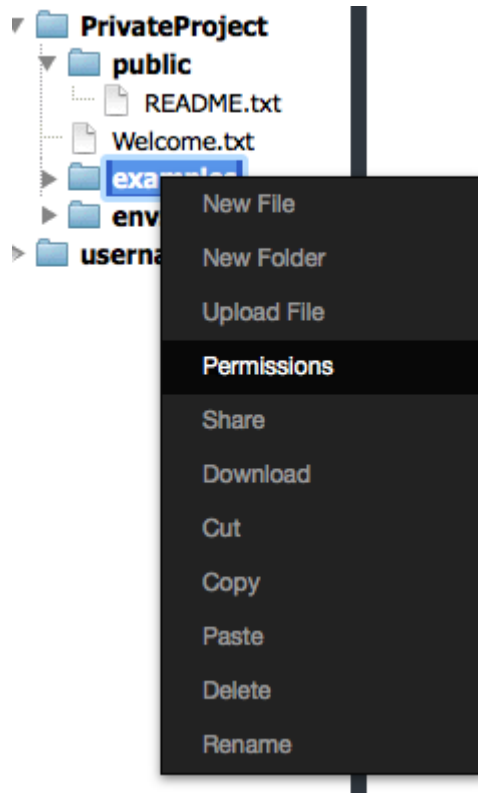
To change a project's permissions:

1. Open the project's home page.
2. Click the Workbench icon.
3. In the Workbench app, right-click the file or folder you want to limit access to.

NOTE: When you change a folder's permissions, the permissions of files and folders inside it do not change. You may change the permissions of those files and folders manually.

4. In the menu that displays, select Permissions:





A list of owners and team members who have access to your project is displayed.

5. Find the team member you want to change access for:

Permissions for examples

Owner 
Group

Who	Type	Read	Write	Execute
owner		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
group		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
others		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mask		true	true	true
<input type="text" value="username"/>	User <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username"/>	Group <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	User <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	Group <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	User <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	Group <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Next to the team member's name, select or deselect the permissions for that user.

NOTE: You can add a team member and set their access at the same time by typing their name in a username box, setting their permissions, and then clicking the Add button.

- Click the Submit button.

The selected permissions are added, and the deselected permissions are removed.

NOTE: If a team member is in the Workbench application when you give them access, they must refresh their browser window to see their current permissions.

## Controlling non-team member access

You can choose to grant file or folder access to someone who is not part of the project team, as long as that person has an AEN account.

Sharing with individuals outside the team is a four step process:

- Copy or move the file or folder to your home directory.*
- Give the user read and execute access to your home directory.*
- Add the user to the file's permissions.*

4. *Have the user add your directory to their workbench.*

### Copying a file or folder to your home directory

Your home directory is displayed at the bottom of the File Manager pane in the Workbench.

To protect the other files and folders in your home directory—those you are not providing permissions to a user to access—we recommended that you:

1. Create a sub-folder.
2. Rename the folder with the name of the user you are granting access to.
3. Copy or move the file you want to grant permissions for to the renamed folder.

The file is copied or moved to the new location and is ready for you to update the file permissions.

### Granting file access

You must select read and execute access for a user to be able to view, but not edit, the files or folders.

1. Right-click the name of the file or folder you are granting access to.
2. In the menu that is displayed, select Permissions.
3. Click the Add button.
4. Type the username of the user to whom you are granting file access and press Enter.

**TIP:** If you grant access to a folder instead of a specific file, you only have to set permissions the first time you share the folder with each user, unless you need to update the permissions.

### Adding file permissions for a user

Once a user is included in your Permissions list, you must *add the correct permissions* for the user, in the same way as you would for a team member.

Once complete, depending on the access granted, the user will be able to view, read, change, and execute the file.

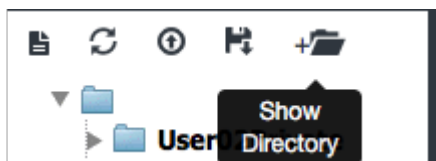
**NOTE:** If you change permissions for a folder instead of a file, the user will be able to see and access any files within that folder.

### Adding a directory to a user's workbench

The user can now add your home directory to their Workbench File Manager.

To add your home directory to another user's workbench, have the other user follow these steps:

1. Click the Show Directory button at the top of the Workbench File Manager:



The Show Directories dialog box displays.

2. In the text box, type `/home/[yourusername]`.

NOTE: Replace `[yourusername]` with your AEN username.

### Show Directories



Enter the full path to an existing directory that you would like to see in the file browser. For example, if the project node has a directory with a path of `/data/2010` that contains data files from 2010 that you want to browse, enter `/data/2010` and click on the Show button.

3. Click the Show button.
4. Verify that the folder is now displayed below the text box:

### Show Directories

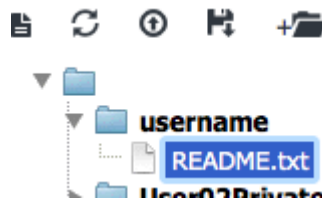


Enter the full path to an existing directory that you would like to see in the file browser. For example, if the project node has a directory with a path of `/data/2010` that contains data files from 2010 that you want to browse, enter `/data/2010` and click on the Show button.

5. Close the Show Directories dialog box by clicking the X in the upper-right corner or by clicking anywhere outside the box.
6. Click the Refresh button.

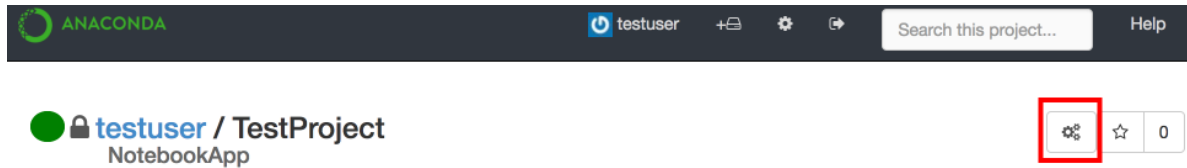
The shared file is displayed in the File Manager:



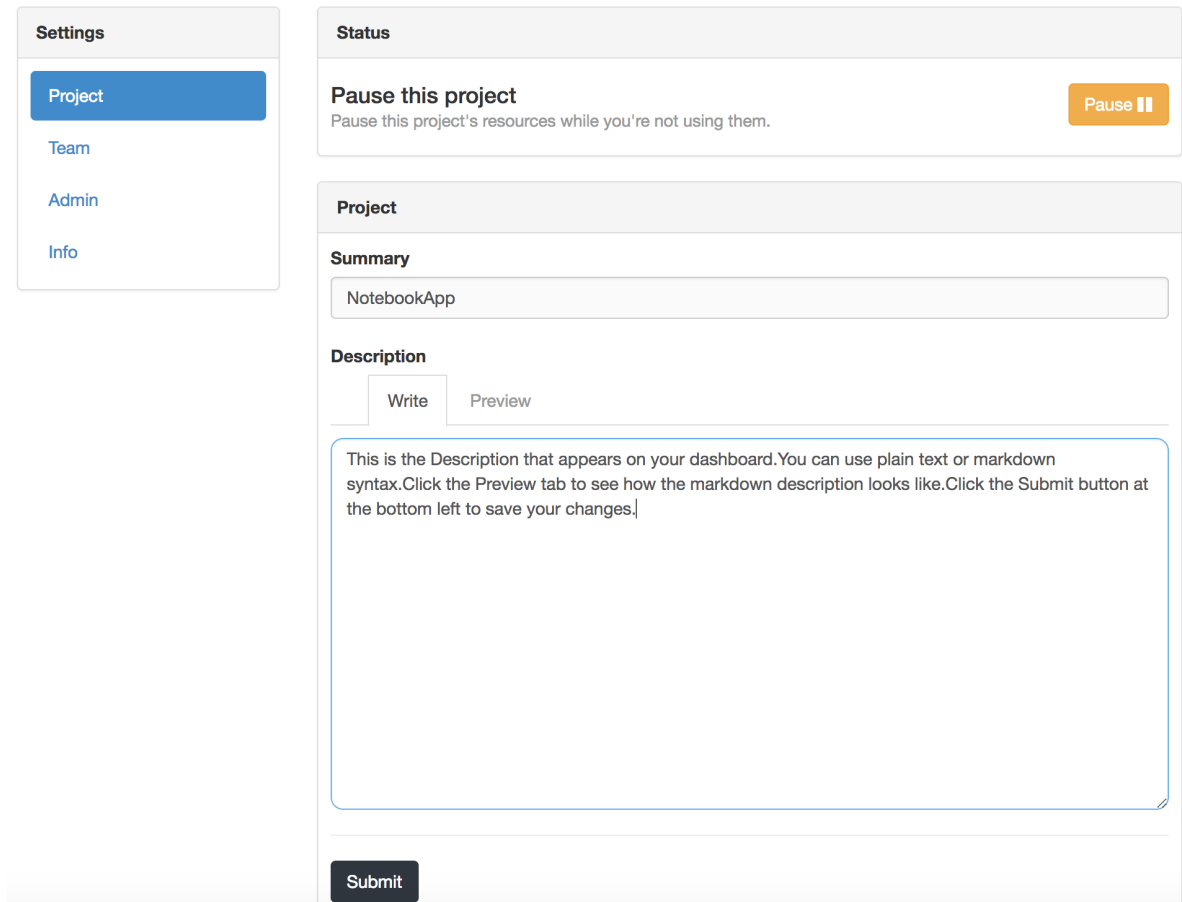
## Starting and stopping a project

**TIP:** Stopping a project stops all the applications launched for that project that use resources when running, such as memory and compute cycles. It is best to stop projects when they are not in use.

1. On the project home page, click the Project Settings icon to open the Project Settings page.



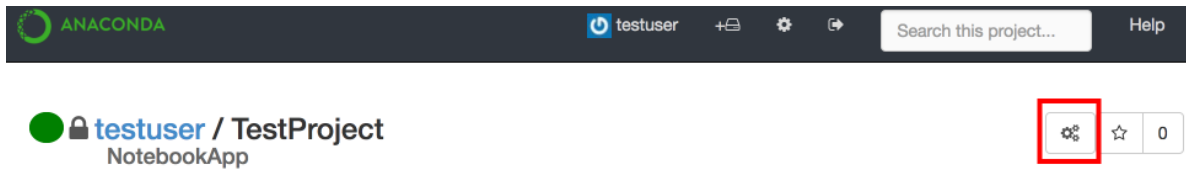
2. In the **Settings** menu, select Project.



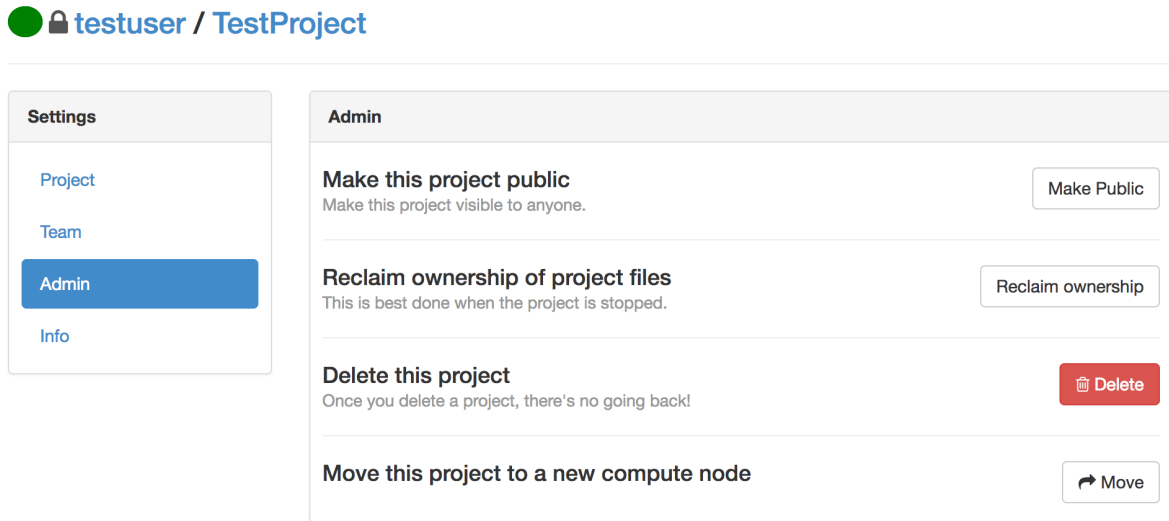
3. In the Status section, click the Start or Stop button to toggle between manually starting and stopping your project.

## Making a project public or private

1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Admin.



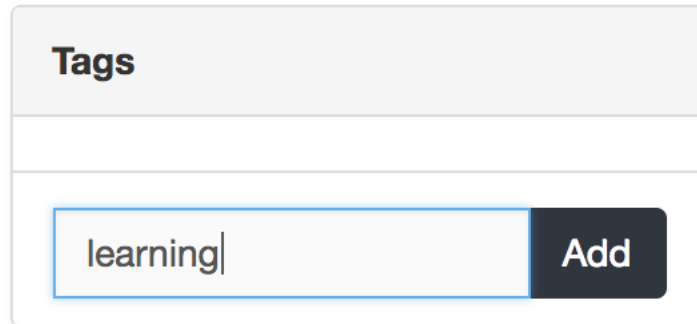
3. Click the Make Public button.
4. If the project is already public and you want to make it private, click the Make Private button.

## Tagging a project

Existing tags assigned to a project are listed in the Tags section on the project's home page.

## Adding a tag

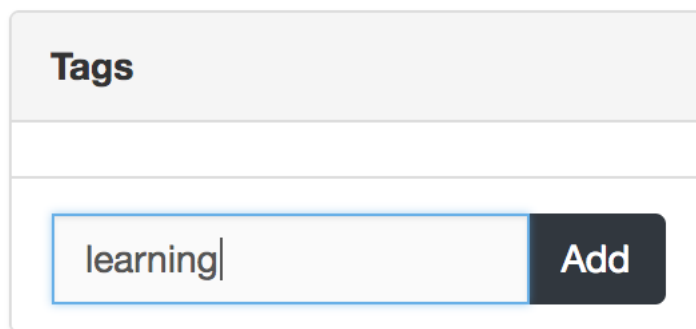
1. In the Tags box, type the name of the tag you want to add:



A screenshot of a web interface showing a 'Tags' section. It features a text input field containing the word 'learning' and a dark 'Add' button to its right.

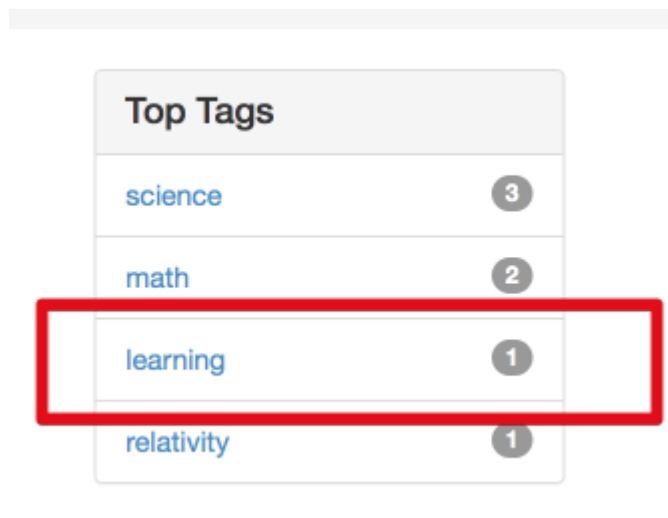
2. Click the Add button.

The new tag is added to the Tags list:



An identical screenshot of the 'Tags' section, showing the 'learning' tag in the input field and the 'Add' button.

If the tag was not already in the Top Tags list on your user home page, it is added. If the tag was already listed because another project used it, the number next to the tag is incremented:

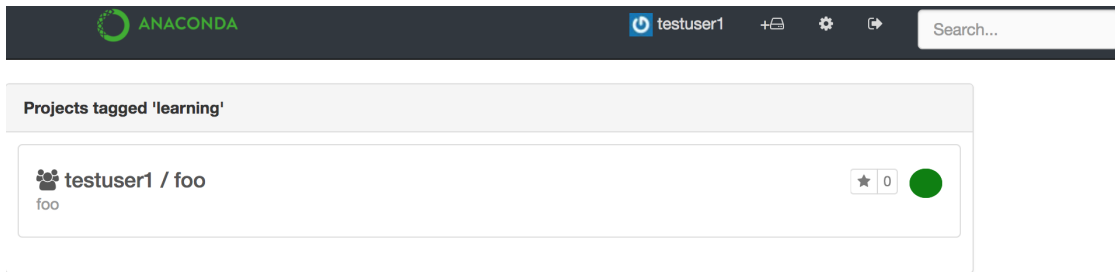


A screenshot of a 'Top Tags' list. The list contains four items: 'science' with a count of 3, 'math' with a count of 2, 'learning' with a count of 1, and 'relativity' with a count of 1. The 'learning' row is highlighted with a red rectangular box.

Top Tags	
science	3
math	2
learning	1
relativity	1

## Removing a tag

1. On your user home page, in the Top Tags list, click the tag name.



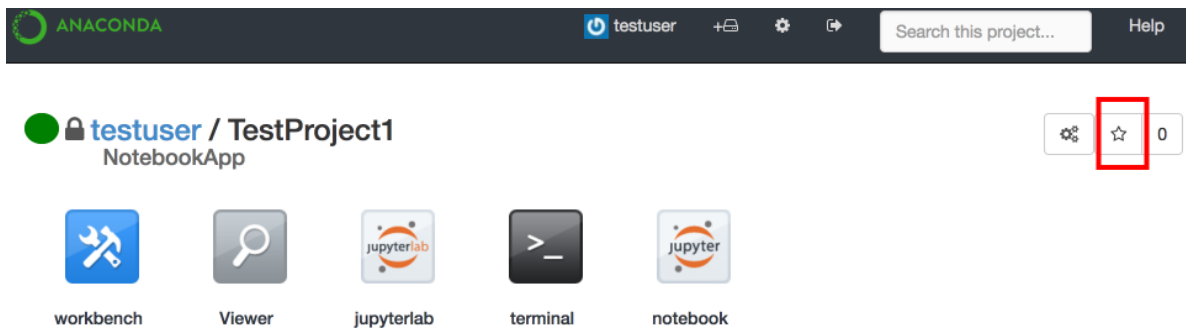
1. In the Tags list, click the X button next to tag name.

## Starring a project (rating)

Starring a project makes it appear on your user home page in the Top Rated list.

Adding or removing stars for a project does not affect the stars added by other users.

1. Open the project that you want to star.
2. On the project home page, click the Star icon at the upper right:

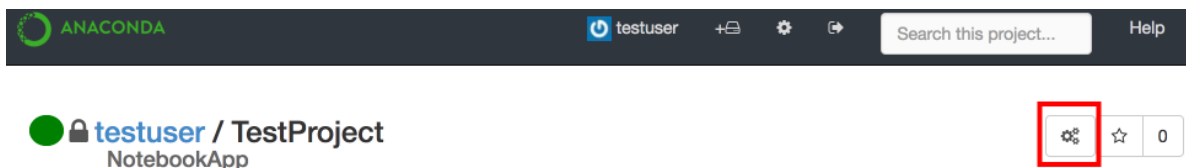


3. To unstar a project, click the Star icon again.

## Claim ownership of a project

When you claim ownership of a project, ownership of all files and folders created by the team members on the project is transferred to you. Project files and folders are copied and renamed.

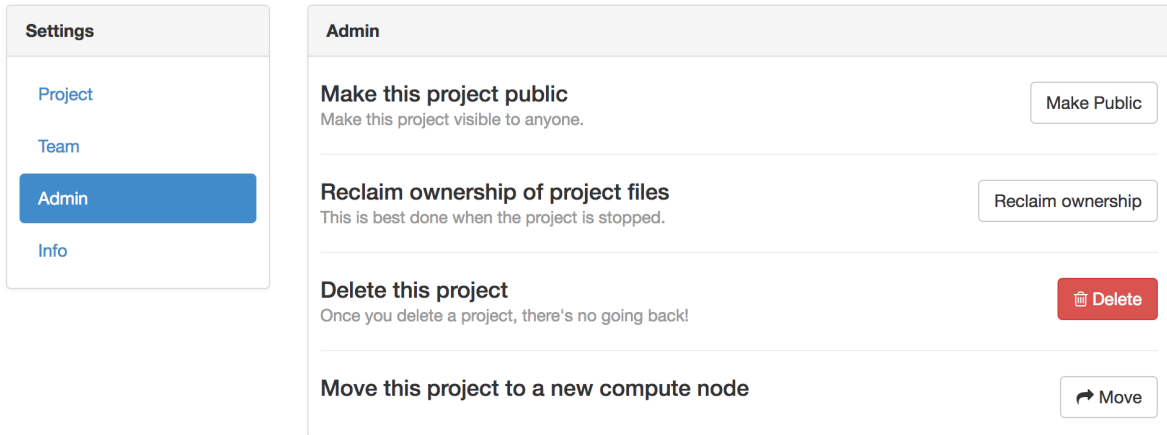
1. *Stop the project* to prevent team members from making changes while you are changing ownership.
2. On the project home page, click the Project Settings icon to open the Project Settings page.





3. In the **Settings** menu, select Admin.

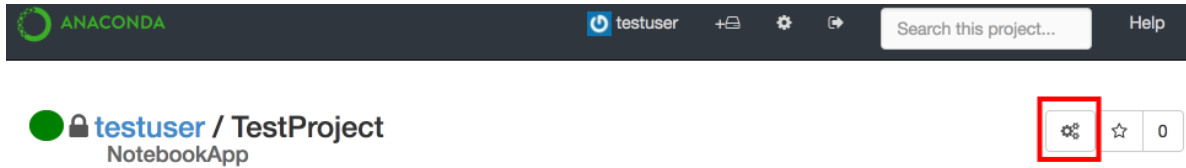
 **testuser** / TestProject



4. Click the Reclaim ownership button.

## Changing a project's summary or description

1. On the project home page, click the Project Settings icon to open the Project Settings page.

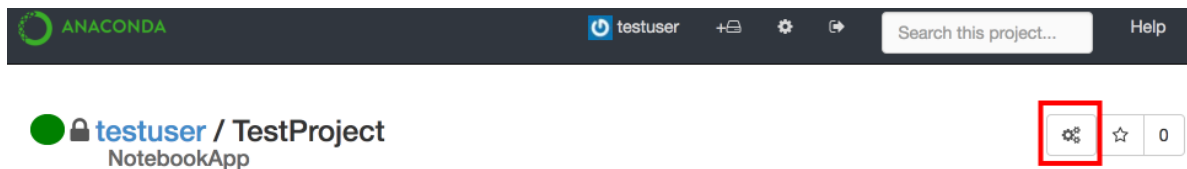


2. In the **Settings** menu, select Project.

3. Update your project's summary using plain text or its description using Markdown syntax.
4. Click the **Preview** tab to see a preview of the Markdown description.
5. Click the Submit button.

### Viewing a project's status

1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Info.

 testuser / TestProject

**Settings**

[Project](#)  
[Team](#)  
[Admin](#)  
**Info**

**Info**

**Status**  
running  
**Created**  
Mon Sep 25 20:43:56 2017  
**Last Heartbeat**  
Mon Sep 25 20:43:56 2017

**Data Center**

**Name**  
Gateway  
**Provider**  
Enterprise Resources  
**Summary**  
Gateway

On the Info page, you can see:

- Whether the project is currently running or stopped.
- When the project was created.
- When the project was last accessed.
- The data center in which the project is running.

## Viewing related projects

Related projects are listed on a project's home page.

Team

Add

user02 (owner)

user01 (remove)

Related Projects

user01 / TestProject2

No Summary

user02 / User02Private

No Summary

user01 / TestProject

No Summary

These are projects that contain fields that are most similar to the current project.

TIP: You will only see projects to which you have been granted access: public projects, and private projects on which you are a team member.

### How related projects are identified

To determine which projects should be listed in Related Projects:

1. The recommendation engine scans the current project's files and weights the terms found to determine which of them to use for the likeness search.
2. The engine performs a search, with extra weight given to the “uses” and “imports” keywords.
3. The engine finds the files and projects that are most similar to the current project and scores the results.
4. The top-scoring matches are displayed in Related Projects. Only public projects and private projects to which you have access are included.

## Viewing top-rated projects

Top-rated projects are listed on your home page:

Top Rated	
einstein	2
euler	1
laplace	1
plank	1
Public_project	1

The number next to a project represents the number of stars that have been given to that project.

Click a project name to view the project's home page.

## Using tags to find a project

The top tags used on your projects are listed on your home page:

**Projects (1)** New project

**NewUser2 / NewProject** ★ 0 ●  
 Woo hoo! I finally get to play with notebooks!

**Contributing (0)**

Not currently contributing to any projects.

**Top Tags**

Fun fun fun	1
Test project	1

**Top Collaborators**









**Top Rated**

test1	0
test2	0
NewProject	0

To list all projects that share a specific tag, click the tag name:

Top Tags	
science	4
math	2
learning	1
relativity	1

A list of projects with the selected tag is displayed:

Projects tagged 'science'	
 malev / euler euler	★ 1 
 malev / einstein einstein	★ 2 
 malev / plank quantum theory	★ 0 
 user01 / User01Private_2 No Summary	★ 0 

TIP: The list includes only projects that you have access to: public projects, and private projects on which you are a team member.

Click a project name to open the project's home page.

### Viewing your top collaborators

Your top collaborators are listed on your home page:

Top Collaborators	
trento	1
user01	1

These are the team members who have the most projects in common with you.

To view a collaborator's home page—where you can see all public projects and the private projects they have shared with you—click the collaborator's name.

## Sharing projects and notebooks

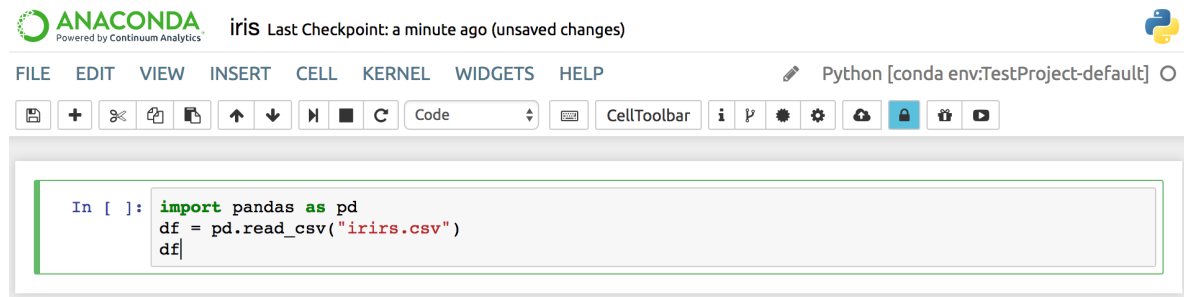
For information on sharing projects via the project settings and access control, see [Sharing projects](#).

To upload a Jupyter Notebook to Anaconda Repository:

1. Log in to Repository by running the `anaconda login` command or by using the login user interface provided by the [nbextension](#).

CAUTION: If you are not using a secure connection, we strongly recommended that you use the command line to log in.

2. To share your notebook environment, select the Attach conda environment checkbox. This ensures that your team members will have the right environment for your notebook.
3. Click the Upload button to upload your notebook to your local Repository or to [Anaconda.org](#), depending on how your administrator has set up AEN:



NOTE: If you have not yet logged into Repository or Anaconda Cloud, or have not created an account, you will be asked to do so.

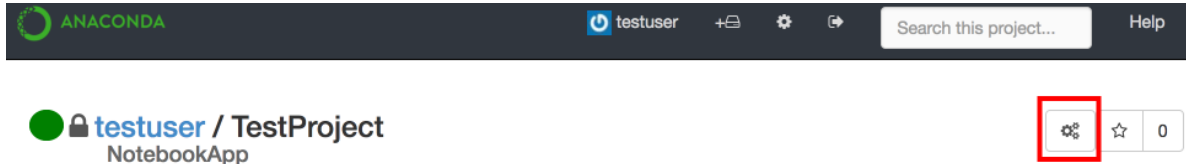
## Other ways to share a notebook

- Print—In the **File** menu, select Print.
- Download and share—In the **File** menu, select one of the following options:
  - Download as Notebook.
  - Download as Python.
  - Download as HTML.
  - Download as Markdown.
  - Download as ReStructured Text.
  - Download as PDF.
- Share and control team members' direct access to read, write and/or execute your notebook file or folder. For more information, see [Controlling access to your project](#).
- Share and control non-team members' file or folder access. For more information, see [Controlling access to your project](#).
- Create a presentation with [NBPresent 4.1](#).

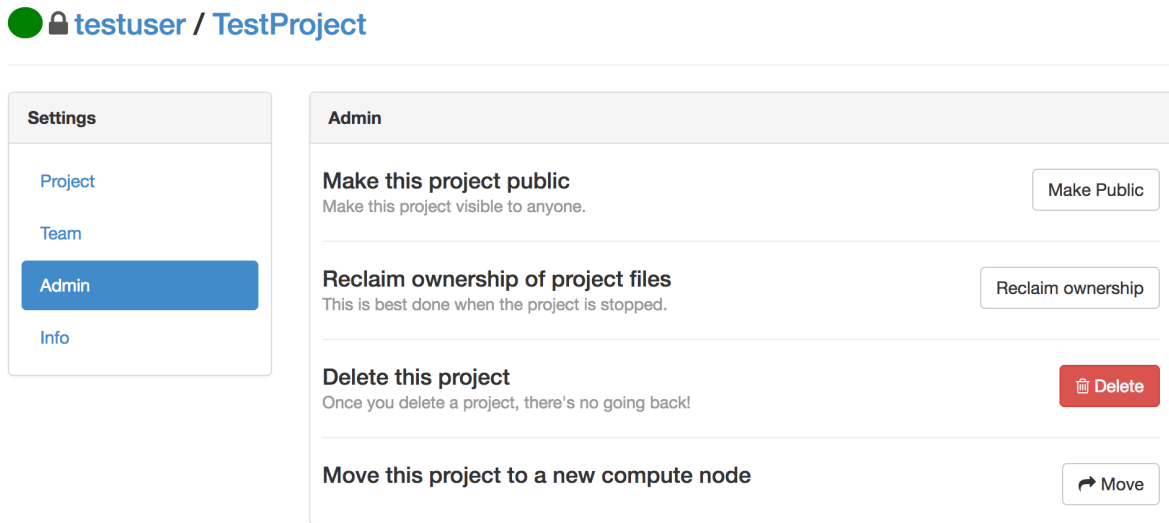
## Deleting a project

CAUTION: Deleting a project deletes all project files and information! There is no undo option.

1. Download a copy of any project files that you need to save.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



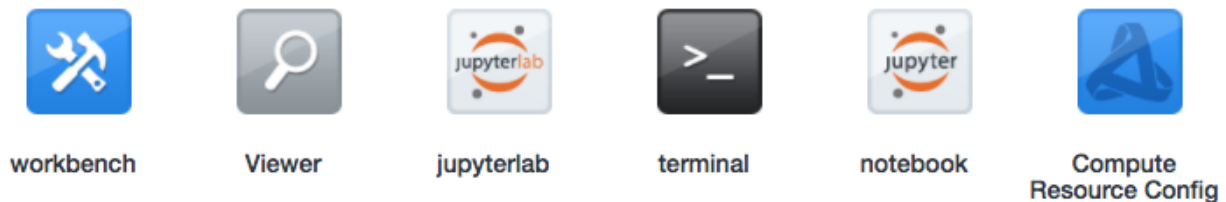
4. Click the Delete button.

## Using AEN applications

The applications in your project make it easy for you to interact with your files and data, manage your project's resources and to customize your AEN experience.

To use applications, log in to AEN, then select the project you want to work on or create a new project and open it.

On the project home page, the following application icons are displayed:



TIP: Each application opens in a new browser tab. You can run multiple applications at the same time in your project.

For more information on each AEN application, see:

- [Using Workbench](#)—File viewer and manager, including permissions settings.



- *Using Viewer*—View-only versions of notebooks and other text files.
- *Using JupyterLab*—Alpha preview of the next generation notebook.
- *Using Terminal*—Basic bash shell Terminal.
- *Using Jupyter Notebook*—Jupyter Notebooks with extensions.
- *Using Compute Resource Configuration*—Project information, view and manage applications.

## Using Workbench

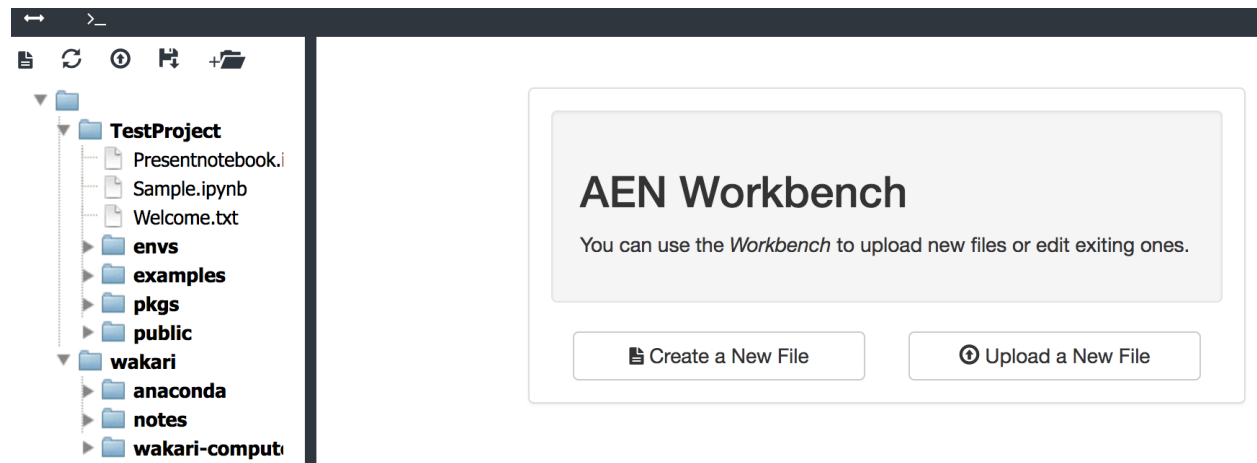
Workbench is a file viewer and manager that includes a file editor and file permissions manager.

You can use Workbench to:

- Upload and download files using the *File Manager*.
- Create new files and folders using the *File Manager*.
- Copy and move files to new locations using the *File Manager*.
- Rename files and/or folders using the *File Manager*.
- Manage the *access permissions* of team members.
- Grant or revoke *access to non-team members*.

Workbench also includes a simple Terminal application, which is convenient because the File Manager is always visible, making navigation simple.

When you first open Workbench, the File Manager is displayed in the left pane, and the Create a New File and Upload a New File buttons are in the right pane:



When you open a file or Workbench Terminal, it is displayed in the right pane. To make the Create or Upload a file options re-appear, refresh your browser window.

Two small icons are displayed in the black navigation bar at the top of the Workbench page. Hovering over them displays tool tips that describe their use:

- The Toggle icon displays or hides the File Manager.
- The Terminal icon opens a simple terminal window.

### Opening Workbench

To open Workbench:

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Workbench icon:



Workbench opens in a new browser window.

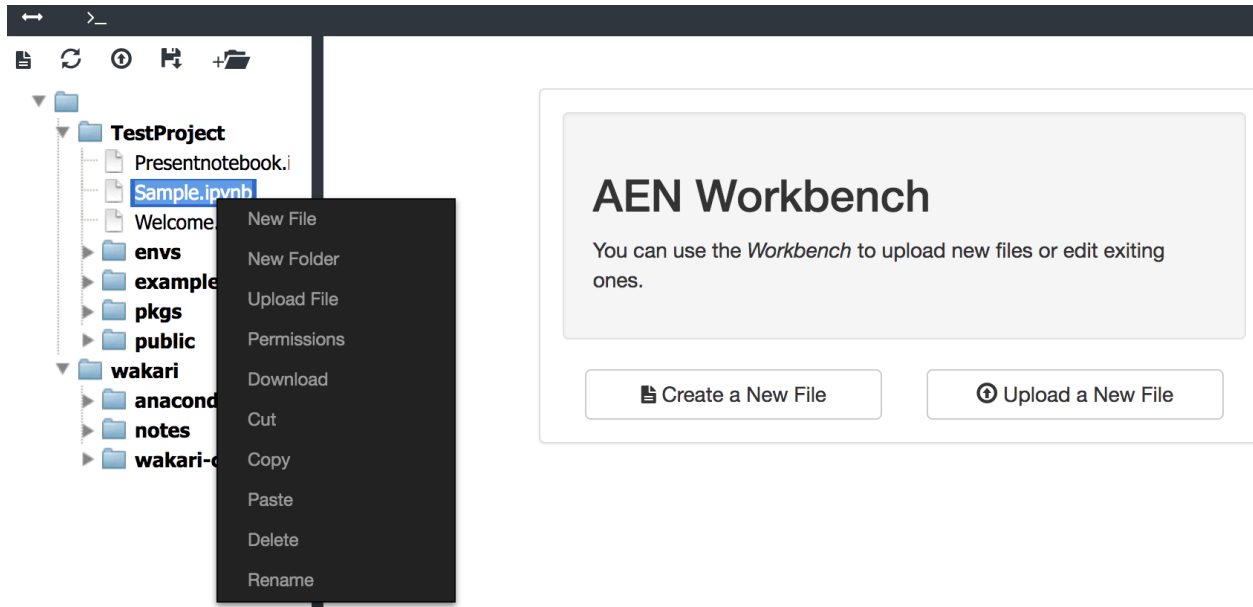
### Using File Manager

The File Manager is an intuitive way to interact with your files and folders.

### Using the options drop-down menu

To perform any of the actions described below:

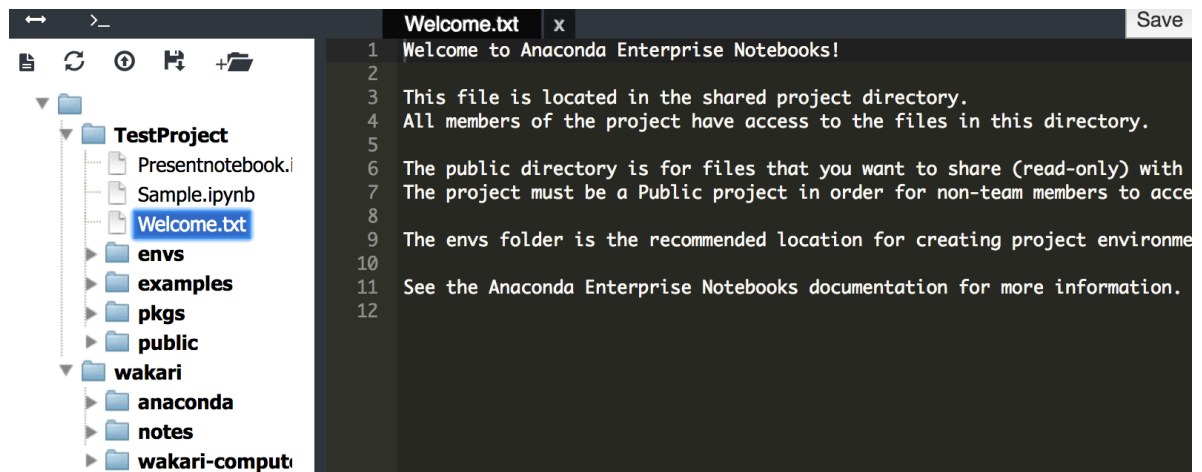
1. Right-click on any folder to display the options drop-down menu.
2. Select one of the following options:
  - New File—Create and edit a new file.
  - New Folder—Create a new folder.
  - Upload File—Upload a file to the selected folder. You can also drag a file to the folder.
  - Permissions—*Control access to files and folders.*
  - Cut—Cut the selected file or folder.
  - Copy—Copy the selected file or folder.
  - Paste—Paste a previously cut or copied file or folder.
  - Delete—Delete the highlighted file or folder.
  - Rename—Rename the highlighted file or folder.



## Editing files using the File Editor

1. Double-click any text file in the File Manager.

The File Editor opens in the right pane:

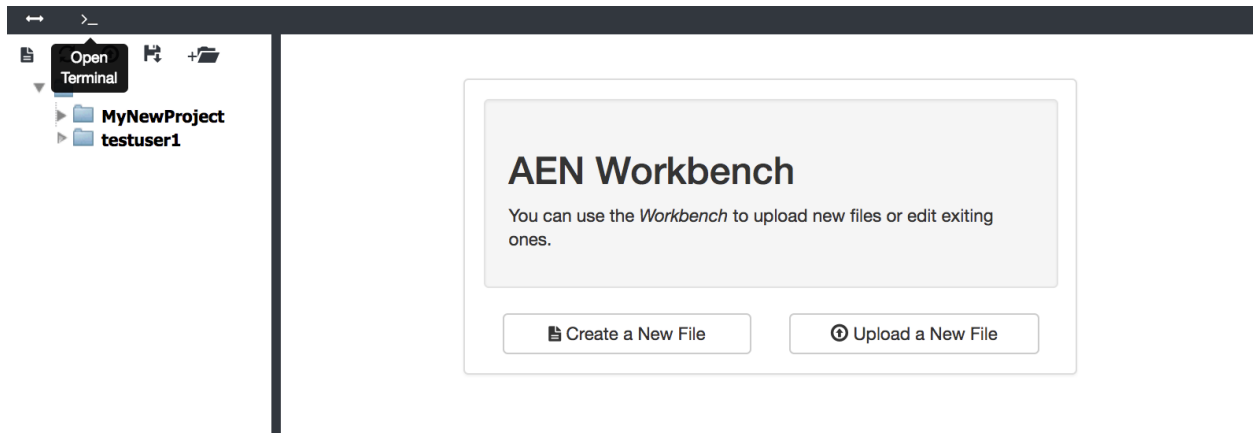


2. When you finish editing the file, click the Save button.

NOTE: To close the file without saving, click the X at the top of the page under the file name.

## Opening the Workbench terminal

In the navigation bar, click the Open terminal icon:



A Terminal—bash shell—is displayed in the right pane.

**TIP:** You can open additional terminals by clicking the Open terminal icon again, or by clicking the Plus + icon at the top of an open terminal.

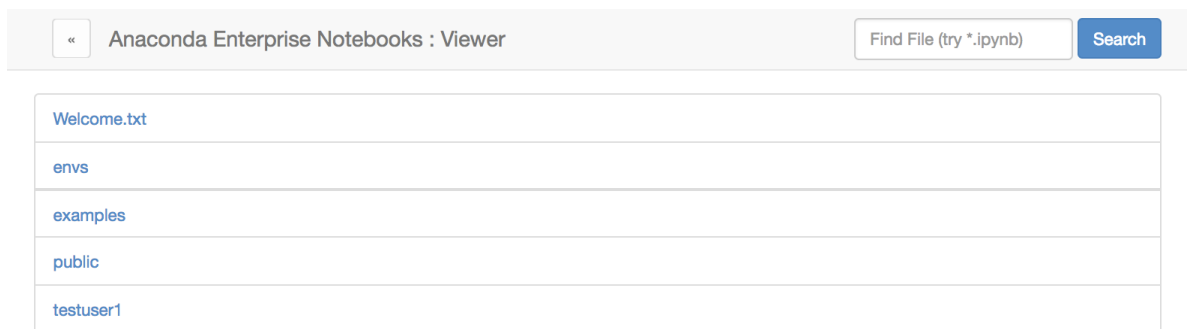
To move between terminal windows, click the **Terminal** tab in the navigation bar, then select the number of the terminal window you want to work in.

## Using Viewer

The Viewer application displays a static, view-only version of your notebooks and other text files by rendering the text files directly and using the NBConvert tool to convert notebooks to static HTML.

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Viewer icon.

Viewer opens in a new browser window:



4. Click any folder to view its contents, or click any filename to view the file.
5. To search for a file or folder name, type text in the Find File box, then press the Enter key. This is not a full-text search, but wildcards are permitted.

## Using JupyterLab

JupyterLab is an early alpha-preview of the next generation of the Jupyter Notebook. It is included so that you can take a tour and play with its capabilities.

CAUTION: JupyterLab is experimental. It is not yet intended for production work.

JupyterLab does not include any of the notebook extensions that are available in the *Jupyter Notebook app*.

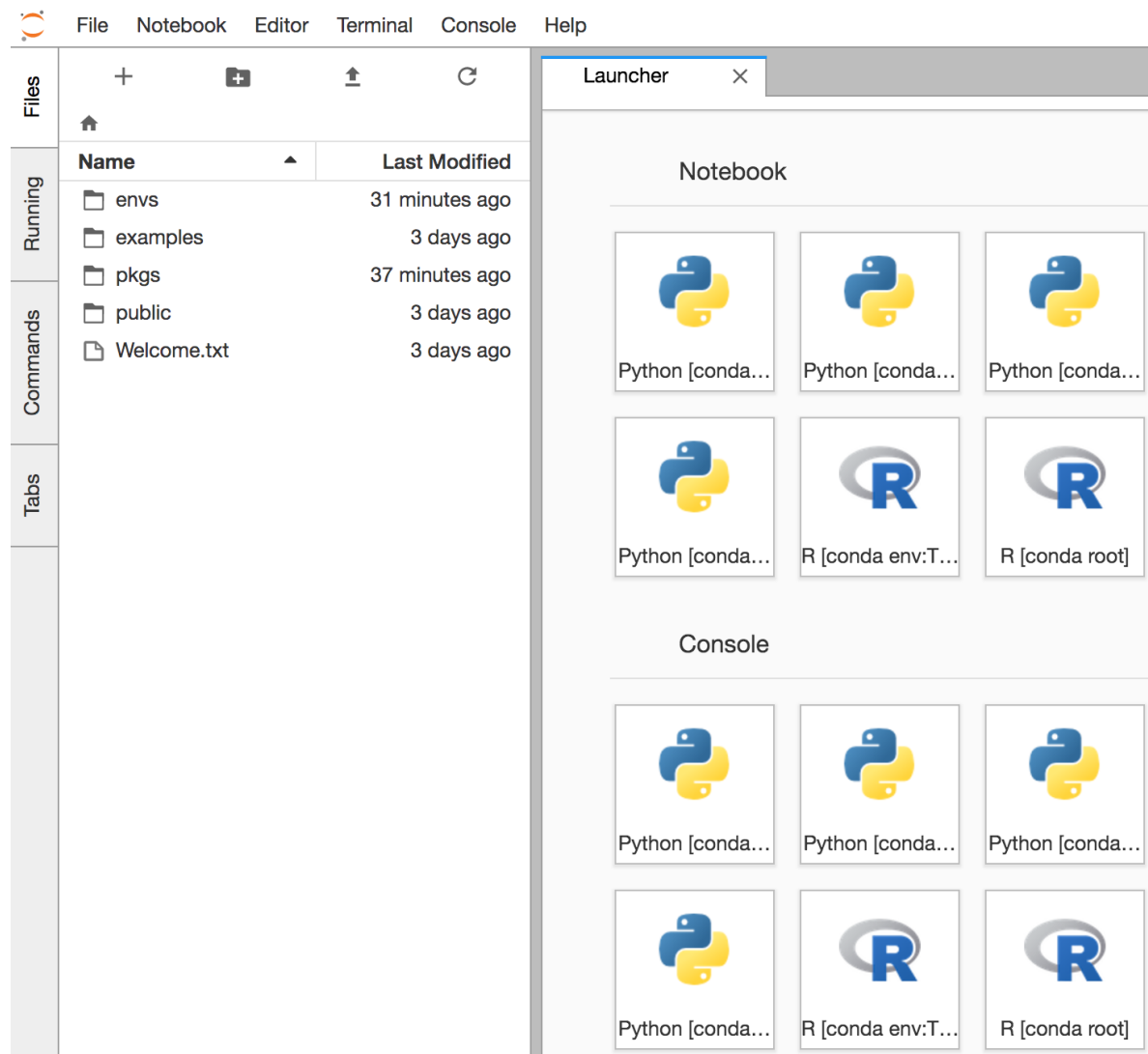
For more information about JupyterLab, see the [documentation](#).

You can also download and print a `Jupyter cheat sheet` on using Jupyter Notebook and the new JupyterLab.

To open JupyterLab:

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click on the JupyterLab icon.

JupyterLab opens in a new browser window:



Experiment with the application on your own, using the **Notebook**, **Editor**, **Terminal** and **Console** menus.

To review a guided tour of all of the features JupyterLab will contain when it is ready for production, click the Take a tour link in the right pane.

### Using Terminal

The Terminal application is a simple bash shell terminal that runs in your browser:

```
+ 1 bash
(/projects/aen_admin/TestProject/envs/default) ls
envs  examples  pkgs  Presentnotebook.ipynb  public  Sample.ipynb  Welcome
(/projects/aen_admin/TestProject/envs/default) █
```

Using Terminal, you can:

- Access your home directory and your project drive.
- Open multiple shells within one instance of Terminal.
- Open multiple instances of Terminal in the same browser window.

1. Log in to AEN.
2. Select a project you want to work on, or create a new project and open it.
3. On the project home page, click the Terminal icon:



Terminal

Terminal opens the project directory in a new browser window.

By default, the project directory is `/projects/username/project-name`.

EXAMPLE: `/projects/TestUser/MyFirstNotebook`

4. To see the physical path of your directory, run the Print Working Directory command `pwd -P`.

TIP: The physical path `-P` is important because project attaches data to the beginning of your virtual path to keep your project files together.

5. To navigate out of your project directory to your home directory, run the command `cd`.
6. To return to your project directory, run the command `cd/projects/username/project-name`.

TIP: If you are new to navigating in a terminal, you may want to use [the Workbench terminal](#), which includes a visual navigation tree in the File Manager.

## Using multiple Terminals

You can open as many terminals as you want.

To open another shell in the terminal, in the upper left of the pane, click the plus + icon.



A corresponding number appears after the plus + icon and 1.

To move to another Terminal, click the corresponding number.

The color of the number tab changes to show which terminal is currently selected.

## Using Jupyter Notebook

The Jupyter Notebook application allows you to create and edit documents that display the input and output of a Python or R language script. Once saved, you can share these files with others.

NOTE: Python and R language are included by default, but with customization, Notebook can run several other kernel environments.

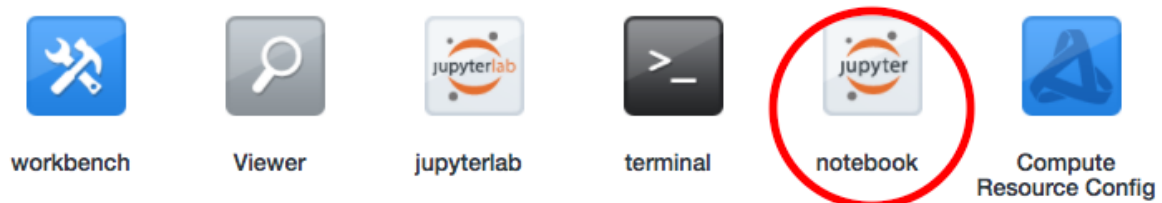
This page provides a brief introduction to Jupyter Notebooks for AEN users.

For the official Jupyter Notebook user instructions, see [Jupyter documentation](#).

For information on the notebook extensions available in AEN, see [Using Jupyter Notebook extensions](#).

## Opening the Jupyter Notebook application

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Jupyter Notebook icon:



Jupyter Notebook opens in a new browser window:



TIP: You can see the same *File Manager* in the Terminal, Workbench, and Viewer applications.

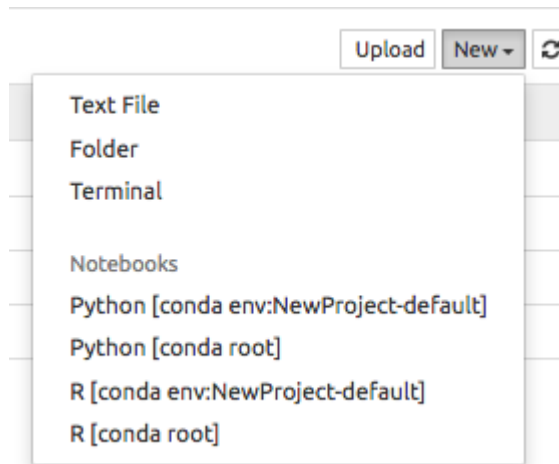
## Using example notebooks

The `Examples` folder in Jupyter Notebook contains several types of Notebook examples created in Python—and one with R language—kernel environments.

Open any example notebook to experiment and see how it works.

## Creating a new Jupyter Notebook

1. At the top right of the **Files** tab, click the New button.



2. Select the kernel environment to create your new notebook in.

NOTE: Customizable Python and R Language kernel environments are automatically created for you during project creation.

- Your project's default conda env kernels are a cloned copy of the root environment. You can customize them and install and delete additional packages.
- Root environment is managed by your Administrator. You cannot make or save any changes to it.



- You can switch between Python, R language and any other custom kernels in the notebook as you work in your notebook. For more information, see [Using the Synchronize Environments extension](#).

The new notebook is saved in the related project directory and displayed.

## Using Jupyter Notebook extensions

The following extensions are available for use with AEN's Jupyter Notebook application:

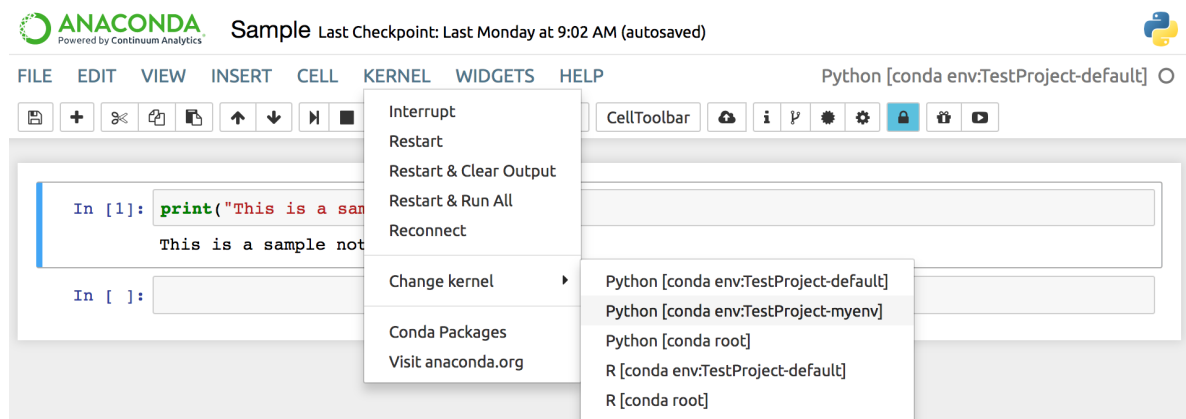
- [Synchronize Environments](#) with Jupyter from the **Kernel** menu.
- [Locking](#) adds multi-user capability from the Lock button.
- [Revision Control Mechanism \(RCM\)](#) adds Status, Checkout and Commit buttons.
- [Conda environment and package management](#) tab.
- [Conda notebook](#) adds conda management inside Notebook from the Kernel > Conda Packages menu option.
- [Anaconda Cloud integration](#) from the Publish to cloud button.
- [Notebook Present](#) turns your notebook into a PowerPoint-style presentation.

## Using the Synchronize Environments extension

The Synchronize Environments extension allows you to apply a Python, R language or any other custom environment inside your current notebook session, without needing to start up several Notebook instances using each of the selected environments.

To change environments:

1. Open the **Kernel** menu.



2. Click the Change kernel option.
3. From the list, select the environment to use.

NOTE: In AEN 4.1+ the default kernel for projects is `default`. In versions prior to 4.0, the default kernel for projects is `root Python`.

## Using the Locking extension

Multi-user capabilities are engaged in AEN when multiple users work in the same notebook file.

The Locking extension allows you to lock a notebook to prevent multiple team members from making changes at the same time. Notebooks are automatically locked when you open them.

If team members open a notebook and make changes while it is locked, their save capability is disabled, and they cannot overwrite the notebook.

To override the lock, they must actively take control of the locked file by clicking the Lock icon in the Notebook menu bar:



NOTE: This is a soft locking model. Team members can choose to override your lock to save their work. If you give team members write access to your files, confirm that they understand that they should never unlock your file unless they are making meaningful, non-destructive team contributions.

## Using the Revision Control Mechanism extension

The Revision Control Mechanism (RCM) Jupyter Notebook extension provides simple version control for notebook files. It uses the internal Jupyter functionality to perform tasks.

On the surface, RCM uses a simple linear model, but beneath that is a more complex git-based branching model. To prevent merge conflicts, this model uses a “latest wins” policy as its main merging strategy.

The RCM Jupyter Notebook extension adds four buttons:



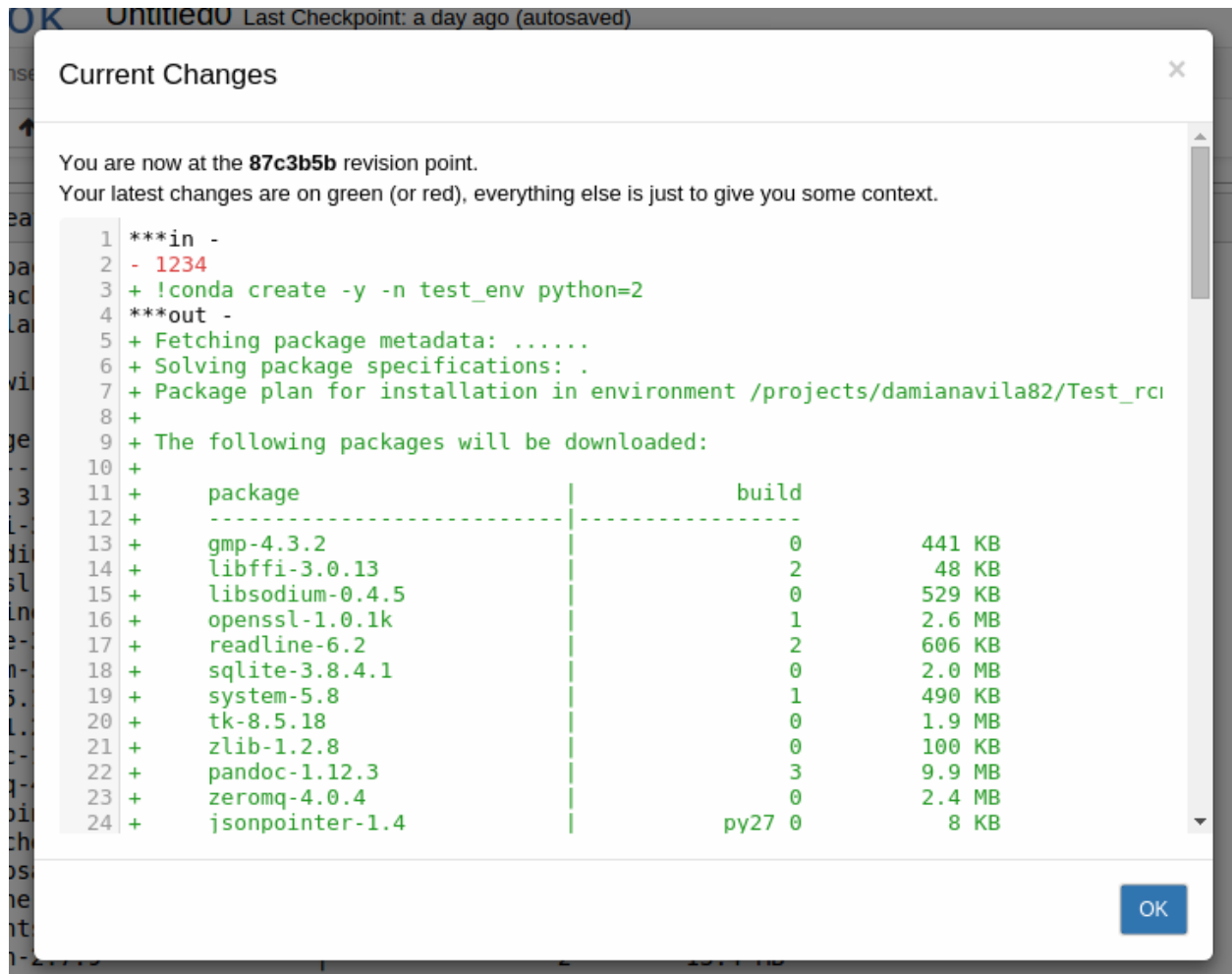
- *Status.*
- *Checkout.*
- *Commit.*
- *Configure git.*

TIP: If you do not see the RCM buttons, see *Setting up RCM for the first time.*

## Using the Status button

The Status button allows you to see what revision you are on.

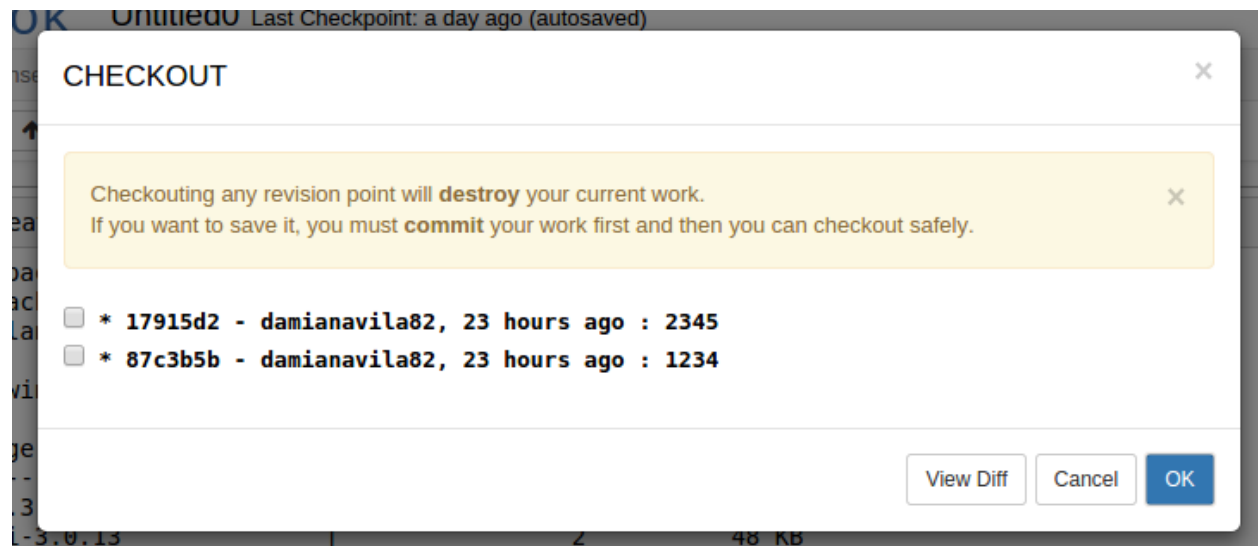
Clicking the Status button displays:



### Using the Checkout button

The Checkout button allows you to view a list of the previous revision points, check out a previous revision or compare differences between revisions.

Clicking the Checkout button displays:



## Checking out a previous revision

To checkout a notebook at an earlier revision point:

1. Select the checkbox next to the desired revision point.
2. Click the OK button.

A copy of the notebook at the selected revision point is displayed.

NOTE: If you have not saved the work in your current project window, checking out a previous revision destroys it. If in doubt, click the Cancel button and save your work before reverting to a previous revision point.

## Comparing revisions

To compare 2 previous revision points:

1. Select the checkboxes of the revision points to compare.
2. Click the View Diff button.

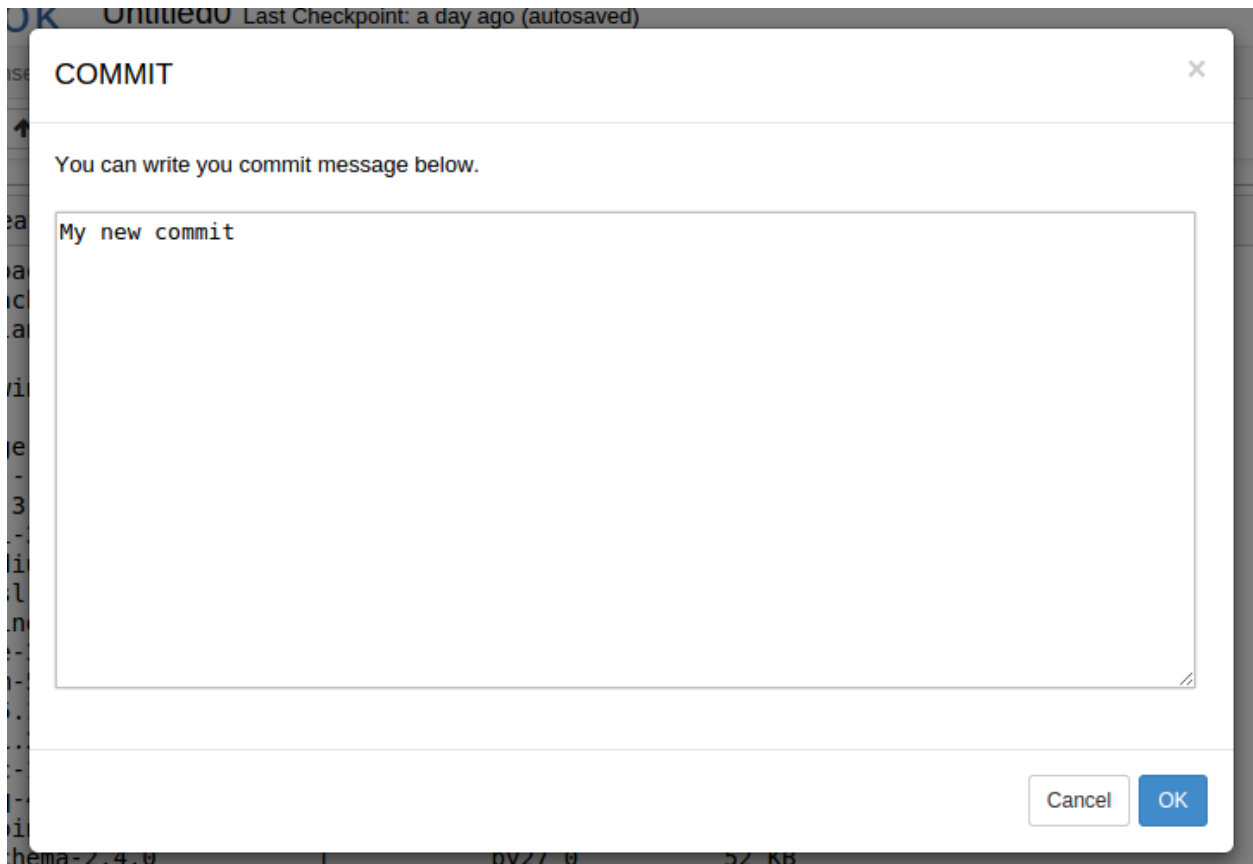
A side-by-side comparison is displayed.

Click the Cancel button to close the differences window.

## Using the Commit button

The Commit button allows you to save or persist the current changes, keeping a permanent record of any changes that are introduced, so that you do not have to worry about losing important data.

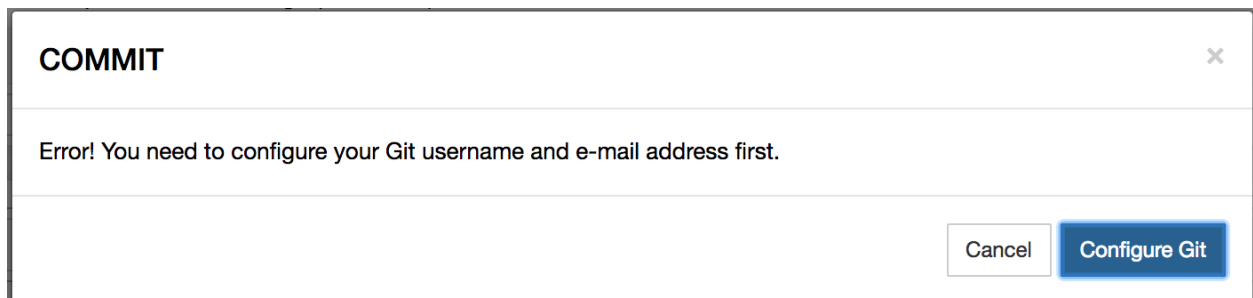
Clicking the Commit button displays:



1. Enter a description of the changes in the commit as a reminder in case you need to revert back to it later.
2. Click the OK button.

Your changes are committed and a revision point is created.

If Git user name and user email are not set, the following window appears:



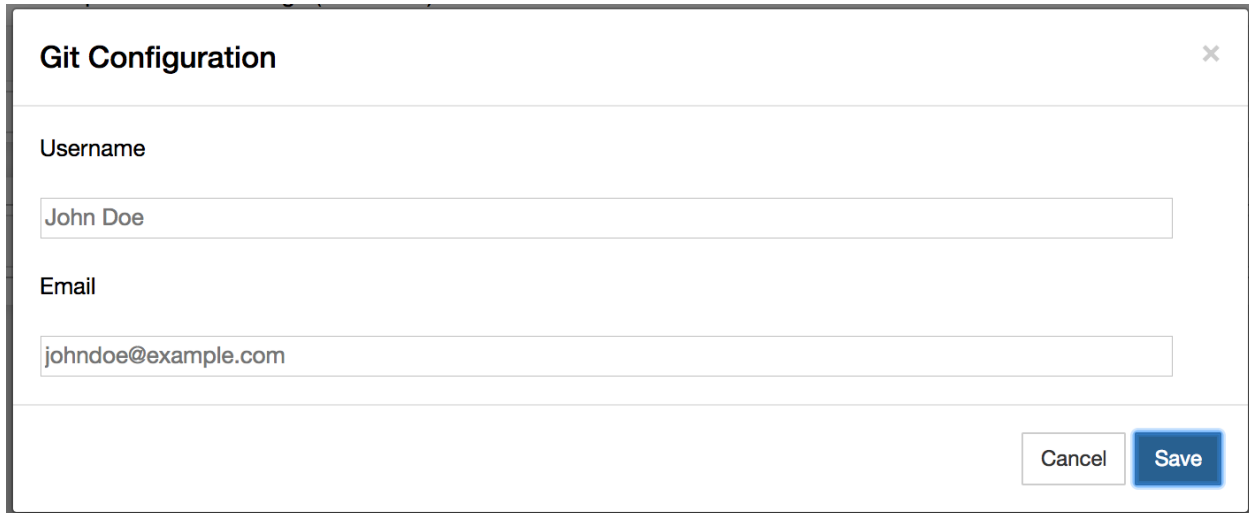
Configure Git and then try to commit again.

TIP: You can roll back committed changes by *checking out a previous version*.

## Using the Configure git button

The Configure git button allows you to configure Git user name and email values.

After clicking the Configure Git button, the following window appears:

A screenshot of a 'Git Configuration' dialog box. The dialog has a title bar with a close button (X) in the top right corner. Inside, there are two sections: 'Username' and 'Email'. The 'Username' section has a text input field containing 'John Doe'. The 'Email' section has a text input field containing 'johndoe@example.com'. At the bottom right of the dialog, there are two buttons: 'Cancel' and 'Save'.

Enter user name and e-mail address. Click the OK button when finished.

## Setting up RCM for the first time

If you do not see the RCM buttons in your notebook:

1. Go to the project home page.
2. Open the Terminal application.
3. In the terminal window, run:

```
git config --global user.email "you@example.com"  
git config --global user.name "Your Name"
```

NOTE: Change `you@example.com` to your email address, and `Your Name` to your actual name.

4. Open Jupyter Notebook and refresh the page.

## Using the NBConda extension

The NBConda extension adds a Conda tab to your notebook for easy environment and package management from within the notebook.



Files Running IPython Clusters **Conda**

2 Conda environments



Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default

1143 available packages

Search...



376 installed packages in environment "default"



Name	Version	Channel
<input type="checkbox"/> _license	1.1	defaults
<input type="checkbox"/> _nb_ext_conf	0.4.0	defaults
<input type="checkbox"/> abstract-rendering	0.5.1	defaults
<input type="checkbox"/> accelerate	2.3.1	defaults
<input type="checkbox"/> accelerate_cudalib	2.0	defaults
<input type="checkbox"/> aen-app-jupyterlab	0.4.0	wakari

Name	Version	Build	Available
<input type="checkbox"/> _license	1.1	py27_1	
<input type="checkbox"/> alabaster	0.7.10	py27_0	
<input type="checkbox"/> anaconda	custom	py27_0	
<input type="checkbox"/> anaconda-client	1.5.1	py27_0	
<input type="checkbox"/> anaconda-project	0.6.0	py27_0	
<input type="checkbox"/> asn1crypto	0.22.0	py27_0	

Click the Conda tab in a notebook to display:

- Conda environments list—export, clone or delete an environment in the action column, or create a new environment by clicking the plus + icon. Switch to an environment by clicking it; packages for that environment are displayed below in the installed packages list.
- Conda available packages list—for the selected environment in currently configured channels, search for packages and click a package name to install it.
- Installed packages list—in the selected environment, check for updates, update or delete selected packages.

**TIP:** While you are in any notebook, you can jump to the NBConda extension for that environment by clicking the **Kernel** menu and selecting Conda Packages:

iris Last Checkpoint: a minute ago (unsaved changes)

FILE EDIT VIEW INSERT CELL KERNEL WIDGETS HELP
Python [conda env:TestProject-default] ○

```

In [ ]: import pandas as pd
        df = pd.read_csv("irirs.csv")
        df

```

## Using the Conda Notebook extension

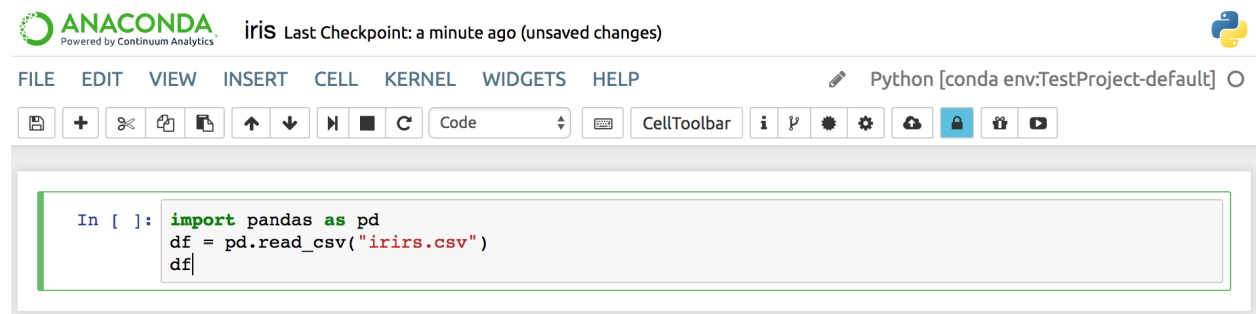
The Conda Notebook extension adds the Conda Packages option to the **Kernel** menu.

Select the Conda Packages option to display a list of all of the Conda packages that are currently used in the environment associated with the running kernel, as well as any available packages.

From the Conda Packages option, you can perform all of the tasks available in the *Conda tab*, but they will only apply to the current environment.

## Using the Anaconda Cloud extension

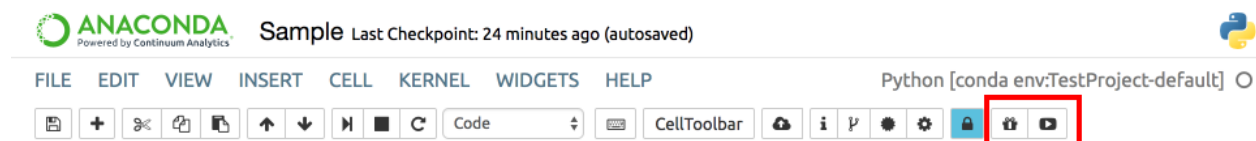
The Anaconda Cloud extension adds the Cloud button to your notebook, allowing you to easily upload your notebook to Cloud:



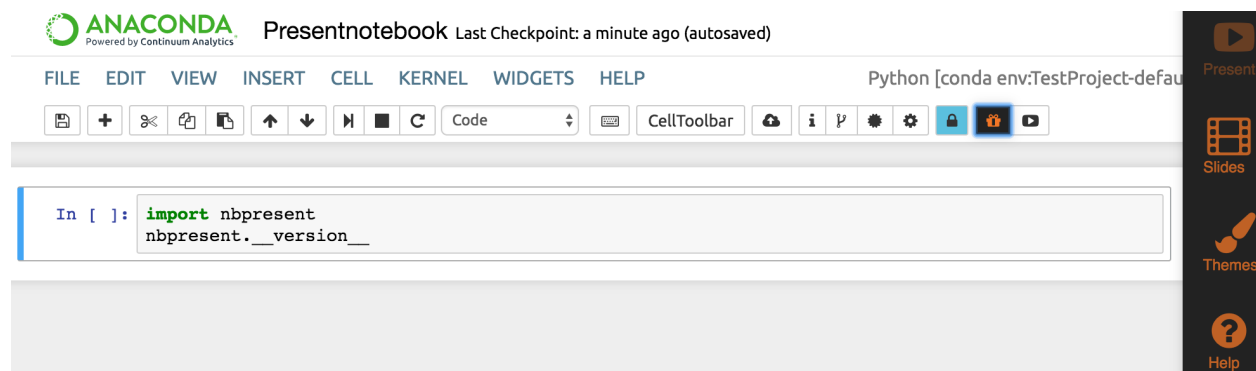
## Using the Notebook Present extension

The AEN Notebook Present extension turns your notebook into a Microsoft PowerPoint-style presentation.

The Present extension adds 2 buttons to Notebook's menu bar—Edit Presentation and Show Presentation:



To begin using Notebook Present, click the Edit Presentation button.



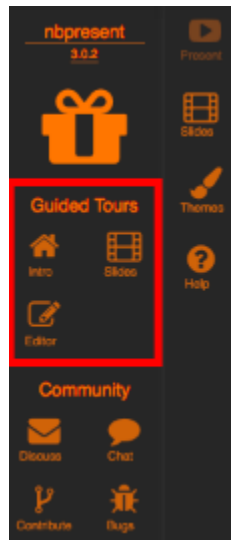
The Notebook Present sidebar is displayed on the right side of your browser:

Clicking each icon changes the menu and layout of your notebook.

Clicking the Help icon displays 3 tours—demonstrations—of the main features of Present:



- *Intro tour.*
- *Slides tour.*
- *Editor tour.*



Select one of the tours to view a short presentation regarding the specifics of that feature.

### Intro tour

The Intro tour is a 2-minute presentation that explains how to use the main features of Present, including a description of each button's purpose.

NOTE: At any time, you can pause, go back to the previous or move forward to the next slide.

The following information is covered in the Intro tour:

- App Bar—When Authoring, this allows you control the content and style of your presentation. It also can be used to activate several keyboard shortcuts for editing:

## Keyboard shortcuts



The Jupyter Notebook has two different keyboard input modes. **Edit mode** allows you to type code/text into a cell and is indicated by a green cell border. **Command mode** binds the keyboard to notebook level actions and is indicated by a grey cell border with a blue left margin.

Mac OS X modifier keys:

: Command

: Control

: Option

: Shift

: Return

: Space

: Tab

### Command Mode (press to enable)

: find and replace

: previous slide

: next slide

: next slide

: enter edit mode

: open the command palette

: run cell, select below

: run selected cells

: run cell, insert below

: to code

: to markdown

: extend selected cells above

: extend selected cells above

: extend selected cells below

: extend selected cells below

: insert cell above

: insert cell below

: cut selected cells

: copy selected cells

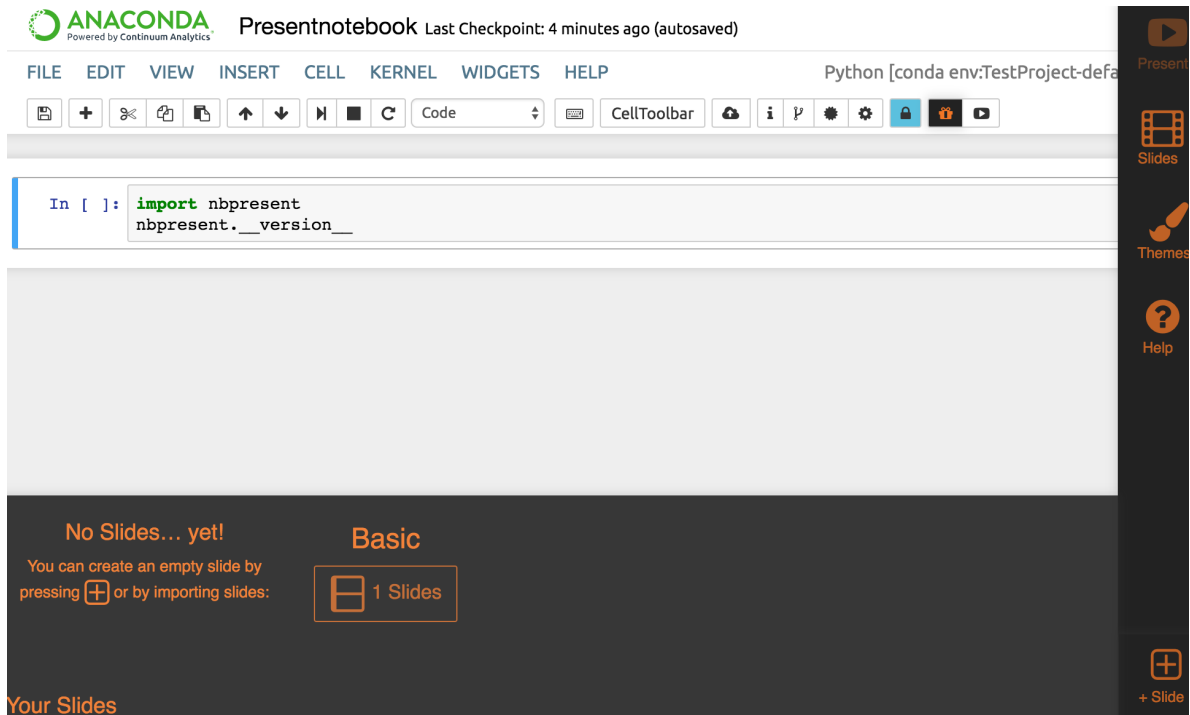
: paste cells above

: paste cells below

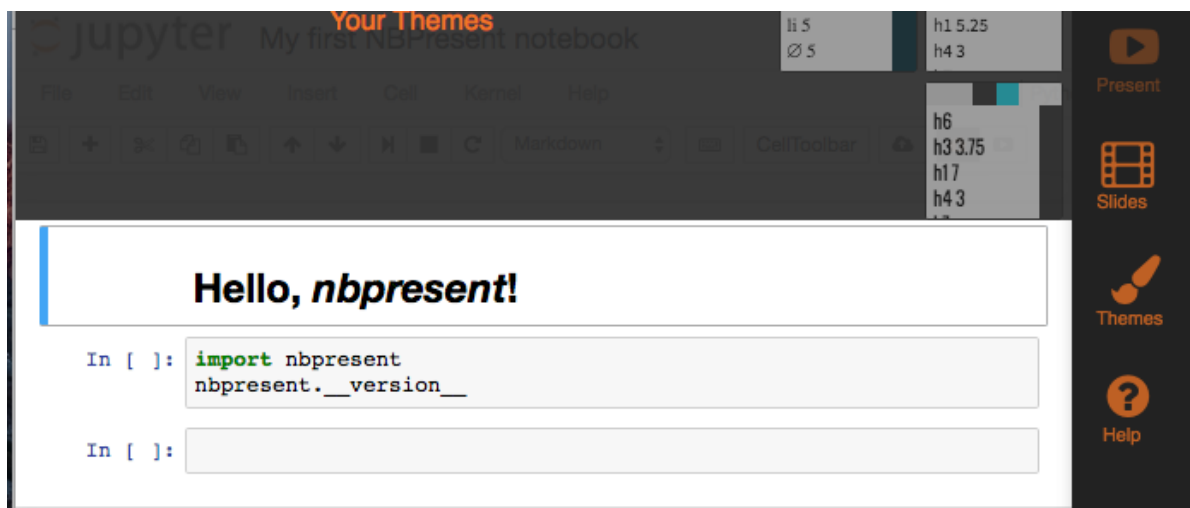
: undo cell deletion

Close

- **Stop Authoring**—Clicking the Edit Presentation button again stops Authoring, and removes all keyboard shortcuts.
- **Show Presentation**—If you just want to run your presentation without using any Authoring tools, just click the Show Presentation button.
- **Presenting/Authoring**—Once you've made some slides, start Presenting, where you can use most Notebook functions with the Theme we have defined, as well as customize slides on the fly.
- **Slides button**—Slides, made of Regions linked to Cell Parts are the bread and butter of any presentation, and can be imported, created, linked, reordered, and edited here.



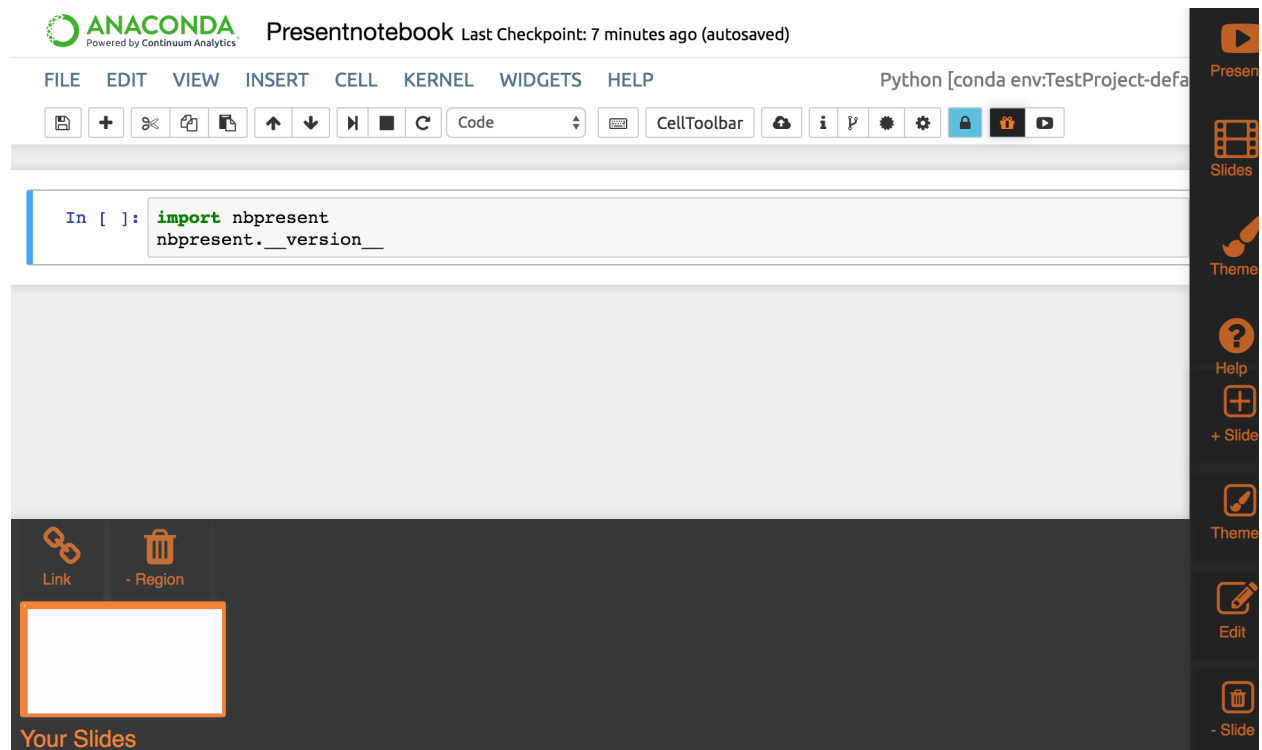
- Theming—Theming lets you select from existing colors, typography, and backgrounds to make distinctive presentations. The first theme you select will become the default, while you can choose custom themes for a particular slide, like a title.



- Saving—Whenever you save your Notebook, all your presentation data will be stored right in the Notebook `.ipynb` file.
- Downloading—After you've made a presentation, you can download it as an HTML page by choosing Download → Download As: Presentation (.html) in the menu.
- Help—Activate Help at any time to try other tours, connect with the Present developers and community, and other information.

## Slides tour

Slides make up a presentation. Clicking Slides toggles the sorter view and the Slide Toolbar on and off:



The Slides tour explains how to create and manage slides, including the following information:

- Slide Toolbar—Create a new slide. Clicking + Slide will offer some choices for creating your new slide.
- Import—The quickest way to create a presentation is to import each cell as a slide. If you’ve already created slides with the official slideshow cell toolbar or RISE, you can import most of that content.
- Template Library—You can create a presentation from an existing template.
  - Reuse Slide as Template—You can create a presentation based on an existing slide.
  - Simple Template—A common template is the Quad Chart, with four pieces of content arranged in a grid.
- Region—The Quad Chart has four Regions. To select a region, click it.
  - Link a Region to a Cell Part—Each Region can be linked to a single Cell Part using the Link Overlay, which shows all of the parts available.
    - \* Cell Part: Source (blue)—Source, such as code and Markdown text.
    - \* Cell Part: Outputs (red)—Outputs, such as rich figures and script results.
    - \* Cell Part: Widgets (purple)—Jupyter widgets, interactive widgets that provide both visualization and user input.
    - \* Cell Part: Whole (orange)—Finally, a Whole Cell, including its Source, Widgets and Outputs can be linked to a single region.
  - Unlink a region from a Cell Part—Unlinking removes the connection between a region and a cell part, without deleting either one.
  - Region: Trashing—Trashing a Region permanently deletes it, without affecting any linked Cell Part.

- Part Thumbnail—We'll try to draw a part thumbnail. It can only be reliably updated when a linked Cell Part is on-screen when you mouse over it, but you should usually be able to get an idea of what you're seeing. The colors of the regions correspond to the cell types.
- Presenting—Clicking the Present button while editing brings up the Presenter with editing mode still enabled:
  - Linked inputs and widgets are still interactive.
  - Go forward—Click to go to the next slide
  - Go back—Click to go back to the previous slide
  - Go back to the beginning—Click to go back to the first slide
  - My work is done here—Click to go back to the Notebook.

## Editor tour

Once you've made a few slides, you'll likely want to customize them. The Editor tour explains how to edit your notebook, including the following information:


- Editing Slides—Activate the Slide Editor by double-clicking it, or by clicking Edit Slide.
- Region Editor—Click to drag Regions around and resize them.
- Region Tree—Reorder Regions and see the details of how Regions will show their linked Parts.
- Add Region—Add new regions.
- Attribute Editor—Edit the properties of a region.
- Data Layouts—In addition to manually moving regions, you can apply these layouts to automatically fill your slides.
- More Regions—Add more regions—with a weight of 1.
- Tree Weight—Make a Region bigger or smaller, based on its relative weight.
- 12 Grid—A compromise between the Free and Treemap layouts, the 12 Grid option rounds all of the values in a layout to a factor of 12.

## Using Compute Resource Configuration

The Compute Resource Configuration (CRC) application displays information about the current project and allows you to set a custom project environment and view and manage your other AEN applications, including stopping, starting, restarting and viewing the logs of each.

The CRC application screen contains 3 sections:

- *Info.*
- *Conda environment.*
- *Running apps.*

 ANACONDA

Info

Hostname

davila-aen-test

Project Home

/projects/testuser1/demo

Project RC file

/projects/testuser1/demo/.projectrc

Conda Environment

/projects/testuser1/demo/envs/default

Setting the default environment for this project will affect all users by modifying the `.projectrc` file.  
All running apps will be shutdown.  
Make sure **No one working on this project** has any unsaved documents!

Set Project Environment

Running Apps

User	Application	Status	Last Seen	Terminate	Relaunch	Logs
testuser1	terminal	running	1 hours ago	<div>⏻ Terminate</div>	<div>🔄 Relaunch</div>	<div>📄</div>

Info

The Info section displays:

- Hostname—IP address of the host computer.
- Project Home—File path to the project home.
- Project RC file—File path to the project runtime configuration file `.projectrc`. This file is sourced when a user opens any AEN application. It sets several AEN internal environment variables, sets up the project environment and sets additional user environment variables for the project.

1892

Chapter 2. Capabilities

## Conda environment

This section displays the path to the default conda environment.

**CAUTION:** Changing the default environment will affect all users. Be sure that no team members have any unsaved documents before changing the project environment.

To change the default conda environment location:

1. Edit the path to point to your preferred conda environment.
2. Click the Set Project Environment button.

Your `.projectrc` file is modified.

## Running apps

The Running Apps section displays a list of users and the applications that are in use, as well as when the app was last modified.

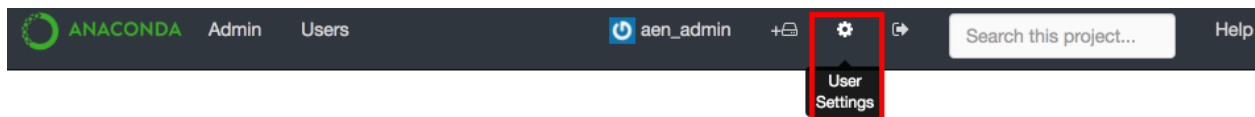
To terminate any individual application, click the Terminate button.

To stop and re-launch any individual application, click the Relaunch button.

To review the run logs of any active application, which may be useful for troubleshooting, click the Logs button.

## Managing your account

To access your account information, click the User Settings icon in the AEN navigation bar:



## Updating your public profile

Your public profile is made up of a name, a personal URL, your company and location.

1. In the left navigation pane, click the **Public Profile** tab.
2. To update your profile picture, create a [Gravatar](#) that is associated with the email address you used to create your AEN account. The gravatar will automatically appear.

## Changing your password

1. In the left navigation pane, click the **Account Settings** tab.

Deleting your AEN account

- 1. In the left navigation pane, click the **Account Settings** tab.

Viewing account operations

- 1. In the left navigation pane, click the **Security Log** tab to view a list of operations performed on your account.

# Settings

Change your account and profile settings.

Public Profile

Account Settings

Security Log

Applications

Security Log

	aen_admin	oauth.authenticate	2017-09-25 04:52:06.713000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.954000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.720000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.490000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.259000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.033000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:57.802000+00:00

- 2. For more information about an operation, click the Eye icon to the left of the the operation name.

Registering an application

If you want to create an application for AEN or have already done so, you must register your application.

- 1. In the left navigation pane, click the **Applications** tab.

# Settings

Change your account and profile settings.

Public Profile

Account Settings

Security Log

Applications

Developer Applications

Register New Application

These are applications you have registered to use the Anaconda Enterprise Notebooks API.

Gateway ()

Authorized applications

Gateway ()

revoke

- 2. Click the Register New Application button to open a form for registering your application.



## Advanced tasks

Advanced tasks are best-suited for users who are comfortable working in a Terminal.

## Working with environments

AEN runs on conda, a package management system and environment management system for installing multiple versions of software packages and their dependencies and switching easily between them.

A conda environment usually includes 1 version of Python or R language and some packages.

The ability to have a custom project environment is one of the most powerful features of AEN. Your project environment is integrated so that all of your project applications recognize it and all of your team members have access to it.

This section contains information about:

- *Creating a default conda environment using the Jupyter Notebook application*
- *Creating a default conda environment using the Jupyter Notebook application*
- *Using your conda environment in a notebook*
- *Customizing your conda environment*
- *Installing a conda package using Terminal*
- *Installing a conda package using Notebook*
- *Uninstalling a conda package*

NOTE: This conda environments guide is specific to AEN. For full conda documentation—including cheat sheets, a conda test drive, and command reference—see the [conda documentation](#).

## Creating a default conda environment using the Jupyter Notebook application

You can create, activate, and install packages and deactivate environments from within the Notebook menu bar.

To install from the Notebook menu bar:

1. Click the **Conda** tab and select the plus sign icon.
2. Search for `numpy` in the package search box.
3. Select `numpy` from the search results.



Files
Running
IPython Clusters
Conda

3 Conda environments

Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default
	myenv		/projects/aen_admin/TestProject/envs/myenv

2 available packages

→

39 installed packages in environment "myenv"

Name	Version	Channel
<input checked="" type="checkbox"/> numpy	1.13.1	defaults
<input type="checkbox"/> numpydoc	0.7.0	defaults

Name	Version	Build	Available
<input type="checkbox"/> anaconda-client	1.6.3	py36_0	
<input type="checkbox"/> certifi	2016.2.28	py36_0	
<input type="checkbox"/> clyent	1.2.2	py36_0	
<input type="checkbox"/> decorator	4.1.2	py36_0	
<input type="checkbox"/> ipykernel	4.6.1	py36_0	
<input type="checkbox"/> ipython	6.1.0	py36_0	

1. Click the Install button.

The environment is added to the project's `env` directory.

## Creating a default conda environment using Terminal

In AEN, all new environments created with conda automatically include Python, Jupyter Notebooks and pip. You can specify any other packages you want included in your new environment.

**TIP:** By default, conda creates a new environment in your project's `env` directory—so that all team members have access to the environment. For information about limiting your team member's read, write or execute permissions, see [Workbench](#).

To create a new environment within your AEN account, run the command `conda` in a [Terminal](#) application.

**EXAMPLE:** To create a new environment named `WeatherModel` that contains Python, NumPy, pip and Jupyter Notebooks in your project's `env` directory:

1. Log in to AEN.
2. Open a project.
3. On the project home page, click the Terminal application icon to open a Terminal.
4. Create the environment:

```
conda create -n WeatherModel numpy
```

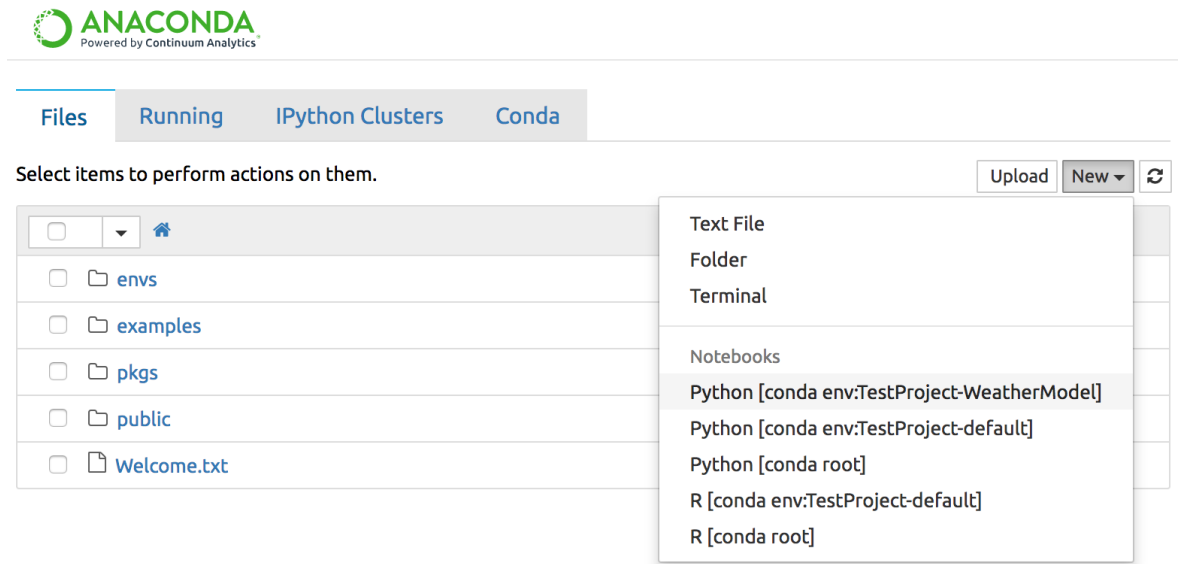
**TIP:** Python, pip and Jupyter Notebooks are automatically installed in each new environment. You only need to specify NumPy in this command.

5. Make the new environment your default:

```
source activate WeatherModel
```

6. To use your new environment with Jupyter Notebooks, open the Notebook application.
7. Click the New button to open a new notebook. In the drop-down menu under Notebooks, the environment you just created is displayed.
8. To activate that environment, select it.

The environment is added to the project's `env` directory.



NOTE: You can deactivate the new environment when you are finished with your notebook by opening the Terminal application and running the command `source deactivate`.

## Using your conda environment in a notebook

Whether you have created an environment using conda in a terminal, or from the **Conda** tab in a notebook, you can use the conda environment in the same way.

When working in a notebook, to select the environment you have created and want to use with that notebook, in the **Kernel** menu, select Change Kernel.

EXAMPLE: If you have an environment named `my_env` in a project named `test1` that includes NumPy and SciPy and you want to use that environment in your notebook, in the **Kernel** menu, select `Python [conda env:test1-my_env]`.

The notebook code will run in that environment and can import NumPy and SciPy functions.

### Customizing your conda environment

If you need a Python package that AEN doesn't include by default, you can install additional packages into your AEN environment.

**TIP:** You cannot install packages into the default Anaconda environment. You must create your own environment before installing a new package into that environment.

AEN is built on Anaconda, so you can install additional Python packages using conda or pip—both of which are included with Anaconda.

### Installing a conda package using Terminal

To install a conda package using the Terminal application:

1. Create and activate the environment using the steps in *Creating a default conda environment using the Jupyter Notebook application*.
2. In your Terminal application, run the command `conda install <packagename>`.

**NOTE:** Be sure to specify the Python version you want when using conda to create the environment, or it will use the same version as root.

**EXAMPLE:**

```
conda create -n mypy3 python=3 numpy scipy
```

A conda environment named mypy3, running on Python 3 and containing NumPy and SciPy is created. All subsequent packages added to this environment will be the Python 3 compatible versions.

### Installing a conda package using Notebook

You can also install the package within your notebook without using the terminal app:

1. From the Notebook application, click the **Conda** tab.
2. Select the environment you wish to use.
3. Search for the package you want to add.
4. Click the Install button.

### Uninstalling a conda package

To uninstall a package using this method, run the command `conda remove <packagename>`.

**NOTE:** Replace <packagename> with the name of the package you are uninstalling.

## Using visualization packages

AEN supports multiple visualization packages for Python and R language.

For Python, the default environment has *Matplotlib* and *Bokeh* installed.

For R language, the default environment has *r-ggplot2* and *r-bokeh* installed.

### Matplotlib

Matplotlib is a Python 2D and 3D plotting and visualization library that produces publication-quality figures in a variety of hardcopy formats and interactive environments across platforms.

To display Matplotlib figures in the output cells of a notebook running the default environment, run:

```
import matplotlib.pyplot as plt
%matplotlib inline
```

Any Matplotlib figures in the notebook are displayed in it's output cells.

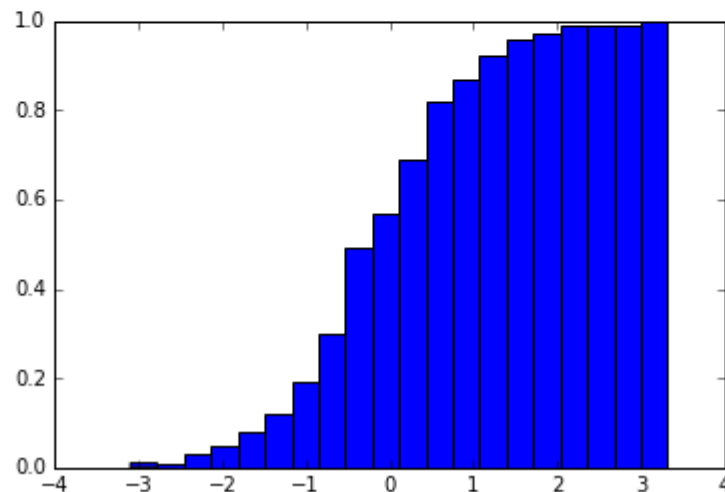
EXAMPLE: The following screenshot is of a cumulative density function (CDF) plot using values taken from a normal distribution:

```
In [1]: import matplotlib.pyplot as plt
%matplotlib inline
```

```
In [2]: import numpy as np

x = np.random.normal(size=100)
```

```
In [3]: plt.hist(x, normed=True, cumulative=True, bins=20);
```



For more information, including a [gallery](#), [examples](#), [documentation](#) and a [list of plotting commands](#), see the [Matplotlib website](#).

## Bokeh

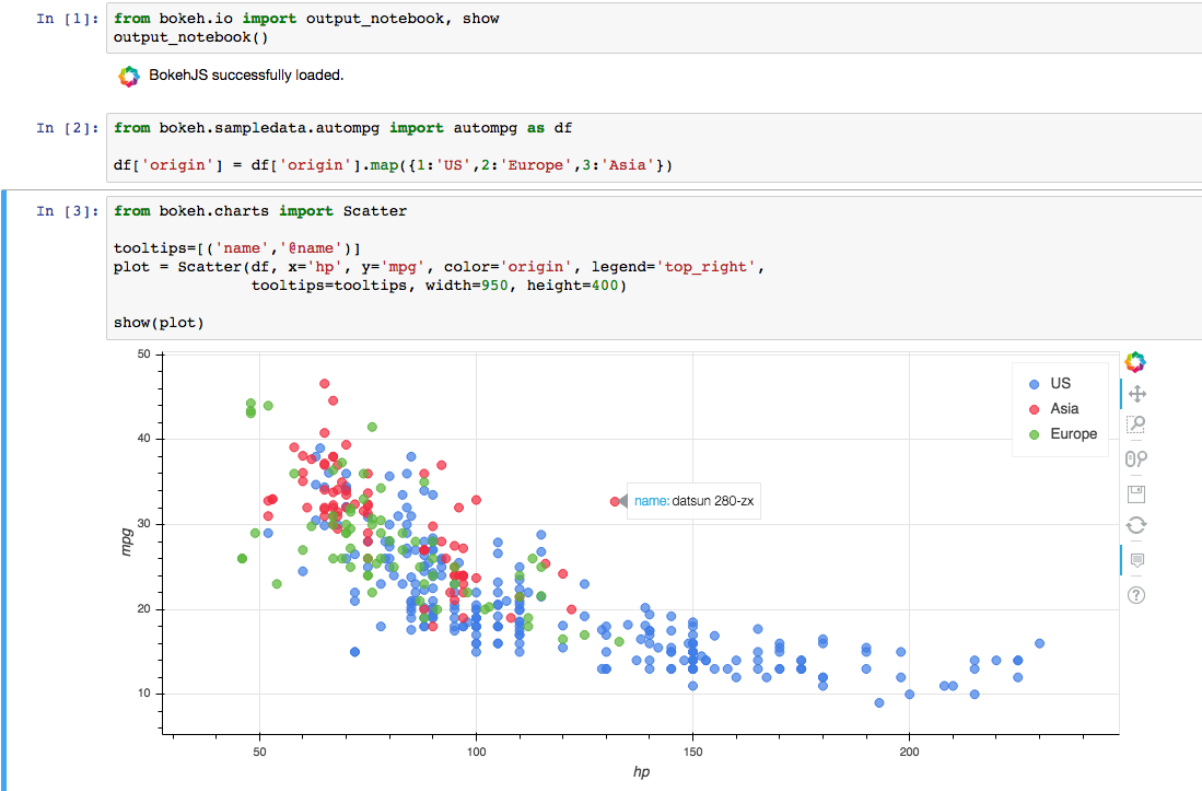
**Bokeh** is an interactive visualization library that targets modern web browsers to provide elegant, concise construction of novel graphics.

To display Bokeh figures in the output cells of a notebook running the default environment, run:

```
from bokeh.io import output_notebook, show
output_notebook()
```

Any Bokeh figures in the notebook are displayed in its output cells.

The following screenshot is of a scatter plot of miles-per-gallon vs. horsepower for 392 automobiles using the `automp` sample dataset:



## ggplot2

**Ggplot2** is a plotting system for R language which is based on the grammar of graphics. Ggplot2 tries to take only the good parts of base and lattice graphics and none of the bad parts.

To use ggplot2 with AEN:

1. Open a new Notebook using the R kernel.
2. Load the ggplot2 library with the following code:

```
library(ggplot2)
```

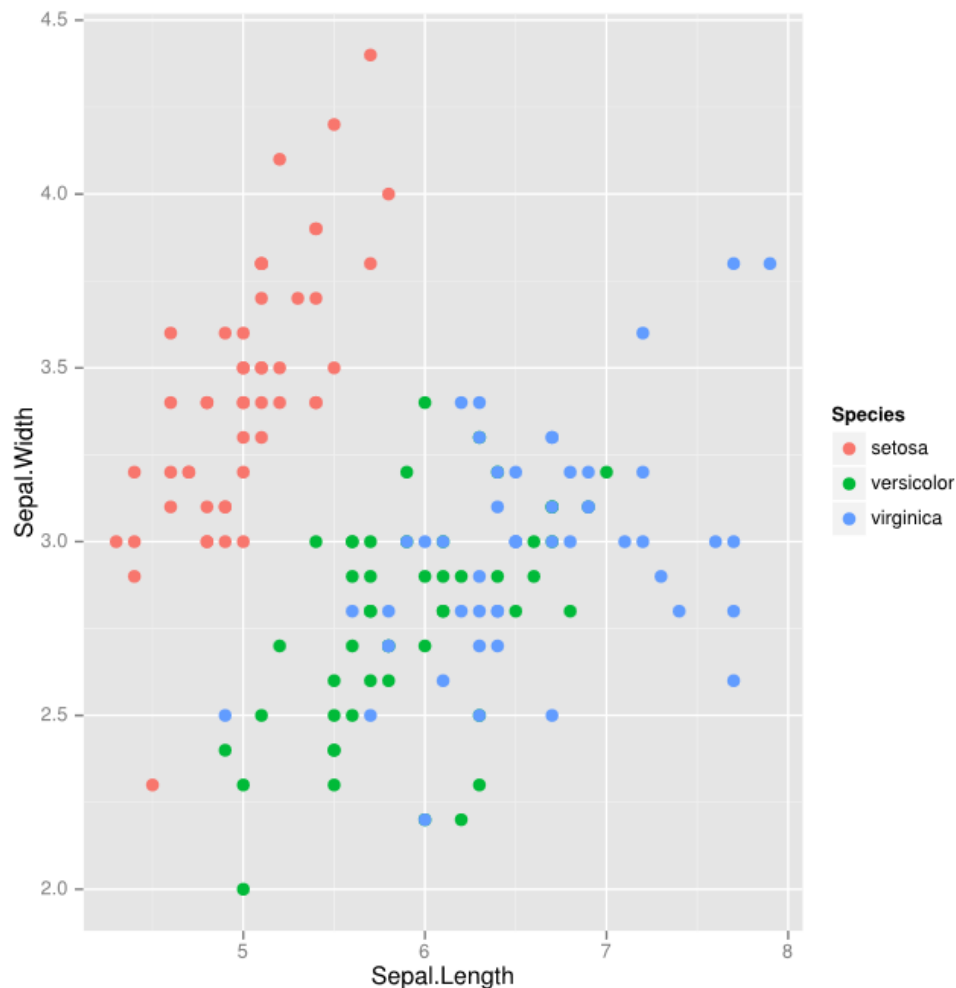
The ggplot2 library is loaded and ready for use in AEN.

The following screenshot is of a scatter plot of sepal width vs sepal length using the `iris` dataset provided by the `dplyr` library:

```
In [5]: library(dplyr)
```

```
In [6]: library(ggplot2)
```

```
In [7]: ggplot(data=iris, aes(x=Sepal.Length, y=Sepal.Width, color=Species)) + geom_point(size=3)
```



## Using environment variables

Some Python packages depend on environment variables for correct operation.

EXAMPLE: Theano requires that the directory containing the CUDA compiler is included in the `$PATH` environment variable in order for GPU acceleration to be enabled.

To change environment variables for all AEN applications, modify the project runtime configuration file `.projectrc`. For more information, see [Using Compute Resource Configuration](#).

`.projectrc` sets several AEN internal environment variables, sets up the project environment and can set additional user environment variables for that project. This file is sourced when a user opens any AEN application—including Jupyter Notebook—and Jupyter kernels will be able to read the included environment variables.

### Cheat sheet

See the [Anaconda Enterprise Notebooks cheat sheet PDF](#) (232 KB) for a single-page summary of the most important information about using AEN.

### Troubleshooting

This troubleshooting guide provides you with ways to deal with issues that may occur with your AEN installation.

#### AEN application not working properly

An AEN application is not working as expected.

#### Cause

There are several reasons an application may not work as expected.

#### Solution

Most AEN application issues can be resolved by following these steps:

1. Refresh the page.
2. If the issue is not resolved, close and open the application.
3. If the issue is not resolved, *stop and restart your project*.
4. If the issue is not resolved, check that you are using the latest version of your web browser—Chrome, Safari, Edge, or Firefox.
5. Log out of AEN.
6. Restart your browser, and log back in.

If you continue to have issues, then please contact your administrator or enterprise support representative.

### Admin guide

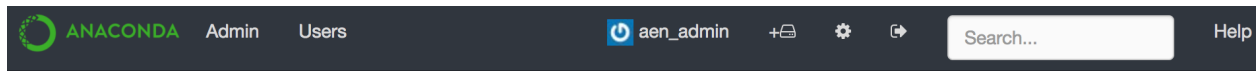
This administrator guide provides information about the administration of an AEN installation.

Most AEN system management is done from the administrative user interface (admin UI). Some advanced tasks are done *using the command line*.

Any AEN user account can be *upgraded to an administrator account* to have both user and administrator privileges.

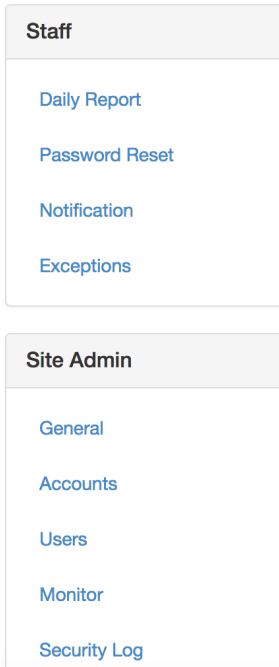
Administrators see two additional links in the AEN Navigation bar—Admin and Users:





# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the system administrator.



All of the other navigation bar items are the same as for a user account.

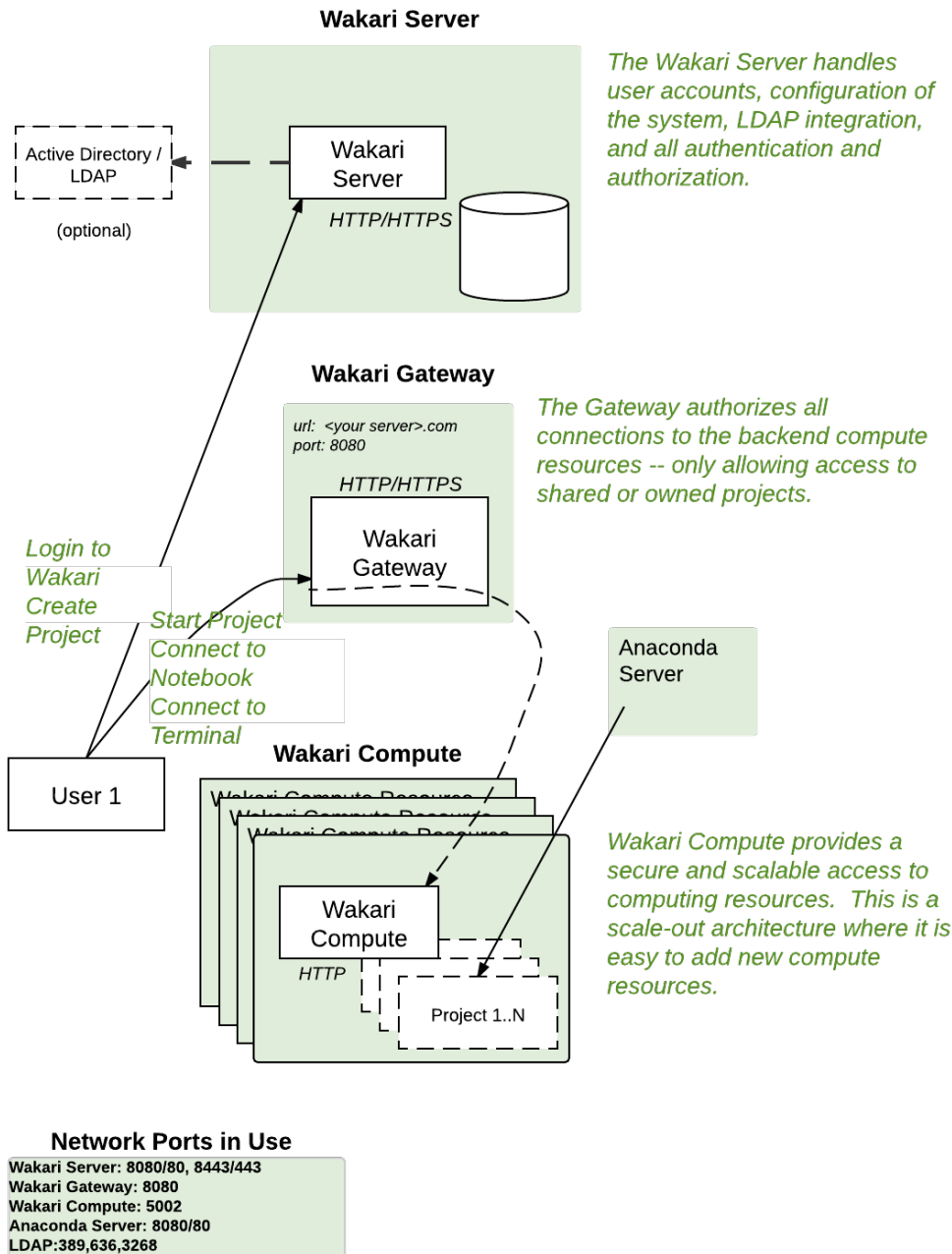
## Concepts

### System overview

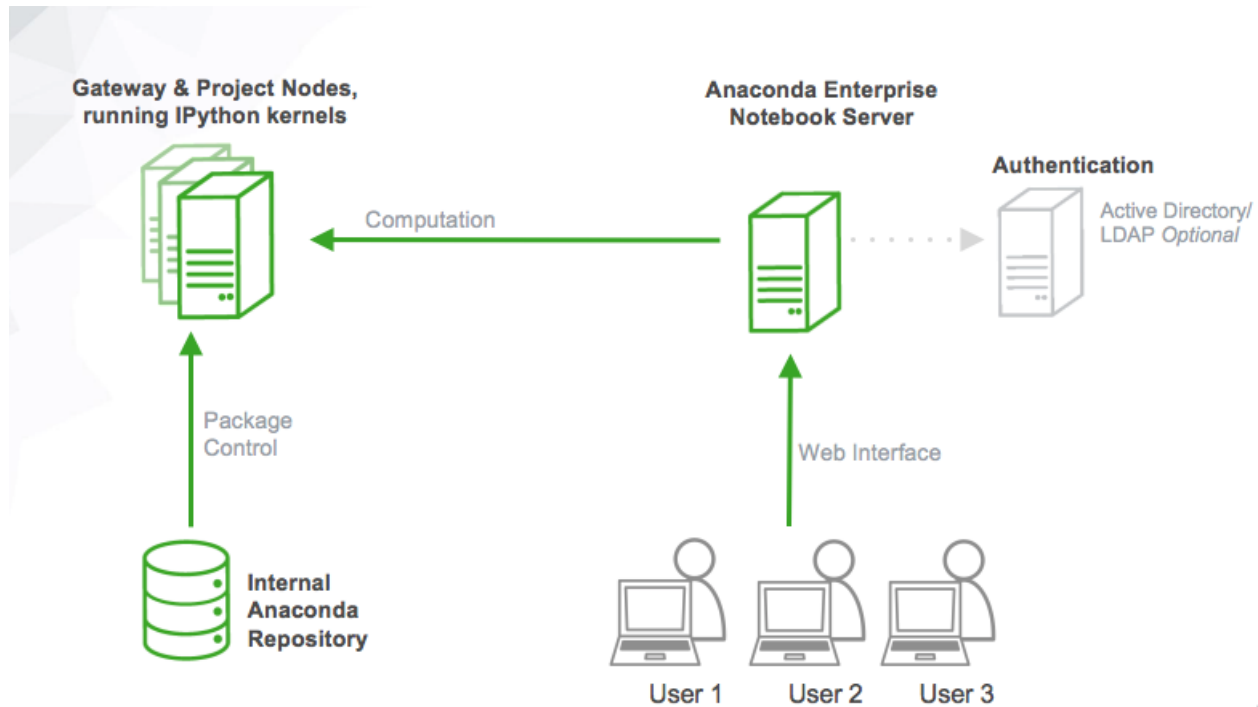
The Anaconda Enterprise Notebooks platform consists of 3 main service groups: AEN server, AEN gateway and AEN compute, which are called “nodes”:

- *Server node*—The administrative front-end to the system where users login, user accounts are stored, and administrators manage the system.
- *Gateway node(s)*—A reverse proxy that authenticates users and directs them to the proper compute node for their project. Users will not notice this node after installation as it automatically routes them.
- *Compute nodes*—Where projects are stored and run.

## Anaconda Enterprise Notebooks



These services can be run on a single machine or distributed across multiple servers.



Organizationally, each AEN installation has exactly 1 server instance and 1 or more gateway instances. Each compute node can only be connected to a single gateway. The collection of compute nodes served by a single gateway is called a **data center**. You can add data centers to the AEN installation at any time.

EXAMPLE: An AEN deployment with 2 data centers, where 1 gateway has a cluster of 20 physical computers, and the second gateway has 30 virtual machines, must have the following services installed and running:

- 1 AEN server instance
- 2 AEN gateway instances
- 50 AEN compute instances (20 + 30)

Nodes must be configured and maintained separately.

## Server node

The server node controls login, accounts, admin, project creation and management as well as interfacing with the database. It is the main entry point to AEN for all users. The server node handles project setup and ensures that users are sent to the correct project data center.

Since AEN is web-based, it uses the standard HTTP port 80 or HTTPS port 443 on the server.

AEN uses MongoDB for its internal data persistency. It is typically run on the same host as the server but can also be *installed* on a separate host.

Server nodes use NGINX to handle the user-facing AEN web interface. NGINX acts as a request proxy for the actual server web-process which runs on a high numbered port that only listens on localhost. NGINX is also responsible for static content.

Server is installed in the `/opt/wakari/wakari-server` directory.

## Server processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manage wakari-worker, multiple processes of wk-server.
user	wakari
configuration	/opt/wakari/wakari-server/etc/supervisord.conf
log	/opt/wakari/wakari-server/var/log/supervisord.log
control	service wakari-server
ports	none

wk-server	details
description	Handles user interaction and passing jobs on to the wakari gateway. Access to it is managed by NGINX.
user	wakari
command	/opt/wakari/wakari-server/bin/wk-server
configuration	/opt/wakari/wakari-server/etc/wakari/
control	service wakari-server
logs	/opt/wakari/wakari-server/var/log/wakari/server.log
ports	Not used in versions after 4.1.2 *

\* AEN 4.1.2 and earlier use port 5000. This port is used only on localhost. Later versions of AEN use Unix sockets instead. The Unix socket path is: `unix:/opt/wakari/wakari-server/var/run/wakari-server.sock`

wakari-worker	details
description	Asynchronously executes tasks from wk-server.
user	wakari
logs	/opt/wakari/wakari-server/var/log/wakari/worker.log
control	service wakari-server

nginx	details
description	Serves static files and acts as proxy for all other requests passed to wk-server process. *
user	nginx
configuration	/etc/nginx/nginx.conf /opt/wakari/wakari-server/etc/conf.d/www.enterprise.conf
logs	/var/log/nginx/woc.log /var/log/nginx/woc-error.log
control	service nginx status
port	80

\* In AEN 4.1.2 and earlier the wk-server process runs on port 5000 on localhost only. In later versions of AEN the wk-server process uses the Unix socket path `unix:/opt/wakari/wakari-server/var/run/wakari-server.sock`.

NGINX runs at least two processes:

- Master process running as root user.
- Worker processes running as nginx user.

## Gateway node

The gateway node serves as an access point for a given group of compute nodes. It acts as a proxy service and manages the authorization and mapping of URLs and ports to services that are running on those nodes. The gateway nodes provide a consistent uniform interface for the user.

NOTE: The gateway may also be referred to as a data center because it serves as the proxy for a collection of compute nodes.

You can put a gateway in each data center in a tiered scale-out fashion.

AEN gateway is installed in the `/opt/wakari/wakari-gateway` directory.

## Gateway processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manages the wk-gateway process.
user	wakari
configuration	/opt/wakari/wakari-gateway/etc/supervisord.conf
log	/opt/wakari/wakari-gateway/var/log/supervisord.log
control	service wakari-gateway
ports	none

wakari-gateway	details
description	Passes requests from the AEN Server to the Compute nodes.
user	wakari
configuration	/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
logs	/opt/wakari/wakari-gateway/var/log/wakari/gateway.application.log      /opt/wakari/wakari-gateway/var/log/wakari/gateway.log
working dir	/ (root)
port	8089 (webcache)

## Compute node(s)

Compute nodes are where applications such as Jupyter Notebook and Workbench actually run. They are also the hosts that a user sees when using the Terminal app or when using SSH to access a node. Compute nodes contain all user-visible programs.

Compute nodes only need to communicate with a gateway, so they can be completely isolated by a firewall.

Each project is associated with one or more compute nodes that are part of a single data center.

AEN compute nodes are installed in the `/opt/wakari/wakari-compute` directory.

Each compute node in the AEN system requires a compute launcher service to mediate access to the server and gateway.

## Compute processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manages the wk-compute process.
user	wakari
configuration	/opt/wakari/wakari-compute/etc/supervisord.conf
log	/opt/wakari/wakari-compute/var/log/supervisord.log
control	service wakari-compute
working dir	/opt/wakari/wakari-compute/etc
ports	none

wk-compute	details
de-scrip-tion	Launches compute processes.
user	wakari
config-uration	/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json /opt/wakari/wakari-compute/etc/wakari/scripts/config.json
logs	/opt/wakari/wakari-compute/var/log/wakari/compute-launcher.application.log /opt/wakari/wakari-compute/var/log/wakari/compute-launcher.log
work-ing dir	/ (root)
control	service wakari-compute
port	5002 (rfe)

Wk-compute loads each of the following configuration files, in this order:

- /etc/wakari/config.json.
- /etc/wakari/compute-launcher-config.json.
- ./compute-launcher-config.json.
- Any configuration file specified by the -c option.

If an option is specified in multiple files, the last one encountered takes precedence.

## Supervisor and supervisord

AEN uses a process control system called “Supervisor” to run its services. Supervisor is run by the AEN Service Account user, usually wakari or aen\_admin.

The Supervisor daemon process is called “supervisord”. It runs in the background and should rarely need to be restarted.

## Service Account

AEN must be installed and executed by a Linux account called the AEN Service Account. The username of the AEN Service Account is called the AEN Functional ID (NFI). The AEN Service Account is created during AEN installation—if it does not exist—and is used to run all AEN services.

The default NFI username is `wakari`. Another popular choice is `aen_admin`.

**WARNING:** The Service Account should only be used for administrative tasks, and should not be used for operating AEN the way an ordinary user would. If the Service Account creates or starts projects, the permissions on the AEN package cache will be reset to match the Service Account, which will interfere with the normal operation of AEN for all other users.

## Anaconda environments

Each project has an associated conda environment containing the packages needed for that project. When a project is first started, AEN clones a default environment with the name “default” into the project directory.

Each release of AEN 4 includes specific tested versions of conda and the conda packages included with AEN. These tested conda packages include Python, R, and other packages, and these tested conda packages include all of the packages in Anaconda.

If you upgrade or install different versions of conda or different versions of any of these conda packages, the new packages will not have been tested as part of the AEN 4 release.

These different packages will usually work, especially if they are newer versions, but they are not tested or guaranteed to work, and in some cases they may break product functionality.

You can use a new conda environment to test a new version of a package before installing it in your existing environments.

If using conda to change the version of a package breaks product functionality, you can use conda to change the version of the package back to the version known to work.

For more information about environments, see [Working with environments](#).

## Projects and permissions

AEN users interact with the system predominantly through [projects](#).

Projects are associated with a single data center within the AEN environment. The team of users includes one owner, which is the user that created the project.

Projects live in the `projectRoot` folder on the compute node—by default, `/projects`.

The project directory is created the first time a project is started. The `start-project` script clones it from `/opt/wakari/wakari-compute/lib/node_modules/wakari-compute-launcher/skeleton`.

Project directory permissions are:

```
owner: rwx, user who created the project
group: rwx, group of the owner
other: --x, to allow access to the Public folder
ACL: rwx for any other team members
```

Files and subdirectories within the project directory have the same permissions as the project directory, except:

- The public folder and everything in it are open to anyone.

- Any files hardlinked into the root anaconda environment—`/opt/wakari/anaconda`—are owned by the root or wakari users.

Project file and directory permissions are maintained by the `start-project` script. All files and directories in the project will have their permissions set when the project is started, except for files owned by root or the `AEN_SRVC_ACCT` user—by default, wakari or `aen_admin`.

The permissions set for files owned by root or the `AEN_SRVC_ACCT` user are not changed to avoid changing the permissions settings of any linked files in the `/opt/wakari/anaconda` directory.

CAUTION: Do not start a project as the `AEN_SRVC_ACCT` user. The permissions system does not correctly manage project files owned by this user.

## Installation

### Installation requirements

#### Hardware requirements

AEN server—At least:

- 2+GB RAM.
- 2+CPU cores.
- 20GB storage.

AEN gateway—At least:

- 2 GB RAM.
- 2 CPU cores.

AEN compute (N-machines)—Configured to meet the needs of the projects. At least:

- 2GB RAM.
- 2 CPU cores.
- 20 GB.

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda env directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

#### Software requirements

- RHEL/CentOS on all nodes. Versions from 6.5 through 7.4 are supported. Other operating systems are supported. However, this document assumes RHEL or CentOS.
- Linux home directories—Jupyter looks in `$HOME` for profiles and extensions.
- Ability to install in AEN directory `/opt/wakari` with at least 10 GB of storage.
- Ability to install in Projects directory `/projects` with at least 20 GB of storage. Size depends on number and size of projects.

NOTE: To install AEN in a different location see [\*Installing AEN in a custom location\*](#).



## Linux system accounts

Some Linux system accounts (UIDs) are added to the system during installation.

If your organization requires special actions, the following list is available:

- mongod (RHEL) or mongod (Ubuntu/Debian)—created by the RPM or deb package.
- elasticsearch—created by RPM or deb package.
- nginx—created by RPM or deb package.
- AEN\_SRVC\_ACCT—created during installation of AEN, and defaults to wakari.
- ANON\_USER—An account such as “public” or “anonymous” on the compute node.

NOTE: If ANON\_USER is not found, AEN\_SRVC\_ACCT will attempt to create it. If it fails, the project(s) will fail to start.

- ACL directories need the filesystem mounted with Posix ACL support (Posix.1e).

NOTE: You can verify ACL from the command line by running `mount` and `tune2fs -l /path/to/filesystem | grep options`.

## Software prerequisites

- AEN server:
  - Mongo—Equal to or higher than version 2.6.8 and lower than version 3.0.
  - NGINX—Equal to or higher than version 1.6.2.
  - Elasticsearch—Equal to or higher than version 1.7.2.
  - Oracle JRE version 7 or 8.
  - bzip2.
- AEN Gateway:
  - bzip2.
- AEN compute:
  - git
  - bzip2
  - bash or zsh
  - X Window System

NOTE: If you don’t want to install the whole X Window System, you must install the following packages to have R plotting support:

```
sudo yum install -y libXrender libXext libXdmcp libSM libICE libXt \
dejavu-sans-fonts dejavu-serif-fonts dejavu-fonts-common \
fontpackages-filesystem
```

## Security requirements

- Root or sudo access.
- File permissions: `umask 0022` is required during the installation.
- SELinux in permissive or disabled mode.

Edit the following file using either root or sudo access:

```
/etc/sysconfig/selinux
```

Edit the following:

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.

SELINUX=enforcing

# SELINUXTYPE= can take one of these two values:
#   targeted - Targeted processes are protected,
#   mls - Multi Level Security protection.

SELINUXTYPE=targeted
```

NOTE: You must reboot for the changes to take effect.

Verify changes with `getenforce`.

## Network requirements

TCP Ports:

Direction	Type	Default Port	Protocol	Optional	Configurable	Comments
Inbound	TCP	80	HTTP or HTTPS	No	Yes	Server
Inbound	TCP	8089	HTTP or HTTPS	No	Yes	Gateway
Inbound	TCP	5002	HTTP	No	Yes	Compute

## Other requirements

As long as the above requirements are met, there are no additional dependencies for AEN.

See also *system requirements for Anaconda Repository and Anaconda Scale*.

## What's next

*Prepare for installation.*

## Preparing for installation

### Downloading AEN installers

Download the installers and copy them to the corresponding servers.

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
→com"
curl -O $RPM_CDN/aen-server-4.3.1-Linux-x86_64.sh
curl -O $RPM_CDN/aen-gateway-4.3.1-Linux-x86_64.sh
curl -O $RPM_CDN/aen-compute-4.3.1-Linux-x86_64.sh
```

NOTE: The current \$RPM\_CDN server will be confirmed in an email provided by your sales rep.

NOTE: These instructions use *curl* or *wget* to download packages, but you may use other means to move the necessary files into the installation directory.

### Gathering IP addresses or FQDNs

AEN is very sensitive to the IP address or domain name used to connect to the server and gateway nodes. If users will be using the domain name, you should install the nodes using the domain name instead of the IP addresses. The authentication system requires the proper hostnames when authenticating users between the services.

Print this page and fill in the domain names or IP addresses of the nodes below and record the user name and auto-generated password for the administrative user account in the box below after installing the AEN server node:

Node   Name or IP address	Port Number	Username   Password	
AEN server			
AEN gateway			
AEN compute			

NOTE: The values of these IP entries or DNS entries are referred to as <AEN\_SERVER\_IP> or <AEN\_SERVER\_FQDN>, particularly in examples of shell commands. Consider actually assigning those values to environment variables with similar names.

### Set up variables

Certain variables need to have values assigned to them before you start the installation.

### AEN server address

To define an environment variable for the AEN server address—FQDN or IP:

```
export AEN_SERVER=<AEN_SERVER_IP> # <from table above>
```

NOTE: The address—FQDN or IP—specified for the AEN server must be resolvable by your intended AEN users' web clients.

To verify your hostname, run `echo $AEN_SERVER`.

### AEN functional ID

AEN must be installed and executed by a Linux account called the AEN Service Account. The username of the AEN Service Account is called the AEN Functional ID (NFI). The AEN Service Account is created during AEN installation—if it does not exist—and is used to run all AEN services.

The default NFI username is `wakari`. Another popular choice is `aen_admin`.

To set the environment variable `AEN_SRVC_ACCT` to `wakari` or your chosen name before installation, run `export AEN_SRVC_ACCT="aen_admin"`.

This name is now the username of the AEN Service Account and of the AEN administrator account.

When upgrading AEN, set the NFI to the NFI of the current installation.

WARNING: The Service Account should only be used for administrative tasks, and should not be used for operating AEN the way an ordinary user would. If the Service Account creates or starts projects, the permissions on the AEN package cache will be reset to match the Service Account, which will interfere with the normal operation of AEN for all other users.

### AEN functional group

The AEN Functional Group (NFG) may be given any name. Most often, it is set to `aen_admin` or `wakari`. This Linux group includes the AEN service account, so all files and directories that have the owner NFI also have the group NFG.

When upgrading AEN, set the NFG to the NFG of the current installation.

To set the NFG before installation, run:

```
export AEN_SRVC_GRP="<NFG>"
```

NOTE: Replace `<NFG>` with your NFG name.

### AEN install sudo command

During AEN installation the installers perform various operations that require root level privileges. By default, the installers use the `sudo` command to perform these operations.

Before installation, set the `AEN_SUDO_CMD_INSTALL` environment variable to perform root level operations. You can also set it to no command at all if the user running the installer(s) has root privileges and the `sudo` command is not needed or is not available.

EXAMPLES:

```
export AEN_SUDO_CMD_INSTALL=""
export AEN_SUDO_CMD_INSTALL="sudo2"
```

## AEN sudo command

By default the AEN services uses `sudo -u` to perform operations on behalf of other users—including `mkdir`, `chmod`, `cp` and `mv`.

To override the default `sudo` command when `sudo` is not available on the system, before installing, set the `AEN_SUDO_CMD` environment variable.

AEN must have the ability to perform operations on behalf of other users. Therefore, this environment variable cannot be set to an empty string or to `null`.

CAUTION: Any command that replaces `AEN_SUDO_CMD` must support the `-u` command line parameter—similarly to the `sudo` command.

EXAMPLE:

```
export AEN_SUDO_CMD="sudo2"
```

The optional environmental variable `AEN_SUDO_SH` is another way to customize AEN sudo operations. When AEN executes any `sudo` command, it will include the value of `AEN_SUDO_SH`, if it is set.

EXAMPLE: If your username is “jsmith” and the values are set as:

```
AEN_SUDO_CMD=sudo
OWNER=jsmith
AEN_SUDO_SH=sudologger
PROJECT_HOME=/projects/jsmith/myproj
```

Then AEN will resolve:

```
$AEN_SUDO_CMD -u ${OWNER} $AEN_SUDO_SH rm -rf $PROJECT_HOME
```

As:

```
sudo -u jsmith sudologger rm -rf /projects/jsmith/myproj
```

In this case the `sudologger` utility could be a pass-through utility that logs all `sudo` usage and then executes the remaining parameters.

## Post-installation Sudo configuration

While root/sudo privileges are required during installation, root/sudo privileges are not required during normal operations after install, if user accounts are managed outside the software. However root/sudo privileges are required to start the services, thus in the service config files there may still need to be an `AEN_SUDO_CMD` entry.

For more information, see *Configuring sudo customizations*.

### AEN remote database settings

By default AEN server uses a local database. To override the default database location, see *Install AEN connected to a remote Mongo DB instance*.

### What's next

*Install the AEN server.*

### Installing the AEN server

The AEN server is the administrative front end to the system. This is where users log in to the system, where user accounts are stored, and where admins can manage the system.

Server is installed in the `/opt/wakari/wakari-server` directory.

### Installing the bzip2 package

Be sure you have the `bzip2` package installed. If this package is not installed on your system, install it:

```
sudo yum install bzip2
```

### Downloading prerequisite RPMs

To install AEN on a CentOS 6 server:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.  
↳com"  
curl -O $RPM_CDN/nginx-1.6.2-1.el6ngx.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-tools-2.6.8-1.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-shell-2.6.8-1.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-server-2.6.8-1.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-mongos-2.6.8-1.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-2.6.8-1.x86_64.rpm  
curl -O $RPM_CDN/elasticsearch-1.7.2.noarch.rpm  
curl -O $RPM_CDN/jre-8u65-linux-x64.rpm
```

To install AEN on a CentOS 7 server:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.  
↳com"  
curl -O $RPM_CDN/nginx-1.10.2-1.el7ngx.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-tools-2.6.12-1.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-shell-2.6.12-1.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-server-2.6.12-1.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-mongos-2.6.12-1.x86_64.rpm  
curl -O $RPM_CDN/mongodb-org-2.6.12-1.x86_64.rpm  
curl -O $RPM_CDN/jre-8u112-linux-x64.rpm  
curl -O $RPM_CDN/elasticsearch-1.7.6.noarch.rpm
```

## Installing prerequisite RPMs

Run:

```
sudo yum install -y *.rpm
sudo service mongod start
sudo chkconfig --add elasticsearch
```

## Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

## Running the AEN server installer

Run:

```
sudo -E ./aen-server-4.3.1-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-server
Logging to /tmp/wakari_server.log
Checking server name
Ready for pre-install steps
Installing miniconda
...
...
Checking server name
Loading config from /opt/wakari/wakari-server/etc/wakari/config.json
Loading config from /opt/wakari/wakari-server/etc/wakari/wk-server-config.json

=====

Created password '<RANDOM_PASSWORD>' for user 'aen_admin'

=====

Starting Wakari daemons...
installation finished.
```

After successfully completing the installation script, the installer creates the administrator account—AEN\_SRVC\_ACCT user—and assigns it a password.

EXAMPLE:

```
Created password '<RANDOM_PASSWORD>' for user 'aen_admin'
```

TIP: Record this password. It will be needed in the following steps. It is also available in the installation log file `/tmp/wakari_server.log`.

### Starting NGINX and Elasticsearch

When SELinux is enabled, it blocks NGINX from connecting to the socket created by Gunicorn. If you have SELinux enabled, run these commands to correct these permissions and allow connections between NGINX and Gunicorn:

```
sudo semanage fcontext -a -t httpd_var_run_t "/opt/wakari/wakari-server/var/run/wakari-  
↪server.sock"  
sudo restorecon -r /opt/wakari/wakari-server/var/run
```

To start NGINX and Elasticsearch to read the new config file:

```
sudo service nginx start  
sudo service elasticsearch start
```

TIP: If the AEN web page shows an NGINX 404 error, restart NGINX:

```
sudo nginx -s stop  
sudo nginx
```

### Testing AEN server installation

Visit [http://\protect\TI\textdollarAEN\\_SERVER](http://\protect\TI\textdollarAEN_SERVER).

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# Anaconda Enterprise Notebooks™

Your Data, Your Servers™

Browser-based Python & Linux for collaborative data analysis and visualization.

Password must contain a minimum of 7 characters. One uppercase, one lowercase and one number.

### What's next

*Install the AEN gateway.*

### Installing the AEN gateway

The gateway is a reverse proxy that authenticates users and automatically directs them to the proper AEN compute node for their project. Users will not notice this node as it automatically routes them.

Gateway is installed in the `/opt/wakari/wakari-gateway` directory.

### Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
export AEN_GATEWAY_PORT=8089
export AEN_GATEWAY=<FQDN HOSTNAME OR IP ADDRESS> # will be needed shortly
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change `<FQDN HOSTNAME OR IP ADDRESS>` to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists. If the terminal is closed before successful installation, export the variables to continue with the installation.

### Running the AEN gateway installer

Run:

```
sudo -E ./aen-gateway-4.3.1-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-gateway
Logging to /tmp/wakari_gateway.log
...
...
Checking server name
Please restart the Gateway after running the following command
to connect this Gateway to the AEN Server
...
```

## Registering your gateway

The gateway needs to register with the AEN server.

This needs to be authenticated, so the NFI user's credentials created during the AEN server install must be used.

To write the configuration file `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`, run the following as `sudo` or `root`:

```
sudo /opt/wakari/wakari-gateway/bin/wk-gateway-configure \  
--server http://$AEN_SERVER --host $AEN_GATEWAY \  
--port $AEN_GATEWAY_PORT --name Gateway --protocol http \  
--summary Gateway --username $AEN_SRVC_ACCT \  
--password '<NFI USER PASSWORD>'
```

NOTE: replace `<NFI USER PASSWORD>` with the password of the NFI user that was generated during *server installation*.

## Setting permissions

Run:

```
sudo chown $AEN_SRVC_ACCT /opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
```

## Starting the gateway

Run:

```
sudo service wakari-gateway start
```

## Verifying your gateway registration

1. Log in to the AEN server using the Chrome or Firefox browser and the `AEN_SRVC_ACCT` user.
2. In the AEN navigation bar, click Admin to open the Admin Settings page.
3. In the **Site Admin** menu, select Data Centers:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)

Data Centers

[Gateway](#) (ec2-52-90-133-17.compute-1.amazonaws.com:8089)

+ Add DataCenter

4. Click your data center:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Security Log](#)
[Data Centers](#)

Data Centers

[Gateway](#) (54.208.221.207:8080)

+ Add DataCenter

5. Verify that your data center is registered and the status is {"status": "ok", "messages": []}:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)
[Task Queue](#)

Datacenter Gateway

Edit

Provider

wk\_server.plugins.providers.enterprise

Client ID

59c119cd3f94c30fe45ff5db

Client Secret

50cc629d-4e8e-44a5-9a2e-a46fee7c1921

Redirect URIs

http://ec2-52-90-133-17.compute-1.amazonaws.com:8089/login/authorized

wk-gateway-config.json

```
{
  "CDN": "http://ec2-204-236-198-47.compute-1.amazonaws.com/static/",
  "SUBDOMAIN_ROUTING": false,
  "client_id": "59c119cd3f94c30fe45ff5db",
  "client_secret": "50cc629d-4e8e-44a5-9a2e-a46fee7c1921",
  "WAKARI_SERVER": "http://ec2-204-236-198-47.compute-1.amazonaws.com",
  "port": 8089
}
```

status

```
{"status": "ok", "messages": []}
```

Back

Remove

## What's next

*Install the AEN compute node(s).*

## Installing the AEN compute node(s)

Compute nodes are where projects are stored and run.

Adding multiple AEN compute machines allows you to scale-out horizontally to increase capacity. Projects can be created on individual compute nodes to spread the load.

Repeat this procedure on each compute machine.

## Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists.

### Running the AEN compute installer

Run:

```
sudo -E ./aen-compute-4.3.1-Linux-x86_64.sh -w $AEN_SERVER
...
...
PREFIX=/opt/wakari/wakari-compute
Logging to /tmp/wakari_compute.log
Checking server name
...
...
Initial clone of root environment...
Starting Wakari daemons...
installation finished.
Do you wish the installer to prepend the wakari-compute install location
to PATH in your /root/.bashrc ? [yes|no]
[no] >>> yes
```

### Restart the AEN Server

Once configured, restart the AEN server:

```
sudo service wakari-server restart
```

### Configuring your compute node(s)

Once installed, you must configure the compute launcher on your server:

1. In your browser, go to your AEN server.
2. Log in as the AEN\_SRVC\_ACCT user.
3. In the AEN navigation bar, click Admin to open the Admin Settings page.
4. In the **Providers** menu, select Enterprise Resources:

Staff	Resources
<a href="#">Daily Report</a> <a href="#">Password Reset</a> <a href="#">Notification</a> <a href="#">Exceptions</a>	<div><div><div><div><div>+</div><div>Add Resource</div></div></div></div></div>
	<div><div><div><div><div>Gateway</div></div></div><div><div>ec2-54-210-232-251.compute-1.amazonaws.com</div><div>remove</div></div></div></div>

5. Click the Add Resource button to open the new resource form.
6. Select the data center to associate this compute node with.

**Resources** / new

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
Compute Node1

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**  
Configuring Compute Node

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Add Resource

7. In the URL box, type: `http://$AEN_COMPUTE:5002`.

NOTE: If the compute launcher is located on the same box as the gateway, we recommended that you type `http://localhost:5002` instead.

8. Type a Name and Description for the compute node.
9. Click the Add Resource button to save the changes.

Your AEN compute node is configured.



## What's next

*Configure conda to use your local on-site AEN repository.*

## Configuring conda to use your local on-site AEN repository

You can configure AEN to use a local on-site Anaconda Repository server instead of Anaconda.org.

To configure AEN to use a local on-site Repository, you must:

1. *Edit condarc on the compute node.*
2. *Configure the Anaconda client.*

## Editing condarc on the compute node

NOTE: If there are channels that you haven't mirrored, you must remove them from the configuration.

Edit the file `.condarc` to match the following:

```
#/opt/wakari/anaconda/.condarc
channels:
  - defaults

create_default_packages:
  - anaconda-client
  - ipykernel

# Default channels is needed for when users override the system .condarc
# with ~/.condarc. This ensures that "defaults" maps to your Anaconda Repository and not
# repo.anaconda.com
default_channels:
  - http://<your Anaconda Repository name>:8080/conda/anaconda
  - http://<your Anaconda Repository name>:8080/conda/wakari
  - http://<your Anaconda Repository name>:8080/conda/r-channel

# Note: You must add the "conda" subdirectory to the end
channel_alias: http://<your Anaconda Repository name>:8080/conda
```

NOTE: Replace `<your Anaconda Repository name>` with the actual name or IP address of your local Anaconda Repository installation.

## Configuring the Anaconda client

Anaconda client lets users work with Repository from the command-line—including searching for packages, logging in, uploading packages, and more.

To set the default configuration of `anaconda-client` for all users on your compute node:

```
sudo /opt/wakari/anaconda/bin/anaconda config --set url http://<your Anaconda Repository>:8080/api -s
```

NOTE: Sudo is required because the configuration file is written to the root file system: `/etc/xdg/binstar/config.yaml`.

NOTE: Replace `<your Anaconda Repository>` with the actual name or IP address of your local Anaconda Repository installation.

### What's next

Review the *optional configuration* tasks to see if any apply to your system.

## Optional configuration

### Using configuration files

The default locations for each component's configuration files are:

- Server—`/opt/wakari/wakari-server/etc/wakari/config.json`.
- Gateway—`/opt/wakari/wakari-gateway/etc/wakari/config.json`.
- Compute—`/opt/wakari/wakari-compute/etc/wakari/config.json`.

Additionally, service-specific configuration files may also be present in the following locations:

- Server—`/opt/wakari/wakari-server/etc/wakari/wk-server-config.json`.
- Gateway—`/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`.
- Compute—`/opt/wakari/wakari-compute/etc/wakari/wk-compute-config.json`.

Each service loads each of the configuration files in the following order and updates the AEN configuration at each step:

1. `/etc/wakari/config.json`.
2. `/etc/wakari/wk-gateway-config.json`.
3. `/opt/wakari/wakari-SERVICE/etc/wakari/config.json`.
4. `/opt/wakari/wakari-SERVICE/etc/wakari/wk-SERVICE-config.json`.
5. `./config.json`.
6. `./wk-gateway-config.json`.

### AEN configuration keys

The following is a list of AEN supported configuration keys:

### Table 29: Server Configuration Keys

Key	Default	Description
CDN	\$WAKARI_SERVER/ static/	The location of static assets.
MONGO_DB	wakari	The name of the AEN database in mongodb.
MONGO_URL	mongodb:// localhost/	The URL of your AEN server's mongodb instance. Format: <code>mongodb://&lt;username&gt;:&lt;password&gt;@&lt;host&gt;:&lt;port&gt;/</code>
WAKARI_SERVER		The URL of this AEN server.
DEFAULT_PRIVACY	public	The default project privacy setting—can be either <b>public</b> or <b>private</b> .
SESSION_COOKIE_NAME	wakari. enterprise. session	The Cookie name used to maintain Anaconda Enterprise Notebooks Enterprise login sessions.
PERMANENT_SESSION	True`	Sets cookie session to permanent. This will keep the session open after the browser is closed. The session will still expire after the number of minutes set in the SESSION_LIFETIME key.
SESSION_LIFETIME	120	Time in minutes until the session expires. The counter resets with each request.
USE_SES	false	Sets whether AEN will use Amazon SES to send emails.
SMTP		Sets the SMTP email settings.
- host		A SMTP subkey—the SMTP mail server hostname.
- user		SMTP subkey—the username for SMTP server authentication.
- password		SMTP subkey—the password for SMTP server authentication.
- from_addr		SMTP subkey—the From address for emails sent through SMTP.
verify_gateway_certificate	true	A boolean setting that indicates whether your AEN server should verify the gateway SSL certificate.
accounts	wk_server. plugins accounts.cloud	The account provider class. For LDAP, this should be set to <code>wk_server.plugins.accounts.ldap_accounts</code> .
uniqueEmail	true	A boolean setting that indicates whether unique user email addresses are required. See <i>note below</i> about updating the database when setting <code>uniqueEmail</code> .
has_internet	true	Boolean for retrieving the avatar from the gravatar URL. If false a local default is used instead.
LDAP	389	LDAP configurations.
- SERVER		LDAP subkey—A list of LDAP servers. At least one server name must be listed. The primary server should be listed first. All secondary or fail-over servers should be listed after the primary.
- PORT	389	LDAP subkey—The LDAP port on the LDAP server.
- AUTH_TYPE		LDAP subkey—LDAP Authentication types. <code>simple</code> —no encryption not secure. ``TLS``—encrypted secure requires the TLS_CERT to be set.
- TLS_CERT		LDAP subkey—the full path to the TLS certificate file. The certificate file must also be provided by the Enterprise.
- BASEDN		LDAP subkey—the LDAP Base DN value.
- OU		LDAP subkey—a list of Organizational Units. Some Enterprises group users by OUs in their LDAP server records. AEN will loop over the list of OUs when authenticating a user. The OU value is a list of lists to support multiple OUs where each OU is a single name or a hierarchy of names.
ANON_USER	anonymous	Username—such as <b>public</b> or <b>anonymous</b> —assigned users who are not logged in to access projects. To disable public access use the special value <b>disabled</b> . For more information, see <i>Configuring sudo customizations</i> .
ELASTICSEARCH_ENABLED	true	Boolean indicating whether ElasticSearch is enabled
SEARCH_SERVER	'localhost:9200'	IP address or domain name and port of ElasticSearch server
LOG_LEVEL	'DEBUG'	Log verbosity. One of: 'ERROR' 'WARN' 'INFO' 'DEBUG'

NOTE: If you set `uniqueEmail` to `false`, you must drop the existing index in the database. EXAMPLE: If the index name is `email_1`, run `db.users.dropIndex("email_1")`.

Table 30: Gateway Configuration Keys

Key	Default	Description
<code>WAKARI_SERVER</code>		The URL of the AEN <code>WAKARI_SERVER</code> .
<code>port</code>	8089	The Port number used by the gateway application. Must be a non-privileged port ( $\geq 1024$ ).
<code>client_id</code>		The client ID assigned to this gateway by the server during <code>wk-gateway-configure</code> .
<code>client_secret</code>		The Client secret assigned to this gateway by the server during <code>wk-gateway-configure</code> .
<code>httpTimeout</code>	600	Timeout in seconds. The default is 10 minutes to allow project creation.
<code>logLevel</code>	<code>info</code>	Log verbosity. One of: 'error' 'warn' 'info' 'debug'.
<code>https</code>		Enable SSL encryption. For more information, see <a href="#">Configuring SSL</a> .
- <code>key</code>		A https subkey–Path to gateway key.
- <code>cert</code>		A https subkey–Path to gateway cert.
- <code>ca</code>		A https subkey–Required if cert was signed by a private root CA or signed by an intermediate authority. It must contain separate values for the paths to the CA root, any intermediates and the certificate for the Server.
- <code>passphrase</code>		A https subkey–Passphrase required to decrypt SSL certs.

Table 31: Compute Node Configuration Keys

Key	Default	Description
WAKARI_SERVER		The URL of the AEN WAKARI_SERVER.
MANAGE_ACCOUNTS	true	A boolean setting that indicates whether AEN should manage system user accounts. Set to false for LDAP installations.
identicalGID	false	<b>To make the AEN compute service create groups with the same uid. Set to true If the /projects folder resides on an NFSv3 volume.</b> For more information, see <a href="#">Group and user permissions for NFS</a> .
port	2227	The port number used by the compute-launcher application. Note that individual applications use dynamic ports.
projectRoot	/projects	The location of project file storage.
logLevel	info	Log verbosity. One of: 'error' 'warn' 'info' 'debug'
logMaxSize	10000000	Max size in bytes of the logfile. Default is 10 MB. If the size is exceeded then a new file is created and a counter will become a suffix of the log file.
logMaxFiles	30	Limit the number of files created when the size of the logfile is exceeded
appIdleTime	172800000 (48 hours)	The amount of idle time before applications will be auto-terminated (in msec).
idleCheckInterval	3600000 (1 hour)	The frequency of idle checks.
numericUsernames	false	A boolean setting that indicates whether numeric usernames are permitted.
httpTimeout	600	The time before a timeout—in seconds. The default is 10 minutes—600 seconds—to allow time for project creation.
ANON_USER	anonymous	Username such as public or anonymous for users who are not logged in to access projects. To disable public access use the special value disabled. For more information, see <a href="#">Configuring sudo customizations</a> .
projDirsAsHome	false	A boolean setting. When false AEN apps use /home/<username> as HOME. When true AEN apps use /projects/<username> as HOME.

Table 32: Server Internal Configuration Keys - Do not change

Key	Default	Description
PROVIDERS	["wk_server. plugins providers. enterprise"]	A list of compute provider classes.
MONGO_ACTION_LOG_SIZE	262144000	The size of the Mongo action log in bytes.
SITE_ADMINS		A list of site administrator email addresses—used for crash notifications and LDAP password reset requests.
FROM_EMAIL_ADDR		The From address for notification emails sent by AEN.
uniqueUserName	true	A boolean setting that indicates whether unique usernames are required.

Table 33: Gateway Internal Configuration Keys - Do not change

Key	Default	Description
CDN	<code>\$WAKARI_SERVER/ static/</code>	The location of static assets.
SUBDOMAIN_ROUTING	<code>false</code>	A boolean that indicates whether subdomains are being used.
refreshTokenExpiration	<code>500000</code>	Idle time in milliseconds before the Gateway session expires.

Table 34: Compute Node Internal Configuration Keys - Do not change

Key	Default	Description
CDN	<code>\$WAKARI_SERVER/ static/</code>	The location of static assets.
USE_SES	<code>false</code>	Sets whether AEN will use Amazon SES to send emails.
multiUser	<code>true</code>	A boolean that indicates whether multi-user support is enabled.
multiProject	<code>true</code>	A boolean that indicates whether multi-project support is enabled.
ANACONDA_ROOT	<code>/opt/wakari/ anaconda</code>	The location of your Anaconda installation.
appLogs	<code>/opt/wakari/ wakari- compute/ var/log/wakari/ compute-launcher-apps</code>	The directory where application logs are stored.
appPIDs	<code>/opt/wakari/ wakari-compute/ var/run/ compute-launcher-apps</code>	The directory where application PID files are stored.
applicationLog	<code>/opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher. application.log</code>	The path to the compute launcher log.
accessLog	<code>opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher. access.log</code>	Path to compute launcher access log

## Checking configuration file syntax

To verify that the configuration file contains valid JSON, run:

```
root@server # python -m json.tool /opt/wakari/wakari-server/etc/wakari/*.json
root@gateway # python -m json.tool /opt/wakari/wakari-gateway/etc/wakari/*.json
root@compute # python -m json.tool /opt/wakari/wakari-compute/etc/wakari/*.json
```

If the file is correct, the contents are displayed.

If there is a syntax error in the file, a “No JSON object could be decoded” message is displayed instead.

To fix any errors, edit the configuration file and verify that it contains the correct JSON syntax.

## Increasing HTTP timeout between gateway and compute nodes

The default HTTP timeout is 600 seconds (10 minutes).

This setting works for HTTP timeout only, not HTTPS.

To modify the HTTP timeout setting:

1. Open the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file and modify the `httpTimeout` key:

```
"httpTimeout": 600
```

2. Update the gateway node by modifying the `httpTimeout` key in the `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json` file to match the above settings.
3. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Installing AEN in a custom location

To install AEN in a custom location:

1. Make the custom install folder owned by `$AEN_SRVC_ACCT`. EXAMPLE: `/data/aen/`.
2. Make a symlink from `/opt/wakari` to `/data/aen`.
3. Run the installers.
4. Move the folder from `/projects` to your chosen custom location. EXAMPLE: `/data/aen/projects`.
5. Make a symlink from `/projects` to `/data/aen/projects`.

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda environment directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

## Changing where projects are stored

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda env directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

To make aen-compute service use a different directory than `/projects` to store your AEN projects:

1. Modify the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file:

```
"projectRoot" : "/nfs/storage/services/wakari/projects",
```

NOTE: The directory `/nfs/storage/services/wakari/projects` specified as `projectRoot` must already exist for this command to resolve properly.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Group and user permissions for NFS

To install AEN with multiple compute nodes and a `/projects` folder on an NFSv3 volume, manually pre-create both the anonymous user and the `$AEN_SRVC_ACCOUNT` user on all nodes. Each of these users must have the same user identity number (UID) and group identity number (GID) on all nodes.

By default AEN creates local users with a different GID on each node. To make the AEN compute service create groups with the same GID:

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, change the `identicalGID` key value to `true`:

```
, "identicalGID": true
```

If you don't see the `identicalGID` key, add it.

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Using numeric usernames

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, change the `numericUsernames` key value to `true`.

```
, "numericUsernames": true
```

If you don't see the `numericUsernames` key, add it.

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Using project directories as home directories

The `projDirsAsHome` option changes the AEN home directories from the standard `/home/<username>` location to the project directories and the location `/projects/<username>/<project_name>/<username>/`. This ensures that AEN and AEN apps will not be affected by configuration files in a user's home directory, such as `.bashrc` or configuration files in subdirectories such as `.ipython` and `.jupyter`.



## Package cache locations

AEN version 4.1.3 stores the cache of packages in `/home/<username>`, while AEN versions 4.2.0 and higher store the cache of packages in `/projects/<username>/<project_name>/<username>/`. By moving the package cache to the same filesystem as the project, AEN versions 4.2.0 and higher can use hardlinks and save disk space and time when creating or cloning environments.

These package cache locations are not affected by the `projDirsAsHome` option.

After upgrading from AEN 4.1.3 to AEN 4.2.0 or higher, existing projects will still use the package cache in `/home/<username>`. Do not remove this cache, or the existing projects will break.

When users create new projects or install packages, the newly installed packages will use the new cache location.

If you wish to remove the older package cache in `/home/<username>`:

- Upgrade AEN to 4.2.0 or higher.
- Use `conda remove` to remove every non-default package in every project.
- Use `conda install` to replace them. The replaced packages will link to the new package cache in `/projects/<username>/<project_name>/<username>/`.
- You can now safely remove the older package cache.

## Enabling `projDirsAsHome`

NOTE: The `projDirsAsHome` option should be enabled immediately after performing the installation process and before any users have logged in to AEN. This ensures that users will not have home directories in different places due to some creating their home directories when the option was disabled and others creating their home directories when the option was enabled.

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, add the `projDirsAsHome` key value and set it to `true`.

```
, "projDirsAsHome": true
```

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Setting up a default project environment

AEN includes a full installation of the Anaconda Python distribution—along with several additional packages—located within the root conda environment in `/opt/wakari/anaconda`.

The first time any new AEN project is started, this default project environment is cloned into the new project's workspace.

To configure a different set of packages than the default:

1. Create a new conda environment in the `/opt/wakari/anaconda/envs/default` directory.

EXAMPLE: Using a Python 3.4 base environment, run:

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \  
create -p /opt/wakari/anaconda/envs/default python=3.4
```

2. Use conda to install any additional packages into the environment.
3. After the environment is created, clone it to ensure that it works correctly:

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \  
create -p /opt/wakari/testenv --clone /opt/wakari/anaconda/envs/default  
sudo -u $AEN_SRVC_ACCT rm -rf /opt/wakari/testenv
```

## Converting an existing project

1. Run the following command to clone the environment:

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \  
create -n /projects/owner/project/envs/<ENV_NAME> \  
--clone /opt/wakari/anaconda/envs/default
```

NOTE: Replace `/projects/owner/project/envs/<ENV_NAME>` with the path to the new environment you would like to create within the project.

2. Open the *Compute Resource Configuration application* for your project and set the project environment path there as well.

## Install AEN connected to a remote Mongo DB instance

To install AEN with a remote database:

1. Connect to the Mongodb instance and create the user for AEN:

```
> user = { user: "<username>",  
  pwd: "<super-secure-password>",  
  roles: [  
    { role: "dbOwner", db: "<db_name>" },  
    { role: "dbOwner", db: "<db_name>_mq" }  
  ]  
}  
> db.createUser(user)  
Successfully added user: { ... }
```

2. Before installing AEN-server export the database URL and name:

```
$ export MONGO_URL="mongodb://<username>:<password>@<host>:<port>/"  
$ export MONGO_DB="<database_name>"
```

3. Continue the installation process: *Install the AEN server*.

## Migrate from local to remote MongoDB

To configure your remote database to work with an already installed AEN server:

1. Stop the server, gateway and compute nodes:

```
sudo service wakari-server stop
sudo service wakari-gateway stop
sudo service wakari-compute stop
```

2. Open the `/opt/wakari/wakari-server/etc/wakari/config.json` file and create the `MONGO_URL` key. For the value parameter, add the database information.

The final file should read:

```
{
  "MONGO_URL": "mongodb://MONGO-USER:MONGO-PASSWORD@MONGO-URL:MONGO-PORT",
  "MONGO_DB": "MONGO-DB-NAME",
  "WAKARI_SERVER": "http://YOUR-IP",
  "USE_SES": false,
  "CDN": "http://YOUR-IP/static/",
  "ANON_USER": "anonymous"
}
```

For more information about configuration keys, see *Using configuration files*.

3. Migrate the data from the former database into the new one. For more information, see the [MongoDB documentation website](#).
4. After migration, restart the nodes:

```
sudo service wakari-server start
sudo service wakari-gateway start
sudo service wakari-compute start
```

## Running SELinux in enforcing mode

To run SELinux in Enforcing mode, a few ports must be set up using the `semanage port` command.

The `semanage` command relies on `policycoreutils-python`. To install `policycoreutils-python`, if needed, run:

```
sudo yum -y install policycoreutils-python
```

Enable ports 9200 and 9300 for Elasticsearch:

```
sudo semanage port -a -t http_port_t -p tcp 9200
sudo semanage port -a -t http_port_t -p tcp 9300
```

## Changing server hostnames

It is possible to change the domain names (hostnames) of the various AEN nodes by updating the configuration files.

NOTE: After the configuration files are updated, the associated nodes need to be restarted.

To edit the information for all of the data centers that you are changing the base domain name for:

1. Go to the Site Admin section of the Admin Settings page.
2. In the Data Centers section, click the Edit button.
3. Make any necessary updates.

NOTE: This must include the service port if it is different from the default—80 for HTTP and 443 for HTTPS.

4. In the Enterprise Resources sub-section of the Providers section, edit each compute node that has a changed domain name.

NOTE: These URLs should include the protocol, hostname and port.

## Authenticating with LDAP

Anaconda Enterprise Notebooks performs local authentication against accounts in the AEN database by default.

To configure AEN to authenticate against accounts in an LDAP (Lightweight Directory Access Protocol) server, follow the instructions below.

## Installing OpenLDAP libraries

The system needs OpenLDAP libraries to be installed and accessible by AEN. AEN uses the OpenLDAP libraries to establish an LDAP connection to your LDAP servers.

To install OpenLDAP on CentOS or Redhat:

```
sudo yum install openldap
```

To install OpenLDAP on Ubuntu or Debian, follow the official [OpenLDAP installation instructions](#).

## Configuring OpenLDAP

1. Open the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file.
2. Add the following LDAP settings:

```
{
  "accounts": "wk_server.plugins.accounts.ldap2",
  "LDAP" : {
    "URI": "ldap://openldap.EXAMPLE.COM",
    "BIND_DN": "cn=Bob Jones,ou=Users,DC=EXAMPLE,DC=COM",
    "BIND_AUTH": "secretpass",
    "USER_SEARCH": {"base": "DC=EXAMPLE,DC=COM",
                    "filter": "(| (& (ou=Payroll)
                                   (uid=%(username)s))
                              (& (ou=Facilities)
                                   (uid=%(username)s)))"
  }
}
```

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```

        },
        "KEY_MAP": {"email": "mail",
                    "name": "cn"}
    }
}

```

- URI—The IP address or hostname of your OpenLDAP server. For SSL/TLS, use the `ldaps://` prefix and specify a `TLS_CACERT` as described in the SSL/TLS configuration section below.
- BIND\_DN—The full directory path of the user you want AEN server to bind as.
- BIND\_AUTH—The password of the BIND\_DN user.
- USER\_SEARCH:
  - base—The level at which you want to start the search.
  - filter—The default is to search for the `sAMAccountName` attribute, and use its value for the AEN server username field.
- KEY\_MAP—Maps user attributes in AEN server to LDAP user attributes.

EXAMPLE: The `mail` attribute in LDAP maps to the `email` attribute in AEN server.

3. Restart AEN server to load new settings.
4. Log in with the admin account. This creates the admin user in the local database.
5. As soon as LDAP is installed, LDAP authentication takes over, so you need to add your admin account again:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add "jsmith"
```

## Configuring Active Directory

Microsoft Active Directory is a server program that provides directory services and uses the open industry standard Lightweight Directory Access Protocol (LDAP).

To enable Active Directory support:

1. Open the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file.
2. Add the following LDAP settings:

```

{
  "accounts": "wk_server.plugins.accounts.ldap2",
  "LDAP" : {
    "URI": "ldap://<ad.EXAMPLE.COM>",
    "BIND_DN": "CN=Bind User,CN=Users,DC=EXAMPLE,DC=COM",
    "BIND_AUTH": "secretpass",
    "USER_SEARCH": {"base": "CN=Users,DC=EXAMPLE,DC=COM",
                    "filter": "sAMAccountName=%(username)s"}
  },
  "KEY_MAP": {"email": "mail",
              "name": "cn"}
}

```

- **URI**—The IP address or hostname of your Active Directory server. Replace `<ad.EXAMPLE.COM>` with the actual URI. For SSL/TLS, use the `ldaps://` prefix and specify a `TLS_CACERT` as described in the SSL/TLS configuration section below.
- **BIND\_DN**—The full directory path of the user you want AEN server to bind as.
- **BIND\_AUTH**—The password of the `BIND_DN` user.
- **USER\_SEARCH**:
  - **base**—the level at which you want to start the search.
  - **filter**—default is to search for the `sAMAccountName` attribute, and use its value for the AEN server `username` field.
- **KEY\_MAP**—Maps user attributes in AEN server to LDAP user attributes.

EXAMPLE: The `mail` attribute in LDAP maps to the `email` attribute in AEN server.

3. Restart AEN server to load new settings.
4. Log in with the admin account. This creates the admin user in the local database.
5. As soon as LDAP is installed, LDAP authentication takes over, so you need to add your admin account again:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add "jsmith"
```

## Configuring SSL/TLS

AEN uses system-wide LDAP settings, including SSL/TLS support.

- On Redhat/CentOS systems, these settings are located in the `/etc/openldap/ldap.conf` file.
- On Ubuntu/Debian systems, these settings are located in the `/etc/ldap/ldap.conf` file.

Typically, the only configuration necessary is updating the file to read:

```
TLS_CACERT /path/to/CA.cert
```

NOTE: `CA.cert` is the Certificate Authority used to sign the LDAP server's SSL certificate. In the case of a self-signed SSL certificate, this is the path to the SSL certificate itself.

## Testing LDAP configuration

Test your LDAP configuration using `flask-ldap-login-check`:

```
/opt/wakari/wakari-server/bin/flask-ldap-login-check \  
wk_server.wsgi:app \  
-u [username] \  
-p [password]
```

NOTE: `username` is the username of a valid user and `password` is that user's `BIND_AUTH` password.

## Configuring sudo customizations

If your organization's IT security policy does not allow root access or has restrictions on the use of sudo, after AEN installation, you may customize AEN to meet their requirements.

Your organization may choose to implement any or all of the following:

- *Remove root access* for AEN service account (Note: this restricts AEN from managing user accounts).
- *Configurable sudo command*.
- *Restrict sudo access to all processes*.

These customizations must be done in a terminal window after copying the files to the server node.

## Removing all root access from the service account

Because root access is required for useradd, the following process restricts AEN from managing user accounts.

1. Modify the `/etc/sudoers.d/wakari_sudo` file to read:

```
Defaults:wakari !requiretty, visiblepw
Runas_Alias    OP = ALL,!root
wakari ALL=(OP) NOPASSWD: ALL
```

NOTE: If you used a service account name other than wakari, enter that name instead of wakari.

2. Modify the `/opt/wakari/wakari-compute/etc/wakari/config.json` file to read:

```
"MANAGE_ACCOUNTS": false,
```

Using this option means that your IT department must create and manage all user accounts at the OS level.

After an OS-level account exists, you may create on the main AEN web page an AEN account using the same name. The password you choose is not linked in any way to the OS-level password for the account.

Alternatively, you can configure the system to *use LDAP for authenticating users*.

## Allowing public users to have access to your AEN projects

A public account is visible to anyone who can access the AEN server. The name of this account can be configured to any name you wish. For example, `public` or `anonymous`. To disable this feature use the special value `disabled`.

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, modify the `ANON_USER` line to read:

```
"ANON_USER": "public"
```

2. Restart AEN compute node:

```
sudo service wakari-compute restart
```

3. In the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file, modify the `ANON_USER` line to read:

```
"ANON_USER": "public"
```

4. Restart AEN server:

```
sudo service wakari-server restart
```

For more information about configuration keys, see *Using configuration files*.

### Using a sudo alternative

You can use a sudo alternative as long as it supports the same execution semantics as the original sudo. The alternative must be configured to give the service account permission to run commands on behalf of AEN users.

1. In your terminal window, open the `/opt/wakari/wakari-compute/etc/wakari/config.json` file.
2. Modify the `AEN_SUDO_CMD` line to read:

```
"AEN_SUDO_CMD": "/path/to/alternative/sudo",
```

NOTE: If the alternate sudo command is available on PATH, then the full path is not required.

### Restricting sudo access to a single gatekeeper

By default, sudoers is configured to allow AEN to run any command as a particular user which allows the platform to initiate processes as the logged-in end user. If more restrictive control is required, it should be implemented using a suitable sudoers policy. If that is not possible or practical, it is also possible to route all AEN ID-changing operations through a single gatekeeper.

This gatekeeper wraps the desired executable and provides an alternate way to log, monitor, or control which processes can be initiated by AEN on behalf of a user.

CAUTION: Gatekeeper is a special case configuration and should only be used if required.

To configure an AEN gatekeeper:

1. Modify the `/etc/sudoers.d/wakari_sudo` file to contain:

```
Defaults:wakari !requiretty, visiblepw
Runas_Alias    OP = ALL,!root
wakari ALL=(OP) NOPASSWD: /path/to/gatekeeper
```

2. In the `/opt/wakari/wakari-compute/etc/wakari/config.json` file, modify the `AEN_SUDO_SH` line to read:

```
"AEN_SUDO_SH": "/path/to/gatekeeper"
```

EXAMPLE: The gatekeeper can be as simple as a script with contents such as:

```
#!/bin/bash
first_cmd=$1
if [ 'bash' == $1 ]; then
    shift
    export HOME=~
    export SHELL=/bin/bash
    export PATH=$PATH:/opt/wakari/anaconda/bin
    bash "$@"
else
    exec $@
fi
```



## Configuring SSL

The server node uses NGINX to proxy all incoming http(s) requests to the server running on a local port, and uses NGINX for SSL termination. The default setup uses http—non-SSL—since cert files are required to configure SSL and each enterprise will have their own cert files.

The `www.enterprise.conf` file is the default `nginx.conf` file used for AEN. It is copied to the `/etc/nginx/conf.d` directory during server installation.

NOTE: This section describes setting up SSL after your gateway node has been installed and registered with the server node.

### Copying the required files

To configure SSL on AEN, you will need the following files:

- Server certificate and key
- Server CA bundle
- Gateway certificate and key
- Gateway CA bundle

Configure SSL on AEN:

1. Copy the Gateway certificate and key to `/opt/wakari/wakari-gateway/etc/` on the Gateway as `gateway.crt` and `gateway.key`.
2. Copy the Gateway CA bundle to `/opt/wakari/wakari-server/etc/` on the Server.
3. Copy the Server certificate and key to `/etc/nginx` on the Server as `server.crt` and `server.key`.
4. Copy the Server CA bundle to `/opt/wakari/wakari-gateway/etc/` on the Gateway.

If you have a certificate that was signed by a private root CA and/or an intermediate authority:

- The Gateway CA bundle must contain the full chain: root CA, any intermediate authority and the certificate.

```
cat gateway.crt intermediate.crt root.crt >> gateway-crt-int-root.crt
```

- The Server CA bundle must be separated into individual files for the root CA, any intermediate and the certificate.

### Configuring SSL on the server node

The `www.enterprise.https.conf` is an NGINX configuration file for SSL. It is set up to use the `server.crt` and `server.key` cert files.

CAUTION: You must change these values to point to the signed cert files for your domain.

NOTE: Self-signed certs or those signed by a private root CA require additional configuration.

Perform the following steps as root:

1. Stop NGINX:

```
service nginx stop
```

2. Move the `/etc/nginx/conf.d/www.enterprise.conf` file to a backup directory.

- Copy the `/opt/wakari/wakari-server/etc/nginx/conf.d/www.enterprise.https.conf` file to `/etc/nginx/conf.d`.

NOTE: `/etc/nginx/conf.d` may have `www.enterprise.conf` or `www.enterprise.https.conf` but it may not have both.

- Edit the `/etc/nginx/conf.d/www.enterprise.https.conf` file and change the `server.crt` and `server.key` values to the names of the real cert and key files if they are different.
- Restart NGINX by running:

```
service nginx start
```

- Update the WAKARI\_SERVER and CDN settings to use https instead of http in the following configuration files:

```
/opt/wakari/wakari-server/etc/wakari/config.json
/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
/opt/wakari/wakari-compute/etc/wakari/config.json
```

- Copy the gateway certificate, `gateway.crt` to `/opt/wakari/wakari-server/etc/`.
- In an editor, open `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` and add:

```
"verify_gateway_certificate": "/opt/wakari/wakari-server/etc/gateway.crt"
```

- Restart AEN services on the server by running:

```
service wakari-server restart
```

NOTE: This step may return an error since the gateway has not yet been configured for SSL.

- In AEN, verify that the browser uses https. On the Admin Settings page, under Data Centers, click Gateway, then select https:

## Admin Settings

Anaconda Enterprise Notebooks settings accessible only by th

Staff	Data Centers / Register a datacenter
<a href="#">Daily Report</a> <a href="#">Password Reset</a> <a href="#">Notification</a>	<p><b>Name</b></p> <p>Gateway 1</p> <p><input type="checkbox"/> Subdomain Routing</p> <p><input checked="" type="checkbox"/> <b>Https</b></p>

## Configuring SSL on the gateway

1. For all types of SSL certificates, in `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt"
  }
}
```

2. For a server certificate signed by a private root CA or signed by an intermediate authority, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "ca": ["/opt/wakari/wakari-gateway/etc/server.crt"]
  }
}
```

NOTE: When the certificate chain has more than one intermediate cert signed by a higher root CA authority, you must manually break up the certs in the chain into individual files, and enumerate them in the `ca` key:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "ca": ["/opt/wakari/wakari-gateway/etc/server1.crt",
          "/opt/wakari/wakari-gateway/etc/server2.crt",
          "/opt/wakari/wakari-gateway/etc/server3.crt"]
  }
}
```

3. For a gateway certificate that is encrypted using a passphrase, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "passphrase": "mysecretpassphrase"
  }
}
```

NOTE: Alternatively, the passphrase can be passed using an environment variable or entered when the wakari-gateway service is manually started.

EXAMPLES:

```
# using an environment variable
AEN_GATEWAY_SSL_PASSPHRASE='mysecretphrase' wk-gateway
```

```
# starting wakari-gateway manually
sudo service wakari-gateway start --ask-for-passphrase
Passphrase?
```

4. Restart the gateway:

```
sudo service wakari-gateway restart
```

## Configuring SSL on compute nodes

Anaconda Enterprise does not support direct SSL on Compute Nodes. If you need SSL on Compute Nodes, you must install each Compute Node on the same server as a Gateway using `http://localhost:5002` for the URL value while adding it as a resource, and you must use a Gateway for each and every Compute Node.

## Security reminder

The permissions on the cert files must be set correctly to prevent them from being read by others. Since NGINX is run by the root user, only the root user needs read access to the cert files.

EXAMPLE: If the cert files are called `server.crt` and `server.key`, then use the root account to set permissions:

```
chmod 600 server.key
chmod 600 server.crt
```

## Enabling or disabling the Strict-Transport-Security header

By default, Strict-Transport-Security (STS) is enabled in the `www.enterprise.https.conf` file:

```
add_header Strict-Transport-Security max-age=31536000;
```

It can remain enabled if either of the following is true:

- The gateway is running on a different host than the server.
- or
- SSL has been enabled for the gateway.

You must comment out this line if both of the following are true:

- The gateway is running on the same host as the server.
- and
- SSL has not been enabled for the gateway.

Leaving STS enabled when these conditions are true will cause a mismatch in protocols between the server and gateway, causing your apps to fail to launch correctly.

## Configuring single sign-on

AEN's single sign-on (SSO) capability creates a new authentication provider that defers to your Anaconda Repository for login and authentication cookies.

To enable SSO:

1. Deploy AEN and Repository on the same machine.
2. In the `/opt/wakari/wakari-server/etc/wakari/config.json` file, add:

```
{
  EXISTING_CONFIGURATION,
  "SECRET_KEY": "<repo signing secret>",
  "REPO_LOGIN_URL":
    "http://example_repo.com:8080/account/login?next=http://example_repo.com/"
}
```

3. Copy the `SECRET_KEY` from the Repository configuration file.
4. In the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file, modify:

```
{
  EXISTING_CONFIGURATION,
  "accounts": "wk_server.plugins.accounts.repo",
}
```

5. If you are using Repository version 2.33.3 through 2.33.10, set `USE_SERVER_BASED_SESSIONS: false` in the Repository configuration.

This setting affects the network security properties of AEN and Repository. Specifically, if `USE_SERVER_BASED_SESSIONS` is set to `false`, and if a new cross-site scripting (XSS) vulnerability is discovered, it could expose an additional server fixation vulnerability. Please discuss this with your Anaconda representative and be sure the feature is compatible with your network requirements before setting `USE_SERVER_BASED_SESSIONS: false`.

6. To activate the changes restart `wakari-server`:

```
sudo service wakari-server restart
```

SSO is enabled.

## Adding a third-party extension

Anaconda officially supports and tests functionality of the default environment(s) only for those extensions that ship with AEN.

It is possible to add third-party and custom extensions from `conda-forge` or `pip`, but doing so may cause instability in your default project environments or kernels.

**CAUTION:** Anaconda does not officially support third-party extensions. This section is informational only.

## Installing unofficial Jupyter Notebook extensions for AEN

TIP: Always back up and verify your complete system before installing extensions.

The jupyter-contrib-nbextensions extensions are installed on a compute node.

The default conda executable directory for AEN is `/opt/wakari/anaconda/bin/conda`. If you are installing a Jupyter extension, it must be installed in the `wakari-compute` directory.

EXAMPLE: Run:

```
/opt/wakari/anaconda/bin/conda install -p /opt/wakari/wakari-compute/ -c conda-forge ↵  
↵ jupyter_contrib_nbextension
```

For more information, see [Unofficial Jupyter Notebook Extensions](#).

## Configure search indexing

For search indexing to work correctly, verify that the AEN Compute node can communicate with the AEN Server.

```
curl -m 5 $AEN_SERVER > /dev/null
```

There must be at least one `inotify` watch available for the number of subdirectories within the project root filesystem. Some Linux distributions default to a low number of watches, which can prevent the search indexer from monitoring project directories for changes.

```
cat /proc/sys/fs/inotify/max_user_watches
```

If necessary, increase the number of max user watches with the following command:

```
echo fs.inotify.max_user_watches=1000000 | sudo tee -a /etc/sysctl.conf && sudo sysctl -p
```

There must be at least one `inotify` user instance available per project.

```
cat /proc/sys/fs/inotify/max_user_instances
```

If necessary, this can be increased with the following command:

```
echo fs.inotify.max_user_instances=1000 | sudo tee -a /etc/sysctl.conf && sudo sysctl -p
```

## Create custom Jupyter kernel for Pyspark

These instructions add a custom Jupyter Notebook option to allow users to select PySpark as the kernel.

## Install Spark

The easiest way to install Spark is with [Cloudera CDH](#).

You will use YARN as a resource manager. After installing Cloudera CDH, [install Spark](#). Spark comes with a PySpark shell.

## Create a notebook kernel for PySpark

You may create the kernel as an administrator or as a regular user. Read the instructions below to help you choose which method to use.

### 1. As an administrator

Create a new kernel and point it to the root env in each project. To do so create a directory ‘pyspark’ in `/opt/wakari/wakari-compute/share/jupyter/kernels/`.

Create the following kernel.json file:

```
{
  "argv": ["/opt/wakari/anaconda/bin/python",
    "-m", "ipykernel", "-f", "connection_file", "--profile", "pyspark"],
  "display_name": "PySpark",
  "language": "python"
}
```

You may choose any name for the ‘display\_name’.

This configuration is pointing to the python executable in the root environment. Since that environment is under admin control, users cannot add new packages to the environment. They will need an admin to help update the environment.

### 2. As an administrator without IPython profile

To have an admin level PySpark kernel without the user .ipython space:

```
{
  "argv": [
    "/opt/wakari/wakari-compute/etc/ipython/pyspark.sh", "-f", "{connection_file}"
  ],
  "display_name": "PySpark",
  "language": "python"
}
```

NOTE: The pyspark.sh script is defined in *Without IPython profile* section below.

### 3. As a regular user

Create a new directory in the user’s home directory: `.local/share/jupyter/kernels/pyspark/`. This way the user will be using the default environment and able to upgrade or install new packages.

Create the following kernel.json file:

```
{
  "argv": ["/projects/<username>/<project_name>/envs/default/bin/python",
    "-m", "ipykernel", "-f", "connection_file", "--profile", "pyspark"],
  "display_name": "PySpark",
  "language": "python"
}
```

NOTE: Replace “<username>” with the correct user name and “<project\_name>” with the correct project name.

You may choose any name for the ‘display\_name’.

## Create an IPython profile

The above profile call from the kernel requires that we define a particular PySpark profile. This profile should be created for each user that logs in to AEN to use the PySpark kernel.

In the user's home, create the directory and file `~/ipython/profile_pyspark/startup/00-pyspark-setup.py` with the file contents:

```
import os
import sys

# The place where CDH installed spark, if the user installed Spark locally it can be
↪ changed here.
# Optionally we can check if the variable can be retrieved from environment.

os.environ["SPARK_HOME"] = "/usr/lib/spark"

os.environ["PYSPARK_PYTHON"] = "/opt/wakari/anaconda/bin/python"

# And Python path
os.environ["PYLIB"] = os.environ["SPARK_HOME"] + "/python/lib"
sys.path.insert(0, os.environ["PYLIB"] + "/py4j-0.9-src.zip") #10.4-src.zip")
sys.path.insert(0, os.environ["PYLIB"] + "/pyspark.zip")

os.environ["PYSPARK_SUBMIT_ARGS"] = "--name yarn pyspark-shell"
```

Now log in using the user account that has the PySpark profile.

## Without IPython profile

If it is necessary to avoid creating a local profile for the users, a script can be made to be called from the kernel. Create a bash script that will load the environment variables:

```
sudo -u $AEN_SRVC_ACCT mkdir /opt/wakari/wakari-compute/etc/ipython
sudo -u $AEN_SRVC_ACCT touch /opt/wakari/wakari-compute/etc/ipython/pyspark.sh
sudo -u $AEN_SRVC_ACCT chmod a+x /opt/wakari/wakari-compute/etc/ipython/pyspark.sh
```

The contents of the file should look like:

```
#!/usr/bin/env bash
# setup environment variable, etc.

export PYSPARK_PYTHON="/opt/wakari/anaconda/bin/python"
export SPARK_HOME="/usr/lib/spark"

# And Python path
export PYLIB=$SPARK_HOME:/python/lib
export PYTHONPATH=$PYTHONPATH:$PYLIB:/py4j-0.9-src.zip
export PYTHONPATH=$PYTHONPATH:$PYLIB:/pyspark.zip

export PYSPARK_SUBMIT_ARGS="--name yarn pyspark-shell"
```

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```
# run the ipykernel
exec /opt/wakari/anaconda/bin/python -m ipykernel $@
```

## Using PySpark

When creating a new notebook in a project, now there will be the option to select PySpark as the kernel. When creating such a notebook you'll be able to import pyspark and start using it:

```
from pyspark import SparkConf
from pyspark import SparkContext
```

NOTE: You can always add those lines and any other command you may use frequently in the PySpark setup file `00-pyspark-setup.py` as shown above.

## Enabling server-side session management

By default, AEN uses client-side session management which is vulnerable to session replay attacks if an attacker manages to steal a valid session ID of a user.

To enable server-side session management:

1. Modify the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file:

```
"USE_SERVER_BASED_SESSIONS": true,
```

2. Restart the AEN server service:

```
sudo service wakari-server restart
```

## Terminate terminal sessions on logout

By default, when a user logs out, their open terminal sessions will remain active.

To disable this behavior:

1. Modify the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file:

```
"TERMINATE_TERMINALS_ON_LOGOUT": true,
```

2. Modify the `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json` file:

```
"TERMINATE_TERMINALS_ON_LOGOUT": true,
```

3. Restart the AEN server service:

```
sudo service wakari-server restart
```

4. Restart the AEN gateway service:

```
sudo service wakari-gateway restart
```

### Upgrading AEN

**CAUTION:** These instructions are for upgrading AEN to the current version 4.3.1 from 4.3.0 ONLY. Each version must be upgraded iteratively from the previous version. Do not skip versions.

Upgrade instructions for previous versions:

- [AEN 4.3.0 upgrade instructions](#)
- [AEN 4.2.2 upgrade instructions](#)
- [AEN 4.2.1 upgrade instructions](#)
- [AEN 4.2.0 upgrade instructions](#)
- [AEN 4.1.3 upgrade instructions](#)
- [AEN 4.1.2 upgrade instructions](#)

For upgrades from versions before those listed above, please contact your enterprise support representative.

**NOTE:** Named Service Account functionality is available with AEN 4.0.0+ for new installations only. It is not available for upgraded installations. Contact your enterprise support representative for more information.

An AEN platform update requires that each instance of the 3 node types be upgraded individually:

- AEN Server
- AEN Gateway
- AEN Compute

The upgrade process requires that all AEN service instances be stopped, upgraded, and then restarted.

**NOTE:** Any commands that call for the root user can also be done using `sudo`.

If you encounter any difficulty during the upgrade process, see [Troubleshooting](#) which provides guidance on:

- processes
- configuration files
- log files
- ports

If you are unable to resolve an installation or upgrade problem, please contact your enterprise support representative.

### Before you upgrade

**CAUTION:** Make a tested backup of your installation before starting the upgrade. Upgrading to a higher version of AEN is not reversible. Any errors during the upgrade procedure may result in partial or complete data loss and require restoring data from backups.

**CAUTION:** Terminate all AEN applications and stop all projects before starting the upgrade process.

Before upgrading each service on each host:

1. Suspend the services on each of the nodes:

```
sudo service wakari-server stop
sudo service wakari-gateway stop
sudo service wakari-compute stop
```

2. Set the AEN Functional ID (“NFI”) and AEN Functional Group (“NFG”) to the NFI and NFG of the current installation:

```
export AEN_SRVC_ACCT="wakari"
export AEN_SRVC_GRP="wakari"
```

NOTE: The default NFI is wakari, but aen\_admin or any other name may be used instead.

For more information on NFI and NFG, see the *installation instructions*.

3. Install wget:

```
yum install wget
```

## Upgrading the AEN server node

NOTE: If you are using LDAP-based authentication, back up the /opt/wakari/wakari-server/etc/wakari/wk-server-config.json configuration file. After the server has been upgraded, copy that file back into the same location as before the upgrade.

Complete the following steps on the server host:

1. Stop the Elasticsearch service:

```
sudo service elasticsearch stop
```

2. Remove any previous index:

```
sudo rm -rf /var/lib/elasticsearch/*
```

NOTE: You can choose to keep the old index, but if you detect any issues with the search capabilities after the upgrade, you will need to run the following to start with a clean index:

```
sudo service wakari-server stop
sudo service elasticsearch stop
sudo rm -rf /var/lib/elasticsearch/*
sudo service elasticsearch start
sudo service wakari-server start
```

3. Upgrade the server:

```
pushd /tmp
wget http://j.mp/aen-server-update-4_3_1

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-server \
    --file aen-server-update-4_3_1

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-server \
    --no-deps \
    wakari-enterprise-server-conf-update=2.0.11
popd
```

4. Start Elasticsearch:

```
sudo service elasticsearch start
```

Or, if you do not want to use the search features, edit your server's `/opt/wakari/wakari-server/etc/wakari/config.json` file by adding the line `"SEARCH_ENABLED": false`.

5. Restart the *NGINX* server:

AEN server version `>= 4.1.3` uses Unix sockets for communication with *NGINX*. Restart *NGINX* to load this new configuration:

```
sudo service nginx restart
```

Alternatively, you can restart *NGINX* with:

```
sudo nginx -s stop
sudo nginx
```

6. Start the server:

```
sudo service wakari-server start
```

7. Check that the server is running properly:

```
sudo service wakari-server status
```

8. If you see *NGINX* errors, please check the configuration at `/opt/wakari/wakari-server/etc/nginx/conf.d/www.enterprise.conf:18`.
9. Connect to AEN server using your web browser with the correct protocol (`http` or `https`), hostname and port number.

## Upgrading the AEN gateway node

Complete the following steps on each gateway host:

1. Upgrade the gateway:

```
pushd /tmp
wget http://j.mp/aen-gateway-update-4_3_1

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-gateway \
    --file aen-gateway-update-4_3_1

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-gateway \
    --no-deps \
    wakari-enterprise-gateway-conf-update=2.0.11
popd
```

2. Start the gateway:

```
sudo service wakari-gateway start
```

3. Check that the gateway is running properly:

```
sudo service wakari-gateway status
```

4. Connect to the gateway using your web browser with the correct http/https, hostname and port number.

## Upgrading AEN compute nodes

Complete the following steps on each host where an AEN compute service is running:

1. Check for any `wakari-indexer` processes running:

```
ps aux | grep wakari-indexer
```

NOTE: If you stopped all the projects, you will not see any `wakari-indexer` processes running.

Terminate any remaining `wakari-indexer` processes:

```
sudo killall wakari-indexer
```

NOTE: The processes killed with `killall` are run by the `$AEN_SRVC_ACCT` user, so they can be killed as root with `sudo killall` or killed as the `$AEN_SRVC_ACCT` user with `sudo -u $AEN_SRVC_ACCT killall`. Example commands show the `sudo killall` option.

2. Check for any AEN applications processes running—Workbench, Viewer, Terminal or Notebook:

```
ps aux | grep wk-app-gateone
ps aux | grep wk-app-workbench
ps aux | grep wk-app-viewer
ps aux | grep wk-app-terminal
ps aux | grep jupyter-notebook
```

NOTE: If you stopped all the projects, you will not see any AEN app processes running.

Terminate any remaining AEN application processes by running one or more of the following:

```
sudo killall wk-app-gateone
sudo killall wk-app-workbench
sudo killall wk-app-viewer
sudo killall wk-app-terminal
sudo killall jupyter-notebook
```

3. Verify the contents of `/opt/wakari/anaconda/.condarc`. Modify it to contain the following entries, and possibly others if you customized the `.condarc` file.

NOTE: Modify the file as the `AEN_SRVC_ACCT` user (or be sure to keep the same ownership).

### channels:

- `https://conda.anaconda.org/t/<TOKEN>/anaconda-nb-extensions`
- `r`
- `https://conda.anaconda.org/wakari`
- `defaults`

### create\_default\_packages:

- `anaconda-client`
- `ipykernel`

NOTE: Contact your enterprise support representative to get your token for the Anaconda channel referenced above. Replace <TOKEN> with the actual token from your enterprise support representative.

- Upgrade each compute service:

```
pushd /tmp
wget http://j.mp/aen-compute-update-4_3_1

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/wakari-compute \
    --file aen-compute-update-4_3_1

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    --no-deps \
    -p /opt/wakari/wakari-compute \
    wakari-enterprise-compute-conf-update=2.0.15

popd
```

NOTE: When upgrading the wakari-compute environment, you may see ImportError warnings with some nbextensions. As long as the Validating message is OK, the ImportError warnings are harmless—a consequence of the post-link presence on those packages.

- Initialize the root environment to prime the package cache:

```
sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenv \
    --clone root
```

- Test the offline cloning step:

```
sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenvoffline \
    --clone root --offline
```

- Remove the test environments:

```
sudo rm -rf /opt/wakari/testenv
sudo rm -rf /opt/wakari/testenvoffline
```

- Install necessary dependencies:

NOTE: Skip this step if you already have these dependencies installed from previous installations.

```
sudo yum groupinstall "X Window System" -y
sudo yum install git -y
```

NOTE: If you don't want to install the whole X Window System, you must install the following packages to have R plotting support:

```
sudo yum install -y libXrender libXext libXdmcp libSM libICE libXt \
    dejavu-sans-fonts dejavu-serif-fonts dejavu-fonts-common \
    fontpackages-filesystem
```

- Start the compute service:

```
sudo service wakari-compute start
```

10. Verify the compute service is running properly:

```
sudo service wakari-compute status
```

11. Restart the AEN Server with:

```
sudo service wakari-server restart
```

12. Repeat this upgrade procedure for all compute nodes in your Data Center.

## After upgrading

1. Restart the projects and start using AEN applications.
2. If you have a *customized default environment*, you may choose to upgrade it depending on the needs of your users.

Upgrade the customized default environment at `/opt/wakari/anaconda/envs/default` with the `$AEN_SRVC_ACCT` user:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4_3_1

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/anaconda/envs/default \
    --file aen-anaconda-update-4_3_1

popd
```

To upgrade the customized default environments for every user and every project at `/projects/<USER>/<PROJECT>/envs/default`, run these commands for **every** user as that user:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4_3_1

sudo -E -u <USER> /opt/wakari/anaconda/bin/conda install \
    -p /projects/<USER>/<PROJECT>/envs/default \
    --file aen-anaconda-update-4_3_1

popd
```

NOTE: Replace `<USER>` with the user's name. Replace `<PROJECT>` with the project name.

NOTE: Upgrading the default environment at `/opt/wakari/anaconda/envs/default` does NOT automatically upgrade the default environment in the users pre-existing projects. For pre-existing projects, the upgrade, if requested, should be done on a per-user basis.

NOTE: These commands update packages listed in `aen-anaconda-update-4_3_1` and do not update any other package.

3. If you did not stop all your projects before upgrading, then the first time you start an application you will see an error page requesting that you restart the application.
4. Restart the application to complete the upgrade.
5. If you still see old applications or icons after restart, reload the page to reset the browser cache.

## Uninstalling AEN

Each AEN node must be uninstalled separately.

Begin by setting the AEN Functional ID (NFI). The NFI is the username of the AEN Service Account which is used to run all AEN services and is also the username of the AEN Admin account. The NFI may be any name. The default NFI is `wakari`. The NFI is also often set to `aen_admin`. The NFI (and AEN Functional Group or NFG) are described in *the installation instructions*.

Set the NFI with this command:

```
export AEN_SRVC_ACCT="aen_admin"
```

Replace the name `aen_admin` with the NFI that was set in your installation of Anaconda Enterprise Notebooks.

## Uninstalling a server node

To remove a server node, run the following commands as root or sudo on the server node's host system:

1. Stop the server processes:

```
service wakari-server stop
```

2. Stop MongoDB:

```
service mongod stop
```

3. Remove AEN server software, AEN database files and NGINX configuration:

```
rm -Rf /opt/wakari/wakari-server
rm -Rf /opt/wakari/miniconda
rm -Rf /var/lib/mongo/wakari*
rm -Rf /etc/nginx/conf.d/www.enterprise.conf
```

NOTE: Remove `/etc/nginx/conf.d/www.enterprise.https.conf` if SSL is enabled on the Server node.

4. Restart MongoDB and NGINX:

```
service mongod restart
service nginx restart
```

5. Check for any outstanding server processes and stop them:

```
ps -ef | grep -e wakari-server -e wk-server
```

6. Remove the AEN Service Account:

```
userdel $AEN_SRVC_ACCT
```

7. Check for and remove any references to “aen” or “wakari” from the root user's `.condarc` file:

```
grep -i aen ~/.condarc
grep -i wakari ~/.condarc
```



## Uninstalling a gateway node

To uninstall a gateway node, run the following commands as root or sudo on the gateway host system:

1. Stop the gateway processes:

```
service wakari-gateway stop
```

2. Remove gateway software:

```
rm -Rf /opt/wakari/wakari-gateway
```

3. Check for any outstanding gateway processes and stop them:

```
ps -ef | grep -e wakari-gateway -e wk-gateway
```

4. Remove the AEN Service Account:

```
userdel $AEN_SRVC_ACCT
```

5. Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc  
grep -i wakari ~/.condarc
```

## Uninstalling a compute node

To remove a compute node, run the following commands as root or sudo on each compute node host system:

1. Stop the compute processes:

```
service wakari-compute stop
```

2. Remove the compute software:

```
rm -Rf /opt/wakari/wakari-compute  
rm -Rf /opt/wakari/miniconda  
rm -Rf /opt/wakari/anaconda
```

3. Check for any outstanding compute processes and stop them:

```
ps -ef | grep -e wakari-compute -e wk-compute
```

4. Remove the AEN Service Account:

```
userdel $AEN_SRVC_ACCT
```

5. Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc  
grep -i wakari ~/.condarc
```

### OPTIONAL: Removing projects from compute nodes

CAUTION: This is an extreme measure and is not necessary in most instances. We recommend you create and verify a backup before doing this or any other file removal.

To remove all AEN projects from all of your compute nodes:

```
rm -Rf /projects
```

This is a step-by-step guide to installing an Anaconda Enterprise Notebooks system comprised of a front-end server, a gateway and compute machines.

If you have any questions about these instructions or you encounter any issues while installing AEN, please contact your sales representative or Priority Support team.

When you have completed the installation process, review the [optional configuration tasks](#) to see if any are appropriate for your system.

### Distributed install

In a distributed install the server and gateway run on separate hosts.

### Single-box install

In a single-box install, both the server and the gateway need separate external ports since they are independent services that are running on the same host in the single-box installation.

Both port 80 and port 8089 must be open on the firewall for a single-box install.

The compute node only receives connections from the gateway and server nodes and typically runs on port 80 or port 443.

### User management

#### Adding or removing an administrative user

An administrator can make any other user an administrator—or remove their administrator permissions—by using administrator commands in the Terminal application.

A user can also be designated as a superuser or as staff, giving them greater administrative privileges within the system.

#### Designating a user as an administrator/superuser

To designate a user as an administrator and superuser:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add <username>
```

NOTE: Replace <username> with the actual username.

EXAMPLE: To give administrative privileges to the user named “jsmith” and set them as a superuser, run:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add jsmith
```

## Removing an administrator/superuser

To remove a user's administrative privileges:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --remove <username>
```

NOTE: Replace <username> with the actual username.

## Allowing and restricting new user registration

When Open Registration is enabled, anyone who has access to the URL of your AEN server can create their own account.

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Accounts.

The screenshot shows the Admin Settings page. On the left, there is a navigation menu with two main sections: 'Staff' and 'Site Admin'. The 'Staff' section includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section includes links for 'General' and 'Accounts'. The 'Accounts' link is highlighted. On the right, the 'Cloud Registration' section is visible. It contains a checkbox labeled 'Open Registration' which is checked, with the text 'Allow new user signups' below it. There is a green 'Update' button at the bottom of this section.

3. To open user registration, select the Open Registration checkbox. To close registration, clear the checkbox.
4. Click the Update button.

## Resetting a user password

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Password Reset:

Anaconda Enterprise Notebooks settings accessible only by the system administrator.

The screenshot shows the 'Staff' menu on the left with options: Daily Report, Password Reset (highlighted), Notification, and Exceptions. The main content area is titled 'Password Reset' and contains a text input field with the value 'guest' and a 'Generate URL' button.

3. Enter the username of the user whose password needs to be reset.
4. Click the Generate URL button.

A password reset link is generated that you can email to the user.

Alternatively you may use the command line interface:

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin reset-password -u SOME_USER -p SOME_
↵PASSWORD
```

NOTE: Replace SOME\_USER with the username and SOME\_PASSWORD with the password.

3. Log in to AEN as the user.

## Managing permissions

This page explains the admin commands used to manage user permissions.

### Checking file ownership

To verify that all files in the /opt/wakari/anaconda directory are owned by the wakari user or group:

```
root@server # find /opt/wakari/anaconda \! -user wakari -print
root@server # find /opt/wakari/anaconda \! -group wakari -print
```

## Fixing file ownership settings

To fix the ownership settings of any files that are listed in the output:

```
chown -R wakari:wakari /opt/wakari/anaconda
```

## Setting a file owner and permissions

To set a file owner and set its permissions:

```
chown wakari:wakari /opt/wakari/wakari-server/bin/wk-*
chmod 700 /opt/wakari/wakari-server/bin/wk-*
```

## Verifying that POSIX ACLs are enabled

The `acl` option must be enabled on the file system that contains the project root directory.

NOTE: By default, the project root directory is `/projects`.

To determine the project root directory where a custom `projectRoot` is configured:

```
root@compute # grep projectRoot /opt/wakari/wakari-compute/etc/wakari/config.json
```

The mount options or default options listed by `tune2fs` should indicate that the `acl` option is enabled.

EXAMPLE:

```
root@compute # fs=`df /projects | tail -1 | cut -d " " -f 1`
root@compute # mount | grep $fs
/dev/vda on / type ext4 (rw)
root@compute # tune2fs -l $fs | grep options
Default mount options:    user_xattr acl
```

## Viewing a list of users

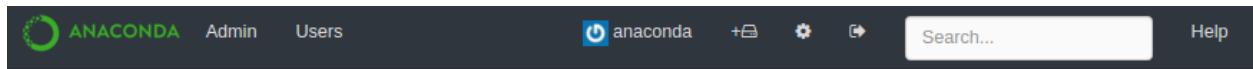
1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Users:

Staff	Users		
<a href="#">Daily Report</a>	<b>Username</b>	<b>Projects</b>	<b>Last Seen</b>
<a href="#">Password Reset</a>	<a href="#">aen_admin</a>	6	Sep 25, 2017 10:05:58 CDT
<a href="#">Notification</a>			
<a href="#">Exceptions</a>			
Site Admin			
<a href="#">General</a>			
<a href="#">Accounts</a>			
<a href="#">Users</a>			

The Users section lists the all users who are signed up, the number of projects they have created and the last time they logged on to AEN.

### Viewing a list of currently active users

In the AEN navigation bar, click Users.



# Users

List of currently active users in the system.

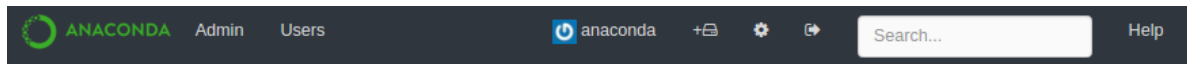
 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

Click a username to open the user's profile page.

## Viewing a user profile

A user's profile page includes a summary of the projects created by that user and a list of projects on which the user is a team member.

1. In the AEN navigation bar, click Users to see a list of users who are currently logged into the system.
2. On the Users page, click the username of the user whose profile page you want to view.



# Users

List of currently active users in the system.

	anaconda
	andrew
	bokeh
	christine
	guest
	hubert
	ivan
	paula
	simon
	tanya
	wakari

## Sending a system message

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Notification:



**Staff**

- Daily Report
- Password Reset
- Notification
- Exceptions

**Site Admin**

- General
- Accounts
- Users
- Security Log
- Data Centers
- Task Queue
- License

**Providers**

- Enterprise Resources

**Notification Settings**

☒ **Off**  
No email notification will be sent

☐ **SES - Amazon Simple Email Service**  
This requires a .boto file in the wakari home dir

☐ **SMTP Email Server**

**SMTP Settings**

SMTP Hostname

SMTP Username (optional)

SMTP Password (optional)

SMTP From Address (optional)

Update

The Notification Settings section allows you to create a system message that can be relayed to users.

By default, notifications are off.

- To turn on email notifications, select the radio button for the type of email service to use:
  - SES to use Amazon Simple Email Service (SES).
  - SMTP Email Server.

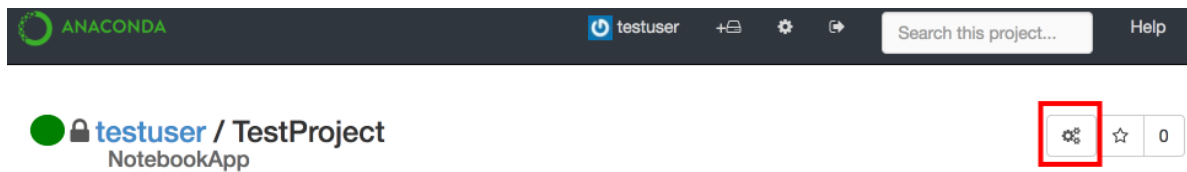
- If you select SMTP Email Server, complete the SMTP Settings.

NOTE: If you get an error message after changing the SMTP settings, you may need to restart the server.

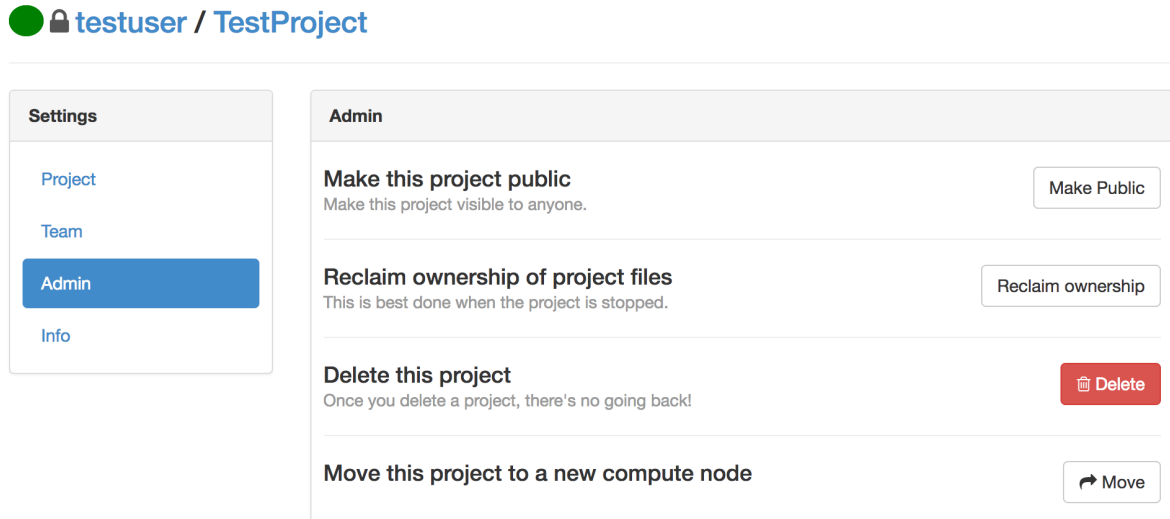
## Moving a project to another compute node

If you have multiple compute nodes available and want to move a project from one to another, the project must exist on both nodes.

- Verify that the project has been created on both compute nodes. You can use `rsync` for this job unless you have a shared file system like `nfs`.
- On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



4. Click the Move button.
5. In the move dialog box, click to choose the compute node destination, and click the Move button.

X

## Move this project to a new compute node?

Choose the compute node to move your project to.  
This project must exist on both compute nodes. Make sure that this is done before you move.

- If you are using a shared file system - like nfs - across compute-nodes, you don't have to do anything
- You can copy this project with `rsync`

☒ **R1 (r1.com)**  
This compute-node was created before this PR and is public by default

☐ **R2 (localhost)**  
This compute-node is private

☐ **R3 (localhost)**  
This compute-node is private, but sean has access

Close

Move

### Deleting a user

To remove a user from the AEN database:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-user <username>
```

NOTE: Replace <username> with the actual username.

NOTE: Changing the owner of a project requires that both the previous owner and the new owner are still AEN users. Before deleting a user, *change the owner* of that user's projects.

## Deleting a project

To remove a project from the AEN database:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-project <username> <projectname>
```

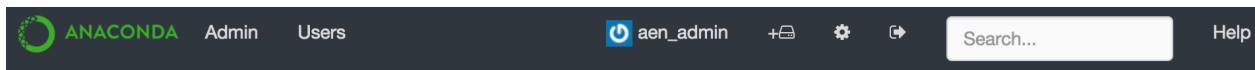
NOTE: Replace <username> with the actual username and <projectname> with the actual project name you are removing.

## System management

### Opening the Admin dashboard

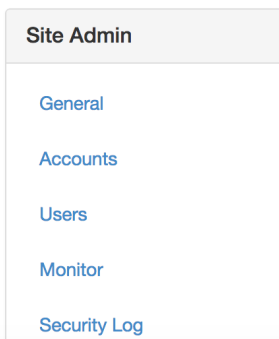
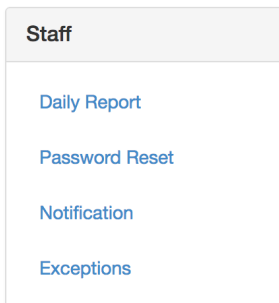
If you have administrator privileges, you see two additional links in the AEN navigation bar—Admin and Users:

To open the Admin dashboard, click the Admin link.



# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the system administrator.



## Backing up and restoring AEN

### Document purpose

This document lays out the steps to backup and restore Anaconda Enterprise Notebooks (AEN) for Disaster Recovery. It is not intended to provide High Availability. Each of the components (Server, Gateway and Compute) has its own instructions and each may be done individually as needed. The steps primarily involve creating tar files of important configuration files and data.

This document is written for a system administrator who is comfortable with basic Linux command line navigation and usage.

To migrate to a new cluster, use these backup and restore instructions to back up the system from the old cluster and restore it to the new cluster.

### Important notes

Review the [Concepts](#) page to become familiar with the different components and how they work together.

Root or sudo access is required for some commands.

**CAUTION:** All commands **MUST** be run by \$AEN\_SRVC\_ACCT (the account used to run AEN) except for those commands explicitly indicated to run as root or sudo. If the commands are not run by the correct user, the installation will not work, and a full uninstallation and reinstallation will be required!

These instructions assume that the fully qualified domain name (FQDN) has not changed for any of the component nodes. If any of the FQDNs are not the same, additional steps will be needed.

### Server component steps

#### Backup

##### Mongo database

This will create a single tar file called `aen_mongo_backup.tar` that includes only the database named “wakari” that is used by AEN. It also generates a log of the database backup.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
mongodump -db wakari -o aen_main >> mongo_backup.log
tar -cvf aen_mongo_backup.tar aen_main
```

##### AEN Server config files (including License file)

Create a tar file of all of the configuration files, including any license files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -cvf aen_server_config.tar -C /opt/wakari/ wakari-server/etc/wakari/
```

### Nginx config (if needed)

Make a copy of the nginx configuration file if it has been customized. The default configuration for the AEN server is a symlink.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
/etc/nginx/conf.d/www.enterprise.conf -> /opt/wakari/wakari-server/etc/nginx/conf.d/www.  
↪enterprise.conf
```

### SSL certificates (if needed)

Make a copy of the SSL certificates files (certfiles) for the server, including the key file, and a copy of the certfile for the gateway, which is needed for verification if using self-signed or private CA signed certs.

### Restore

#### Reinstall AEN-Server

See *the instructions for installing the current version of AEN-Server*.

It is not necessary to upload the license, because it will be restored with the config files.

NOTE: The new installation will generate a new password for the local \$AEN\_SRVC\_ACCT account.

#### Restore Mongo database

This assumes that mongo was reinstalled as part of the reinstallation of the server component. Untar the mongo database and restore it.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_mongo_backup.tar  
mongorestore --drop aen_main
```

NOTE: The --drop option resets the \$AEN\_SRVC\_ACCT user password and restores the database to the exact state it was in at the time of backup. Please see the [MongoDB documentation](#) for more information about mongorestore options for Mongo 2.6.

NOTE: AEN uses Mongo 2.6 by default. If you are using a different version, consult the documentation for your version.

#### AEN Server config files (including License file)

Untar the tar file of all of the configuration files, including any license files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_server_config.tar -C /opt/wakari/
```

Make sure the files are in /opt/wakari/wakari-server/etc/wakari/ and are owned by the \$AEN\_SRVC\_ACCT.

### Nginx config (if needed)

Make sure any modifications to the nginx configuration are either in `/etc/nginx/conf.d` or in `/opt/wakari/wakari-server/etc/nginx/conf.d/` with a proper symlink.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
/etc/nginx/conf.d/www.enterprise.conf -> /opt/wakari/wakari-server/etc/nginx/conf.d/www.  
↪enterprise.conf
```

### SSL certificates (if needed)

Move any SSL certificate files to the locations indicated in the config files.

### Restart server

Restart the server application.

NOTE: This command must be run as root or with `sudo`.

```
service wakari-server restart
```

## Gateway component steps

### Backup

### Config files

Create a tar file of all of the configuration files.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
tar -cvf aen_gateway_config.tar -C /opt/wakari/ wakari-gateway/etc/wakari/
```

### Custom .condarc file (if needed)

Make a copy of any `/opt/wakari/miniconda/.condarc` if it has been modified.

### SSL certificates (if needed)

Make a copy of SSL certificate files for the gateway (including the key file) and the certfile for the server (needed for verification if using self-signed or private CA signed certs).

### Restore

### Reinstall AEN-Gateway

#### Setting variables and changing permissions

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
export AEN_GATEWAY_PORT=8089
export AEN_GATEWAY=<FQDN HOSTNAME OR IP ADDRESS> # will be needed shortly
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists. If the terminal is closed before successful installation, export the variables to continue with the installation.

#### Running the AEN gateway installer

Run:

```
sudo -E ./aen-gateway-4.3.1-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-gateway
Logging to /tmp/wakari_gateway.log
...
...
Checking server name
Please restart the Gateway after running the following command
to connect this Gateway to the AEN Server
...
```

#### Config files

Untar the configuration files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_gateway_config.tar -C /opt/wakari
```

Verify that the files are in /opt/wakari/wakari-gateway/etc/wakari/ and are owned by the \$AEN\_SRVC\_ACCT.



### Custom .condarc file (if needed)

Move the custom .condarc file to /opt/wakari/miniconda/.condarc.

### SSL certificates (if needed)

Move any SSL certificate files to the locations indicated in the config files.

### Restart gateway

Restart the gateway application.

NOTE: This command must be run as root or with sudo.

```
service wakari-gateway restart
```

### Compute component steps

#### Backup

#### Config files

Create a tar file of all of the configuration files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -cvf aen_compute_config.tar -C /opt/wakari/ wakari-compute/etc/wakari
```

### Custom Changes (rare)

Manually backup any custom changes that were applied to the code. One change might be additional files in the skeleton folder:

```
/opt/wakari/wakari-compute/lib/node_modules/wakari-compute-launcher/skeleton
```

### Create user list

AEN uses POSIX access control lists (ACLs) for project sharing, so the backup must preserve the ACL information. This is done with a script that creates a file named `users.lst` containing a list of all users that have access to projects on a given compute node. Download and run the script.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
wget https://s3.amazonaws.com/continuum-airgap/misc/wk-compute-get-acl-users.py
chmod 755 wk-compute-get-acl-users.py
./wk-compute-get-acl-users.py
```

### Project files

Create a tar of the projects directory with ACLs enabled. The default projects base location is `/projects`.

NOTE: This command must be run as root or with sudo.

```
tar --acls -cpvf projects.tar -C <projects base location>/*
```

### Full Anaconda (option 1)

If any changes have been made to the default Anaconda installation (additional packages installed or packages removed), it is necessary to backup the entire Anaconda installation.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
tar -cvf aen_anaconda.tar -C /opt/wakari/anaconda/*
```

If no changes have been made to the default installation of Anaconda, you may just backup the `.condarc` file and any custom environments.

### Partial Anaconda (option 2)

#### Custom `.condarc` file

Make a copy of `/opt/wakari/anaconda/.condarc`.

#### Custom environments (if needed)

Create a tar file of any custom shared environments.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
tar -cvf aen_compute_envs.tar -C /opt/wakari/ anaconda/envs
```

NOTE: If no custom shared environments have been created, the `envs` folder will not be present.

### Restore

#### Reinstall AEN-Compute

#### Setting variables and changing permissions

NOTE: These commands must be run by `$AEN_SRVC_ACCT`.

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change `<FQDN HOSTNAME OR IP ADDRESS>` to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists.

## Running the AEN compute installer

Run:

```
sudo -E ./aen-compute-4.3.1-Linux-x86_64.sh -w $AEN_SERVER
...
...
PREFIX=/opt/wakari/wakari-compute
Logging to /tmp/wakari_compute.log
Checking server name
...
...
Initial clone of root environment...
Starting Wakari daemons...
installation finished.
Do you wish the installer to prepend the wakari-compute install location
to PATH in your /root/.bashrc ? [yes|no]
[no] >>> yes
```

## Config files

Untar the config files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_compute_config.tar -C /opt/wakari
```

NOTE: Verify that they are located in /opt/wakari/wakari-compute/etc/wakari and are owned by the \$AEN\_SRVC\_ACCT.

## Custom changes (rare)

Manually restore any custom changes you saved in the backup section. If there are changes in the skeleton directory, these files must be world readable or projects will refuse to start.

## Create users

NOTE: Only create users with these instructions if your Linux machine is not bound to LDAP.

In order for the ACLs to be set properly on restore, all users that have permissions to the files must be available on the machine. Ask your system administrator for the proper way to do this for your system, such as using the “useradd” tool. A list of users that are needed was created in the backup process as a file named `users.lst`.

A process similar to the following `useradd` example will be suitable for most Linux systems.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
xargs -0 -n 1 useradd --user-group < users.lst
```

### Project files

Create the projects directory in the location specified in projectRoot in wk-compute-launcher-config.json.

NOTE: By default this directory is /projects.

Then untar the projects directory with ACLs.

NOTE: This command must be run as root or with sudo:

```
tar --acls -xpvf projects.tar -C <projects base location>
```

### Full Anaconda (option 1)

If you did a full backup of the full Anaconda installation, untar this file to /opt/wakari/anaconda.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_anaconda.tar -C /opt/wakari
```

### Partial Anaconda (option 2)

Restore the custom .condarc file.

If you did a partial backup of the Anaconda installation, move the copy of the .condarc file to /opt/wakari/anaconda/.condarc.

### Custom environments (if needed)

Untar any custom environments that were created to /opt/wakari/anaconda/envs.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_compute_envs.tar -C /opt/wakari
```

### Restart compute node

Restart the compute-launcher application.

NOTE: This command must be run as root or with sudo.

```
service wakari-compute restart
```

## Viewing a list of admin commands

A user who is promoted to administrator can access administrator commands to perform advanced administrator tasks.

NOTE: Utility files are owned by, and should only be executed by, the AEN user who owns the files.

To display a list of all administrator commands:

```
ls -al /opt/wakari/wakari-server/bin/wk-*
```

## Viewing help for admin commands

To view help information for command, run the command followed by `-h` or `--help`.

EXAMPLE: To view help for the `remove-user` command:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-user -h  
/opt/wakari/wakari-server/bin/wk-server-admin remove-project -h
```

## Running daily reports

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Daily Report:

Staff

[Daily Report](#)

[Password Reset](#)

[Notification](#)

[Exceptions](#)

Site Admin

[General](#)

[Accounts](#)

[Users](#)

[Monitor](#)

[Security Log](#)

[Data Centers](#)

[Task Queue](#)

[License](#)

Providers

[Enterprise Resources](#)

## Report

[Today](#)
[Yesterday](#)
[This Week](#)
[This Month](#)

**From:**  
Sun Sep 24 15:09:03 2017

**Until:**  
Mon Sep 25 15:09:03 2017

**Date Range**  
1 day, 0:00:00

### Users

	New	Total
<b>Users</b>	0	1
<b>Projects</b>	0	6

### New User Emails

Username	Email
----------	-------

### Actions

Count	Action
82	<a href="#">oauth.authenticate</a>

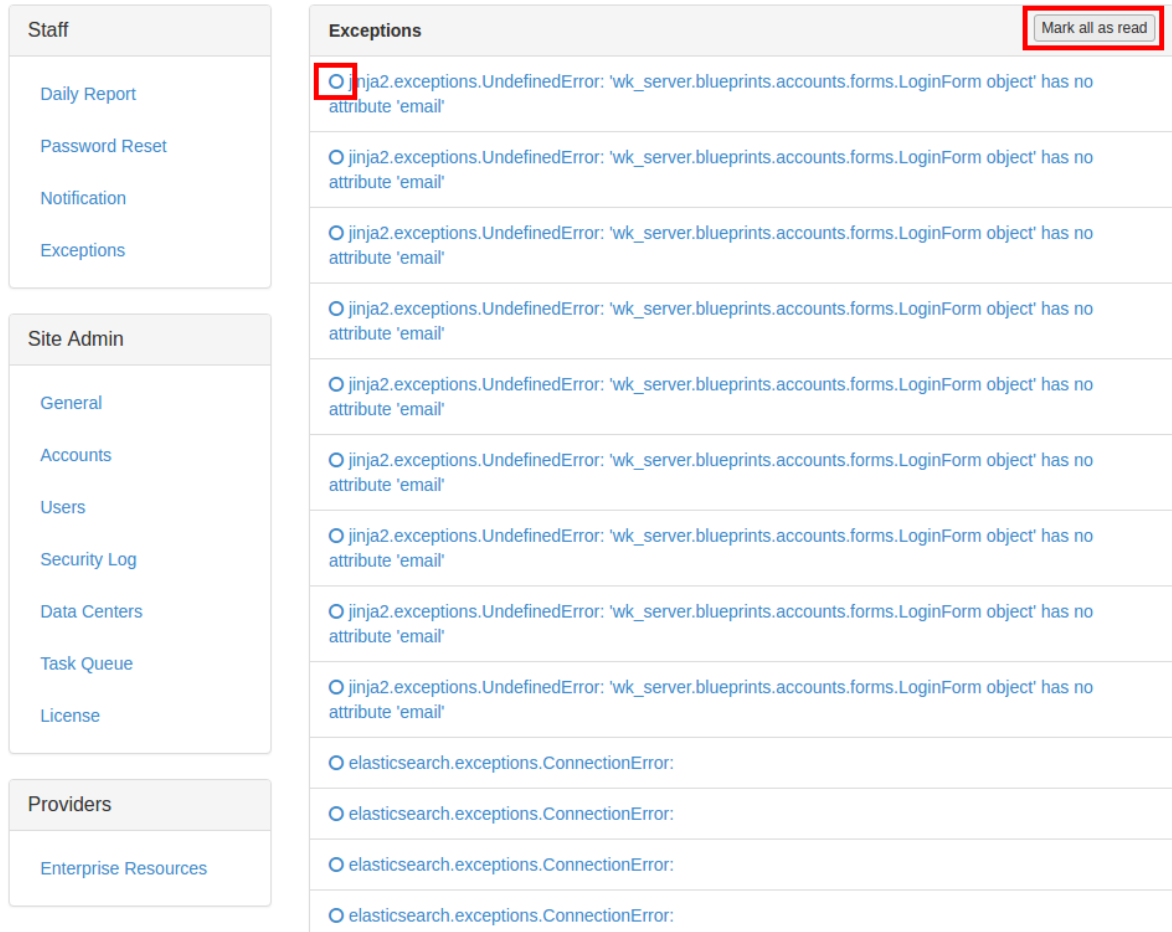
The Report section displays the following:

- Users—The number of users and projects.
- New User Emails—If *open registration is enabled*, the user names and emails for new users.
- Actions—The actions—projects created, projects updated, user authentications and added users—that have occurred in during the selected time frame—today, yesterday, this week, or this month.

## Viewing system errors

When an error occurs, a red dot is displayed in the AEN navigation bar next to the Admin link. The red dot is removed when all exceptions are marked as “read.”

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Exceptions:



The screenshot shows the AEN Admin Settings interface. On the left, there are three main menu sections: **Staff**, **Site Admin**, and **Providers**. The **Staff** menu is expanded, showing options like Daily Report, Password Reset, Notification, and Exceptions. The **Exceptions** option is selected. The main content area displays a list of exceptions. Each exception entry starts with a radio button, which is highlighted with a red box in the first entry. The text of the exceptions is as follows:

- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- elasticsearch.exceptions.ConnectionError:
- elasticsearch.exceptions.ConnectionError:
- elasticsearch.exceptions.ConnectionError:
- elasticsearch.exceptions.ConnectionError:

In the top right corner of the Exceptions list, there is a button labeled "Mark all as read", which is also highlighted with a red box.

The Exceptions section lists all errors that have occurred while AEN is running.

3. To see the details of an error, click the radio button next to the error. This also marks the error as “read.”
4. To mark all errors as read without reviewing each one, click the Mark all as read button.

## Viewing security errors

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Security Log:

Staff		Security Log			
<a href="#">Daily Report</a> <a href="#">Password Reset</a> <a href="#">Notification</a> <a href="#">Exceptions</a>		View	Actor	Action	Date
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 09:46:09 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 09:39:17 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 09:22:04 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 09:10:31 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 08:45:50 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 08:43:12 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 08:10:30 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 25, 2017 08:09:38 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 24, 2017 23:52:06 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 24, 2017 23:51:58 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 24, 2017 23:51:58 CDT
			<a href="#">aen_admin</a>	oauth.authenticate	Sep 24, 2017 23:51:58 CDT

The Security Log section lists all errors that have occurred that could potentially affect AEN security.

- To view a user's profile page, click their username in the Actor column.
- To see the details of an error, click the Eye icon next to the error.

The error details are displayed:

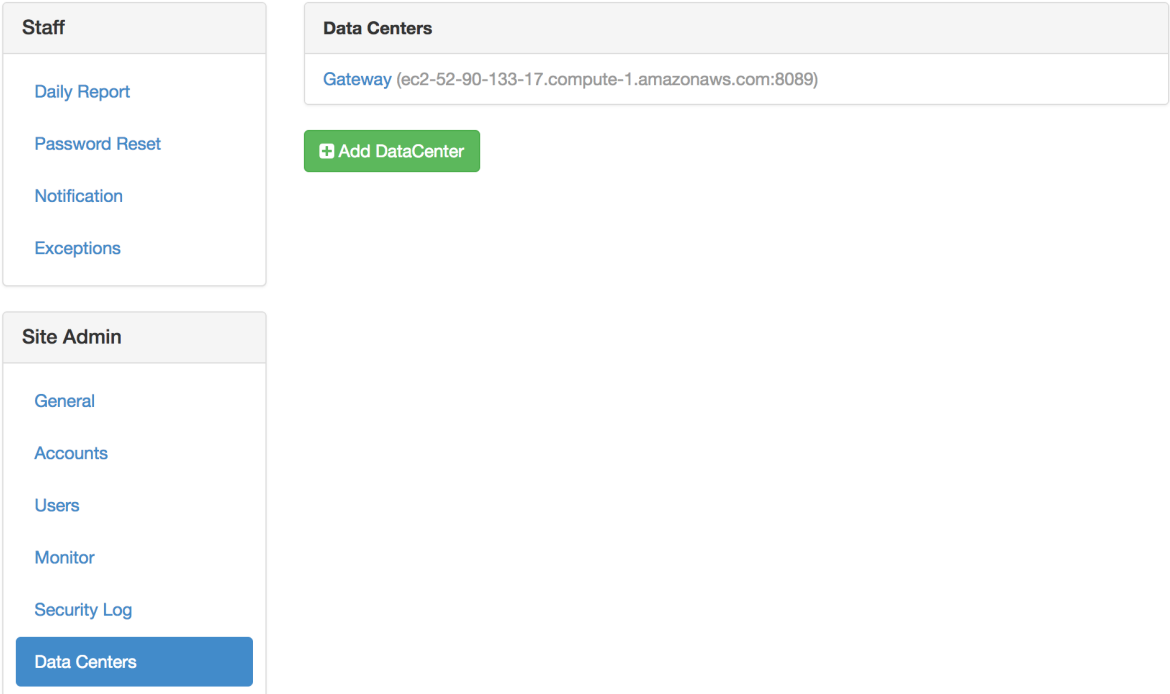
<a href="#">Public Profile</a> <a href="#">Account Settings</a> <a href="#">Security Log</a> <a href="#">Applications</a>	<table> <tr><th colspan="2">oauth.authenticate</th></tr> <tr><td>_id</td><td>59c907f03f94c30fe45ffb9e</td></tr> <tr><td>action</td><td>oauth.authenticate</td></tr> <tr><td>actor_id</td><td>59c069b1ae55d1b3fe9fa45e</td></tr> <tr><td>actor_username</td><td>aen_admin</td></tr> <tr><td>client_id</td><td>59c119cd3f94c30fe45ff5db</td></tr> <tr><td>remote_addr</td><td>None</td></tr> <tr><td>time</td><td>2017-09-25 13:43:12.479000+00:00</td></tr> <tr><td>token_id</td><td>59c907f03f94c30fe45ffb9d</td></tr> <tr><td colspan="2"><a href="#">⏪ Back</a></td></tr> </table>	oauth.authenticate		_id	59c907f03f94c30fe45ffb9e	action	oauth.authenticate	actor_id	59c069b1ae55d1b3fe9fa45e	actor_username	aen_admin	client_id	59c119cd3f94c30fe45ff5db	remote_addr	None	time	2017-09-25 13:43:12.479000+00:00	token_id	59c907f03f94c30fe45ffb9d	<a href="#">⏪ Back</a>	
oauth.authenticate																					
_id	59c907f03f94c30fe45ffb9e																				
action	oauth.authenticate																				
actor_id	59c069b1ae55d1b3fe9fa45e																				
actor_username	aen_admin																				
client_id	59c119cd3f94c30fe45ff5db																				
remote_addr	None																				
time	2017-09-25 13:43:12.479000+00:00																				
token_id	59c907f03f94c30fe45ffb9d																				
<a href="#">⏪ Back</a>																					

- To close the error details, click the Back link.



Managing data centers

- 1. In the AEN navigation bar, click Admin to open the Admin Settings page.
- 2. In the **Site Admin** menu, select Data Centers:



The Data Centers section displays current data center information.

Adding a data center

- 1. Click the Add DataCenter button to display the the Register a datacenter form.
- 2. In the Name box, type a Name for the new data center:

**Data Centers / Register a datacenter**

**Name**

☐ Subdomain Routing  
☐ Https

**Base Domain Name**

**summary**

**Provider**

3. Select the Subdomain Routing and/or Https checkboxes.
4. In the Base Domain Name box, type the base domain name.
5. In the Summary box, type a description of the data center.
6. In the Provider list, select a provider.
7. Click the Submit button.

## Managing enterprise resources

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Providers** menu, select Enterprise Resources:

The screenshot displays the Anaconda web interface. On the left, a sidebar menu is organized into three sections: 'Staff' with links for Daily Report, Password Reset, Notification, and Exceptions; 'Site Admin' with links for General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License; and 'Providers' with a link for Enterprise Resources. The main content area is titled 'Resources' and features a green 'Add Resource' button in the top right corner. Below this, a table lists existing resources. The table has a header row labeled 'Gateway' and a single data row containing the resource identifier 'ec2-54-210-232-251.compute-1.amazonaws.com' and a red 'remove' button.

Resources	
Gateway	
ec2-54-210-232-251.compute-1.amazonaws.com	<a href="#">remove</a>

The Resources section lists your existing cloud and local resources.

### Adding a resource

1. Click the Add Resource button to open the new resource form.
2. Complete the form:

**Resources** / new

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
Compute Node1

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**  
Configuring Compute Node

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Add Resource

3. Click the Add Resource button.

### Viewing or changing the resource details

1. Click a resource name to open the Local Resource form.
2. If necessary, change the resource details:

**Data Center**

Gateway 59c119cd3f94c30fe45ff5db

**Name**

ec2-54-210-232-251.compute-1.amazonaws.com

**URL**

http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**

{"status": "ok", "messages": []}

- Click the Update button.

## Making a node public or private

1. Click the resource name to open the Local Resource form.
2. Select or clear the Public checkbox:

**Data Center**

Gateway 59c119cd3f94c30fe45ff5db

**Name**

ec2-54-210-232-251.compute-1.amazonaws.com

**URL**

http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**

{"status": "ok", "messages": []}

3. Click the Update button.

## Removing a resource

Click the Remove button next to the resource you want to remove.

NOTE: When you remove a resource assigned to a project, the project becomes orphaned. To fix an orphaned project, :doc: *move the project to a valid Compute Resource* <../user-mgmt/move-project-to-compute-node>.

## Managing services

The tasks on this page assume that the 3 AEN nodes are installed in the following locations:

- Server—/opt/wakari/wakari-server/.
- Gateway—/opt/wakari/wakari-gateway/.
- Compute-Launcher—/opt/wakari/wakari-compute/.

## Checking the status of server node processes

1. Run:

```
# service wakari-server status
wk-server          RUNNING    pid 20758, uptime 5 days, 0:30:23
worker             RUNNING    pid 20757, uptime 5 days, 0:30:23
```

OR

```
root@server # ps -Hu wakari
  PID TTY          TIME CMD
 20756 ?           00:02:26 .supervisord
 20757 ?           00:05:58  mtq-worker
 20758 ?           00:00:08  wk-server
 20765 ?           00:02:00  wk-server
 20766 ?           00:01:55  wk-server
 20767 ?           00:02:20  wk-server
 20770 ?           00:02:02  wk-server
```

2. Run:

```
root@server # service nginx status
nginx (pid 26303) is running...
```

For more information on server processes, see [Server processes](#).

## Checking the status of gateway node processes

Run:

```
# service wakari-gateway status
wk-gateway                RUNNING    pid 1137, uptime 5 days, 1:59:28
```

OR

```
root@gateway # ps -Hu wakari
  PID TTY          TIME CMD
 1136 ?            00:01:59 .supervisord
 1137 ?            00:00:02  wk-gateway
```

For more information on gateway processes, see [Gateway processes](#).

## Checking the status of compute node processes

Run:

```
# service wakari-compute status
wk-compute                RUNNING    pid 22050, uptime 3 days, 1:03:19
```

OR

```
root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?            00:02:01 .supervisord
 1152 ?            00:00:01  wk-compute
```

For more information on compute node processes, see [Compute processes](#).

## Starting AEN services

Services should start automatically both when they are first installed and at any point when the system is restarted.

If you need to manually start an AEN service, you must start each node independently, because they may be running on separate machines.

NOTE: The process is basically the same for each node, but the path to the correct commands vary.

To manually start a service:

- On the server node, run:

```
service wakari-server start
```

- On the gateway node, run:

```
service wakari-gateway start
```

- On a compute node, run:

```
service wakari-compute start
```



## Verifying that AEN services are set to start with the system

To verify that AEN services are set up to start automatically:

1. Run the following command on each node:

```
chkconfig --list | grep wakari
```

2. If services are missing, add them:

```
chkconfig --add [wakari-server|wakari-gateway|wakari-compute]
```

3. *Restart the services.*

## Stopping AEN services

CAUTION: Do not stop or kill supervisord without first stopping wk-compute and any other processes that use it.

You must stop services on each node independently, because they may be running on separate machines.

To stop an AEN service:

- On the server node, run:

```
service wakari-server stop
```

- On the gateway node, run:

```
service wakari-gateway stop
```

- On a compute node, run:

```
service wakari-compute stop
```

Compute nodes may have running processes that are not automatically stopped. To stop them, run:

```
sudo /opt/wakari/wakari-compute/bin/wk-compute-apps kill-all
```

## Restarting AEN services

- On the server node, run:

```
service wakari-server restart
```

- On the gateway node, run:

```
service wakari-gateway restart
```

- On a compute node, run:

```
service wakari-compute restart
```

## Identifying extraneous processes

To get a complete list of the processes running under the wakari user account, run `ps -Hu wakari`.

EXAMPLE:

```
root@server # ps -Hu wakari
  PID TTY          TIME CMD
 20756 ?           00:02:26 .supervisord
 20757 ?           00:05:58 mtq-worker
 20758 ?           00:00:08 wk-server
 20765 ?           00:02:00 wk-server
 20766 ?           00:01:55 wk-server
 20767 ?           00:02:20 wk-server
 20770 ?           00:02:02 wk-server

root@server # ps -f -C nginx
UID      PID  PPID  C  STIME TTY          TIME CMD
root    26303      1   0  12:18 ?        00:00:00 nginx: master process /usr/sbin/nginx -c /etc/
↪nginx/nginx.conf
nginx   26305 26303   0  12:18 ?        00:00:00 nginx: worker process

root@gateway # ps -Hu wakari
  PID TTY          TIME CMD
 1136 ?           00:01:59 .supervisord
 1137 ?           00:00:02 wk-gateway

root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?           00:02:01 .supervisord
 1152 ?           00:00:01 wk-compute
```

- wk-server, wk-gateway and wk-compute should have PIDs reported by supervisorctl.
- The nginx master process should have a PID reported by service nginx status.
- If you have installed more than one AEN node on a single machine, the processes from all of the installed nodes should be displayed for that machine.
- On compute node(s), any AEN applications currently being run by users will be present.

EXAMPLE:

```
root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?           00:00:00 .supervisord
 1152 ?           00:00:00 wk-compute
 1340 ?           00:00:00 bash
 1341 ?           00:00:00 notebookwrapper
```

## Removing extraneous processes

If extra `wk-server`, `wk-gateway`, `wk-compute`, or `supervisord` processes are present, use the `kill` command to remove them to prevent issues with AEN.

You can safely *restart* any process that you remove in error.

## Making sure NGINX and MongoDB are running

In order for AEN to run, the dependencies `mongodb` and `nginx` must be up and running. If either of these fail to start, AEN will not be served on port 80.

Check if `nginx` and `mongod` are both running (RHEL 6x):

```
$ sudo service nginx status
nginx (pid 25956) is running...
```

```
$ sudo service mongod status
mongod (pid 25928) is running...
```

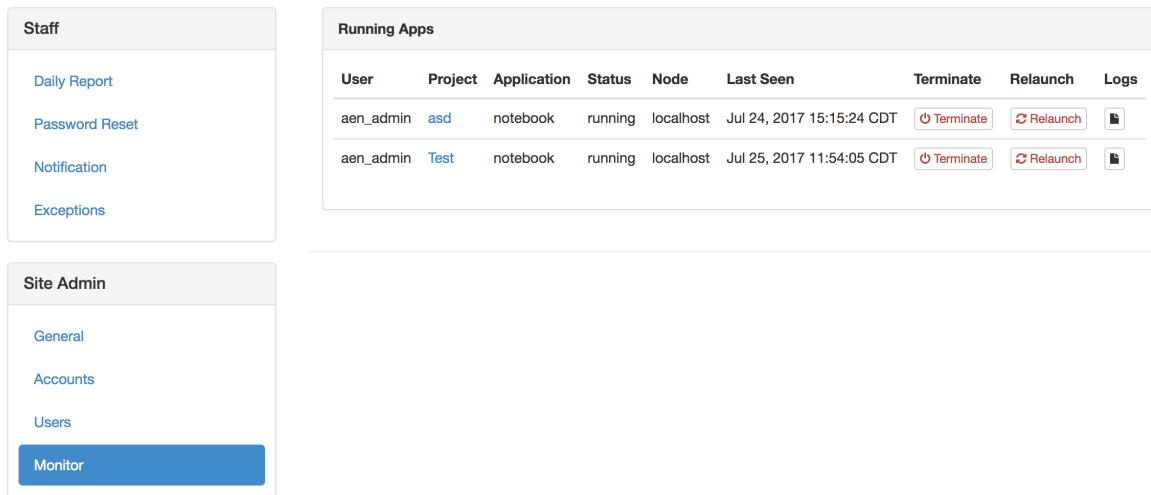
If either of these failed to start, tail the log files. The default location of log files is:

```
$ tail -n 50 /var/log/mongodb/mongod.log

# nginx errors reported in error.log
$ tail -n 50 /var/log/nginx/error.log
```

## Viewing, terminating, and relaunching applications

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Monitor:



The screenshot shows the AEN Admin Settings page. On the left, there is a 'Staff' menu with options: Daily Report, Password Reset, Notification, and Exceptions. Below it is a 'Site Admin' menu with options: General, Accounts, Users, and Monitor (highlighted in blue). On the right, there is a 'Running Apps' table with columns: User, Project, Application, Status, Node, Last Seen, Terminate, Relaunch, and Logs.

User	Project	Application	Status	Node	Last Seen	Terminate	Relaunch	Logs
aen_admin	asd	notebook	running	localhost	Jul 24, 2017 15:15:24 CDT	<a href="#">Terminate</a>	<a href="#">Relaunch</a>	<a href="#">Logs</a>
aen_admin	Test	notebook	running	localhost	Jul 25, 2017 11:54:05 CDT	<a href="#">Terminate</a>	<a href="#">Relaunch</a>	<a href="#">Logs</a>

The Monitor menu lists started applications by user and project.

The list includes columns for the application name, current running status, running node and last seen date.

3. Use the buttons to terminate or relaunch an application.

- 4. To view an application’s logs, click the Logs button with the document icon.

Viewing the task queue

- 1. In the AEN navigation bar, click Admin to open the Admin Settings page.
- 2. In the **Site Admin** menu, select Task Queue:

Staff

[Daily Report](#)

[Password Reset](#)

[Notification](#)

[Exceptions](#)

Site Admin

[General](#)

[Accounts](#)

[Users](#)

[Monitor](#)

[Security Log](#)

[Data Centers](#)

Task Queue

### Task Queue

Workers

ip-172-31-10-196.4053 | high default low

Queues

high

Backlog: 0

Failed: 1

default

Backlog: 0

Failed: 3

The Workers section lists the workers in the task queue and whether each worker is set at high, default or low priority.

The Queues section provides information on the default and high priority queues.

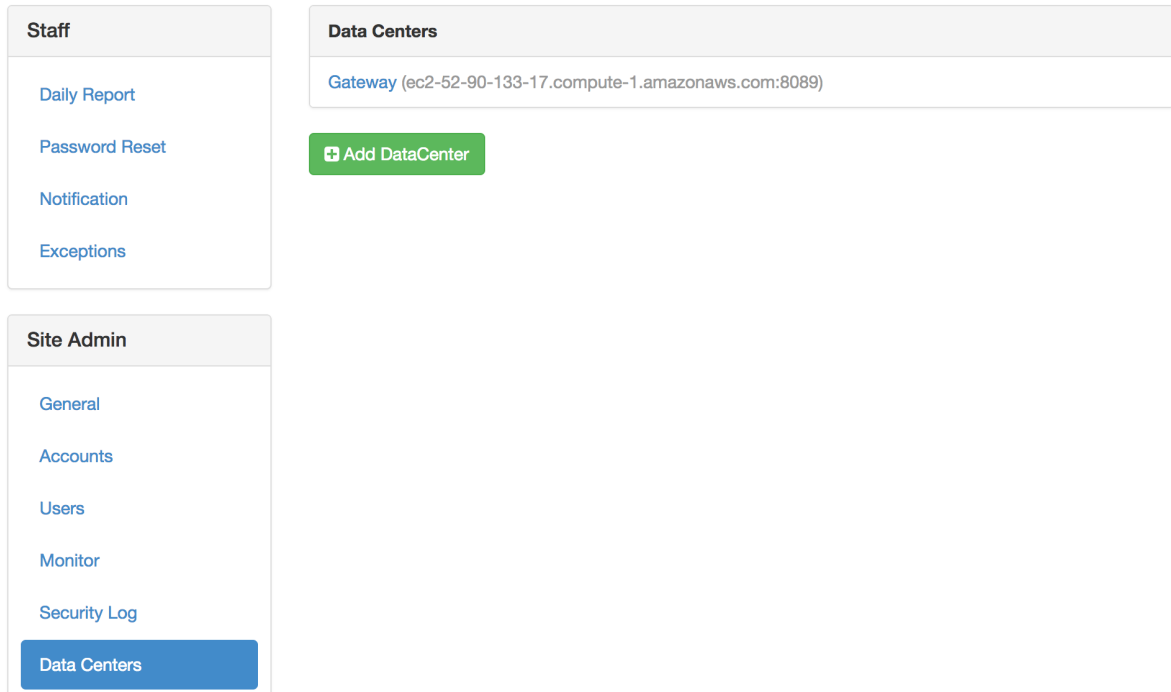
- 3. To view all the tasks in a particular queue, in the Queues section, click the queue name.

## Checking node connections

When the AEN nodes cannot communicate with each other as intended, it can cause issues with you AEN platform installation.

### Verifying server to gateway connectivity

1. On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Data Centers:



3. For each data center in the list, check connectivity from the server to that gateway.

EXAMPLE: The gateway in this example is `http://gateway.example.com:8089`:

```
root@server # curl --connect-timeout 5 http://gateway.example.com:8089 > /dev/null
```

### Verifying gateway to compute node connectivity

1. On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Providers** menu, select Enterprise Resources:

**Staff**

[Daily Report](#)  
[Password Reset](#)  
[Notification](#)  
[Exceptions](#)

**Site Admin**

[General](#)  
[Accounts](#)  
[Users](#)  
[Monitor](#)  
[Security Log](#)  
[Data Centers](#)  
[Task Queue](#)  
[License](#)

**Providers**

[Enterprise Resources](#)

**Resources** [+ Add Resource](#)

**Gateway**

[ec2-54-210-232-251.compute-1.amazonaws.com](#) [remove](#)

3. Open each compute node in the Resources section.
4. Verify that the contents of the URL field begin with either `http` or `https`.

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
ec2-54-210-232-251.compute-1.amazonaws.com

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**  
{ "status": "ok", "messages": [] }

5. Check connectivity to that URL from the corresponding gateway.

EXAMPLE: The gateway in this example is `http://gateway.example.com:8089`:

```
root@gateway # curl --connect-timeout 5 http://compute.example.com:5002 > /dev/null
```

## Verifying gateway to server connectivity

The gateway-to-server path is used by the gateway configuration command `wk-gateway-configure`.

1. Verify that the gateway is linked to the correct server in the configuration file.
2. Verify that the full server URL is specified.
3. Check connectivity to the server:

```
root@gateway # grep WAKARI_SERVER /opt/wakari/wakari-gateway/etc/wakari/wk-gateway-
↪config.json
"WAKARI_SERVER": "http://wakari.example.com",

root@gateway # curl --connect-timeout 5 http://wakari.example.com > /dev/null
root@gateway # curl --connect-timeout 5 http://error.example.com > /dev/null
curl: (7) Failed to connect to error.example.com port 80: Connection refused
```

4. If a connection fails:
  1. Ensure that gateways (data centers) and compute nodes (Enterprise Resources) are correctly configured on the server.
  2. Verify that processes are listening on the configured ports:

```
$ sudo netstat -nplt
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address   Foreign Address State  PID/Program
tcp        0      0 *:80            *:.*           LISTEN 26409/nginx
tcp        0      0 *:22            *:.*           LISTEN 986/sshd
tcp        0      0 127.0.0.1:25    *:.*           LISTEN 1063/master
tcp        0      0 *:5000          *:.*           LISTEN 26192/python
tcp        0      0 127.0.0.1:27017 *:.*           LISTEN 29261/mongod
tcp        0      0 *:22            *:.*           LISTEN 986/sshd
tcp        0      0 127.0.0.1:25    *:.*           LISTEN 1063/master
```

3. Check the firewall setting and logs on both hosts to ensure that packets are not being blocked or discarded.

## Verifying and tuning search indexing

For search indexing to work correctly, a compute node must be able to communicate with the server. To verify this:

1. Run:

```
curl -m 5 $AEN_SERVER > /dev/null
```

2. Verify that there are sufficient inotify watches available for the number of subdirectories within the project root file system:

```
cat /proc/sys/fs/inotify/max_user_watches
```

NOTE: Some Linux distributions default to a low number of watches, which may prevent the search indexer from monitoring project directories for changes.

3. If necessary, increase the number of watches:



```
echo fs.inotify.max_user_watches=100000 | sudo tee -a /etc/sysctl.conf && sudo
↵ sysctl -p
```

4. Verify that there are sufficient inotify user instances available—at least one per project:

```
cat /proc/sys/fs/inotify/max_user_instances
```

5. If necessary, increase the number of inotify user instances:

```
echo fs.inotify.max_user_instances=1000 | sudo tee -a /etc/sysctl.conf && sudo
↵ sysctl -p
```

## Changing the AEN server URL

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

<p><b>Staff</b></p> <ul style="list-style-type: none"> <li>Daily Report</li> <li>Password Reset</li> <li>Notification</li> <li>Exceptions</li> </ul> <p><b>Site Admin</b></p> <ul style="list-style-type: none"> <li><b>General</b></li> <li>Accounts</li> <li>Users</li> <li>Monitor</li> <li>Security Log</li> <li>Data Centers</li> <li>Task Queue</li> <li>License</li> </ul> <p><b>Providers</b></p>	<p><b>General Admin Settings</b></p> <p><b>Wakari Server</b> Set the main URL where this site will be accessed</p> <input type="text" value="http://anaconda-enterprise.trl"/> <p><b>Static URL</b> Set static URL where the js can be accessed</p> <input type="text" value="http://anaconda-enterprise.trl/static/"/> <p><b>Default Project Access</b> This will be the default when a user creates a project</p> <p> <input type="radio"/> <b>Public</b> Anyone can see this project. Collaborators have write access         </p> <p> <input checked="" type="radio"/> <b>Private</b> No one can see this project except collaborators.         </p> <p><b>Account Type</b></p> <input type="text" value="wk_server;plugins.accounts.cloud"/> <p><b>Update</b></p> <p><b>Config Files</b></p>
---	---

3. In the Wakari Server box, type the main URL where the site can be viewed.
4. Click the Update button.

## Changing the static URL for JavaScript files

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

The screenshot shows the Admin Settings page with the 'General' tab selected under 'Site Admin'. The left sidebar contains a 'Staff' section with links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. Below it is the 'Site Admin' section with 'General' highlighted, and other links for 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and 'License'. At the bottom of the sidebar is the 'Providers' section. The main content area is titled 'General Admin Settings' and includes three sections: 'Wakari Server' with a text input for the main URL (http://anaconda-enterprise.trl), 'Static URL' with a text input for the static URL (http://anaconda-enterprise.trl/static/), and 'Default Project Access' with radio buttons for 'Public' and 'Private' (selected). Below these is the 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. A green 'Update' button is at the bottom of the settings area. A 'Config Files' section is visible at the very bottom of the page.

Staff	General Admin Settings
<a href="#">Daily Report</a>	<b>Wakari Server</b> Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
<a href="#">Password Reset</a>	<b>Static URL</b> Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
<a href="#">Notification</a>	<b>Default Project Access</b> This will be the default when a user creates a project  <input type="radio"/> <b>Public</b> Anyone can see this project. Collaborators have write access  <input checked="" type="radio"/> <b>Private</b> No one can see this project except collaborators.
<a href="#">Exceptions</a>	<b>Account Type</b> <input type="text" value="wk_server.plugins.accounts.cloud"/>
	<input type="button" value="Update"/>
	<b>Config Files</b>

3. In the Static URL box, type the static URL where JavaScript files can be accessed.
4. Click the Update button.

## Changing the AEN account type

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

<div>Staff</div> <div>Daily Report</div> <div>Password Reset</div> <div>Notification</div> <div>Exceptions</div>	<div>General Admin Settings</div> <div> <b>Wakari Server</b>  Set the main URL where this site will be accessed  <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> <b>Static URL</b>  Set static URL where the js can be accessed  <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> <b>Default Project Access</b>  This will be the default when a user creates a project  <div> <input type="radio"/> <b>Public</b>  Anyone can see this project. Collaborators have write access </div> <div> <input checked="" type="radio"/> <b>Private</b>  No one can see this project except collaborators. </div> </div> <div> <b>Account Type</b>  <input type="text" value="wk_server.plugins.accounts.cloud"/> </div> <div> <input type="button" value="Update"/> </div>
<div>Site Admin</div> <div>General</div> <div>Accounts</div> <div>Users</div> <div>Monitor</div> <div>Security Log</div> <div>Data Centers</div> <div>Task Queue</div> <div>License</div>	<div>Providers</div> <div>Config Files</div>

3. In the Account Type box, select the account type—cloud or LDAP.
4. Click the Update button.

### Changing the default for project access

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

The screenshot shows the Anaconda Enterprise Admin interface. On the left is a sidebar with three main sections: 'Staff' (containing links for Daily Report, Password Reset, Notification, and Exceptions), 'Site Admin' (containing links for General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License), and 'Providers'. The 'General' link under 'Site Admin' is selected. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' with a text input field containing 'http://anaconda-enterprise.trl'; 'Static URL' with a text input field containing 'http://anaconda-enterprise.trl/static/'; and 'Default Project Access' with two radio button options: 'Public' (unselected) and 'Private' (selected). Below these is an 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the settings section is a green 'Update' button. Below the settings section is a 'Config Files' section.

3. Under Default Project Access, select the default access type for new projects: Public or Private.
4. Click the Update button.

## Changing the owner of a project

To change the owner of a project:

1. Collect the project name, the user name of the previous owner, and the user name of the new owner.
2. Run the `wakari-server` executable command `wk-server-admin`:

```
/opt/wakari/wakari-server/bin/wk-server-admin project-owner --project PROJECT --old_
↪OLD_OWNER --new NEW_OWNER --delete --keep-owner
```

- **PROJECT**: The project name.
- **OLD\_OWNER**: The user name of the previous owner.
- **NEW\_OWNER**: The user name of the new owner.
- **--delete**: An optional flag that deletes the old project directory in the `projects` directory of **OLD\_OWNER**. If this flag is not used, the old project directory is preserved but no longer used.
- **--keep-owner**: An optional flag that makes **OLD\_OWNER** a collaborator of the project after it is transferred to **NEW\_OWNER**. If this flag is not used, **OLD\_OWNER** will no longer have collaborator access to the project.

**NOTE:** The **OLD\_OWNER** user must still exist when the project's owner is changed. Before deleting any user, be sure to change the owner of the user's projects.

## Editing configuration files

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General.

<div>Staff</div> <div>Daily Report</div> <div>Password Reset</div> <div>Notification</div> <div>Exceptions</div>	<div>General Admin Settings</div> <div> <b>Wakari Server</b>  Set the main URL where this site will be accessed  <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> <b>Static URL</b>  Set static URL where the js can be accessed  <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> <b>Default Project Access</b>  This will be the default when a user creates a project  <div> <input type="radio"/> <b>Public</b>  Anyone can see this project. Collaborators have write access </div> <div> <input checked="" type="radio"/> <b>Private</b>  No one can see this project except collaborators. </div> </div> <div> <b>Account Type</b>  <input type="text" value="wk_server.plugins.accounts.cloud"/> </div> <div> <input type="button" value="Update"/> </div>
<div>Site Admin</div> <div>General</div> <div>Accounts</div> <div>Users</div> <div>Monitor</div> <div>Security Log</div> <div>Data Centers</div> <div>Task Queue</div> <div>License</div>	
<div>Providers</div>	<div>Config Files</div>

3. In the Config Files section, change the configuration settings for your AEN installation. For more information on configuration files, see [Using configuration files](#).
4. Click the Update button.

## Managing your AEN license

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select License:

The screenshot displays the Admin Settings interface. On the left, there are two vertical navigation menus. The 'Staff' menu includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' menu includes links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and a highlighted 'License' button. The main content area is titled 'Current License' and features a light blue banner stating 'You have 166 days remaining on your current license.' with a 'Renew your license' button. Below this, a table lists license details: product (Anaconda Enterprise Notebooks), vendor (Continuum Analytics, Inc.), name (Continuum Development), end\_date (2018-03-10), issued (2017-03-10), company (Continuum Analytics), type (undefined), and email (dev@continuum.io). At the bottom, the 'Upload New License' section contains a 'License File' input field with a 'Choose File' button and the text 'No file chosen', followed by an 'Update' button.

Current License	
You have <b>166 days</b> remaining on your current license.	
<a href="#">Renew your license</a>	
<b>product</b>	Anaconda Enterprise Notebooks
<b>vendor</b>	Continuum Analytics, Inc.
<b>name</b>	Continuum Development
<b>end_date</b>	2018-03-10
<b>issued</b>	2017-03-10
<b>company</b>	Continuum Analytics
<b>type</b>	undefined
<b>email</b>	dev@continuum.io

Upload New License	
<b>License File</b>	
<a href="#">Choose File</a>	No file chosen
<a href="#">Update</a>	

The Current License section displays information regarding your AEN license, including the name of the product, vendor, license holder's name, end and issued dates, company name, license type, and contact email.

## Renewing your AEN license

1. Click the Renew your license button.
2. In the Upload New License section, click the Choose File button.
3. Select the new license file.
4. Click the Open button.
5. Click the Update button.

Your renewed license information is displayed.

## Cheat sheet

The Admin dashboard includes three menus in the left column: **Staff**, **Site Admin** and **Providers**.

### Staff menu

- Daily Report—See the number of users and projects.
- Password Reset—Reset a user password.
- Notification—Send system messages to users via SES or SMTP.
- Exceptions—If errors are raised while AEN is running, a red dot appears in the AEN navigation bar. Review errors and mark them as read.

### Site Admin menu

- General—Change the configuration settings for your AE Notebook server installation.
- Accounts—Turns on or off Open Registration.
- Users—View usernames, number of projects and last logins.
- Monitor—View status of applications with related data, terminate or restart
- Security Log—View errors that could affect security.
- Data Centers—View current data centers and add a new data center.
- Task Queue—View workers in the task queue and priority.
- License—View current AEN license or upload a new license.

### Providers menu

Enterprise Resources—View, add or remove local or cloud services and designate public or private to control access to a compute node.

## Troubleshooting

This troubleshooting guide provides you with ways to deal with issues that may occur with your AEN installation.

### General troubleshooting steps

1. Clear browser cookies. When you change the AEN configuration or upgrade AEN, cookies remaining in the browser can cause issues. Clearing cookies and logging in again can help to resolve problems.
2. *Make sure NGINX and MongoDB are running.*
3. Make sure that AEN services are *set to start at boot*, on all nodes.
4. *Make sure that services are running* as expected. If any services are not running or are missing, *restart them*.
5. *Check for and remove extraneous processes.*
6. *Check the connectivity between nodes.*

7. *Check the configuration file syntax.*
8. *Check file ownership.*
9. *Verify that POSIX ACLs are enabled.*

### Browser error: too many redirects

#### Cause

Browser cookies are out of date.

#### Solution

1. Log out.
2. Clear the browser's cookies.
3. Clear the browser cache.
4. Log in.

### Browser error: too many redirects when starting project apps

Browser shows “Too many redirects” when the user tries to start an application.

#### Cause

The project's Compute Resource is invalid or was deleted.

#### Solution

*Move the project to a valid Compute Resource.*

### Exception: `exceptions.TypeError: 'NoneType' object has no attribute '__getitem__'`

This exception appears on the Admin > Exceptions page when a project does not have a Compute Resource assigned.

#### Cause

The project's Compute Resource is invalid or was deleted.



## Solution

*Move the project to a valid Compute Resource.*

### Error: `unix:///opt/wakari/wakari-server/etc/supervisor.sock` no such file

This is a supervisorctl error.

## Cause

supervisord is not running on the Server.

## Solution

Ensure that supervisord is included in the crontab. Then restart supervisord manually.

### Error: “Data Center Not Found” when deleting a project

## Cause

The data center has been removed.

## Solution

As root, run:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-project --db-only <user> <project>
```

## Forgotten administrator password

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin reset-password -u SOME_USER -p SOME_
↪PASSWORD
```

NOTE: Replace SOME\_USER with the administrator username and SOME\_PASSWORD with the password.

3. Log in to AEN as the administrator user with the new password.

Alternatively you may add an administrator user:

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin add-user SOME_USER --admin -p SOME_
↪PASSWORD -e YOUR_EMAIL
```

NOTE: Replace SOME\_USER with the username, replace SOME\_PASSWORD with the password, and replace YOUR\_EMAIL with your email address.

3. Log in to AEN as the administrator user with the new password.

### Log files being deleted

Log files are being deleted.

NOTE: Locations of AEN log files for each process and application are shown in the node sections in *Concepts*.

### Cause

AEN installers log in to `/tmp/wakari\_{server,gateway,compute}.log`. If the log files grow too large, they might be deleted.

### Solution

To set the logs to be more or less verbose, Jupyter Notebooks uses `Application.log_level`.

To make the logs less verbose than the default, but still informative, set `Application.log_level` to `ERROR`.

### Error: This socket is closed

You receive the “This socket is closed” error message when you try to start an application.

### Cause

When the `supervisord` process is killed, information sent to the standard output `stdout` and the standard error `stderr` is held in a pipe that will eventually fill up.

Once full, attempting to start any application will cause the “This socket is closed” error.

### Solution

To prevent this issue:

- Follow the instructions in *Managing services* to stop and restart processes.
- Do not stop or kill `supervisord` without first stopping `wk-compute` and any other processes that use it.

To resolve the “This socket is closed” error:

1. Stop `wk-compute` by running `sudo kill -9`.
2. Restart the `supervisord` and `wk-compute` processes:

```
sudo /etc/init.d/wakari-compute stop
sudo /etc/init.d/wakari-compute start
```

## Service error 502: Cannot connect to the application manager

Gateway node displays “Service Error 502: Can not connect to the application manager.”

### Cause

A compute node is not responding because the wk-compute process has stopped.

### Solution

Stop and then restart the supervisord and wk-compute processes:

```
sudo /etc/init.d/wakari-compute stop
sudo /etc/init.d/wakari-compute start
```

## 502 communication error on Amazon web services (AWS)

You receive the “502 Communication Error: This gateway could not communicate with the Wakari server” error message.

### Cause

An AEN gateway cannot communicate with the Wakari server on AWS. There may be an issue with the IP address of the Wakari server.

### Solution

Configure your AEN gateway to use the DNS hostname of the server. On AWS this is the DNS hostname of the Amazon Elastic Compute Cloud (EC2) instance.

## Invalid username

### Cause

The username does not follow 1 or more of these rules:

- Must be at least 3 characters and no more than 25 characters.
- The first character must be a letter (A-Z) or a digit (0-9).
- Other characters can be a letter, digit, period (.), underscore (\_) or hyphen (-).
- The [POSIX standard](#) specifies that these characters are the portable filename character set, and that portable usernames have the same character set.

### Solution

Follow the above rules for usernames.

### Notebook Error: Cannot download notebook as PDF via LaTeX

#### Cause

LaTeX is not properly installed.

#### CentOS/6 Solution

1. Install TeXLive from the [TUG site](#). Follow the described steps. The installation may take some time.
2. Add the installation to the PATH in the file `/etc/profile.d/latex.sh`. Add the following, replacing the year and architecture as needed:

```
PATH=/usr/local/texlive/2017/bin/x86_64-linux:$PATH
```

3. Restart the compute node.

#### CentOS/7 Solution

1. Install the missing packages running the command:

```
yum install texlive texlive-xetex texlive-xetexconfig texlive-xetex-def texlive-  
↪adjustbox texlive-upquote texlive-ulem
```

### Unresponsive wk-server thread without error messages

#### Cause

Two things can cause the `wk-server` thread to freeze without error messages:

- LDAP freezing
- MongoDB freezing

If LDAP or MongoDB are configured with a long timeout, Gunicorn can time out first and kill the LDAP or MongoDB process. Then the LDAP or MongoDB process dies without logging a timeout error.

## Solution

1. Check for frozen LDAP or MongoDB server processes.
2. You may also wish to configure the Gunicorn timeout to more than 30 seconds.

## Unresponsive wk-gateway thread without error messages

### Cause

If TLS is configured with a passphrase protected private key, wk-gateway will freeze without any error messages.

### Solution

Update the TLS configuration so that it does not use a passphrase protected private key.

## Error starting projects

Project's status page shows "There was an error starting this project".

### Cause

Lack of disk space in compute nodes prevents projects from starting.

### Solution

1. Verify that the project node meets the *system requirements*.
2. Check if there is enough free space on the compute node's partition where `/projects` lives:

```
df -h /projects
```

3. Free up some disk space to meet the system requirements.
4. Restart the project.

## Changes in .condarc file are ignored

Changes applied to `.condarc` are ignored by conda.

### Cause

Conda loads its configuration by merging multiple files together.

### Solution

Check if you are applying the changes to the correct file.

To show the merged state that conda is currently using:

```
conda config --show
```

To show all config files that conda is currently reading:

```
conda config --show-sources
```

## Frequently asked questions

### What is AEN?

For information on AEN, see *Anaconda Enterprise 4 Notebooks*.

### Can notebooks be shared with anyone?

Yes. When you share a Jupyter Notebook through AEN, it can be viewed and run without the need to install anything special, regardless of what libraries were used to create the notebook. Each notebook also includes the python environment that it needs to run in.

AEN allows users to clone a shared Jupyter Notebook into their AEN account to make whatever changes or modifications they want. The notebook's Python environment is also cloned, so it runs in the same environment as the shared Jupyter Notebook unless it is changed.

### Can I disable the option, “publish your notebook to anaconda.org”?

Yes. The upload button in the notebook app executes the option “publish your notebook to anaconda.org”. To disable it, log in as the AEN\_SRVC\_ACCT and run these commands:

```
source activate /opt/wakari/wakari-compute
jupyter-nbextension disable nb_anacondacloud --py --sys-prefix
jupyter-serverextension disable nb_anacondacloud --py --sys-prefix
```

### How can I check the version number of my AEN server?

Go to this URL in a browser: `http://$AEN_SERVER/admin/list`

NOTE: Replace `$AEN_SERVER` with the domain name or the domain name and port number of your AEN server.

### Can I use AEN to access CSV or Amazon S3 data?

Yes. If your data is in CSV files, upload the CSV files to your AEN account using the upload controls in the File Browser of the Workbench Application or the File Transfer Application.

To access data stored on Amazon S3, use the Boto interface from AEN. See the public data files in AEN for examples of how to use Boto to pull your data from Amazon S3 into AEN. For more information, see [Boto documentation](#).

You can also use IOPro to simplify and optimize the conversion of your data into Python arrays.

### Can I install other Python packages?

Yes, by creating a custom environment for your packages within your project.

For more information, see [Using the NBConda extension](#).

### Can I create a Python environment from the command line?

Yes, you can use the `conda create` command to create custom Python environments with whatever packages you choose. All AEN environments are shared with all the team members of a project.

EXAMPLE: In this example, `myenv` is a new environment containing the NumPy package.

```
conda create -n myenv numpy
```

NOTE: Python, Jupyter Notebooks and PIP are installed by default in all new AEN environments.

To use your new environment, activate it by running `source activate myenv`.

### Can I connect to GitHub with AEN?

Yes, you have full access to GitHub through an AEN Terminal application.

To generate an SSH key from your AEN account and add it to your GitHub account:

1. [Generate a GitHub SSH key](#).
2. Copy your key by running `cat ~/.ssh/id_rsa.pub`.
3. Select and copy the contents of the `id_rsa.pub` file to the clipboard.
4. Follow [GitHub's instructions](#) to go to your GitHub account and paste it from your clipboard into the appropriate box in your GitHub settings.

### Can I print or print preview my Jupyter Notebooks?

Yes, you can print your notebooks using your browser's regular printing capabilities.

You can also preview the printed page by clicking the **File** menu and selecting Print Preview.

### Is there a set amount of storage on AEN?

No, there is no set limit for storage in AEN. You are limited only by the size of the disk where AEN is installed.

If you need more storage, contact your system administrator.

### How do I get help, give feedback, suggest features or report a bug?

See *Help and support*.

### Help and support

Priority support is included with the purchase of an Anaconda subscription.

Contact your administrator first if you are having problems. Your administrator has a service level agreement where your issue will be responded to within a specific response time, depending on type and severity.

### Training and consulting

Training and consulting is available for AEN and any other Anaconda product.

For more information, please contact your account representative or [email the sales team](#).

### Providing feedback

Your feedback is very important to us!

Please, send us any [product feedback](#) while you are thinking about it.

TIP: Be sure to select AEN as the Platform Component Name.

### Submitting feature requests

We'd love to hear your ideas for consideration in future releases!

Your ideas help us build a better product. Your administrator can submit a support ticket for you.

NOTE: You can also request new features by using the [product feedback](#) form.



## Reporting a bug

If you think you have found a bug, please contact your administrator immediately. They will open a support ticket for your issue.

## Additional resources

The following resources are useful for getting started with Jupyter Notebooks:

- [Jupyter Notebook quick start guide](#)
- [Jupyter Notebook user documentation](#)
- [GitHub](#) shows the most popular Jupyter notebooks of the [month](#), [week](#), and [day](#).

## Release notes

### v4.3.1 March 25, 2019

Administrator-facing changes:

- Add option for server-side session management
- Add option to terminate terminal sessions on logout

Internal Fixes: - Set Secure and HTTPOnly flag on session cookies - Fix XSS vulnerability

### v4.3.0 October 24, 2018

Administrator-facing changes:

- Fix bug where compute logging wasn't respecting the `logMaxFiles` key
- Log and display a descriptive error message when there is a problem creating the users index
- Log and display a descriptive error message when there is a problem creating a new user with a duplicated e-mail address when the `uniqueEmail` setting is enabled
- Add footer server pages with server host data (IP, AEN version and server version)
- Fix admin script to change the status of private projects
- Fix validation error when updating/editing an existing resource
- Docs: Add KB article about using MongoDB to update old projects with new Data Center information
- Docs: Add restarting service step to SSO documentation
- Docs: Add support for newer versions of MongoDB
- Docs: Add documentation on `uniqueEmail`
- Docs: Add `projDirsAsHome` key to config docs
- Docs: Rewrite the "Using project directories as home directories" section
- Docs: Add full path to admin commands
- Docs: Warn about upgrading away from tested pkgs
- Docs: Add missing steps to "Authenticating with LDAP" section

- Docs: Add troubleshooting documentation about orphaned projects
- Docs: Warn about not using IP address when you connect to AEN
- Docs: Add an entry about 'Error starting projects' in the troubleshooting page
- Docs: Rewrite "Group and user permissions for NFS" section and description of the `identicalGID` key in the config pages
- Docs: Add a new section about using MRO packages in AEN (Update: MRO was discontinued in 2021)
- Docs: Preserve username capitalization when using LDAP/AD
- Docs: Add umask 0022 to security requirements
- Docs: Add new section about changing install location
- Docs: Add note about how to manually break out Root CA for the gateway
- Docs: Add note about upgrading custom environments
- Docs: Add notes about how to find conda config files inside AEN
- Docs: Add note about using `USE_SERVER_BASED_SESSIONS: false` when configuring SSO between AEN and versions 2.33.3 through 2.33.10 of the Repository

### User-facing changes:

- Increase Workbench file upload limit
- Fix Bokeh examples
- Extend `nb_locker` to detect a server disconnection and generate an alert if it occurs
- Docs: Update the notebook app to correctly point to AEN docs
- Docs: Emphasize that permissions are not applied recursively in the workbench

### Internal fixes:

- Update Nginx version to v1.12.2
- Remove unused server config file during the compute upgrade process
- Remove already defined compute default settings from the post-script step
- Pin `widetsnbextension` version to prevent version mismatch issue (ipywidgets)
- Remove `--offline` flag from the conda clone operations
- Support MongoDB 3.4.14 and update pymongo to version 3.2.2
- Fix LDAP username case sensitivity
- Security fixes and enhancements

## v4.2.2 March 1, 2018

### Administrator-facing changes:

- Add admin command to change project owner
- Server: Add ability to disable public projects
- Gateway: Add support for SSL private key passphrase
- Docs: Add backup and restore runbook to the docs

- Docs: Emphasize backups before upgrading process
- Docs: Recommend putting AEN and projects folder on the same filesystem
- Docs: Add RHEL version 7.4 to supported versions
- Docs: Add troubleshooting instructions to fix problems when downloading notebook as PDF via LaTeX

User-facing changes:

- Upgrade bokeh to version 0.12.7
- Upgrade holoviews to version 1.8.3
- Upgrade numba to version 0.35.0
- Upgrade scikit-learn to version 0.19.0

Internal fixes:

- Fix bug in init scripts when requiretty is enabled
- Fix bugs related to AEN\_SUDO\_SSH option
- Fix bug in fix\_ownership function when directories contain spaces
- Docs: Fix error in Active Directory configuration example
- Server: Fix bug when updating user/group in supervisor configuration files in post-install for server and gateway
- Server: Fix bug Admin reports on user totals are inconsistent
- Server: Fix error in login screen when open registration and LDAP are enabled
- Server: Fix bug in Last seen date
- Server: Fix bug Monitor Report blank
- Server: Load JS files from local CDN
- Server: Fix error when terminating or relaunching an application from Monitor
- Server: Fix error creating projects when using Internet Explorer 11
- Compute: Fix 404 errors when using pivottablesjs
- Remove Wakari Cloud leftovers

### **v4.2.1 December 18, 2017**

Administrator-facing changes:

- None

User-facing changes:

- None

Internal fixes:

- Fix undetected “ca” key when using self-signed certificates signed by a private CA
- Fix login redirects when using SSL
- Add verify gateway SSL certificate for get and post requests

### v4.2.0 November 22, 2017

#### Administrator-facing changes:

- Feature/allow remote MongoDB
- Allow for configuration for login timeout and set default
- Add verbose option to conda create clone
- Avoid duplicate name for resources / compute-nodes
- Allow renaming main and message queue databases
- PAM-based authentication module
- Change wakari logos to Anaconda logos
- Replace 'wakari' wording
- New config option to move the user's home directory into the user's project directory
- Make logging less verbose in AEN
- Documentation for PySpark kernel installation
- Improve SSL documentation

#### User-facing changes:

- New config option to move the user's home directory into the user's project directory
- Package cache was moved from user's home directory into the user's project directory
- Change wakari logos to Anaconda logos
- Fix error for deleting tags to work
- Define shell prompt in `.projectrc` template
- Replace 'wakari' wording

#### Internal fixes:

- Move server unix socket from `/tmp` to `/opt/wakari/wakari-server/var/run`
- Make project deletion synchronous for consistency
- Avoid storing `csrf` token in the user profile
- Expire gateway session when server logs out
- Allow log rotation in the three components
- Fix permissions on static files
- Change log level to debug in gateway
- Do not log private keys in gateway
- Save request remote address when logging action
- Unify logs formatting and timezone in compute nodes with Winston
- Several fixes and documentation improvements

**v4.1.3 August 16, 2017**

- Upgrade conda to version 4.3.24
- Upgrade anaconda to version 4.4.0
- Admin application monitor
- Block access to package list view
- Add placeholders in password reset form
- Change static content location
- Fix error when checking for package updates in notebook application
- Replace slashes in project tags
- Fix submit errors in password reset form
- Replace/remove “wakari” word from multiple places
- Fix missing commands missing sudo in start-project
- Improve gateway and compute node validators
- Check if bzip2 is installed during server setup process
- Include port number in host header
- Forbid creation of empty tags
- Repair “Create Account” link in login page
- Use UTC for server logs
- Mark datacenters as trusted by default
- Disable heart beating
- Compute resource: Show full path to log file
- Improve init scripts
- Allow deleting all projects
- mtq: Implement exponential backoff on connection error to mongodb
- In the general admin display, do not show the bind password for LDAP
- The accelerate package has been removed from the installation
- Other minor bugfixes

**v4.1.2 March 29, 2017**

This is mainly a maintenance release improving internal machinery and upgrading the root packages.

- Upgrade conda to version 4.3.14
- Upgrade Anaconda to 4.3.1
- Upgrade r-base to 3.2.2
- Fixed AEN nb\_conda to be compatible with conda 4.3.x series
- Several documentation fixes

- Other minor bugfixes

### **v4.1.1 December 15, 2016**

- Added CentOS 7 support
- Support dots in usernames
- More usernames validation
- Fixed creation (through nb\_conda) of single letter environment names
- Environment names (through nb\_conda) validation
- Fixed uploading of notebook using nb\_anacondacloud
- Fixed attaching of environments in published notebooks through nb\_anacondacloud
- Several documentation fixes
- Other bugfixes

### **v4.1.0 October 21, 2016**

- Added JupyterLab application
- Removed GateOne terminal application
- Included additional notebook extensions (nbpresent and nb\_anaconda\_theme)
- Updated to conda 4.2.9 in default project environments
- Added HTTP timeout setting for gateway and compute launcher
- Changed default gateway port to 8089
- Added support for all-numeric usernames
- Add R channel to default conda configuration file
- Other bugfixes

### **v4.0.0 June 30, 2016**

- Customized installation with:
  - AEN Functional ID and Group
  - AEN (installation and run) sudo commands
  - Removal of root access from the AEN service account
  - Configurable sudo command
  - Restriction of sudo access to all the processes
- Upgrade Jupyter to 4.2
- Upgrade the anaconda-nb-extensions to the latest versions
- Upgrade Anaconda to 4.0
- Deprecate wakari-publisher

- Security enhancements
- SSL configuration documented between all AEN Server components
- Several bugfixes
- Overall documentation revision and general improvement

### **v0.10.0 February 2, 2016**

- New projects dashboard
- Capability to star and tag a project
- Sticky searches
- New Jupyter Notebook extensions
- Updates to all packages. Highlights: bokeh 0.11, ipython/jupyter 4.1.

### **v0.9.1 October 19, 2015**

- New Search capability to find projects and files within a project.
- Added “Related Projects” list to the project view, based on code similarity.
- New UI for fine-grained access control of project files in the Workbench app
- Viewer app now renders plain text files correctly
- Updated LDAP configuration docs
- Updates to all packages. Highlights: bokeh 0.10, ipython/jupyter 4.0.

**Note** ElasticSearch, and an Oracle JRE, must be installed on the server in order to use the new search features. Indexing of project files will begin when the project is started (or paused and re-started). If search features are not desired, set "SEARCH\_ENABLED": `false` in the server configuration file to avoid errors.

### **v0.8.0 August 21, 2015**

#### **New Features**

- Updated packages based on Anaconda 2.3, and removed older packages no longer in Anaconda.
- Updated IPython to version 3.2.1
- Documentation is now installed with the server (use the Help link in the top navigation bar)
- Added the ability for the administrator to define a customized default project environment.
- The server has been updated to use python 2.7.10.
- Init scripts are now provided for each Anaconda Enterprise Notebooks service.
- Added relevant links to some error pages

### Problems Resolved in this Release

- Project status indicators (e.g. starting, pausing) now automatically update.
- If an access is unauthorized, the server now returns a 403 (Unauthorized) status code and prompts the user to log in.
- Modified nginx configuration to support running the server on non-standard ports.
- The server installation no longer uses a default password for the wakari user. A random password is generated and displayed during installation.
- Prevent double-click from attempting to create a project twice
- Removed an obsolete script reference that was causes a 404 error to be logged in the browser console when opening the Terminal app.
- The installer scripts no longer fail if the database already contains the 'wakari' user.
- Updated example notebooks to work with latest Bokeh release.
- Fixed terminal app key bindings to allow Mac command key to work normally
- Installers now indicate where the installation logs are stored
- LDAP user attributes containing binary data are now ignored.

### Documentation Updates

- Updated and consolidated Troubleshooting guide.
- Simplified some steps in the installation procedure.
- Updated notebooks in the Examples directory for use with the latest IPython Notebook and Bokeh.
- Added a section on project permissions to the Troubleshooting guide.
- Added notes on how to remove a project if the datacenter has already been removed.

### v0.7.0 June 12, 2015

#### New Features

- Updated Bokeh to v0.9
- Ability to list packages installed on the server
- Administrators now have full access to all projects.
- Added automated checking and display of connection status between server, data centers, and compute resources.
- When creating a new project, an environment for the project is automatically created as a clone of the root Anaconda environment.



## Problems Resolved in this Release

- Problem with checking in files with revision control extension
- Revision control extension can't handle notebook names with spaces
- Problem moving files from one compute node to another if configured for LDAP
- Should default to UTF-8 encoding and warn user if no locale is detected
- Adding a compute resource via the command line admin tool does not work
- The installer now sets `umask 0022` to ensure correct file permissions

## Documentation Updates

- Added a *Troubleshooting* section to the documentation.
- Added notes on how to configure crontab to start the Anaconda Enterprise Notebooks services at startup
- Example SSL config file now has correct log paths
- Added instructions on how to ensure that POSIX ACL support is enabled on the projects directory.
- Fixed syntax problem in sample LDAP config.json
- Added section on how to use self-signed or private CA certificates

## v0.6.3 March 27, 2015

- Updated LDAP module
- LDAP user filtering
- Added Notebook locking
- Added Notebook integrated revision control system
- Move projects between compute nodes
- User-specific binding to compute nodes (private compute nodes)
- Improved installation process and dependency checking
- Incorporated support for SSL for Server and Gateway nodes
- Improved Gateway error handling
- Fixed package dependencies for update process
- Documentation updates

### Previous versions

Documentation for previous versions of AEN is provided for users who have not yet upgraded to the latest version. See the sidebar for links to other documentation versions.

### Anaconda Enterprise 4 Notebooks

*Empower the Data Science Team with cross-collaboration*

AEN is a browser-based Python data analysis environment and visualization tool from Anaconda®. AEN is a ready-to-use, powerful, fully-configured data analytics environment all in a secure, governed environment.

AEN allows data science team members to create and share private notebooks, manage access, control notebook revisions, compare and identify differences across notebook versions, search notebooks for keywords and packages, use enhanced collaborative notebook features—including revision control and locking—and to access an on-premises and/or cloud collaborative notebook server.

The current version of AEN is 4.3.0, released October 24th, 2018.

### User guide

AEN's browser-based management of private packages, notebooks, and environments allows data science team members to:

- Create, share and manage private notebooks.
- Control notebook revisions.
- Compare and identify differences across notebook versions.
- Search notebooks for keywords and packages.
- Use enhanced collaborative notebook features including revision control and locking.
- Access on-premises and/or cloud-based collaborative notebook servers.
- Utilize multiple language kernels like Python and R language in the same notebook.
- Create new notebook environments on the fly without leaving the notebook or entering commands in a prompt.
- Publish results to business stakeholders as interactive visualizations and presentations.

To quickly get up and running with AEN, see [Getting started](#).

Download the [Cheat sheet](#) for easy reference.

### Concepts

#### Projects

AEN users interact with the system predominantly through projects.

A project is a set of conda environments, Jupyter Notebooks, and other files.

Each project has a project drive that all team members can access. The size of the drive is not limited by AEN. Contact your system administrator if you find you do not have sufficient space.

Each project has a separate project directory on the project drive.

The project directory is a directory for project files and data that is separate from the project owner's and team members' home directories, so that team members can share and have equal access.

The path to your project directory is `/projects/<project_owner>/<project_name>`.

For administrative information about projects, directories, and permissions, see [Projects and permissions](#).

## Team collaboration

Teams collaborate in AEN using projects. Projects allow a team to easily come together by sharing the resources, applications, and environments that are necessary to collaborate effectively.

The AEN project owner and any team members connected to their project will have access to the same:

- Shared files and home directories.
- Shared Python and R environments.
- Shared nodes and hardware.
- Common applications.
- Web user interface.

For more information, see [Working with projects](#).

## Access control

AEN access controls allow you to:

- Add and remove project access for new team members.
- Limit the access to specific folders and files to members of your project team.
- Use permissions to extend execute access to team members. By default, all of the team members on a project have read and write access to all project assets.

Access control is performed from each project's Workbench application.

For more information, see [Controlling access to your project](#).

## Sharing projects

AEN supports both public and private sharing.

A project can be “public,” which means that anyone with access to the system can view the project assets.

Any content placed in the `public` folder in a project is publicly accessible using its URL.

A project can be “private,” which means that only the project owner and team members can view the project assets.

You can also [limit who can access specific files](#).

### Sharing Jupyter Notebooks

In addition to general project sharing capabilities, you can also publish Jupyter Notebooks to Anaconda Repository. This automatically versions the notebook and allows you to define who can view the notebook.

### Project tags

Tags are used to:

- Group similar or related projects.
- Identify your project so that it is easier to find.
- Let others know about your project.

You can *add and remove tags* for any project that you have access to.

### Getting started

This section contains information and tasks for first-time AEN users.

#### 1. Download the AEN cheat sheet

Before you start, download and print the *AEN cheat sheet* for easy reference.

#### 2. Access your user home page

After your administrator has set up your server and new Anaconda account, you will receive a welcome email.

1. Click the link in the email to open the AEN login page.

NOTE: Use the domain name and not the IP address when you connect to AEN. Using the IP address can cause TLS and security certificate errors.

2. Enter your AEN account username and password.

NOTE: Some administrators allow you to create your own account. If your administrator has allowed this, in the create a new account section, create your own username and password.

3. Click the Login button.

Your user home page, where all good things happen, is displayed:

The screenshot shows the Anaconda user profile for 'NewUser2'. The header includes the Anaconda logo, the username 'NewUser2', and a search bar. The profile information shows the user joined on Oct 20, 2016, with email 'newuser@mycompany.com' and 1 project. The 'Projects (1)' section shows a project named 'NewProject' with a description 'Woo hoo! I finally get to play with notebooks!'. The 'Contributing (0)' section shows 'Not currently contributing to any projects.' The 'Top Tags' section lists 'Fun fun fun' and 'Test project'. The 'Top Collaborators' and 'Top Rated' sections are empty.

### 3. Create a new project

1. There are 2 ways to create a new project in AEN:

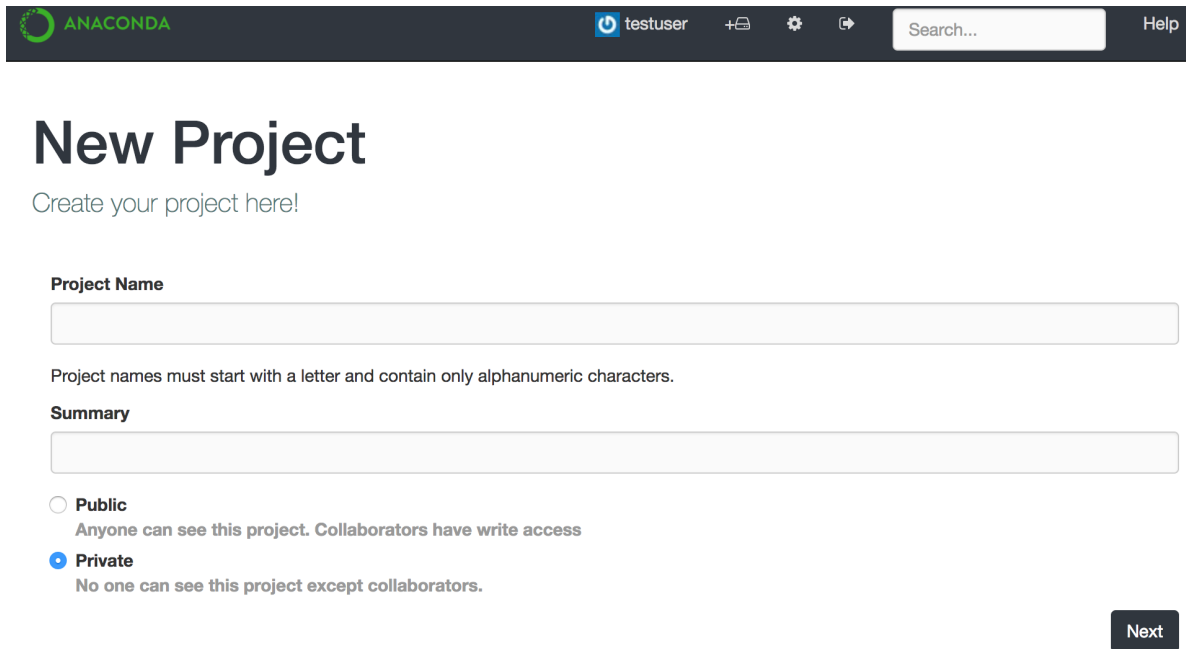
- On the right side of the AEN task bar, click on the New Project icon:



- On your home page, click the New project button:

The screenshot shows the Anaconda user profile for 'testuser'. The header includes the Anaconda logo, the username 'testuser', and a search bar. The profile information shows the user joined on Sep 21, 2017, with email 'testuser@outlook.com' and 2 projects. The 'Projects (2)' section shows two projects: 'TestProject' and 'TestProject1', both with descriptions 'NotebookApp'. The 'New project' button is highlighted with a red circle. The 'Top Tags' section lists '!@#\$\$%^&\*()\_+.', 'Abc', and '.)('.

2. On the Project page that is displayed, type a name for your project, such as “Testing.”



**Project Name**

Project names must start with a letter and contain only alphanumeric characters.

**Summary**

☐ **Public**  
Anyone can see this project. Collaborators have write access

☒ **Private**  
No one can see this project except collaborators.

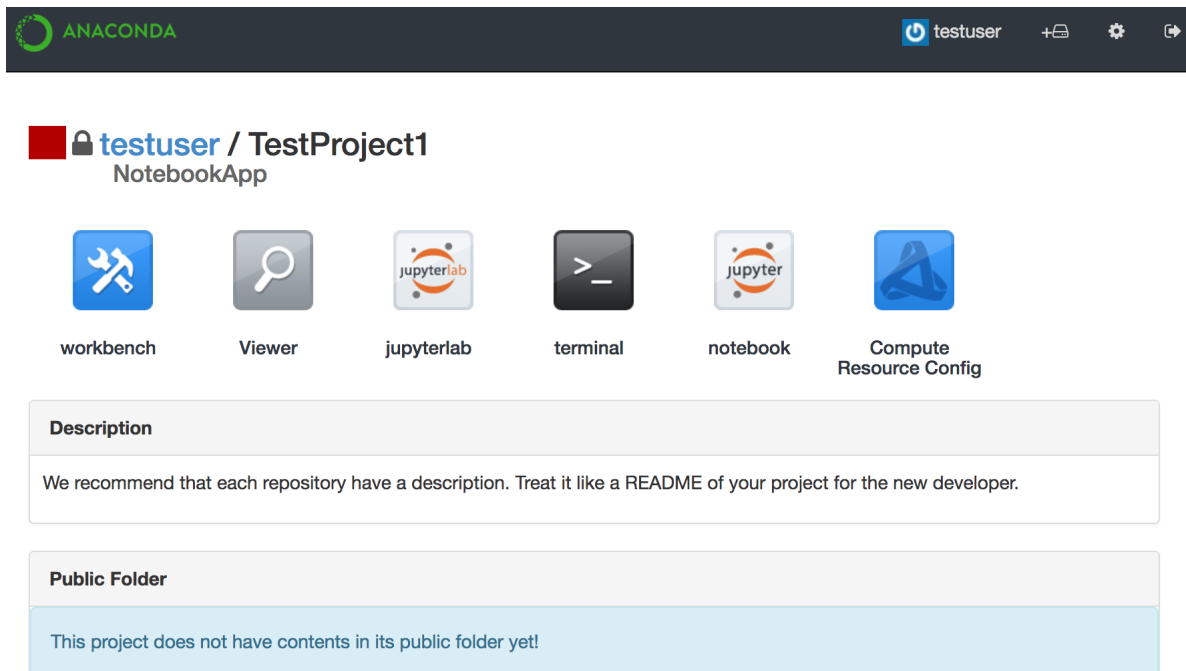
Next

3. Type a summary of the project so you can recognize it later.
4. Select whether your project will be public or private.
5. Verify that the default data center is selected.

TIP: You can update the project summary and description at any time from the **Project** menu in the Project Settings. To return to your project at any time, click the project name.

6. Click the Next button.

Your new project's home page is displayed:



**testuser / TestProject1**  
NotebookApp

workbench Viewer jupyterlab terminal notebook Compute Resource Config

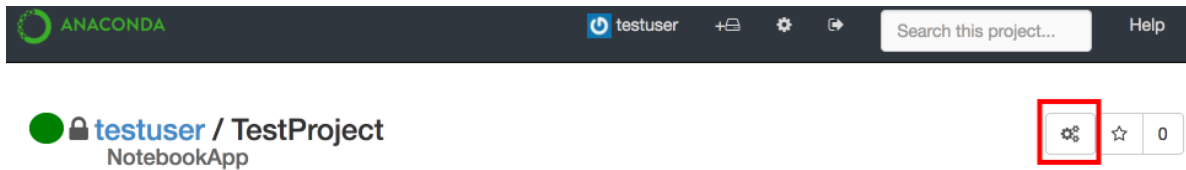
**Description**

We recommend that each repository have a description. Treat it like a README of your project for the new developer.

**Public Folder**

This project does not have contents in its public folder yet!

7. To change the project settings, click the Project Settings icon on at the top right.



8. Modify the summary or add a description of the project.

TIP: A project description is recommended, and may be written in Markdown syntax (plain text valid Markdown).

To see how Markdown will be displayed, in the description area, click the **Preview** tab.

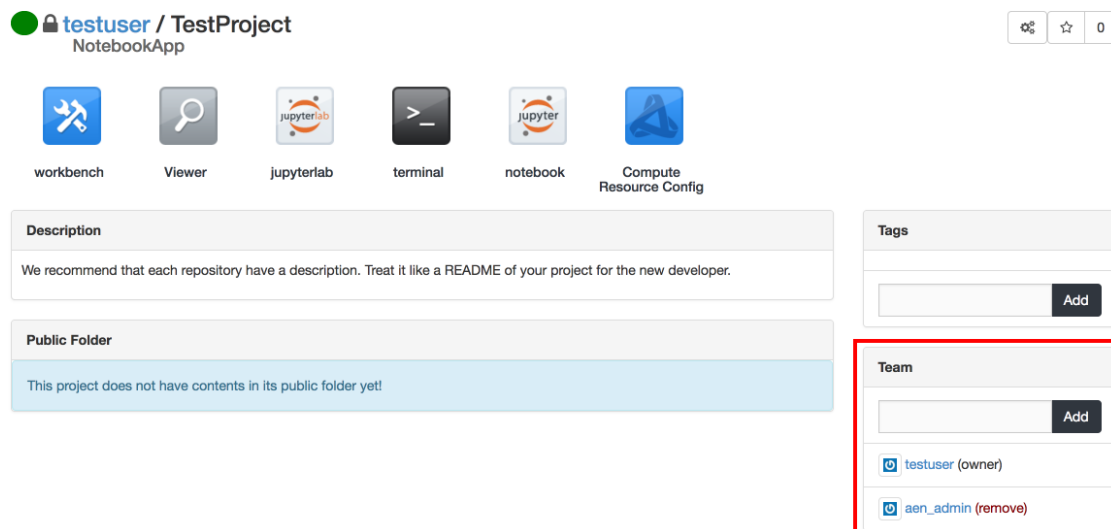
#### 4. Add collaborators

You can add team members to your project as collaborators. Adding team members to your projects makes collaboration easy because they have full access to the project's applications, files and services.

When you add team members, their home directory is mounted in the project. There is no need to download and email data or scripts—team members can work on the same files in the same environment in which you are working.

To add collaborators to your project:

1. From your project home page, in the Team box, begin typing a teammate's username.
2. In the list that is displayed, select the teammate's username.
3. Click the Add button.



1. Repeat these steps for each team member you want to add as a collaborator.

TIP: You can add or remove team members any time from the **Team** menu in Project Settings. You can also modify a team member's read, write or execute permissions at any time from the *Using Workbench*.

### 5a. Open an example notebook, OR

1. From your project home page, click the Jupyter Notebooks icon.
2. On the File View page, click the Examples folder.



3. Select any of the example notebooks.
4. To see the default results of the formulas used in the displayed notebook, in the **Cell** menu, select Run All.
5. To experiment with changing the notebook, edit any of the formulas in the notebook.
6. In the **Cell** menu, select Run All.

Any differences resulting from your edits are displayed.

### 5b. Create a new environment and notebook

If you are already familiar with creating notebooks, you can easily set up a new environment with the programs you need—like SciPy and NumPy—then open a new notebook and make your edits.

To create a new environment:


1. From your project home page, click the Jupyter Notebooks icon.
2. On the File View page, click the **Conda** tab.
3. To add a new conda environment, on the top right of the **Conda** tab, click the + icon.
4. Type a name for your environment.
5. Select Python 2, Python 3 or R language kernel.
6. Click the Create button.
7. To activate your new environment, click its name.

The packages that are available and installed in your new environment are displayed.












## Adding SciPy and Numpy packages

1. In the available packages section, search for the package name `numpy`—all lower case.
2. In the results section, next to `numpy`, select the checkbox.

 **ANACONDA**  
Powered by Continuum Analytics

Files Running IPython Clusters **Conda**

3 Conda environments + ↺

Action	Name	Default?	Directory
  	root		/opt/wakari/anaconda
  	default	✓	/projects/aen_admin/TestProject/envs/default
  	myenv		/projects/aen_admin/TestProject/envs/myenv

2 available packages  → 39 installed packages in environment "myenv" ↺ ✓ ⬇ 🗑

Name	Version	Channel
<input checked="" type="checkbox"/> numpy	1.13.1	defaults
<input type="checkbox"/> numpydoc	0.7.0	defaults

Name	Version	Build	Available
<input type="checkbox"/> anaconda-client	1.6.3	py36_0	
<input type="checkbox"/> certifi	2016.2.28	py36_0	
<input type="checkbox"/> clyent	1.2.2	py36_0	
<input type="checkbox"/> decorator	4.1.2	py36_0	
<input type="checkbox"/> ipykernel	4.6.1	py36_0	
<input type="checkbox"/> ipython	6.1.0	py36_0	

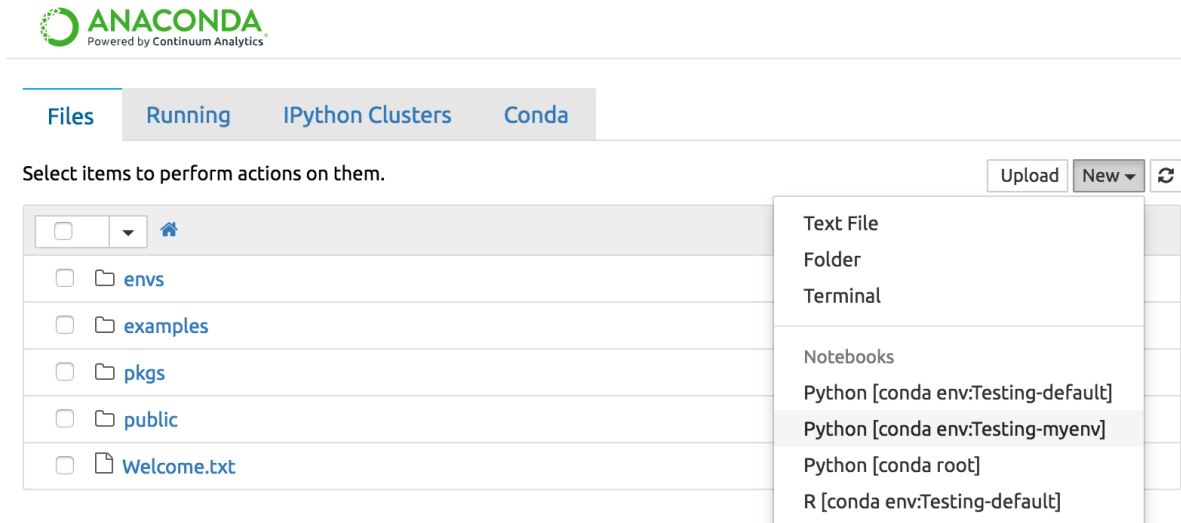
1. Click the Install icon.
2. To confirm your installation, click the Install button.

Numpy is displayed in the installed packages section—if not, click the Refresh button. Repeat these steps to install the Scipy package—searching for `scipy` in step 1.

TIP: You can return to this screen at any time to add additional packages to this environment.

## Creating a new notebook in your environment

1. From the AEN homepage, click the **Files** tab.
2. On the top right of the **Files** tab, click the New button.
3. Under Notebooks, select the Python environment with the name you entered while *creating a new environment*.



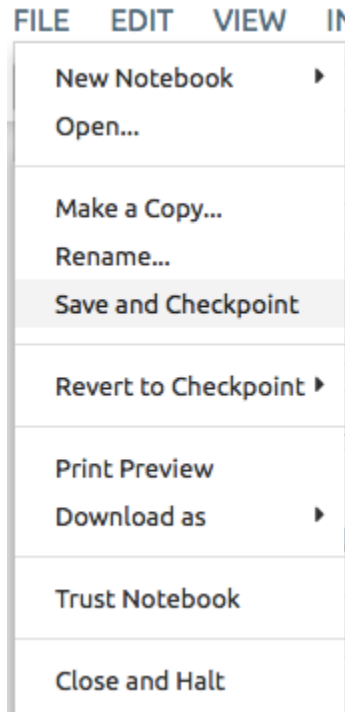
NOTE: If you do not see your new environment listed under Notebooks, next to the New button, click the Refresh button.

A new locked notebook is displayed. Paste or write some code to execute when you are ready.

## 6. Create checkpoints for version control

Whether you are exploring an existing notebook, or creating a new one, you can easily create checkpoints, return to an earlier version, compare two different versions and save them for reference.

To create a checkpoint, in the **File** menu, select Save and Checkpoint:



To revert your notebook to a previous checkpoint, in the **File** menu, select Revert to Checkpoint.

NOTE: For more information about revision control features, including creating commits and comparing differences, see [Using the Revision Control Mechanism extension](#).

## 7. Share your notebook and environment with others

See [Sharing projects and notebooks](#).

## 8. See what to do next

Now that you have completed the Getting Started guide, you are ready to move on to [basic tasks](#) and [advanced tasks](#).

### Basic tasks

This section contains information and tasks that use the web browser to manage projects and is best-suited for any beginning AEN user:

### Working with projects

Almost everything in AEN starts by opening an existing project or creating a new one.

After that, you can set up a special environment with the packages you want, set their access permissions and modify your project settings.

### Searching for a project or file

To search for projects and files, use the Search box in the AEN navigation bar. The search provides different results depending on which page you search from:

- On a project home page, search results include any files that match your search criteria within the current project.
- On any other AEN page, search results include any files that match your search criteria within all projects.

**TIP:** Your search results include only files and projects that you can view: public projects, and private projects to which you have a minimum of view access.

### Types of files searched

The following types of files are included in search results:

- `.py`—Python source files.
- `.ipynb`—IPython/Jupyter notebooks.
- `.txt`—plain text files.
- `.md`—Markdown files.

### Search indexing

Files that are modified while a project is running are automatically re-indexed shortly after the files are modified. If you create or update a large number of files—such as cloning a git repository or copying a directory—search results may take several minutes to update.

Files that are modified while the project is not running are re-indexed only after the project is started.

## Using search constructs

You can use the following search constructs:

- Ordinary words will match the full-text contents of any file.
- Wildcards are permitted.

EXAMPLE: `John*` will match John and Johnny. These are glob patterns and are similar to their usage in the command line.

- Combine queries using AND or OR, and group them using parentheses ().

Regular expression patterns can be embedded in the query string by wrapping them in forward-slashes (/):

```
name:/joh?n(ath[oa]n)/
```

The supported regular expression syntax is explained in [the Elasticsearch reference](#).

NOTE: Wildcards apply inside a regular expression. A query string such as `/. *n/` would force the search to visit every term in the index.

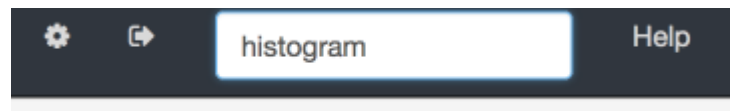
## Searching metadata fields

You can search in specific metadata fields:

- `imports:name`—matches files that import the module name.
- `uses:name`—matches files that reference the identifier name. Referenced names include any functions and globals imported from other modules, as well as the names of any methods invoked on any object.
- `defines:name`—matches files that define the identifier name. Defined names include functions defined at global scope, class names, and method names within classes.
- `acl:user`—matches files in which the named user has read access or higher.

## Searching a project

1. In the Search box, type a string of text:























TIP: Search by glob patterns, which are similar to file matching in the command line.

EXAMPLE: To find projects in the test family that are numbered from 00 to 99, search for `Test-??`. To find all projects whose name ends with “Stats,” search for `*Stats`.

2. Press Enter.
3. In the search results, click the plus + icon above a project name to show a list of matching files in the selected project:

Projects matching 'iris' ([save this search](#))

	 <b>testuser / TestProject</b> NotebookApp	 0 
	 <b>AnacondaEN / AEN11_0</b> No Summary	 0 
	 <b>Rida / ABC</b> No Summary	 0 
	 <b>Rida / Testing</b> No Summary	 0 
	 <b>testuser / TestProject1</b> NotebookApp	 0 

TIP: Click the project name to open the project's home page.

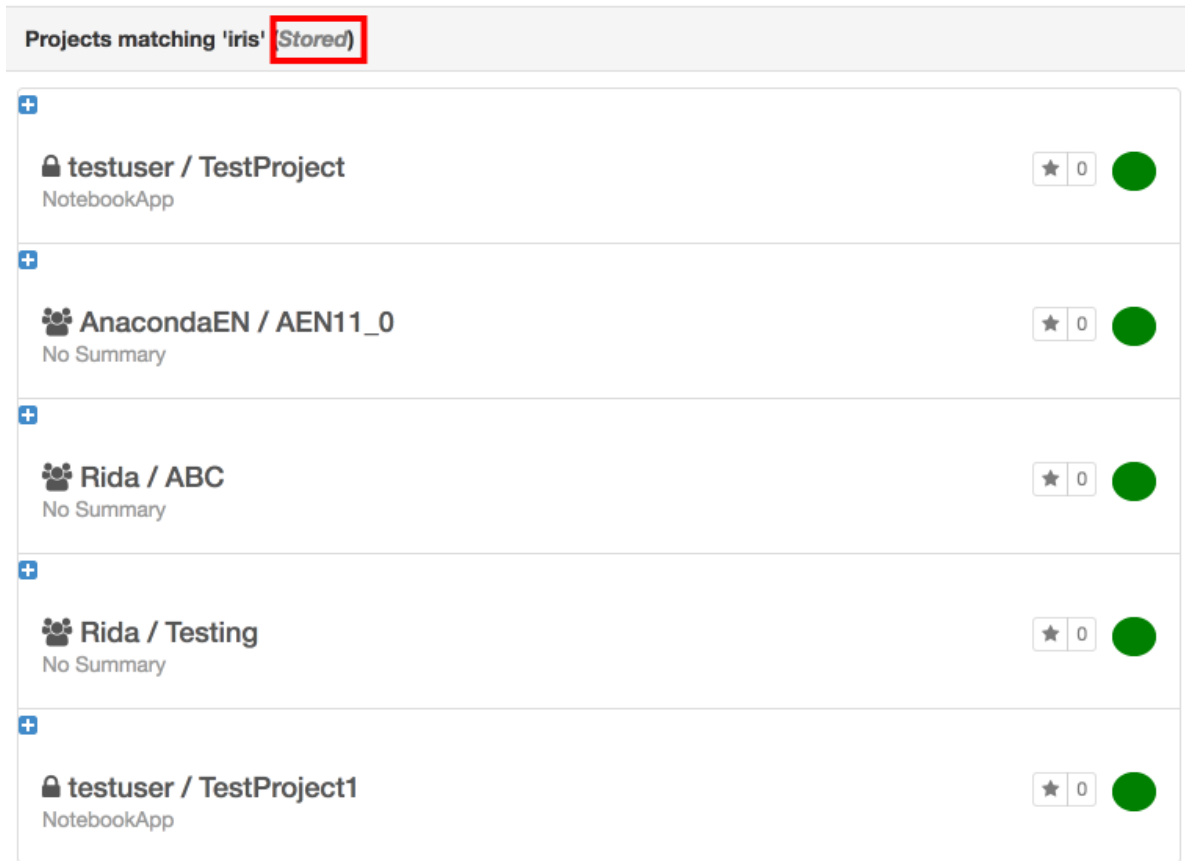
4. To view a file, click its file name in the matching files list:

Found 1 files matching 'histogram' in user02/Public\_project. ([save this search](#))

File	Relevance
<a href="#">/examples/histograms.ipynb</a>	42

## Saving a search

1. At the top of the search results, click Save this search:



The “save this search” text changes to “stored” and your search is saved. Your saved searches are listed on your home page.

## Removing a saved search

On your home page, in the Saved searches section, click X next the saved search that you want to remove:

Projects (2)

New project

testuser / TestProject

NotebookApp

★ 0

testuser / TestProject1

NotebookApp

★ 0

Contributing (0)

Not currently contributing to any projects.

Top Tags

!@#\$\$%^&*()_+~	1
Abc	1
_))((	1

Top Collaborators

aen_admin	1
-----------	---

Top Rated

Project	1
Testing	0
AEN11_0	0
ABC	0
TestProject	0

Saved searches

iris	✕
------	---

## Adding and removing team members on a project

1. On the project home page, click the Project Settings icon to open the Project Settings page.

ANACONDA

testuser

+

⚙

↔

Search this project...

Help

testuser / TestProject

NotebookApp

⚙ ☆ 0

2. In the **Settings** menu, select Team.

testuser / TestProject

NotebookApp

Settings

Project

Team

Admin

Info

Team

Add

Team members will be granted full access to your applications, files, and services.

testuser

aen\_admin (remove)



### Adding a team member

1. In the username box, type in the first few letters of the username for the team member you want to add to the project.
2. In the list of usernames that displays, click the user to add.
3. Click the Add button.

### Removing a team member

Click the red Remove link next to the name of the user you want to remove from the project.

### Controlling access to your project

#### Controlling team member access

By default, all of the team members on a project have read and write access permissions for all project assets.

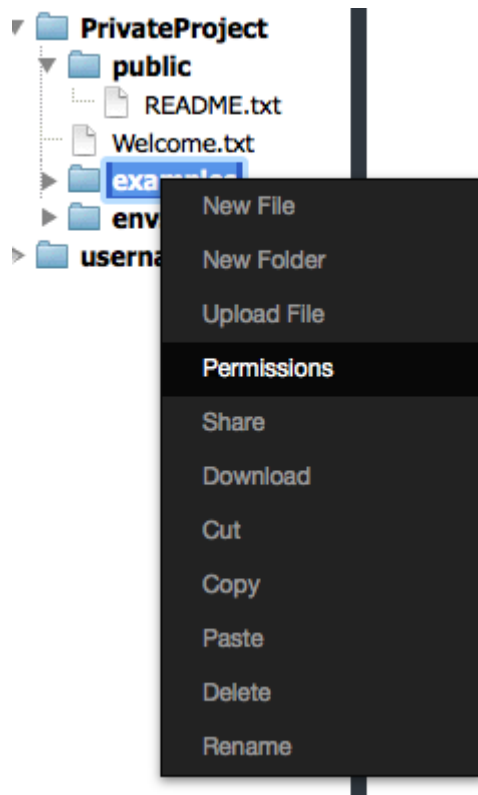
The available permissions are read, write and execute. If you remove all individual or group permissions for a project asset, team members will not be able to access that asset.

To change a project's permissions:

1. Open the project's home page.
2. Click the Workbench icon.
3. In the Workbench app, right-click the file or folder you want to limit access to.

NOTE: When you change a folder's permissions, the permissions of files and folders inside it do not change. You may change the permissions of those files and folders manually.

4. In the menu that displays, select Permissions:



A list of owners and team members who have access to your project is displayed.

5. Find the team member you want to change access for:

Permissions for examples

Owner 
Group

Who	Type	Read	Write	Execute
owner		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
group		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
others		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mask		true	true	true
<input type="text" value="username"/>	User <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username"/>	Group <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	User <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	Group <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	User <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	Group <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Next to the team member's name, select or deselect the permissions for that user.

NOTE: You can add a team member and set their access at the same time by typing their name in a username box, setting their permissions, and then clicking the Add button.

- Click the Submit button.

The selected permissions are added, and the deselected permissions are removed.

NOTE: If a team member is in the Workbench application when you give them access, they must refresh their browser window to see their current permissions.

### Controlling non-team member access

You can choose to grant file or folder access to someone who is not part of the project team, as long as that person has an AEN account.

Sharing with individuals outside the team is a four step process:

- Copy or move the file or folder to your home directory.*
- Give the user read and execute access to your home directory.*
- Add the user to the file's permissions.*

4. *Have the user add your directory to their workbench.*

### Copying a file or folder to your home directory

Your home directory is displayed at the bottom of the File Manager pane in the Workbench.

To protect the other files and folders in your home directory—those you are not providing permissions to a user to access—we recommended that you:

1. Create a sub-folder.
2. Rename the folder with the name of the user you are granting access to.
3. Copy or move the file you want to grant permissions for to the renamed folder.

The file is copied or moved to the new location and is ready for you to update the file permissions.

### Granting file access

You must select read and execute access for a user to be able to view, but not edit, the files or folders.

1. Right-click the name of the file or folder you are granting access to.
2. In the menu that is displayed, select Permissions.
3. Click the Add button.
4. Type the username of the user to whom you are granting file access and press Enter.

**TIP:** If you grant access to a folder instead of a specific file, you only have to set permissions the first time you share the folder with each user, unless you need to update the permissions.

### Adding file permissions for a user

Once a user is included in your Permissions list, you must *add the correct permissions* for the user, in the same way as you would for a team member.

Once complete, depending on the access granted, the user will be able to view, read, change, and execute the file.

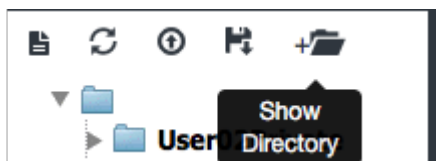
**NOTE:** If you change permissions for a folder instead of a file, the user will be able to see and access any files within that folder.

### Adding a directory to a user's workbench

The user can now add your home directory to their Workbench File Manager.

To add your home directory to another user's workbench, have the other user follow these steps:

1. Click the Show Directory button at the top of the Workbench File Manager:



The Show Directories dialog box displays.

- In the text box, type `/home/[yourusername]`.

NOTE: Replace `[yourusername]` with your AEN username.

### Show Directories



Enter the full path to an existing directory that you would like to see in the file browser. For example, if the project node has a directory with a path of `/data/2010` that contains data files from 2010 that you want to browse, enter `/data/2010` and click on the Show button.

- Click the Show button.
- Verify that the folder is now displayed below the text box:

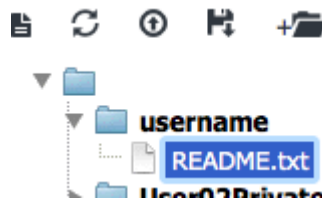
### Show Directories



Enter the full path to an existing directory that you would like to see in the file browser. For example, if the project node has a directory with a path of `/data/2010` that contains data files from 2010 that you want to browse, enter `/data/2010` and click on the Show button.

- Close the Show Directories dialog box by clicking the X in the upper-right corner or by clicking anywhere outside the box.
- Click the Refresh button.

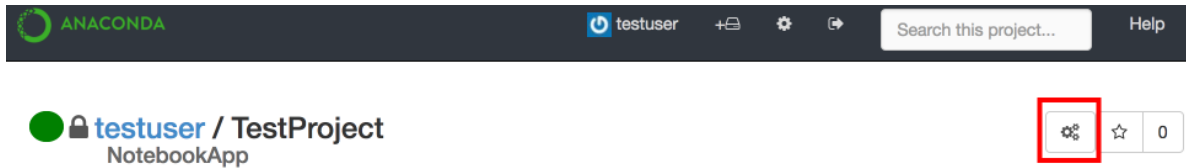
The shared file is displayed in the File Manager:



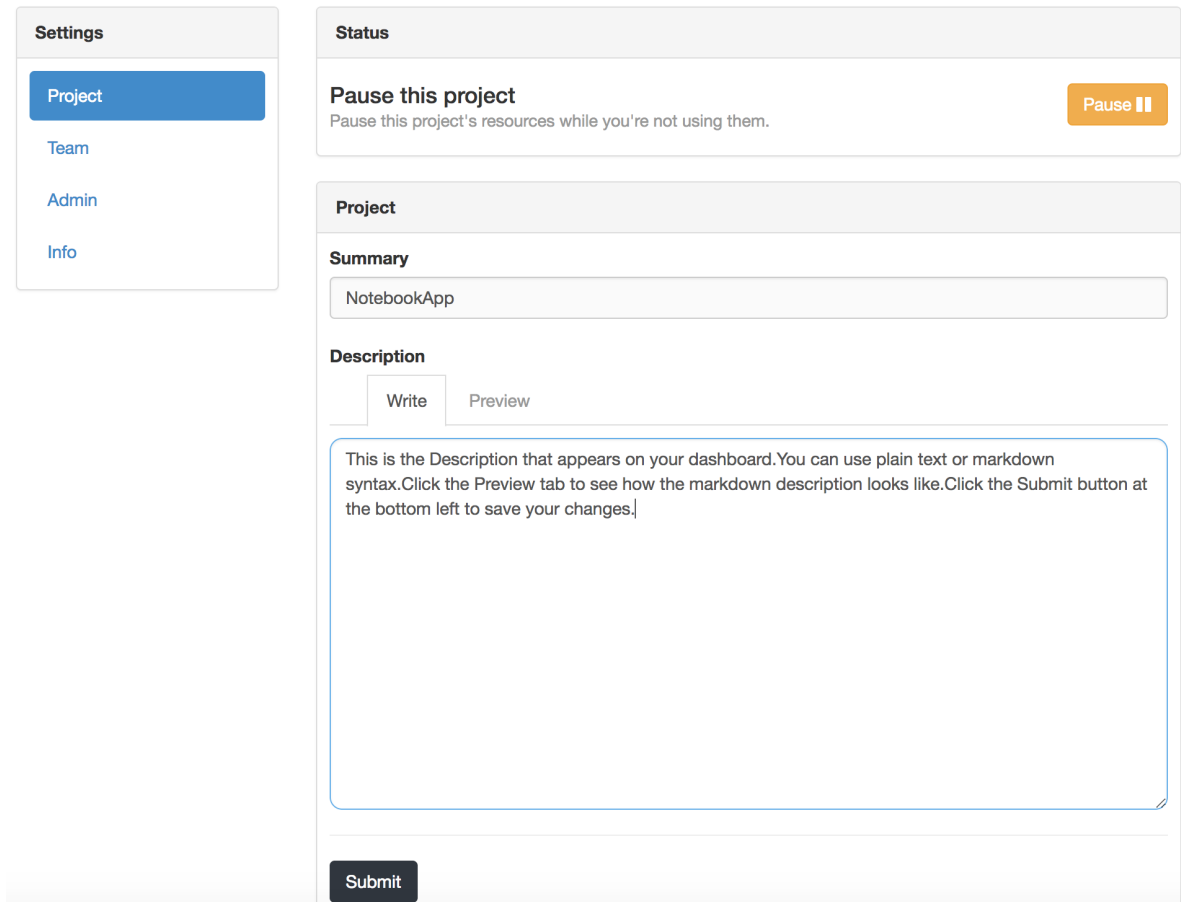
## Starting and stopping a project

**TIP:** Stopping a project stops all the applications launched for that project that use resources when running, such as memory and compute cycles. It is best to stop projects when they are not in use.

1. On the project home page, click the Project Settings icon to open the Project Settings page.



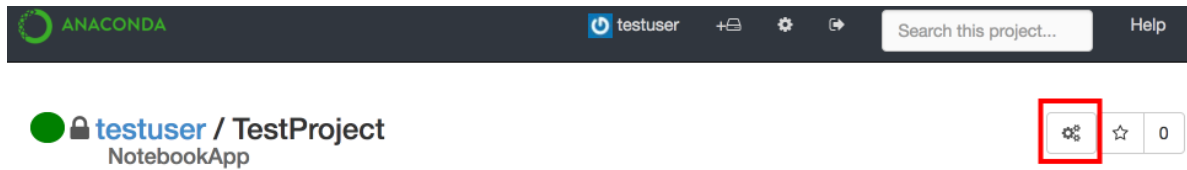
2. In the **Settings** menu, select Project.



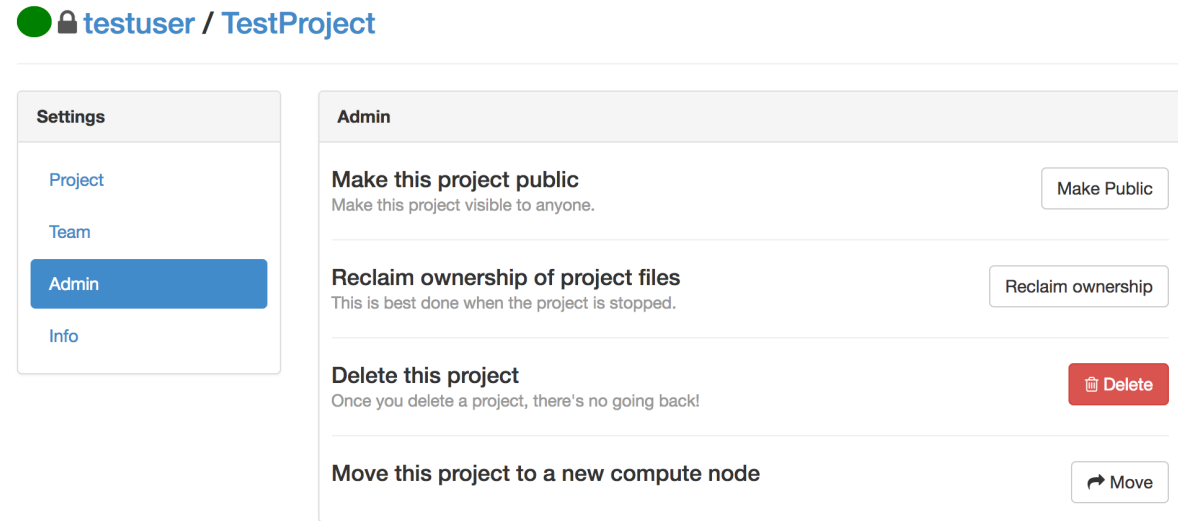
3. In the Status section, click the Start or Stop button to toggle between manually starting and stopping your project.

## Making a project public or private

1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Admin.



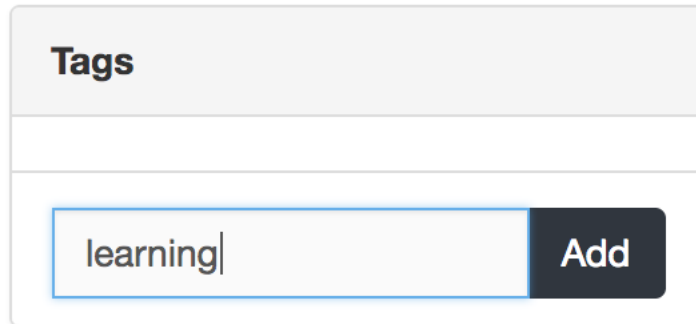
3. Click the Make Public button.
4. If the project is already public and you want to make it private, click the Make Private button.

## Tagging a project

Existing tags assigned to a project are listed in the Tags section on the project's home page.

### Adding a tag

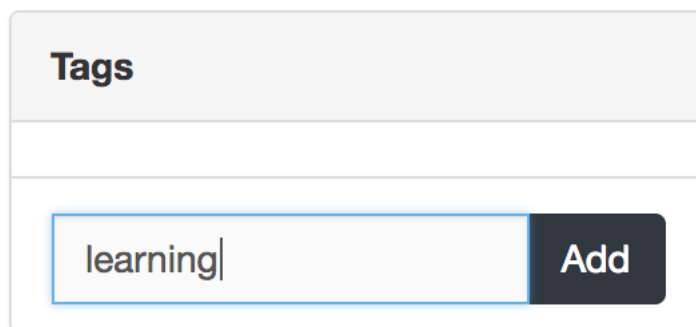
1. In the Tags box, type the name of the tag you want to add:



A screenshot of a web interface showing a 'Tags' section. It features a text input field containing the word 'learning' and a dark 'Add' button to its right. The entire section is enclosed in a light gray box with the title 'Tags' at the top.

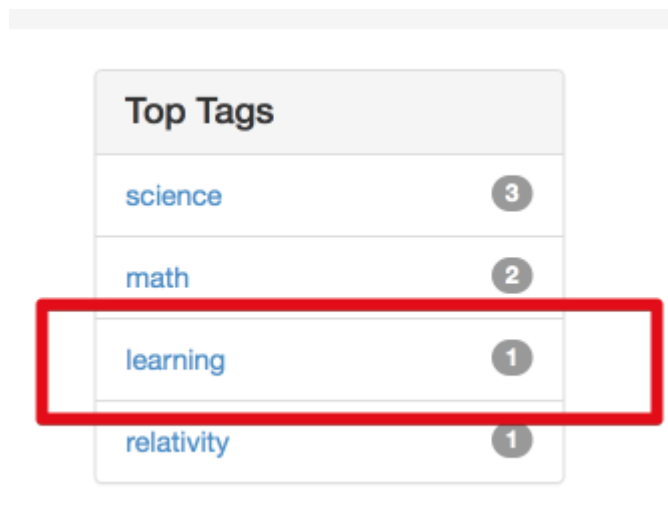
2. Click the Add button.

The new tag is added to the Tags list:



An identical screenshot to the previous one, showing the 'Tags' input box with 'learning' typed and the 'Add' button.

If the tag was not already in the Top Tags list on your user home page, it is added. If the tag was already listed because another project used it, the number next to the tag is incremented:



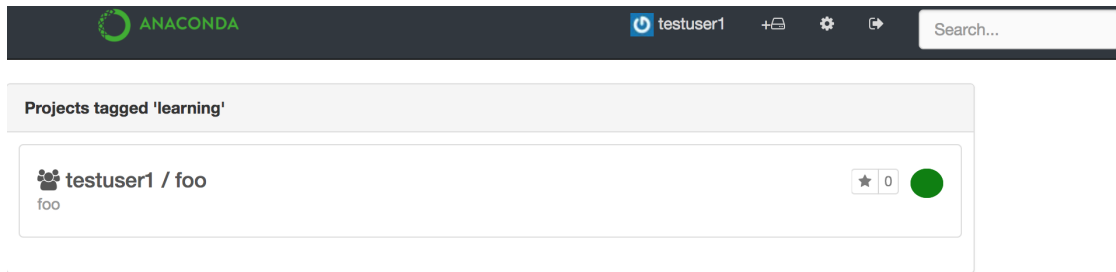
A screenshot of a 'Top Tags' list. The list contains four items: 'science' with a count of 3, 'math' with a count of 2, 'learning' with a count of 1, and 'relativity' with a count of 1. The 'learning' row is highlighted with a red rectangular box.

Top Tags	
science	3
math	2
learning	1
relativity	1



## Removing a tag

1. On your user home page, in the Top Tags list, click the tag name.



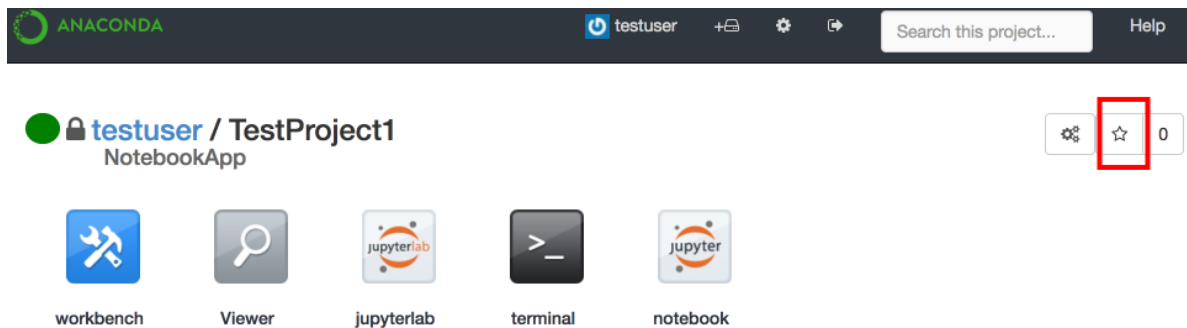
1. In the Tags list, click the X button next to tag name.

## Starring a project (rating)

Starring a project makes it appear on your user home page in the Top Rated list.

Adding or removing stars for a project does not affect the stars added by other users.

1. Open the project that you want to star.
2. On the project home page, click the Star icon at the upper right:

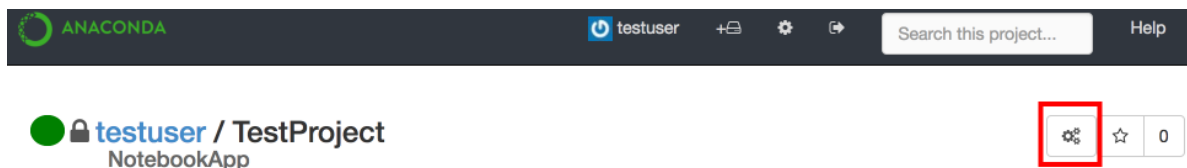


3. To unstar a project, click the Star icon again.

## Claim ownership of a project

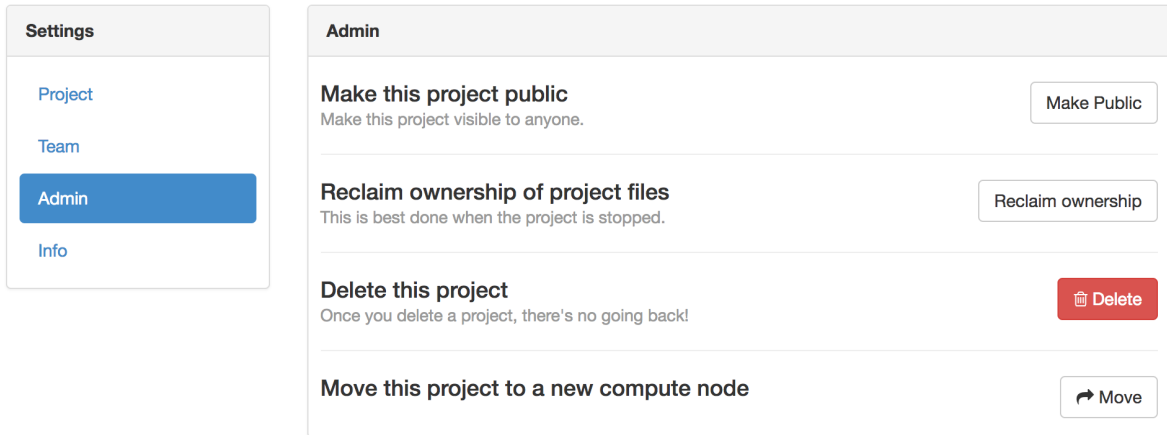
When you claim ownership of a project, ownership of all files and folders created by the team members on the project is transferred to you. Project files and folders are copied and renamed.

1. *Stop the project* to prevent team members from making changes while you are changing ownership.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.

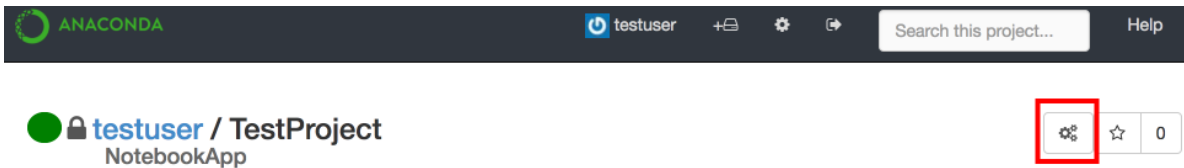
 testuser / TestProject



4. Click the Reclaim ownership button.

## Changing a project's summary or description

1. On the project home page, click the Project Settings icon to open the Project Settings page.

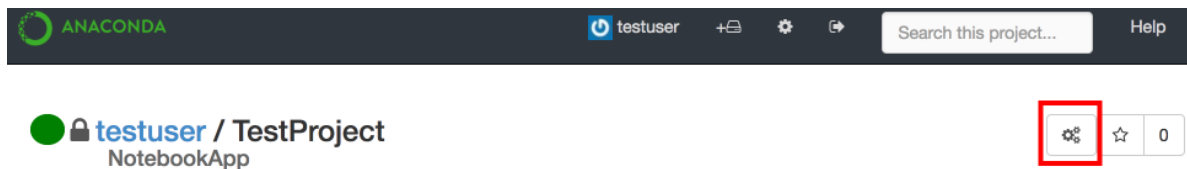


2. In the **Settings** menu, select Project.

3. Update your project's summary using plain text or its description using Markdown syntax.
4. Click the **Preview** tab to see a preview of the Markdown description.
5. Click the Submit button.

### Viewing a project's status

1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Info.

 **testuser** / **TestProject**

**Settings**

[Project](#)  
[Team](#)  
[Admin](#)  
**Info**

**Info**

**Status**  
running  
**Created**  
Mon Sep 25 20:43:56 2017  
**Last Heartbeat**  
Mon Sep 25 20:43:56 2017

**Data Center**

**Name**  
Gateway  
**Provider**  
Enterprise Resources  
**Summary**  
Gateway

On the Info page, you can see:

- Whether the project is currently running or stopped.
- When the project was created.
- When the project was last accessed.
- The data center in which the project is running.

## Viewing related projects

Related projects are listed on a project's home page.

Team

Add

user02 (owner)

user01 (remove)

Related Projects

user01 / TestProject2

No Summary

user02 / User02Private

No Summary

user01 / TestProject

No Summary

These are projects that contain fields that are most similar to the current project.

TIP: You will only see projects to which you have been granted access: public projects, and private projects on which you are a team member.

### How related projects are identified

To determine which projects should be listed in Related Projects:

1. The recommendation engine scans the current project's files and weights the terms found to determine which of them to use for the likeness search.
2. The engine performs a search, with extra weight given to the "uses" and "imports" keywords.
3. The engine finds the files and projects that are most similar to the current project and scores the results.
4. The top-scoring matches are displayed in Related Projects. Only public projects and private projects to which you have access are included.

## Viewing top-rated projects

Top-rated projects are listed on your home page:

Top Rated	
einstein	2
euler	1
laplace	1
plank	1
Public_project	1

The number next to a project represents the number of stars that have been given to that project.

Click a project name to view the project's home page.

## Using tags to find a project


The top tags used on your projects are listed on your home page:

ANACONDA

NewUser2

Search...

Help

 **NewUser2**

Joined on Oct 20, 2016  
newuser@mycompany.com  
1 Projects

Projects (1)

New project

NewUser2 / NewProject

Woo hoo! I finally get to play with notebooks!

★ 0

Contributing (0)

Not currently contributing to any projects.

Top Tags

Fun fun fun 1

Test project 1

Top Collaborators

Top Rated

test1 0









test2 0

NewProject 0

To list all projects that share a specific tag, click the tag name:

Top Tags	
science	4
math	2
learning	1
relativity	1

A list of projects with the selected tag is displayed:

Projects tagged 'science'	
 malev / euler euler	★ 1 
 malev / einstein einstein	★ 2 
 malev / plank quantum theory	★ 0 
 user01 / User01Private_2 No Summary	★ 0 

TIP: The list includes only projects that you have access to: public projects, and private projects on which you are a team member.

Click a project name to open the project's home page.

### Viewing your top collaborators

Your top collaborators are listed on your home page:

Top Collaborators	
trento	1
user01	1

These are the team members who have the most projects in common with you.

To view a collaborator's home page—where you can see all public projects and the private projects they have shared with you—click the collaborator's name.

## Sharing projects and notebooks

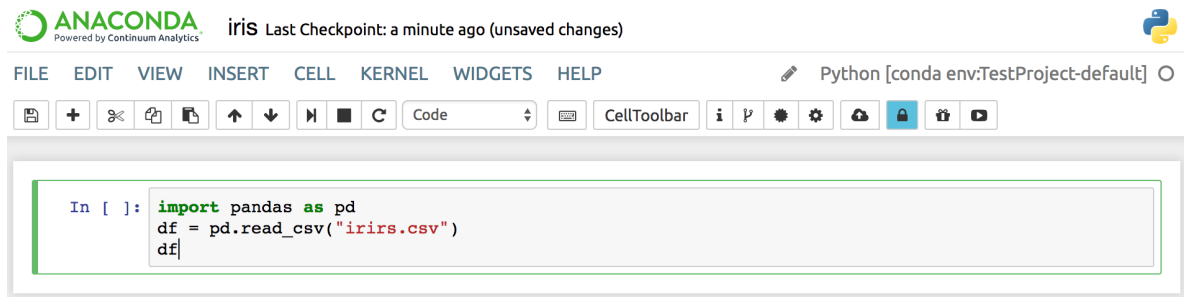
For information on sharing projects via the project settings and access control, see [Sharing projects](#).

To upload a Jupyter Notebook to Anaconda Repository:

1. Log in to Repository by running the `anaconda login` command or by using the login user interface provided by the [nbextension](#).

CAUTION: If you are not using a secure connection, we strongly recommended that you use the command line to log in.

2. To share your notebook environment, select the Attach conda environment checkbox. This ensures that your team members will have the right environment for your notebook.
3. Click the Upload button to upload your notebook to your local Repository or to [Anaconda.org](#), depending on how your administrator has set up AEN:



NOTE: If you have not yet logged into Repository or Anaconda Cloud, or have not created an account, you will be asked to do so.

## Other ways to share a notebook

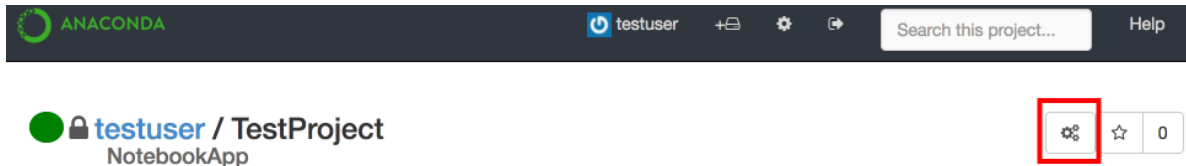
- Print—In the **File** menu, select Print.
- Download and share—In the **File** menu, select one of the following options:
  - Download as Notebook.
  - Download as Python.
  - Download as HTML.
  - Download as Markdown.
  - Download as ReStructured Text.
  - Download as PDF.
- Share and control team members' direct access to read, write and/or execute your notebook file or folder. For more information, see [Controlling access to your project](#).
- Share and control non-team members' file or folder access. For more information, see [Controlling access to your project](#).
- Create a presentation with [NBPresent 4.1](#).



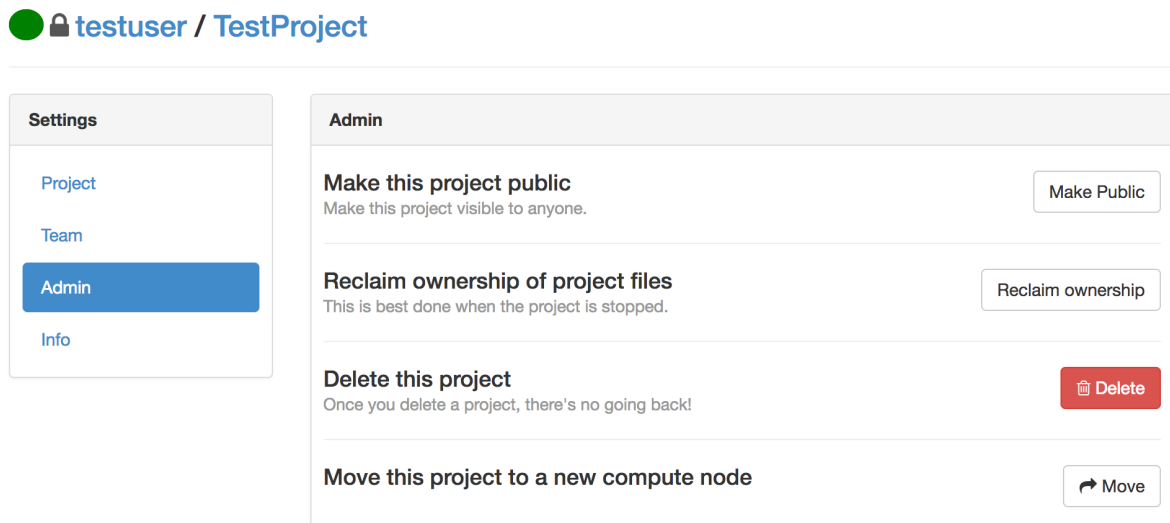
## Deleting a project

CAUTION: Deleting a project deletes all project files and information! There is no undo option.

1. Download a copy of any project files that you need to save.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



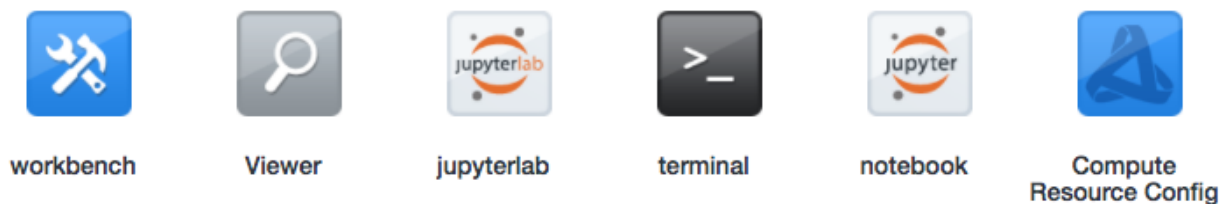
4. Click the Delete button.

## Using AEN applications

The applications in your project make it easy for you to interact with your files and data, manage your project's resources and to customize your AEN experience.

To use applications, log in to AEN, then select the project you want to work on or create a new project and open it.

On the project home page, the following application icons are displayed:



TIP: Each application opens in a new browser tab. You can run multiple applications at the same time in your project.

For more information on each AEN application, see:

- [Using Workbench](#)—File viewer and manager, including permissions settings.

- *Using Viewer*—View-only versions of notebooks and other text files.
- *Using JupyterLab*—Alpha preview of the next generation notebook.
- *Using Terminal*—Basic bash shell Terminal.
- *Using Jupyter Notebook*—Jupyter Notebooks with extensions.
- *Using Compute Resource Configuration*—Project information, view and manage applications.

## Using Workbench

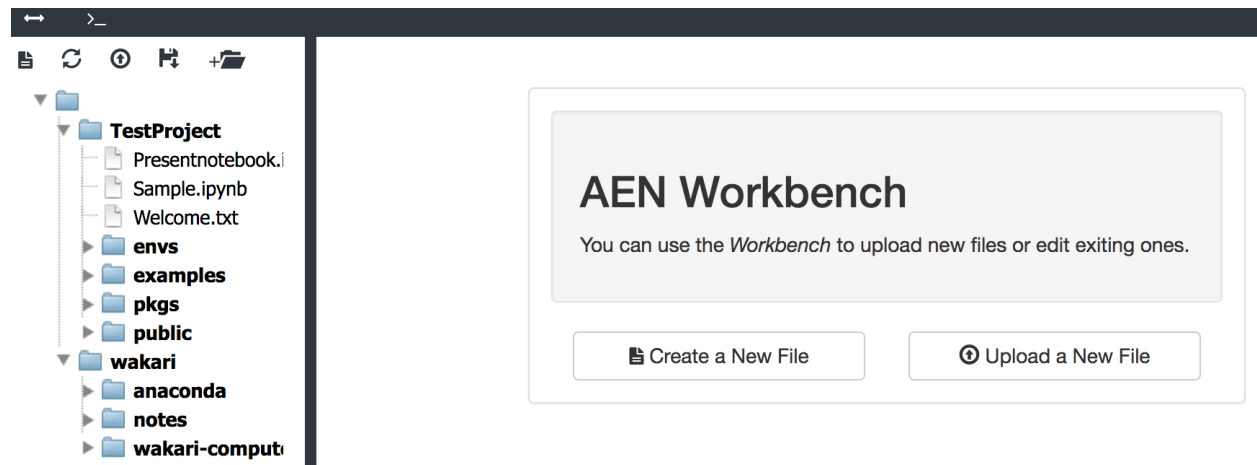
Workbench is a file viewer and manager that includes a file editor and file permissions manager.

You can use Workbench to:

- Upload and download files using the *File Manager*.
- Create new files and folders using the *File Manager*.
- Copy and move files to new locations using the *File Manager*.
- Rename files and/or folders using the *File Manager*.
- Manage the *access permissions* of team members.
- Grant or revoke *access to non-team members*.

Workbench also includes a simple Terminal application, which is convenient because the File Manager is always visible, making navigation simple.

When you first open Workbench, the File Manager is displayed in the left pane, and the Create a New File and Upload a New File buttons are in the right pane:



When you open a file or Workbench Terminal, it is displayed in the right pane. To make the Create or Upload a file options re-appear, refresh your browser window.

Two small icons are displayed in the black navigation bar at the top of the Workbench page. Hovering over them displays tool tips that describe their use:

- The Toggle icon displays or hides the File Manager.
- The Terminal icon opens a simple terminal window.

## Opening Workbench

To open Workbench:

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Workbench icon:



workbench

Workbench opens in a new browser window.

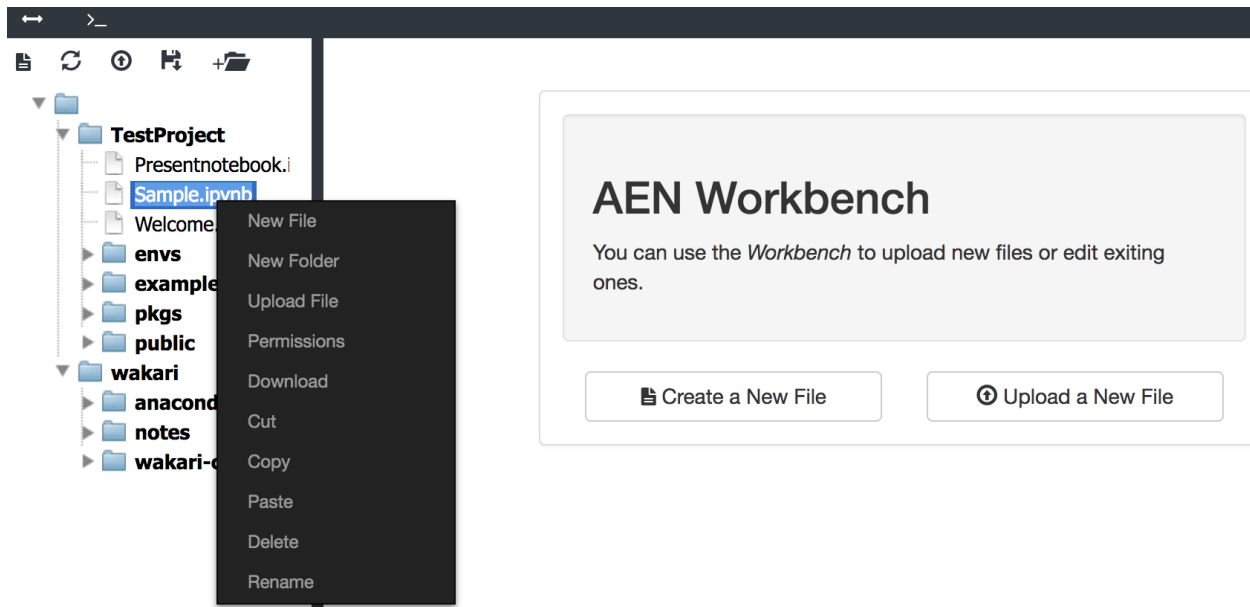
## Using File Manager

The File Manager is an intuitive way to interact with your files and folders.

## Using the options drop-down menu

To perform any of the actions described below:

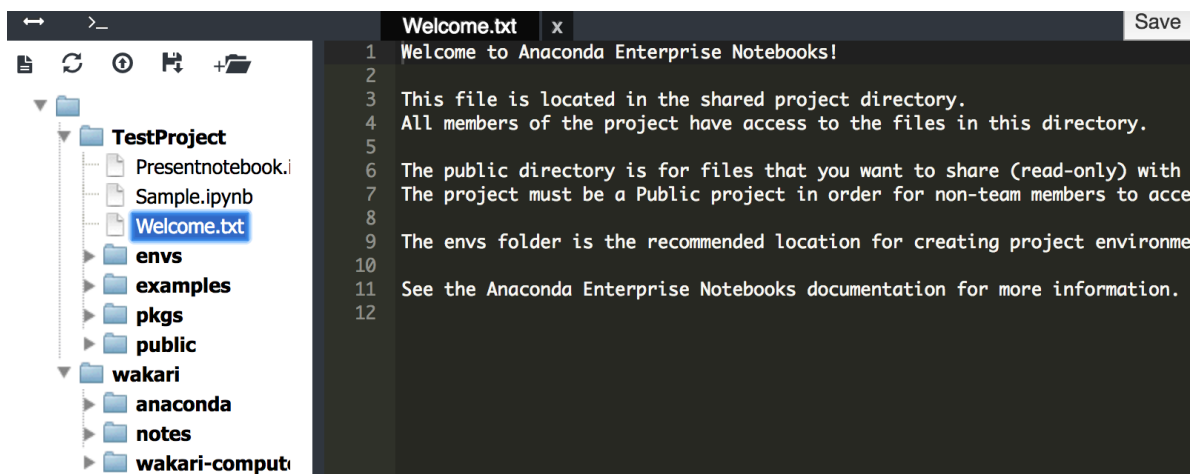
1. Right-click on any folder to display the options drop-down menu.
2. Select one of the following options:
  - New File—Create and edit a new file.
  - New Folder—Create a new folder.
  - Upload File—Upload a file to the selected folder. You can also drag a file to the folder.
  - Permissions—*Control access to files and folders.*
  - Cut—Cut the selected file or folder.
  - Copy—Copy the selected file or folder.
  - Paste—Paste a previously cut or copied file or folder.
  - Delete—Delete the highlighted file or folder.
  - Rename—Rename the highlighted file or folder.



## Editing files using the File Editor

1. Double-click any text file in the File Manager.

The File Editor opens in the right pane:

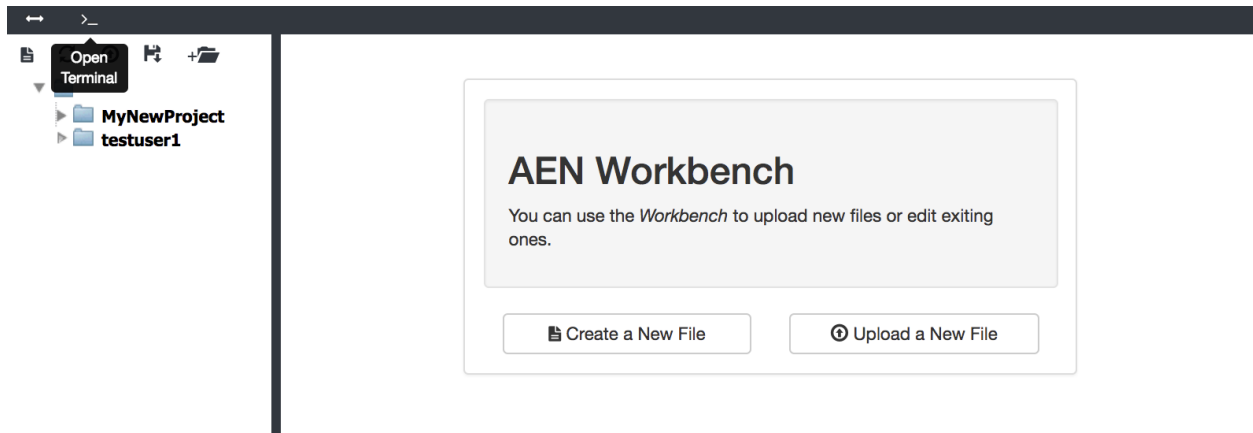


2. When you finish editing the file, click the Save button.

NOTE: To close the file without saving, click the X at the top of the page under the file name.

## Opening the Workbench terminal

In the navigation bar, click the Open terminal icon:



A Terminal—bash shell—is displayed in the right pane.

**TIP:** You can open additional terminals by clicking the Open terminal icon again, or by clicking the Plus + icon at the top of an open terminal.

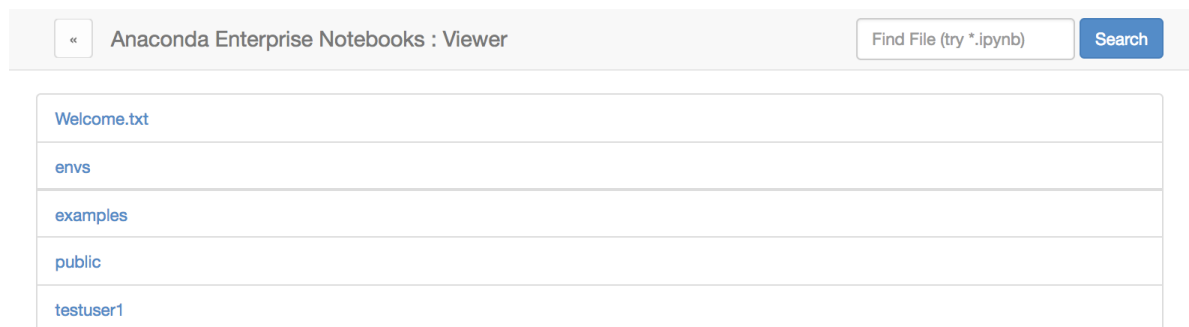
To move between terminal windows, click the **Terminal** tab in the navigation bar, then select the number of the terminal window you want to work in.

## Using Viewer

The Viewer application displays a static, view-only version of your notebooks and other text files by rendering the text files directly and using the NBConvert tool to convert notebooks to static HTML.

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Viewer icon.

Viewer opens in a new browser window:



4. Click any folder to view its contents, or click any filename to view the file.
5. To search for a file or folder name, type text in the Find File box, then press the Enter key. This is not a full-text search, but wildcards are permitted.

## Using JupyterLab

JupyterLab is an early alpha-preview of the next generation of the Jupyter Notebook. It is included so that you can take a tour and play with its capabilities.

CAUTION: JupyterLab is experimental. It is not yet intended for production work.

JupyterLab does not include any of the notebook extensions that are available in the *Jupyter Notebook app*.

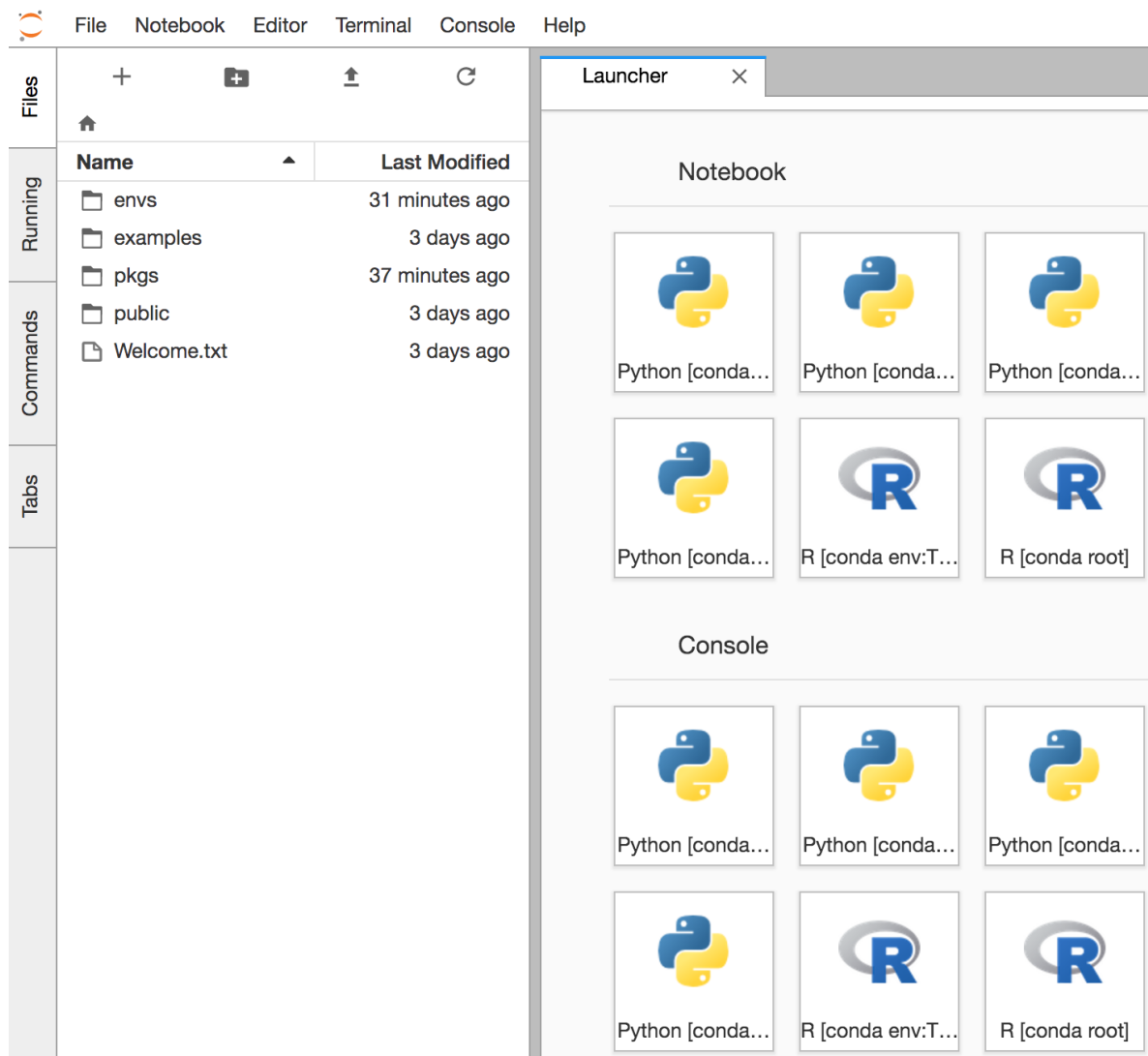
For more information about JupyterLab, see the [documentation](#).

You can also download and print a `Jupyter cheat sheet` on using Jupyter Notebook and the new JupyterLab.

To open JupyterLab:

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click on the JupyterLab icon.

JupyterLab opens in a new browser window:



Experiment with the application on your own, using the **Notebook**, **Editor**, **Terminal** and **Console** menus.

To review a guided tour of all of the features JupyterLab will contain when it is ready for production, click the Take a tour link in the right pane.

## Using Terminal

The Terminal application is a simple bash shell terminal that runs in your browser:

```
+ 1 bash
(/projects/aen_admin/TestProject/envs/default) ls
envs  examples  pkgs  Presentnotebook.ipynb  public  Sample.ipynb  Welcome
(/projects/aen_admin/TestProject/envs/default) █
```

Using Terminal, you can:

- Access your home directory and your project drive.
- Open multiple shells within one instance of Terminal.
- Open multiple instances of Terminal in the same browser window.

1. Log in to AEN.
2. Select a project you want to work on, or create a new project and open it.
3. On the project home page, click the Terminal icon:



Terminal

Terminal opens the project directory in a new browser window.

By default, the project directory is `/projects/username/project-name`.

EXAMPLE: `/projects/TestUser/MyFirstNotebook`

4. To see the physical path of your directory, run the Print Working Directory command `pwd -P`.

TIP: The physical path `-P` is important because project attaches data to the beginning of your virtual path to keep your project files together.

5. To navigate out of your project directory to your home directory, run the command `cd`.
6. To return to your project directory, run the command `cd/projects/username/project-name`.

TIP: If you are new to navigating in a terminal, you may want to use [the Workbench terminal](#), which includes a visual navigation tree in the File Manager.

## Using multiple Terminals

You can open as many terminals as you want.

To open another shell in the terminal, in the upper left of the pane, click the plus + icon.



A corresponding number appears after the plus + icon and 1.

To move to another Terminal, click the corresponding number.

The color of the number tab changes to show which terminal is currently selected.

## Using Jupyter Notebook

The Jupyter Notebook application allows you to create and edit documents that display the input and output of a Python or R language script. Once saved, you can share these files with others.

NOTE: Python and R language are included by default, but with customization, Notebook can run several other kernel environments.

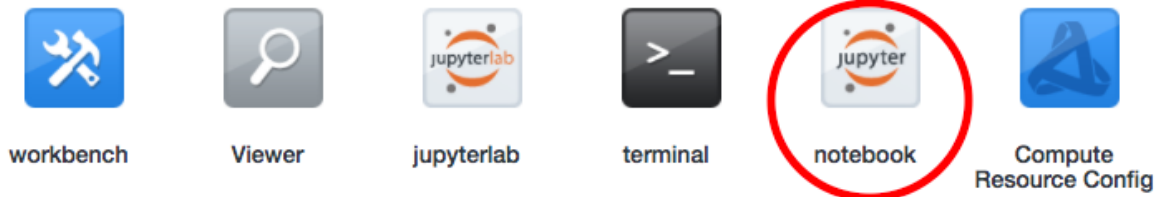
This page provides a brief introduction to Jupyter Notebooks for AEN users.

For the official Jupyter Notebook user instructions, see [Jupyter documentation](#).

For information on the notebook extensions available in AEN, see [Using Jupyter Notebook extensions](#).

## Opening the Jupyter Notebook application

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Jupyter Notebook icon:



Jupyter Notebook opens in a new browser window:





TIP: You can see the same *File Manager* in the Terminal, Workbench, and Viewer applications.

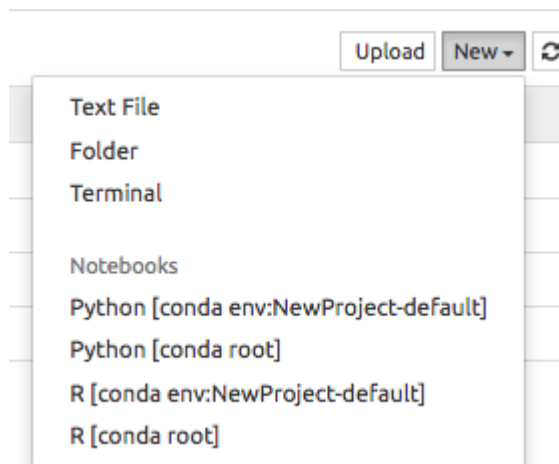
## Using example notebooks

The `Examples` folder in Jupyter Notebook contains several types of Notebook examples created in Python—and one with R language—kernel environments.

Open any example notebook to experiment and see how it works.

## Creating a new Jupyter Notebook

1. An the top right of the **Files** tab, click the New button.



2. Select the kernel environment to create your new notebook in.

NOTE: Customizable Python and R Language kernel environments are automatically created for you during project creation.

- Your project's default conda env kernels are a cloned copy of the root environment. You can customize them and install and delete additional packages.
- Root environment is managed by your Administrator. You cannot make or save any changes to it.

- You can switch between Python, R language and any other custom kernels in the notebook as you work in your notebook. For more information, see [Using the Synchronize Environments extension](#).

The new notebook is saved in the related project directory and displayed.

## Using Jupyter Notebook extensions

The following extensions are available for use with AEN's Jupyter Notebook application:

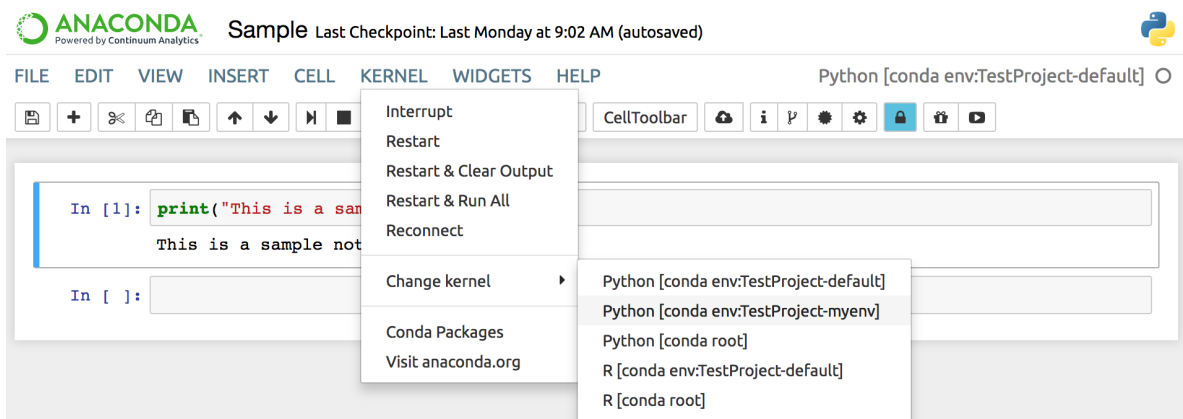
- [Synchronize Environments](#) with Jupyter from the **Kernel** menu.
- [Locking](#) adds multi-user capability from the Lock button.
- [Revision Control Mechanism \(RCM\)](#) adds Status, Checkout and Commit buttons.
- [Conda environment and package management](#) tab.
- [Conda notebook](#) adds conda management inside Notebook from the Kernel > Conda Packages menu option.
- [Anaconda Cloud integration](#) from the Publish to cloud button.
- [Notebook Present](#) turns your notebook into a PowerPoint-style presentation.

## Using the Synchronize Environments extension

The Synchronize Environments extension allows you to apply a Python, R language or any other custom environment inside your current notebook session, without needing to start up several Notebook instances using each of the selected environments.

To change environments:

1. Open the **Kernel** menu.



2. Click the Change kernel option.
3. From the list, select the environment to use.

NOTE: In AEN 4.1+ the default kernel for projects is default. In versions prior to 4.0, the default kernel for projects is root Python.

## Using the Locking extension

Multi-user capabilities are engaged in AEN when multiple users work in the same notebook file.

The Locking extension allows you to lock a notebook to prevent multiple team members from making changes at the same time. Notebooks are automatically locked when you open them.

If team members open a notebook and make changes while it is locked, their save capability is disabled, and they cannot overwrite the notebook.

To override the lock, they must actively take control of the locked file by clicking the Lock icon in the Notebook menu bar:



NOTE: This is a soft locking model. Team members can choose to override your lock to save their work. If you give team members write access to your files, confirm that they understand that they should never unlock your file unless they are making meaningful, non-destructive team contributions.

## Using the Revision Control Mechanism extension

The Revision Control Mechanism (RCM) Jupyter Notebook extension provides simple version control for notebook files. It uses the internal Jupyter functionality to perform tasks.

On the surface, RCM uses a simple linear model, but beneath that is a more complex git-based branching model. To prevent merge conflicts, this model uses a “latest wins” policy as its main merging strategy.

The RCM Jupyter Notebook extension adds four buttons:



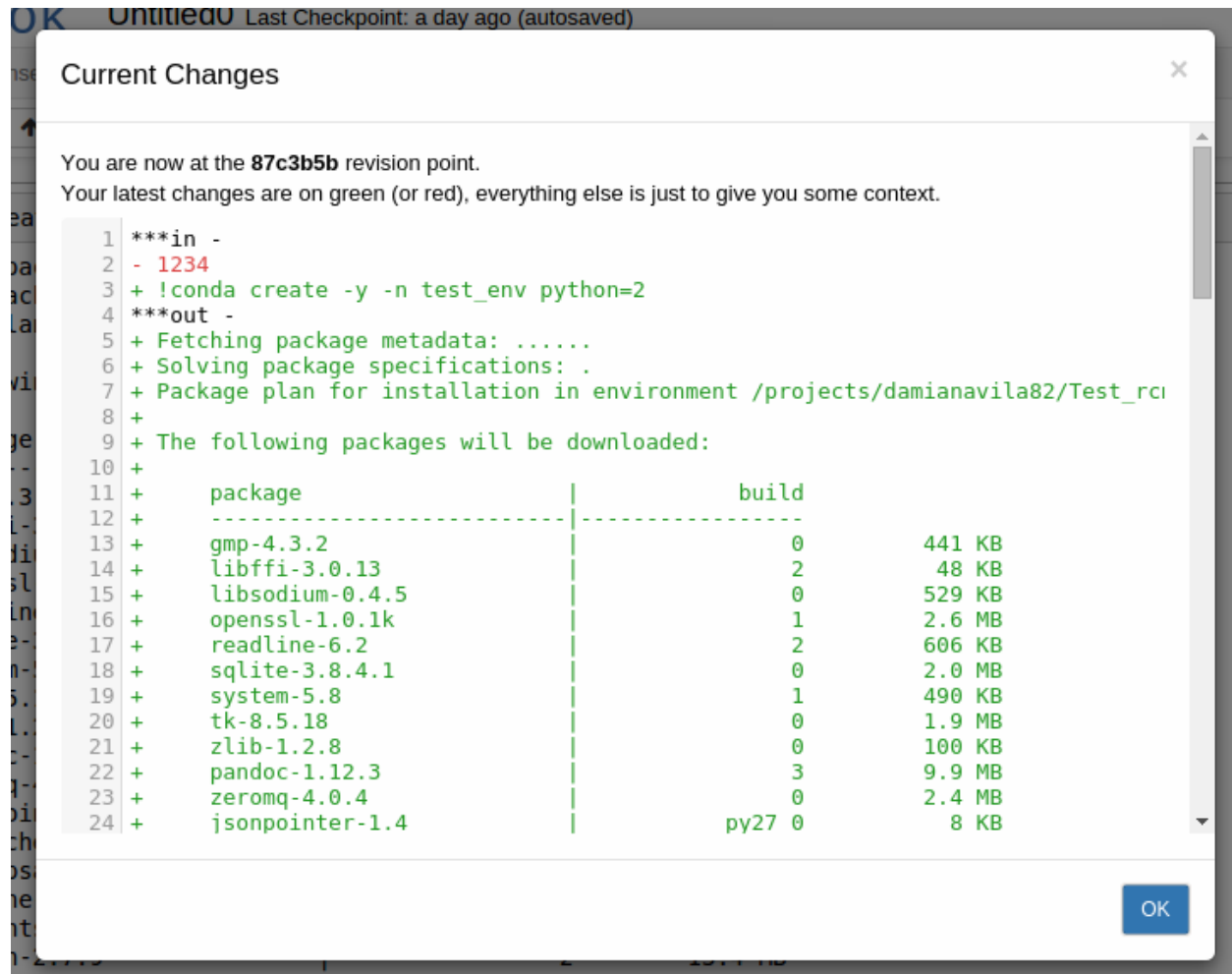
- *Status.*
- *Checkout.*
- *Commit.*
- *Configure git.*

TIP: If you do not see the RCM buttons, see *Setting up RCM for the first time.*

## Using the Status button

The Status button allows you to see what revision you are on.

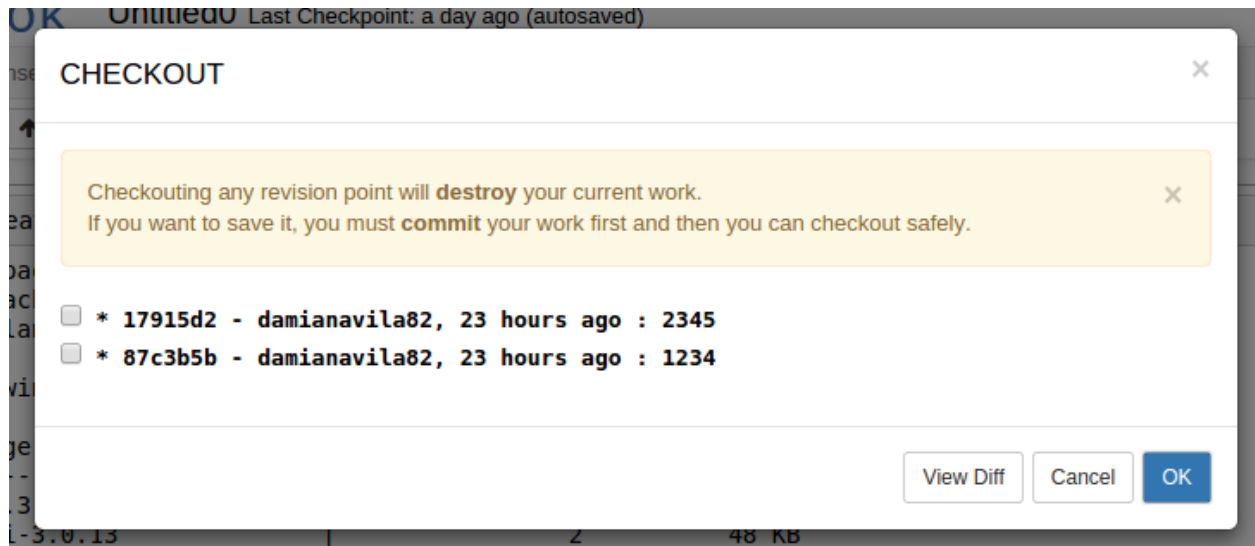
Clicking the Status button displays:



### Using the Checkout button

The Checkout button allows you to view a list of the previous revision points, check out a previous revision or compare differences between revisions.

Clicking the Checkout button displays:



### Checking out a previous revision

To checkout a notebook at an earlier revision point:

1. Select the checkbox next to the desired revision point.
2. Click the OK button.

A copy of the notebook at the selected revision point is displayed.

NOTE: If you have not saved the work in your current project window, checking out a previous revision destroys it. If in doubt, click the Cancel button and save your work before reverting to a previous revision point.

### Comparing revisions

To compare 2 previous revision points:

1. Select the checkboxes of the revision points to compare.
2. Click the View Diff button.

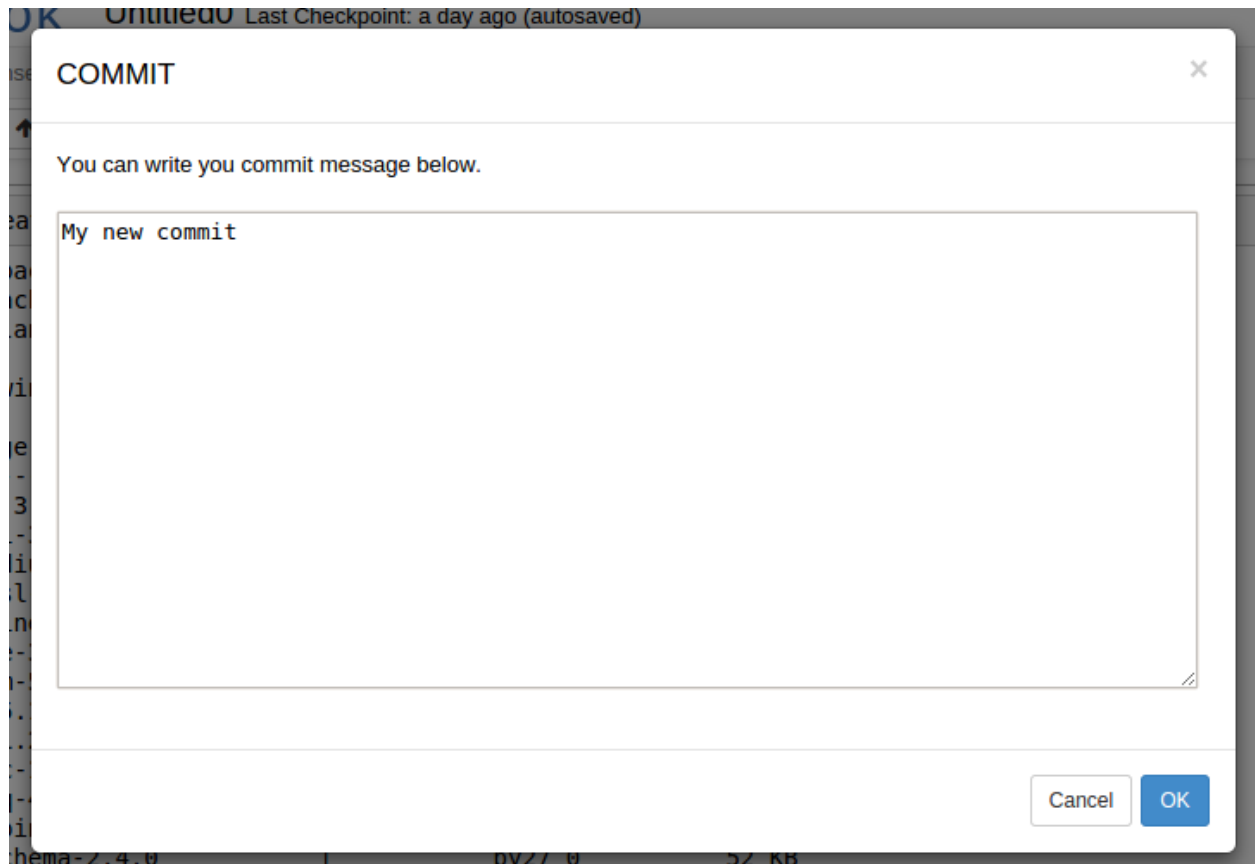
A side-by-side comparison is displayed.

Click the Cancel button to close the differences window.

### Using the Commit button

The Commit button allows you to save or persist the current changes, keeping a permanent record of any changes that are introduced, so that you do not have to worry about losing important data.

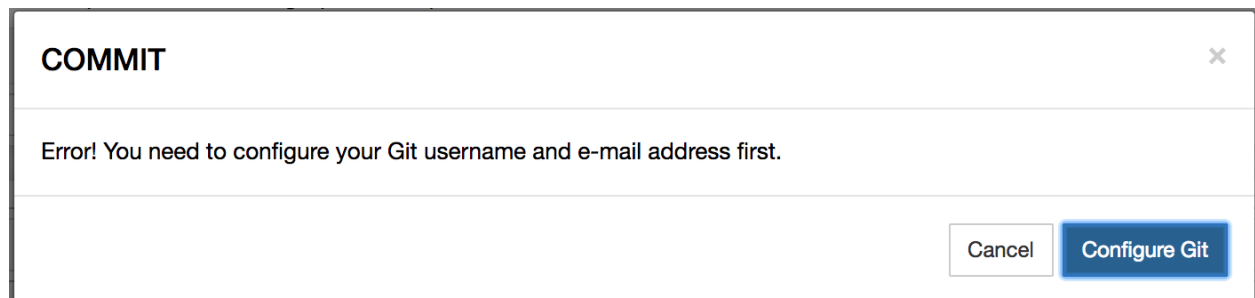
Clicking the Commit button displays:



1. Enter a description of the changes in the commit as a reminder in case you need to revert back to it later.
2. Click the OK button.

Your changes are committed and a revision point is created.

If Git user name and user email are not set, the following window appears:




Configure Git and then try to commit again.

TIP: You can roll back committed changes by *checking out a previous version*.

## Using the Configure git button

The Configure git button allows you to configure Git user name and email values.

After clicking the Configure Git button, the following window appears:

A screenshot of a 'Git Configuration' dialog box. The dialog has a title bar with a close button (X) in the top right corner. Inside, there are two sections: 'Username' and 'Email'. The 'Username' section has a text input field containing 'John Doe'. The 'Email' section has a text input field containing 'johndoe@example.com'. At the bottom right of the dialog, there are two buttons: 'Cancel' and 'Save'.

Enter user name and e-mail address. Click the OK button when finished.

## Setting up RCM for the first time

If you do not see the RCM buttons in your notebook:

1. Go to the project home page.
2. Open the Terminal application.
3. In the terminal window, run:

```
git config --global user.email "you@example.com"  
git config --global user.name "Your Name"
```

NOTE: Change `you@example.com` to your email address, and `Your Name` to your actual name.

4. Open Jupyter Notebook and refresh the page.

## Using the NBConda extension

The NBConda extension adds a Conda tab to your notebook for easy environment and package management from within the notebook.



Files Running IPython Clusters **Conda**

2 Conda environments



Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default

1143 available packages

Search...



376 installed packages in environment "default"



Name	Version	Channel
<input type="checkbox"/> _license	1.1	defaults
<input type="checkbox"/> _nb_ext_conf	0.4.0	defaults
<input type="checkbox"/> abstract-rendering	0.5.1	defaults
<input type="checkbox"/> accelerate	2.3.1	defaults
<input type="checkbox"/> accelerate_cudalib	2.0	defaults
<input type="checkbox"/> aen-app-jupyterlab	0.4.0	wakari

Name	Version	Build	Available
<input type="checkbox"/> _license	1.1	py27_1	
<input type="checkbox"/> alabaster	0.7.10	py27_0	
<input type="checkbox"/> anaconda	custom	py27_0	
<input type="checkbox"/> anaconda-client	1.5.1	py27_0	
<input type="checkbox"/> anaconda-project	0.6.0	py27_0	
<input type="checkbox"/> asn1crypto	0.22.0	py27_0	

Click the Conda tab in a notebook to display:

- Conda environments list—export, clone or delete an environment in the action column, or create a new environment by clicking the plus + icon. Switch to an environment by clicking it; packages for that environment are displayed below in the installed packages list.
- Conda available packages list—for the selected environment in currently configured channels, search for packages and click a package name to install it.
- Installed packages list—in the selected environment, check for updates, update or delete selected packages.

**TIP:** While you are in any notebook, you can jump to the NBConda extension for that environment by clicking the **Kernel** menu and selecting Conda Packages:

iris Last Checkpoint: a minute ago (unsaved changes)

FILE EDIT VIEW INSERT CELL KERNEL WIDGETS HELP
Python [conda env:TestProject-default] ○

```
In [ ]: import pandas as pd
df = pd.read_csv("irirs.csv")
df
```



## Using the Conda Notebook extension

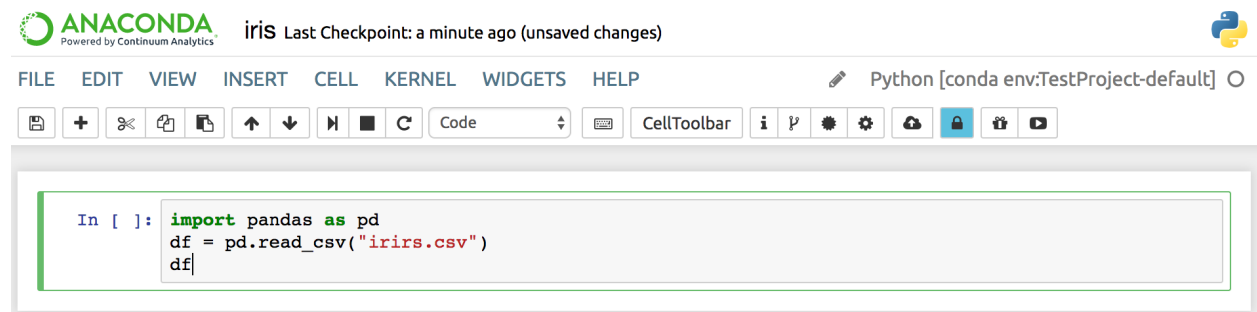
The Conda Notebook extension adds the Conda Packages option to the **Kernel** menu.

Select the Conda Packages option to display a list of all of the Conda packages that are currently used in the environment associated with the running kernel, as well as any available packages.

From the Conda Packages option, you can perform all of the tasks available in the *Conda tab*, but they will only apply to the current environment.

## Using the Anaconda Cloud extension

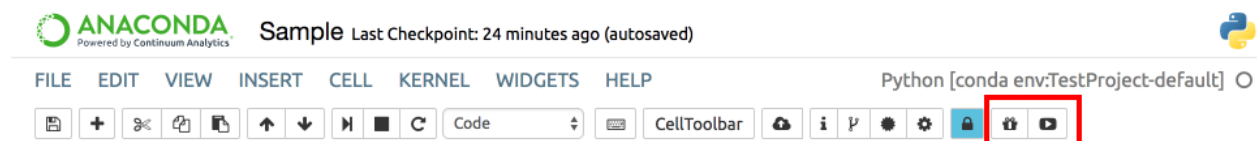
The Anaconda Cloud extension adds the Cloud button to your notebook, allowing you to easily upload your notebook to Cloud:



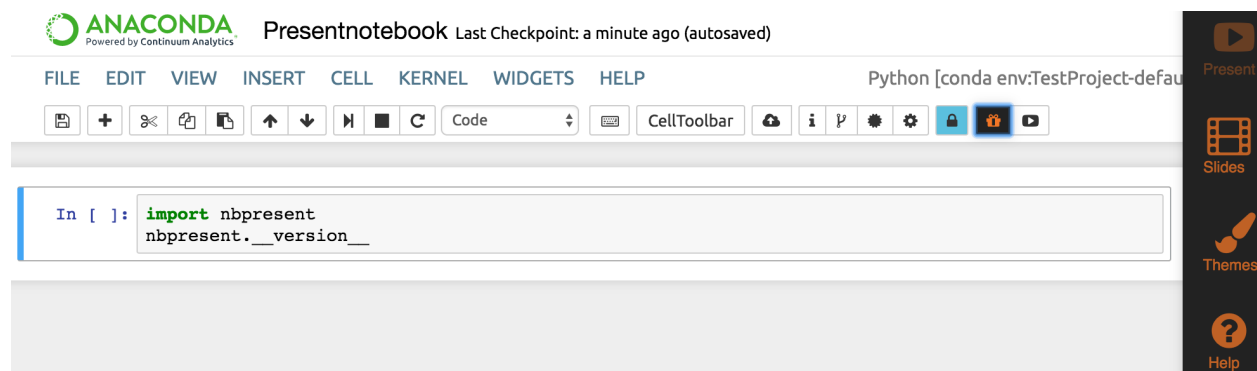
## Using the Notebook Present extension

The AEN Notebook Present extension turns your notebook into a Microsoft PowerPoint-style presentation.

The Present extension adds 2 buttons to Notebook's menu bar—Edit Presentation and Show Presentation:



To begin using Notebook Present, click the Edit Presentation button.

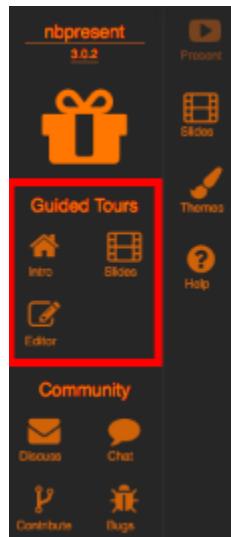


The Notebook Present sidebar is displayed on the right side of your browser:

Clicking each icon changes the menu and layout of your notebook.

Clicking the Help icon displays 3 tours—demonstrations—of the main features of Present:

- *Intro tour.*
- *Slides tour.*
- *Editor tour.*



Select one of the tours to view a short presentation regarding the specifics of that feature.

### Intro tour

The Intro tour is a 2-minute presentation that explains how to use the main features of Present, including a description of each button's purpose.

NOTE: At any time, you can pause, go back to the previous or move forward to the next slide.

The following information is covered in the Intro tour:

- App Bar—When authoring, this allows you control the content and style of your presentation. It also can be used to activate several keyboard shortcuts for editing:

## Keyboard shortcuts



The Jupyter Notebook has two different keyboard input modes. **Edit mode** allows you to type code/text into a cell and is indicated by a green cell border. **Command mode** binds the keyboard to notebook level actions and is indicated by a grey cell border with a blue left margin.

Mac OS X modifier keys:

: Command

: Control

: Option

: Shift

: Return

: Space

: Tab

### Command Mode (press to enable)

: find and replace

: previous slide

: next slide

: next slide

: enter edit mode

: open the command palette

: run cell, select below

: run selected cells

: run cell, insert below

: to code

: to markdown

: extend selected cells above

: extend selected cells above

: extend selected cells below

: extend selected cells below

: insert cell above

: insert cell below

: cut selected cells

: copy selected cells

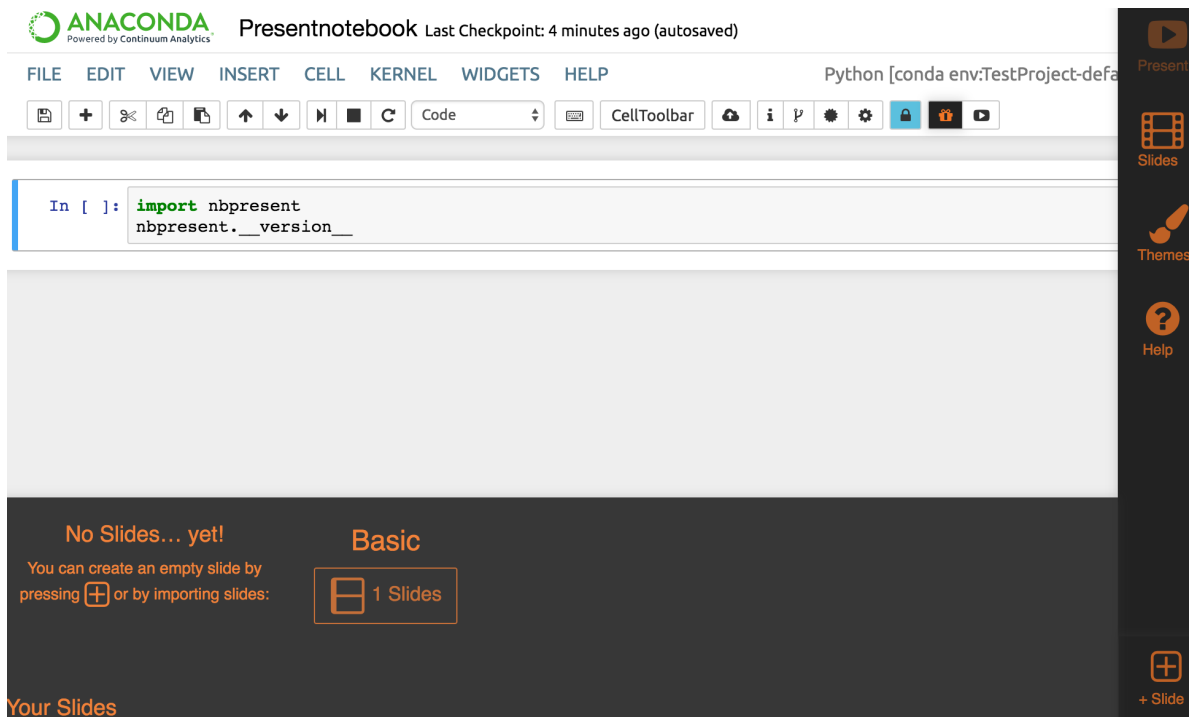
: paste cells above

: paste cells below

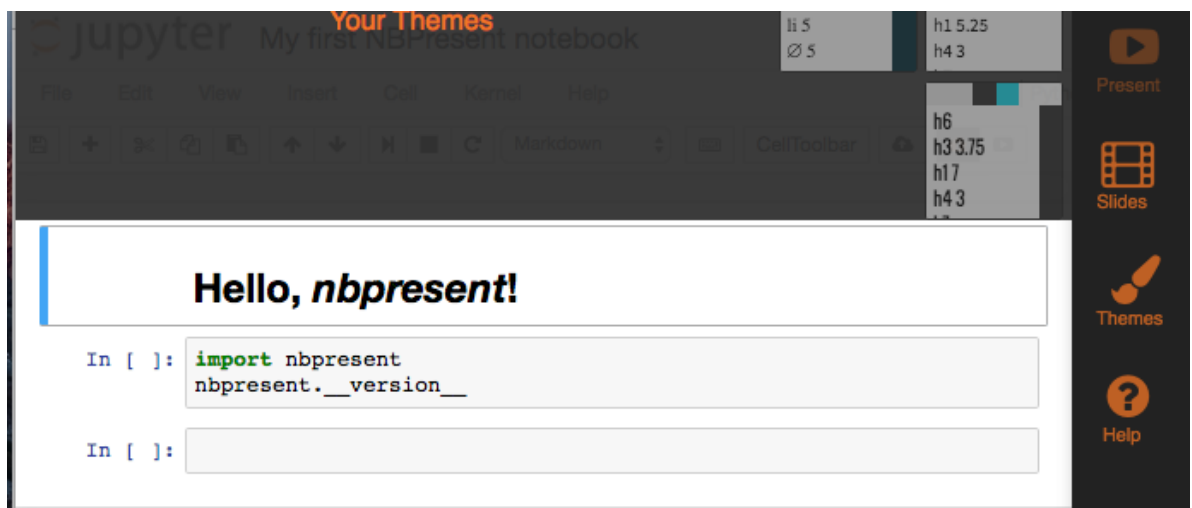
: undo cell deletion

Close

- **Stop Authoring**—Clicking the Edit Presentation button again stops authoring, and removes all keyboard shortcuts.
- **Show Presentation**—If you just want to run your presentation without using any authoring tools, just click the Show Presentation button.
- **Presenting/Authoring**—Once you've made some slides, start presenting, where you can use most Notebook functions with the theme we have defined, as well as customize slides on the fly.
- **Slides button**—Slides, made of Regions linked to Cell Parts are the bread and butter of any presentation, and can be imported, created, linked, reordered, and edited here.



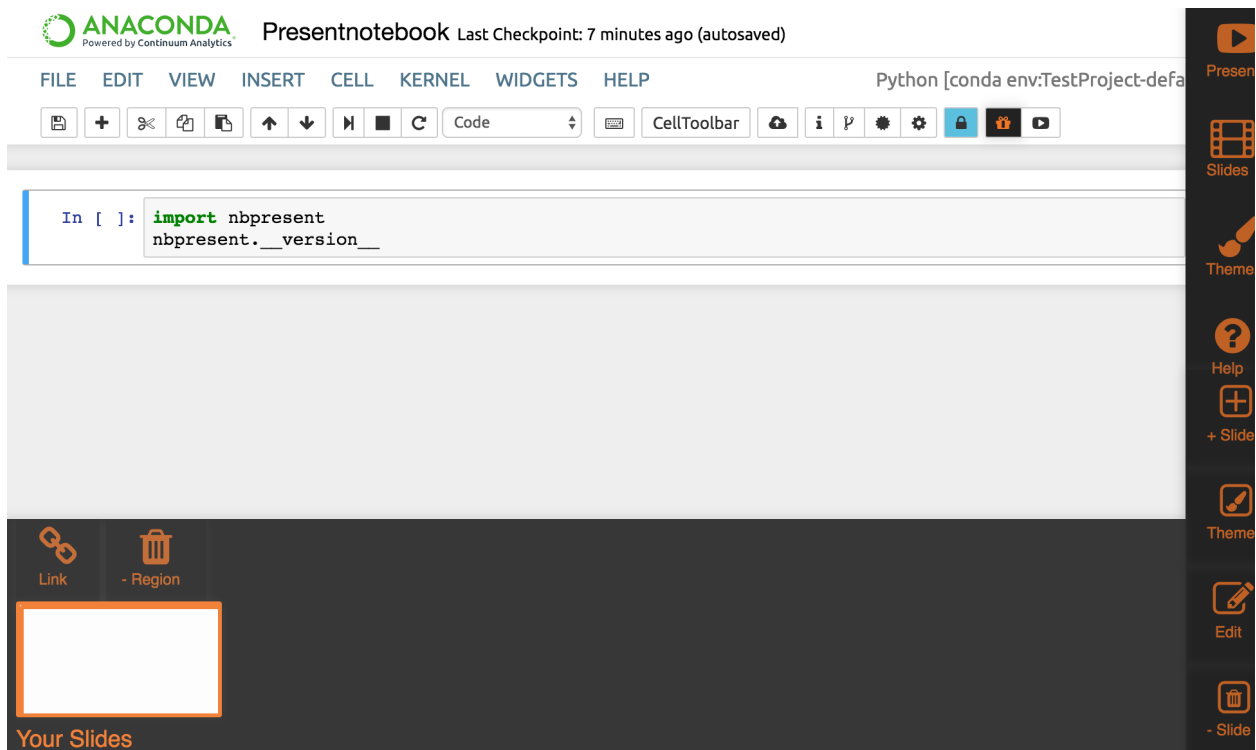
- Theming—Theming lets you select from existing colors, typography, and backgrounds to make distinctive presentations. The first theme you select will become the default, while you can choose custom themes for a particular slide, like a title.



- Saving—Whenever you save your Notebook, all your presentation data will be stored right in the Notebook .ipynb file.
- Downloading—After you’ve made a presentation, you can download it as an HTML page by choosing Download → Download As: Presentation (.html) in the menu.
- Help—Activate help at any time to try other tours, connect with the present developers and community, and other information.

## Slides tour

Slides make up a presentation. Clicking Slides toggles the sorter view and the Slide Toolbar on and off:



The Slides tour explains how to create and manage slides, including the following information:

- Slide Toolbar—Create a new slide. Clicking + Slide will offer some choices for creating your new slide.
- Import—The quickest way to create a presentation is to import each cell as a slide. If you’ve already created slides with the official slideshow cell toolbar or RISE, you can import most of that content.
- Template Library—You can create a presentation from an existing template.
  - Reuse Slide as Template—You can create a presentation based on an existing slide.
  - Simple Template—A common template is the Quad Chart, with four pieces of content arranged in a grid.
- Region—The Quad Chart has four Regions. To select a region, click it.
  - Link a Region to a Cell Part—Each Region can be linked to a single Cell Part using the Link Overlay, which shows all of the parts available.
    - \* Cell Part: Source (blue)—Source, such as code and Markdown text.
    - \* Cell Part: Outputs (red)—Outputs, such as rich figures and script results.
    - \* Cell Part: Widgets (purple)—Jupyter widgets, interactive widgets that provide both visualization and user input.
    - \* Cell Part: Whole (orange)—Finally, a Whole Cell, including its Source, Widgets and Outputs can be linked to a single Region.
  - Unlink a region from a Cell Part—Unlinking removes the connection between a Region and a Cell Part, without deleting either one.
  - Region: Trashing—Trashing a Region permanently deletes it, without affecting any linked Cell Part.

- Part Thumbnail—We'll try to draw a part thumbnail. It can only be reliably updated when a linked Cell Part is on-screen when you mouse over it, but you should usually be able to get an idea of what you're seeing. The colors of the regions correspond to the cell types.
- Presenting—Clicking the Present button while editing brings up the Presenter with editing mode still enabled:
  - Linked inputs and widgets are still interactive.
  - Go forward—Click to go to the next slide
  - Go back—Click to go back to the previous slide
  - Go back to the beginning—Click to go back to the first slide
  - My work is done here—Click to go back to the Notebook.

### Editor tour

Once you've made a few slides, you'll likely want to customize them. The Editor tour explains how to edit your notebook, including the following information:


- Editing Slides—Activate the Slide Editor by double-clicking it, or by clicking Edit Slide.
- Region Editor—Click to drag Regions around and resize them.
- Region Tree—Reorder Regions and see the details of how Regions will show their linked Parts.
- Add Region—Add new regions.
- Attribute Editor—Edit the properties of a region.
- Data Layouts—In addition to manually moving regions, you can apply these layouts to automatically fill your slides.
- More Regions—Add more regions—with a weight of 1.
- Tree Weight—Make a Region bigger or smaller, based on its relative weight.
- 12 Grid—A compromise between the Free and Treemap layouts, the 12 Grid option rounds all of the values in a layout to a factor of 12.

### Using Compute Resource Configuration

The Compute Resource Configuration (CRC) application displays information about the current project and allows you to set a custom project environment and view and manage your other AEN applications, including stopping, starting, restarting and viewing the logs of each.

The CRC application screen contains 3 sections:

- *Info.*
- *Conda environment.*
- *Running apps.*

 ANACONDA

Info

**Hostname**  
davila-aen-test

**Project Home**  
/projects/testuser1/demo

**Project RC file**  
/projects/testuser1/demo/.projectrc

Conda Environment

/projects/testuser1/demo/envs/default

Setting the default environment for this project will affect all users by modifying the **.projectrc** file.  
All running apps will be shutdown.  
Make sure **No one working on this project** has any unsaved documents!

Set Project Environment

Running Apps

User	Application	Status	Last Seen	Terminate	Relaunch	Logs
testuser1	terminal	running	1 hours ago	Terminate	Relaunch	

Info

The Info section displays:

- Hostname—IP address of the host computer.
- Project Home—File path to the project home.
- Project RC file—File path to the project runtime configuration file **.projectrc**. This file is sourced when a user opens any AEN application. It sets several AEN internal environment variables, sets up the project environment and sets additional user environment variables for the project.

### Conda environment

This section displays the path to the default conda environment.

**CAUTION:** Changing the default environment will affect all users. Be sure that no team members have any unsaved documents before changing the project environment.

To change the default conda environment location:

1. Edit the path to point to your preferred conda environment.
2. Click the Set Project Environment button.

Your `.projectrc` file is modified.

### Running apps

The Running Apps section displays a list of users and the applications that are in use, as well as when the app was last modified.

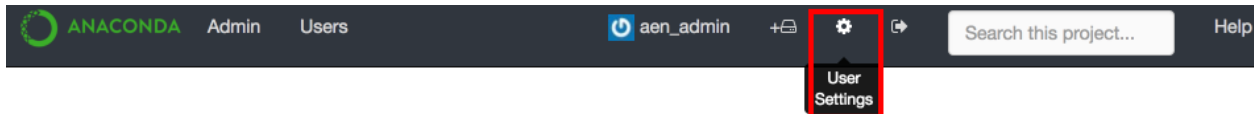
To terminate any individual application, click the Terminate button.

To stop and re-launch any individual application, click the Relaunch button.

To review the run logs of any active application, which may be useful for troubleshooting, click the Logs button.

### Managing your account

To access your account information, click the User Settings icon in the AEN navigation bar:



### Updating your public profile

Your public profile is made up of a name, a personal URL, your company and location.

1. In the left navigation pane, click the **Public Profile** tab.
2. To update your profile picture, create a [Gravatar](#) that is associated with the email address you used to create your AEN account. The gravatar will automatically appear.

### Changing your password

1. In the left navigation pane, click the **Account Settings** tab.



Deleting your AEN account

- 1. In the left navigation pane, click the **Account Settings** tab.

Viewing account operations

- 1. In the left navigation pane, click the **Security Log** tab to view a list of operations performed on your account.

# Settings

Change your account and profile settings.

Public Profile

Account Settings

Security Log

Applications

Security Log

	aen_admin	oauth.authenticate	2017-09-25 04:52:06.713000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.954000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.720000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.490000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.259000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.033000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:57.802000+00:00

- 2. For more information about an operation, click the Eye icon to the left of the the operation name.

Registering an application

If you want to create an application for AEN or have already done so, you must register your application.

- 1. In the left navigation pane, click the **Applications** tab.

# Settings

Change your account and profile settings.

Public Profile

Account Settings

Security Log

Applications

Developer Applications

Register New Application

These are applications you have registered to use the Anaconda Enterprise Notebooks API.

Gateway ()

Authorized applications

Gateway ()

revoke

- 2. Click the Register New Application button to open a form for registering your application.

### Advanced tasks

Advanced tasks are best-suited for users who are comfortable working in a Terminal.

### Working with environments

AEN runs on conda, a package management system and environment management system for installing multiple versions of software packages and their dependencies and switching easily between them.

A conda environment usually includes 1 version of Python or R language and some packages.

The ability to have a custom project environment is one of the most powerful features of AEN. Your project environment is integrated so that all of your project applications recognize it and all of your team members have access to it.

This section contains information about:

- *Creating a default conda environment using the Jupyter Notebook application*
- *Creating a default conda environment using the Jupyter Notebook application*
- *Using your conda environment in a notebook*
- *Customizing your conda environment*
- *Installing a conda package using Terminal*
- *Installing a conda package using Notebook*
- *Uninstalling a conda package*

NOTE: This conda environments guide is specific to AEN. For full conda documentation—including cheat sheets, a conda test drive, and command reference—see the [conda documentation](#).

### Creating a default conda environment using the Jupyter Notebook application

You can create, activate, and install packages and deactivate environments from within the Notebook menu bar.

To install from the Notebook menu bar:

1. Click the **Conda** tab and select the plus sign icon.
2. Search for `numpy` in the package search box.
3. Select `numpy` from the search results.

**3 Conda environments**

Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default
	myenv		/projects/aen_admin/TestProject/envs/myenv

**2 available packages**

Name	Version	Channel
<input checked="" type="checkbox"/> numpy	1.13.1	defaults
<input type="checkbox"/> numpydoc	0.7.0	defaults

**39 installed packages in environment "myenv"**

Name	Version	Build	Available
<input type="checkbox"/> anaconda-client	1.6.3	py36_0	
<input type="checkbox"/> certifi	2016.2.28	py36_0	
<input type="checkbox"/> clyent	1.2.2	py36_0	
<input type="checkbox"/> decorator	4.1.2	py36_0	
<input type="checkbox"/> ipykernel	4.6.1	py36_0	
<input type="checkbox"/> ipython	6.1.0	py36_0	

1. Click the Install button.

The environment is added to the project's env directory.

## Creating a default conda environment using Terminal

In AEN, all new environments created with conda automatically include Python, Jupyter Notebooks and pip. You can specify any other packages you want included in your new environment.

**TIP:** By default, conda creates a new environment in your project's env directory—so that all team members have access to the environment. For information about limiting your team member's read, write or execute permissions, see [Workbench](#).

To create a new environment within your AEN account, run the command conda in a [Terminal](#) application.

**EXAMPLE:** To create a new environment named `WeatherModel` that contains Python, NumPy, pip and Jupyter Notebooks in your project's env directory:

1. Log in to AEN.
2. Open a project.
3. On the project home page, click the Terminal application icon to open a Terminal.
4. Create the environment:

```
conda create -n WeatherModel numpy
```

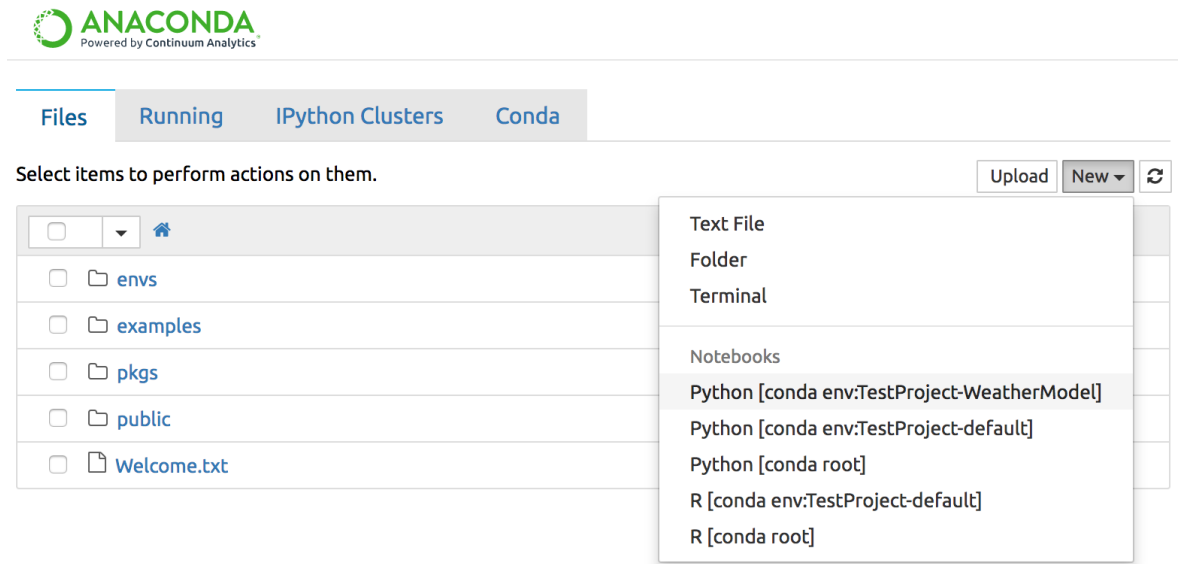
**TIP:** Python, pip and Jupyter Notebooks are automatically installed in each new environment. You only need to specify NumPy in this command.

5. Make the new environment your default:

```
source activate WeatherModel
```

6. To use your new environment with Jupyter Notebooks, open the Notebook application.
7. Click the New button to open a new notebook. In the drop-down menu under Notebooks, the environment you just created is displayed.
8. To activate that environment, select it.

The environment is added to the project's `env` directory.



NOTE: You can deactivate the new environment when you are finished with your notebook by opening the Terminal application and running the command `source deactivate`.

## Using your conda environment in a notebook

Whether you have created an environment using conda in a terminal, or from the **Conda** tab in a notebook, you can use the conda environment in the same way.

When working in a notebook, to select the environment you have created and want to use with that notebook, in the **Kernel** menu, select Change Kernel.

EXAMPLE: If you have an environment named `my_env` in a project named `test1` that includes NumPy and SciPy and you want to use that environment in your notebook, in the **Kernel** menu, select `Python [conda env:test1-my_env]`.

The notebook code will run in that environment and can import NumPy and SciPy functions.

## Customizing your conda environment

If you need a Python package that AEN doesn't include by default, you can install additional packages into your AEN environment.

**TIP:** You cannot install packages into the default Anaconda environment. You must create your own environment before installing a new package into that environment.

AEN is built on Anaconda, so you can install additional Python packages using conda or pip—both of which are included with Anaconda.

## Installing a conda package using Terminal

To install a conda package using the Terminal application:

1. Create and activate the environment using the steps in *Creating a default conda environment using the Jupyter Notebook application*.
2. In your Terminal application, run the command `conda install <packagename>`.

**NOTE:** Be sure to specify the Python version you want when using conda to create the environment, or it will use the same version as root.

**EXAMPLE:**

```
conda create -n mypy3 python=3 numpy scipy
```

A conda environment named mypy3, running on Python 3 and containing NumPy and SciPy is created. All subsequent packages added to this environment will be the Python 3 compatible versions.

## Installing a conda package using Notebook

You can also install the package within your notebook without using the terminal app:

1. From the Notebook application, click the **Conda** tab.
2. Select the environment you wish to use.
3. Search for the package you want to add.
4. Click the Install button.

## Uninstalling a conda package

To uninstall a package using this method, run the command `conda remove <packagename>`.

**NOTE:** Replace <packagename> with the name of the package you are uninstalling.

## Using visualization packages

AEN supports multiple visualization packages for Python and R language.

For Python, the default environment has *Matplotlib* and *Bokeh* installed.

For R language, the default environment has *r-ggplot2* and *r-bokeh* installed.

### Matplotlib

Matplotlib is a Python 2D and 3D plotting and visualization library that produces publication-quality figures in a variety of hardcopy formats and interactive environments across platforms.

To display Matplotlib figures in the output cells of a notebook running the default environment, run:

```
import matplotlib.pyplot as plt
%matplotlib inline
```

Any Matplotlib figures in the notebook are displayed in it's output cells.

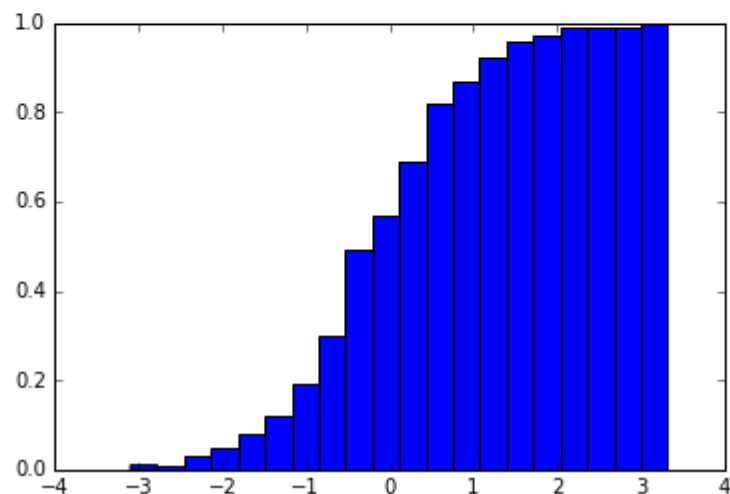
EXAMPLE: The following screenshot is of a cumulative density function (CDF) plot using values taken from a normal distribution:

```
In [1]: import matplotlib.pyplot as plt
%matplotlib inline
```

```
In [2]: import numpy as np

x = np.random.normal(size=100)
```

```
In [3]: plt.hist(x, normed=True, cumulative=True, bins=20);
```



For more information, including a [gallery](#), [examples](#), [documentation](#) and a [list of plotting commands](#), see the [Matplotlib website](#).

## Bokeh

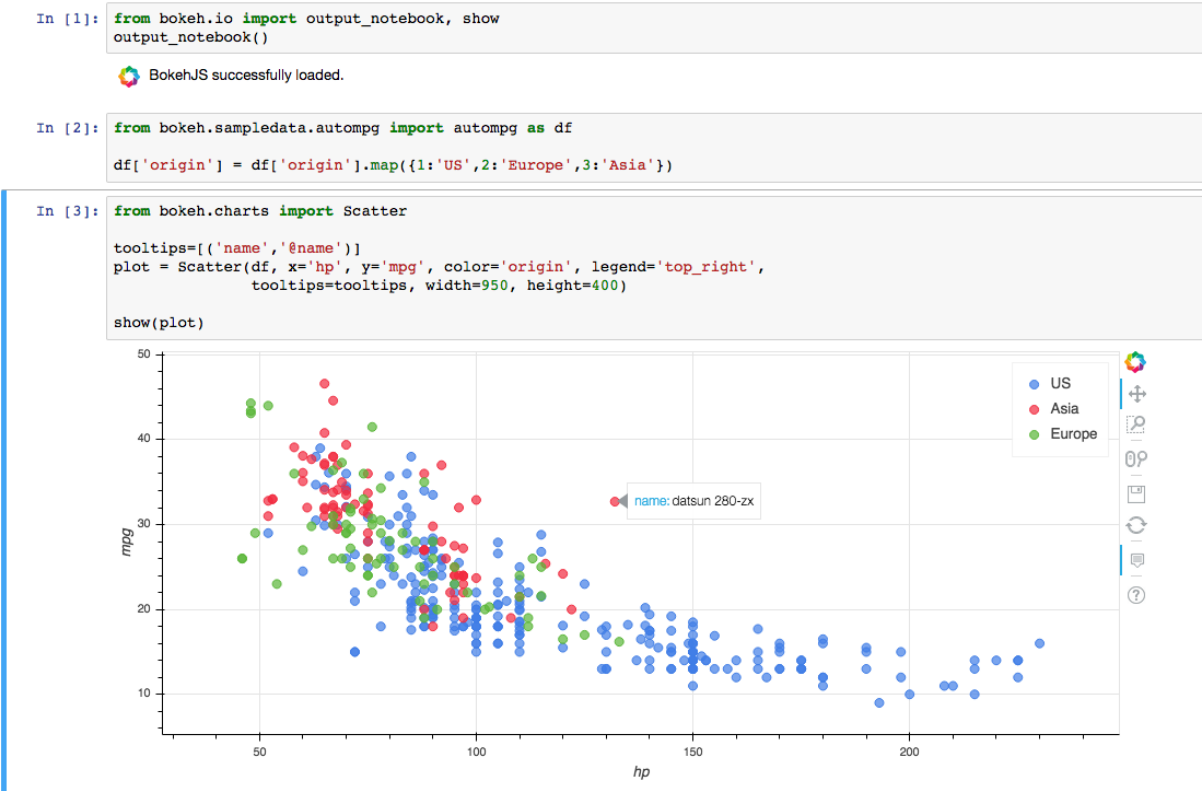
**Bokeh** is an interactive visualization library that targets modern web browsers to provide elegant, concise construction of novel graphics.

To display Bokeh figures in the output cells of a notebook running the default environment, run:

```
from bokeh.io import output_notebook, show
output_notebook()
```

Any Bokeh figures in the notebook are displayed in its output cells.

The following screenshot is of a scatter plot of miles-per-gallon vs. horsepower for 392 automobiles using the `autompg` sample dataset:



## ggplot2

**Ggplot2** is a plotting system for R language which is based on the grammar of graphics. Ggplot2 tries to take only the good parts of base and lattice graphics and none of the bad parts.

To use ggplot2 with AEN:

1. Open a new Notebook using the R kernel.
2. Load the ggplot2 library with the following code:

```
library(ggplot2)
```

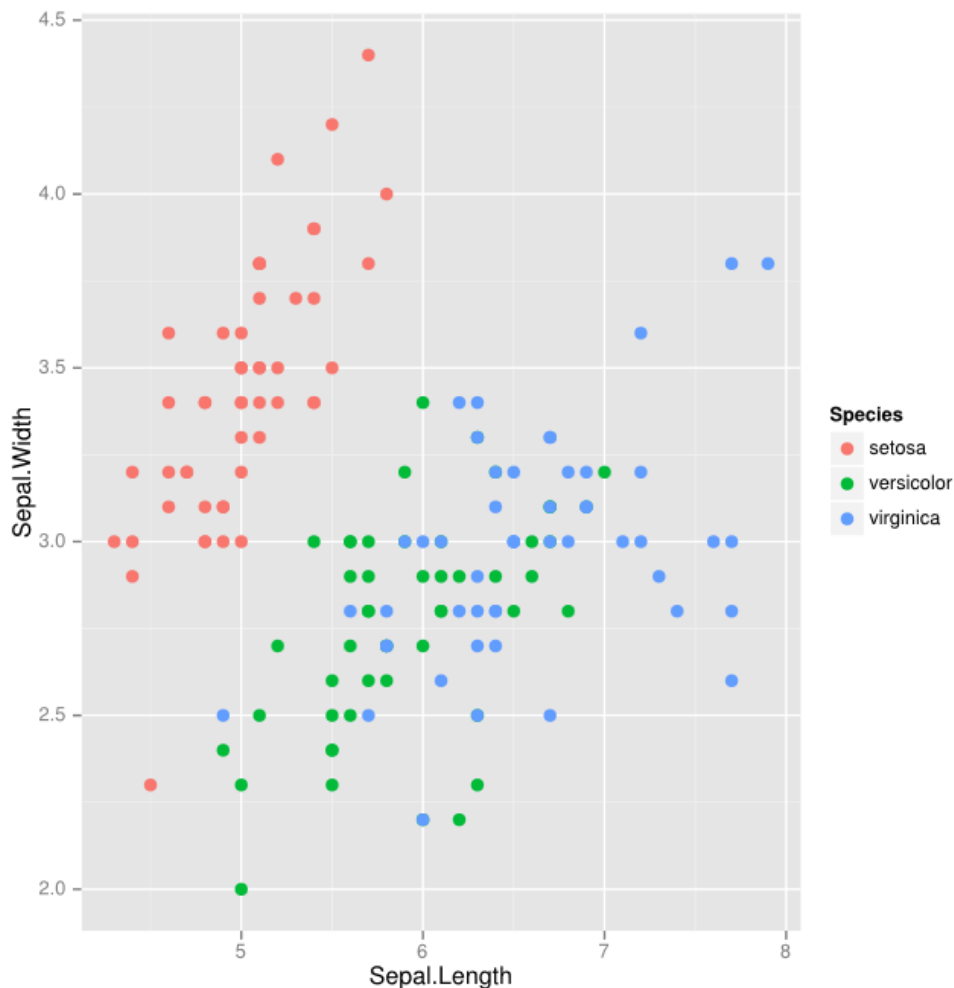
The ggplot2 library is loaded and ready for use in AEN.

The following screenshot is of a scatter plot of sepal width vs sepal length using the `iris` dataset provided by the `dplyr` library:

```
In [5]: library(dplyr)
```

```
In [6]: library(ggplot2)
```

```
In [7]: ggplot(data=iris, aes(x=Sepal.Length, y=Sepal.Width, color=Species)) + geom_point(size=3)
```



## Using environment variables

Some Python packages depend on environment variables for correct operation.

EXAMPLE: Theano requires that the directory containing the CUDA compiler is included in the `$PATH` environment variable in order for GPU acceleration to be enabled.

To change environment variables for all AEN applications, modify the project runtime configuration file `.projectrc`. For more information, see [Using Compute Resource Configuration](#).

`.projectrc` sets several AEN internal environment variables, sets up the project environment and can set additional user environment variables for that project. This file is sourced when a user opens any AEN application—including Jupyter Notebook—and Jupyter kernels will be able to read the included environment variables.



## Cheat sheet

See the [Anaconda Enterprise Notebooks cheat sheet PDF](#) (232 KB) for a single-page summary of the most important information about using AEN.

## Troubleshooting

This troubleshooting guide provides you with ways to deal with issues that may occur with your AEN installation.

### AEN application not working properly

An AEN application is not working as expected.

#### Cause

There are several reasons an application may not work as expected.

#### Solution

Most AEN application issues can be resolved by following these steps:

1. Refresh the page.
2. If the issue is not resolved, close and open the application.
3. If the issue is not resolved, *stop and restart your project*.
4. If the issue is not resolved, check that you are using the latest version of your web browser—Chrome, Safari, Edge, or Firefox.
5. Log out of AEN.
6. Restart your browser, and log back in.

If you continue to have issues, then please contact your administrator or enterprise support representative.

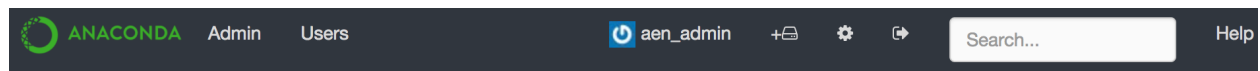
## Admin guide

This administrator guide provides information about the administration of an AEN installation.

Most AEN system management is done from the administrative user interface (admin UI). Some advanced tasks are done *using the command line*.

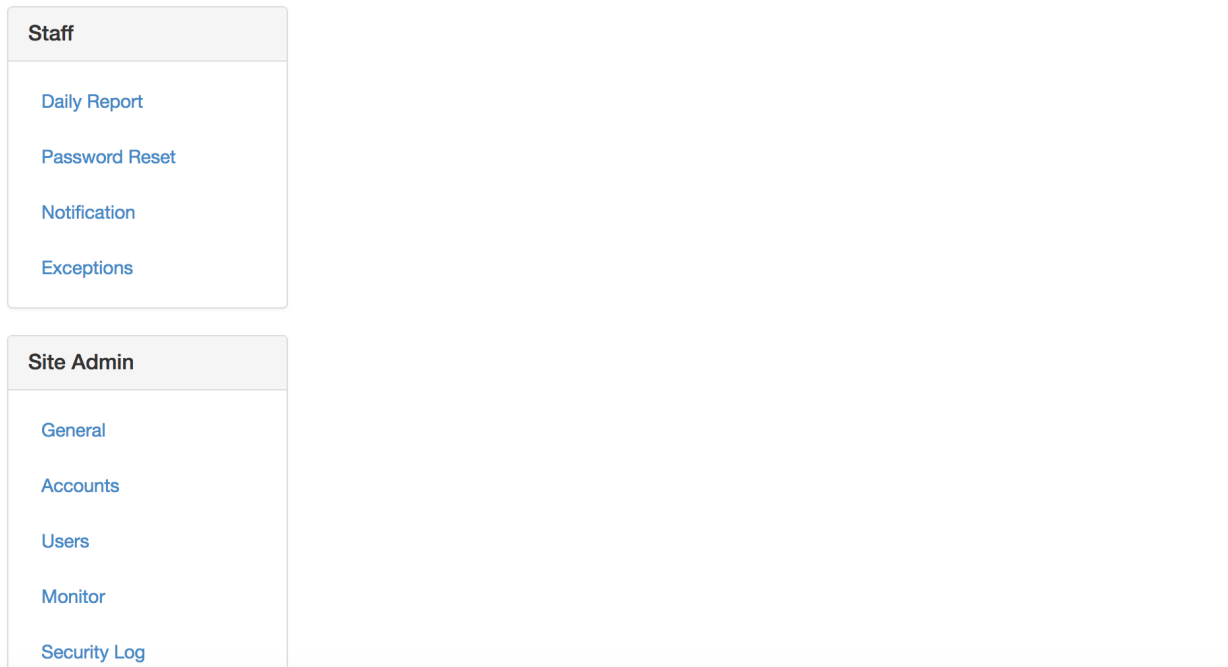
Any AEN user account can be *upgraded to an administrator account* to have both user and administrator privileges.

Administrators see two additional links in the AEN Navigation bar—Admin and Users:



# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the system administrator.



All of the other navigation bar items are the same as for a user account.

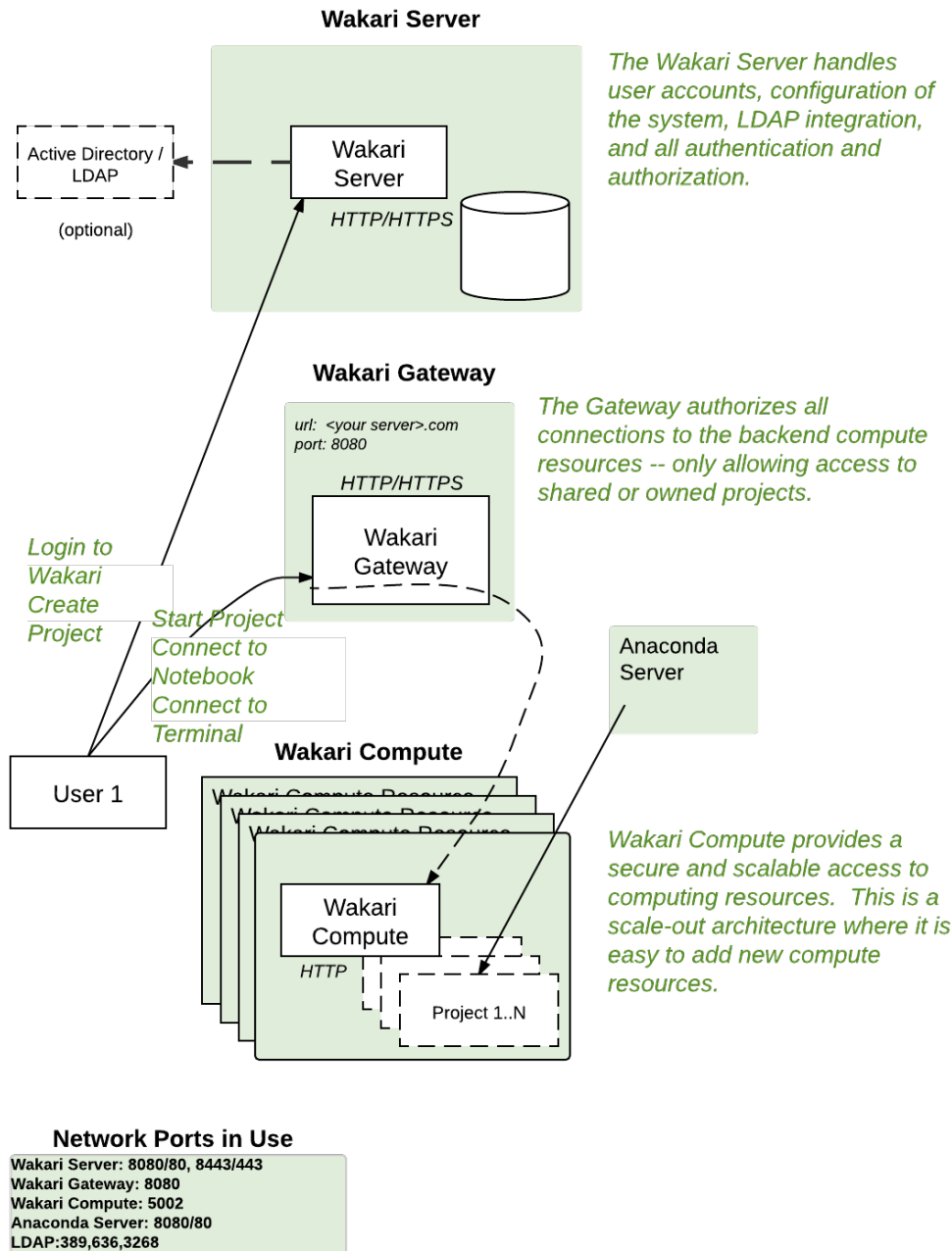
## Concepts

### System overview

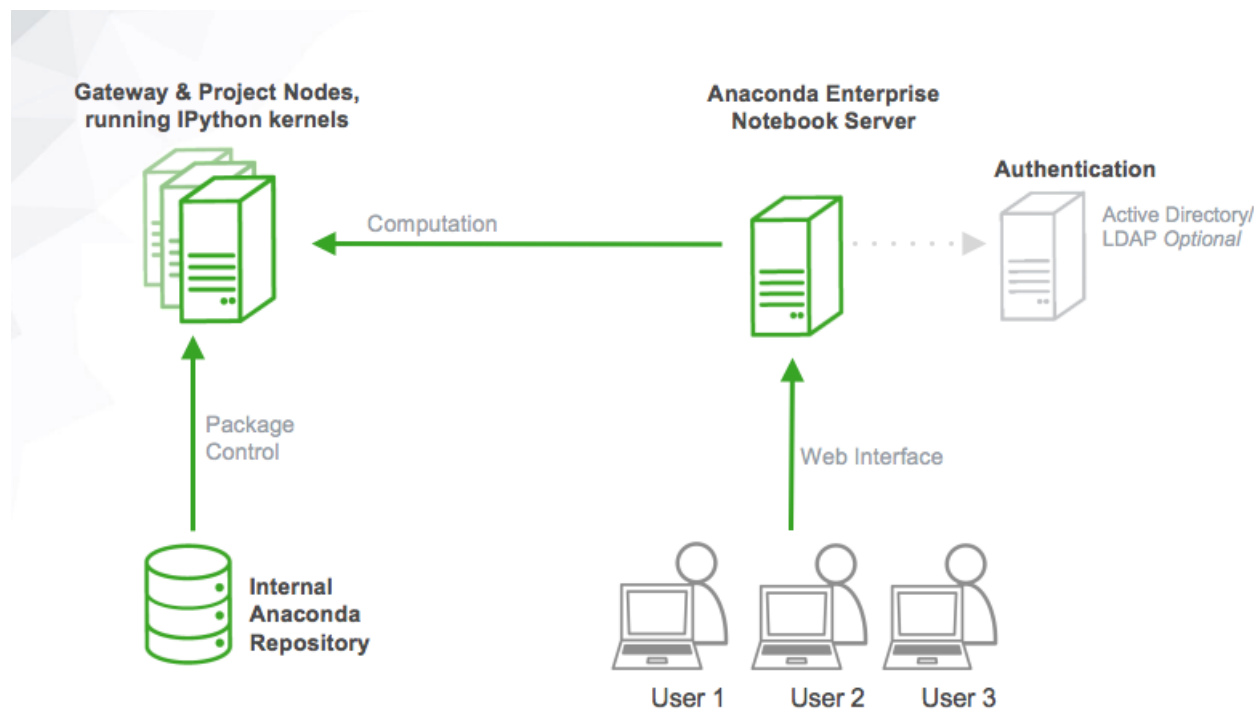
The Anaconda Enterprise Notebooks platform consists of 3 main service groups: AEN server, AEN gateway and AEN compute, which are called “nodes”:

- *Server node*—The administrative front-end to the system where users login, user accounts are stored, and administrators manage the system.
- *Gateway node(s)*—A reverse proxy that authenticates users and directs them to the proper compute node for their project. Users will not notice this node after installation as it automatically routes them.
- *Compute nodes*—Where projects are stored and run.

## Anaconda Enterprise Notebooks



These services can be run on a single machine or distributed across multiple servers.



Organizationally, each AEN installation has exactly 1 server instance and 1 or more gateway instances. Each compute node can only be connected to a single gateway. The collection of compute nodes served by a single gateway is called a **data center**. You can add data centers to the AEN installation at any time.

EXAMPLE: An AEN deployment with 2 data centers, where 1 gateway has a cluster of 20 physical computers, and the second gateway has 30 virtual machines, must have the following services installed and running:

- 1 AEN server instance
- 2 AEN gateway instances
- 50 AEN compute instances (20 + 30)

Nodes must be configured and maintained separately.

## Server node

The server node controls login, accounts, admin, project creation and management as well as interfacing with the database. It is the main entry point to AEN for all users. The server node handles project setup and ensures that users are sent to the correct project data center.

Since AEN is web-based, it uses the standard HTTP port 80 or HTTPS port 443 on the server.

AEN uses MongoDB for its internal data persistency. It is typically run on the same host as the server but can also be *installed* on a separate host.

Server nodes use NGINX to handle the user-facing AEN web interface. NGINX acts as a request proxy for the actual server web-process which runs on a high numbered port that only listens on localhost. NGINX is also responsible for static content.

Server is installed in the `/opt/wakari/wakari-server` directory.

## Server processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manage wakari-worker, multiple processes of wk-server.
user	wakari
configuration	/opt/wakari/wakari-server/etc/supervisord.conf
log	/opt/wakari/wakari-server/var/log/supervisord.log
control	service wakari-server
ports	none

wk-server	details
description	Handles user interaction and passing jobs on to the wakari gateway. Access to it is managed by NGINX.
user	wakari
command	/opt/wakari/wakari-server/bin/wk-server
configuration	/opt/wakari/wakari-server/etc/wakari/
control	service wakari-server
logs	/opt/wakari/wakari-server/var/log/wakari/server.log
ports	Not used in versions after 4.1.2 *

\* AEN 4.1.2 and earlier use port 5000. This port is used only on localhost. Later versions of AEN use Unix sockets instead. The Unix socket path is: `unix:/opt/wakari/wakari-server/var/run/wakari-server.sock`

wakari-worker	details
description	Asynchronously executes tasks from wk-server.
user	wakari
logs	/opt/wakari/wakari-server/var/log/wakari/worker.log
control	service wakari-server

nginx	details
description	Serves static files and acts as proxy for all other requests passed to wk-server process. *
user	nginx
configuration	/etc/nginx/nginx.conf /opt/wakari/wakari-server/etc/conf.d/www.enterprise.conf
logs	/var/log/nginx/woc.log /var/log/nginx/woc-error.log
control	service nginx status
port	80

\* In AEN 4.1.2 and earlier the wk-server process runs on port 5000 on localhost only. In later versions of AEN the wk-server process uses the Unix socket path `unix:/opt/wakari/wakari-server/var/run/wakari-server.sock`.

NGINX runs at least two processes:

- Master process running as root user.
- Worker processes running as nginx user.

## Gateway node

The gateway node serves as an access point for a given group of compute nodes. It acts as a proxy service and manages the authorization and mapping of URLs and ports to services that are running on those nodes. The gateway nodes provide a consistent uniform interface for the user.

NOTE: The gateway may also be referred to as a data center because it serves as the proxy for a collection of compute nodes.

You can put a gateway in each data center in a tiered scale-out fashion.

AEN gateway is installed in the `/opt/wakari/wakari-gateway` directory.

## Gateway processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manages the wk-gateway process.
user	wakari
configuration	/opt/wakari/wakari-gateway/etc/supervisord.conf
log	/opt/wakari/wakari-gateway/var/log/supervisord.log
control	service wakari-gateway
ports	none

wakari-gateway	details
description	Passes requests from the AEN Server to the Compute nodes.
user	wakari
configuration	/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
logs	/opt/wakari/wakari-gateway/var/log/wakari/gateway.application.log /opt/wakari/wakari-gateway/var/log/wakari/gateway.log
working dir	/ (root)
port	8089 (webcache)

## Compute node(s)

Compute nodes are where applications such as Jupyter Notebook and Workbench actually run. They are also the hosts that a user sees when using the Terminal app or when using SSH to access a node. Compute nodes contain all user-visible programs.

Compute nodes only need to communicate with a gateway, so they can be completely isolated by a firewall.

Each project is associated with one or more compute nodes that are part of a single data center.

AEN compute nodes are installed in the `/opt/wakari/wakari-compute` directory.

Each compute node in the AEN system requires a compute launcher service to mediate access to the server and gateway.

## Compute processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manages the wk-compute process.
user	wakari
configuration	/opt/wakari/wakari-compute/etc/supervisord.conf
log	/opt/wakari/wakari-compute/var/log/supervisord.log
control	service wakari-compute
working dir	/opt/wakari/wakari-compute/etc
ports	none

wk-compute	details
de-scrip-tion	Launches compute processes.
user	wakari
config-uration	/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json      /opt/wakari/wakari-compute/etc/wakari/scripts/config.json
logs	/opt/wakari/wakari-compute/var/log/wakari/compute-launcher.application.log      /opt/wakari/wakari-compute/var/log/wakari/compute-launcher.log
work-ing dir	/ (root)
control	service wakari-compute
port	5002 (rfe)

Wk-compute loads each of the following configuration files, in this order:

- /etc/wakari/config.json.
- /etc/wakari/compute-launcher-config.json.
- ./compute-launcher-config.json.
- Any configuration file specified by the -c option.

If an option is specified in multiple files, the last one encountered takes precedence.

## Supervisor and supervisord

AEN uses a process control system called “Supervisor” to run its services. Supervisor is run by the AEN Service Account user, usually wakari or aen\_admin.

The Supervisor daemon process is called “supervisord”. It runs in the background and should rarely need to be restarted.

### Service Account

AEN must be installed and executed by a Linux account called the AEN Service Account. The username of the AEN Service Account is called the AEN Functional ID (NFI). The AEN Service Account is created during AEN installation—if it does not exist—and is used to run all AEN services.

The default NFI username is `wakari`. Another popular choice is `aen_admin`.

**WARNING:** The Service Account should only be used for administrative tasks, and should not be used for operating AEN the way an ordinary user would. If the Service Account creates or starts projects, the permissions on the AEN package cache will be reset to match the Service Account, which will interfere with the normal operation of AEN for all other users.

### Anaconda environments

Each project has an associated conda environment containing the packages needed for that project. When a project is first started, AEN clones a default environment with the name “default” into the project directory.

Each release of AEN 4 includes specific tested versions of conda and the conda packages included with AEN. These tested conda packages include Python, R, and other packages, and these tested conda packages include all of the packages in Anaconda.

If you upgrade or install different versions of conda or different versions of any of these conda packages, the new packages will not have been tested as part of the AEN 4 release.

These different packages will usually work, especially if they are newer versions, but they are not tested or guaranteed to work, and in some cases they may break product functionality.

You can use a new conda environment to test a new version of a package before installing it in your existing environments.

If using conda to change the version of a package breaks product functionality, you can use conda to change the version of the package back to the version known to work.

For more information about environments, see [Working with environments](#).

### Projects and permissions

AEN users interact with the system predominantly through [projects](#).

Projects are associated with a single data center within the AEN environment. The team of users includes one owner, which is the user that created the project.

Projects live in the `projectRoot` folder on the compute node—by default, `/projects`.

The project directory is created the first time a project is started. The `start-project` script clones it from `/opt/wakari/wakari-compute/lib/node_modules/wakari-compute-launcher/skeleton`.

Project directory permissions are:

```
owner: rwx, user who created the project
group: rwx, group of the owner
other: --x, to allow access to the Public folder
ACL: rwx for any other team members
```

Files and subdirectories within the project directory have the same permissions as the project directory, except:

- The public folder and everything in it are open to anyone.



- Any files hardlinked into the root anaconda environment—`/opt/wakari/anaconda`—are owned by the root or wakari users.

Project file and directory permissions are maintained by the `start-project` script. All files and directories in the project will have their permissions set when the project is started, except for files owned by root or the `AEN_SRVC_ACCT` user—by default, wakari or `aen_admin`.

The permissions set for files owned by root or the `AEN_SRVC_ACCT` user are not changed to avoid changing the permissions settings of any linked files in the `/opt/wakari/anaconda` directory.

CAUTION: Do not start a project as the `AEN_SRVC_ACCT` user. The permissions system does not correctly manage project files owned by this user.

## Installation

### Installation requirements

#### Hardware requirements

AEN server—At least:

- 2+GB RAM.
- 2+CPU cores.
- 20GB storage.

AEN gateway—At least:

- 2 GB RAM.
- 2 CPU cores.

AEN compute (N-machines)—Configured to meet the needs of the projects. At least:

- 2GB RAM.
- 2 CPU cores.
- 20 GB.

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda env directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

#### Software requirements

- RHEL/CentOS on all nodes. Versions from 6.5 through 7.4 are supported. Other operating systems are supported. However, this document assumes RHEL or CentOS.
- Linux home directories—Jupyter looks in `$HOME` for profiles and extensions.
- Ability to install in AEN directory `/opt/wakari` with at least 10 GB of storage.
- Ability to install in Projects directory `/projects` with at least 20 GB of storage. Size depends on number and size of projects.

NOTE: To install AEN in a different location see [\*Installing AEN in a custom location\*](#).

## Linux system accounts

Some Linux system accounts (UIDs) are added to the system during installation.

If your organization requires special actions, the following list is available:

- mongod (RHEL) or mongod (Ubuntu/Debian)—created by the RPM or deb package.
- elasticsearch—created by RPM or deb package.
- nginx—created by RPM or deb package.
- AEN\_SRVC\_ACCT—created during installation of AEN, and defaults to wakari.
- ANON\_USER—An account such as “public” or “anonymous” on the compute node.

NOTE: If ANON\_USER is not found, AEN\_SRVC\_ACCT will attempt to create it. If it fails, the project(s) will fail to start.

- ACL directories need the filesystem mounted with Posix ACL support (Posix.1e).

NOTE: You can verify ACL from the command line by running `mount` and `tune2fs -l /path/to/filesystem | grep options`.

## Software prerequisites

- AEN server:
  - Mongo—Equal to or higher than version 2.6.8 and lower than version 3.0.
  - NGINX—Equal to or higher than version 1.6.2.
  - Elasticsearch—Equal to or higher than version 1.7.2.
  - Oracle JRE version 7 or 8.
  - bzip2.
- AEN Gateway:
  - bzip2.
- AEN compute:
  - git
  - bzip2
  - bash or zsh
  - X Window System

NOTE: If you don’t want to install the whole X Window System, you must install the following packages to have R plotting support:

```
sudo yum install -y libXrender libXext libXdmcp libSM libICE libXt \
dejavu-sans-fonts dejavu-serif-fonts dejavu-fonts-common \
fontpackages-filesystem
```

## Security requirements

- Root or sudo access.
- File permissions: `umask 0022` is required during the installation.
- SELinux in permissive or disabled mode.

Edit the following file using either root or sudo access:

```
/etc/sysconfig/selinux
```

Edit the following:

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.

SELINUX=enforcing

# SELINUXTYPE= can take one of these two values:
#   targeted - Targeted processes are protected,
#   mls - Multi Level Security protection.

SELINUXTYPE=targeted
```

NOTE: You must reboot for the changes to take effect.

Verify changes with `getenforce`.

## Network requirements

TCP Ports:

Direction	Type	Default Port	Protocol	Optional	Configurable	Comments
Inbound	TCP	80	HTTP or HTTPS	No	Yes	Server
Inbound	TCP	8089	HTTP or HTTPS	No	Yes	Gateway
Inbound	TCP	5002	HTTP	No	Yes	Compute

## Other requirements

As long as the above requirements are met, there are no additional dependencies for AEN.

See also *system requirements for Anaconda Repository and Anaconda Scale*.

## What's next

*Prepare for installation.*

## Preparing for installation

### Downloading AEN installers

Download the installers and copy them to the corresponding servers.

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.  
com"  
curl -O $RPM_CDN/aen-server-4.3.0-Linux-x86_64.sh  
curl -O $RPM_CDN/aen-gateway-4.3.0-Linux-x86_64.sh  
curl -O $RPM_CDN/aen-compute-4.3.0-Linux-x86_64.sh
```

NOTE: The current \$RPM\_CDN server will be confirmed in an email provided by your sales rep.

NOTE: These instructions use `curl` or `wget` to download packages, but you may use other means to move the necessary files into the installation directory.

### Gathering IP addresses or FQDNs

AEN is very sensitive to the IP address or domain name used to connect to the server and gateway nodes. If users will be using the domain name, you should install the nodes using the domain name instead of the IP addresses. The authentication system requires the proper hostnames when authenticating users between the services.

Print this page and fill in the domain names or IP addresses of the nodes below and record the user name and auto-generated password for the administrative user account in the box below after installing the AEN server node:

Node   Name or IP address	Port Number	Username   Password	
AEN server			
AEN gateway			
AEN compute			

NOTE: The values of these IP entries or DNS entries are referred to as `<AEN_SERVER_IP>` or `<AEN_SERVER_FQDN>`, particularly in examples of shell commands. Consider actually assigning those values to environment variables with similar names.

### Set up variables

Certain variables need to have values assigned to them before you start the installation.

## AEN server address

To define an environment variable for the AEN server address—FQDN or IP:

```
export AEN_SERVER=<AEN_SERVER_IP> # <from table above>
```

NOTE: The address—FQDN or IP—specified for the AEN server must be resolvable by your intended AEN users' web clients.

To verify your hostname, run `echo $AEN_SERVER`.

## AEN functional ID

AEN must be installed and executed by a Linux account called the AEN Service Account. The username of the AEN Service Account is called the AEN Functional ID (NFI). The AEN Service Account is created during AEN installation—if it does not exist—and is used to run all AEN services.

The default NFI username is `wakari`. Another popular choice is `aen_admin`.

To set the environment variable `AEN_SRVC_ACCT` to `wakari` or your chosen name before installation, run `export AEN_SRVC_ACCT="aen_admin"`.

This name is now the username of the AEN Service Account and of the AEN administrator account.

When upgrading AEN, set the NFI to the NFI of the current installation.

WARNING: The Service Account should only be used for administrative tasks, and should not be used for operating AEN the way an ordinary user would. If the Service Account creates or starts projects, the permissions on the AEN package cache will be reset to match the Service Account, which will interfere with the normal operation of AEN for all other users.

## AEN functional group

The AEN Functional Group (NFG) may be given any name. Most often, it is set to `aen_admin` or `wakari`. This Linux group includes the AEN service account, so all files and directories that have the owner NFI also have the group NFG.

When upgrading AEN, set the NFG to the NFG of the current installation.

To set the NFG before installation, run:

```
export AEN_SRVC_GRP="<NFG>"
```

NOTE: Replace `<NFG>` with your NFG name.

## AEN install sudo command

During AEN installation the installers perform various operations that require root level privileges. By default, the installers use the `sudo` command to perform these operations.

Before installation, set the `AEN_SUDO_CMD_INSTALL` environment variable to perform root level operations. You can also set it to no command at all if the user running the installer(s) has root privileges and the `sudo` command is not needed or is not available.

EXAMPLES:

```
export AEN_SUDO_CMD_INSTALL=""  
export AEN_SUDO_CMD_INSTALL="sudo2"
```

### AEN sudo command

By default the AEN services uses `sudo -u` to perform operations on behalf of other users—including `mkdir`, `chmod`, `cp` and `mv`.

To override the default `sudo` command when `sudo` is not available on the system, before installing, set the `AEN_SUDO_CMD` environment variable.

AEN must have the ability to perform operations on behalf of other users. Therefore, this environment variable cannot be set to an empty string or to `null`.

CAUTION: Any command that replaces `AEN_SUDO_CMD` must support the `-u` command line parameter—similarly to the `sudo` command.

EXAMPLE:

```
export AEN_SUDO_CMD="sudo2"
```

The optional environmental variable `AEN_SUDO_SH` is another way to customize AEN sudo operations. When AEN executes any `sudo` command, it will include the value of `AEN_SUDO_SH`, if it is set.

EXAMPLE: If your username is “jsmith” and the values are set as:

```
AEN_SUDO_CMD=sudo  
OWNER=jsmith  
AEN_SUDO_SH=sudologger  
PROJECT_HOME=/projects/jsmith/myproj
```

Then AEN will resolve:

```
$AEN_SUDO_CMD -u ${OWNER} $AEN_SUDO_SH rm -rf $PROJECT_HOME
```

As:

```
sudo -u jsmith sudologger rm -rf /projects/jsmith/myproj
```

In this case the `sudologger` utility could be a pass-through utility that logs all `sudo` usage and then executes the remaining parameters.

### Post-installation Sudo configuration

While root/sudo privileges are required during installation, root/sudo privileges are not required during normal operations after install, if user accounts are managed outside the software. However root/sudo privileges are required to start the services, thus in the service config files there may still need to be an `AEN_SUDO_CMD` entry.

For more information, see *Configuring sudo customizations*.

## AEN remote database settings

By default AEN server uses a local database. To override the default database location, see *Install AEN connected to a remote Mongo DB instance*.

## What's next

*Install the AEN server.*

## Installing the AEN server

The AEN server is the administrative front end to the system. This is where users log in to the system, where user accounts are stored, and where admins can manage the system.

Server is installed in the `/opt/wakari/wakari-server` directory.

## Installing the bzip2 package

Be sure you have the `bzip2` package installed. If this package is not installed on your system, install it:

```
sudo yum install bzip2
```

## Downloading prerequisite RPMs

To install AEN on a CentOS 6 server:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
↪com"
curl -O $RPM_CDN/nginx-1.6.2-1.el6ngx.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-tools-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-shell-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-server-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-mongos-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/elasticsearch-1.7.2.noarch.rpm
curl -O $RPM_CDN/jre-8u65-linux-x64.rpm
```

To install AEN on a CentOS 7 server:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
↪com"
curl -O $RPM_CDN/nginx-1.10.2-1.el7ngx.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-tools-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-shell-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-server-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-mongos-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/jre-8u112-linux-x64.rpm
curl -O $RPM_CDN/elasticsearch-1.7.6.noarch.rpm
```

### Installing prerequisite RPMs

Run:

```
sudo yum install -y *.rpm
sudo service mongod start
sudo chkconfig --add elasticsearch
```

### Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

### Running the AEN server installer

Run:

```
sudo -E ./aen-server-4.3.0-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-server
Logging to /tmp/wakari_server.log
Checking server name
Ready for pre-install steps
Installing miniconda
...
...
Checking server name
Loading config from /opt/wakari/wakari-server/etc/wakari/config.json
Loading config from /opt/wakari/wakari-server/etc/wakari/wk-server-config.json

=====

Created password '<RANDOM_PASSWORD>' for user 'aen_admin'

=====

Starting Wakari daemons...
installation finished.
```

After successfully completing the installation script, the installer creates the administrator account—AEN\_SRVC\_ACCT user—and assigns it a password.

EXAMPLE:



```
Created password '<RANDOM_PASSWORD>' for user 'aen_admin'
```

TIP: Record this password. It will be needed in the following steps. It is also available in the installation log file `/tmp/wakari_server.log`.

## Starting NGINX and Elasticsearch

When SELinux is enabled, it blocks NGINX from connecting to the socket created by Gunicorn. If you have SELinux enabled, run these commands to correct these permissions and allow connections between NGINX and Gunicorn:

```
sudo semanage fcontext -a -t httpd_var_run_t "/opt/wakari/wakari-server/var/run/wakari-  
↪server.sock"  
sudo restorecon -r /opt/wakari/wakari-server/var/run
```

To start NGINX and Elasticsearch to read the new config file:

```
sudo service nginx start  
sudo service elasticsearch start
```

TIP: If the AEN web page shows an NGINX 404 error, restart NGINX:

```
sudo nginx -s stop  
sudo nginx
```

## Testing AEN server installation

Visit `http://\protect\TI\textdollarAEN_SERVER`.

The License expired page is displayed.

No license found!

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**Upload License File**


**License File**

No file selected.

## Updating your license

From the License expired page, follow the onscreen instructions to upload your license file.

After your license is submitted, you will see this page:

 ANACONDA

Login Help

License Successfully Updated

# Anaconda Enterprise Notebooks™

Your Data, Your Servers™

Browser-based Python & Linux for collaborative data analysis and visualization.

Password must contain a minimum of 7 characters. One uppercase, one lowercase and one number.

## What's next

*Install the AEN gateway.*

## Installing the AEN gateway

The gateway is a reverse proxy that authenticates users and automatically directs them to the proper AEN compute node for their project. Users will not notice this node as it automatically routes them.

Gateway is installed in the `/opt/wakari/wakari-gateway` directory.

## Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
export AEN_GATEWAY_PORT=8089
export AEN_GATEWAY=<FQDN HOSTNAME OR IP ADDRESS> # will be needed shortly
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change `<FQDN HOSTNAME OR IP ADDRESS>` to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists. If the terminal is closed before successful installation, export the variables to continue with the installation.

## Running the AEN gateway installer

Run:

```
sudo -E ./aen-gateway-4.3.0-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-gateway
Logging to /tmp/wakari_gateway.log
...
...
Checking server name
Please restart the Gateway after running the following command
to connect this Gateway to the AEN Server
...
```

### Registering your gateway

The gateway needs to register with the AEN server.

This needs to be authenticated, so the NFI user's credentials created during the AEN server install must be used.

To write the configuration file `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`, run the following as `sudo` or `root`:

```
sudo /opt/wakari/wakari-gateway/bin/wk-gateway-configure \  
--server http://$AEN_SERVER --host $AEN_GATEWAY \  
--port $AEN_GATEWAY_PORT --name Gateway --protocol http \  
--summary Gateway --username $AEN_SRVC_ACCT \  
--password '<NFI USER PASSWORD>'
```

NOTE: replace `<NFI USER PASSWORD>` with the password of the NFI user that was generated during *server installation*.

### Setting permissions

Run:

```
sudo chown $AEN_SRVC_ACCT /opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
```

### Starting the gateway

Run:

```
sudo service wakari-gateway start
```

### Verifying your gateway registration

1. Log in to the AEN server using the Chrome or Firefox browser and the `AEN_SRVC_ACCT` user.
2. In the AEN navigation bar, click **Admin** to open the Admin Settings page.
3. In the **Site Admin** menu, select **Data Centers**:

The screenshot shows the Anaconda web interface. On the left, there are two vertical menus. The top menu, titled 'Staff', contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom menu, titled 'Site Admin', contains links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', and 'Data Centers'. The 'Data Centers' link is highlighted with a blue background. On the right, there is a 'Data Centers' section with a header 'Data Centers' and a list containing one entry: 'Gateway (ec2-52-90-133-17.compute-1.amazonaws.com:8089)'. Below the list is a green button with a plus icon and the text 'Add DataCenter'.

4. Click your data center:

The screenshot shows the Anaconda web interface. On the left, there are two vertical menus. The top menu, titled 'Staff', contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom menu, titled 'Site Admin', contains links for 'General', 'Accounts', 'Users', 'Security Log', and 'Data Centers'. The 'Data Centers' link is highlighted with a grey background. On the right, there is a 'Data Centers' section with a header 'Data Centers' and a list containing one entry: 'Gateway (54.208.221.207:8080)'. Below the list is a green button with a plus icon and the text 'Add DataCenter'.

5. Verify that your data center is registered and the status is `{"status": "ok", "messages": []}`:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)
[Task Queue](#)

Datacenter Gateway

Edit

Provider

wk\_server.plugins.providers.enterprise

Client ID

59c119cd3f94c30fe45ff5db

Client Secret

50cc629d-4e8e-44a5-9a2e-a46fee7c1921

Redirect URIs

http://ec2-52-90-133-17.compute-1.amazonaws.com:8089/login/authorized

wk-gateway-config.json

```
{
  "CDN": "http://ec2-204-236-198-47.compute-1.amazonaws.com/static/",
  "SUBDOMAIN_ROUTING": false,
  "client_id": "59c119cd3f94c30fe45ff5db",
  "client_secret": "50cc629d-4e8e-44a5-9a2e-a46fee7c1921",
  "WAKARI_SERVER": "http://ec2-204-236-198-47.compute-1.amazonaws.com",
  "port": 8089
}
```

status

```
{"status": "ok", "messages": []}
```

Back

Remove

## What's next

*Install the AEN compute node(s).*

## Installing the AEN compute node(s)

Compute nodes are where projects are stored and run.

Adding multiple AEN compute machines allows you to scale-out horizontally to increase capacity. Projects can be created on individual compute nodes to spread the load.

Repeat this procedure on each compute machine.

## Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal, to ensure the variable export persists.

## Running the AEN compute installer

Run:

```
sudo -E ./aen-compute-4.3.0-Linux-x86_64.sh -w $AEN_SERVER
...
...
PREFIX=/opt/wakari/wakari-compute
Logging to /tmp/wakari_compute.log
Checking server name
...
...
Initial clone of root environment...
Starting Wakari daemons...
installation finished.
Do you wish the installer to prepend the wakari-compute install location
to PATH in your /root/.bashrc ? [yes|no]
[no] >>> yes
```

## Restart the AEN Server

Once configured, restart the AEN server:

```
sudo service wakari-server restart
```

## Configuring your compute node(s)

Once installed, you must configure the compute launcher on your server:

1. In your browser, go to your AEN server.
2. Log in as the AEN\_SRVC\_ACCT user.
3. In the AEN navigation bar, click Admin to open the Admin Settings page.
4. In the **Providers** menu, select Enterprise Resources:

<b>Staff</b>	<b>Resources</b> <a href="#">+ Add Resource</a>
<a href="#">Daily Report</a>	<b>Gateway</b>
<a href="#">Password Reset</a>	<a href="#">ec2-54-210-232-251.compute-1.amazonaws.com</a> <a href="#">remove</a>
<a href="#">Notification</a>	
<a href="#">Exceptions</a>	
<b>Site Admin</b>	
<a href="#">General</a>	
<a href="#">Accounts</a>	
<a href="#">Users</a>	
<a href="#">Monitor</a>	
<a href="#">Security Log</a>	
<a href="#">Data Centers</a>	
<a href="#">Task Queue</a>	
<a href="#">License</a>	
<b>Providers</b>	
<a href="#">Enterprise Resources</a>	

5. Click the Add Resource button to open the new resource form.
6. Select the data center to associate this compute node with.



**Resources / new**

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
Compute Node1

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**  
Configuring Compute Node

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Add Resource

7. In the URL box, type: `http://$AEN_COMPUTE:5002`.

NOTE: If the compute launcher is located on the same box as the gateway, we recommended that you type `http://localhost:5002` instead.

8. Type a Name and Description for the compute node.
9. Click the Add Resource button to save the changes.

Your AEN compute node is configured.

### What's next

*Configure conda to use your local on-site AEN repository.*

### Configuring conda to use your local on-site AEN repository

You can configure AEN to use a local on-site Anaconda Repository server instead of Anaconda.org.

To configure AEN to use a local on-site Repository, you must:

1. *Edit conda on the compute node.*
2. *Configure the Anaconda client.*

### Editing conda on the compute node

NOTE: If there are channels that you haven't mirrored, you must remove them from the configuration.

Edit the file `.condarc` to match the following:

```
#/opt/wakari/anaconda/.condarc
channels:
  - defaults

create_default_packages:
  - anaconda-client
  - ipykernel

# Default channels is needed for when users override the system .condarc
# with ~/.condarc. This ensures that "defaults" maps to your Anaconda Repository and not
# repo.anaconda.com
default_channels:
  - http://<your Anaconda Repository name>:8080/conda/anaconda
  - http://<your Anaconda Repository name>:8080/conda/wakari
  - http://<your Anaconda Repository name>:8080/conda/r-channel

# Note: You must add the "conda" subdirectory to the end
channel_alias: http://<your Anaconda Repository name>:8080/conda
```

NOTE: Replace `<your Anaconda Repository name>` with the actual name or IP address of your local Anaconda Repository installation.

### Configuring the Anaconda client

Anaconda client lets users work with Repository from the command-line—including searching for packages, logging in, uploading packages, and more.

To set the default configuration of `anaconda-client` for all users on your compute node:

```
sudo /opt/wakari/anaconda/bin/anaconda config --set url http://<your Anaconda Repository>
↪:8080/api -s
```

NOTE: Sudo access is required because the configuration file is written to the root file system: `/etc/xdg/binstar/config.yaml`.

NOTE: Replace `<your Anaconda Repository>` with the actual name or IP address of your local Anaconda Repository installation.

## What's next

Review the *optional configuration* tasks to see if any apply to your system.

## Optional configuration

### Using configuration files

The default locations for each component's configuration files are:

- Server—`/opt/wakari/wakari-server/etc/wakari/config.json`.
- Gateway—`/opt/wakari/wakari-gateway/etc/wakari/config.json`.
- Compute—`/opt/wakari/wakari-compute/etc/wakari/config.json`.

Additionally, service-specific configuration files may also be present in the following locations:

- Server—`/opt/wakari/wakari-server/etc/wakari/wk-server-config.json`.
- Gateway—`/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`.
- Compute—`/opt/wakari/wakari-compute/etc/wakari/wk-compute-config.json`.

Each service loads each of the configuration files in the following order and updates the AEN configuration at each step:

1. `/etc/wakari/config.json`.
2. `/etc/wakari/wk-gateway-config.json`.
3. `/opt/wakari/wakari-SERVICE/etc/wakari/config.json`.
4. `/opt/wakari/wakari-SERVICE/etc/wakari/wk-SERVICE-config.json`.
5. `./config.json`.
6. `./wk-gateway-config.json`.

## AEN configuration keys

The following is a list of AEN supported configuration keys:

Table 35: Server Configuration Keys

Key	Default	Description
CDN	<code>\$WAKARI_SERVER/ static/</code>	The location of static assets.
MONGO_DB	<code>wakari</code>	The name of the AEN database in mongodb.
MONGO_URL	<code>mongodb:// localhost/</code>	The URL of your AEN server's mongodb instance. Format: <code>mongodb://&lt;username&gt;:&lt;password&gt;@&lt;host&gt;:&lt;port&gt;/</code>
WAKARI_SERVER		The URL of this AEN server.
DEFAULT_PRIVACY	<code>public</code>	The default project privacy setting—can be either <code>public</code> or <code>private</code> .
SESSION_COOKIE_NAME	<code>wakari. enterprise. session</code>	The cookie name used to maintain Anaconda Enterprise Notebooks Enterprise login sessions.
PERMANENT_SESSION	<code>True</code>	Sets cookie session to permanent. This will keep the session open after the browser is closed. The session will still expire after the number of minutes set in the <code>SESSION_LIFETIME</code> key.
SESSION_LIFETIME	<code>120</code>	Time in minutes until the session expires. The counter resets with each request.
USE_SES	<code>false</code>	Sets whether AEN will use Amazon SES to send emails.
SMTP		Sets the SMTP email settings.
- host		A SMTP subkey—the SMTP mail server hostname.
- user		SMTP subkey—the username for SMTP server authentication.
- password		SMTP subkey—the password for SMTP server authentication.
- from_addr		SMTP subkey—the From address for emails sent through SMTP.
verify_gateway_certificate	<code>true</code>	A boolean setting that indicates whether your AEN server should verify the gateway SSL certificate.
accounts	<code>wk_server. plugins accounts.cloud</code>	The account provider class. For LDAP, this should be set to <code>wk_server.plugins.accounts.ldap_accounts</code> .
uniqueEmail	<code>true</code>	A boolean setting that indicates whether unique user email addresses are required. See <a href="#">note below</a> about updating the database when setting <code>uniqueEmail</code> .
has_internet	<code>true</code>	Boolean for retrieving the avatar from the gravatar URL. If false a local default is used instead.
LDAP	<code>389</code>	LDAP configurations.
- SERVER		LDAP subkey—A list of LDAP servers. At least one server name must be listed. The primary server should be listed first. All secondary or fail-over servers should be listed after the primary.
- PORT	<code>389</code>	LDAP subkey—The LDAP port on the LDAP server.
- AUTH_TYPE		LDAP subkey—LDAP Authentication types. <code>simple</code> —no encryption not secure. <code>``TLS``</code> —encrypted secure requires the <code>TLS_CERT</code> to be set.
- TLS_CERT		LDAP subkey—the full path to the TLS certificate file. The certificate file must also be provided by the Enterprise.
- BASEDN		LDAP subkey—the LDAP Base DN value.
- OU		LDAP subkey—a list of Organizational Units. Some enterprises group users by OUs in their LDAP server records. AEN will loop over the list of OUs when authenticating a user. The OU value is a list of lists to support multiple OUs where each OU is a single name or a hierarchy of names.
ANON_USER	<code>anonymous</code>	Username—such as <code>public</code> or <code>anonymous</code> —assigned users who are not logged in to access projects. To disable public access use the special value <code>disabled</code> . For more information, see <a href="#">Configuring sudo customizations</a> .
ELASTICSEARCH_ENABLED	<code>true</code>	Boolean indicating whether ElasticSearch is enabled. <b>Chapter 2: Capabilities</b>
SEARCH_SERVER	<code>'localhost:9200'</code>	IP address or domain name and port of ElasticSearch server
LOG_LEVEL	<code>'DEBUG'</code>	Log verbosity. One of: <code>'ERROR'</code> <code>'WARN'</code> <code>'INFO'</code> <code>'DEBUG'</code>

NOTE: If you set `uniqueEmail` to `false`, you must drop the existing index in the database. EXAMPLE: If the index name is `email_1`, run `db.users.dropIndex("email_1")`.

Table 36: Gateway Configuration Keys

Key	Default	Description
<code>WAKARI_SERVER</code>		The URL of the AEN <code>WAKARI_SERVER</code> .
<code>port</code>	8089	The Port number used by the gateway application. Must be a non-privileged port ( $\geq 1024$ ).
<code>client_id</code>		The client ID assigned to this gateway by the server during <code>wk-gateway-configure</code> .
<code>client_secret</code>		The Client secret assigned to this gateway by the server during <code>wk-gateway-configure</code> .
<code>httpTimeout</code>	600	Timeout in seconds. The default is 10 minutes to allow project creation.
<code>logLevel</code>	info	Log verbosity. One of: 'error' 'warn' 'info' 'debug'.
<code>https</code>		Enable SSL encryption. For more information, see <a href="#">Configuring SSL</a> .
- <code>key</code>		A https subkey–Path to gateway key.
- <code>cert</code>		A https subkey–Path to gateway cert.
- <code>ca</code>		A https subkey–Required if cert was signed by a private root CA or signed by an intermediate authority. It must contain separate values for the paths to the CA root, any intermediates and the certificate for the Server.
- <code>passphrase</code>		A https subkey–Passphrase required to decrypt SSL certs.

Table 37: Compute Node Configuration Keys

Key	Default	Description
WAKARI_SERVER		The URL of the AEN WAKARI_SERVER.
MANAGE_ACCOUNTS	true	A boolean setting that indicates whether AEN should manage system user accounts. Set to false for LDAP installations.
identicalGID	false	<b>To make the AEN compute service create groups with the same uid. Set to true If the /projects folder resides on an NFSv3 volume.</b> For more information, see <a href="#">Group and user permissions for NFS</a> .
port	2227	The port number used by the compute-launcher application. Note that individual applications use dynamic ports.
projectRoot	/projects	The location of project file storage.
logLevel	info	Log verbosity. One of: 'error' 'warn' 'info' 'debug'
logMaxSize	10000000	Max size in bytes of the logfile. Default is 10 MB. If the size is exceeded then a new file is created and a counter will become a suffix of the log file.
logMaxFiles	30	Limit the number of files created when the size of the logfile is exceeded
appIdleTime	172800000 (48 hours)	The amount of idle time before applications will be auto-terminated (in msec).
idleCheckInterval	3600000 (1 hour)	The frequency of idle checks.
numericUsernames	false	A boolean setting that indicates whether numeric usernames are permitted.
httpTimeout	600	The time before a timeout—in seconds. The default is 10 minutes—600 seconds—to allow time for project creation.
ANON_USER	anonymous	Username such as public or anonymous for users who are not logged in to access projects. To disable public access use the special value disabled. For more information, see <a href="#">Configuring sudo customizations</a> .
projDirsAsHome	false	A boolean setting. When false AEN apps use /home/<username> as HOME. When true AEN apps use /projects/<username> as HOME.

Table 38: Server Internal Configuration Keys - Do not change

Key	Default	Description
PROVIDERS	["wk_server. plugins providers. enterprise"]	A list of compute provider classes.
MONGO_ACTION_LOG_SIZE	262144000	The size of the Mongo action log in bytes.
SITE_ADMINS		A list of site administrator email addresses—used for crash notifications and LDAP password reset requests.
FROM_EMAIL_ADDR		The From address for notification emails sent by AEN.
uniqueUserName	true	A boolean setting that indicates whether unique usernames are required.

Table 39: Gateway Internal Configuration Keys - Do not change

Key	Default	Description
CDN	<code>\$WAKARI_SERVER/ static/</code>	The location of static assets.
SUBDOMAIN_ROUTING	<code>false</code>	A boolean that indicates whether subdomains are being used.
refreshTokenExpiration	<code>500000</code>	Idle time in milliseconds before the Gateway session expires.

Table 40: Compute Node Internal Configuration Keys - Do not change

Key	Default	Description
CDN	<code>\$WAKARI_SERVER/ static/</code>	The location of static assets.
USE_SES	<code>false</code>	Sets whether AEN will use Amazon SES to send emails.
multiUser	<code>true</code>	A boolean that indicates whether multi-user support is enabled.
multiProject	<code>true</code>	A boolean that indicates whether multi-project support is enabled.
ANACONDA_ROOT	<code>/opt/wakari/ anaconda</code>	The location of your Anaconda installation.
appLogs	<code>/opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher-apps</code>	The directory where application logs are stored.
appPIDs	<code>/opt/wakari/ wakari-compute/ var/run/ compute-launcher-apps</code>	The directory where application PID files are stored.
applicationLog	<code>/opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher. application.log</code>	The path to the compute launcher log.
accessLog	<code>opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher. access.log</code>	Path to compute launcher access log

## Checking configuration file syntax

To verify that the configuration file contains valid JSON, run:

```
root@server # python -m json.tool /opt/wakari/wakari-server/etc/wakari/*.json
root@gateway # python -m json.tool /opt/wakari/wakari-gateway/etc/wakari/*.json
root@compute # python -m json.tool /opt/wakari/wakari-compute/etc/wakari/*.json
```

If the file is correct, the contents are displayed.

If there is a syntax error in the file, a “No JSON object could be decoded” message is displayed instead.

To fix any errors, edit the configuration file and verify that it contains the correct JSON syntax.

## Increasing HTTP timeout between gateway and compute nodes

The default HTTP timeout is 600 seconds (10 minutes).

This setting works for HTTP timeout only, not HTTPS.

To modify the HTTP timeout setting:

1. Open the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file and modify the `httpTimeout` key:

```
"httpTimeout": 600
```

2. Update the gateway node by modifying the `httpTimeout` key in the `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json` file to match the above settings.
3. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Installing AEN in a custom location

To install AEN in a custom location:

1. Make the custom install folder owned by `$AEN_SRVC_ACCT`. EXAMPLE: `/data/aen/`.
2. Make a symlink from `/opt/wakari` to `/data/aen`.
3. Run the installers.
4. Move the folder from `/projects` to your chosen custom location. EXAMPLE: `/data/aen/projects`.
5. Make a symlink from `/projects` to `/data/aen/projects`.

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the conda environment and project directories are on separate filesystems, more disk space will be required on compute nodes and performance will be impacted.

## Changing where projects are stored

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda env directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

To make aen-compute service use a different directory than `/projects` to store your AEN projects:

1. Modify the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file:

```
"projectRoot" : "/nfs/storage/services/wakari/projects",
```

NOTE: The directory `/nfs/storage/services/wakari/projects` specified as `projectRoot` must already exist for this command to resolve properly.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```



## Group and user permissions for NFS

To install AEN with multiple compute nodes and a `/projects` folder on an NFSv3 volume, manually pre-create both the anonymous user and the `$AEN_SRVC_ACCOUNT` user on all nodes. Each of these users must have the same user identity number (UID) and group identity number (GID) on all nodes.

By default AEN creates local users with a different GID on each node. To make the AEN compute service create groups with the same GID:

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, change the `identicalGID` key value to `true`:

```
, "identicalGID": true
```

If you don't see the `identicalGID` key, add it.

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Using numeric usernames

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, change the `numericUsernames` key value to `true`.

```
, "numericUsernames": true
```

If you don't see the `numericUsernames` key, add it.

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Using project directories as home directories

The `projDirsAsHome` option changes the AEN home directories from the standard `/home/<username>` location to the project directories and the location `/projects/<username>/<project_name>/<username>/`. This ensures that AEN and AEN apps will not be affected by configuration files in a user's home directory, such as `.bashrc` or configuration files in subdirectories such as `.ipython` and `.jupyter`.

## Package cache locations

AEN version 4.1.3 stores the cache of packages in `/home/<username>`, while AEN versions 4.2.0 and higher store the cache of packages in `/projects/<username>/<project_name>/<username>/`. By moving the package cache to the same filesystem as the project, AEN versions 4.2.0 and higher can use hardlinks and save disk space and time when creating or cloning environments.

These package cache locations are not affected by the `projDirsAsHome` option.

After upgrading from AEN 4.1.3 to AEN 4.2.0 or higher, existing projects will still use the package cache in `/home/<username>`. Do not remove this cache, or the existing projects will break.

When users create new projects or install packages, the newly installed packages will use the new cache location.

If you wish to remove the older package cache in `/home/<username>`:

- Upgrade AEN to 4.2.0 or higher.
- Use `conda remove` to remove every non-default package in every project.
- Use `conda install` to replace them. The replaced packages will link to the new package cache in `/projects/<username>/<project_name>/<username>/`.
- You can now safely remove the older package cache.

## Enabling `projDirsAsHome`

NOTE: The `projDirsAsHome` option should be enabled immediately after performing the installation process and before any users have logged in to AEN. This ensures that users will not have home directories in different places due to some creating their home directories when the option was disabled and others creating their home directories when the option was enabled.

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, add the `projDirsAsHome` key value and set it to `true`.

```
, "projDirsAsHome": true
```

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Setting up a default project environment

AEN includes a full installation of the Anaconda Python distribution—along with several additional packages—located within the root conda environment in `/opt/wakari/anaconda`.

The first time any new AEN project is started, this default project environment is cloned into the new project's workspace.

To configure a different set of packages than the default:

1. Create a new conda environment in the `/opt/wakari/anaconda/envs/default` directory.

EXAMPLE: Using a Python 3.4 base environment, run:

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
create -p /opt/wakari/anaconda/envs/default python=3.4
```

2. Use conda to install any additional packages into the environment.
3. After the environment is created, clone it to ensure that it works correctly:

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
create -p /opt/wakari/testenv --clone /opt/wakari/anaconda/envs/default
sudo -u $AEN_SRVC_ACCT rm -rf /opt/wakari/testenv
```

## Converting an existing project

1. Run the following command to clone the environment:

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
create -n /projects/owner/project/envs/<ENV_NAME> \
--clone /opt/wakari/anaconda/envs/default
```

NOTE: Replace `/projects/owner/project/envs/<ENV_NAME>` with the path to the new environment you would like to create within the project.

2. Open the *Compute Resource Configuration application* for your project and set the project environment path there as well.

## Install AEN connected to a remote Mongo DB instance

To install AEN with a remote database:

1. Connect to the Mongodb instance and create the user for AEN:

```
> user = { user: "<username>",
  pwd: "<super-secure-password>",
  roles: [
    { role: "dbOwner", db: "<db_name>" },
    { role: "dbOwner", db: "<db_name>_mq" }
  ]
}
> db.createUser(user)
Successfully added user: { ... }
```

2. Before installing AEN-server export the database URL and name:

```
$ export MONGO_URL="mongodb://<username>:<password>@<host>:<port>/"
$ export MONGO_DB="<database_name>"
```

3. Continue the installation process: *Install the AEN server*.

## Migrate from local to remote MongoDB

To configure your remote database to work with an already installed AEN server:

1. Stop the server, gateway and compute nodes:

```
sudo service wakari-server stop
sudo service wakari-gateway stop
sudo service wakari-compute stop
```

2. Open the `/opt/wakari/wakari-server/etc/wakari/config.json` file and create the `MONGO_URL` key. For the value parameter, add the database information.

The final file should read:

```
{
  "MONGO_URL": "mongodb://MONGO-USER:MONGO-PASSWORD@MONGO-URL:MONGO-PORT",
  "MONGO_DB": "MONGO-DB-NAME",
  "WAKARI_SERVER": "http://YOUR-IP",
  "USE_SES": false,
  "CDN": "http://YOUR-IP/static/",
  "ANON_USER": "anonymous"
}
```

For more information about configuration keys, see *Using configuration files*.

3. Migrate the data from the former database into the new one. For more information, see the [MongoDB documentation website](#).
4. After migration, restart the nodes:

```
sudo service wakari-server start
sudo service wakari-gateway start
sudo service wakari-compute start
```

## Running SELinux in enforcing mode

To run SELinux in Enforcing mode, a few ports must be set up using the `semanage port` command.

The `semanage` command relies on `policycoreutils-python`. To install `policycoreutils-python`, if needed, run:

```
sudo yum -y install policycoreutils-python
```

Enable ports 9200 and 9300 for Elasticsearch:

```
sudo semanage port -a -t http_port_t -p tcp 9200
sudo semanage port -a -t http_port_t -p tcp 9300
```

## Changing server hostnames

It is possible to change the domain names (hostnames) of the various AEN nodes by updating the configuration files.

NOTE: After the configuration files are updated, the associated nodes need to be restarted.

To edit the information for all of the data centers that you are changing the base domain name for:

1. Go to the Site Admin section of the Admin Settings page.
2. In the Data Centers section, click the Edit button.
3. Make any necessary updates.

NOTE: This must include the service port if it is different from the default—80 for HTTP and 443 for HTTPS.

4. In the Enterprise Resources sub-section of the Providers section, edit each compute node that has a changed domain name.

NOTE: These URLs should include the protocol, hostname and port.

## Authenticating with LDAP

Anaconda Enterprise Notebooks performs local authentication against accounts in the AEN database by default.

To configure AEN to authenticate against accounts in an LDAP (Lightweight Directory Access Protocol) server, follow the instructions below.

## Installing OpenLDAP libraries

The system needs OpenLDAP libraries to be installed and accessible by AEN. AEN uses the OpenLDAP libraries to establish an LDAP connection to your LDAP servers.

To install OpenLDAP on CentOS or Redhat:

```
sudo yum install openldap
```

To install OpenLDAP on Ubuntu or Debian, follow the official [OpenLDAP installation instructions](#).

## Configuring OpenLDAP

1. Open the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file.
2. Add the following LDAP settings:

```
{
  "accounts": "wk_server.plugins.accounts.ldap2",
  "LDAP" : {
    "URI": "ldap://openldap.EXAMPLE.COM",
    "BIND_DN": "cn=Bob Jones,ou=Users,DC=EXAMPLE,DC=COM",
    "BIND_AUTH": "secretpass",
    "USER_SEARCH": {"base": "DC=EXAMPLE,DC=COM",
                    "filter": "(| (& (ou=Payroll)
                                   (uid=%(username)s))
                               (& (ou=Facilities)
                                   (uid=%(username)s)))"
  }
}
```

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```

        },
        "KEY_MAP": {"email": "mail",
                    "name": "cn"}
    }
}

```

- URI—The IP address or hostname of your OpenLDAP server. For SSL/TLS, use the `ldaps://` prefix and specify a `TLS_CACERT` as described in the SSL/TLS configuration section below.
- BIND\_DN—The full directory path of the user you want AEN server to bind as.
- BIND\_AUTH—The password of the BIND\_DN user.
- USER\_SEARCH:
  - base—The level at which you want to start the search.
  - filter—The default is to search for the `sAMAccountName` attribute, and use its value for the AEN server username field.
- KEY\_MAP—Maps user attributes in AEN server to LDAP user attributes.

EXAMPLE: The `mail` attribute in LDAP maps to the `email` attribute in AEN server.

3. Restart AEN server to load new settings.
4. Log in with the admin account. This creates the admin user in the local database.
5. As soon as LDAP is installed, LDAP authentication takes over, so you need to add your admin account again:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add "jsmith"
```

## Configuring Active Directory

Microsoft Active Directory is a server program that provides directory services and uses the open industry standard Lightweight Directory Access Protocol (LDAP).

To enable Active Directory support:

1. Open the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file.
2. Add the following LDAP settings:

```

{
    "accounts": "wk_server.plugins.accounts.ldap2",
    "LDAP" : {
        "URI": "ldap://<ad.EXAMPLE.COM>",
        "BIND_DN": "CN=Bind User,CN=Users,DC=EXAMPLE,DC=COM",
        "BIND_AUTH": "secretpass",
        "USER_SEARCH": {"base": "CN=Users,DC=EXAMPLE,DC=COM",
                        "filter": "sAMAccountName=%(username)s"}
    },
    "KEY_MAP": {"email": "mail",
                "name": "cn"}
}

```

- **URI**—The IP address or hostname of your Active Directory server. Replace `<ad.EXAMPLE.COM>` with the actual URI. For SSL/TLS, use the `ldaps://` prefix and specify a `TLS_CACERT` as described in the SSL/TLS configuration section below.
- **BIND\_DN**—The full directory path of the user you want AEN server to bind as.
- **BIND\_AUTH**—The password of the `BIND_DN` user.
- **USER\_SEARCH**:
  - **base**—the level at which you want to start the search.
  - **filter**—default is to search for the `sAMAccountName` attribute, and use its value for the AEN server username field.
- **KEY\_MAP**—Maps user attributes in AEN server to LDAP user attributes.

EXAMPLE: The `mail` attribute in LDAP maps to the `email` attribute in AEN server.

3. Restart AEN server to load new settings.
4. Log in with the admin account. This creates the admin user in the local database.
5. As soon as LDAP is installed, LDAP authentication takes over, so you need to add your admin account again:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add "jsmith"
```

## Configuring SSL/TLS

AEN uses system-wide LDAP settings, including SSL/TLS support.

- On Redhat/CentOS systems, these settings are located in the `/etc/openldap/ldap.conf` file.
- On Ubuntu/Debian systems, these settings are located in the `/etc/ldap/ldap.conf` file.

Typically, the only configuration necessary is updating the file to read:

```
TLS_CACERT /path/to/CA.cert
```

NOTE: `CA.cert` is the Certificate Authority used to sign the LDAP server's SSL certificate. In the case of a self-signed SSL certificate, this is the path to the SSL certificate itself.

## Testing LDAP configuration

Test your LDAP configuration using `flask-ldap-login-check`:

```
/opt/wakari/wakari-server/bin/flask-ldap-login-check \
wk_server.wsgi:app \
-u [username] \
-p [password]
```

NOTE: `username` is the username of a valid user and `password` is that user's `BIND_AUTH` password.

## Configuring sudo customizations

If your organization's IT security policy does not allow root access or has restrictions on the use of sudo, after AEN installation, you may customize AEN to meet their requirements.

Your organization may choose to implement any or all of the following:

- *Remove root access* for AEN service account (Note: this restricts AEN from managing user accounts).
- *Configurable sudo command*.
- *Restrict sudo access to all processes*.

These customizations must be done in a terminal window after copying the files to the server node.

## Removing all root access from the service account

Because root access is required for useradd, the following process restricts AEN from managing user accounts.

1. Modify the `/etc/sudoers.d/wakari_sudo` file to read:

```
Defaults:wakari !requiretty, visiblepw
Runas_Alias    OP = ALL,!root
wakari ALL=(OP) NOPASSWD: ALL
```

NOTE: If you used a service account name other than wakari, enter that name instead of wakari.

2. Modify the `/opt/wakari/wakari-compute/etc/wakari/config.json` file to read:

```
"MANAGE_ACCOUNTS": false,
```

Using this option means that your IT department must create and manage all user accounts at the OS level.

After an OS-level account exists, you may create on the main AEN web page an AEN account using the same name. The password you choose is not linked in any way to the OS-level password for the account.

Alternatively, you can configure the system to *use LDAP for authenticating users*.

## Allowing public users to have access to your AEN projects

A public account is visible to anyone who can access the AEN server. The name of this account can be configured to any name you wish. For example, `public` or `anonymous`. To disable this feature use the special value `disabled`.

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, modify the `ANON_USER` line to read:

```
"ANON_USER": "public"
```

2. Restart AEN compute node:

```
sudo service wakari-compute restart
```

3. In the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file, modify the `ANON_USER` line to read:

```
"ANON_USER": "public"
```

4. Restart AEN server:



```
sudo service wakari-server restart
```

For more information about configuration keys, see *Using configuration files*.

## Using a sudo alternative

You can use a sudo alternative as long as it supports the same execution semantics as the original sudo. The alternative must be configured to give the service account permission to run commands on behalf of AEN users.

1. In your terminal window, open the `/opt/wakari/wakari-compute/etc/wakari/config.json` file.
2. Modify the `AEN_SUDO_CMD` line to read:

```
"AEN_SUDO_CMD": "/path/to/alternative/sudo",
```

NOTE: If the alternate sudo command is available on PATH, then the full path is not required.

## Restricting sudo access to a single gatekeeper

By default, sudoers is configured to allow AEN to run any command as a particular user which allows the platform to initiate processes as the logged-in end user. If more restrictive control is required, it should be implemented using a suitable sudoers policy. If that is not possible or practical, it is also possible to route all AEN ID-changing operations through a single gatekeeper.

This gatekeeper wraps the desired executable and provides an alternate way to log, monitor, or control which processes can be initiated by AEN on behalf of a user.

CAUTION: Gatekeeper is a special case configuration and should only be used if required.

To configure an AEN gatekeeper:

1. Modify the `/etc/sudoers.d/wakari_sudo` file to contain:

```
Defaults:wakari !requiretty, visiblepw
Runas_Alias    OP = ALL,!root
wakari ALL=(OP) NOPASSWD: /path/to/gatekeeper
```

2. In the `/opt/wakari/wakari-compute/etc/wakari/config.json` file, modify the `AEN_SUDO_SH` line to read:

```
"AEN_SUDO_SH": "/path/to/gatekeeper"
```

EXAMPLE: The gatekeeper can be as simple as a script with contents such as:

```
#!/bin/bash
first_cmd=$1
if [ 'bash' == $1 ]; then
    shift
    export HOME=~
    export SHELL=/bin/bash
    export PATH=$PATH:/opt/wakari/anaconda/bin
    bash "$@"
else
    exec $@
fi
```

## Configuring SSL

The server node uses NGINX to proxy all incoming http(s) requests to the server running on a local port, and uses NGINX for SSL termination. The default setup uses http—non-SSL—since cert files are required to configure SSL and each enterprise will have their own cert files.

The `www.enterprise.conf` file is the default `nginx.conf` file used for AEN. It is copied to the `/etc/nginx/conf.d` directory during server installation.

NOTE: This section describes setting up SSL after your gateway node has been installed and registered with the server node.

### Copying the required files

To configure SSL on AEN, you will need the following files:

- Server certificate and key
- Server CA bundle
- Gateway certificate and key
- Gateway CA bundle

Configure SSL on AEN:

1. Copy the Gateway certificate and key to `/opt/wakari/wakari-gateway/etc/` on the Gateway as `gateway.crt` and `gateway.key`.
2. Copy the Gateway CA bundle to `/opt/wakari/wakari-server/etc/` on the Server.
3. Copy the Server certificate and key to `/etc/nginx` on the Server as `server.crt` and `server.key`.
4. Copy the Server CA bundle to `/opt/wakari/wakari-gateway/etc/` on the Gateway.

If you have a certificate that was signed by a private root CA and/or an intermediate authority:

- The Gateway CA bundle must contain the full chain: root CA, any intermediate authority and the certificate.

```
cat gateway.crt intermediate.crt root.crt >> gateway-crt-int-root.crt
```

- The Server CA bundle must be separated into individual files for the root CA, any intermediate and the certificate.

### Configuring SSL on the server node

The `www.enterprise.https.conf` is an NGINX configuration file for SSL. It is set up to use the `server.crt` and `server.key` cert files.

CAUTION: You must change these values to point to the signed cert files for your domain.

NOTE: Self-signed certs or those signed by a private root CA require additional configuration.

Perform the following steps as root:

1. Stop NGINX:

```
service nginx stop
```

2. Move the `/etc/nginx/conf.d/www.enterprise.conf` file to a backup directory.

- Copy the `/opt/wakari/wakari-server/etc/nginx/conf.d/www.enterprise.https.conf` file to `/etc/nginx/conf.d`.

NOTE: `/etc/nginx/conf.d` may have `www.enterprise.conf` or `www.enterprise.https.conf` but it may not have both.

- Edit the `/etc/nginx/conf.d/www.enterprise.https.conf` file and change the `server.crt` and `server.key` values to the names of the real cert and key files if they are different.
- Restart NGINX by running:

```
service nginx start
```

- Update the WAKARI\_SERVER and CDN settings to use https instead of http in the following configuration files:

```
/opt/wakari/wakari-server/etc/wakari/config.json
/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
/opt/wakari/wakari-compute/etc/wakari/config.json
```

- Copy the gateway certificate, `gateway.crt` to `/opt/wakari/wakari-server/etc/`.
- In an editor, open `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` and add:

```
"verify_gateway_certificate": "/opt/wakari/wakari-server/etc/gateway.crt"
```

- Restart AEN services on the server by running:

```
service wakari-server restart
```

NOTE: This step may return an error since the gateway has not yet been configured for SSL.

- In AEN, verify that the browser uses https. On the Admin Settings page, under Data Centers, click Gateway, then select https:

## Admin Settings

Anaconda Enterprise Notebooks settings accessible only by th

Staff	Data Centers / Register a datacenter
<a href="#">Daily Report</a> <a href="#">Password Reset</a> <a href="#">Notification</a>	<p><b>Name</b></p> <p>Gateway 1</p> <p><input type="checkbox"/> Subdomain Routing</p> <p><input checked="" type="checkbox"/> <b>Https</b></p>

## Configuring SSL on the gateway

1. For all types of SSL certificates, in `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt"
  }
}
```

2. For a server certificate signed by a private root CA or signed by an intermediate authority, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "ca": ["/opt/wakari/wakari-gateway/etc/server.crt"]
  }
}
```

NOTE: When the certificate chain has more than one intermediate cert signed by a higher root CA authority, you must manually break up the certs in the chain into individual files, and enumerate them in the `ca` key:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "ca": ["/opt/wakari/wakari-gateway/etc/server1.crt",
          "/opt/wakari/wakari-gateway/etc/server2.crt",
          "/opt/wakari/wakari-gateway/etc/server3.crt"]
  }
}
```

3. For a gateway certificate that is encrypted using a passphrase, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "passphrase": "mysecretpassphrase"
  }
}
```

NOTE: Alternatively, the passphrase can be passed using an environment variable or entered when the wakari-gateway service is manually started.

EXAMPLES:

```
# using an environment variable
AEN_GATEWAY_SSL_PASSPHRASE='mysecretpassphrase' wk-gateway
```

```
# starting wakari-gateway manually
sudo service wakari-gateway start --ask-for-passphrase
Passphrase?
```

4. Restart the gateway:

```
sudo service wakari-gateway restart
```

## Configuring SSL on compute nodes

Anaconda Enterprise does not support direct SSL on Compute Nodes. If you need SSL on Compute Nodes, you must install each Compute Node on the same server as a Gateway using `http://localhost:5002` for the URL value while adding it as a resource, and you must use a Gateway for each and every Compute Node.

## Security reminder

The permissions on the cert files must be set correctly to prevent them from being read by others. Since NGINX is run by the root user, only the root user needs read access to the cert files.

EXAMPLE: If the cert files are called `server.crt` and `server.key`, then use the root account to set permissions:

```
chmod 600 server.key
chmod 600 server.crt
```

## Enabling or disabling the Strict-Transport-Security header

By default, Strict-Transport-Security (STS) is enabled in the `www.enterprise.https.conf` file:

```
add_header Strict-Transport-Security max-age=31536000;
```

It can remain enabled if either of the following is true:

- The gateway is running on a different host than the server.
- or
- SSL has been enabled for the gateway.

You must comment out this line if both of the following are true:

- The gateway is running on the same host as the server.
- and
- SSL has not been enabled for the gateway.

Leaving STS enabled when these conditions are true will cause a mismatch in protocols between the server and gateway, causing your apps to fail to launch correctly.

## Configuring single sign-on

AEN's single sign-on (SSO) capability creates a new authentication provider that defers to your Anaconda Repository for login and authentication cookies.

To enable SSO:

1. Deploy AEN and Repository on the same machine.
2. In the `/opt/wakari/wakari-server/etc/wakari/config.json` file, add:

```
{
  EXISTING_CONFIGURATION,
  "SECRET_KEY": "<repo signing secret>",
  "REPO_LOGIN_URL":
    "http://example_repo.com:8080/account/login?next=http://example_repo.com/"
}
```

3. Copy the `SECRET_KEY` from the Repository configuration file.
4. In the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file, modify:

```
{
  EXISTING_CONFIGURATION,
  "accounts": "wk_server.plugins.accounts.repo",
}
```

5. If you are using Repository version 2.33.3 through 2.33.10, set `USE_SERVER_BASED_SESSIONS: false` in the Repository configuration.

This setting affects the network security properties of AEN and Repository. Specifically, if `USE_SERVER_BASED_SESSIONS` is set to `false`, and if a new cross-site scripting (XSS) vulnerability is discovered, it could expose an additional server fixation vulnerability. Please discuss this with your Anaconda representative and be sure the feature is compatible with your network requirements before setting `USE_SERVER_BASED_SESSIONS: false`.

6. To activate the changes restart `wakari-server`:

```
sudo service wakari-server restart
```

SSO is enabled.

## Adding a third-party extension

Anaconda officially supports and tests functionality of the default environment(s) only for those extensions that ship with AEN.

It is possible to add third-party and custom extensions from `conda-forge` or `pip`, but doing so may cause instability in your default project environments or kernels.

**CAUTION:** Anaconda does not officially support third-party extensions. This section is informational only.

## Installing unofficial Jupyter Notebook extensions for AEN

**TIP:** Always back up and verify your complete system before installing extensions.

The `jupyter-contrib-nbextensions` extensions are installed on a compute node.

The default conda executable directory for AEN is `/opt/wakari/anaconda/bin/conda`. If you are installing a Jupyter extension, it must be installed in the `wakari-compute` directory.

**EXAMPLE:** Run:

```
/opt/wakari/anaconda/bin/conda install -p /opt/wakari/wakari-compute/ -c conda-forge ↵
↵ jupyter_contrib_nbextension
```

For more information, see [Unofficial Jupyter Notebook Extensions](#).

## Configure search indexing

For search indexing to work correctly, verify that the AEN Compute node can communicate with the AEN Server.

```
curl -m 5 $AEN_SERVER > /dev/null
```

There must be at least one `inotify` watch available for the number of subdirectories within the project root filesystem. Some Linux distributions default to a low number of watches, which can prevent the search indexer from monitoring project directories for changes.

```
cat /proc/sys/fs/inotify/max_user_watches
```

If necessary, increase the number of max user watches with the following command:

```
echo fs.inotify.max_user_watches=1000000 | sudo tee -a /etc/sysctl.conf && sudo sysctl -p
```

There must be at least one `inotify` user instance available per project.

```
cat /proc/sys/fs/inotify/max_user_instances
```

If necessary, this can be increased with the following command:

```
echo fs.inotify.max_user_instances=1000 | sudo tee -a /etc/sysctl.conf && sudo sysctl -p
```

## Create custom Jupyter kernel for Pyspark

These instructions add a custom Jupyter Notebook option to allow users to select PySpark as the kernel.

## Install Spark

The easiest way to install Spark is with [Cloudera CDH](#).

You will use YARN as a resource manager. After installing Cloudera CDH, [install Spark](#). Spark comes with a PySpark shell.

## Create a notebook kernel for PySpark

You may create the kernel as an administrator or as a regular user. Read the instructions below to help you choose which method to use.

### 1. As an administrator

Create a new kernel and point it to the root env in each project. To do so create a directory 'pyspark' in /opt/wakari/wakari-compute/share/jupyter/kernels/.

Create the following kernel.json file:

```
{ "argv": [ "/opt/wakari/anaconda/bin/python",  
  "-m", "ipykernel", "-f", "connection_file", "--profile", "pyspark"],  
  "display_name": "PySpark", "language": "python" }
```

You may choose any name for the 'display\_name'.

This configuration is pointing to the python executable in the root environment. Since that environment is under admin control, users cannot add new packages to the environment. They will need an admin to help update the environment.

### 2. As an administrator without IPython profile

To have an admin level PySpark kernel, without the user .ipython space:

```
{ "argv":  
  [ "/opt/wakari/wakari-compute/etc/ipython/pyspark.sh", "-f", "{connection_file}" ],  
  "display_name": "PySpark", "language": "python" }
```

NOTE: The pyspark.sh script is defined in *Without IPython profile* section below.

### 3. As a regular user

Create a new directory in the user's home directory: .local/share/jupyter/kernels/pyspark/. This way the user will be using the default environment and able to upgrade or install new packages.

Create the following kernel.json file:

```
{ "argv": [ "/projects/<username>/<project_name>/envs/default/bin/python",  
  "-m", "ipykernel", "-f", "connection_file", "--profile", "pyspark"],  
  "display_name": "PySpark", "language": "python" }
```

NOTE: Replace <username> with the correct user name and <project\_name> with the correct project name.

You may choose any name for the display\_name.



## Create an IPython profile

The above profile call from the kernel requires that we define a particular PySpark profile. This profile should be created for each user that logs in to AEN to use the PySpark kernel.

In the user's home, create the directory and file `~/ipython/profile_pyspark/startup/00-pyspark-setup.py` with the file contents:

```
import os
import sys

# The place where CDH installed spark, if the user installed Spark locally it can be
↪ changed here.
# Optionally we can check if the variable can be retrieved from environment.

os.environ["SPARK_HOME"] = "/usr/lib/spark"

os.environ["PYSPARK_PYTHON"] = "/opt/wakari/anaconda/bin/python"

# And Python path
os.environ["PYLIB"] = os.environ["SPARK_HOME"] + "/python/lib"
sys.path.insert(0, os.environ["PYLIB"] + "/py4j-0.9-src.zip") #10.4-src.zip")
sys.path.insert(0, os.environ["PYLIB"] + "/pyspark.zip")

os.environ["PYSPARK_SUBMIT_ARGS"] = "--name yarn pyspark-shell"
```

Now log in using the user account that has the PySpark profile.

## Without IPython profile

If it is necessary to avoid creating a local profile for the users, a script can be made to be called from the kernel. Create a bash script that will load the environment variables:

```
sudo -u $AEN_SRVC_ACCT mkdir /opt/wakari/wakari-compute/etc/ipython
sudo -u $AEN_SRVC_ACCT touch /opt/wakari/wakari-compute/etc/ipython/pyspark.sh
sudo -u $AEN_SRVC_ACCT chmod a+x /opt/wakari/wakari-compute/etc/ipython/pyspark.sh
```

The contents of the file should look like:

```
#!/usr/bin/env bash
# setup environment variable, etc.

export PYSPARK_PYTHON="/opt/wakari/anaconda/bin/python"
export SPARK_HOME="/usr/lib/spark"

# And Python path
export PYLIB=$SPARK_HOME:/python/lib
export PYTHONPATH=$PYTHONPATH:$PYLIB:/py4j-0.9-src.zip
export PYTHONPATH=$PYTHONPATH:$PYLIB:/pyspark.zip

export PYSPARK_SUBMIT_ARGS="--name yarn pyspark-shell"
```

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```
# run the ipykernel
exec /opt/wakari/anaconda/bin/python -m ipykernel $@
```

## Using PySpark

When creating a new notebook in a project, now there will be the option to select PySpark as the kernel. When creating such a notebook you'll be able to import pyspark and start using it:

```
from pyspark import SparkConf
from pyspark import SparkContext
```

NOTE: You can always add those lines and any other command you may use frequently in the PySpark setup file `00-pyspark-setup.py` as shown above.

## Upgrading AEN

CAUTION: These instructions are for upgrading AEN to the current version 4.3.0 from 4.2.2 ONLY. Each version must be upgraded iteratively from the previous version. Do not skip versions.

Upgrade instructions for previous versions:

- [AEN 4.2.2 upgrade instructions](#)
- [AEN 4.2.1 upgrade instructions](#)
- [AEN 4.2.0 upgrade instructions](#)
- [AEN 4.1.3 upgrade instructions](#)
- [AEN 4.1.2 upgrade instructions](#)

For upgrades from versions before those listed above, please contact your enterprise support representative.

NOTE: Named Service Account functionality is available with AEN 4.0.0+ for new installations only. It is not available for upgraded installations. Contact your enterprise support representative for more information.

An AEN platform update requires that each instance of the 3 node types be upgraded individually:

- AEN Server
- AEN Gateway
- AEN Compute

The upgrade process requires that all AEN service instances be stopped, upgraded, and then restarted.

NOTE: Any commands that call for the root user can also be done using `sudo`.

If you encounter any difficulty during the upgrade process, see [Troubleshooting](#) which provides guidance on:

- processes
- configuration files
- log files
- ports

If you are unable to resolve an installation or upgrade problem, please contact your enterprise support representative.

## Before you upgrade

**CAUTION:** Make a tested backup of your installation before starting the upgrade. Upgrading to a higher version of AEN is not reversible. Any errors during the upgrade procedure may result in partial or complete data loss and require restoring data from backups.

**CAUTION:** Terminate all AEN applications and stop all projects before starting the upgrade process.

Before upgrading each service on each host:

1. Suspend the services on each of the nodes:

```
sudo service wakari-server stop
sudo service wakari-gateway stop
sudo service wakari-compute stop
```

2. Set the AEN Functional ID (“NFI”) and AEN Functional Group (“NFG”) to the NFI and NFG of the current installation:

```
export AEN_SRVC_ACCT="wakari"
export AEN_SRVC_GRP="wakari"
```

**NOTE:** The default NFI is wakari, but aen\_admin or any other name may be used instead.

For more information on NFI and NFG, see the *installation instructions*.

3. Install wget:

```
yum install wget
```

## Upgrading the AEN server node

**NOTE:** If you are using LDAP-based authentication, back up the /opt/wakari/wakari-server/etc/wakari/wk-server-config.json configuration file. After the server has been upgraded, copy that file back into the same location as before the upgrade.

Complete the following steps on the server host:

1. Stop the Elasticsearch service:

```
sudo service elasticsearch stop
```

2. Remove any previous index:

```
sudo rm -rf /var/lib/elasticsearch/*
```

**NOTE:** You can choose to keep the old index, but if you detect any issues with the search capabilities after the upgrade, you will need to run the following to start with a clean index:

```
sudo service wakari-server stop
sudo service elasticsearch stop
sudo rm -rf /var/lib/elasticsearch/*
sudo service elasticsearch start
sudo service wakari-server start
```

3. Upgrade the server:

```
pushd /tmp
wget http://j.mp/aen-server-update-4_3_0

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-server \
    --file aen-server-update-4_3_0

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-server \
    --no-deps \
    wakari-enterprise-server-conf-update=2.0.10

popd
```

4. Start Elasticsearch:

```
sudo service elasticsearch start
```

Or, if you do not want to use the search features, edit your server's `/opt/wakari/wakari-server/etc/wakari/config.json` file by adding the line `"SEARCH_ENABLED": false`.

5. Restart the *NGINX* server:

AEN server version `>= 4.1.3` uses Unix sockets for communication with *NGINX*. Restart *NGINX* to load this new configuration:

```
sudo service nginx restart
```

Alternatively, you can restart *NGINX* with:

```
sudo nginx -s stop
sudo nginx
```

6. Start the server:

```
sudo service wakari-server start
```

7. Check that the server is running properly:

```
sudo service wakari-server status
```

8. If you see *NGINX* errors, please check the configuration at `/opt/wakari/wakari-server/etc/nginx/conf.d/www.enterprise.conf:18`.
9. Connect to AEN server using your web browser with the correct protocol (`http` or `https`), hostname and port number.

## Upgrading the AEN gateway node

Complete the following steps on each gateway host:

1. Upgrade the gateway:

```
pushd /tmp
wget http://j.mp/aen-gateway-update-4_3_0

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-gateway \
    --file aen-gateway-update-4_3_0

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-gateway \
    --no-deps \
    wakari-enterprise-gateway-conf-update=2.0.10

popd
```

2. Start the gateway:

```
sudo service wakari-gateway start
```

3. Check that the gateway is running properly:

```
sudo service wakari-gateway status
```

4. Connect to the gateway using your web browser with the correct http/https, hostname and port number.

## Upgrading AEN compute nodes

Complete the following steps on each host where an AEN compute service is running:

1. Check for any `wakari-indexer` processes running:

```
ps aux | grep wakari-indexer
```

NOTE: If you stopped all the projects, you will not see any `wakari-indexer` processes running.

Terminate any remaining `wakari-indexer` processes:

```
sudo killall wakari-indexer
```

NOTE: The processes killed with `killall` are run by the `$AEN_SRVC_ACCT` user, so they can be killed as root with `sudo killall` or killed as the `$AEN_SRVC_ACCT` user with `sudo -u $AEN_SRVC_ACCT killall`. Example commands show the `sudo killall` option.

2. Check for any AEN applications processes running—Workbench, Viewer, Terminal or Notebook:

```
ps aux | grep wk-app-gateone
ps aux | grep wk-app-workbench
ps aux | grep wk-app-viewer
ps aux | grep wk-app-terminal
ps aux | grep jupyter-notebook
```

NOTE: If you stopped all the projects, you will not see any AEN app processes running.

Terminate any remaining AEN application processes by running one or more of the following:

```
sudo killall wk-app-gateone
sudo killall wk-app-workbench
sudo killall wk-app-viewer
sudo killall wk-app-terminal
sudo killall jupyter-notebook
```

3. Verify the contents of `/opt/wakari/anaconda/.condarc`. Modify it to contain the following entries, and possibly others if you customized the `.condarc` file.

NOTE: Modify the file as the `AEN_SRVC_ACCT` user (or be sure to keep the same ownership).

```
channels:
- https://conda.anaconda.org/t/<TOKEN>/anaconda-nb-extensions
- r
- https://conda.anaconda.org/wakari
- defaults

create_default_packages:
- anaconda-client
- ipykernel
```

NOTE: Contact your enterprise support representative to get your token for the Anaconda channel referenced above. Replace `<TOKEN>` with the actual token from your enterprise support representative.

4. Upgrade *Anaconda* in the root environment:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4_3_0

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/anaconda \
    --file aen-anaconda-update-4_3_0

popd
```

5. Upgrade each compute service:

```
pushd /tmp
wget http://j.mp/aen-compute-update-4_3_0

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/wakari-compute \
    --file aen-compute-update-4_3_0

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    --no-deps \
    -p /opt/wakari/wakari-compute \
    wakari-enterprise-compute-conf-update=2.0.14

popd
```

NOTE: When upgrading the wakari-compute environment, you may see `ImportError` warnings with some nbextensions. As long as the Validating message is OK, the `ImportError` warnings are harmless—a consequence of the post-link presence on those packages.

6. Initialize the root environment to prime the package cache:

```
sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenv \
    --clone root
```

7. Test the offline cloning step:

```
sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenvoffline \
    --clone root --offline
```

8. Remove the test environments:

```
sudo rm -rf /opt/wakari/testenv
sudo rm -rf /opt/wakari/testenvoffline
```

9. Install necessary dependencies:

NOTE: Skip this step if you already have these dependencies installed from previous installations.

```
sudo yum groupinstall "X Window System" -y
sudo yum install git -y
```

NOTE: If you don't want to install the whole X Window System, you must install the following packages to have R plotting support:

```
sudo yum install -y libXrender libXext libXdmcpc libSM libICE libXt \
    dejavu-sans-fonts dejavu-serif-fonts dejavu-fonts-common \
    fontpackages-filesystem
```

10. Start the compute service:

```
sudo service wakari-compute start
```

11. Verify the compute service is running properly:

```
sudo service wakari-compute status
```

12. Restart the AEN Server with:

```
sudo service wakari-server restart
```

13. Repeat this upgrade procedure for all compute nodes in your Data Center.

## After upgrading

1. Restart the projects and start using AEN applications.
2. If you have a *customized default environment*, you may choose to upgrade it depending on the needs of your users.

Upgrade the customized default environment at `/opt/wakari/anaconda/envs/default` with the `$AEN_SRVC_ACCT` user:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4_3_0

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/anaconda/envs/default \
    --file aen-anaconda-update-4_3_0

popd
```

To upgrade the customized default environments for every user and every project at `/projects/<USER>/<PROJECT>/envs/default`, run these commands for **every** user as that user:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4_3_0

sudo -E -u <USER> /opt/wakari/anaconda/bin/conda install \
    -p /projects/<USER>/<PROJECT>/envs/default \
    --file aen-anaconda-update-4_3_0

popd
```

NOTE: Replace `<USER>` with the user's name. Replace `<PROJECT>` with the project name.

NOTE: Upgrading the default environment at `/opt/wakari/anaconda/envs/default` does NOT automatically upgrade the default environment in the users pre-existing projects. For pre-existing projects, the upgrade, if requested, should be done on a per-user basis.

NOTE: These commands update packages listed in `aen-anaconda-update-4_3_0` and do not update any other package.

3. If you did not stop all your projects before upgrading, then the first time you start an application you will see an error page requesting that you restart the application.
4. Restart the application to complete the upgrade.
5. If you still see old applications or icons after restart, reload the page to reset the browser cache.

## Uninstalling AEN

Each AEN node must be uninstalled separately.

Begin by setting the AEN Functional ID (NFI). The NFI is the username of the AEN Service Account which is used to run all AEN services and is also the username of the AEN Admin account. The NFI may be any name. The default NFI is `wakari`. The NFI is also often set to `aen_admin`. The NFI (and AEN Functional Group or NFG) are described in *the installation instructions*.

Set the NFI with this command:

```
export AEN_SRVC_ACCT="aen_admin"
```

Replace the name `aen_admin` with the NFI that was set in your installation of Anaconda Enterprise Notebooks.



## Uninstalling a server node

To remove a server node, run the following commands as root or sudo on the server node's host system:

1. Stop the server processes:

```
service wakari-server stop
```

2. Stop MongoDB:

```
service mongod stop
```

3. Remove AEN server software, AEN database files and NGINX configuration:

```
rm -Rf /opt/wakari/wakari-server
rm -Rf /opt/wakari/miniconda
rm -Rf /var/lib/mongo/wakari*
rm -Rf /etc/nginx/conf.d/www.enterprise.conf
```

NOTE: Remove /etc/nginx/conf.d/www.enterprise.https.conf if SSL is enabled on the Server node.

4. Restart MongoDB and NGINX:

```
service mongod restart
service nginx restart
```

5. Check for any outstanding server processes and stop them:

```
ps -ef | grep -e wakari-server -e wk-server
```

6. Remove the AEN Service Account:

```
userdel $AEN_SRVC_ACCT
```

7. Check for and remove any references to “aen” or “wakari” from the root user's .condarc file:

```
grep -i aen ~/.condarc
grep -i wakari ~/.condarc
```

## Uninstalling a gateway node

To uninstall a gateway node, run the following commands as root or sudo on the gateway host system:

1. Stop the gateway processes:

```
service wakari-gateway stop
```

2. Remove gateway software:

```
rm -Rf /opt/wakari/wakari-gateway
```

3. Check for any outstanding gateway processes and stop them:

```
ps -ef | grep -e wakari-gateway -e wk-gateway
```

4. Remove the AEN Service Account:

```
userdel $AEN_SRV_ACCT
```

5. Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc  
grep -i wakari ~/.condarc
```

### Uninstalling a compute node

To remove a compute node, run the following commands as root or sudo on each compute node host system:

1. Stop the compute processes:

```
service wakari-compute stop
```

2. Remove the compute software:

```
rm -Rf /opt/wakari/wakari-compute  
rm -Rf /opt/wakari/miniconda  
rm -Rf /opt/wakari/anaconda
```

3. Check for any outstanding compute processes and stop them:

```
ps -ef | grep -e wakari-compute -e wk-compute
```

4. Remove the AEN Service Account:

```
userdel $AEN_SRV_ACCT
```

5. Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc  
grep -i wakari ~/.condarc
```

### OPTIONAL: Removing projects from compute nodes

**CAUTION:** This is an extreme measure and is not necessary in most instances. We recommend you create and verify a backup before doing this or any other file removal.

To remove all AEN projects from all of your compute nodes:

```
rm -Rf /projects
```

This is a step-by-step guide to installing an Anaconda Enterprise Notebooks system comprised of a front-end server, a gateway and compute machines.

If you have any questions about these instructions or you encounter any issues while installing AEN, please contact your sales representative or Priority Support team.

When you have completed the installation process, review the [optional configuration tasks](#) to see if any are appropriate for your system.

## Distributed install

In a distributed install the server and gateway run on separate hosts.

## Single-box install

In a single-box install, both the server and the gateway need separate external ports since they are independent services that are running on the same host in the single-box installation.

Both port 80 and port 8089 must be open on the firewall for a single-box install.

The compute node only receives connections from the gateway and server nodes and typically runs on port 80 or port 443.

## User management

### Adding or removing an administrative user

An administrator can make any other user an administrator—or remove their administrator permissions—by using administrator commands in the Terminal application.

A user can also be designated as a superuser or as staff, giving them greater administrative privileges within the system.

### Designating a user as an administrator/superuser

To designate a user as an administrator and superuser:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add <username>
```

NOTE: Replace <username> with the actual username.

EXAMPLE: To give administrative privileges to the user named “jsmith” and set them as a superuser, run:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add jsmith
```

### Removing an administrator/superuser

To remove a user’s administrative privileges:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --remove <username>
```

NOTE: Replace <username> with the actual username.

## Allowing and restricting new user registration

When Open Registration is enabled, anyone who has access to the URL of your AEN server can create their own account.

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Accounts.

The screenshot shows the Admin Settings page. On the left, there are two navigation menus. The 'Staff' menu includes 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' menu includes 'General' and 'Accounts'. The main content area is titled 'Cloud Registration' and contains a checkbox labeled 'Open Registration' with the text 'Allow new user signups' below it. A green 'Update' button is located at the bottom of the settings area.

3. To open user registration, select the Open Registration checkbox. To close registration, clear the checkbox.
4. Click the Update button.

## Resetting a user password

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Password Reset:

Anaconda Enterprise Notebooks settings accessible only by the system administrator.

The screenshot shows the Admin Settings page with the 'Password Reset' settings. On the left, the 'Staff' menu is expanded, showing 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The main content area is titled 'Password Reset' and contains a text input field with the value 'guest'. Below the input field is a button labeled 'Generate URL'.

3. Enter the username of the user whose password needs to be reset.
4. Click the Generate URL button.

A password reset link is generated that you can email to the user.

Alternatively you may use the command line interface:

1. Use ssh to log in to the server as root.

2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin reset-password -u SOME_USER -p SOME_
↪PASSWORD
```

NOTE: Replace SOME\_USER with the username and SOME\_PASSWORD with the password.

3. Log in to AEN as the user.

## Managing permissions

This page explains the admin commands used to manage user permissions.

### Checking file ownership

To verify that all files in the `/opt/wakari/anaconda` directory are owned by the `wakari` user or group:

```
root@server # find /opt/wakari/anaconda \! -user wakari -print
root@server # find /opt/wakari/anaconda \! -group wakari -print
```

### Fixing file ownership settings

To fix the ownership settings of any files that are listed in the output:

```
chown -R wakari:wakari /opt/wakari/anaconda
```

### Setting a file owner and permissions

To set a file owner and set its permissions:

```
chown wakari:wakari /opt/wakari/wakari-server/bin/wk-*
chmod 700 /opt/wakari/wakari-server/bin/wk-*
```

### Verifying that POSIX ACLs are enabled

The `acl` option must be enabled on the file system that contains the project root directory.

NOTE: By default, the project root directory is `/projects`.

To determine the project root directory where a custom `projectRoot` is configured:

```
root@compute # grep projectRoot /opt/wakari/wakari-compute/etc/wakari/config.json
```

The mount options or default options listed by `tune2fs` should indicate that the `acl` option is enabled.

EXAMPLE:

```
root@compute # fs=`df /projects | tail -1 | cut -d " " -f 1`
root@compute # mount | grep $fs
/dev/vda on / type ext4 (rw)
root@compute # tune2fs -l $fs | grep options
Default mount options:    user_xattr acl
```

## Viewing a list of users

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Users:

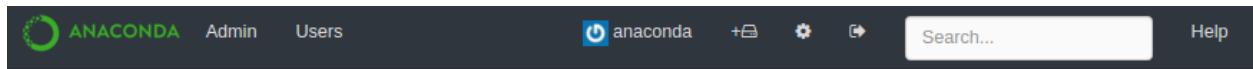
The screenshot shows the AEN Admin Settings page. On the left, there are two sidebars. The top sidebar, titled 'Staff', contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom sidebar, titled 'Site Admin', contains links for 'General', 'Accounts', and 'Users' (which is highlighted in blue). On the right, there is a table titled 'Users' with three columns: 'Username', 'Projects', and 'Last Seen'. The table contains one row with the username 'aen\_admin', 6 projects, and a last seen time of 'Sep 25, 2017 10:05:58 CDT'.

Users		
Username	Projects	Last Seen
aen_admin	6	Sep 25, 2017 10:05:58 CDT

The Users section lists the all users who are signed up, the number of projects they have created and the last time they logged on to AEN.

## Viewing a list of currently active users

In the AEN navigation bar, click Users.



# Users

List of currently active users in the system.

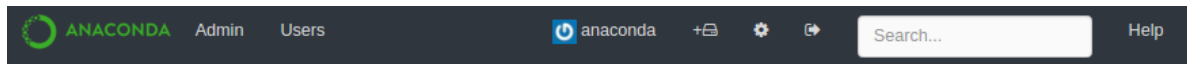
 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

Click a username to open the user's profile page.

## Viewing a user profile

A user's profile page includes a summary of the projects created by that user and a list of projects on which the user is a team member.

1. In the AEN navigation bar, click Users to see a list of users who are currently logged into the system.
2. On the Users page, click the username of the user whose profile page you want to view.



# Users

List of currently active users in the system.

	anaconda
	andrew
	bokeh
	christine
	guest
	hubert
	ivan
	paula
	simon
	tanya
	wakari

## Sending a system message

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Notification:



**Staff**

- Daily Report
- Password Reset
- Notification
- Exceptions

**Site Admin**

- General
- Accounts
- Users
- Security Log
- Data Centers
- Task Queue
- License

**Providers**

- Enterprise Resources

**Notification Settings**

☒ **Off**  
No email notification will be sent

☐ **SES - Amazon Simple Email Service**  
This requires a .boto file in the wakari home dir

☐ **SMTP Email Server**

**SMTP Settings**

SMTP Hostname

SMTP Username (optional)

SMTP Password (optional)

SMTP From Address (optional)

Update

The Notification Settings section allows you to create a system message that can be relayed to users.

By default, notifications are off.

- To turn on email notifications, select the radio button for the type of email service to use:
  - SES to use Amazon Simple Email Service (SES).
  - SMTP Email Server.

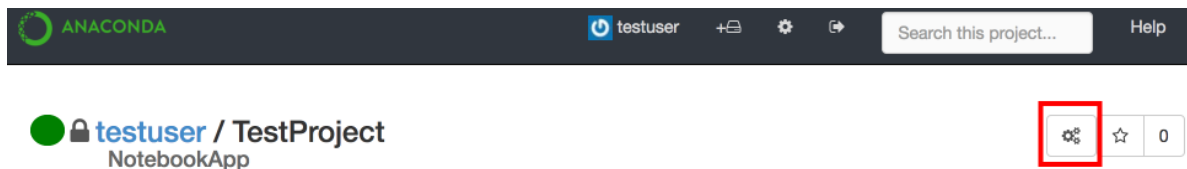
- If you select SMTP Email Server, complete the SMTP Settings.

NOTE: If you get an error message after changing the SMTP settings, you may need to restart the server.

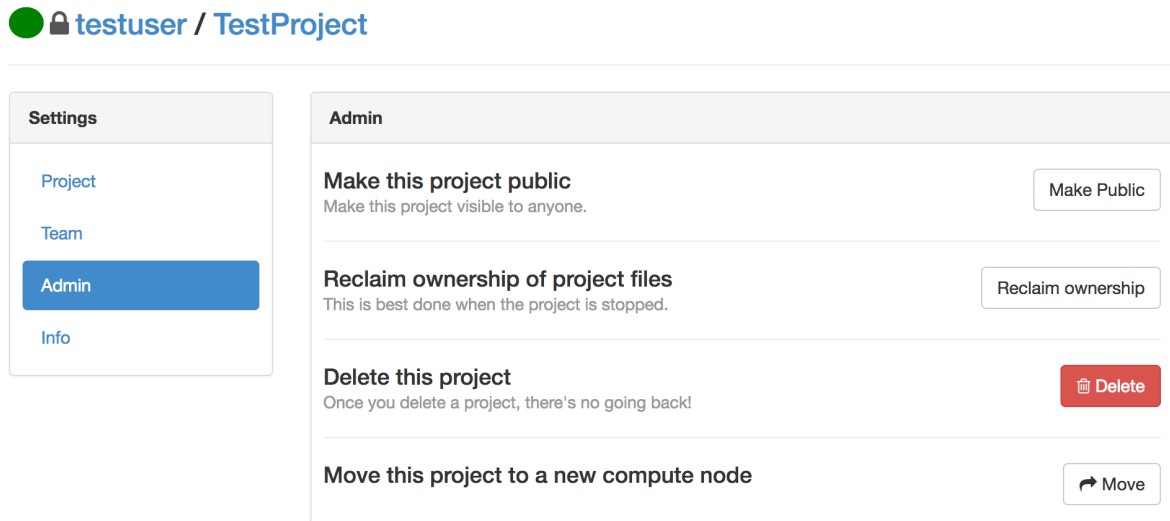
### Moving a project to another compute node

If you have multiple compute nodes available and want to move a project from one to another, the project must exist on both nodes.

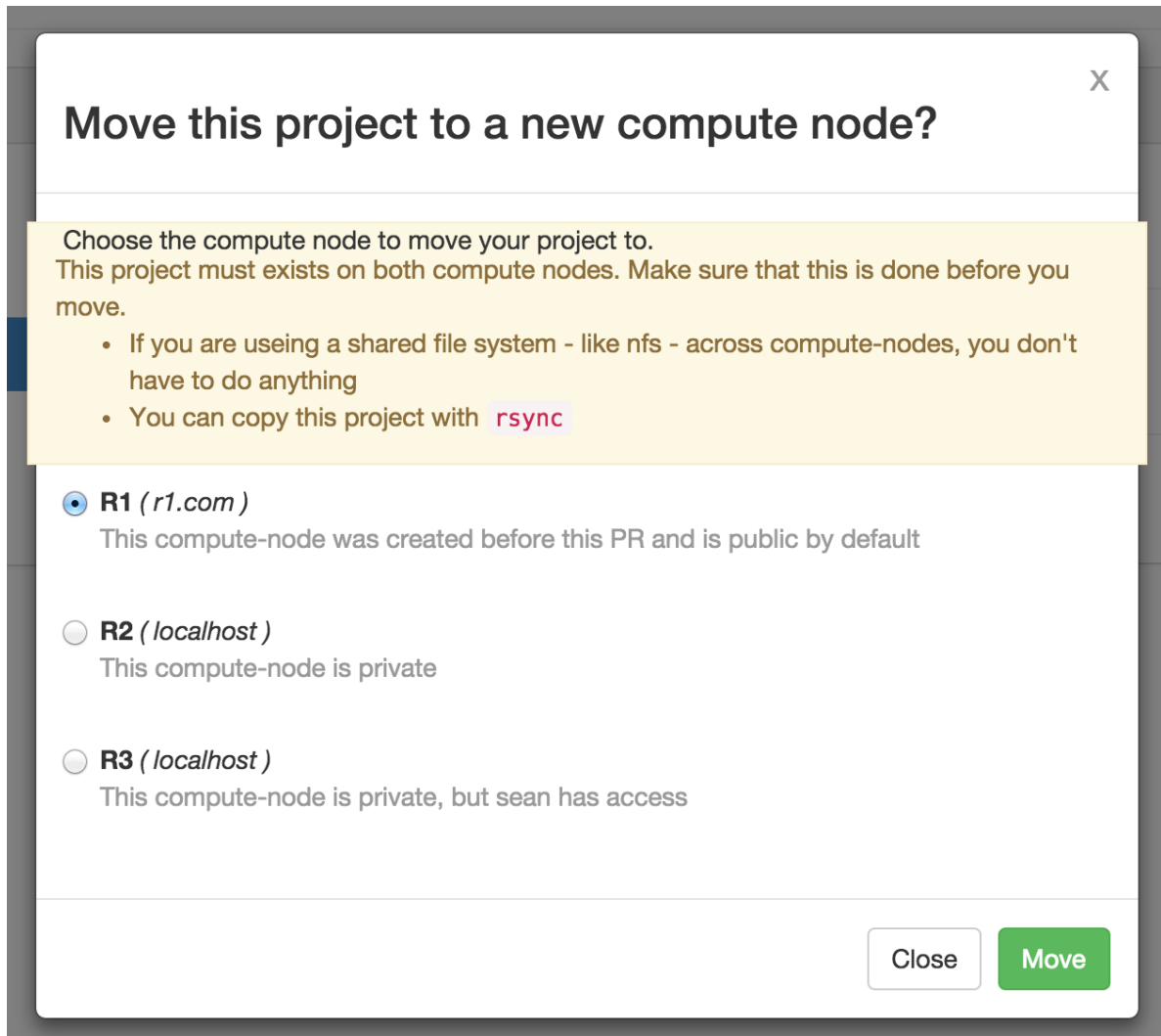
- Verify that the project has been created on both compute nodes. You can use `rsync` for this job unless you have a shared file system like `nfs`.
- On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



4. Click the Move button.
5. In the move dialog box, click to choose the compute node destination, and click the Move button.



## Deleting a user

To remove a user from the AEN database:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-user <username>
```

NOTE: Replace <username> with the actual username.

NOTE: Changing the owner of a project requires that both the previous owner and the new owner are still AEN users. Before deleting a user, *change the owner* of that user's projects.

## Deleting a project

To remove a project from the AEN database:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-project <username> <projectname>
```

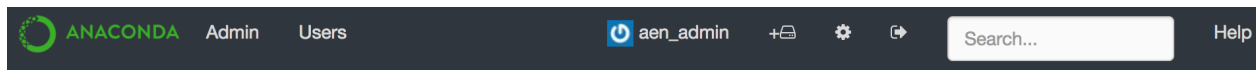
NOTE: Replace <username> with the actual username and <projectname> with the actual project name you are removing.

## System management

### Opening the Admin dashboard

If you have administrator privileges, you see two additional links in the AEN navigation bar—Admin and Users:

To open the Admin dashboard, click the Admin link.



# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the system administrator.

Staff
<a href="#">Daily Report</a>
<a href="#">Password Reset</a>
<a href="#">Notification</a>
<a href="#">Exceptions</a>

Site Admin
<a href="#">General</a>
<a href="#">Accounts</a>
<a href="#">Users</a>
<a href="#">Monitor</a>
<a href="#">Security Log</a>

## Backing up and restoring AEN

### Document purpose

This document lays out the steps to backup and restore Anaconda Enterprise Notebooks (AEN) for Disaster Recovery. It is not intended to provide High Availability. Each of the components (Server, Gateway and Compute) has its own instructions and each may be done individually as needed. The steps primarily involve creating tar files of important configuration files and data.

This document is written for a system administrator who is comfortable with basic Linux command line navigation and usage.

To migrate to a new cluster, use these backup and restore instructions to back up the system from the old cluster and restore it to the new cluster.

### Important notes

Review the [Concepts](#) page to become familiar with the different components and how they work together.

Root or sudo access is required for some commands.

**CAUTION:** All commands **MUST** be run by \$AEN\_SRVC\_ACCT (the account used to run AEN) except for those commands explicitly indicated to run as root or sudo. If the commands are not run by the correct user, the installation will not work, and a full uninstallation and reinstallation will be required!

These instructions assume that the fully qualified domain name (FQDN) has not changed for any of the component nodes. If any of the FQDNs are not the same, additional steps will be needed.

### Server component steps

#### Backup

##### Mongo database

This will create a single tar file called `aen_mongo_backup.tar` that includes only the database named “wakari” that is used by AEN. It also generates a log of the database backup.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
mongodump -db wakari -o aen_main >> mongo_backup.log
tar -cvf aen_mongo_backup.tar aen_main
```

##### AEN Server config files (including License file)

Create a tar file of all of the configuration files, including any license files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -cvf aen_server_config.tar -C /opt/wakari/ wakari-server/etc/wakari/
```

### Nginx config (if needed)

Make a copy of the nginx configuration file if it has been customized. The default configuration for the AEN server is a symlink.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
/etc/nginx/conf.d/www.enterprise.conf -> /opt/wakari/wakari-server/etc/nginx/conf.d/www.  
↪enterprise.conf
```

### SSL certificates (if needed)

Make a copy of the SSL certificates files (certfiles) for the server, including the key file, and a copy of the certfile for the gateway, which is needed for verification if using self-signed or private CA signed certs.

### Restore

#### Reinstall AEN-Server

See *the instructions for installing the current version of AEN-Server*.

It is not necessary to upload the license, because it will be restored with the config files.

NOTE: The new installation will generate a new password for the local \$AEN\_SRVC\_ACCT account.

#### Restore Mongo database

This assumes that mongo was reinstalled as part of the reinstallation of the server component. Untar the mongo database and restore it.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_mongo_backup.tar  
mongorestore --drop aen_main
```

NOTE: The --drop option resets the \$AEN\_SRVC\_ACCT user password and restores the database to the exact state it was in at the time of backup. Please see the [MongoDB documentation](#) for more information about mongorestore options for Mongo 2.6.

NOTE: AEN uses Mongo 2.6 by default. If you are using a different version, consult the documentation for your version.

#### AEN Server config files (including License file)

Untar the tar file of all of the configuration files, including any license files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_server_config.tar -C /opt/wakari/
```

Make sure the files are in /opt/wakari/wakari-server/etc/wakari/ and are owned by the \$AEN\_SRVC\_ACCT.

### Nginx config (if needed)

Make sure any modifications to the nginx configuration are either in `/etc/nginx/conf.d` or in `/opt/wakari/wakari-server/etc/nginx/conf.d/` with a proper symlink.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
/etc/nginx/conf.d/www.enterprise.conf -> /opt/wakari/wakari-server/etc/nginx/conf.d/www.  
↪enterprise.conf
```

### SSL certificates (if needed)

Move any SSL certificate files to the locations indicated in the config files.

### Restart server

Restart the server application.

NOTE: This command must be run as root or with sudo.

```
service wakari-server restart
```

## Gateway component steps

### Backup

### Config files

Create a tar file of all of the configuration files.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
tar -cvf aen_gateway_config.tar -C /opt/wakari/ wakari-gateway/etc/wakari/
```

### Custom .condarc file (if needed)

Make a copy of any `/opt/wakari/miniconda/.condarc` if it has been modified.

### SSL certificates (if needed)

Make a copy of SSL certificate files for the gateway (including the key file) and the certfile for the server (needed for verification if using self-signed or private CA signed certs).

### Restore

### Reinstall AEN-Gateway

#### Setting variables and changing permissions

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
export AEN_GATEWAY_PORT=8089
export AEN_GATEWAY=<FQDN HOSTNAME OR IP ADDRESS> # will be needed shortly
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists. If the terminal is closed before successful installation, export the variables to continue with the installation.

#### Running the AEN gateway installer

Run:

```
sudo -E ./aen-gateway-4.3.0-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-gateway
Logging to /tmp/wakari_gateway.log
...
...
Checking server name
Please restart the Gateway after running the following command
to connect this Gateway to the AEN Server
...
```

#### Config files

Untar the configuration files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_gateway_config.tar -C /opt/wakari
```

Verify that the files are in /opt/wakari/wakari-gateway/etc/wakari/ and are owned by the \$AEN\_SRVC\_ACCT.



### Custom .condarc file (if needed)

Move the custom .condarc file to /opt/wakari/miniconda/.condarc.

### SSL certificates (if needed)

Move any SSL certificate files to the locations indicated in the config files.

### Restart gateway

Restart the gateway application.

NOTE: This command must be run as root or with sudo.

```
service wakari-gateway restart
```

### Compute component steps

#### Backup

#### Config files

Create a tar file of all of the configuration files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -cvf aen_compute_config.tar -C /opt/wakari/ wakari-compute/etc/wakari
```

### Custom Changes (rare)

Manually backup any custom changes that were applied to the code. One change might be additional files in the skeleton folder:

```
/opt/wakari/wakari-compute/lib/node_modules/wakari-compute-launcher/skeleton
```

### Create user list

AEN uses POSIX access control lists (ACLs) for project sharing, so the backup must preserve the ACL information. This is done with a script that creates a file named `users.lst` containing a list of all users that have access to projects on a given compute node. Download and run the script.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
wget https://s3.amazonaws.com/continuum-airgap/misc/wk-compute-get-acl-users.py
chmod 755 wk-compute-get-acl-users.py
./wk-compute-get-acl-users.py
```

### Project files

Create a tar of the projects directory with ACLs enabled. The default projects base location is `/projects`.

NOTE: This command must be run as root or with sudo.

```
tar --acls -cpvf projects.tar -C <projects base location>/*
```

### Full Anaconda (option 1)

If any changes have been made to the default Anaconda installation (additional packages installed or packages removed), it is necessary to backup the entire Anaconda installation.

NOTE: This command must be run by `$AEN_SRV_ACCT`.

```
tar -cvf aen_anaconda.tar -C /opt/wakari/anaconda/*
```

If no changes have been made to the default installation of Anaconda, you may just backup the `.condarc` file and any custom environments.

### Partial Anaconda (option 2)

#### Custom `.condarc` file

Make a copy of `/opt/wakari/anaconda/.condarc`.

#### Custom environments (if needed)

Create a tar file of any custom shared environments.

NOTE: This command must be run by `$AEN_SRV_ACCT`.

```
tar -cvf aen_compute_envs.tar -C /opt/wakari/ anaconda/envs
```

NOTE: If no custom shared environments have been created, the `envs` folder will not be present.

### Restore

#### Reinstall AEN-Compute

#### Setting variables and changing permissions

NOTE: These commands must be run by `$AEN_SRV_ACCT`.

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change `<FQDN HOSTNAME OR IP ADDRESS>` to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal, to ensure the variable export persists.

## Running the AEN compute installer

Run:

```
sudo -E ./aen-compute-4.3.0-Linux-x86_64.sh -w $AEN_SERVER
...
...
PREFIX=/opt/wakari/wakari-compute
Logging to /tmp/wakari_compute.log
Checking server name
...
...
Initial clone of root environment...
Starting Wakari daemons...
installation finished.
Do you wish the installer to prepend the wakari-compute install location
to PATH in your /root/.bashrc ? [yes|no]
[no] >>> yes
```

## Config files

Untar the config files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_compute_config.tar -C /opt/wakari
```

NOTE: Verify that they are located in /opt/wakari/wakari-compute/etc/wakari and are owned by the \$AEN\_SRVC\_ACCT.

## Custom changes (rare)

Manually restore any custom changes you saved in the backup section. If there are changes in the skeleton directory, these files must be world readable or projects will refuse to start.

## Create users

NOTE: Only create users with these instructions if your Linux machine is not bound to LDAP.

In order for the ACLs to be set properly on restore, all users that have permissions to the files must be available on the machine. Ask your system administrator for the proper way to do this for your system, such as using the “useradd” tool. A list of users that are needed was created in the backup process as a file named `users.lst`.

A process similar to the following `useradd` example will be suitable for most Linux systems.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
xargs -0 -n 1 useradd --user-group < users.lst
```

### Project files

Create the projects directory in the location specified in projectRoot in wk-compute-launcher-config.json.

NOTE: By default this directory is /projects.

Then untar the projects directory with ACLs.

NOTE: This command must be run as root or with sudo:

```
tar --acls -xpvf projects.tar -C <projects base location>
```

### Full Anaconda (option 1)

If you did a full backup of the full Anaconda installation, untar this file to /opt/wakari/anaconda.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_anaconda.tar -C /opt/wakari
```

### Partial Anaconda (option 2)

Restore the custom .condarc file.

If you did a partial backup of the Anaconda installation, move the copy of the .condarc file to /opt/wakari/anaconda/.condarc.

### Custom environments (if needed)

Untar any custom environments that were created to /opt/wakari/anaconda/envs.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_compute_envs.tar -C /opt/wakari
```

### Restart compute node

Restart the compute-launcher application.

NOTE: This command must be run as root or with sudo.

```
service wakari-compute restart
```

## Viewing a list of admin commands

A user who is promoted to administrator can access administrator commands to perform advanced administrator tasks.

NOTE: Utility files are owned by, and should only be executed by, the AEN user who owns the files.

To display a list of all administrator commands:

```
ls -al /opt/wakari/wakari-server/bin/wk-*
```

## Viewing help for admin commands

To view help information for command, run the command followed by `-h` or `--help`.

EXAMPLE: To view help for the `remove-user` command:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-user -h  
/opt/wakari/wakari-server/bin/wk-server-admin remove-project -h
```

## Running daily reports

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Daily Report:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)
[Task Queue](#)
[License](#)

Providers

[Enterprise Resources](#)

## Report

[Today](#)
[Yesterday](#)
[This Week](#)
[This Month](#)

**From:**  
Sun Sep 24 15:09:03 2017  
**Until:**  
Mon Sep 25 15:09:03 2017  
**Date Range**  
1 day, 0:00:00

### Users

	New	Total
<b>Users</b>	0	1
<b>Projects</b>	0	6

### New User Emails

Username	Email
----------	-------

### Actions

Count	Action
82	<a href="#">oauth.authenticate</a>

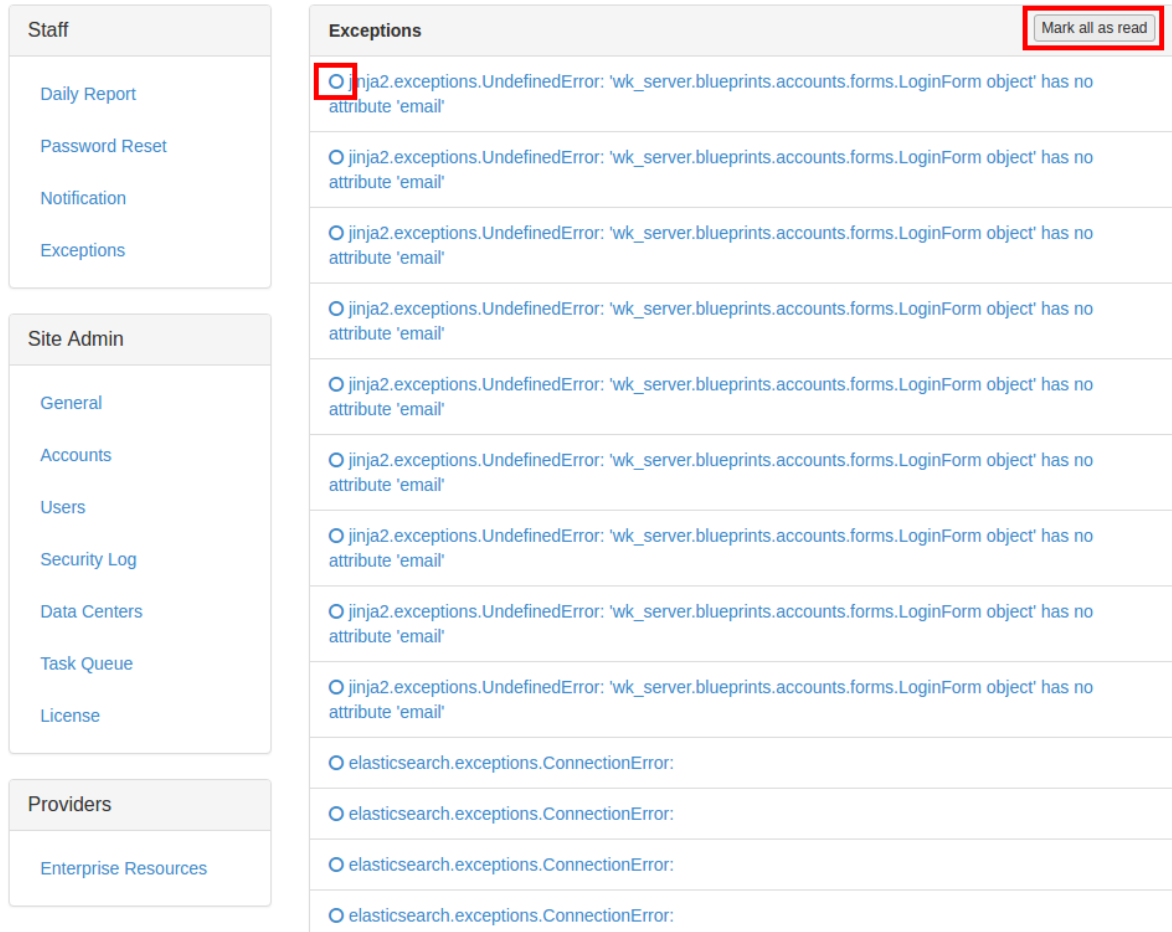
The Report section displays the following:

- Users—The number of users and projects.
- New User Emails—If *open registration is enabled*, the user names and emails for new users.
- Actions—The actions—projects created, projects updated, user authentications and added users—that have occurred in during the selected time frame—today, yesterday, this week, or this month.

## Viewing system errors

When an error occurs, a red dot is displayed in the AEN navigation bar next to the Admin link. The red dot is removed when all exceptions are marked as “read.”

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Exceptions:



The screenshot shows the AEN Admin Settings interface. On the left, there are three main navigation sections: **Staff**, **Site Admin**, and **Providers**. Under **Staff**, the **Exceptions** link is highlighted. The main content area displays a table of exceptions. The first exception is selected, indicated by a red square around its radio button. The table has a header row with the title 'Exceptions' and a 'Mark all as read' button in the top right corner. The exceptions listed are Jinja2 UndefinedErrors and Elasticsearch ConnectionErrors.

Exceptions		Mark all as read
<input checked="" type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'	
<input type="radio"/>	elasticsearch.exceptions.ConnectionError:	
<input type="radio"/>	elasticsearch.exceptions.ConnectionError:	
<input type="radio"/>	elasticsearch.exceptions.ConnectionError:	
<input type="radio"/>	elasticsearch.exceptions.ConnectionError:	

The Exceptions section lists all errors that have occurred while AEN is running.

3. To see the details of an error, click the radio button next to the error. This also marks the error as “read.”
4. To mark all errors as read without reviewing each one, click the Mark all as read button.

## Viewing security errors

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Security Log:

Staff

Daily Report

Password Reset

Notification

Exceptions

Site Admin

General

Accounts

Users

Monitor

Security Log

Security Log

View	Actor	Action	Date
	aen_admin	oauth.authenticate	Sep 25, 2017 09:46:09 CDT
	aen_admin	oauth.authenticate	Sep 25, 2017 09:39:17 CDT
	aen_admin	oauth.authenticate	Sep 25, 2017 09:22:04 CDT
	aen_admin	oauth.authenticate	Sep 25, 2017 09:10:31 CDT
	aen_admin	oauth.authenticate	Sep 25, 2017 08:45:50 CDT
	aen_admin	oauth.authenticate	Sep 25, 2017 08:43:12 CDT
	aen_admin	oauth.authenticate	Sep 25, 2017 08:10:30 CDT
	aen_admin	oauth.authenticate	Sep 25, 2017 08:09:38 CDT
	aen_admin	oauth.authenticate	Sep 24, 2017 23:52:06 CDT
	aen_admin	oauth.authenticate	Sep 24, 2017 23:51:58 CDT
	aen_admin	oauth.authenticate	Sep 24, 2017 23:51:58 CDT
	aen_admin	oauth.authenticate	Sep 24, 2017 23:51:58 CDT

- The Security Log section lists all errors that have occurred that could potentially affect AEN security.
- To view a user’s profile page, click their username in the Actor column.
  - To see the details of an error, click the Eye icon next to the error.

The error details are displayed:

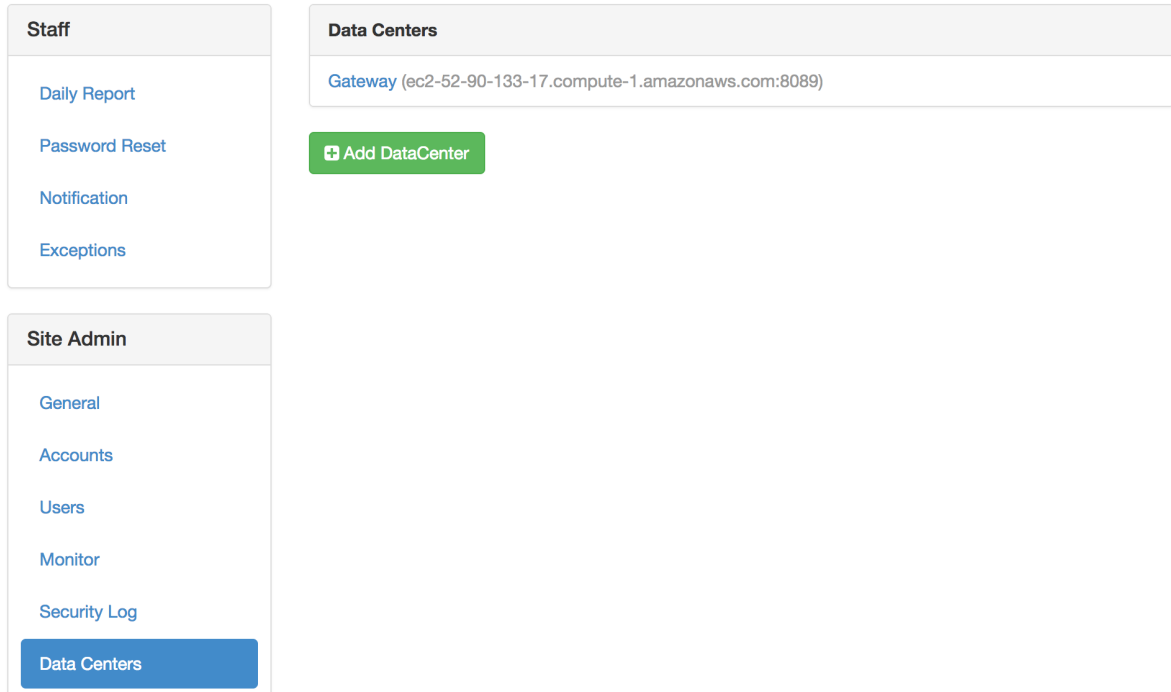
<div>Public Profile</div> <div>Account Settings</div> <div>Security Log</div> <div>Applications</div>	<div>oauth.authenticate</div> <table><tr><td>_id</td><td>59c907f03f94c30fe45ffb9e</td></tr><tr><td>action</td><td>oauth.authenticate</td></tr><tr><td>actor_id</td><td>59c069b1ae55d1b3fe9fa45e</td></tr><tr><td>actor_username</td><td>aen_admin</td></tr><tr><td>client_id</td><td>59c119cd3f94c30fe45ff5db</td></tr><tr><td>remote_addr</td><td>None</td></tr><tr><td>time</td><td>2017-09-25 13:43:12.479000+00:00</td></tr><tr><td>token_id</td><td>59c907f03f94c30fe45ffb9d</td></tr></table> <div>⏪ Back</div>	_id	59c907f03f94c30fe45ffb9e	action	oauth.authenticate	actor_id	59c069b1ae55d1b3fe9fa45e	actor_username	aen_admin	client_id	59c119cd3f94c30fe45ff5db	remote_addr	None	time	2017-09-25 13:43:12.479000+00:00	token_id	59c907f03f94c30fe45ffb9d
_id	59c907f03f94c30fe45ffb9e																
action	oauth.authenticate																
actor_id	59c069b1ae55d1b3fe9fa45e																
actor_username	aen_admin																
client_id	59c119cd3f94c30fe45ff5db																
remote_addr	None																
time	2017-09-25 13:43:12.479000+00:00																
token_id	59c907f03f94c30fe45ffb9d																

- To close the error details, click the Back link.



## Managing data centers

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Data Centers:



The Data Centers section displays current data center information.

## Adding a data center

1. Click the Add DataCenter button to display the Register a datacenter form.
2. In the Name box, type a Name for the new data center:

**Data Centers / Register a datacenter**

**Name**

☐ Subdomain Routing  
☐ Https

**Base Domain Name**

**summary**

**Provider**

3. Select the Subdomain Routing and/or Https checkboxes.
4. In the Base Domain Name box, type the base domain name.
5. In the Summary box, type a description of the data center.
6. In the Provider list, select a provider.
7. Click the Submit button.

## Managing enterprise resources

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Providers** menu, select Enterprise Resources:

The screenshot displays the Anaconda web interface. On the left, there is a sidebar with three main sections: 'Staff' containing links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'; 'Site Admin' containing links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and 'License'; and 'Providers' containing a button for 'Enterprise Resources'. The main content area is titled 'Resources' and features a green '+ Add Resource' button in the top right corner. Below this, there is a 'Gateway' section with a single entry: 'ec2-54-210-232-251.compute-1.amazonaws.com', which has a red 'remove' button next to it.

The Resources section lists your existing cloud and local resources.

### Adding a resource

1. Click the Add Resource button to open the new resource form.
2. Complete the form:

**Resources** / new

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
Compute Node1

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**  
Configuring Compute Node

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Add Resource

3. Click the Add Resource button.

### Viewing or changing the resource details

1. Click a resource name to open the Local Resource form.
2. If necessary, change the resource details:

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
ec2-54-210-232-251.compute-1.amazonaws.com

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**  
{ "status": "ok", "messages": [] }

- Click the Update button.

## Making a node public or private

1. Click the resource name to open the Local Resource form.
2. Select or clear the Public checkbox:

**Data Center**

Gateway 59c119cd3f94c30fe45ff5db

**Name**

ec2-54-210-232-251.compute-1.amazonaws.com

**URL**

http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**

{"status": "ok", "messages": []}

3. Click the Update button.

## Removing a resource

Click the Remove button next to the resource you want to remove.

NOTE: When you remove a resource assigned to a project, the project becomes orphaned. To fix an orphaned project, *move the project to a valid Compute Resource*.

## Managing services

The tasks on this page assume that the 3 AEN nodes are installed in the following locations:

- Server—/opt/wakari/wakari-server/.
- Gateway—/opt/wakari/wakari-gateway/.
- Compute-Launcher—/opt/wakari/wakari-compute/.

## Checking the status of server node processes

1. Run:

```
# service wakari-server status
wk-server          RUNNING    pid 20758, uptime 5 days, 0:30:23
worker             RUNNING    pid 20757, uptime 5 days, 0:30:23
```

OR

```
root@server # ps -Hu wakari
  PID TTY          TIME CMD
 20756 ?           00:02:26 .supervisord
 20757 ?           00:05:58 mtq-worker
 20758 ?           00:00:08 wk-server
 20765 ?           00:02:00 wk-server
 20766 ?           00:01:55 wk-server
 20767 ?           00:02:20 wk-server
 20770 ?           00:02:02 wk-server
```

2. Run:

```
root@server # service nginx status
nginx (pid 26303) is running...
```

For more information on server processes, see *Server processes*.

## Checking the status of gateway node processes

Run:

```
# service wakari-gateway status
wk-gateway                RUNNING    pid 1137, uptime 5 days, 1:59:28
```

OR

```
root@gateway # ps -Hu wakari
  PID TTY          TIME CMD
 1136 ?            00:01:59 .supervisord
 1137 ?            00:00:02  wk-gateway
```

For more information on gateway processes, see [Gateway processes](#).

## Checking the status of compute node processes

Run:

```
# service wakari-compute status
wk-compute                RUNNING    pid 22050, uptime 3 days, 1:03:19
```

OR

```
root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?            00:02:01 .supervisord
 1152 ?            00:00:01  wk-compute
```

For more information on compute node processes, see [Compute processes](#).

## Starting AEN services

Services should start automatically both when they are first installed and at any point when the system is restarted.

If you need to manually start an AEN service, you must start each node independently, because they may be running on separate machines.

NOTE: The process is basically the same for each node, but the path to the correct commands vary.

To manually start a service:

- On the server node, run:

```
service wakari-server start
```

- On the gateway node, run:

```
service wakari-gateway start
```

- On a compute node, run:

```
service wakari-compute start
```



## Verifying that AEN services are set to start with the system

To verify that AEN services are set up to start automatically:

1. Run the following command on each node:

```
chkconfig --list | grep wakari
```

2. If services are missing, add them:

```
chkconfig --add [wakari-server|wakari-gateway|wakari-compute]
```

3. *Restart the services.*

## Stopping AEN services

CAUTION: Do not stop or kill supervisord without first stopping wk-compute and any other processes that use it.

You must stop services on each node independently, because they may be running on separate machines.

To stop an AEN service:

- On the server node, run:

```
service wakari-server stop
```

- On the gateway node, run:

```
service wakari-gateway stop
```

- On a compute node, run:

```
service wakari-compute stop
```

Compute nodes may have running processes that are not automatically stopped. To stop them, run:

```
sudo /opt/wakari/wakari-compute/bin/wk-compute-apps kill-all
```

## Restarting AEN services

- On the server node, run:

```
service wakari-server restart
```

- On the gateway node, run:

```
service wakari-gateway restart
```

- On a compute node, run:

```
service wakari-compute restart
```

## Identifying extraneous processes

To get a complete list of the processes running under the wakari user account, run `ps -Hu wakari`.

EXAMPLE:

```
root@server # ps -Hu wakari
  PID TTY          TIME CMD
 20756 ?           00:02:26 .supervisord
 20757 ?           00:05:58 mtq-worker
 20758 ?           00:00:08 wk-server
 20765 ?           00:02:00 wk-server
 20766 ?           00:01:55 wk-server
 20767 ?           00:02:20 wk-server
 20770 ?           00:02:02 wk-server

root@server # ps -f -C nginx
UID      PID  PPID  C  STIME TTY          TIME CMD
root    26303      1   0  12:18 ?        00:00:00 nginx: master process /usr/sbin/nginx -c /etc/
↪nginx/nginx.conf
nginx   26305 26303   0  12:18 ?        00:00:00 nginx: worker process

root@gateway # ps -Hu wakari
  PID TTY          TIME CMD
 1136 ?           00:01:59 .supervisord
 1137 ?           00:00:02 wk-gateway

root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?           00:02:01 .supervisord
 1152 ?           00:00:01 wk-compute
```

- wk-server, wk-gateway and wk-compute should have PIDs reported by supervisorctl.
- The nginx master process should have a PID reported by service nginx status.
- If you have installed more than one AEN node on a single machine, the processes from all of the installed nodes should be displayed for that machine.
- On compute node(s), any AEN applications currently being run by users will be present.

EXAMPLE:

```
root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?           00:00:00 .supervisord
 1152 ?           00:00:00 wk-compute
 1340 ?           00:00:00 bash
 1341 ?           00:00:00 notebookwrapper
```

## Removing extraneous processes

If extra `wk-server`, `wk-gateway`, `wk-compute`, or `supervisord` processes are present, use the `kill` command to remove them to prevent issues with AEN.

You can safely *restart* any process that you remove in error.

## Making sure NGINX and MongoDB are running

In order for AEN to run, the dependencies `mongodb` and `nginx` must be up and running. If either of these fail to start, AEN will not be served on port 80.

Check if `nginx` and `mongod` are both running (RHEL 6x):

```
$ sudo service nginx status
nginx (pid 25956) is running...
```

```
$ sudo service mongod status
mongod (pid 25928) is running...
```

If either of these failed to start, tail the log files. The default location of log files is:

```
$ tail -n 50 /var/log/mongodb/mongod.log

# nginx errors reported in error.log
$ tail -n 50 /var/log/nginx/error.log
```

## Viewing, terminating, and relaunching applications

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Monitor:

Running Apps								
User	Project	Application	Status	Node	Last Seen	Terminate	Relaunch	Logs
aen_admin	asd	notebook	running	localhost	Jul 24, 2017 15:15:24 CDT	<button>Terminate</button>	<button>Relaunch</button>	
aen_admin	Test	notebook	running	localhost	Jul 25, 2017 11:54:05 CDT	<button>Terminate</button>	<button>Relaunch</button>	

The Monitor menu lists started applications by user and project.

The list includes columns for the application name, current running status, running node and last seen date.

3. Use the buttons to terminate or relaunch an application.

4. To view an application's logs, click the Logs button with the document icon.

## Viewing the task queue

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Task Queue:

The screenshot shows the 'Task Queue' page. On the left is a navigation sidebar with two main sections: 'Staff' and 'Site Admin'. The 'Staff' section includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section includes links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', and a highlighted 'Task Queue' button. The main content area is titled 'Task Queue' and contains two sections: 'Workers' and 'Queues'. The 'Workers' section shows a single worker with ID 'ip-172-31-10-196.4053' and three priority buttons: 'high' (selected), 'default', and 'low'. The 'Queues' section lists two queues: 'high' with a backlog of 0 and 1 failed task, and 'default' with a backlog of 0 and 3 failed tasks.

Staff
<a href="#">Daily Report</a>
<a href="#">Password Reset</a>
<a href="#">Notification</a>
<a href="#">Exceptions</a>

Site Admin
<a href="#">General</a>
<a href="#">Accounts</a>
<a href="#">Users</a>
<a href="#">Monitor</a>
<a href="#">Security Log</a>
<a href="#">Data Centers</a>
<a href="#">Task Queue</a>

### Task Queue

Workers
ip-172-31-10-196.4053   <span>high</span> <span>default</span> <span>low</span>

Queues
<b>high</b> Backlog: 0 Failed: 1
<b>default</b> Backlog: 0 Failed: 3

The Workers section lists the workers in the task queue and whether each worker is set at high, default or low priority.

The Queues section provides information on the default and high priority queues.

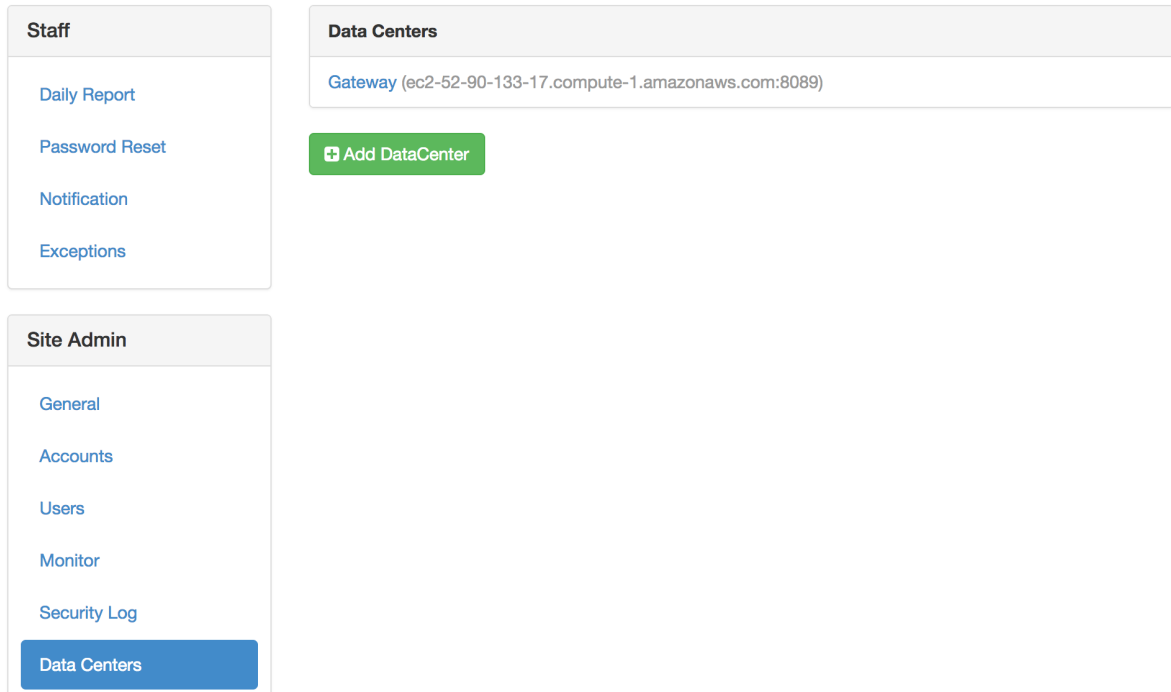
3. To view all the tasks in a particular queue, in the Queues section, click the queue name.

## Checking node connections

When the AEN nodes cannot communicate with each other as intended, it can cause issues with you AEN platform installation.

### Verifying server to gateway connectivity

1. On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Data Centers:



3. For each data center in the list, check connectivity from the server to that gateway.

EXAMPLE: The gateway in this example is `http://gateway.example.com:8089`:

```
root@server # curl --connect-timeout 5 http://gateway.example.com:8089 > /dev/null
```

### Verifying gateway to compute node connectivity

1. On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Providers** menu, select Enterprise Resources:

**Staff**

[Daily Report](#)  
[Password Reset](#)  
[Notification](#)  
[Exceptions](#)

**Site Admin**

[General](#)  
[Accounts](#)  
[Users](#)  
[Monitor](#)  
[Security Log](#)  
[Data Centers](#)  
[Task Queue](#)  
[License](#)

**Providers**

[Enterprise Resources](#)

**Resources** [+ Add Resource](#)

**Gateway**  

[ec2-54-210-232-251.compute-1.amazonaws.com](#) [remove](#)

3. Open each compute node in the Resources section.
4. Verify that the contents of the URL field begin with either `http` or `https`.

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
ec2-54-210-232-251.compute-1.amazonaws.com

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**  
{"status": "ok", "messages": []}

5. Check connectivity to that URL from the corresponding gateway.

EXAMPLE: The gateway in this example is `http://gateway.example.com:8089`:

```
root@gateway # curl --connect-timeout 5 http://compute.example.com:5002 > /dev/null
```

## Verifying gateway to server connectivity

The gateway-to-server path is used by the gateway configuration command `wk-gateway-configure`.

1. Verify that the gateway is linked to the correct server in the configuration file.
2. Verify that the full server URL is specified.
3. Check connectivity to the server:

```
root@gateway # grep WAKARI_SERVER /opt/wakari/wakari-gateway/etc/wakari/wk-gateway-
↪config.json
"WAKARI_SERVER": "http://wakari.example.com",

root@gateway # curl --connect-timeout 5 http://wakari.example.com > /dev/null
root@gateway # curl --connect-timeout 5 http://error.example.com > /dev/null
curl: (7) Failed to connect to error.example.com port 80: Connection refused
```

4. If a connection fails:
  1. Ensure that gateways (data centers) and compute nodes (Enterprise Resources) are correctly configured on the server.
  2. Verify that processes are listening on the configured ports:

```
$ sudo netstat -nplt
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address   Foreign Address State  PID/Program
tcp        0      0 *:80            *:.*           LISTEN 26409/nginx
tcp        0      0 *:22            *:.*           LISTEN 986/sshd
tcp        0      0 127.0.0.1:25    *:.*           LISTEN 1063/master
tcp        0      0 *:5000          *:.*           LISTEN 26192/python
tcp        0      0 127.0.0.1:27017 *:.*           LISTEN 29261/mongod
tcp        0      0 *:22            *:.*           LISTEN 986/sshd
tcp        0      0 127.0.0.1:25    *:.*           LISTEN 1063/master
```

3. Check the firewall setting and logs on both hosts to ensure that packets are not being blocked or discarded.

## Verifying and tuning search indexing

For search indexing to work correctly, a compute node must be able to communicate with the server. To verify this:

1. Run:

```
curl -m 5 $AEN_SERVER > /dev/null
```

2. Verify that there are sufficient inotify watches available for the number of subdirectories within the project root file system:

```
cat /proc/sys/fs/inotify/max_user_watches
```

NOTE: Some Linux distributions default to a low number of watches, which may prevent the search indexer from monitoring project directories for changes.

3. If necessary, increase the number of watches:



```
echo fs.inotify.max_user_watches=100000 | sudo tee -a /etc/sysctl.conf && sudo
↵ sysctl -p
```

4. Verify that there are sufficient inotify user instances available—at least one per project:

```
cat /proc/sys/fs/inotify/max_user_instances
```

5. If necessary, increase the number of inotify user instances:

```
echo fs.inotify.max_user_instances=1000 | sudo tee -a /etc/sysctl.conf && sudo
↵ sysctl -p
```

## Changing the AEN server URL

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

<p><b>Staff</b></p> <ul style="list-style-type: none"> <li>Daily Report</li> <li>Password Reset</li> <li>Notification</li> <li>Exceptions</li> </ul> <p><b>Site Admin</b></p> <ul style="list-style-type: none"> <li><b>General</b></li> <li>Accounts</li> <li>Users</li> <li>Monitor</li> <li>Security Log</li> <li>Data Centers</li> <li>Task Queue</li> <li>License</li> </ul> <p><b>Providers</b></p>	<p><b>General Admin Settings</b></p> <p><b>Wakari Server</b> Set the main URL where this site will be accessed</p> <input type="text" value="http://anaconda-enterprise.trl"/> <p><b>Static URL</b> Set static URL where the js can be accessed</p> <input type="text" value="http://anaconda-enterprise.trl/static/"/> <p><b>Default Project Access</b> This will be the default when a user creates a project</p> <p> <input type="radio"/> <b>Public</b> Anyone can see this project. Collaborators have write access         </p> <p> <input checked="" type="radio"/> <b>Private</b> No one can see this project except collaborators.         </p> <p><b>Account Type</b></p> <input type="text" value="wk_server;plugins.accounts.cloud"/> <p><b>Update</b></p> <p><b>Config Files</b></p>
---	---

3. In the Wakari Server box, type the main URL where the site can be viewed.
4. Click the Update button.

## Changing the static URL for JavaScript files

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

The screenshot shows the Admin Settings page with the 'General' tab selected under the 'Site Admin' menu. The 'Static URL' field is highlighted, showing the current value 'http://anaconda-enterprise.tr/static/'. The 'Default Project Access' section shows 'Private' selected. The 'Account Type' dropdown is set to 'wk\_server.plugins.accounts.cloud'. An 'Update' button is visible at the bottom of the settings section.

Staff	General Admin Settings
Daily Report	<b>Wakari Server</b> Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.tr"/>
Password Reset	<b>Static URL</b> Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.tr/static/"/>
Notification	<b>Default Project Access</b> This will be the default when a user creates a project  <input type="radio"/> <b>Public</b> Anyone can see this project. Collaborators have write access  <input checked="" type="radio"/> <b>Private</b> No one can see this project except collaborators.
Exceptions	<b>Account Type</b> <input type="text" value="wk_server.plugins.accounts.cloud"/>
	<input type="button" value="Update"/>

Site Admin	Config Files
General	
Accounts	
Users	
Monitor	
Security Log	
Data Centers	
Task Queue	
License	

Providers

3. In the Static URL box, type the static URL where JavaScript files can be accessed.
4. Click the Update button.

## Changing the AEN account type

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

<div>Staff</div> <div>Daily Report</div> <div>Password Reset</div> <div>Notification</div> <div>Exceptions</div>	<div>General Admin Settings</div> <div> <b>Wakari Server</b>  Set the main URL where this site will be accessed  <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> <b>Static URL</b>  Set static URL where the js can be accessed  <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> <b>Default Project Access</b>  This will be the default when a user creates a project  <div> <input type="radio"/> <b>Public</b>  Anyone can see this project. Collaborators have write access </div> <div> <input checked="" type="radio"/> <b>Private</b>  No one can see this project except collaborators. </div> </div> <div> <b>Account Type</b>  <input type="text" value="wk_server.plugins.accounts.cloud"/> </div> <div> <input type="button" value="Update"/> </div>
<div>Site Admin</div> <div>General</div> <div>Accounts</div> <div>Users</div> <div>Monitor</div> <div>Security Log</div> <div>Data Centers</div> <div>Task Queue</div> <div>License</div>	<div>Providers</div> <div>Config Files</div>

3. In the Account Type box, select the account type—cloud or LDAP.
4. Click the Update button.

### Changing the default for project access

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

The screenshot shows the Anaconda Enterprise Admin interface. On the left is a sidebar with three main sections: 'Staff' (containing links for Daily Report, Password Reset, Notification, and Exceptions), 'Site Admin' (containing links for General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License), and 'Providers'. The 'General' link under 'Site Admin' is selected. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' with a text input field containing 'http://anaconda-enterprise.trl'; 'Static URL' with a text input field containing 'http://anaconda-enterprise.trl/static/'; and 'Default Project Access' with two radio button options: 'Public' (unselected) and 'Private' (selected). Below these is an 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the settings section is a green 'Update' button. Below the settings section is a 'Config Files' section.

3. Under Default Project Access, select the default access type for new projects: Public or Private.
4. Click the Update button.

## Changing the owner of a project

To change the owner of a project:

1. Collect the project name, the user name of the previous owner, and the user name of the new owner.
2. Run the `wakari-server` executable command `wk-server-admin`:

```
/opt/wakari/wakari-server/bin/wk-server-admin project-owner --project PROJECT --old_
↪OLD_OWNER --new NEW_OWNER --delete --keep-owner
```

- **PROJECT**: The project name.
- **OLD\_OWNER**: The user name of the previous owner.
- **NEW\_OWNER**: The user name of the new owner.
- **--delete**: An optional flag that deletes the old project directory in the `projects` directory of **OLD\_OWNER**. If this flag is not used, the old project directory is preserved but no longer used.
- **--keep-owner**: An optional flag that makes **OLD\_OWNER** a collaborator of the project after it is transferred to **NEW\_OWNER**. If this flag is not used, **OLD\_OWNER** will no longer have collaborator access to the project.

**NOTE:** The **OLD\_OWNER** user must still exist when the project's owner is changed. Before deleting any user, be sure to change the owner of the user's projects.

## Editing configuration files

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General.

The screenshot shows the AEN Admin Settings interface. On the left is a navigation sidebar with three main sections: 'Staff' (containing links for Daily Report, Password Reset, Notification, and Exceptions), 'Site Admin' (containing links for General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License), and 'Providers'. The 'General' link under 'Site Admin' is highlighted. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' with a text input field containing 'http://anaconda-enterprise.trl'; 'Static URL' with a text input field containing 'http://anaconda-enterprise.trl/static/'; and 'Default Project Access' with two radio button options: 'Public' (unselected) and 'Private' (selected). Below these is an 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the settings area is a green 'Update' button. Below the settings area is a 'Config Files' section.

3. In the Config Files section, change the configuration settings for your AEN installation. For more information on configuration files, see [Using configuration files](#).
4. Click the Update button.

## Managing your AEN license

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select License:

The screenshot shows the Admin Settings page. On the left is a navigation menu with two main sections: 'Staff' and 'Site Admin'. The 'Staff' section includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section includes links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and a highlighted 'License' button. The main content area is divided into two sections. The 'Current License' section has a light blue header and a message: 'You have 166 days remaining on your current license.' with a 'Renew your license' button. Below this is a table of license details. The 'Upload New License' section has a light gray header and a 'License File' section with a 'Choose File' button and the text 'No file chosen'. Below that is a green 'Update' button.

Current License	
You have <b>166 days</b> remaining on your current license.	
<a href="#">Renew your license</a>	
<b>product</b>	Anaconda Enterprise Notebooks
<b>vendor</b>	Continuum Analytics, Inc.
<b>name</b>	Continuum Development
<b>end_date</b>	2018-03-10
<b>issued</b>	2017-03-10
<b>company</b>	Continuum Analytics
<b>type</b>	undefined
<b>email</b>	dev@continuum.io

Upload New License	
<b>License File</b>	
<a href="#">Choose File</a>	No file chosen
<a href="#">Update</a>	

The Current License section displays information regarding your AEN license, including the name of the product, vendor, license holder's name, end and issued dates, company name, license type, and contact email.

## Renewing your AEN license

1. Click the Renew your license button.
2. In the Upload New License section, click the Choose File button.
3. Select the new license file.
4. Click the Open button.
5. Click the Update button.

Your renewed license information is displayed.

## Cheat sheet

The Admin dashboard includes three menus in the left column: **Staff**, **Site Admin** and **Providers**.

### Staff menu

- Daily Report—See the number of users and projects.
- Password Reset—Reset a user password.
- Notification—Send system messages to users via SES or SMTP.
- Exceptions—If errors are raised while AEN is running, a red dot appears in the AEN navigation bar. Review errors and mark them as read.

### Site Admin menu

- General—Change the configuration settings for your AE Notebook server installation.
- Accounts—Turns on or off Open Registration.
- Users—View usernames, number of projects and last logins.
- Monitor—View status of applications with related data, terminate or restart
- Security Log—View errors that could affect security.
- Data Centers—View current data centers and add a new data center.
- Task Queue—View workers in the task queue and priority.
- License—View current AEN license or upload a new license.

### Providers menu

Enterprise Resources—View, add or remove local or cloud services and designate public or private to control access to a compute node.

## Troubleshooting

This troubleshooting guide provides you with ways to deal with issues that may occur with your AEN installation.

### General troubleshooting steps

1. Clear browser cookies. When you change the AEN configuration or upgrade AEN, cookies remaining in the browser can cause issues. Clearing cookies and logging in again can help to resolve problems.
2. *Make sure NGINX and MongoDB are running.*
3. Make sure that AEN services are *set to start at boot*, on all nodes.
4. *Make sure that services are running* as expected. If any services are not running or are missing, *restart them*.
5. *Check for and remove extraneous processes.*
6. *Check the connectivity between nodes.*

7. *Check the configuration file syntax.*
8. *Check file ownership.*
9. *Verify that POSIX ACLs are enabled.*

### Browser error: too many redirects

#### Cause

Browser cookies are out of date.

#### Solution

1. Log out.
2. Clear the browser's cookies.
3. Clear the browser cache.
4. Log in.

### Browser error: too many redirects when starting project apps

Browser shows “Too many redirects” when the user tries to start an application.

#### Cause

The project's Compute Resource is invalid or was deleted.

#### Solution

*Move the project to a valid Compute Resource.*

### Exception: `exceptions.TypeError: 'NoneType' object has no attribute '__getitem__'`

This exception appears on the Admin > Exceptions page when a project does not have a Compute Resource assigned.

#### Cause

The project's Compute Resource is invalid or was deleted.



## Solution

*Move the project to a valid Compute Resource.*

### Error: `unix:///opt/wakari/wakari-server/etc/supervisor.sock` no such file

This is a supervisorctl error.

## Cause

supervisord is not running on the Server.

## Solution

Ensure that supervisord is included in the crontab. Then restart supervisord manually.

### Error: “Data Center Not Found” when deleting a project

## Cause

The data center has been removed.

## Solution

As root, run:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-project --db-only <user> <project>
```

## Forgotten administrator password

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin reset-password -u SOME_USER -p SOME_
↪PASSWORD
```

NOTE: Replace SOME\_USER with the administrator username and SOME\_PASSWORD with the password.

3. Log in to AEN as the administrator user with the new password.

Alternatively you may add an administrator user:

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin add-user SOME_USER --admin -p SOME_
↪PASSWORD -e YOUR_EMAIL
```

NOTE: Replace SOME\_USER with the username, replace SOME\_PASSWORD with the password, and replace YOUR\_EMAIL with your email address.

3. Log in to AEN as the administrator user with the new password.

### Log files being deleted

Log files are being deleted.

NOTE: Locations of AEN log files for each process and application are shown in the node sections in *Concepts*.

### Cause

AEN installers log in to `/tmp/wakari\_{server,gateway,compute}.log`. If the log files grow too large, they might be deleted.

### Solution

To set the logs to be more or less verbose, Jupyter Notebooks uses `Application.log_level`.

To make the logs less verbose than the default, but still informative, set `Application.log_level` to `ERROR`.

### Error: This socket is closed

You receive the “This socket is closed” error message when you try to start an application.

### Cause

When the `supervisord` process is killed, information sent to the standard output `stdout` and the standard error `stderr` is held in a pipe that will eventually fill up.

Once full, attempting to start any application will cause the “This socket is closed” error.

### Solution

To prevent this issue:

- Follow the instructions in *Managing services* to stop and restart processes.
- Do not stop or kill `supervisord` without first stopping `wk-compute` and any other processes that use it.

To resolve the “This socket is closed” error:

1. Stop `wk-compute` by running `sudo kill -9`.
2. Restart the `supervisord` and `wk-compute` processes:

```
sudo /etc/init.d/wakari-compute stop
sudo /etc/init.d/wakari-compute start
```

## Service error 502: Cannot connect to the application manager

Gateway node displays “Service Error 502: Can not connect to the application manager.”

### Cause

A compute node is not responding because the wk-compute process has stopped.

### Solution

Stop and then restart the supervisord and wk-compute processes:

```
sudo /etc/init.d/wakari-compute stop
sudo /etc/init.d/wakari-compute start
```

## 502 communication error on Amazon web services (AWS)

You receive the “502 Communication Error: This gateway could not communicate with the Wakari server” error message.

### Cause

An AEN gateway cannot communicate with the Wakari server on AWS. There may be an issue with the IP address of the Wakari server.

### Solution

Configure your AEN gateway to use the DNS hostname of the server. On AWS this is the DNS hostname of the Amazon Elastic Compute Cloud (EC2) instance.

## Invalid username

### Cause

The username does not follow 1 or more of these rules:

- Must be at least 3 characters and no more than 25 characters.
- The first character must be a letter (A-Z) or a digit (0-9).
- Other characters can be a letter, digit, period (.), underscore (\_) or hyphen (-).
- The [POSIX standard](#) specifies that these characters are the portable filename character set, and that portable usernames have the same character set.

### Solution

Follow the above rules for usernames.

### Notebook Error: Cannot download notebook as PDF via LaTeX

#### Cause

LaTeX is not properly installed.

#### CentOS/6 Solution

1. Install TeXLive from the [TUG site](#). Follow the described steps. The installation may take some time.
2. Add the installation to the PATH in the file `/etc/profile.d/latex.sh`. Add the following, replacing the year and architecture as needed:

```
PATH=/usr/local/texlive/2017/bin/x86_64-linux:$PATH
```

3. Restart the compute node.

#### CentOS/7 Solution

1. Install the missing packages running the command:

```
yum install texlive texlive-xetex texlive-xetexconfig texlive-xetex-def texlive-  
↪adjustbox texlive-upquote texlive-ulem
```

### Unresponsive wk-server thread without error messages

#### Cause

Two things can cause the `wk-server` thread to freeze without error messages:

- LDAP freezing
- MongoDB freezing

If LDAP or MongoDB are configured with a long timeout, Gunicorn can time out first and kill the LDAP or MongoDB process. Then the LDAP or MongoDB process dies without logging a timeout error.

## Solution

1. Check for frozen LDAP or MongoDB server processes.
2. You may also wish to configure the Gunicorn timeout to more than 30 seconds.

## Unresponsive wk-gateway thread without error messages

### Cause

If TLS is configured with a passphrase protected private key, wk-gateway will freeze without any error messages.

### Solution

Update the TLS configuration so that it does not use a passphrase protected private key.

## Error starting projects

Project's status page shows "There was an error starting this project".

### Cause

Lack of disk space in compute nodes prevents projects from starting.

### Solution

1. Verify that the project node meets the *system requirements*.
2. Check if there is enough free space on the compute node's partition where `/projects` lives:

```
df -h /projects
```

3. Free up some disk space to meet the system requirements.
4. Restart the project.

## Changes in .condarc file are ignored

Changes applied to `.condarc` are ignored by conda.

### Cause

Conda loads its configuration by merging multiple files together.

### Solution

Check if you are applying the changes to the correct file.

To show the merged state that conda is currently using:

```
conda config --show
```

To show all config files that conda is currently reading:

```
conda config --show-sources
```

## Frequently asked questions

### What is AEN?

For information on AEN, see *Anaconda Enterprise 4 Notebooks*.

### Can notebooks be shared with anyone?

Yes. When you share a Jupyter Notebook through AEN, it can be viewed and run without the need to install anything special, regardless of what libraries were used to create the notebook. Each notebook also includes the Python environment that it needs to run in.

AEN allows users to clone a shared Jupyter Notebook into their AEN account to make whatever changes or modifications they want. The notebook's Python environment is also cloned, so it runs in the same environment as the shared Jupyter Notebook unless it is changed.

### Can I disable the option, “publish your notebook to anaconda.org”?

Yes. The upload button in the notebook app executes the option “publish your notebook to anaconda.org”. To disable it, log in as the AEN\_SRVC\_ACCT and run these commands:

```
source activate /opt/wakari/wakari-compute
jupyter-nbextension disable nb_anacondacloud --py --sys-prefix
jupyter-serverextension disable nb_anacondacloud --py --sys-prefix
```

### How can I check the version number of my AEN server?

Go to this URL in a browser: `http://$AEN_SERVER/admin/list`

NOTE: Replace `$AEN_SERVER` with the domain name or the domain name and port number of your AEN server.

### Can I use AEN to access CSV or Amazon S3 data?

Yes. If your data is in CSV files, upload the CSV files to your AEN account using the upload controls in the File Browser of the Workbench Application or the File Transfer Application.

To access data stored on Amazon S3, use the Boto interface from AEN. See the public data files in AEN for examples of how to use Boto to pull your data from Amazon S3 into AEN. For more information, see [Boto documentation](#).

You can also use IOPro to simplify and optimize the conversion of your data into Python arrays.

### Can I install other Python packages?

Yes, by creating a custom environment for your packages within your project.

For more information, see [Using the NBConda extension](#).

### Can I create a Python environment from the command line?

Yes, you can use the `conda create` command to create custom Python environments with whatever packages you choose. All AEN environments are shared with all the team members of a project.

EXAMPLE: In this example, `myenv` is a new environment containing the NumPy package.

```
conda create -n myenv numpy
```

NOTE: Python, Jupyter Notebooks and PIP are installed by default in all new AEN environments.

To use your new environment, activate it by running `source activate myenv`.

### Can I connect to GitHub with AEN?

Yes, you have full access to GitHub through an AEN Terminal application.

To generate an SSH key from your AEN account and add it to your GitHub account:

1. [Generate a GitHub SSH key](#).
2. Copy your key by running `cat ~/.ssh/id_rsa.pub`.
3. Select and copy the contents of the `id_rsa.pub` file to the clipboard.
4. Follow [GitHub's instructions](#) to go to your GitHub account and paste it from your clipboard into the appropriate box in your GitHub settings.

### Can I print or print preview my Jupyter Notebooks?

Yes, you can print your notebooks using your browser's regular printing capabilities.

You can also preview the printed page by clicking the **File** menu and selecting Print Preview.

### Is there a set amount of storage on AEN?

No, there is no set limit for storage in AEN. You are limited only by the size of the disk where AEN is installed.

If you need more storage, contact your system administrator.

### How do I get help, give feedback, suggest features or report a bug?

See *Help and support*.

### Help and support

Priority support is included with the purchase of an Anaconda subscription.

Contact your administrator first if you are having problems. Your administrator has a service level agreement where your issue will be responded to within a specific response time, depending on type and severity.

### Training and consulting

Training and consulting is available for AEN and any other Anaconda product.

For more information, please contact your account representative or [email the sales team](#).

### Providing feedback

Your feedback is very important to us!

Please, send us any [product feedback](#) while you are thinking about it.

TIP: Be sure to select AEN as the Platform Component Name.

### Submitting feature requests

We'd love to hear your ideas for consideration in future releases!

Your ideas help us build a better product. Your administrator can submit a support ticket for you.

NOTE: You can also request new features by using the [product feedback](#) form.



## Reporting a bug

If you think you have found a bug, please contact your administrator immediately. They will open a support ticket for your issue.

## Additional resources

The following resources are useful for getting started with Jupyter Notebooks:

- [Jupyter Notebook quick start guide](#)
- [Jupyter Notebook user documentation](#)
- [GitHub](#) shows the most popular Jupyter notebooks of the [month](#), [week](#), and [day](#).

## Release notes

### v4.3.0 October 24, 2018

Administrator-facing changes:

- Fix bug where compute logging wasn't respecting the `logMaxFiles` key
- Log and display a descriptive error message when there is a problem creating the users index
- Log and display a descriptive error message when there is a problem creating a new user with a duplicated e-mail address when the `uniqueEmail` setting is enabled
- Add footer server pages with server host data (IP, AEN version and server version)
- Fix admin script to change the status of private projects
- Fix validation error when updating/editing an existing resource
- Docs: Add KB article about using MongoDB to update old projects with new Data Center information
- Docs: Add restarting service step to SSO documentation
- Docs: Add support for newer versions of MongoDB
- Docs: Add documentation on `uniqueEmail`
- Docs: Add `projDirsAsHome` key to config docs
- Docs: Rewrite the “Using project directories as home directories” section
- Docs: Add full path to admin commands
- Docs: Warn about upgrading away from tested pkgs
- Docs: Add missing steps to “Authenticating with LDAP” section
- Docs: Add troubleshooting documentation about orphaned projects
- Docs: Warn about not using IP address when you connect to AEN
- Docs: Add an entry about ‘Error starting projects’ in the troubleshooting page
- Docs: Rewrite “Group and user permissions for NFS” section and description of the `identicalGID` key in the config pages
- Docs: Add a new section about using MRO packages in AEN (Update: MRO was discontinued in 2021)

- Docs: Preserve username capitalization when using LDAP/AD
- Docs: Add umask 0022 to security requirements
- Docs: Add new section about changing install location
- Docs: Add note about how to manually break out Root CA for the gateway
- Docs: Add note about upgrading custom environments
- Docs: Add notes about how to find conda config files inside AEN
- Docs: Add note about using `USE_SERVER_BASED_SESSIONS: false` when configuring SSO between AEN and versions 2.33.3 through 2.33.10 of the Repository

User-facing changes:

- Increase Workbench file upload limit
- Fix Bokeh examples
- Extend `nb_locker` to detect a server disconnection and generate an alert if it occurs
- Docs: Update the notebook app to correctly point to AEN docs
- Docs: Emphasize that permissions are not applied recursively in the workbench

Internal fixes:

- Update Nginx version to v1.12.2
- Remove unused server config file during the compute upgrade process
- Remove already defined compute default settings from the post-script step
- Pin `widgetsnbextension` version to prevent version mismatch issue (ipywidgets)
- Remove `--offline` flag from the conda clone operations
- Support MongoDB 3.4.14 and update pymongo to version 3.2.2
- Fix LDAP username case sensitivity
- Security fixes and enhancements

### **v4.2.2 March 1, 2018**

Administrator-facing changes:

- Add admin command to change project owner
- Server: Add ability to disable public projects
- Gateway: Add support for SSL private key passphrase
- Docs: Add backup and restore runbook to the docs
- Docs: Emphasize backups before upgrading process
- Docs: Recommend putting AEN and projects folder on the same filesystem
- Docs: Add RHEL version 7.4 to supported versions
- Docs: Add troubleshooting instructions to fix problems when downloading notebook as PDF via LaTeX

User-facing changes:

- Upgrade bokeh to version 0.12.7

- Upgrade holoviews to version 1.8.3
- Upgrade numba to version 0.35.0
- Upgrade scikit-learn to version 0.19.0

Internal fixes:

- Fix bug in init scripts when requiretty is enabled
- Fix bugs related to AEN\_SUDO\_SSH option
- Fix bug in fix\_ownership function when directories contain spaces
- Docs: Fix error in Active Directory configuration example
- Server: Fix bug when updating user/group in supervisor configuration files in post-install for server and gateway
- Server: Fix bug Admin reports on user totals are inconsistent
- Server: Fix error in login screen when open registration and LDAP are enabled
- Server: Fix bug in Last seen date
- Server: Fix bug Monitor Report blank
- Server: Load JS files from local CDN
- Server: Fix error when terminating or relaunching an application from Monitor
- Server: Fix error creating projects when using Internet Explorer 11
- Compute: Fix 404 errors when using pivottablesjs
- Remove Wakari Cloud leftovers

#### **v4.2.1 December 18, 2017**

Administrator-facing changes:

- None

User-facing changes:

- None

Internal fixes:

- Fix undetected “ca” key when using self-signed certificates signed by a private CA
- Fix login redirects when using SSL
- Add verify gateway SSL certificate for get and post requests

#### **v4.2.0 November 22, 2017**

Administrator-facing changes:

- Feature/allow remote MongoDB
- Allow for configuration for login timeout and set default
- Add verbose option to conda create clone
- Avoid duplicate name for resources / compute-nodes

- Allow renaming main and message queue databases
- PAM-based authentication module
- Change wakari logos to Anaconda logos
- Replace ‘wakari’ wording
- New config option to move the user’s home directory into the user’s project directory
- Make logging less verbose in AEN
- Documentation for PySpark kernel installation
- Improve SSL documentation

User-facing changes:

- New config option to move the user’s home directory into the user’s project directory
- Package cache was moved from user’s home directory into the user’s project directory
- Change wakari logos to Anaconda logos
- Fix error for deleting tags to work
- Define shell prompt in `.projectrc` template
- Replace ‘wakari’ wording

Internal fixes:

- Move server unix socket from `/tmp` to `/opt/wakari/wakari-server/var/run`
- Make project deletion synchronous for consistency
- Avoid storing `csrf` token in the user profile
- Expire gateway session when server logs out
- Allow log rotation in the three components
- Fix permissions on static files
- Change log level to debug in gateway
- Do not log private keys in gateway
- Save request remote address when logging action
- Unify logs formatting and timezone in compute nodes with Winston
- Several fixes and documentation improvements

### **v4.1.3 August 16, 2017**

- Upgrade conda to version 4.3.24
- Upgrade anaconda to version 4.4.0
- Admin application monitor
- Block access to package list view
- Add placeholders in password reset form
- Change static content location
- Fix error when checking for package updates in notebook application

- Replace slashes in project tags
- Fix submit errors in password reset form
- Replace/remove “wakari” word from multiple places
- Fix missing commands missing sudo in start-project
- Improve gateway and compute node validators
- Check if bzip2 is installed during server setup process
- Include port number in host header
- Forbid creation of empty tags
- Repair “Create Account” link in login page
- Use UTC for server logs
- Mark datacenters as trusted by default
- Disable heart beating
- Compute resource: Show full path to log file
- Improve init scripts
- Allow deleting all projects
- mtq: Implement exponential backoff on connection error to mongodb
- In the general admin display, do not show the bind password for LDAP
- The accelerate package has been removed from the installation
- Other minor bugfixes

#### **v4.1.2 March 29, 2017**

This is mainly a maintenance release improving internal machinery and upgrading the root packages.

- Upgrade conda to version 4.3.14
- Upgrade Anaconda to 4.3.1
- Upgrade r-base to 3.2.2
- Fixed AEN nb\_conda to be compatible with conda 4.3.x series
- Several documentation fixes
- Other minor bugfixes

#### **v4.1.1 December 15, 2016**

- Added CentOS 7 support
- Support dots in usernames
- More usernames validation
- Fixed creation (through nb\_conda) of single letter environment names
- Environment names (through nb\_conda) validation

- Fixed uploading of notebook using nb\_anacondacloud
- Fixed attaching of environments in published notebooks through nb\_anacondacloud
- Several documentation fixes
- Other bugfixes

### **v4.1.0 October 21, 2016**

- Added JupyterLab application
- Removed GateOne terminal application
- Included additional notebook extensions (nbpresent and nb\_anaconda\_theme)
- Updated to conda 4.2.9 in default project environments
- Added HTTP timeout setting for gateway and compute launcher
- Changed default gateway port to 8089
- Added support for all-numeric usernames
- Add R channel to default conda configuration file
- Other bugfixes

### **v4.0.0 June 30, 2016**

- Customized installation with:
  - AEN Functional ID and Group
  - AEN (installation and run) sudo commands
  - Removal of root access from the AEN service account
  - Configurable sudo command
  - Restriction of sudo access to all the processes
- Upgrade Jupyter to 4.2
- Upgrade the anaconda-nb-extensions to the latest versions
- Upgrade Anaconda to 4.0
- Deprecate wakari-publisher
- Security enhancements
- SSL configuration documented between all AEN Server components
- Several bugfixes
- Overall documentation revision and general improvement

### v0.10.0 February 2, 2016

- New projects dashboard
- Capability to star and tag a project
- Sticky searches
- New Jupyter Notebook extensions
- Updates to all packages. Highlights: bokeh 0.11, ipython/jupyter 4.1.

### v0.9.1 October 19, 2015

- New Search capability to find projects and files within a project.
- Added “Related Projects” list to the project view, based on code similarity.
- New UI for fine-grained access control of project files in the Workbench app
- Viewer app now renders plain text files correctly
- Updated LDAP configuration docs
- Updates to all packages. Highlights: bokeh 0.10, ipython/jupyter 4.0.

**Note** ElasticSearch, and an Oracle JRE, must be installed on the server in order to use the new search features. Indexing of project files will begin when the project is started (or paused and re-started). If search features are not desired, set "SEARCH\_ENABLED": false in the server configuration file to avoid errors.

### v0.8.0 August 21, 2015

#### New Features

- Updated packages based on Anaconda 2.3, and removed older packages no longer in Anaconda.
- Updated IPython to version 3.2.1
- Documentation is now installed with the server (use the Help link in the top navigation bar)
- Added the ability for the administrator to define a customized default project environment.
- The server has been updated to use python 2.7.10.
- Init scripts are now provided for each Anaconda Enterprise Notebooks service.
- Added relevant links to some error pages

#### Problems Resolved in this Release

- Project status indicators (e.g. starting, pausing) now automatically update.
- If an access is unauthorized, the server now returns a 403 (Unauthorized) status code and prompts the user to log in.
- Modified nginx configuration to support running the server on non-standard ports.
- The server installation no longer uses a default password for the wakari user. A random password is generated and displayed during installation.

- Prevent double-click from attempting to create a project twice
- Removed an obsolete script reference that was causes a 404 error to be logged in the browser console when opening the Terminal app.
- The installer scripts no longer fail if the database already contains the ‘wakari’ user.
- Updated example notebooks to work with latest Bokeh release.
- Fixed terminal app key bindings to allow Mac command key to work normally
- Installers now indicate where the installation logs are stored
- LDAP user attributes containing binary data are now ignored.

### Documentation Updates

- Updated and consolidated Troubleshooting guide.
- Simplified some steps in the installation procedure.
- Updated notebooks in the Examples directory for use with the latest IPython Notebook and Bokeh.
- Added a section on project permissions to the Troubleshooting guide.
- Added notes on how to remove a project if the datacenter has already been removed.

### v0.7.0 June 12, 2015

#### New Features

- Updated Bokeh to v0.9
- Ability to list packages installed on the server
- Administrators now have full access to all projects.
- Added automated checking and display of connection status between server, data centers, and compute resources.
- When creating a new project, an environment for the project is automatically created as a clone of the root Anaconda environment.

#### Problems Resolved in this Release

- Problem with checking in files with revision control extension
- Revision control extension can’t handle notebook names with spaces
- Problem moving files form one compute node to another if configured for LDAP
- Should default to UTF-8 encoding and warn user if no locale is detected
- Adding a compute resource via the command line admin tool does not work
- The installer now sets `umask 0022` to ensure correct file permissions



## Documentation Updates

- Added a *Troubleshooting* section to the documentation.
- Added notes on how to configure crontab to start the Anaconda Enterprise Notebooks services at startup
- Example SSL config file now has correct log paths
- Added instructions on how to ensure that POSIX ACL support is enabled on the projects directory.
- Fixed syntax problem in sample LDAP config.json
- Added section on how to use self-signed or private CA certificates

### v0.6.3 March 27, 2015

- Updated LDAP module
- LDAP user filtering
- Added Notebook locking
- Added Notebook integrated revision control system
- Move projects between compute nodes
- User-specific binding to compute nodes (private compute nodes)
- Improved installation process and dependency checking
- Incorporated support for SSL for Server and Gateway nodes
- Improved Gateway error handling
- Fixed package dependencies for update process
- Documentation updates

## Anaconda Enterprise Notebooks 4

*Empower the Data Science Team with cross-collaboration*

AEN is a browser-based Python data analysis environment and visualization tool from Anaconda®. AEN is a ready-to-use, powerful, fully-configured data analytics environment all in a secure, governed environment.

AEN allows data science team members to create and share private notebooks, manage access, control notebook revisions, compare and identify differences across notebook versions, search notebooks for keywords and packages, use enhanced collaborative notebook features—including revision control and locking—and to access an on-premises and/or cloud collaborative notebook server.

The current version of AEN is 4.2.2, released March 1st, 2018.

### User guide

AEN's browser-based management of private packages, notebooks, and environments allows data science team members to:

- Create, share and manage private notebooks.
- Control notebook revisions.
- Compare and identify differences across notebook versions.
- Search notebooks for keywords and packages.
- Use enhanced collaborative notebook features including revision control and locking.
- Access on-premises and/or cloud-based collaborative notebook servers.
- Utilize multiple language kernels like Python and R language in the same notebook.
- Create new notebook environments on the fly without leaving the notebook or entering commands in a prompt.
- Publish results to business stakeholders as interactive visualizations and presentations.

To quickly get up and running with AEN, see [Getting started](#).

Download the [Cheat sheet](#) for easy reference.

### Concepts

#### Projects

AEN users interact with the system predominantly through projects.

A project is a set of conda environments, Jupyter Notebooks, and other files.

Each project has a project drive that all team members can access. The size of the drive is not limited by AEN. Contact your system administrator if you find you do not have sufficient space.

Each project has a separate project directory on the project drive.

The project directory is a directory for project files and data that is separate from the project owner's and team members' home directories, so that team members can share and have equal access.

The path to your project directory is `/projects/<project_owner>/<project_name>`.

For administrative information about projects, directories, and permissions, see [Projects and permissions](#).

#### Team collaboration

Teams collaborate in AEN using projects. Projects allow a team to easily come together by sharing the resources, applications, and environments that are necessary to collaborate effectively.

The AEN project owner and any team members connected to their project will have access to the same:

- Shared files and home directories.
- Shared Python and R environments.
- Shared nodes and hardware.
- Common applications.
- Web user interface.

For more information, see [Working with projects](#).

## Access control

AEN access controls allow you to:

- Add and remove project access for new team members.
- Limit the access to specific folders and files to members of your project team.
- Use permissions to extend execute access to team members. By default, all of the team members on a project have read and write access to all project assets.

Access control is performed from each project's Workbench application.

For more information, see [Controlling access to your project](#).

## Sharing projects

AEN supports both public and private sharing.

A project can be “public,” which means that anyone with access to the system can view the project assets.

Any content placed in the `public` folder in a project is publicly accessible using its URL.

A project can be “private,” which means that only the project owner and team members can view the project assets.

You can also [limit who can access specific files](#).

## Sharing Jupyter Notebooks

In addition to general project sharing capabilities, you can also publish Jupyter Notebooks to Anaconda Repository. This automatically versions the notebook and allows you to define who can view the notebook.

## Project tags

Tags are used to:

- Group similar or related projects.
- Identify your project so that it is easier to find.
- Let others know about your project.

You can [add and remove tags](#) for any project that you have access to.

## Getting started

This section contains information and tasks for first-time AEN users.

### 1. Download the AEN cheat sheet

Before you start, download and print the [AEN cheat sheet](#) for easy reference.

### 2. Access your user home page

After your administrator has set up your server and new Anaconda account, you will receive a welcome email.

1. Click the link in the email to open the AEN login page.

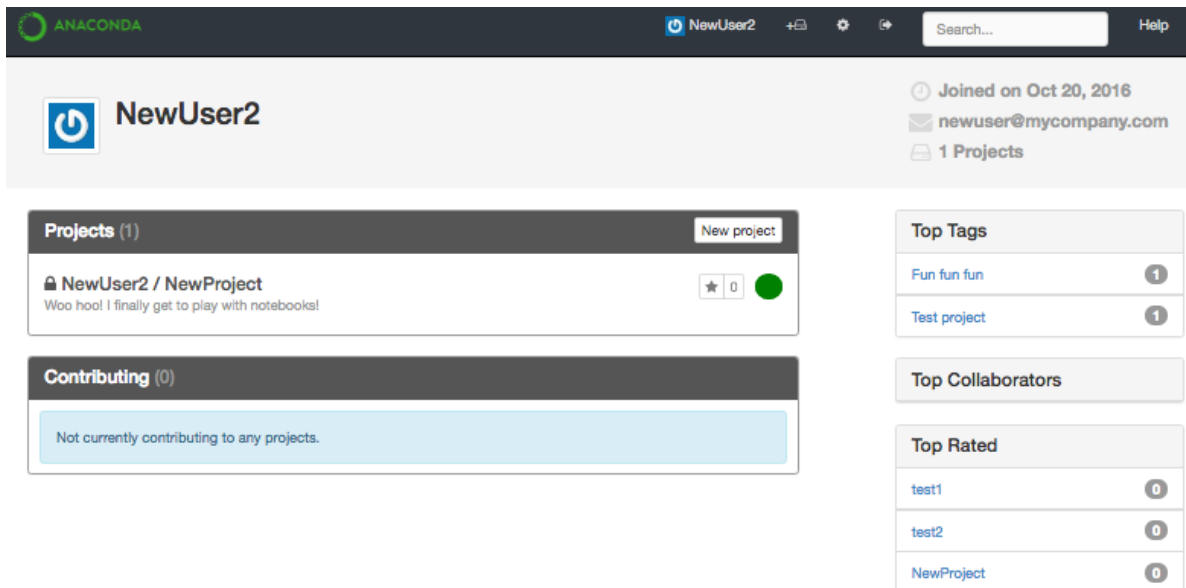
NOTE: Use the domain name and not the IP address when you connect to AEN. Using the IP address can cause TLS and security certificate errors.

2. Enter your AEN account username and password.

NOTE: Some administrators allow you to create your own account. If your administrator has allowed this, in the create a new account section, create your own username and password.

3. Click the Login button.

Your user home page, where all good things happen, is displayed:



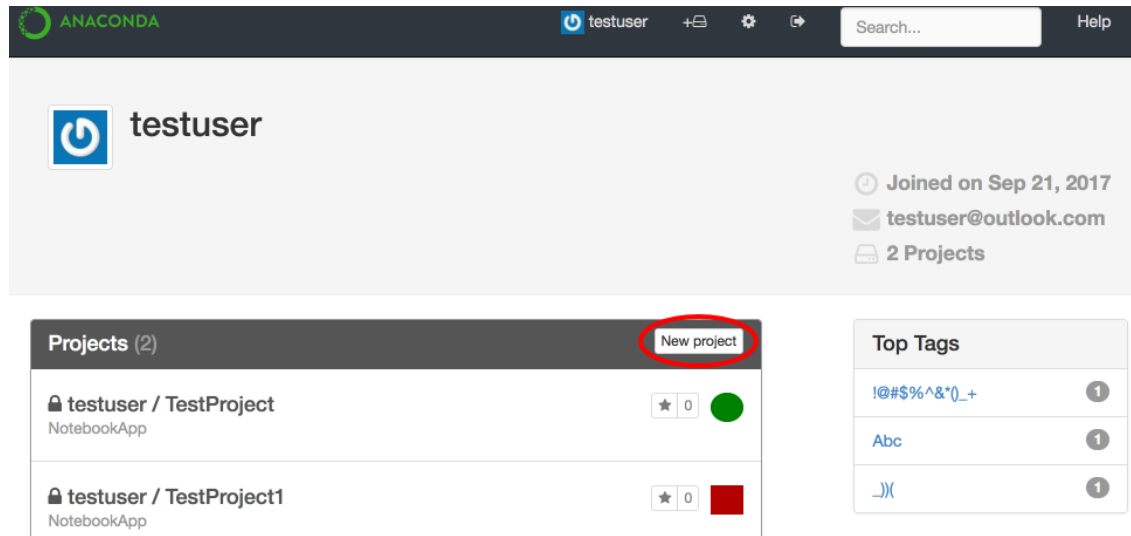
### 3. Create a new project

1. There are 2 ways to create a new project in AEN:

- On the right side of the AEN task bar, click on the New Project icon:



- On your home page, click the New project button:



2. On the Project page that is displayed, type a name for your project, such as “Testing.”

**Project Name**

Project names must start with a letter and contain only alphanumeric characters.

**Summary**

☐ **Public**  
Anyone can see this project. Collaborators have write access

☒ **Private**  
No one can see this project except collaborators.

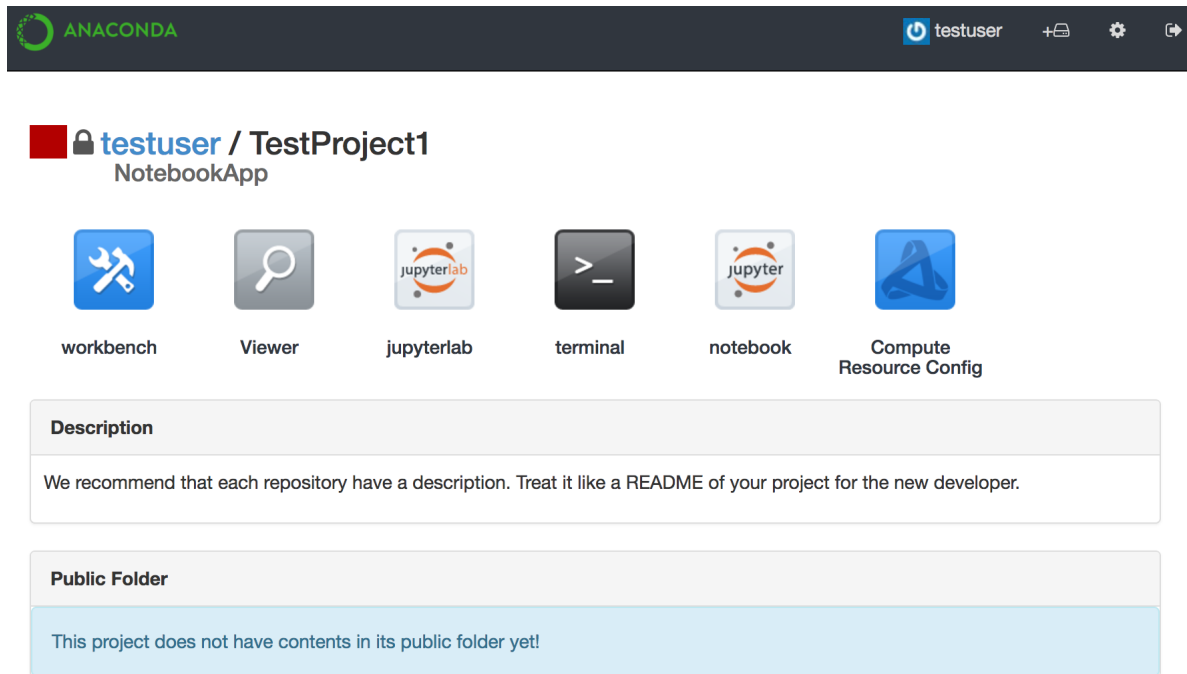
**Next**

3. Type a summary of the project so you can recognize it later.
4. Select whether your project will be public or private.
5. Verify that the default data center is selected.

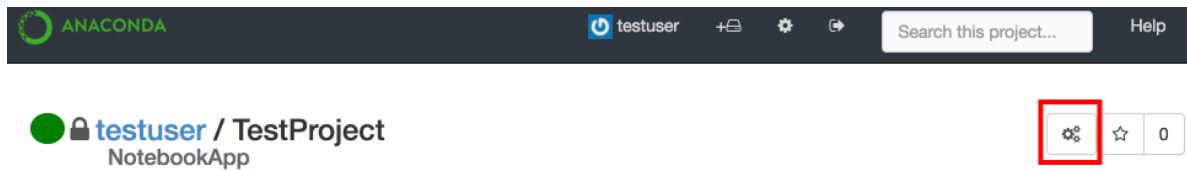
**TIP:** You can update the project summary and description at any time from the **Project** menu in the Project Settings. To return to your project at any time, click the project name.

6. Click the Next button.

Your new project’s home page is displayed:



7. To change the project settings, click the Project Settings icon on at the top right.



8. Modify the summary or add a description of the project.

TIP: A project description is recommended, and may be written in Markdown syntax (plain text valid Markdown).

To see how Markdown will be displayed, in the description area, click the **Preview** tab.

#### 4. Add collaborators

You can add team members to your project as collaborators. Adding team members to your projects makes collaboration easy because they have full access to the project's applications, files and services.

When you add team members, their home directory is mounted in the project. There is no need to download and email data or scripts—team members can work on the same files in the same environment in which you are working.

To add collaborators to your project:

1. From your project home page, in the Team box, begin typing a teammate's username.
2. In the list that is displayed, select the teammate's username.
3. Click the Add button.

1. Repeat these steps for each team member you want to add as a collaborator.

TIP: You can add or remove team members any time from the **Team** menu in Project Settings. You can also modify a team member's read, write or execute permissions at any time from the *Using Workbench*.

### 5a. Open an example notebook, OR

1. From your project home page, click the Jupyter Notebooks icon.
2. On the File View page, click the Examples folder.

3. Select any of the example notebooks.
4. To see the default results of the formulas used in the displayed notebook, in the **Cell** menu, select Run All.
5. To experiment with changing the notebook, edit any of the formulas in the notebook.
6. In the **Cell** menu, select Run All.

Any differences resulting from your edits are displayed.

## 5b. Create a new environment and notebook

If you are already familiar with creating notebooks, you can easily set up a new environment with the programs you need—like SciPy and NumPy—then open a new notebook and make your edits.

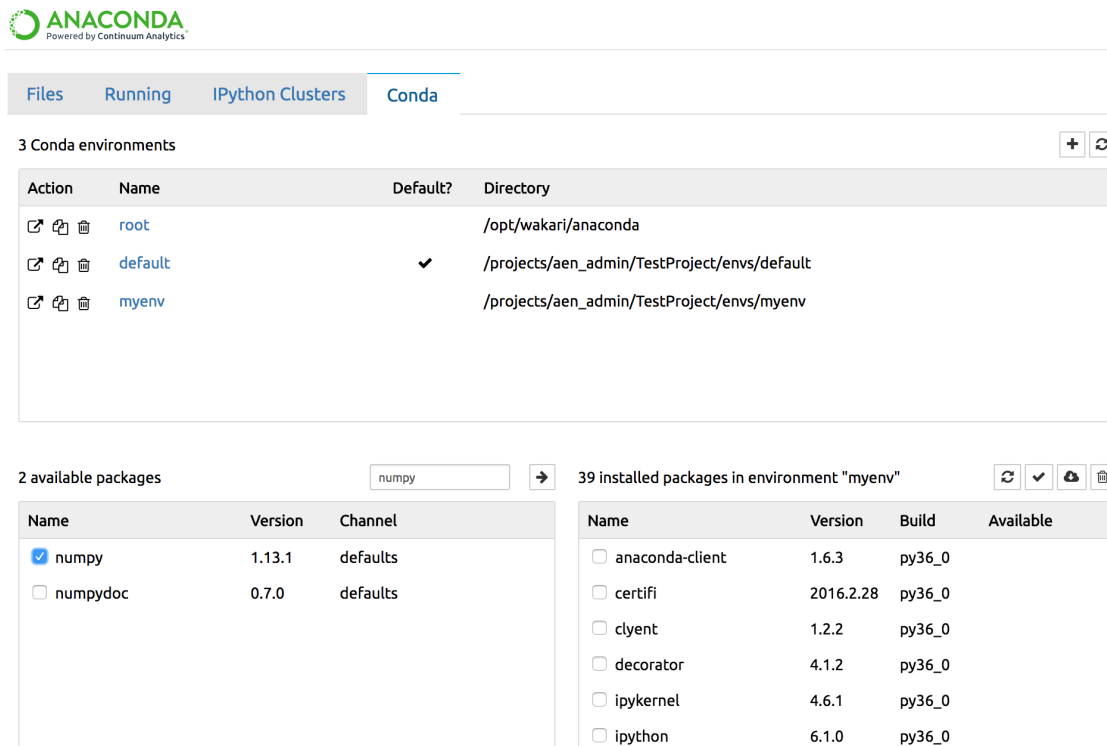
To create a new environment:

1. From your project home page, click the Jupyter Notebooks icon.
2. On the File View page, click the **Conda** tab.
3. To add a new conda environment, on the top right of the **Conda** tab, click the + icon.
4. Type a name for your environment.
5. Select Python 2, Python 3 or R language kernel.
6. Click the Create button.
7. To activate your new environment, click its name.

The packages that are available and installed in your new environment are displayed.

### Adding SciPy and Numpy packages

1. In the available packages section, search for the package name `numpy`—all lower case.
2. In the results section, next to `numpy`, select the checkbox.



The screenshot shows the Anaconda web interface. At the top is the Anaconda logo with the tagline "Powered by Continuum Analytics". Below it are tabs for "Files", "Running", "IPython Clusters", and "Conda". The "Conda" tab is active, showing "3 Conda environments".

Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default
	myenv		/projects/aen_admin/TestProject/envs/myenv

Below the environments table, there are two sections. The first is "2 available packages" with a search bar containing "numpy". It shows a list of packages:

Name	Version	Channel
<input checked="" type="checkbox"/> numpy	1.13.1	defaults
<input type="checkbox"/> numpydoc	0.7.0	defaults

The second section is "39 installed packages in environment 'myenv'". It shows a list of installed packages:

Name	Version	Build	Available
<input type="checkbox"/> anaconda-client	1.6.3	py36_0	
<input type="checkbox"/> certifi	2016.2.28	py36_0	
<input type="checkbox"/> clyent	1.2.2	py36_0	
<input type="checkbox"/> decorator	4.1.2	py36_0	
<input type="checkbox"/> ipykernel	4.6.1	py36_0	
<input type="checkbox"/> ipython	6.1.0	py36_0	

1. Click the Install icon.
2. To confirm your installation, click the Install button.

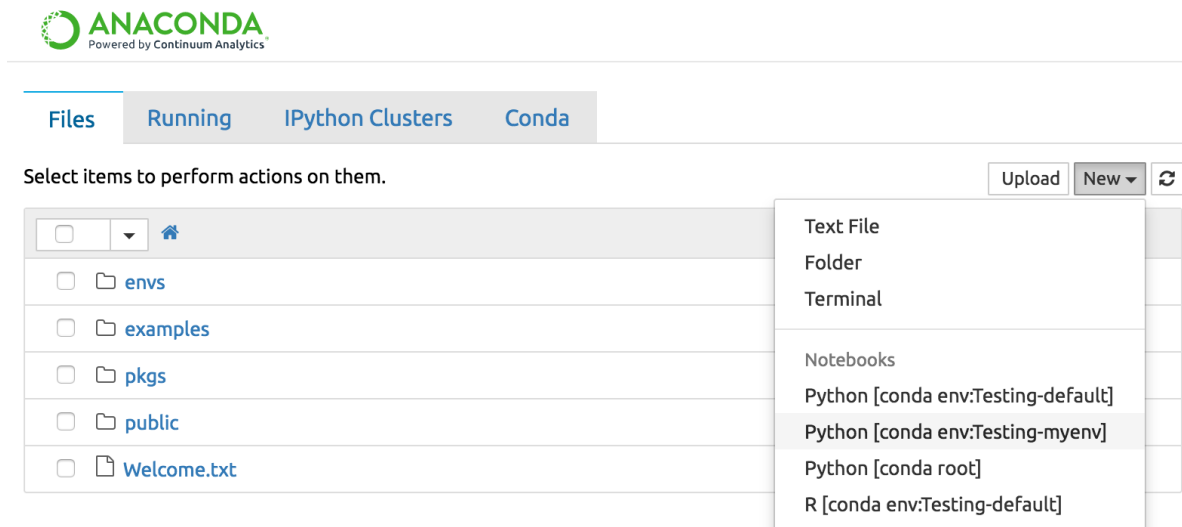
Numpy is displayed in the installed packages section—if not, click the Refresh button. Repeat these steps to install the Scipy package—searching for `scipy` in step 1.



TIP: You can return to this screen at any time to add additional packages to this environment.

## Creating a new notebook in your environment

1. From the AEN homepage, click the **Files** tab.
2. On the top right of the **Files** tab, click the New button.
3. Under Notebooks, select the Python environment with the name you entered while *creating a new environment*.



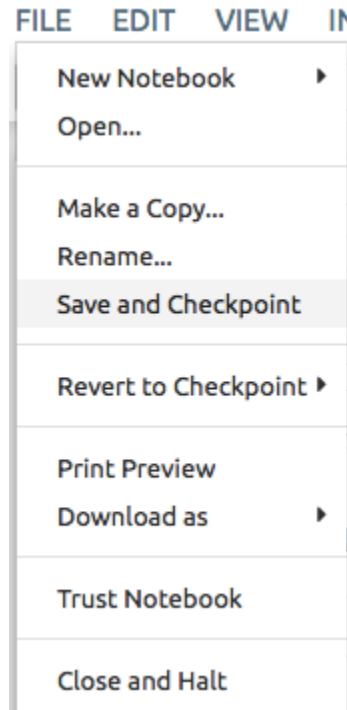
NOTE: If you do not see your new environment listed under Notebooks, next to the New button, click the Refresh button.

A new locked notebook is displayed. Paste or write some code to execute when you are ready.

## 6. Create checkpoints for version control

Whether you are exploring an existing notebook, or creating a new one, you can easily create checkpoints, return to an earlier version, compare two different versions and save them for reference.

To create a checkpoint, in the **File** menu, select Save and Checkpoint:



To revert your notebook to a previous checkpoint, in the **File** menu, select Revert to Checkpoint.

NOTE: For more information about revision control features, including creating commits and comparing differences, see *Using the Revision Control Mechanism extension*.

## 7. Share your notebook and environment with others

See *Sharing projects and notebooks*.

## 8. See what to do next

Now that you have completed the Getting Started guide, you are ready to move on to *basic tasks* and *advanced tasks*.

## Basic tasks

This section contains information and tasks that use the web browser to manage projects and is best-suited for any beginning AEN user:

### Working with projects

Almost everything in AEN starts by opening an existing project or creating a new one.

After that, you can set up a special environment with the packages you want, set their access permissions and modify your project settings.

### Searching for a project or file

To search for projects and files, use the Search box in the AEN navigation bar. The search provides different results depending on which page you search from:

- On a project home page, search results include any files that match your search criteria within the current project.
- On any other AEN page, search results include any files that match your search criteria within all projects.

**TIP:** Your search results include only files and projects that you can view: public projects, and private projects to which you have a minimum of view access.

### Types of files searched

The following types of files are included in search results:

- `.py`—Python source files.
- `.ipynb`—IPython/Jupyter notebooks.
- `.txt`—plain text files.
- `.md`—Markdown files.

### Search indexing

Files that are modified while a project is running are automatically re-indexed shortly after the files are modified. If you create or update a large number of files—such as cloning a git repository or copying a directory—search results may take several minutes to update.

Files that are modified while the project is not running are re-indexed only after the project is started.

## Using search constructs

You can use the following search constructs:

- Ordinary words will match the full-text contents of any file.
- Wildcards are permitted.  
EXAMPLE: `John*` will match John and Johnny. These are glob patterns and are similar to their usage in the command line.
- Combine queries using AND or OR, and group them using parentheses ().

Regular expression patterns can be embedded in the query string by wrapping them in forward-slashes (/):

```
name:/joh?n(ath[oa]n)/
```

The supported regular expression syntax is explained in [the Elasticsearch reference](#).

NOTE: Wildcards apply inside a regular expression. A query string such as `/.*n/` would force the search to visit every term in the index.

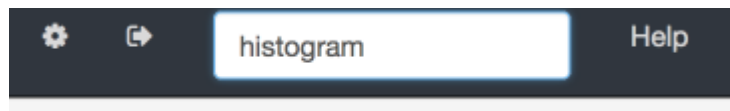
## Searching metadata fields

You can search in specific metadata fields:

- `imports:name`—matches files that import the module name.
- `uses:name`—matches files that reference the identifier name. Referenced names include any functions and globals imported from other modules, as well as the names of any methods invoked on any object.
- `defines:name`—matches files that define the identifier name. Defined names include functions defined at global scope, class names, and method names within classes.
- `acl:user`—matches files in which the named user has read access or higher.

## Searching a project

1. In the Search box, type a string of text:







TIP: Search by glob patterns, which are similar to file matching in the command line.


EXAMPLE: To find projects in the test family that are numbered from 00 to 99, search for `Test-??`. To find all projects whose name ends with “Stats,” search for `*Stats`.




2. Press Enter.
3. In the search results, click the plus + icon above a project name to show a list of matching files in the selected project:


Projects matching 'iris' ([save this search](#))







 **testuser / TestProject**  
NotebookApp  0 







 **AnacondaEN / AEN11\_0**  
No Summary  0 






 **Rida / ABC**  
No Summary  0 



 **Rida / Testing**  
No Summary  0 



 **testuser / TestProject1**  
NotebookApp  0 

TIP: Click the project name to open the project's home page.

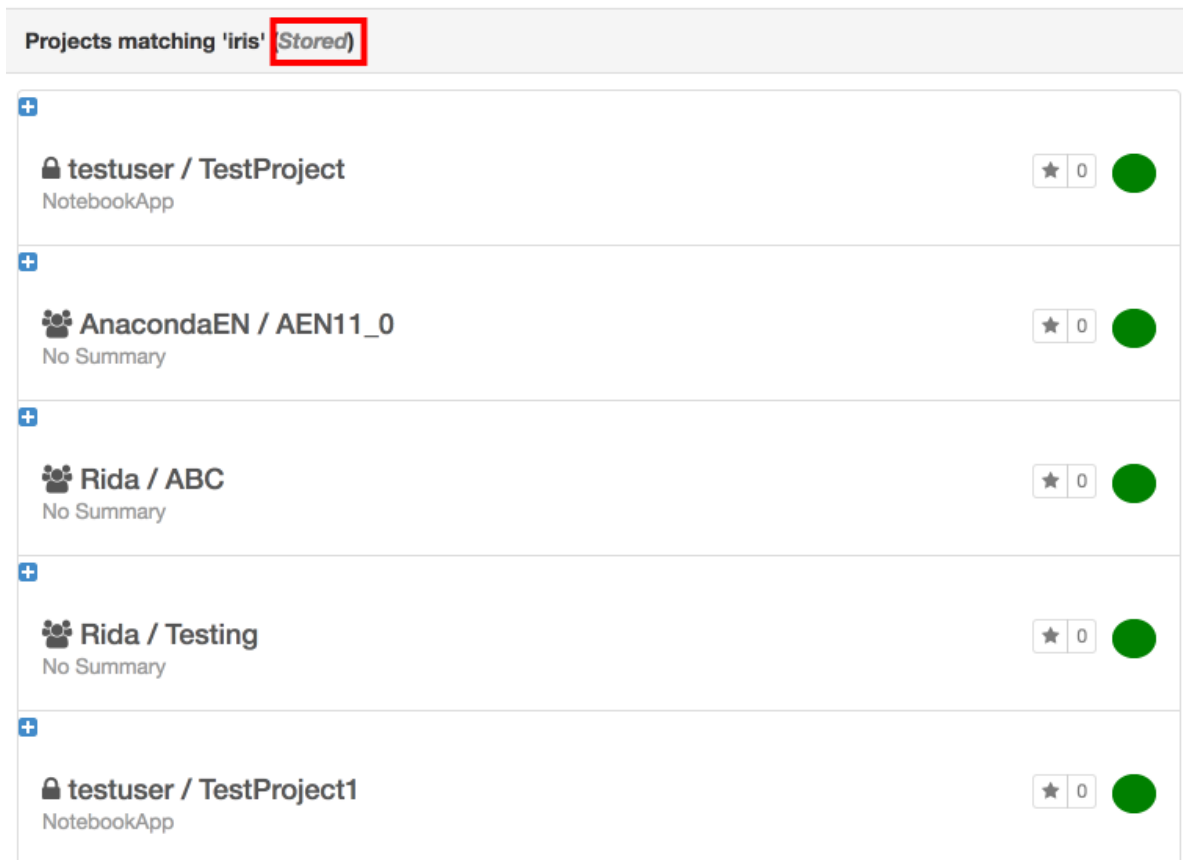
4. To view a file, click its file name in the matching files list:

Found 1 files matching 'histogram' in user02/Public\_project. ([save this search](#))

File	Relevance
<a href="#">/examples/histograms.ipynb</a>	42

## Saving a search

1. At the top of the search results, click Save this search:



The “save this search” text changes to “stored” and your search is saved. Your saved searches are listed on your home page.

## Removing a saved search

On your home page, in the Saved searches section, click X next the saved search that you want to remove:

Projects (2)

New project

testuser / TestProject

NotebookApp

★ 0

testuser / TestProject1

NotebookApp

★ 0

Contributing (0)

Not currently contributing to any projects.

Top Tags

!@#\$\$%^&*()_+.	1
Abc	1
_))((	1

Top Collaborators

aen_admin	1
-----------	---

Top Rated

Project	1
Testing	0
AEN11_0	0
ABC	0
TestProject	0

Saved searches

iris	✕
------	---

## Adding and removing team members on a project

1. On the project home page, click the Project Settings icon to open the Project Settings page.

ANACONDA

testuser

+

⚙

↗

Search this project...

Help

testuser / TestProject

NotebookApp

⚙ ☆ 0

2. In the **Settings** menu, select Team.

## Adding a team member

1. In the username box, type in the first few letters of the username for the team member you want to add to the project.
2. In the list of usernames that displays, click the user to add.
3. Click the Add button.

### Removing a team member

Click the red Remove link next to the name of the user you want to remove from the project.

### Controlling access to your project

#### Controlling team member access

By default, all of the team members on a project have read and write access permissions for all project assets.

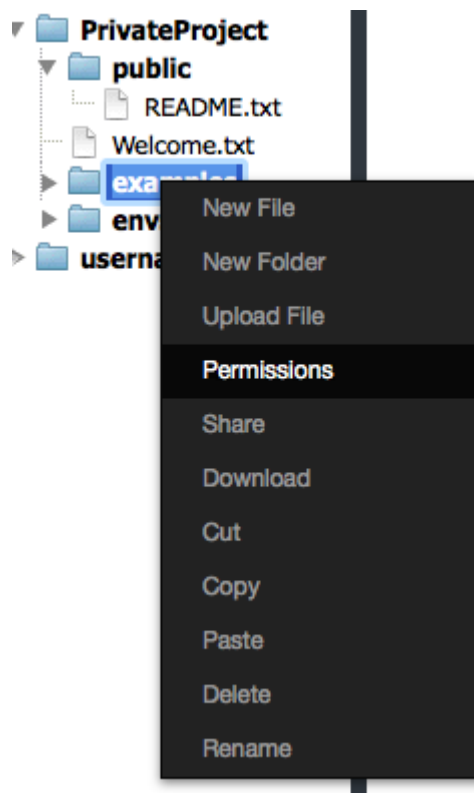
The available permissions are read, write and execute. If you remove all individual or group permissions for a project asset, team members will not be able to access that asset.

To change a project's permissions:

1. Open the project's home page.
2. Click the Workbench icon.
3. In the Workbench app, right-click the file or folder you want to limit access to.

NOTE: When you change a folder's permissions, the permissions of files and folders inside it do not change. You may change the permissions of those files and folders manually.

4. In the menu that displays, select Permissions:



A list of owners and team members who have access to your project is displayed.

5. Find the team member you want to change access for:



Permissions for examples

Owner 
Group

Who	Type	Read	Write	Execute
owner		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
group		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
others		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Mask		true	true	true
<input type="text" value="username"/>	User <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username"/>	Group <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	User <input type="button" value="v"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	Group <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	User <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	Group <input type="button" value="v"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

- Next to the team member's name, select or deselect the permissions for that user.

NOTE: You can add a team member and set their access at the same time by typing their name in a username box, setting their permissions, and then clicking the Add button.

- Click the Submit button.

The selected permissions are added, and the deselected permissions are removed.

NOTE: If a team member is in the Workbench application when you give them access, they must refresh their browser window to see their current permissions.

### Controlling non-team member access

You can choose to grant file or folder access to someone who is not part of the project team, as long as that person has an AEN account.

Sharing with individuals outside the team is a four step process:

- Copy or move the file or folder to your home directory.*
- Give the user read and execute access to your home directory.*
- Add the user to the file's permissions.*

4. *Have the user add your directory to their workbench.*

### Copying a file or folder to your home directory

Your home directory is displayed at the bottom of the File Manager pane in the Workbench.

To protect the other files and folders in your home directory—those you are not providing permissions to a user to access—we recommended that you:

1. Create a sub-folder.
2. Rename the folder with the name of the user you are granting access to.
3. Copy or move the file you want to grant permissions for to the renamed folder.

The file is copied or moved to the new location and is ready for you to update the file permissions.

### Granting file access

You must select read and execute access for a user to be able to view, but not edit, the files or folders.

1. Right-click the name of the file or folder you are granting access to.
2. In the menu that is displayed, select Permissions.
3. Click the Add button.
4. Type the username of the user to whom you are granting file access and press Enter.

**TIP:** If you grant access to a folder instead of a specific file, you only have to set permissions the first time you share the folder with each user, unless you need to update the permissions.

### Adding file permissions for a user

Once a user is included in your Permissions list, you must *add the correct permissions* for the user, in the same way as you would for a team member.

Once complete, depending on the access granted, the user will be able to view, read, change, and execute the file.

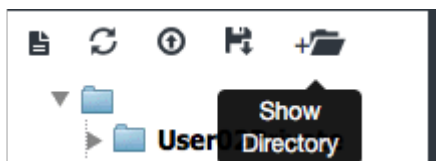
**NOTE:** If you change permissions for a folder instead of a file, the user will be able to see and access any files within that folder.

### Adding a directory to a user's workbench

The user can now add your home directory to their Workbench File Manager.

To add your home directory to another user's workbench, have the other user follow these steps:

1. Click the Show Directory button at the top of the Workbench File Manager:



The Show Directories dialog box displays.

- In the text box, type `/home/[yourusername]`.

NOTE: Replace `[yourusername]` with your AEN username.

### Show Directories



Enter the full path to an existing directory that you would like to see in the file browser. For example, if the project node has a directory with a path of `/data/2010` that contains data files from 2010 that you want to browse, enter `/data/2010` and click on the Show button.

- Click the Show button.
- Verify that the folder is now displayed below the text box:

### Show Directories

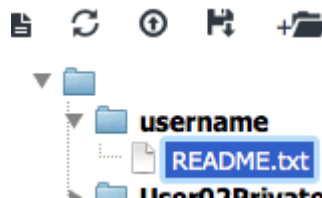


Enter the full path to an existing directory that you would like to see in the file browser. For example, if the project node has a directory with a path of `/data/2010` that contains data files from 2010 that you want to browse, enter `/data/2010` and click on the Show button.


- Close the Show Directories dialog box by clicking the X in the upper-right corner or by clicking anywhere outside the box.
- Click the Refresh button.

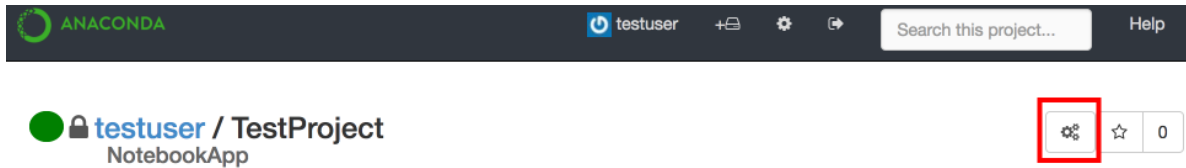
The shared file is displayed in the File Manager:



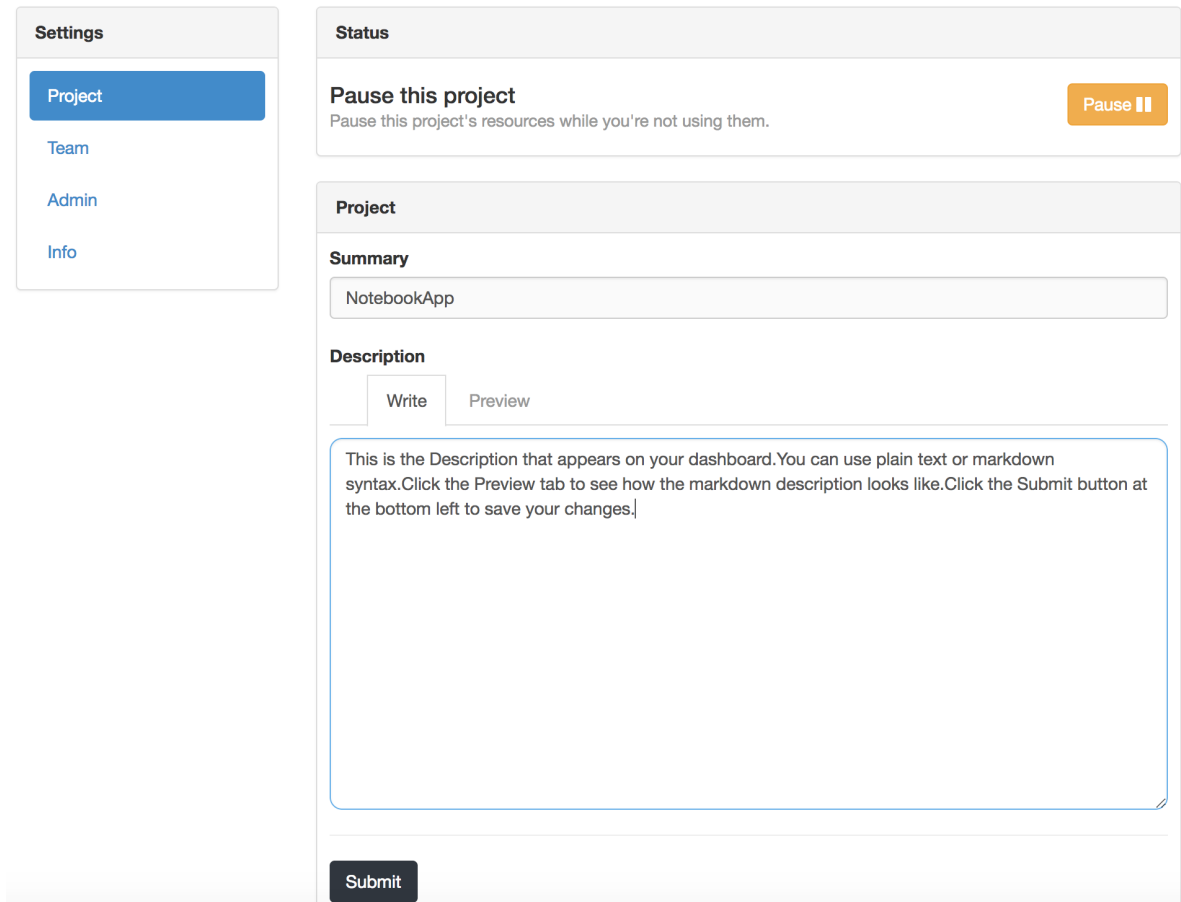
## Starting and stopping a project

TIP: Stopping a project stops all the applications launched for that project that use resources when running, such as memory and compute cycles. It is best to stop projects when they are not in use.

1. On the project home page, click the Project Settings icon to open the Project Settings page.



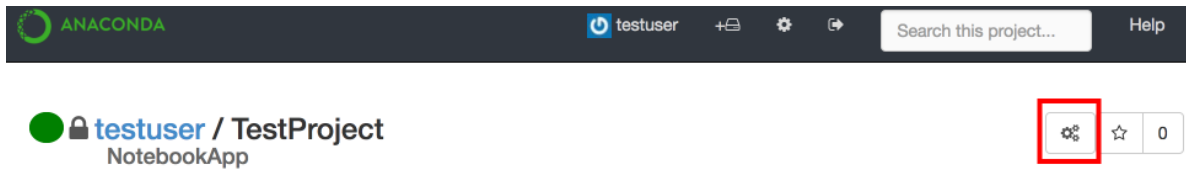
2. In the **Settings** menu, select Project.



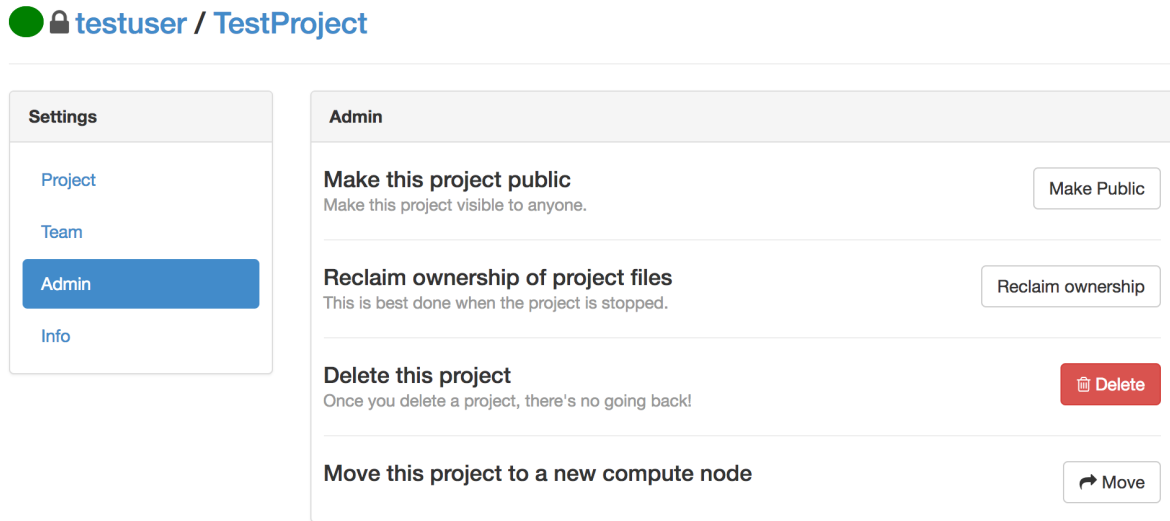
3. In the Status section, click the Start or Stop button to toggle between manually starting and stopping your project.

## Making a project public or private

1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Admin.



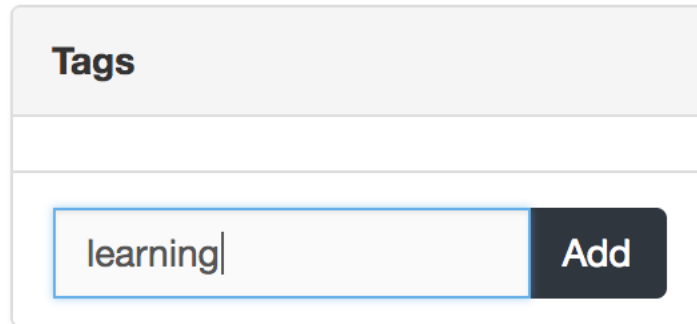
3. Click the Make Public button.
4. If the project is already public and you want to make it private, click the Make Private button.

## Tagging a project

Existing tags assigned to a project are listed in the Tags section on the project's home page.

## Adding a tag

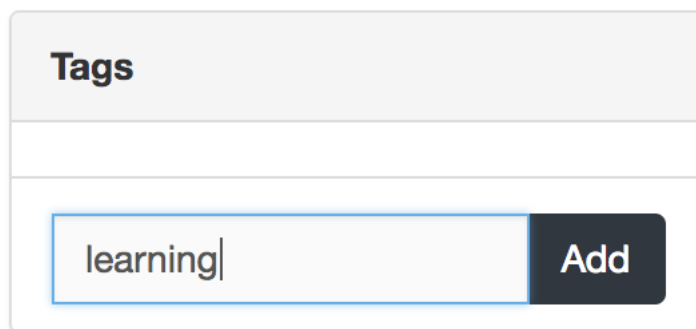
1. In the Tags box, type the name of the tag you want to add:



A screenshot of a web interface showing a 'Tags' section. It features a text input field containing the word 'learning' and a dark 'Add' button to its right.

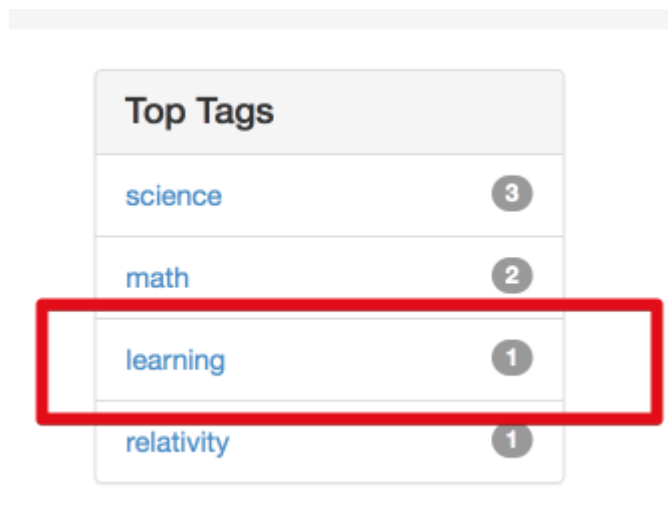
2. Click the Add button.

The new tag is added to the Tags list:



A second screenshot of the 'Tags' section, identical to the first, showing the 'learning' tag in the input field and the 'Add' button.

If the tag was not already in the Top Tags list on your user home page, it is added. If the tag was already listed because another project used it, the number next to the tag is incremented:

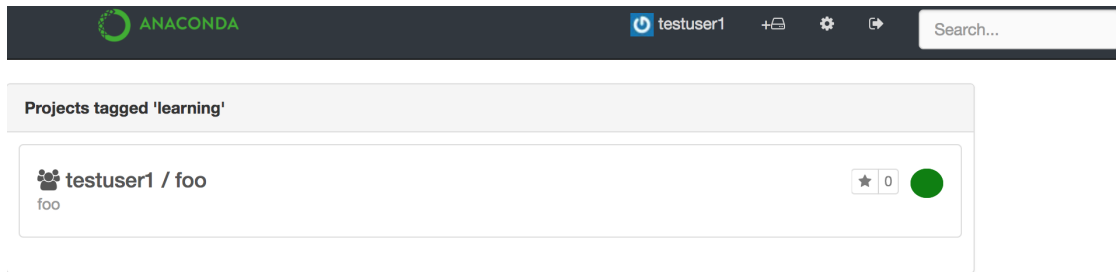


A screenshot of a 'Top Tags' list. The list contains four items: 'science' with a count of 3, 'math' with a count of 2, 'learning' with a count of 1, and 'relativity' with a count of 1. The 'learning' row is highlighted with a red rectangular box.

Top Tags	
science	3
math	2
learning	1
relativity	1

## Removing a tag

1. On your user home page, in the Top Tags list, click the tag name.



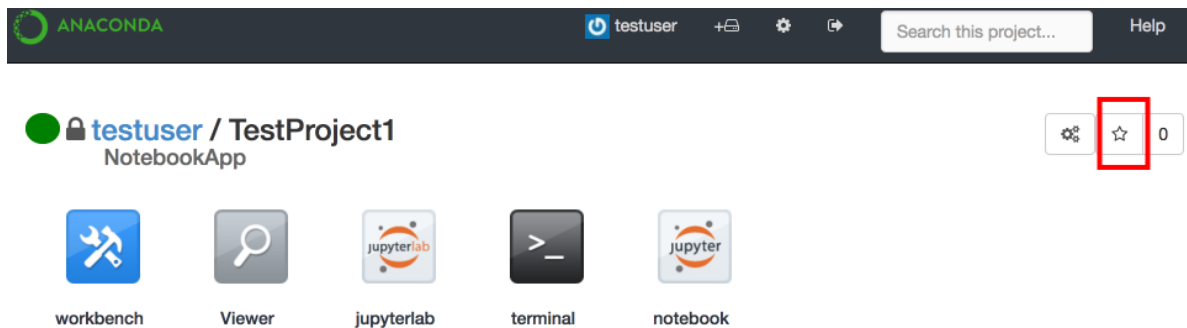
1. In the Tags list, click the X button next to tag name.

## Starring a project (rating)

Starring a project makes it appear on your user home page in the Top Rated list.

Adding or removing stars for a project does not affect the stars added by other users.

1. Open the project that you want to star.
2. On the project home page, click the Star icon at the upper right:

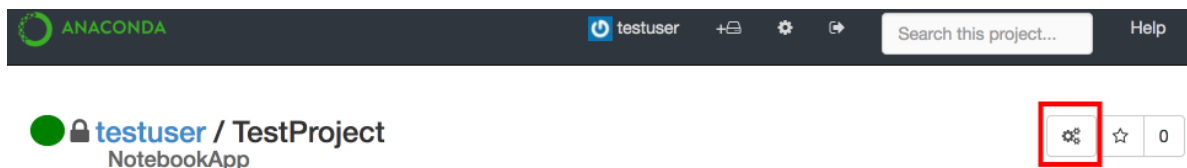


3. To unstar a project, click the Star icon again.

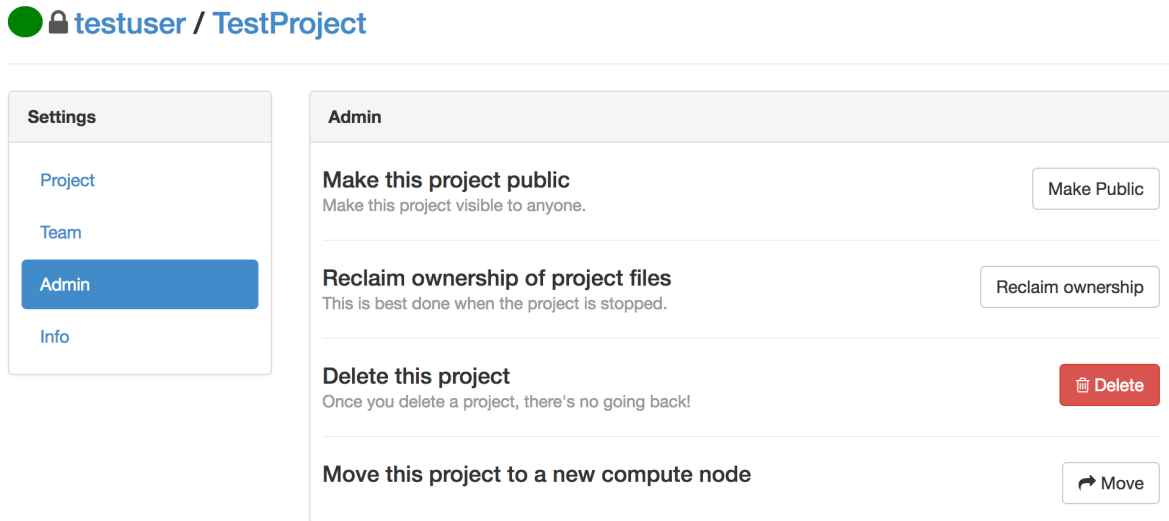
## Claim ownership of a project

When you claim ownership of a project, ownership of all files and folders created by the team members on the project is transferred to you. Project files and folders are copied and renamed.

1. *Stop the project* to prevent team members from making changes while you are changing ownership.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



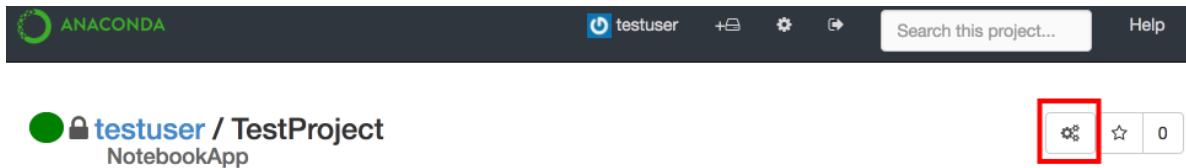
3. In the **Settings** menu, select Admin.



4. Click the Reclaim ownership button.

## Changing a project's summary or description

1. On the project home page, click the Project Settings icon to open the Project Settings page.



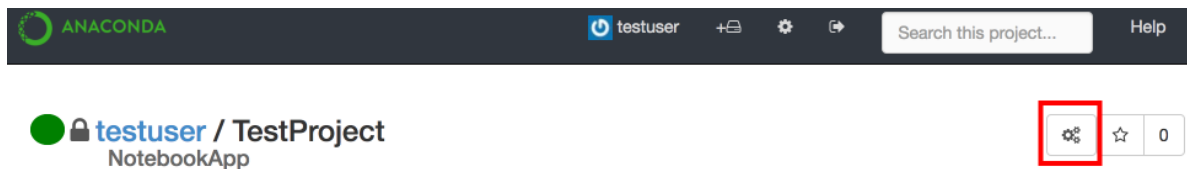
2. In the **Settings** menu, select Project.



3. Update your project's summary using plain text or its description using Markdown syntax.
4. Click the **Preview** tab to see a preview of the Markdown description.
5. Click the Submit button.

### Viewing a project's status

1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Info.

 **testuser** / **TestProject**

**Settings**

[Project](#)  
[Team](#)  
[Admin](#)  
**Info**

**Info**

**Status**  
running  
**Created**  
Mon Sep 25 20:43:56 2017  
**Last Heartbeat**  
Mon Sep 25 20:43:56 2017

**Data Center**

**Name**  
Gateway  
**Provider**  
Enterprise Resources  
**Summary**  
Gateway

On the Info page, you can see:

- Whether the project is currently running or stopped.
- When the project was created.
- When the project was last accessed.
- The data center in which the project is running.

## Viewing related projects

Related projects are listed on a project's home page.

Team

Add

user02 (owner)

user01 (remove)

Related Projects

user01 / TestProject2

No Summary

user02 / User02Private

No Summary

user01 / TestProject

No Summary

These are projects that contain fields that are most similar to the current project.

TIP: You will only see projects to which you have been granted access: public projects, and private projects on which you are a team member.

### How related projects are identified

To determine which projects should be listed in Related Projects:

1. The recommendation engine scans the current project's files and weights the terms found to determine which of them to use for the likeness search.
2. The engine performs a search, with extra weight given to the "uses" and "imports" keywords.
3. The engine finds the files and projects that are most similar to the current project and scores the results.
4. The top-scoring matches are displayed in Related Projects. Only public projects and private projects to which you have access are included.

## Viewing top-rated projects

Top-rated projects are listed on your home page:

Top Rated	
einstein	2
euler	1
laplace	1
plank	1
Public_project	1

The number next to a project represents the number of stars that have been given to that project.

Click a project name to view the project's home page.

## Using tags to find a project


The top tags used on your projects are listed on your home page:

ANACONDA

NewUser2

Search...

Help

 **NewUser2**

Joined on Oct 20, 2016  
newuser@mycompany.com  
1 Projects

Projects (1)

New project

NewUser2 / NewProject

Woo hoo! I finally get to play with notebooks!

★ 0

Contributing (0)

Not currently contributing to any projects.

Top Tags

Fun fun fun 1

Test project 1

Top Collaborators

Top Rated

test1 0









test2 0

NewProject 0

To list all projects that share a specific tag, click the tag name:

Top Tags	
science	4
math	2
learning	1
relativity	1

A list of projects with the selected tag is displayed:

Projects tagged 'science'	
 malev / euler euler	★ 1 
 malev / einstein einstein	★ 2 
 malev / plank quantum theory	★ 0 
 user01 / User01Private_2 No Summary	★ 0 

TIP: The list includes only projects that you have access to: public projects, and private projects on which you are a team member.

Click a project name to open the project's home page.

## Viewing your top collaborators

Your top collaborators are listed on your home page:

Top Collaborators	
trento	1
user01	1

These are the team members who have the most projects in common with you.

To view a collaborator's home page—where you can see all public projects and the private projects they have shared with you—click the collaborator's name.

### Sharing projects and notebooks

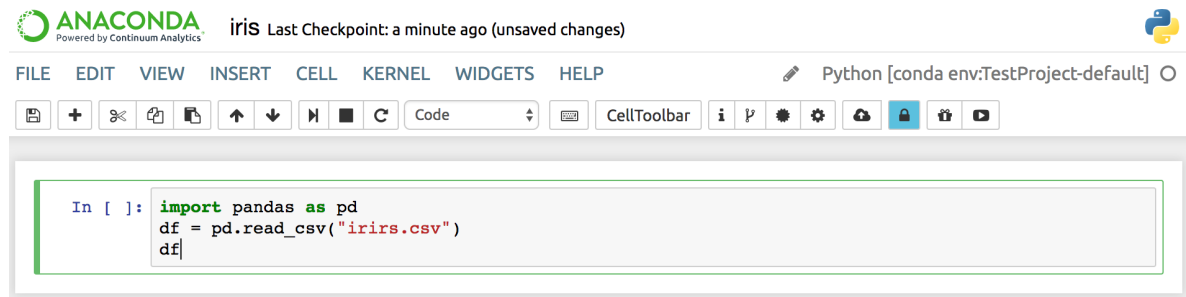
For information on sharing projects via the project settings and access control, see [Sharing projects](#).

To upload a Jupyter Notebook to Anaconda Repository:

1. Log in to Repository by running the `anaconda login` command or by using the login user interface provided by the [nbextension](#).

CAUTION: If you are not using a secure connection, we strongly recommended that you use the command line to log in.

2. To share your notebook environment, select the Attach conda environment checkbox. This ensures that your team members will have the right environment for your notebook.
3. Click the Upload button to upload your notebook to your local Repository or to [Anaconda.org](#), depending on how your administrator has set up AEN:



NOTE: If you have not yet logged into Repository or Anaconda Cloud, or have not created an account, you will be asked to do so.

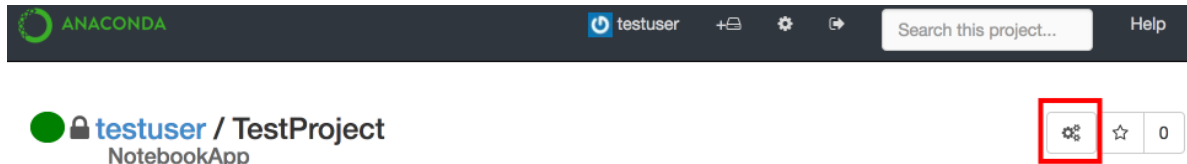
### Other ways to share a notebook

- Print—In the **File** menu, select Print.
- Download and share—In the **File** menu, select one of the following options:
  - Download as Notebook.
  - Download as Python.
  - Download as HTML.
  - Download as Markdown.
  - Download as ReStructured Text.
  - Download as PDF.
- Share and control team members' direct access to read, write and/or execute your notebook file or folder. For more information, see [Controlling access to your project](#).
- Share and control non-team members' file or folder access. For more information, see [Controlling access to your project](#).
- Create a presentation with [NBPresent 4.1](#).

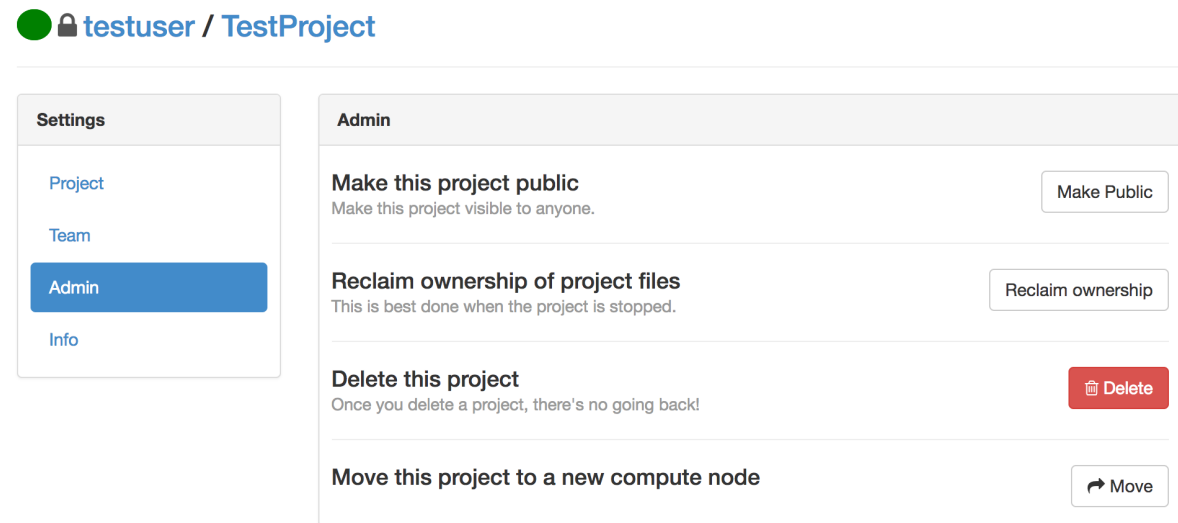
## Deleting a project

CAUTION: Deleting a project deletes all project files and information! There is no undo option.

1. Download a copy of any project files that you need to save.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



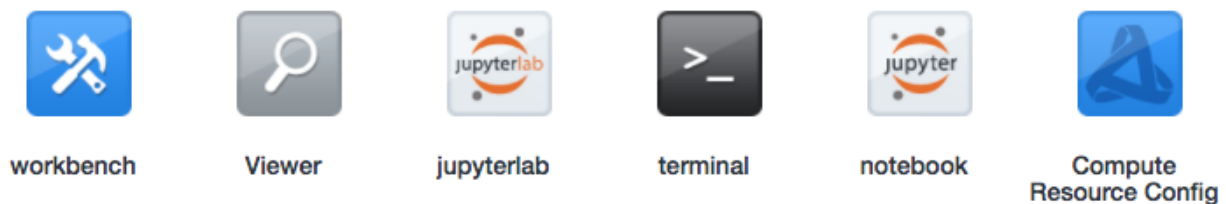
4. Click the Delete button.

## Using AEN applications

The applications in your project make it easy for you to interact with your files and data, manage your project's resources and to customize your AEN experience.

To use applications, log in to AEN, then select the project you want to work on or create a new project and open it.

On the project home page, the following application icons are displayed:



TIP: Each application opens in a new browser tab. You can run multiple applications at the same time in your project.

For more information on each AEN application, see:

- [Using Workbench](#)—File viewer and manager, including permissions settings.

- *Using Viewer*—View-only versions of notebooks and other text files.
- *Using JupyterLab*—Alpha preview of the next generation notebook.
- *Using Terminal*—Basic bash shell Terminal.
- *Using Jupyter Notebook*—Jupyter Notebooks with extensions.
- *Using Compute Resource Configuration*—Project information, view and manage applications.

## Using Workbench

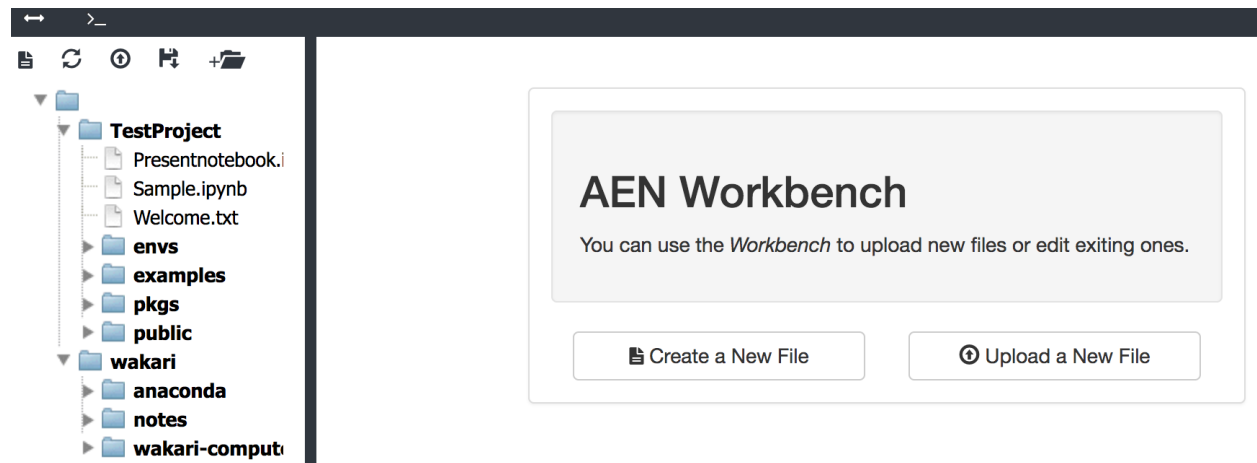
Workbench is a file viewer and manager that includes a file editor and file permissions manager.

You can use Workbench to:

- Upload and download files using the *File Manager*.
- Create new files and folders using the *File Manager*.
- Copy and move files to new locations using the *File Manager*.
- Rename files and/or folders using the *File Manager*.
- Manage the *access permissions* of team members.
- Grant or revoke *access to non-team members*.

Workbench also includes a simple Terminal application, which is convenient because the File Manager is always visible, making navigation simple.

When you first open Workbench, the File Manager is displayed in the left pane, and the Create a New File and Upload a New File buttons are in the right pane:



When you open a file or Workbench Terminal, it is displayed in the right pane. To make the Create or Upload a file options re-appear, refresh your browser window.

Two small icons are displayed in the black navigation bar at the top of the Workbench page. Hovering over them displays tool tips that describe their use:

- The Toggle icon displays or hides the File Manager.
- The Terminal icon opens a simple terminal window.



## Opening Workbench

To open Workbench:

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Workbench icon:



workbench

Workbench opens in a new browser window.

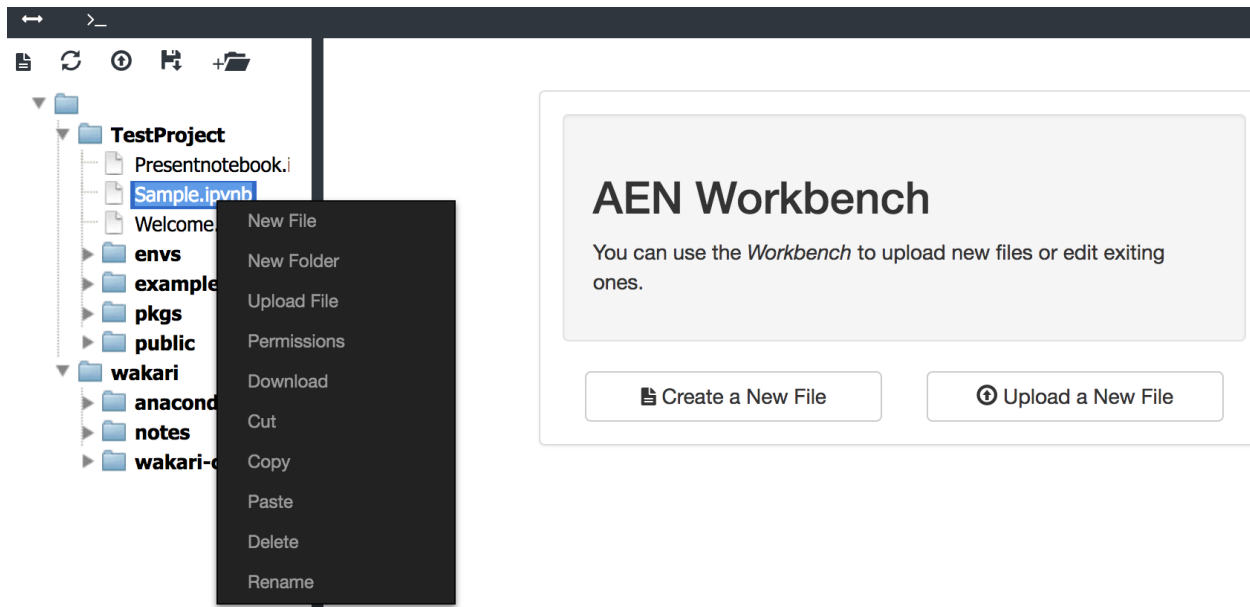
## Using File Manager

The File Manager is an intuitive way to interact with your files and folders.

## Using the options drop-down menu

To perform any of the actions described below:

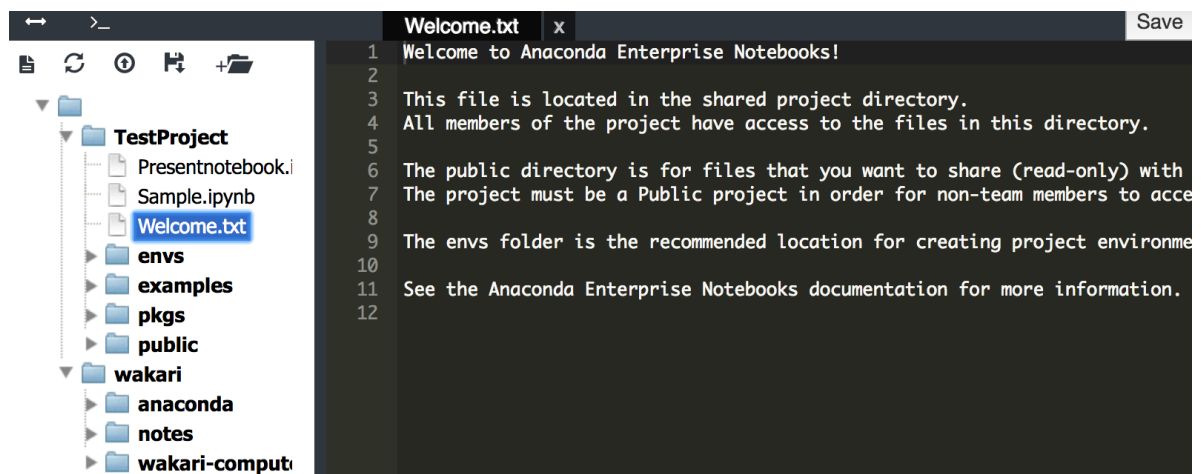
1. Right-click on any folder to display the options drop-down menu.
2. Select one of the following options:
  - New File—Create and edit a new file.
  - New Folder—Create a new folder.
  - Upload File—Upload a file to the selected folder. You can also drag a file to the folder.
  - Permissions—*Control access to files and folders.*
  - Cut—Cut the selected file or folder.
  - Copy—Copy the selected file or folder.
  - Paste—Paste a previously cut or copied file or folder.
  - Delete—Delete the highlighted file or folder.
  - Rename—Rename the highlighted file or folder.



## Editing files using the File Editor

1. Double-click any text file in the File Manager.

The File Editor opens in the right pane:

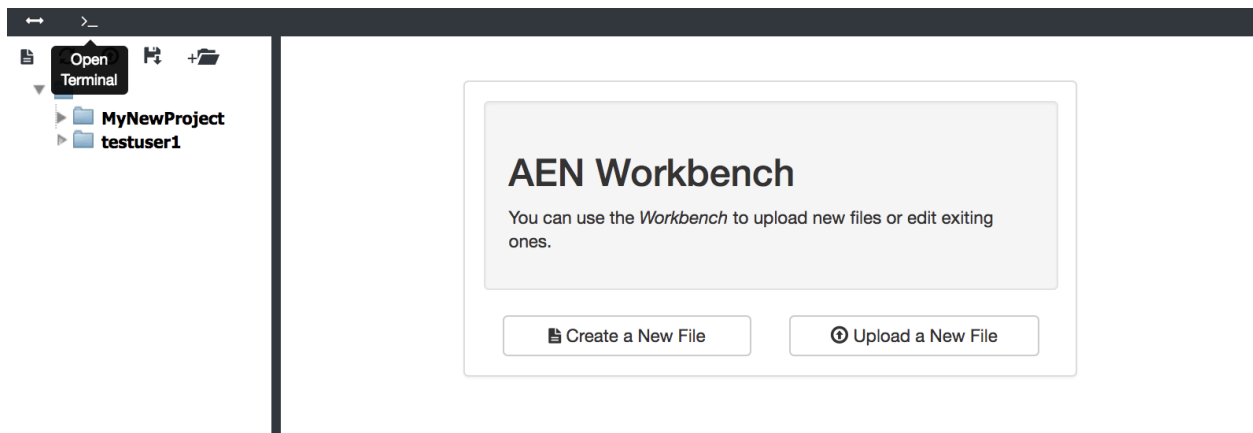


2. When you finish editing the file, click the Save button.

NOTE: To close the file without saving, click the X at the top of the page under the file name.

## Opening the Workbench terminal

In the navigation bar, click the Open terminal icon:



A Terminal—bash shell—is displayed in the right pane.

**TIP:** You can open additional terminals by clicking the Open terminal icon again, or by clicking the Plus + icon at the top of an open terminal.

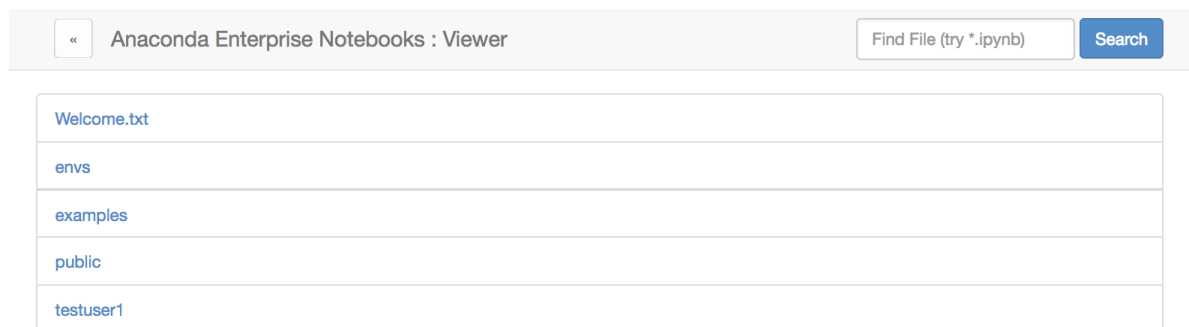
To move between terminal windows, click the **Terminal** tab in the navigation bar, then select the number of the terminal window you want to work in.

## Using Viewer

The Viewer application displays a static, view-only version of your notebooks and other text files by rendering the text files directly and using the NBConvert tool to convert notebooks to static HTML.

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Viewer icon.

Viewer opens in a new browser window:



4. Click any folder to view its contents, or click any filename to view the file.
5. To search for a file or folder name, type text in the Find File box, then press the Enter key. This is not a full-text search, but wildcards are permitted.

## Using JupyterLab

JupyterLab is an early alpha-preview of the next generation of the Jupyter Notebook. It is included so that you can take a tour and play with its capabilities.

CAUTION: JupyterLab is experimental. It is not yet intended for production work.

JupyterLab does not include any of the notebook extensions that are available in the *Jupyter Notebook app*.

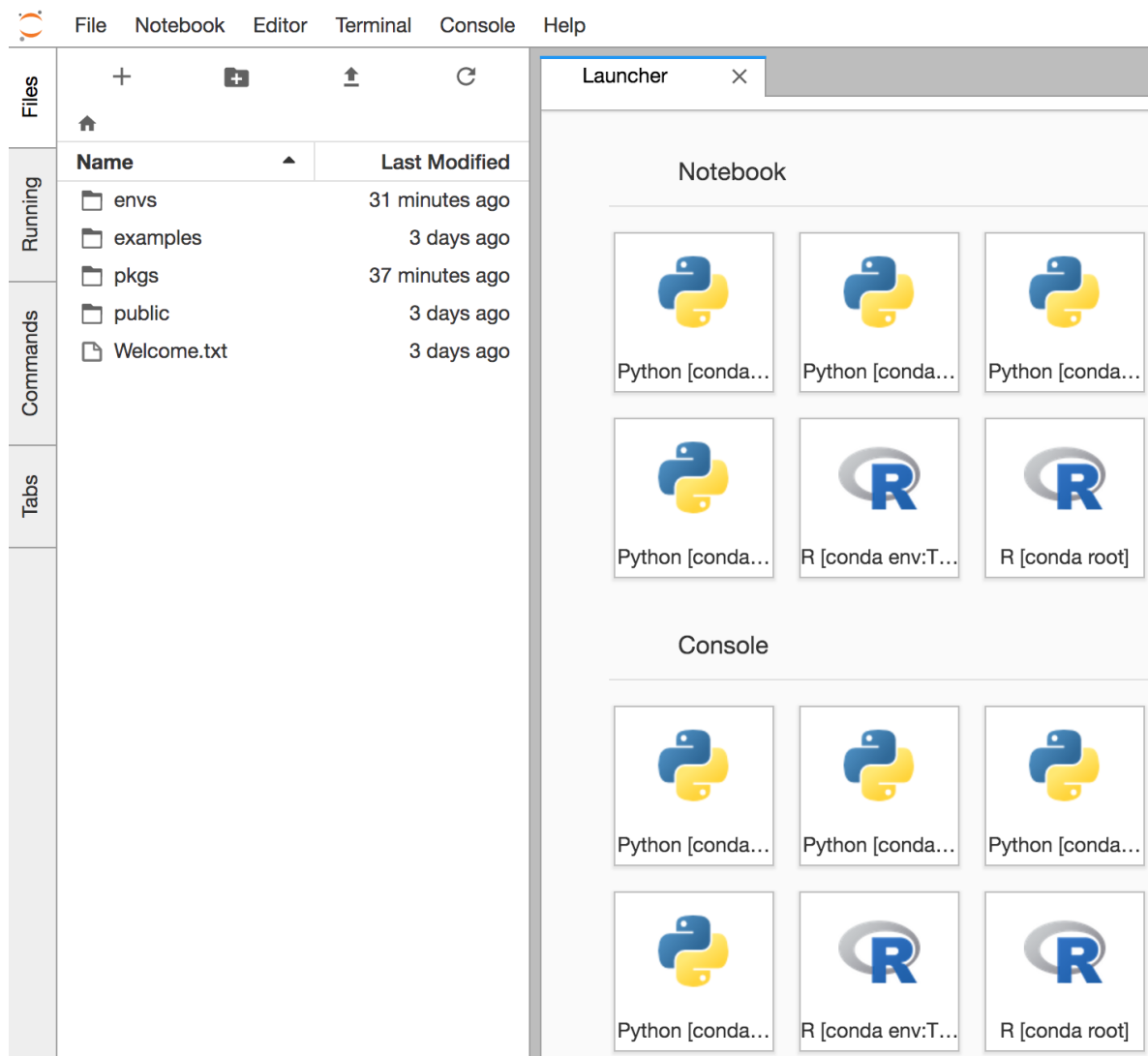
For more information about JupyterLab, see the [documentation](#).

You can also download and print a `Jupyter cheat sheet` on using Jupyter Notebook and the new JupyterLab.

To open JupyterLab:

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click on the JupyterLab icon.

JupyterLab opens in a new browser window:



Experiment with the application on your own, using the **Notebook**, **Editor**, **Terminal** and **Console** menus.

To review a guided tour of all of the features JupyterLab will contain when it is ready for production, click the Take a tour link in the right pane.

## Using Terminal

The Terminal application is a simple bash shell terminal that runs in your browser:

```
+ 1 bash
(/projects/aen_admin/TestProject/envs/default) ls
envs examples pkgs Presentnotebook.ipynb public Sample.ipynb Welcome
(/projects/aen_admin/TestProject/envs/default) █
```

Using Terminal, you can:

- Access your home directory and your project drive.
- Open multiple shells within one instance of Terminal.
- Open multiple instances of Terminal in the same browser window.

1. Log in to AEN.
2. Select a project you want to work on, or create a new project and open it.
3. On the project home page, click the Terminal icon:



Terminal

Terminal opens the project directory in a new browser window.

By default, the project directory is `/projects/username/project-name`.

EXAMPLE: `/projects/TestUser/MyFirstNotebook`

4. To see the physical path of your directory, run the Print Working Directory command `pwd -P`.

TIP: The physical path `-P` is important because project attaches data to the beginning of your virtual path to keep your project files together.

5. To navigate out of your project directory to your home directory, run the command `cd`.
6. To return to your project directory, run the command `cd/projects/username/project-name`.

TIP: If you are new to navigating in a terminal, you may want to use [the Workbench terminal](#), which includes a visual navigation tree in the File Manager.

## Using multiple Terminals

You can open as many terminals as you want.

To open another shell in the terminal, in the upper left of the pane, click the plus + icon.



A corresponding number appears after the plus + icon and 1.

To move to another Terminal, click the corresponding number.

The color of the number tab changes to show which terminal is currently selected.

## Using Jupyter Notebook

The Jupyter Notebook application allows you to create and edit documents that display the input and output of a Python or R language script. Once saved, you can share these files with others.

NOTE: Python and R language are included by default, but with customization, Notebook can run several other kernel environments.

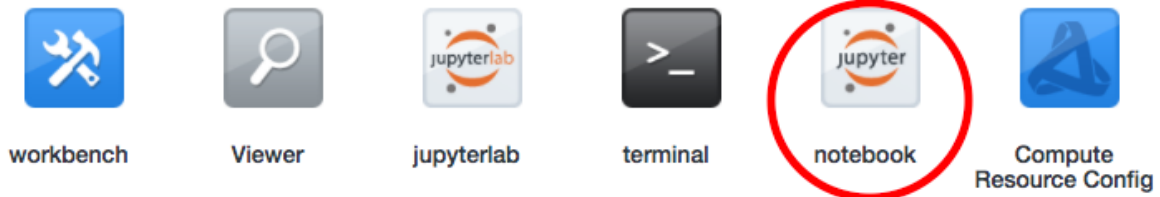
This page provides a brief introduction to Jupyter Notebooks for AEN users.

For the official Jupyter Notebook user instructions, see [Jupyter documentation](#).

For information on the notebook extensions available in AEN, see [Using Jupyter Notebook extensions](#).

## Opening the Jupyter Notebook application

1. Log in to AEN.
2. Select the project you want to work on, or create a new project and open it.
3. On the project home page, click the Jupyter Notebook icon:



Jupyter Notebook opens in a new browser window:



TIP: You can see the same *File Manager* in the Terminal, Workbench, and Viewer applications.

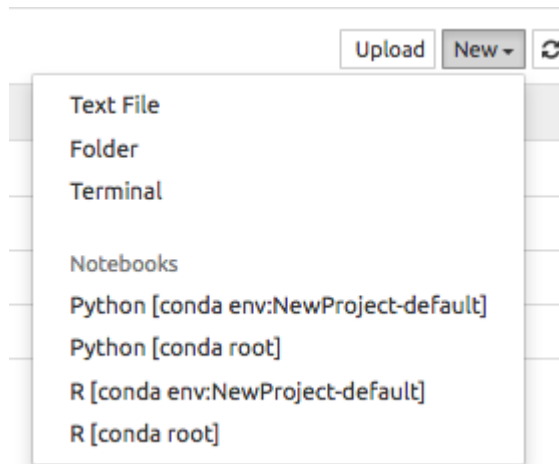
## Using example notebooks

The `Examples` folder in Jupyter Notebook contains several types of Notebook examples created in Python—and one with R language—kernel environments.

Open any example notebook to experiment and see how it works.

## Creating a new Jupyter Notebook

1. At the top right of the **Files** tab, click the New button.



2. Select the kernel environment to create your new notebook in.

NOTE: Customizable Python and R Language kernel environments are automatically created for you during project creation.

- Your project's default conda env kernels are a cloned copy of the root environment. You can customize them and install and delete additional packages.
- Root environment is managed by your Administrator. You cannot make or save any changes to it.

- You can switch between Python, R language and any other custom kernels in the notebook as you work in your notebook. For more information, see [Using the Synchronize Environments extension](#).

The new notebook is saved in the related project directory and displayed.

### Using Jupyter Notebook extensions

The following extensions are available for use with AEN's Jupyter Notebook application:

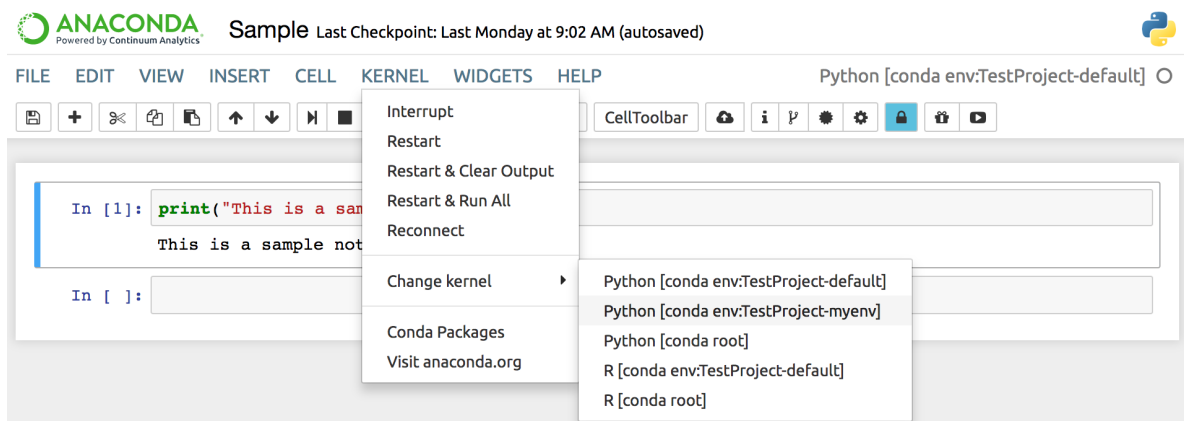
- [Synchronize Environments](#) with Jupyter from the **Kernel** menu.
- [Locking](#) adds multi-user capability from the Lock button.
- [Revision Control Mechanism \(RCM\)](#) adds Status, Checkout and Commit buttons.
- [Conda environment and package management](#) tab.
- [Conda notebook](#) adds conda management inside Notebook from the Kernel > Conda Packages menu option.
- [Anaconda Cloud integration](#) from the Publish to cloud button.
- [Notebook Present](#) turns your notebook into a PowerPoint-style presentation.

### Using the Synchronize Environments extension

The Synchronize Environments extension allows you to apply a Python, R language or any other custom environment inside your current notebook session, without needing to start up several Notebook instances using each of the selected environments.

To change environments:

1. Open the **Kernel** menu.



2. Click the Change kernel option.
3. From the list, select the environment to use.

NOTE: In AEN 4.1+ the default kernel for projects is `default`. In versions prior to 4.0, the default kernel for projects is `root Python`.



## Using the Locking extension

Multi-user capabilities are engaged in AEN when multiple users work in the same notebook file.

The Locking extension allows you to lock a notebook to prevent multiple team members from making changes at the same time. Notebooks are automatically locked when you open them.

If team members open a notebook and make changes while it is locked, their save capability is disabled, and they cannot overwrite the notebook.

To override the lock, they must actively take control of the locked file by clicking the Lock icon in the Notebook menu bar:



NOTE: This is a soft locking model. Team members can choose to override your lock to save their work. If you give team members write access to your files, confirm that they understand that they should never unlock your file unless they are making meaningful, non-destructive team contributions.

## Using the Revision Control Mechanism extension

The Revision Control Mechanism (RCM) Jupyter Notebook extension provides simple version control for notebook files. It uses the internal Jupyter functionality to perform tasks.

On the surface, RCM uses a simple linear model, but beneath that is a more complex git-based branching model. This model uses the latest wins as its main merging strategy to prevent merge conflicts.

The RCM Jupyter Notebook extension adds four buttons:



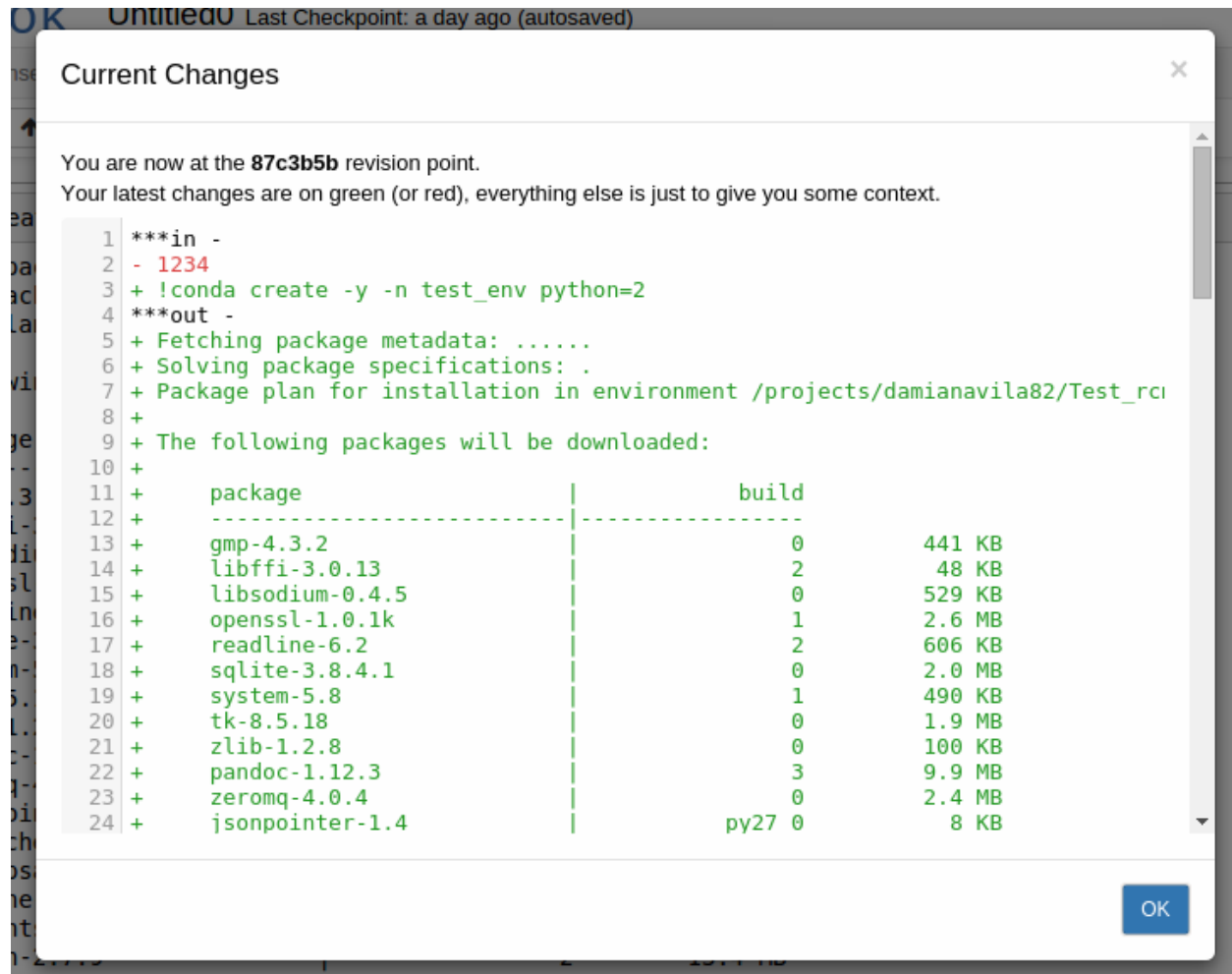
- *Status.*
- *Checkout.*
- *Commit.*
- *Configure git.*

TIP: If you do not see the RCM buttons, see *Setting up RCM for the first time*.

## Using the Status button

The Status button allows you to see what revision you are on.

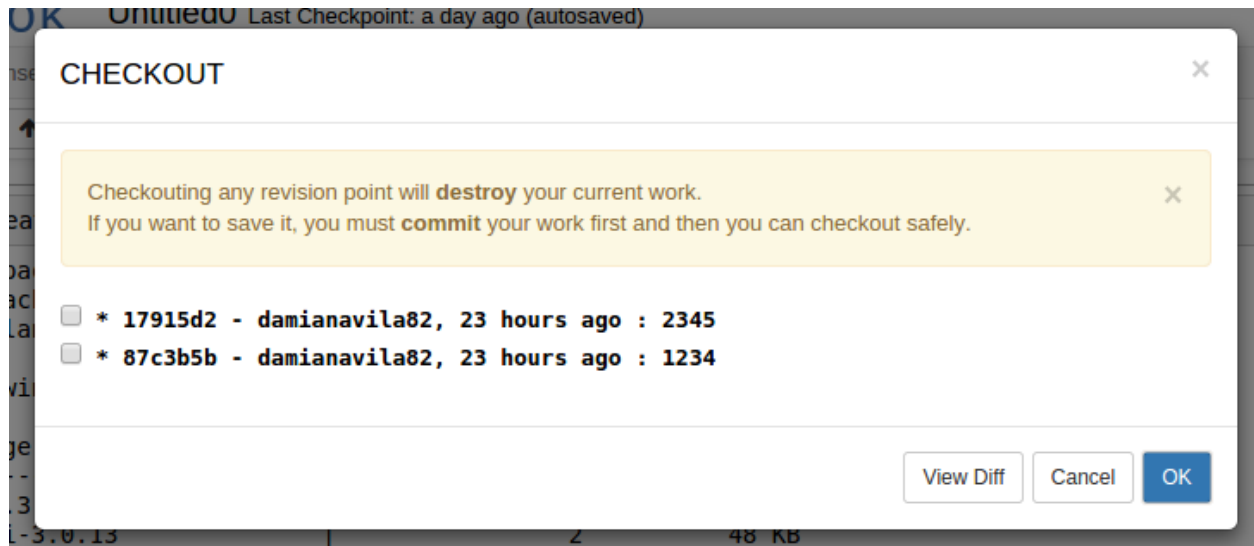
Clicking the Status button displays:



### Using the Checkout button

The Checkout button allows you to view a list of the previous revision points, check out a previous revision or compare differences between revisions.

Clicking the Checkout button displays:



### Checking out a previous revision

To checkout a notebook at an earlier revision point:

1. Select the checkbox next to the desired revision point.
2. Click the OK button.

A copy of the notebook at the selected revision point is displayed.

NOTE: If you have not saved the work in your current project window, checking out a previous revision destroys it. If in doubt, click the Cancel button and save your work before reverting to a previous revision point.

### Comparing revisions

To compare 2 previous revision points:

1. Select the checkboxes of the revision points to compare.
2. Click the View Diff button.

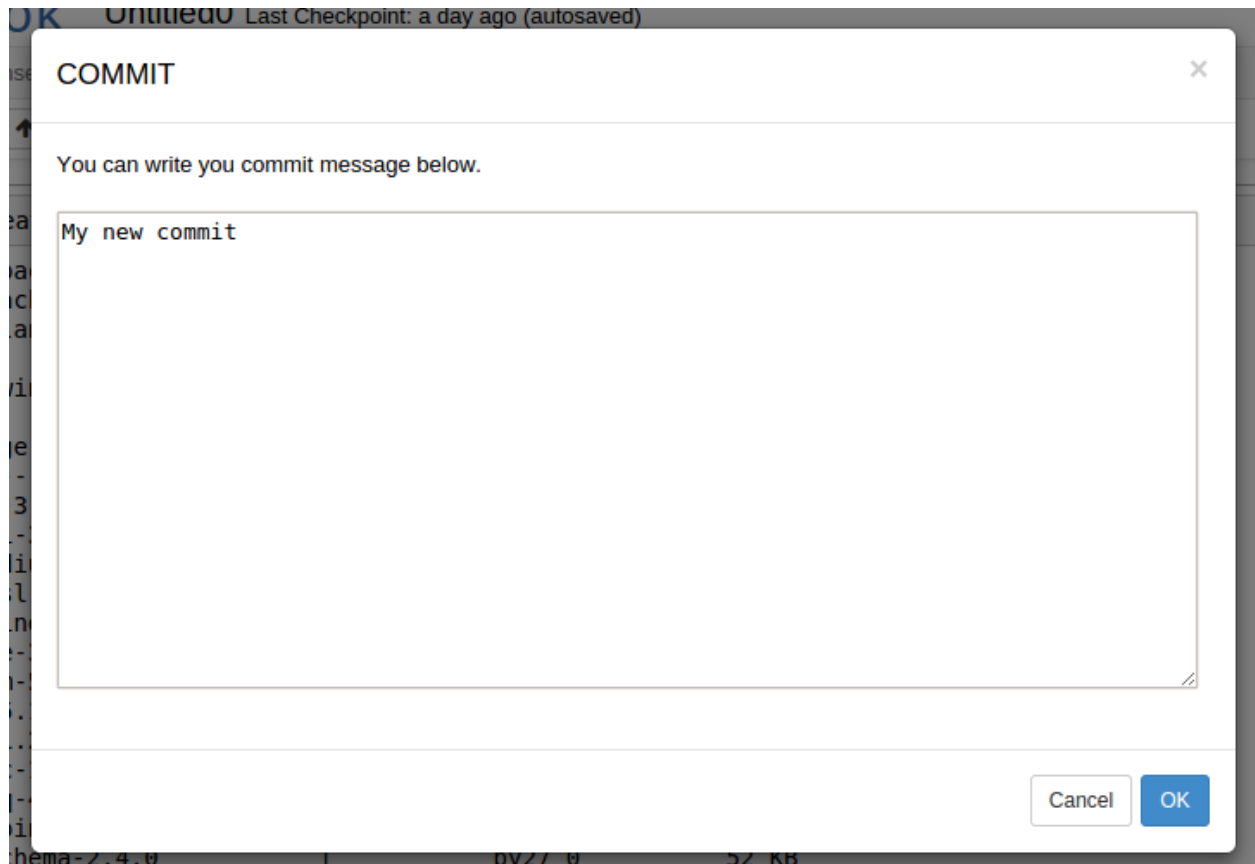
A side-by-side comparison is displayed.

Click the Cancel button to close the differences window.

### Using the Commit button

The Commit button allows you to save or persist the current changes, keeping a permanent record of any changes that are introduced, so that you do not have to worry about losing important data.

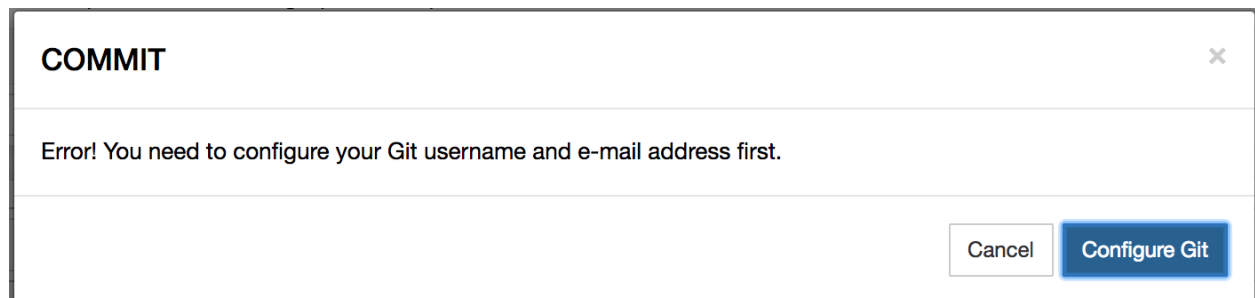
Clicking the Commit button displays:



1. Enter a description of the changes in the commit as a reminder in case you need to revert back to it later.
2. Click the OK button.

Your changes are committed and a revision point is created.

If Git user name and user email are not set, the following window appears:



Configure Git and then try to commit again.

TIP: You can roll back committed changes by *checking out a previous version*.

## Using the Configure git button

The Configure git button allows you to configure Git user name and email values.

After clicking the Configure Git button, the following window appears:

A screenshot of a 'Git Configuration' dialog box. The dialog has a title bar with a close button (X). It contains two input fields: 'Username' with the text 'John Doe' and 'Email' with the text 'johndoe@example.com'. At the bottom right, there are two buttons: 'Cancel' and 'Save'.

Enter user name and e-mail address. Click the OK button when finished.

## Setting up RCM for the first time

If you do not see the RCM buttons in your notebook:

1. Go to the project home page.
2. Open the Terminal application.
3. In the terminal window, run:

```
git config --global user.email "you@example.com"  
git config --global user.name "Your Name"
```

NOTE: Change `you@example.com` to your email address, and `Your Name` to your actual name.

4. Open Jupyter Notebook and refresh the page.

## Using the NBConda extension

The NBConda extension adds a Conda tab to your notebook for easy environment and package management from within the notebook.



Files Running IPython Clusters **Conda**

2 Conda environments



Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default

1143 available packages

Search...



376 installed packages in environment "default"



Name	Version	Channel
<input type="checkbox"/> _license	1.1	defaults
<input type="checkbox"/> _nb_ext_conf	0.4.0	defaults
<input type="checkbox"/> abstract-rendering	0.5.1	defaults
<input type="checkbox"/> accelerate	2.3.1	defaults
<input type="checkbox"/> accelerate_cudalib	2.0	defaults
<input type="checkbox"/> aen-app-jupyterlab	0.4.0	wakari

Name	Version	Build	Available
<input type="checkbox"/> _license	1.1	py27_1	
<input type="checkbox"/> alabaster	0.7.10	py27_0	
<input type="checkbox"/> anaconda	custom	py27_0	
<input type="checkbox"/> anaconda-client	1.5.1	py27_0	
<input type="checkbox"/> anaconda-project	0.6.0	py27_0	
<input type="checkbox"/> asn1crypto	0.22.0	py27_0	

Click the Conda tab in a notebook to display:

- Conda environments list—export, clone or delete an environment in the action column, or create a new environment by clicking the plus + icon. Switch to an environment by clicking it; packages for that environment are displayed below in the installed packages list.
- Conda available packages list—for the selected environment in currently configured channels, search for packages and click a package name to install it.
- Installed packages list—in the selected environment, check for updates, update or delete selected packages.

**TIP:** While you are in any notebook, you can jump to the NBConda extension for that environment by clicking the **Kernel** menu and selecting Conda Packages:

iris Last Checkpoint: a minute ago (unsaved changes)

FILE EDIT VIEW INSERT CELL KERNEL WIDGETS HELP
Python [conda env:TestProject-default] ○

```
In [ ]: import pandas as pd
df = pd.read_csv("irirs.csv")
df
```

## Using the Conda Notebook extension

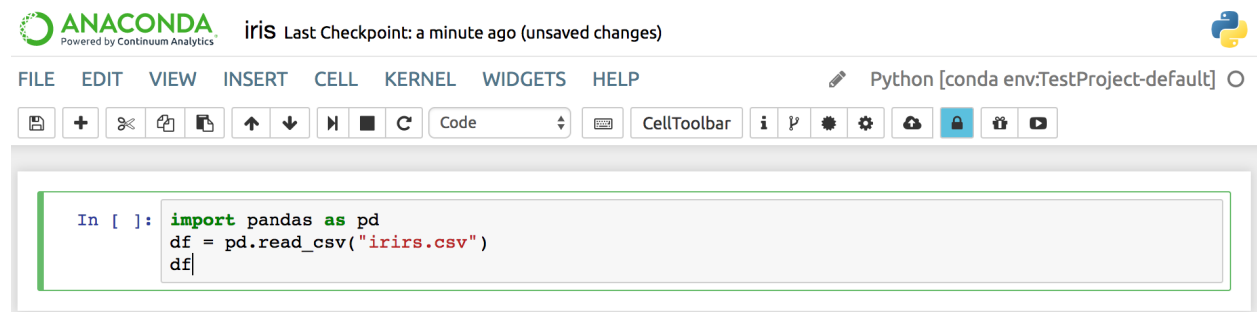
The Conda Notebook extension adds the Conda Packages option to the **Kernel** menu.

Select the Conda Packages option to display a list of all of the Conda packages that are currently used in the environment associated with the running kernel, as well as any available packages.

From the Conda Packages option, you can perform all of the tasks available in the *Conda tab*, but they will only apply to the current environment.

## Using the Anaconda Cloud extension

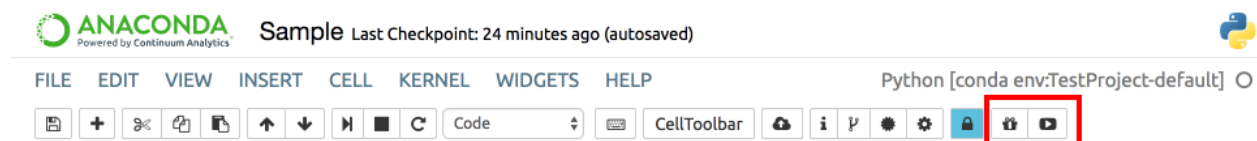
The Anaconda Cloud extension adds the Cloud button to your notebook, allowing you to easily upload your notebook to Cloud:



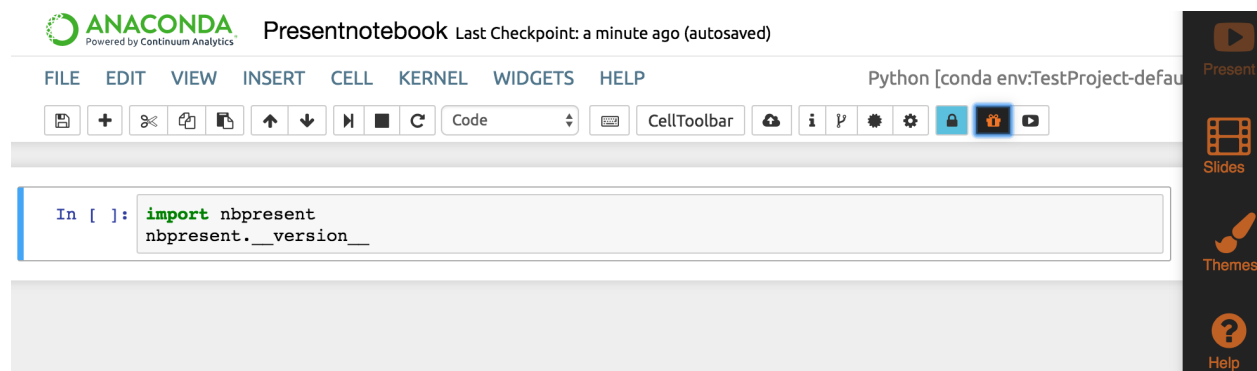
## Using the Notebook Present extension

The AEN Notebook Present extension turns your notebook into a Microsoft PowerPoint-style presentation.

The Present extension adds 2 buttons to Notebook's menu bar—Edit Presentation and Show Presentation:



To begin using Notebook Present, click the Edit Presentation button.

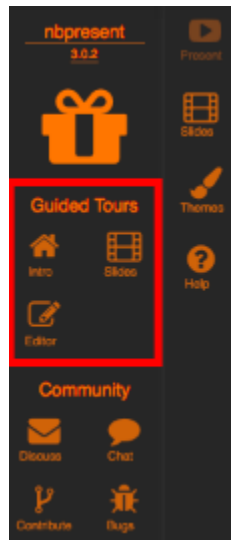


The Notebook Present sidebar is displayed on the right side of your browser:

Clicking each icon changes the menu and layout of your notebook.

Clicking the Help icon displays 3 tours—demonstrations—of the main features of Present:

- *Intro tour.*
- *Slides tour.*
- *Editor tour.*



Select one of the tours to view a short presentation regarding the specifics of that feature.

### Intro tour

The Intro tour is a 2-minute presentation that explains how to use the main features of Present, including a description of each button's purpose.

NOTE: At any time, you can pause, go back to the previous or move forward to the next slide.

The following information is covered in the Intro tour:

- App Bar—When Authoring, this allows you control the content and style of your presentation. It also can be used to activate several keyboard shortcuts for editing:



## Keyboard shortcuts



The Jupyter Notebook has two different keyboard input modes. **Edit mode** allows you to type code/text into a cell and is indicated by a green cell border. **Command mode** binds the keyboard to notebook level actions and is indicated by a grey cell border with a blue left margin.

Mac OS X modifier keys:

: Command

: Control

: Option

: Shift

: Return

: Space

: Tab

### Command Mode (press to enable)

: find and replace

: previous slide

: next slide

: next slide

: enter edit mode

: open the command palette

: run cell, select below

: run selected cells

: run cell, insert below

: to code

: to markdown

: extend selected cells above

: extend selected cells above

: extend selected cells below

: extend selected cells below

: insert cell above

: insert cell below

: cut selected cells

: copy selected cells

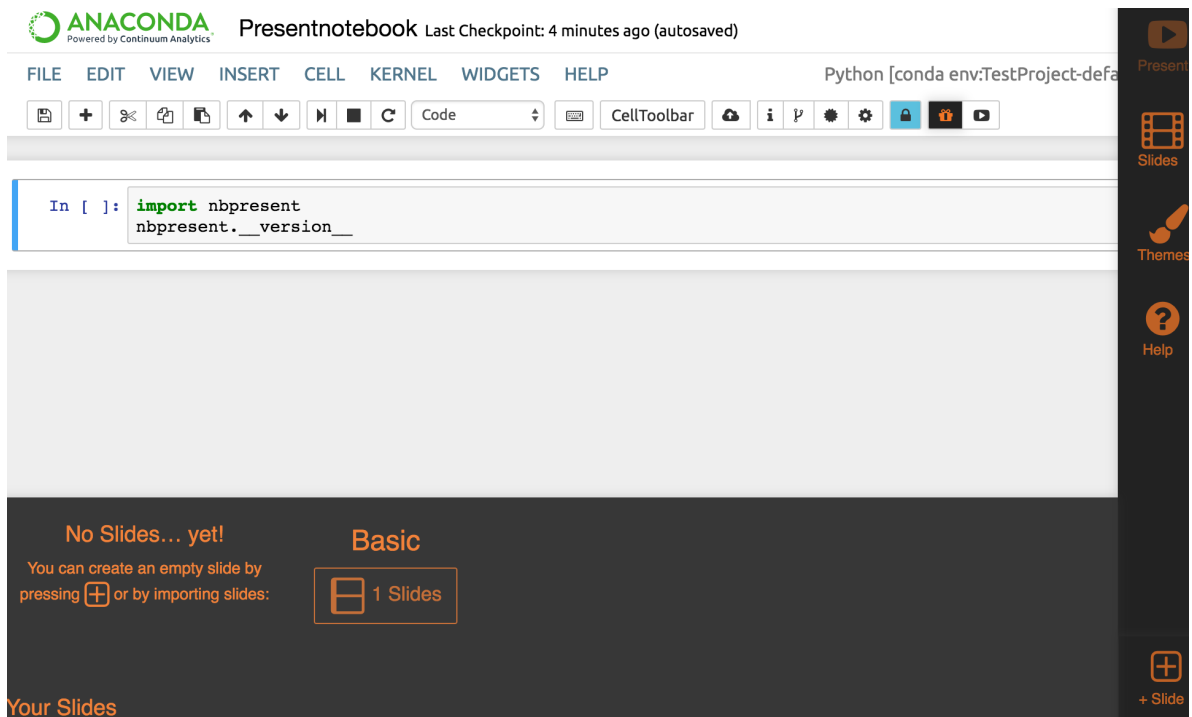
: paste cells above

: paste cells below

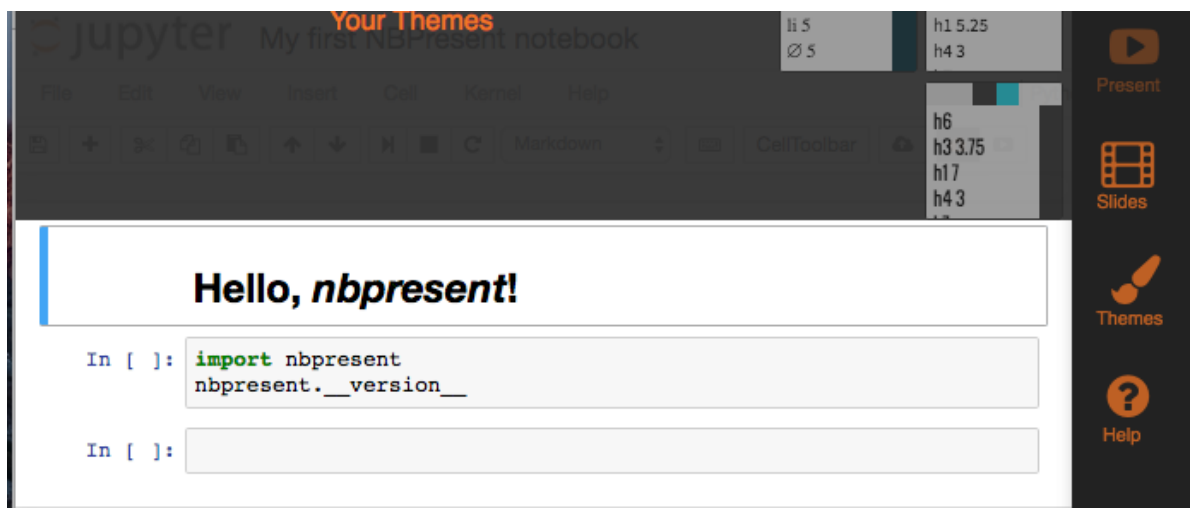
: undo cell deletion

Close

- **Stop Authoring**—Clicking the Edit Presentation button again stops Authoring, and removes all keyboard shortcuts.
- **Show Presentation**—If you just want to run your presentation without using any Authoring tools, just click the Show Presentation button.
- **Presenting/Authoring**—Once you've made some slides, start Presenting, where you can use most Notebook functions with the Theme we have defined, as well as customize slides on the fly.
- **Slides button**—Slides, made of Regions linked to Cell Parts are the bread and butter of any presentation, and can be imported, created, linked, reordered, and edited here.



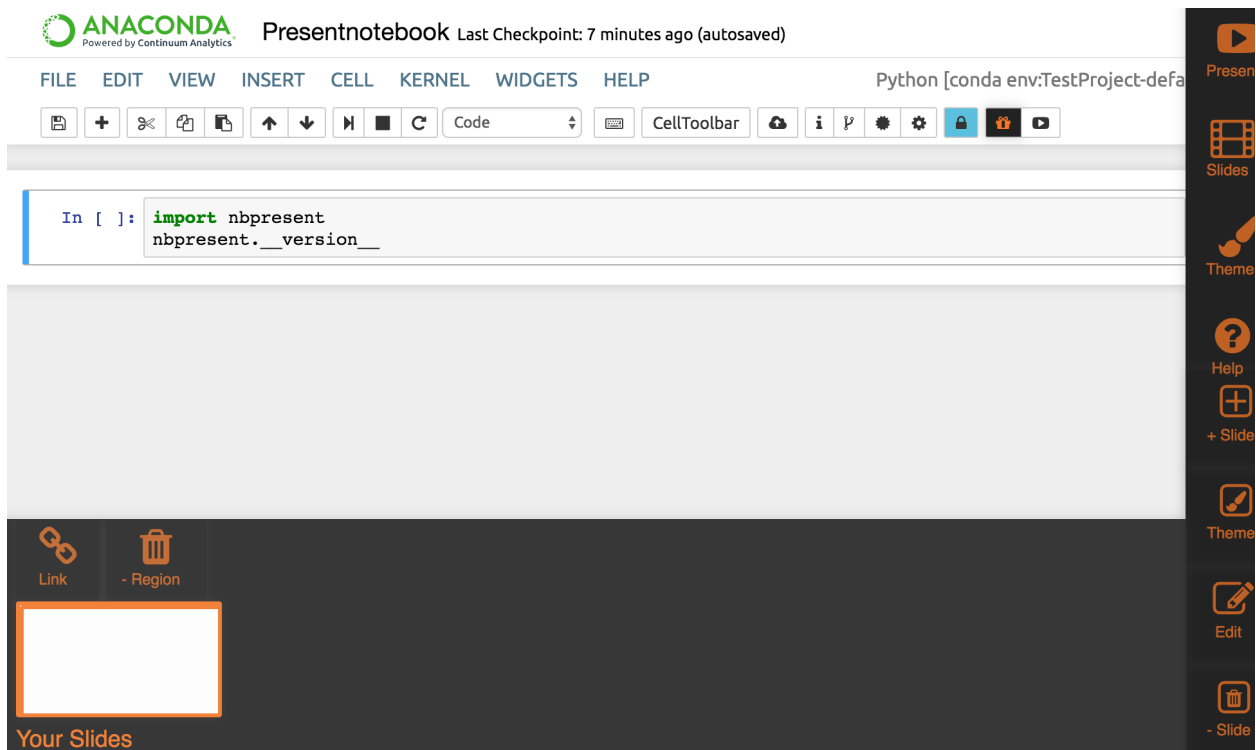
- Theming—Theming lets you select from existing colors, typography, and backgrounds to make distinctive presentations. The first theme you select will become the default, while you can choose custom themes for a particular slide, like a title.



- Saving—Whenever you save your Notebook, all your presentation data will be stored right in the Notebook .ipynb file.
- Downloading—After you've made a presentation, you can download it as an HTML page by choosing Download → Download As: Presentation (.html) in the menu.
- Help—Activate Help at any time to try other tours, connect with the Present developers and community, and other information.

## Slides tour

Slides make up a presentation. Clicking Slides toggles the sorter view and the Slide Toolbar on and off:



The Slides tour explains how to create and manage slides, including the following information:

- Slide Toolbar—Create a new slide. Clicking + Slide will offer some choices for creating your new slide.
- Import—The quickest way to create a presentation is to import each cell as a slide. If you’ve already created slides with the official slideshow cell toolbar or RISE, you can import most of that content.
- Template Library—You can create a presentation from an existing template.
  - Reuse Slide as Template—You can create a presentation based on an existing slide.
  - Simple Template—A common template is the Quad Chart, with four pieces of content arranged in a grid.
- Region—The Quad Chart has four Regions. To select a region, click it.
  - Link a Region to a Cell Part—Each Region can be linked to a single Cell Part using the Link Overlay, which shows all of the parts available.
    - \* Cell Part: Source (blue)—Source, such as code and Markdown text.
    - \* Cell Part: Outputs (red)—Outputs, such as rich figures and script results.
    - \* Cell Part: Widgets (purple)—Jupyter widgets, interactive widgets that provide both visualization and user input.
    - \* Cell Part: Whole (orange)—Finally, a Whole Cell, including its Source, Widgets and Outputs can be linked to a single region.
  - Unlink a region from a Cell Part—Unlinking removes the connection between a region and a cell part, without deleting either one.
  - Region: Trashing—Trashing a Region permanently deletes it, without affecting any linked Cell Part.

- Part Thumbnail—We'll try to draw a part thumbnail. It can only be reliably updated when a linked Cell Part is on-screen when you mouse over it, but you should usually be able to get an idea of what you're seeing. The colors of the regions correspond to the cell types.
- Presenting—Clicking the Present button while editing brings up the Presenter with editing mode still enabled:
  - Linked inputs and widgets are still interactive.
  - Go forward—Click to go to the next slide
  - Go back—Click to go back to the previous slide
  - Go back to the beginning—Click to go back to the first slide
  - My work is done here—Click to go back to the Notebook.

### Editor tour

Once you've made a few slides, you'll likely want to customize them. The Editor tour explains how to edit your notebook, including the following information:


- Editing Slides—Activate the Slide Editor by double-clicking it, or by clicking Edit Slide.
- Region Editor—Click to drag Regions around and resize them.
- Region Tree—Reorder Regions and see the details of how Regions will show their linked Parts.
- Add Region—Add new regions.
- Attribute Editor—Edit the properties of a region.
- Data Layouts—In addition to manually moving regions, you can apply these layouts to automatically fill your slides.
- More Regions—Add more regions—with a weight of 1.
- Tree Weight—Make a Region bigger or smaller, based on its relative weight.
- 12 Grid—A compromise between the Free and Treemap layouts, the 12 Grid option rounds all of the values in a layout to a factor of 12.

### Using Compute Resource Configuration

The Compute Resource Configuration (CRC) application displays information about the current project and allows you to set a custom project environment and view and manage your other AEN applications, including stopping, starting, restarting and viewing the logs of each.

The CRC application screen contains 3 sections:

- *Info.*
- *Conda environment.*
- *Running apps.*

 ANACONDA

Info

**Hostname**  
davila-aen-test

**Project Home**  
/projects/testuser1/demo

**Project RC file**  
/projects/testuser1/demo/.projectrc

Conda Environment

/projects/testuser1/demo/envs/default

Setting the default environment for this project will affect all users by modifying the **.projectrc** file.  
All running apps will be shutdown.  
Make sure **No one working on this project** has any unsaved documents!

Set Project Environment

Running Apps

User	Application	Status	Last Seen	Terminate	Relaunch	Logs
testuser1	terminal	running	1 hours ago	Terminate	Relaunch	

Info

The Info section displays:

- Hostname—IP address of the host computer.
- Project Home—File path to the project home.
- Project RC file—File path to the project runtime configuration file **.projectrc**. This file is sourced when a user opens any AEN application. It sets several AEN internal environment variables, sets up the project environment and sets additional user environment variables for the project.

### Conda environment

This section displays the path to the default conda environment.

**CAUTION:** Changing the default environment will affect all users. Be sure that no team members have any unsaved documents before changing the project environment.

To change the default conda environment location:

1. Edit the path to point to your preferred conda environment.
2. Click the Set Project Environment button.

Your `.projectrc` file is modified.

### Running apps

The Running Apps section displays a list of users and the applications that are in use, as well as when the app was last modified.

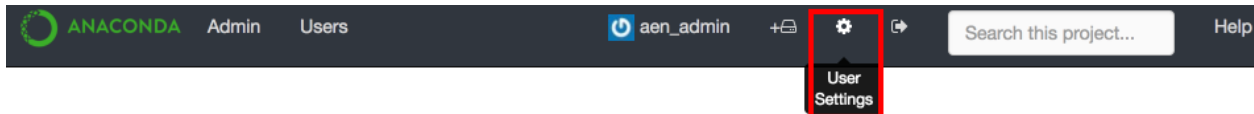
To terminate any individual application, click the Terminate button.

To stop and re-launch any individual application, click the Relaunch button.

To review the run logs of any active application, which may be useful for troubleshooting, click the Logs button.

### Managing your account

To access your account information, click the User Settings icon in the AEN navigation bar:



### Updating your public profile

Your public profile is made up of a name, a personal URL, your company and location.

1. In the left navigation pane, click the **Public Profile** tab.
2. To update your profile picture, create a [Gravatar](#) that is associated with the email address you used to create your AEN account. The gravatar will automatically appear.

### Changing your password

1. In the left navigation pane, click the **Account Settings** tab.

Deleting your AEN account

- 1. In the left navigation pane, click the **Account Settings** tab.

Viewing account operations

- 1. In the left navigation pane, click the **Security Log** tab to view a list of operations performed on your account.

# Settings

Change your account and profile settings.

Public Profile

Account Settings

Security Log

Applications

Security Log

	aen_admin	oauth.authenticate	2017-09-25 04:52:06.713000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.954000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.720000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.490000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.259000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:58.033000+00:00
	aen_admin	oauth.authenticate	2017-09-25 04:51:57.802000+00:00

- 2. For more information about an operation, click the Eye icon to the left of the the operation name.

Registering an application

If you want to create an application for AEN or have already done so, you must register your application.

- 1. In the left navigation pane, click the **Applications** tab.

# Settings

Change your account and profile settings.

Public Profile

Account Settings

Security Log

Applications

Developer Applications

Register New Application

These are applications you have registered to use the Anaconda Enterprise Notebooks API.

Gateway ()

Authorized applications

Gateway ()

revoke

- 2. Click the Register New Application button to open a form for registering your application.

### Advanced tasks

Advanced tasks are best-suited for users who are comfortable working in a Terminal.

### Working with environments

AEN runs on conda, a package management system and environment management system for installing multiple versions of software packages and their dependencies and switching easily between them.

A conda environment usually includes 1 version of Python or R language and some packages.

The ability to have a custom project environment is one of the most powerful features of AEN. Your project environment is integrated so that all of your project applications recognize it and all of your team members have access to it.

This section contains information about:

- *Creating a default conda environment using the Jupyter Notebook application*
- *Creating a default conda environment using the Jupyter Notebook application*
- *Using your conda environment in a notebook*
- *Customizing your conda environment*
- *Installing a conda package using Terminal*
- *Installing a conda package using Notebook*
- *Uninstalling a conda package*

NOTE: This conda environments guide is specific to AEN. For full conda documentation—including cheat sheets, a conda test drive, and command reference—see the [conda documentation](#).

### Creating a default conda environment using the Jupyter Notebook application

You can create, activate, and install packages and deactivate environments from within the Notebook menu bar.

To install from the Notebook menu bar:

1. Click the **Conda** tab and select the plus sign icon.
2. Search for `numpy` in the package search box.
3. Select `numpy` from the search results.





Files
Running
IPython Clusters
Conda

3 Conda environments

Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default
	myenv		/projects/aen_admin/TestProject/envs/myenv

2 available packages
→
39 installed packages in environment "myenv"

Name	Version	Channel
<input checked="" type="checkbox"/> numpy	1.13.1	defaults
<input type="checkbox"/> numpydoc	0.7.0	defaults

Name	Version	Build	Available
<input type="checkbox"/> anaconda-client	1.6.3	py36_0	
<input type="checkbox"/> certifi	2016.2.28	py36_0	
<input type="checkbox"/> clyent	1.2.2	py36_0	
<input type="checkbox"/> decorator	4.1.2	py36_0	
<input type="checkbox"/> ipykernel	4.6.1	py36_0	
<input type="checkbox"/> ipython	6.1.0	py36_0	

1. Click the Install button.

The environment is added to the project's `env` directory.

## Creating a default conda environment using Terminal

In AEN, all new environments created with conda automatically include Python, Jupyter Notebooks and pip. You can specify any other packages you want included in your new environment.

**TIP:** By default, conda creates a new environment in your project's `env` directory—so that all team members have access to the environment. For information about limiting your team member's read, write or execute permissions, see [Workbench](#).

To create a new environment within your AEN account, run the command `conda` in a [Terminal](#) application.

**EXAMPLE:** To create a new environment named `WeatherModel` that contains Python, NumPy, pip and Jupyter Notebooks in your project's `env` directory:

1. Log in to AEN.
2. Open a project.
3. On the project home page, click the Terminal application icon to open a Terminal.
4. Create the environment:

```
conda create -n WeatherModel numpy
```

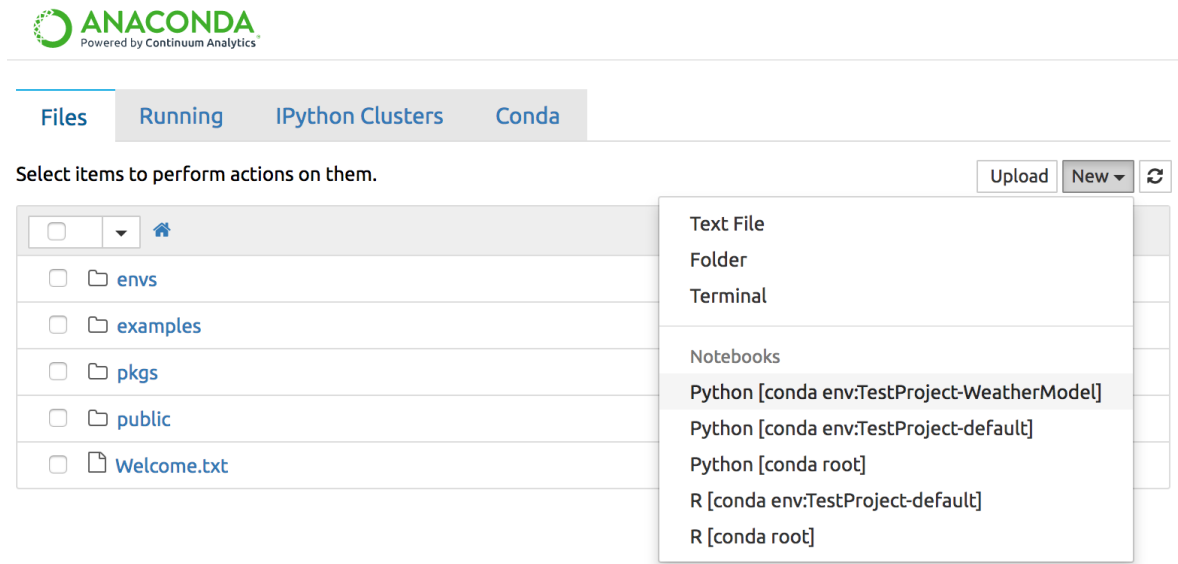
**TIP:** Python, pip and Jupyter Notebooks are automatically installed in each new environment. You only need to specify NumPy in this command.

5. Make the new environment your default:

```
source activate WeatherModel
```

6. To use your new environment with Jupyter Notebooks, open the Notebook application.
7. Click the New button to open a new notebook. In the drop-down menu under Notebooks, the environment you just created is displayed.
8. To activate that environment, select it.

The environment is added to the project's `env` directory.



NOTE: You can deactivate the new environment when you are finished with your notebook by opening the Terminal application and running the command `source deactivate`.

## Using your conda environment in a notebook

Whether you have created an environment using conda in a terminal, or from the **Conda** tab in a notebook, you can use the conda environment in the same way.

When working in a notebook, to select the environment you have created and want to use with that notebook, in the **Kernel** menu, select Change Kernel.

EXAMPLE: If you have an environment named `my_env` in a project named `test1` that includes NumPy and SciPy and you want to use that environment in your notebook, in the **Kernel** menu, select `Python [conda env:test1-my_env]`.

The notebook code will run in that environment and can import NumPy and SciPy functions.

## Customizing your conda environment

If you need a Python package that AEN doesn't include by default, you can install additional packages into your AEN environment.

**TIP:** You cannot install packages into the default Anaconda environment. You must create your own environment before installing a new package into that environment.

AEN is built on Anaconda, so you can install additional Python packages using conda or pip—both of which are included with Anaconda.

## Installing a conda package using Terminal

To install a conda package using the Terminal application:

1. Create and activate the environment using the steps in *Creating a default conda environment using the Jupyter Notebook application*.
2. In your Terminal application, run the command `conda install <packagename>`.

**NOTE:** Be sure to specify the Python version you want when using conda to create the environment, or it will use the same version as root.

**EXAMPLE:**

```
conda create -n mypy3 python=3 numpy scipy
```

A conda environment named mypy3, running on Python 3 and containing NumPy and SciPy is created. All subsequent packages added to this environment will be the Python 3 compatible versions.

## Installing a conda package using Notebook

You can also install the package within your notebook without using the terminal app:

1. From the Notebook application, click the **Conda** tab.
2. Select the environment you wish to use.
3. Search for the package you want to add.
4. Click the Install button.

## Uninstalling a conda package

To uninstall a package using this method, run the command `conda remove <packagename>`.

**NOTE:** Replace <packagename> with the name of the package you are uninstalling.

## Using visualization packages

AEN supports multiple visualization packages for Python and R language.

For Python, the default environment has *Matplotlib* and *Bokeh* installed.

For R language, the default environment has *r-ggplot2* and *r-bokeh* installed.

### Matplotlib

Matplotlib is a Python 2D and 3D plotting and visualization library that produces publication-quality figures in a variety of hardcopy formats and interactive environments across platforms.

To display Matplotlib figures in the output cells of a notebook running the default environment, run:

```
import matplotlib.pyplot as plt
%matplotlib inline
```

Any Matplotlib figures in the notebook are displayed in it's output cells.

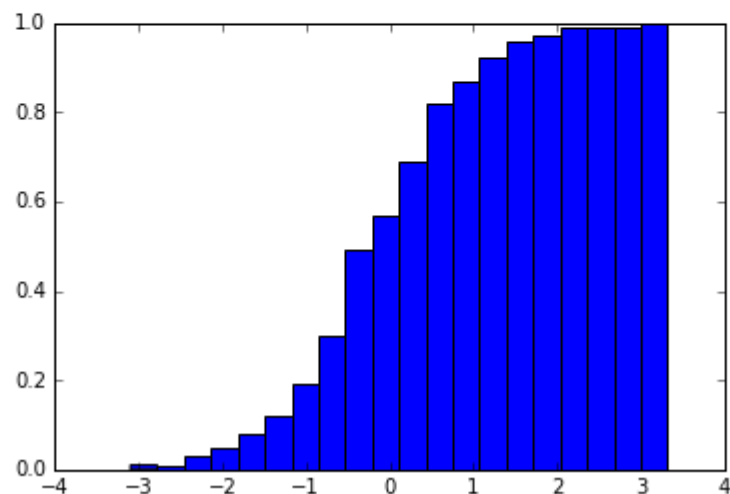
EXAMPLE: The following screenshot is of a cumulative density function (CDF) plot using values taken from a normal distribution:

```
In [1]: import matplotlib.pyplot as plt
%matplotlib inline
```

```
In [2]: import numpy as np

x = np.random.normal(size=100)
```

```
In [3]: plt.hist(x, normed=True, cumulative=True, bins=20);
```



For more information, including a [gallery](#), [examples](#), [documentation](#) and a [list of plotting commands](#), see the [Matplotlib website](#).

## Bokeh

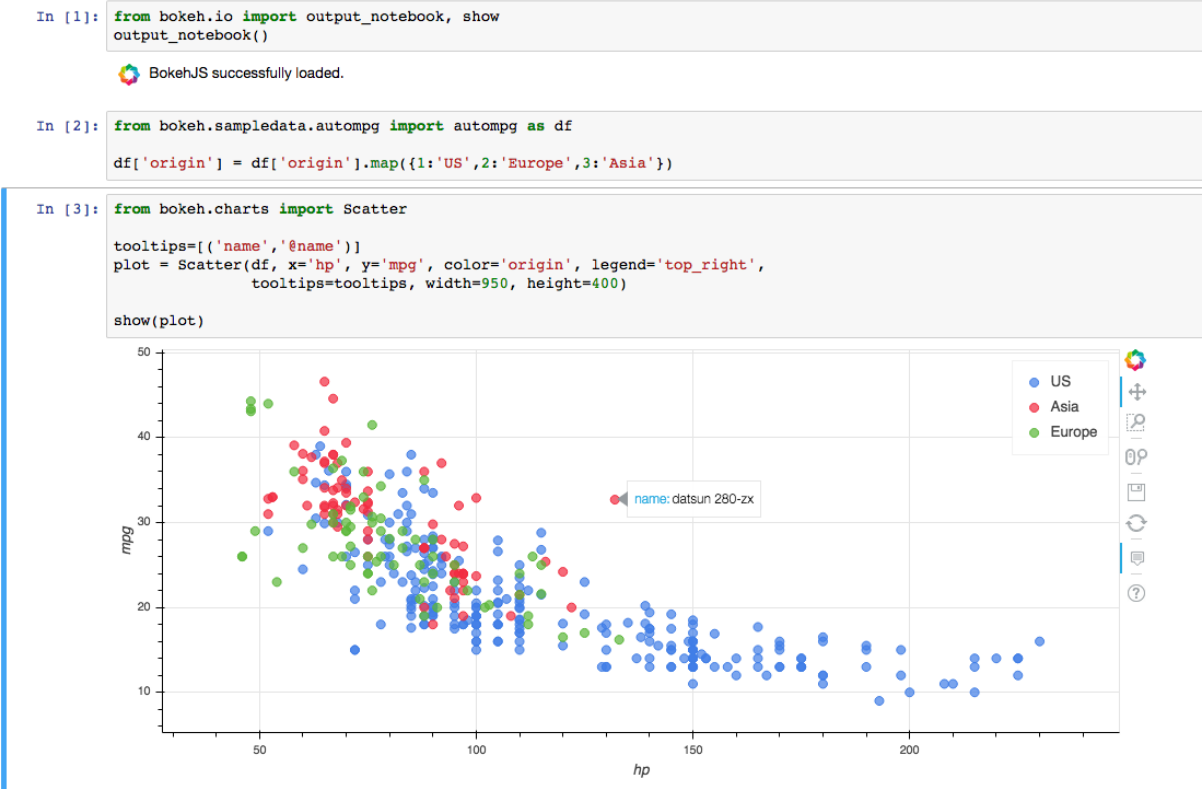
**Bokeh** is an interactive visualization library that targets modern web browsers to provide elegant, concise construction of novel graphics.

To display Bokeh figures in the output cells of a notebook running the default environment, run:

```
from bokeh.io import output_notebook, show
output_notebook()
```

Any Bokeh figures in the notebook are displayed in its output cells.

The following screenshot is of a scatter plot of miles-per-gallon vs. horsepower for 392 automobiles using the `autompg` sample dataset:



## ggplot2

**Ggplot2** is a plotting system for R language which is based on the grammar of graphics. Ggplot2 tries to take only the good parts of base and lattice graphics and none of the bad parts.

To use ggplot2 with AEN:

1. Open a new Notebook using the R kernel.
2. Load the ggplot2 library with the following code:

```
library(ggplot2)
```

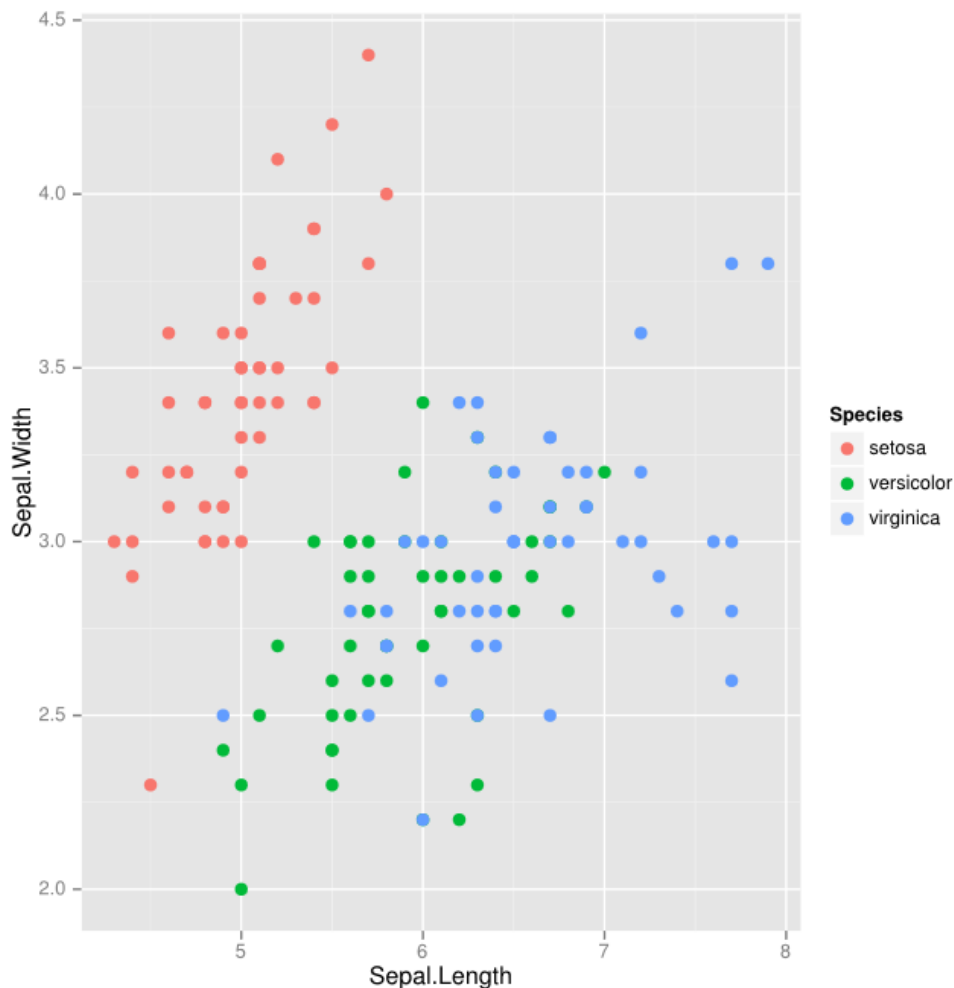
The ggplot2 library is loaded and ready for use in AEN.

The following screenshot is of a scatter plot of sepal width vs sepal length using the `iris` dataset provided by the `dplyr` library:

```
In [5]: library(dplyr)
```

```
In [6]: library(ggplot2)
```

```
In [7]: ggplot(data=iris, aes(x=Sepal.Length, y=Sepal.Width, color=Species)) + geom_point(size=3)
```



## Using environment variables

Some Python packages depend on environment variables for correct operation.

EXAMPLE: Theano requires that the directory containing the CUDA compiler is included in the `$PATH` environment variable in order for GPU acceleration to be enabled.

To change environment variables for all AEN applications, modify the project runtime configuration file `.projectrc`. For more information, see [Using Compute Resource Configuration](#).

`.projectrc` sets several AEN internal environment variables, sets up the project environment and can set additional user environment variables for that project. This file is sourced when a user opens any AEN application—including Jupyter Notebook—and Jupyter kernels will be able to read the included environment variables.

## Cheat sheet

See the [Anaconda Enterprise Notebooks cheat sheet PDF](#) (232 KB) for a single-page summary of the most important information about using AEN.

## Troubleshooting

This troubleshooting guide provides you with ways to deal with issues that may occur with your AEN installation.

### AEN application not working properly

An AEN application is not working as expected.

#### Cause

There are several reasons an application may not work as expected.

#### Solution

Most AEN application issues can be resolved by following these steps:

1. Refresh the page.
2. If the issue is not resolved, close and open the application.
3. If the issue is not resolved, *stop and restart your project*.
4. If the issue is not resolved, check that you are using the latest version of your web browser—Chrome, Safari, Edge, or Firefox.
5. Log out of AEN.
6. Restart your browser, and log back in.

If you continue to have issues, then please contact your administrator or enterprise support representative.

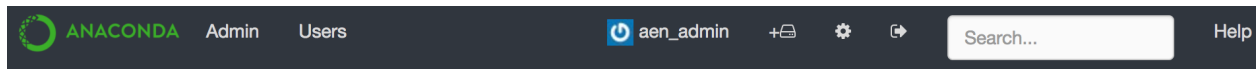
## Admin guide

This administrator guide provides information about the administration of an AEN installation.

Most AEN system management is done from the administrative user interface (admin UI). Some advanced tasks are done *using the command line*.

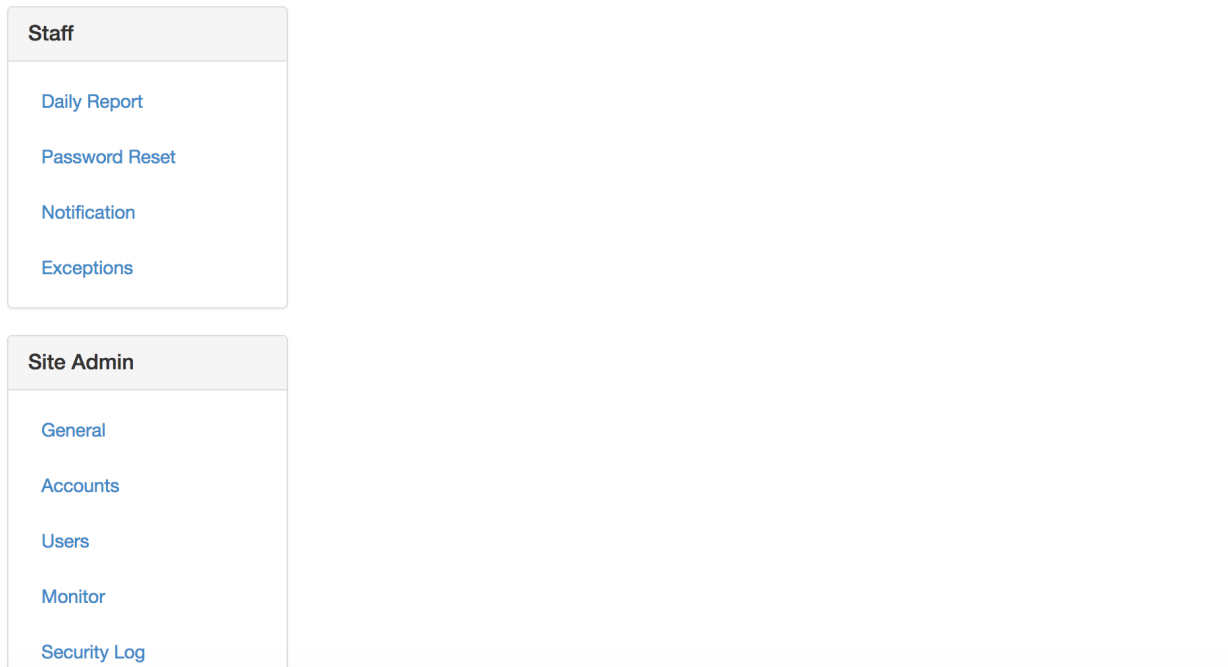
Any AEN user account can be *upgraded to an administrator account* to have both user and administrator privileges.

Administrators see two additional links in the AEN Navigation bar—Admin and Users:



# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the system administrator.



All of the other navigation bar items are the same as for a user account.

## Concepts

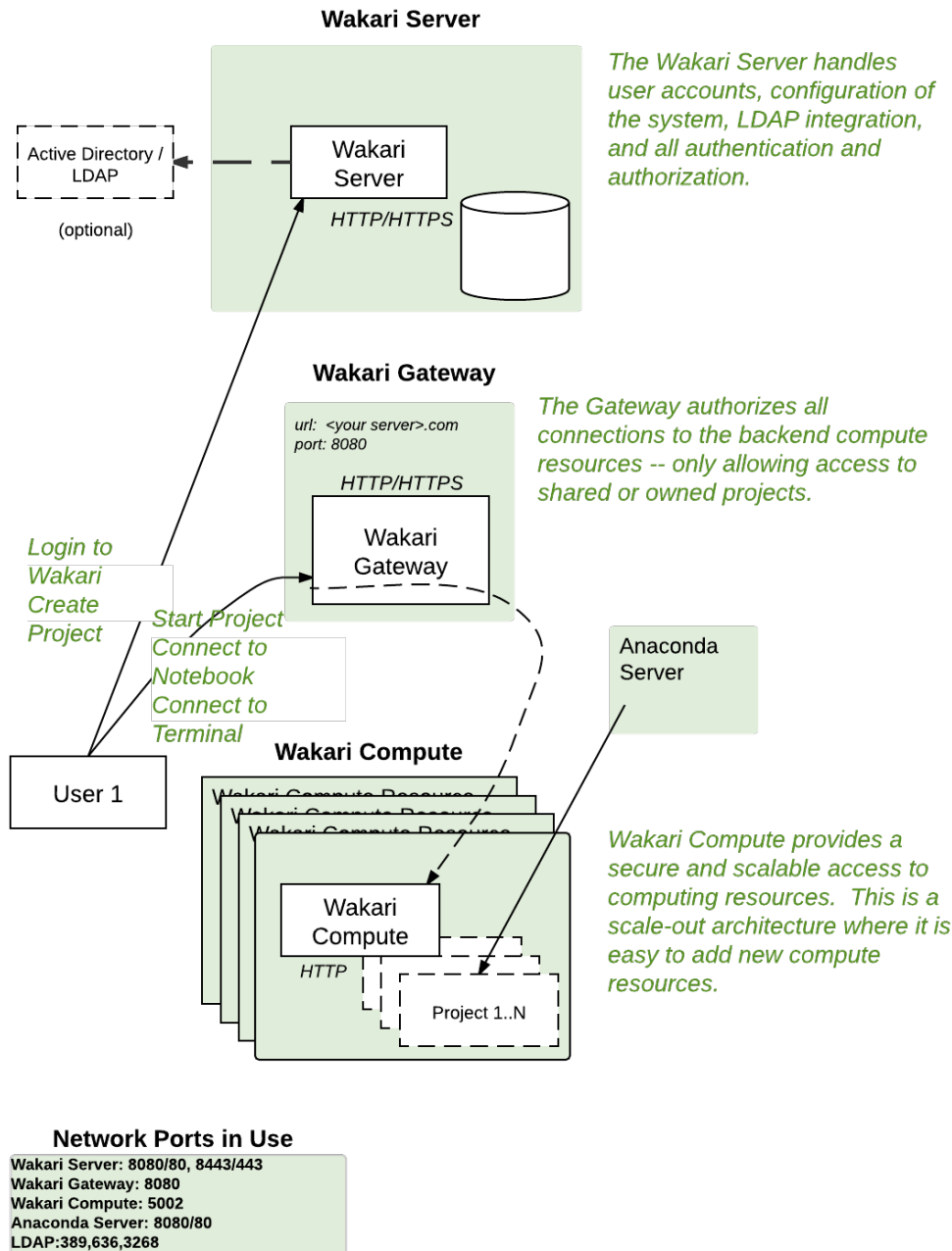
### System overview

The Anaconda Enterprise Notebooks platform consists of 3 main service groups: AEN server, AEN gateway and AEN compute, which are called “nodes”:

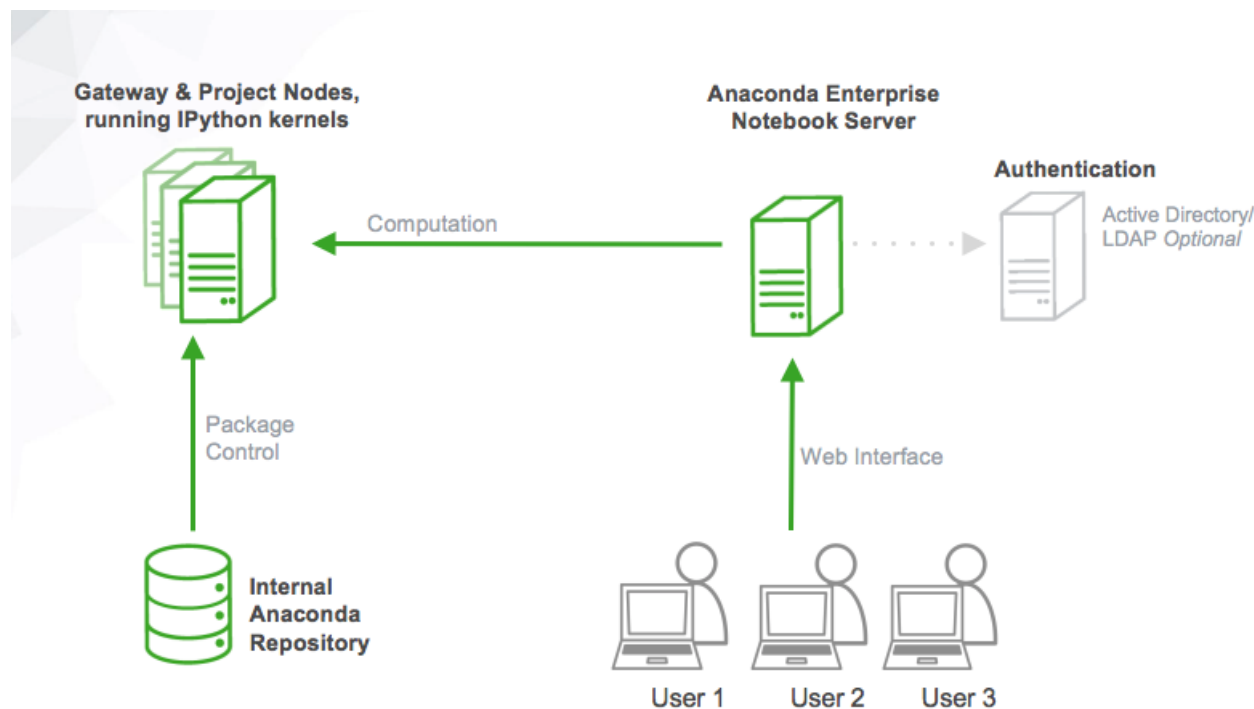
- *Server node*—The administrative front-end to the system where users login, user accounts are stored, and administrators manage the system.
- *Gateway node(s)*—A reverse proxy that authenticates users and directs them to the proper compute node for their project. Users will not notice this node after installation as it automatically routes them.
- *Compute nodes*—Where projects are stored and run.



## Anaconda Enterprise Notebooks



These services can be run on a single machine or distributed across multiple servers.



Organizationally, each AEN installation has exactly 1 server instance and 1 or more gateway instances. Each compute node can only be connected to a single gateway. The collection of compute nodes served by a single gateway is called a **data center**. You can add data centers to the AEN installation at any time.

EXAMPLE: An AEN deployment with 2 data centers, where 1 gateway has a cluster of 20 physical computers, and the second gateway has 30 virtual machines, must have the following services installed and running:

- 1 AEN server instance
- 2 AEN gateway instances
- 50 AEN compute instances (20 + 30)

Nodes must be configured and maintained separately.

## Server node

The server node controls login, accounts, admin, project creation and management as well as interfacing with the database. It is the main entry point to AEN for all users. The server node handles project setup and ensures that users are sent to the correct project data center.

Since AEN is web-based, it uses the standard HTTP port 80 or HTTPS port 443 on the server.

AEN uses MongoDB for its internal data persistency. It is typically run on the same host as the server but can also be *installed* on a separate host.

Server nodes use NGINX to handle the user-facing AEN web interface. NGINX acts as a request proxy for the actual server web-process which runs on a high numbered port that only listens on localhost. NGINX is also responsible for static content.

Server is installed in the `/opt/wakari/wakari-server` directory.

## Server processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manage wakari-worker, multiple processes of wk-server.
user	wakari
configuration	/opt/wakari/wakari-server/etc/supervisord.conf
log	/opt/wakari/wakari-server/var/log/supervisord.log
control	service wakari-server
ports	none

wk-server	details
description	Handles user interaction and passing jobs on to the wakari gateway. Access to it is managed by NGINX.
user	wakari
command	/opt/wakari/wakari-server/bin/wk-server
configuration	/opt/wakari/wakari-server/etc/wakari/
control	service wakari-server
logs	/opt/wakari/wakari-server/var/log/wakari/server.log
ports	Not used in versions after 4.1.2 *

\* AEN 4.1.2 and earlier use port 5000. This port is used only on localhost. Later versions of AEN use Unix sockets instead. The Unix socket path is: `unix:/opt/wakari/wakari-server/var/run/wakari-server.sock`

wakari-worker	details
description	Asynchronously executes tasks from wk-server.
user	wakari
logs	/opt/wakari/wakari-server/var/log/wakari/worker.log
control	service wakari-server

nginx	details
description	Serves static files and acts as proxy for all other requests passed to wk-server process. *
user	nginx
configuration	/etc/nginx/nginx.conf /opt/wakari/wakari-server/etc/conf.d/www.enterprise.conf
logs	/var/log/nginx/woc.log /var/log/nginx/woc-error.log
control	service nginx status
port	80

\* In AEN 4.1.2 and earlier the wk-server process runs on port 5000 on localhost only. In later versions of AEN the wk-server process uses the Unix socket path `unix:/opt/wakari/wakari-server/var/run/wakari-server.sock`.

NGINX runs at least two processes:

- Master process running as root user.
- Worker processes running as nginx user.

## Gateway node

The gateway node serves as an access point for a given group of compute nodes. It acts as a proxy service and manages the authorization and mapping of URLs and ports to services that are running on those nodes. The gateway nodes provide a consistent uniform interface for the user.

NOTE: The gateway may also be referred to as a data center because it serves as the proxy for a collection of compute nodes.

You can put a gateway in each data center in a tiered scale-out fashion.

AEN gateway is installed in the `/opt/wakari/wakari-gateway` directory.

## Gateway processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manages the wk-gateway process.
user	wakari
configuration	/opt/wakari/wakari-gateway/etc/supervisord.conf
log	/opt/wakari/wakari-gateway/var/log/supervisord.log
control	service wakari-gateway
ports	none

wakari-gateway	details
description	Passes requests from the AEN Server to the Compute nodes.
user	wakari
configuration	/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
logs	/opt/wakari/wakari-gateway/var/log/wakari/gateway.application.log /opt/wakari/wakari-gateway/var/log/wakari/gateway.log
working dir	/ (root)
port	8089 (webcache)

## Compute node(s)

Compute nodes are where applications such as Jupyter Notebook and Workbench actually run. They are also the hosts that a user sees when using the Terminal app or when using SSH to access a node. Compute nodes contain all user-visible programs.

Compute nodes only need to communicate with a gateway, so they can be completely isolated by a firewall.

Each project is associated with one or more compute nodes that are part of a single data center.

AEN compute nodes are installed in the `/opt/wakari/wakari-compute` directory.

Each compute node in the AEN system requires a compute launcher service to mediate access to the server and gateway.

## Compute processes

When you *view the status of server processes*, you may see the processes explained below.

supervisord	details
description	Manages the wk-compute process.
user	wakari
configuration	/opt/wakari/wakari-compute/etc/supervisord.conf
log	/opt/wakari/wakari-compute/var/log/supervisord.log
control	service wakari-compute
working dir	/opt/wakari/wakari-compute/etc
ports	none

wk-compute	details
de-scrip-tion	Launches compute processes.
user	wakari
config-uration	/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json      /opt/wakari/wakari-compute/etc/wakari/scripts/config.json
logs	/opt/wakari/wakari-compute/var/log/wakari/compute-launcher.application.log      /opt/wakari/wakari-compute/var/log/wakari/compute-launcher.log
work-ing dir	/ (root)
control	service wakari-compute
port	5002 (rfe)

Wk-compute loads each of the following configuration files, in this order:

- /etc/wakari/config.json.
- /etc/wakari/compute-launcher-config.json.
- ./compute-launcher-config.json.
- Any configuration file specified by the -c option.

If an option is specified in multiple files, the last one encountered takes precedence.

## Supervisor and supervisord

AEN uses a process control system called “Supervisor” to run its services. Supervisor is run by the AEN Service Account user, usually wakari or aen\_admin.

The Supervisor daemon process is called “supervisord”. It runs in the background and should rarely need to be restarted.

### Service Account

AEN must be installed and executed by a Linux account called the AEN Service Account. The username of the AEN Service Account is called the AEN Functional ID (NFI). The AEN Service Account is created during AEN installation—if it does not exist—and is used to run all AEN services.

The default NFI username is `wakari`. Another popular choice is `aen_admin`.

**WARNING:** The Service Account should only be used for administrative tasks, and should not be used for operating AEN the way an ordinary user would. If the Service Account creates or starts projects, the permissions on the AEN package cache will be reset to match the Service Account, which will interfere with the normal operation of AEN for all other users.

### Anaconda environments

Each project has an associated conda environment containing the packages needed for that project. When a project is first started, AEN clones a default environment with the name “default” into the project directory.

Each release of AEN 4 includes specific tested versions of conda and the conda packages included with AEN. These tested conda packages include Python, R, and other packages, and these tested conda packages include all of the packages in Anaconda.

If you upgrade or install different versions of conda or different versions of any of these conda packages, the new packages will not have been tested as part of the AEN 4 release.

These different packages will usually work, especially if they are newer versions, but they are not tested or guaranteed to work, and in some cases they may break product functionality.

You can use a new conda environment to test a new version of a package before installing it in your existing environments.

If using conda to change the version of a package breaks product functionality, you can use conda to change the version of the package back to the version known to work.

For more information about environments, see [Working with environments](#).

### Projects and permissions

AEN users interact with the system predominantly through [projects](#).

Projects are associated with a single data center within the AEN environment. The team of users includes one owner, which is the user that created the project.

Projects live in the `projectRoot` folder on the compute node—by default, `/projects`.

The project directory is created the first time a project is started. The `start-project` script clones it from `/opt/wakari/wakari-compute/lib/node_modules/wakari-compute-launcher/skeleton`.

Project directory permissions are:

```
owner: rwx, user who created the project
group: rwx, group of the owner
other: --x, to allow access to the Public folder
ACL: rwx for any other team members
```

Files and subdirectories within the project directory have the same permissions as the project directory, except:

- The public folder and everything in it are open to anyone.

- Any files hardlinked into the root anaconda environment—`/opt/wakari/anaconda`—are owned by the root or wakari users.

Project file and directory permissions are maintained by the `start-project` script. All files and directories in the project will have their permissions set when the project is started, except for files owned by root or the `AEN_SRVC_ACCT` user—by default, wakari or `aen_admin`.

The permissions set for files owned by root or the `AEN_SRVC_ACCT` user are not changed to avoid changing the permissions settings of any linked files in the `/opt/wakari/anaconda` directory.

CAUTION: Do not start a project as the `AEN_SRVC_ACCT` user. The permissions system does not correctly manage project files owned by this user.

## Installation

### Installation requirements

#### Hardware requirements

AEN server—At least:

- 2+GB RAM.
- 2+CPU cores.
- 20GB storage.

AEN gateway—At least:

- 2 GB RAM.
- 2 CPU cores.

AEN compute (N-machines)—Configured to meet the needs of the projects. At least:

- 2GB RAM.
- 2 CPU cores.
- 20 GB.

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda env directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

#### Software requirements

- RHEL/CentOS on all nodes. Versions from 6.5 through 7.4 are supported. Other operating systems are supported. However, this document assumes RHEL or CentOS.
- Linux home directories—Jupyter looks in `$HOME` for profiles and extensions.
- Ability to install in AEN directory `/opt/wakari` with at least 10 GB of storage.
- Ability to install in Projects directory `/projects` with at least 20 GB of storage. Size depends on number and size of projects.

NOTE: To install AEN in a different location see [\*Installing AEN in a custom location\*](#).

## Linux system accounts

Some Linux system accounts (UIDs) are added to the system during installation.

If your organization requires special actions, the following list is available:

- mongod (RHEL) or mongod (Ubuntu/Debian)—created by the RPM or deb package.
- elasticsearch—created by RPM or deb package.
- nginx—created by RPM or deb package.
- AEN\_SRVC\_ACCT—created during installation of AEN, and defaults to wakari.
- ANON\_USER—An account such as “public” or “anonymous” on the compute node.

NOTE: If ANON\_USER is not found, AEN\_SRVC\_ACCT will attempt to create it. If it fails, the project(s) will fail to start.

- ACL directories need the filesystem mounted with Posix ACL support (Posix.1e).

NOTE: You can verify ACL from the command line by running `mount` and `tune2fs -l /path/to/filesystem | grep options`.

## Software prerequisites

- AEN server:
  - Mongo—Greater than or equal to version 2.6.8 and less than or equal to version 3.4.14.
  - NGINX—Greater than or equal to version 1.12.2.
  - Elasticsearch—Greater than or equal to version 1.7.2.
  - Oracle JRE version 7 or 8.
  - bzip2.
- AEN Gateway:
  - bzip2.
- AEN compute:
  - git
  - bzip2
  - bash or zsh
  - X Window System

NOTE: If you don’t want to install the whole X Window System, you must install the following packages to have R plotting support:

```
sudo yum install -y libXrender libXext libXdmcp libSM libICE libXt \
dejavu-sans-fonts dejavu-serif-fonts dejavu-fonts-common \
fontpackages-filesystem
```



## Security requirements

- Root or sudo access.
- File permissions: `umask 0022` is required during the installation.
- SELinux in permissive or disabled mode.

Edit the following file using either root or sudo access:

```
/etc/sysconfig/selinux
```

Edit the following:

```
# This file controls the state of SELinux on the system.
# SELINUX= can take one of these three values:
#   enforcing - SELinux security policy is enforced.
#   permissive - SELinux prints warnings instead of enforcing.
#   disabled - No SELinux policy is loaded.

SELINUX=enforcing

# SELINUXTYPE= can take one of these two values:
#   targeted - Targeted processes are protected,
#   mls - Multi Level Security protection.

SELINUXTYPE=targeted
```

NOTE: You must reboot for the changes to take effect.

Verify changes with `getenforce`.

## Network requirements

TCP Ports:

Direction	Type	Default Port	Protocol	Optional	Configurable	Comments
Inbound	TCP	80	HTTP or HTTPS	No	Yes	Server
Inbound	TCP	8089	HTTP or HTTPS	No	Yes	Gateway
Inbound	TCP	5002	HTTP	No	Yes	Compute

## Other requirements

As long as the above requirements are met, there are no additional dependencies for AEN.

See also *system requirements for Anaconda Repository and Anaconda Scale*.

## What's next

*Prepare for installation.*

## Preparing for installation

### Downloading AEN installers

Download the installers and copy them to the corresponding servers.

```
SRPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
→com"
curl -O $SRPM_CDN/aen-server-4.2.2-Linux-x86_64.sh
curl -O $SRPM_CDN/aen-gateway-4.2.2-Linux-x86_64.sh
curl -O $SRPM_CDN/aen-compute-4.2.2-Linux-x86_64.sh
```

NOTE: The current `$SRPM_CDN` server will be confirmed in an email provided by your sales rep.

NOTE: These instructions use `curl` or `wget` to download packages, but you may use other means to move the necessary files into the installation directory.

### Gathering IP addresses or FQDNs

AEN is very sensitive to the IP address or domain name used to connect to the server and gateway nodes. If users will be using the domain name, you should install the nodes using the domain name instead of the IP addresses. The authentication system requires the proper hostnames when authenticating users between the services.

Print this page and fill in the domain names or IP addresses of the nodes below and record the user name and auto-generated password for the administrative user account in the box below after installing the AEN server node:

Node   Name or IP address	Port Number	Username   Password	
AEN server			
AEN gateway			
AEN compute			

NOTE: The values of these IP entries or DNS entries are referred to as `<AEN_SERVER_IP>` or `<AEN_SERVER_FQDN>`, particularly in examples of shell commands. Consider actually assigning those values to environment variables with similar names.

### Set up variables

Certain variables need to have values assigned to them before you start the installation.

## AEN server address

To define an environment variable for the AEN server address—FQDN or IP:

```
export AEN_SERVER=<AEN_SERVER_IP> # <from table above>
```

NOTE: The address—FQDN or IP—specified for the AEN server must be resolvable by your intended AEN users' web clients.

To verify your hostname, run `echo $AEN_SERVER`.

## AEN functional ID

AEN must be installed and executed by a Linux account called the AEN Service Account. The username of the AEN Service Account is called the AEN Functional ID (NFI). The AEN Service Account is created during AEN installation—if it does not exist—and is used to run all AEN services.

The default NFI username is `wakari`. Another popular choice is `aen_admin`.

To set the environment variable `AEN_SRVC_ACCT` to `wakari` or your chosen name before installation, run `export AEN_SRVC_ACCT="aen_admin"`.

This name is now the username of the AEN Service Account and of the AEN administrator account.

When upgrading AEN, set the NFI to the NFI of the current installation.

WARNING: The Service Account should only be used for administrative tasks, and should not be used for operating AEN the way an ordinary user would. If the Service Account creates or starts projects, the permissions on the AEN package cache will be reset to match the Service Account, which will interfere with the normal operation of AEN for all other users.

## AEN functional group

The AEN Functional Group (NFG) may be given any name. Most often, it is set to `aen_admin` or `wakari`. This Linux group includes the AEN service account, so all files and directories that have the owner NFI also have the group NFG.

When upgrading AEN, set the NFG to the NFG of the current installation.

To set the NFG before installation, run:

```
export AEN_SRVC_GRP="<NFG>"
```

NOTE: Replace `<NFG>` with your NFG name.

## AEN install sudo command

During AEN installation the installers perform various operations that require root level privileges. By default, the installers use the `sudo` command to perform these operations.

Before installation, set the `AEN_SUDO_CMD_INSTALL` environment variable to perform root level operations. You can also set it to no command at all if the user running the installer(s) has root privileges and the `sudo` command is not needed or is not available.

EXAMPLES:

```
export AEN_SUDO_CMD_INSTALL=""  
export AEN_SUDO_CMD_INSTALL="sudo2"
```

### AEN sudo command

By default the AEN services uses `sudo -u` to perform operations on behalf of other users—including `mkdir`, `chmod`, `cp` and `mv`.

To override the default `sudo` command when `sudo` is not available on the system, before installing, set the `AEN_SUDO_CMD` environment variable.

AEN must have the ability to perform operations on behalf of other users. Therefore, this environment variable cannot be set to an empty string or to `null`.

CAUTION: Any command that replaces `AEN_SUDO_CMD` must support the `-u` command line parameter—similarly to the `sudo` command.

EXAMPLE:

```
export AEN_SUDO_CMD="sudo2"
```

The optional environmental variable `AEN_SUDO_SH` is another way to customize AEN sudo operations. When AEN executes any `sudo` command, it will include the value of `AEN_SUDO_SH`, if it is set.

EXAMPLE: If your username is “jsmith” and the values are set as:

```
AEN_SUDO_CMD=sudo  
OWNER=jsmith  
AEN_SUDO_SH=sudologger  
PROJECT_HOME=/projects/jsmith/myproj
```

Then AEN will resolve:

```
$AEN_SUDO_CMD -u ${OWNER} $AEN_SUDO_SH rm -rf $PROJECT_HOME
```

As:

```
sudo -u jsmith sudologger rm -rf /projects/jsmith/myproj
```

In this case the `sudologger` utility could be a pass-through utility that logs all `sudo` usage and then executes the remaining parameters.

### Post-installation Sudo configuration

While root/sudo privileges are required during installation, root/sudo privileges are not required during normal operations after install, if user accounts are managed outside the software. However root/sudo privileges are required to start the services, thus in the service config files there may still need to be an `AEN_SUDO_CMD` entry.

For more information, see *Configuring sudo customizations*.

## AEN remote database settings

By default AEN server uses a local database. To override the default database location, see *Install AEN connected to a remote Mongo DB instance*.

## What's next

*Install the AEN server.*

## Installing the AEN server

The AEN server is the administrative front end to the system. This is where users log in to the system, where user accounts are stored, and where admins can manage the system.

Server is installed in the `/opt/wakari/wakari-server` directory.

## Installing the bzip2 package

Be sure you have the `bzip2` package installed. If this package is not installed on your system, install it:

```
sudo yum install bzip2
```

## Downloading prerequisite RPMs

To install AEN on a CentOS 6 server:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
↪com"
curl -O $RPM_CDN/nginx-1.12.2-1.el6ngx.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-tools-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-shell-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-server-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-mongos-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-2.6.8-1.x86_64.rpm
curl -O $RPM_CDN/elasticsearch-1.7.2.noarch.rpm
curl -O $RPM_CDN/jre-8u65-linux-x64.rpm
```

To install AEN on a CentOS 7 server:

```
RPM_CDN="https://820451f3d8380952ce65-4cc6343b423784e82fd202bb87cf87cf.ssl.cf1.rackcdn.
↪com"
curl -O $RPM_CDN/nginx-1.12.2-1.el7_4ngx.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-tools-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-shell-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-server-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-mongos-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/mongodb-org-2.6.12-1.x86_64.rpm
curl -O $RPM_CDN/jre-8u112-linux-x64.rpm
curl -O $RPM_CDN/elasticsearch-1.7.6.noarch.rpm
```

### Installing prerequisite RPMs

Run:

```
sudo yum install -y *.rpm
sudo service mongod start
sudo chkconfig --add elasticsearch
```

### Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

### Running the AEN server installer

Run:

```
sudo -E ./aen-server-4.2.2-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-server
Logging to /tmp/wakari_server.log
Checking server name
Ready for pre-install steps
Installing miniconda
...
...
Checking server name
Loading config from /opt/wakari/wakari-server/etc/wakari/config.json
Loading config from /opt/wakari/wakari-server/etc/wakari/wk-server-config.json

=====

Created password '<RANDOM_PASSWORD>' for user 'aen_admin'

=====

Starting Wakari daemons...
installation finished.
```

After successfully completing the installation script, the installer creates the administrator account—AEN\_SRVC\_ACCT user—and assigns it a password.

EXAMPLE:

```
Created password '<RANDOM_PASSWORD>' for user 'aen_admin'
```

TIP: Record this password. It will be needed in the following steps. It is also available in the installation log file `/tmp/wakari_server.log`.

## Starting NGINX and Elasticsearch

When SELinux is enabled, it blocks NGINX from connecting to the socket created by Gunicorn. If you have SELinux enabled, run these commands to correct these permissions and allow connections between NGINX and Gunicorn:

```
sudo semanage fcontext -a -t httpd_var_run_t "/opt/wakari/wakari-server/var/run/wakari-  
↪server.sock"  
sudo restorecon -r /opt/wakari/wakari-server/var/run
```

To start NGINX and Elasticsearch to read the new config file:

```
sudo service nginx start  
sudo service elasticsearch start
```

TIP: If the AEN web page shows an NGINX 404 error, restart NGINX:

```
sudo nginx -s stop  
sudo nginx
```

## Testing AEN server installation

Visit `http://\protect\TI\textdollarAEN_SERVER`.

The License expired page is displayed.

No license found!

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**Upload License File**


**License File**

No file selected.

## Updating your license

From the License expired page, follow the onscreen instructions to upload your license file.

After your license is submitted, you will see this page:

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Login Help

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Browser-based Python & Linux for collaborative data analysis and visualization.

Password must contain a minimum of 7 characters. One uppercase, one lowercase and one number.



## What's next

*Install the AEN gateway.*

## Installing the AEN gateway

The gateway is a reverse proxy that authenticates users and automatically directs them to the proper AEN compute node for their project. Users will not notice this node as it automatically routes them.

Gateway is installed in the `/opt/wakari/wakari-gateway` directory.

## Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
export AEN_GATEWAY_PORT=8089
export AEN_GATEWAY=<FQDN HOSTNAME OR IP ADDRESS> # will be needed shortly
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change `<FQDN HOSTNAME OR IP ADDRESS>` to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists. If the terminal is closed before successful installation, export the variables to continue with the installation.

## Running the AEN gateway installer

Run:

```
sudo -E ./aen-gateway-4.2.2-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-gateway
Logging to /tmp/wakari_gateway.log
...
...
Checking server name
Please restart the Gateway after running the following command
to connect this Gateway to the AEN Server
...
```

### Registering your gateway

The gateway needs to register with the AEN server.

This needs to be authenticated, so the NFI user's credentials created during the AEN server install must be used.

To write the configuration file `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`, run the following as `sudo` or `root`:

```
sudo /opt/wakari/wakari-gateway/bin/wk-gateway-configure \  
--server http://$AEN_SERVER --host $AEN_GATEWAY \  
--port $AEN_GATEWAY_PORT --name Gateway --protocol http \  
--summary Gateway --username $AEN_SRVC_ACCT \  
--password '<NFI USER PASSWORD>'
```

NOTE: replace `<NFI USER PASSWORD>` with the password of the NFI user that was generated during *server installation*.

### Setting permissions

Run:

```
sudo chown $AEN_SRVC_ACCT /opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
```

### Starting the gateway

Run:

```
sudo service wakari-gateway start
```

### Verifying your gateway registration

1. Log in to the AEN server using the Chrome or Firefox browser and the `AEN_SRVC_ACCT` user.
2. In the AEN navigation bar, click **Admin** to open the Admin Settings page.
3. In the **Site Admin** menu, select **Data Centers**:

The screenshot shows the Anaconda web interface. On the left, there are two vertical menus. The top menu, titled 'Staff', contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom menu, titled 'Site Admin', contains links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', and 'Data Centers'. The 'Data Centers' link is highlighted with a blue background. On the right, there is a section titled 'Data Centers'. It contains a single entry 'Gateway' with the IP address 'ec2-52-90-133-17.compute-1.amazonaws.com:8089'. Below this entry is a green button with a plus icon and the text 'Add DataCenter'.

4. Click your data center:

This screenshot is similar to the previous one, showing the same left-hand menus. The 'Data Centers' section on the right now shows the 'Gateway' entry with the IP address '54.208.221.207:8080'. The 'Add DataCenter' button remains visible below the entry.

5. Verify that your data center is registered and the status is `{"status": "ok", "messages": []}`:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)
[Task Queue](#)

Datacenter Gateway

Edit

Provider

wk\_server.plugins.providers.enterprise

Client ID

59c119cd3f94c30fe45ff5db

Client Secret

50cc629d-4e8e-44a5-9a2e-a46fee7c1921

Redirect URIs

http://ec2-52-90-133-17.compute-1.amazonaws.com:8089/login/authorized

wk-gateway-config.json

```
{
  "CDN": "http://ec2-204-236-198-47.compute-1.amazonaws.com/static/",
  "SUBDOMAIN_ROUTING": false,
  "client_id": "59c119cd3f94c30fe45ff5db",
  "client_secret": "50cc629d-4e8e-44a5-9a2e-a46fee7c1921",
  "WAKARI_SERVER": "http://ec2-204-236-198-47.compute-1.amazonaws.com",
  "port": 8089
}
```

status

```
{"status": "ok", "messages": []}
```

Back

Remove

## What's next

*Install the AEN compute node(s).*

## Installing the AEN compute node(s)

Compute nodes are where projects are stored and run.

Adding multiple AEN compute machines allows you to scale-out horizontally to increase capacity. Projects can be created on individual compute nodes to spread the load.

Repeat this procedure on each compute machine.

## Setting variables and changing permissions

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists.

## Running the AEN compute installer

Run:

```
sudo -E ./aen-compute-4.2.2-Linux-x86_64.sh -w $AEN_SERVER
...
...
PREFIX=/opt/wakari/wakari-compute
Logging to /tmp/wakari_compute.log
Checking server name
...
...
Initial clone of root environment...
Starting Wakari daemons...
installation finished.
Do you wish the installer to prepend the wakari-compute install location
to PATH in your /root/.bashrc ? [yes|no]
[no] >>> yes
```

## Restart the AEN Server

Once configured, restart the AEN server:

```
sudo service wakari-server restart
```

## Configuring your compute node(s)

Once installed, you must configure the compute launcher on your server:

1. In your browser, go to your AEN server.
2. Log in as the AEN\_SRVC\_ACCT user.
3. In the AEN navigation bar, click Admin to open the Admin Settings page.
4. In the **Providers** menu, select Enterprise Resources:

<b>Staff</b>	<b>Resources</b> <a href="#">+ Add Resource</a>
<a href="#">Daily Report</a>	<b>Gateway</b>
<a href="#">Password Reset</a>	<a href="#">ec2-54-210-232-251.compute-1.amazonaws.com</a> <a href="#">remove</a>
<a href="#">Notification</a>	
<a href="#">Exceptions</a>	
<b>Site Admin</b>	
<a href="#">General</a>	
<a href="#">Accounts</a>	
<a href="#">Users</a>	
<a href="#">Monitor</a>	
<a href="#">Security Log</a>	
<a href="#">Data Centers</a>	
<a href="#">Task Queue</a>	
<a href="#">License</a>	
<b>Providers</b>	
<a href="#">Enterprise Resources</a>	

5. Click the Add Resource button to open the new resource form.
6. Select the data center to associate this compute node with.

**Resources / new**

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
Compute Node1

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**  
Configuring Compute Node

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Add Resource

7. In the URL box, type: `http://$AEN_COMPUTE:5002`.

NOTE: If the compute launcher is located on the same box as the gateway, we recommended that you type `http://localhost:5002` instead.

8. Type a Name and Description for the compute node.
9. Click the Add Resource button to save the changes.

Your AEN compute node is configured.

### What's next

*Configure conda to use your local on-site AEN repository.*

### Configuring conda to use your local on-site AEN repository

You can configure AEN to use a local on-site Anaconda Repository server instead of Anaconda.org.

To configure AEN to use a local on-site Repository, you must:

1. *Edit conda on the compute node.*
2. *Configure the Anaconda client.*

### Editing conda on the compute node

NOTE: If there are channels that you haven't mirrored, you must remove them from the configuration.

Edit the file `.condarc` to match the following:

```
#/opt/wakari/anaconda/.condarc
channels:
  - defaults

create_default_packages:
  - anaconda-client
  - ipykernel

# Default channels is needed for when users override the system .condarc
# with ~/.condarc. This ensures that "defaults" maps to your Anaconda Repository and not
# repo.continuum.io
default_channels:
  - http://<your Anaconda Repository name>:8080/conda/anaconda
  - http://<your Anaconda Repository name>:8080/conda/wakari
  - http://<your Anaconda Repository name>:8080/conda/r-channel

# Note: You must add the "conda" subdirectory to the end
channel_alias: http://<your Anaconda Repository name>:8080/conda
```

NOTE: Replace `<your Anaconda Repository name>` with the actual name or IP address of your local Anaconda Repository installation.

### Configuring the Anaconda client

Anaconda client lets users work with Repository from the command-line—including searching for packages, logging in, uploading packages, and more.

To set the default configuration of `anaconda-client` for all users on your compute node:

```
sudo /opt/wakari/anaconda/bin/anaconda config --set url http://<your Anaconda Repository>:8080/api -s
```



NOTE: Sudo is required because the configuration file is written to the root file system: `/etc/xdg/binstar/config.yaml`.

NOTE: Replace `<your Anaconda Repository>` with the actual name or IP address of your local Anaconda Repository installation.

## What's next

Review the *optional configuration* tasks to see if any apply to your system.

## Optional configuration

### Using configuration files

The default locations for each component's configuration files are:

- Server—`/opt/wakari/wakari-server/etc/wakari/config.json`.
- Gateway—`/opt/wakari/wakari-gateway/etc/wakari/config.json`.
- Compute—`/opt/wakari/wakari-compute/etc/wakari/config.json`.

Additionally, service-specific configuration files may also be present in the following locations:

- Server—`/opt/wakari/wakari-server/etc/wakari/wk-server-config.json`.
- Gateway—`/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`.
- Compute—`/opt/wakari/wakari-compute/etc/wakari/wk-compute-config.json`.

Each service loads each of the configuration files in the following order and updates the AEN configuration at each step:

1. `/etc/wakari/config.json`.
2. `/etc/wakari/wk-gateway-config.json`.
3. `/opt/wakari/wakari-SERVICE/etc/wakari/config.json`.
4. `/opt/wakari/wakari-SERVICE/etc/wakari/wk-SERVICE-config.json`.
5. `./config.json`.
6. `./wk-gateway-config.json`.

## AEN configuration keys

The following is a list of AEN supported configuration keys:

Table 41: Server Configuration Keys

Key	Default	Description
CDN	<code>\$WAKARI_SERVER/static/</code>	The location of static assets.
MONGO_DB	<code>wakari</code>	The name of the AEN database in mongodb.
MONGO_URL	<code>mongodb://localhost/</code>	The URL of your AEN server's mongodb instance. Format: <code>mongodb://&lt;username&gt;:&lt;password&gt;@&lt;host&gt;:&lt;port&gt;/</code>
WAKARI_SERVER		The URL of this AEN server.
DEFAULT_PRIVACY	<code>public</code>	The default project privacy setting—can be either <code>public</code> or <code>private</code> .
SESSION_COOKIE_NAME	<code>wakari.enterprise.session</code>	The Cookie name used to maintain Anaconda Enterprise Notebooks Enterprise login sessions.
PERMANENT_SESSION	<code>True</code>	Sets cookie session to permanent. This will keep the session open after the browser is closed. The session will still expire after the number of minutes set in the <code>SESSION_LIFETIME</code> key.
SESSION_LIFETIME	<code>120</code>	Time in minutes until the session expires. The counter resets with each request.
USE_SES	<code>false</code>	Sets whether AEN will use Amazon SES to send emails.
SMTP		Sets the SMTP email settings.
- host		A SMTP subkey—the SMTP mail server hostname.
- user		SMTP subkey—the username for SMTP server authentication.
- password		SMTP subkey—the password for SMTP server authentication.
- from_addr		SMTP subkey—the From address for emails sent through SMTP.
verify_gateway_certificate	<code>true</code>	A boolean setting that indicates whether your AEN server should verify the gateway SSL certificate.
accounts	<code>wk_server.plugins.accounts.cloud</code>	The account provider class. For LDAP, this should be set to <code>wk_server.plugins.accounts.ldap_accounts</code> .
uniqueEmail	<code>true</code>	A boolean setting that indicates whether unique user email addresses are required. See <a href="#">note below</a> about updating the database when setting <code>uniqueEmail</code> .
has_internet	<code>true</code>	Boolean for retrieving the avatar from the gravatar URL. If false a local default is used instead.
LDAP	<code>389</code>	LDAP configurations.
- SERVER		LDAP subkey—A list of LDAP servers. At least one server name must be listed. The primary server should be listed first. All secondary or fail-over servers should be listed after the primary.
- PORT	<code>389</code>	LDAP subkey—The LDAP port on the LDAP server.
- AUTH_TYPE		LDAP subkey—LDAP Authentication types. <code>simple</code> —no encryption not secure. <code>``TLS``</code> —encrypted secure requires the <code>TLS_CERT</code> to be set.
- TLS_CERT		LDAP subkey—the full path to the TLS certificate file. The certificate file must also be provided by the Enterprise.
- BASEDN		LDAP subkey—the LDAP Base DN value.
- OU		LDAP subkey—a list of Organizational Units. Some Enterprises group users by OUs in their LDAP server records. AEN will loop over the list of OUs when authenticating a user. The OU value is a list of lists to support multiple OUs where each OU is a single name or a hierarchy of names.
ANON_USER	<code>anonymous</code>	Username—such as <code>public</code> or <code>anonymous</code> —assigned users who are not logged in to access projects. To disable public access use the special value <code>disabled</code> . For more information, see <a href="#">Configuring sudo customizations</a> .
SEARCH_ENABLED	<code>true</code>	Boolean indicating whether ElasticSearch is enabled.
SEARCH_SERVER	<code>'localhost:9200'</code>	IP address or domain name and port of ElasticSearch server
LOG_LEVEL	<code>'DEBUG'</code>	Log verbosity. One of: <code>'ERROR'</code> <code>'WARN'</code> <code>'INFO'</code> <code>'DEBUG'</code>

NOTE: If you set `uniqueEmail` to `false`, you must drop the existing index in the database. EXAMPLE: If the index name is `email_1`, run `db.users.dropIndex("email_1")`.

Table 42: Gateway Configuration Keys

Key	Default	Description
<code>WAKARI_SERVER</code>		The URL of the AEN <code>WAKARI_SERVER</code> .
<code>port</code>	8089	The Port number used by the gateway application. Must be a non-privileged port ( $\geq 1024$ ).
<code>client_id</code>		The client ID assigned to this gateway by the server during <code>wk-gateway-configure</code> .
<code>client_secret</code>		The Client secret assigned to this gateway by the server during <code>wk-gateway-configure</code> .
<code>httpTimeout</code>	600	Timeout in seconds. The default is 10 minutes to allow project creation.
<code>logLevel</code>	info	Log verbosity. One of: 'error' 'warn' 'info' 'debug'.
<code>https</code>		Enable SSL encryption. For more information, see <a href="#">Configuring SSL</a> .
- <code>key</code>		A https subkey–Path to gateway key.
- <code>cert</code>		A https subkey–Path to gateway cert.
- <code>ca</code>		A https subkey–Required if cert was signed by a private root CA or signed by an intermediate authority. It must contain separate values for the paths to the CA root, any intermediates and the certificate for the Server.
- <code>passphrase</code>		A https subkey–Passphrase required to decrypt SSL certs.

Table 43: Compute Node Configuration Keys

Key	Default	Description
WAKARI_SERVER		The URL of the AEN WAKARI_SERVER.
MANAGE_ACCOUNTS	true	A boolean setting that indicates whether AEN should manage system user accounts. Set to false for LDAP installations.
identicalGID	false	<b>To make the AEN compute service create groups with the same uid. Set to true If the /projects folder resides on an NFSv3 volume.</b> For more information, see <a href="#">Group and user permissions for NFS</a> .
port	2227	The port number used by the compute-launcher application. Note that individual applications use dynamic ports.
projectRoot	/projects	The location of project file storage.
logLevel	info	Log verbosity. One of: 'error' 'warn' 'info' 'debug'
logMaxSize	10000000	Max size in bytes of the logfile. Default is 10 MB. If the size is exceeded then a new file is created and a counter will become a suffix of the log file.
logMaxFiles	30	Limit the number of files created when the size of the logfile is exceeded
appIdleTime	172800000 (48 hours)	The amount of idle time before applications will be auto-terminated (in msec).
idleCheckInterval	3600000 (1 hour)	The frequency of idle checks.
numericUsernames	false	A boolean setting that indicates whether numeric usernames are permitted.
httpTimeout	600	The time before a timeout—in seconds. The default is 10 minutes—600 seconds—to allow time for project creation.
ANON_USER	anonymous	Username such as public or anonymous for users who are not logged in to access projects. To disable public access use the special value disabled. For more information, see <a href="#">Configuring sudo customizations</a> .
projDirsAsHome	false	A boolean setting. When false AEN apps use /home/<username> as HOME. When true AEN apps use /projects/<username> as HOME.

Table 44: Server Internal Configuration Keys - Do not change

Key	Default	Description
PROVIDERS	["wk_server. plugins providers. enterprise"]	A list of compute provider classes.
MONGO_ACTION_LOG_SIZE	262144000	The size of the Mongo action log in bytes.
SITE_ADMINS		A list of site administrator email addresses—used for crash notifications and LDAP password reset requests.
FROM_EMAIL_ADDR		The From address for notification emails sent by AEN.
uniqueUserName	true	A boolean setting that indicates whether unique usernames are required.

Table 45: Gateway Internal Configuration Keys - Do not change

Key	Default	Description
CDN	<code>\$WAKARI_SERVER/ static/</code>	The location of static assets.
SUBDOMAIN_ROUTING	<code>false</code>	A boolean that indicates whether subdomains are being used.
refreshTokenExpiration	<code>500000</code>	Idle time in milliseconds before the Gateway session expires.

Table 46: Compute Node Internal Configuration Keys - Do not change

Key	Default	Description
CDN	<code>\$WAKARI_SERVER/ static/</code>	The location of static assets.
USE_SES	<code>false</code>	Sets whether AEN will use Amazon SES to send emails.
multiUser	<code>true</code>	A boolean that indicates whether multi-user support is enabled.
multiProject	<code>true</code>	A boolean that indicates whether multi-project support is enabled.
ANACONDA_ROOT	<code>/opt/wakari/ anaconda</code>	The location of your Anaconda installation.
appLogs	<code>/opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher-apps</code>	The directory where application logs are stored.
appPIDs	<code>/opt/wakari/ wakari-compute/ var/run/ compute-launcher-apps</code>	The directory where application PID files are stored.
applicationLog	<code>/opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher. application.log</code>	The path to the compute launcher log.
accessLog	<code>opt/wakari/ wakari-compute/ var/log/wakari/ compute-launcher. access.log</code>	Path to compute launcher access log

## Checking configuration file syntax

To verify that the configuration file contains valid JSON, run:

```
root@server # python -m json.tool /opt/wakari/wakari-server/etc/wakari/*.json
root@gateway # python -m json.tool /opt/wakari/wakari-gateway/etc/wakari/*.json
root@compute # python -m json.tool /opt/wakari/wakari-compute/etc/wakari/*.json
```

If the file is correct, the contents are displayed.

If there is a syntax error in the file, a “No JSON object could be decoded” message is displayed instead.

To fix any errors, edit the configuration file and verify that it contains the correct JSON syntax.

## Increasing HTTP timeout between gateway and compute nodes

The default HTTP timeout is 600 seconds (10 minutes).

This setting works for HTTP timeout only, not HTTPS.

To modify the HTTP timeout setting:

1. Open the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file and modify the `httpTimeout` key:

```
"httpTimeout": 600
```

2. Update the gateway node by modifying the `httpTimeout` key in the `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json` file to match the above settings.
3. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Installing AEN in a custom location

To install AEN in a custom location:

1. Make the custom install folder owned by `$AEN_SRVC_ACCT`. EXAMPLE: `/data/aen/`.
2. Make a symlink from `/opt/wakari` to `/data/aen`.
3. Run the installers.
4. Move the folder from `/projects` to your chosen custom location. EXAMPLE: `/data/aen/projects`.
5. Make a symlink from `/projects` to `/data/aen/projects`.

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda environment directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

## Changing where projects are stored

NOTE: We recommend putting `/opt/wakari` and `/projects` on the same filesystem. If the project and conda env directories are on separate filesystems then more disk space will be required on compute nodes and performance will be worse.

To make aen-compute service use a different directory than `/projects` to store your AEN projects:

1. Modify the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file:

```
"projectRoot" : "/nfs/storage/services/wakari/projects",
```

NOTE: The directory `/nfs/storage/services/wakari/projects` specified as `projectRoot` must already exist for this command to resolve properly.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Group and user permissions for NFS

To install AEN with multiple compute nodes and a `/projects` folder on an NFSv3 volume, manually pre-create both the anonymous user and the `$AEN_SRVC_ACCOUNT` user on all nodes. Each of these users must have the same user identity number (UID) and group identity number (GID) on all nodes.

By default AEN creates local users with a different GID on each node. To make the AEN compute service create groups with the same GID:

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, change the `identicalGID` key value to `true`:

```
, "identicalGID": true
```

If you don't see the `identicalGID` key, add it.

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Using numeric usernames

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, change the `numericUsernames` key value to `true`.

```
, "numericUsernames": true
```

If you don't see the `numericUsernames` key, add it.

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Using project directories as home directories

The `projDirsAsHome` option changes the AEN home directories from the standard `/home/<username>` location to the project directories and the location `/projects/<username>/<project_name>/<username>/`. This ensures that AEN and AEN apps will not be affected by configuration files in a user's home directory, such as `.bashrc` or configuration files in subdirectories such as `.ipython` and `.jupyter`.

## Package cache locations

AEN version 4.1.3 stores the cache of packages in `/home/<username>`, while AEN versions 4.2.0 and higher store the cache of packages in `/projects/<username>/<project_name>/<username>/`. By moving the package cache to the same filesystem as the project, AEN versions 4.2.0 and higher can use hardlinks and save disk space and time when creating or cloning environments.

These package cache locations are not affected by the `projDirsAsHome` option.

After upgrading from AEN 4.1.3 to AEN 4.2.0 or higher, existing projects will still use the package cache in `/home/<username>`. Do not remove this cache, or the existing projects will break.

When users create new projects or install packages, the newly installed packages will use the new cache location.

If you wish to remove the older package cache in `/home/<username>`:

- Upgrade AEN to 4.2.0 or higher.
- Use `conda remove` to remove every non-default package in every project.
- Use `conda install` to replace them. The replaced packages will link to the new package cache in `/projects/<username>/<project_name>/<username>/`.
- You can now safely remove the older package cache.

## Enabling `projDirsAsHome`

NOTE: The `projDirsAsHome` option should be enabled immediately after performing the installation process and before any users have logged in to AEN. This ensures that users will not have home directories in different places due to some creating their home directories when the option was disabled and others creating their home directories when the option was enabled.

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, add the `projDirsAsHome` key value and set it to `true`.

```
, "projDirsAsHome": true
```

NOTE: You must add the comma at the beginning of the line. If you add this line as the last key, you must remove any comma at the end of the line.

2. Restart the AEN compute service:

```
sudo service wakari-compute restart
```

## Setting up a default project environment

AEN includes a full installation of the Anaconda Python distribution—along with several additional packages—located within the root conda environment in `/opt/wakari/anaconda`.

The first time any new AEN project is started, this default project environment is cloned into the new project's workspace.

To configure a different set of packages than the default:

1. Create a new conda environment in the `/opt/wakari/anaconda/envs/default` directory.

EXAMPLE: Using a Python 3.4 base environment, run:



```
sudo -u $AEN_SRV_ACCT /opt/wakari/anaconda/bin/conda \
create -p /opt/wakari/anaconda/envs/default python=3.4
```

2. Use conda to install any additional packages into the environment.
3. After the environment is created, clone it to ensure that it works correctly:

```
sudo -u $AEN_SRV_ACCT /opt/wakari/anaconda/bin/conda \
create -p /opt/wakari/testenv --clone /opt/wakari/anaconda/envs/default
sudo -u $AEN_SRV_ACCT rm -rf /opt/wakari/testenv
```

## Converting an existing project

1. Run the following command to clone the environment:

```
sudo -u $AEN_SRV_ACCT /opt/wakari/anaconda/bin/conda \
create -n /projects/owner/project/envs/<ENV_NAME> \
--clone /opt/wakari/anaconda/envs/default
```

NOTE: Replace `/projects/owner/project/envs/<ENV_NAME>` with the path to the new environment you would like to create within the project.

2. Open the *Compute Resource Configuration application* for your project and set the project environment path there as well.

## Install AEN connected to a remote Mongo DB instance

To install AEN with a remote database:

1. Connect to the Mongodb instance and create the user for AEN:

```
> user = { user: "<username>",
  pwd: "<super-secure-password>",
  roles: [
    { role: "dbOwner", db: "<db_name>" },
    { role: "dbOwner", db: "<db_name>_mq" }
  ]
}
> db.createUser(user)
Successfully added user: { ... }
```

2. Before installing AEN-server export the database URL and name:

```
$ export MONGO_URL="mongodb://<username>:<password>@<host>:<port>/"
$ export MONGO_DB="<database_name>"
```

3. Continue the installation process: *Install the AEN server*.

## Migrate from local to remote MongoDB

To configure your remote database to work with an already installed AEN server:

1. Stop the server, gateway and compute nodes:

```
sudo service wakari-server stop
sudo service wakari-gateway stop
sudo service wakari-compute stop
```

2. Open the `/opt/wakari/wakari-server/etc/wakari/config.json` file and create the `MONGO_URL` key. For the value parameter, add the database information.

The final file should read:

```
{
  "MONGO_URL": "mongodb://MONGO-USER:MONGO-PASSWORD@MONGO-URL:MONGO-PORT",
  "MONGO_DB": "MONGO-DB-NAME",
  "WAKARI_SERVER": "http://YOUR-IP",
  "USE_SES": false,
  "CDN": "http://YOUR-IP/static/",
  "ANON_USER": "anonymous"
}
```

For more information about configuration keys, see *Using configuration files*.

3. Migrate the data from the former database into the new one. For more information, see the [MongoDB documentation website](#).
4. After migration, restart the nodes:

```
sudo service wakari-server start
sudo service wakari-gateway start
sudo service wakari-compute start
```

## Running SELinux in enforcing mode

To run SELinux in Enforcing mode, a few ports must be set up using the `semanage port` command.

The `semanage` command relies on `policycoreutils-python`. To install `policycoreutils-python`, if needed, run:

```
sudo yum -y install policycoreutils-python
```

Enable ports 9200 and 9300 for Elasticsearch:

```
sudo semanage port -a -t http_port_t -p tcp 9200
sudo semanage port -a -t http_port_t -p tcp 9300
```

## Changing server hostnames

It is possible to change the domain names (hostnames) of the various AEN nodes by updating the configuration files.

NOTE: After the configuration files are updated, the associated nodes need to be restarted.

To edit the information for all of the data centers that you are changing the base domain name for:

1. Go to the Site Admin section of the Admin Settings page.
2. In the Data Centers section, click the Edit button.
3. Make any necessary updates.

NOTE: This must include the service port if it is different from the default—80 for HTTP and 443 for HTTPS.

4. In the Enterprise Resources sub-section of the Providers section, edit each compute node that has a changed domain name.

NOTE: These URLs should include the protocol, hostname and port.

## Authenticating with LDAP

Anaconda Enterprise Notebooks performs local authentication against accounts in the AEN database by default.

To configure AEN to authenticate against accounts in an LDAP (Lightweight Directory Access Protocol) server, follow the instructions below.

## Installing OpenLDAP libraries

The system needs OpenLDAP libraries to be installed and accessible by AEN. AEN uses the OpenLDAP libraries to establish an LDAP connection to your LDAP servers.

To install OpenLDAP on CentOS or Redhat:

```
sudo yum install openldap
```

To install OpenLDAP on Ubuntu or Debian, follow the official [OpenLDAP installation instructions](#).

## Configuring OpenLDAP

1. Open the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file.
2. Add the following LDAP settings:

```
{
  "accounts": "wk_server.plugins.accounts.ldap2",
  "LDAP" : {
    "URI": "ldap://openldap.EXAMPLE.COM",
    "BIND_DN": "cn=Bob Jones,ou=Users,DC=EXAMPLE,DC=COM",
    "BIND_AUTH": "secretpass",
    "USER_SEARCH": {"base": "DC=EXAMPLE,DC=COM",
                    "filter": "(| (& (ou=Payroll)
                                   (uid=%(username)s))
                              (& (ou=Facilities)
                                   (uid=%(username)s)))"
  }
}
```

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```

        },
        "KEY_MAP": {"username": "uid",
                    "email": "mail",
                    "name": "cn"}
    }
}

```

- **URI**—The IP address or hostname of your OpenLDAP server. For SSL/TLS, use the `ldaps://` prefix and specify a `TLS_CACERT` as described in the SSL/TLS configuration section below.
- **BIND\_DN**—The full directory path of the user you want AEN server to bind as.
- **BIND\_AUTH**—The password of the `BIND_DN` user.
- **USER\_SEARCH**:
  - **base**—The level at which you want to start the search.
  - **filter**—The default is to search for the `sAMAccountName` attribute, and use its value for the AEN server username field.
- **KEY\_MAP**—Maps user attributes in AEN server to LDAP user attributes.

EXAMPLE: The `mail` attribute in LDAP maps to the `email` attribute in AEN server.

NOTE: Map the `uid` attribute in LDAP to the `username` attribute in AEN server to preserve username capitalization.

3. Restart AEN server to load new settings.
4. Log in with the admin account. This creates the admin user in the local database.
5. As soon as LDAP is installed, LDAP authentication takes over, so you need to add your admin account again:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add "jsmith"
```

## Configuring Active Directory

Microsoft Active Directory is a server program that provides directory services and uses the open industry standard Lightweight Directory Access Protocol (LDAP).

To enable Active Directory support:

1. Open the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file.
2. Add the following LDAP settings:

```

{
  "accounts": "wk_server.plugins.accounts.ldap2",
  "LDAP" : {
    "URI": "ldap://<ad.EXAMPLE.COM>",
    "BIND_DN": "CN=Bind User,CN=Users,DC=EXAMPLE,DC=COM",
    "BIND_AUTH": "secretpass",
    "USER_SEARCH": {"base": "CN=Users,DC=EXAMPLE,DC=COM",
                    "filter": "sAMAccountName=%(username)s"}
  },
  "KEY_MAP": {"username": "sAMAccountName",

```

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```

        "email": "mail",
        "name": "cn"
    }
}

```

- **URI**—The IP address or hostname of your Active Directory server. Replace <ad.EXAMPLE.COM> with the actual URI. For SSL/TLS, use the `ldaps://` prefix and specify a `TLS_CACERT` as described in the SSL/TLS configuration section below.
- **BIND\_DN**—The full directory path of the user you want AEN server to bind as.
- **BIND\_AUTH**—The password of the `BIND_DN` user.
- **USER\_SEARCH**:
  - **base**—the level at which you want to start the search.
  - **filter**—default is to search for the `sAMAccountName` attribute, and use its value for the AEN server `username` field.
- **KEY\_MAP**—Maps user attributes in AEN server to LDAP user attributes.

EXAMPLE: The `mail` attribute in LDAP maps to the `email` attribute in AEN server.

NOTE: Map the `sAMAccountName` attribute in LDAP to the `username` attribute in AEN server to preserve username capitalization.

3. Restart AEN server to load new settings.
4. Log in with the admin account. This creates the admin user in the local database.
5. As soon as LDAP is installed, LDAP authentication takes over, so you need to add your admin account again:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add "jsmith"
```

## Configuring SSL/TLS

AEN uses system-wide LDAP settings, including SSL/TLS support.

- On Redhat/CentOS systems, these settings are located in the `/etc/openldap/ldap.conf` file.
- On Ubuntu/Debian systems, these settings are located in the `/etc/ldap/ldap.conf` file.

Typically, the only configuration necessary is updating the file to read:

```
TLS_CACERT /path/to/CA.cert
```

NOTE: `CA.cert` is the Certificate Authority used to sign the LDAP server's SSL certificate. In the case of a self-signed SSL certificate, this is the path to the SSL certificate itself.

## Testing LDAP configuration

Test your LDAP configuration using `flask-ldap-login-check`:

```
/opt/wakari/wakari-server/bin/flask-ldap-login-check \  
wk_server.wsgi:app \  
-u [username] \  
-p [password]
```

NOTE: username is the username of a valid user and password is that user's BIND\_AUTH password.

## Configuring sudo customizations

If your organization's IT security policy does not allow root access or has restrictions on the use of sudo, after AEN installation, you may customize AEN to meet their requirements.

Your organization may choose to implement any or all of the following:

- *Remove root access* for AEN service account (Note: this restricts AEN from managing user accounts).
- *Configurable sudo command*.
- *Restrict sudo access to all processes*.

These customizations must be done in a terminal window after copying the files to the server node.

## Removing all root access from the service account

Because root access is required for `useradd`, the following process restricts AEN from managing user accounts.

1. Modify the `/etc/sudoers.d/wakari_sudo` file to read:

```
Defaults:wakari !requiretty, visiblepw  
Runas_Alias    OP = ALL,!root  
wakari ALL=(OP) NOPASSWD: ALL
```

NOTE: If you used a service account name other than `wakari`, enter that name instead of `wakari`.

2. Modify the `/opt/wakari/wakari-compute/etc/wakari/config.json` file to read:

```
"MANAGE_ACCOUNTS": false,
```

Using this option means that your IT department must create and manage all user accounts at the OS level.

After an OS-level account exists, you may create on the main AEN web page an AEN account using the same name. The password you choose is not linked in any way to the OS-level password for the account.

Alternatively, you can configure the system to *use LDAP for authenticating users*.

## Allowing public users to have access to your AEN projects

A public account is visible to anyone who can access the AEN server. The name of this account can be configured to any name you wish. For example, `public` or `anonymous`. To disable this feature use the special value `disabled`.

1. In the `/opt/wakari/wakari-compute/etc/wakari/wk-compute-launcher-config.json` file, modify the `ANON_USER` line to read:

```
"ANON_USER": "public"
```

2. Restart AEN compute node:

```
sudo service wakari-compute restart
```

3. In the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file, modify the `ANON_USER` line to read:

```
"ANON_USER": "public"
```

4. Restart AEN server:

```
sudo service wakari-server restart
```

For more information about configuration keys, see *Using configuration files*.

## Using a sudo alternative

You can use a sudo alternative as long as it supports the same execution semantics as the original sudo. The alternative must be configured to give the service account permission to run commands on behalf of AEN users.

1. In your terminal window, open the `/opt/wakari/wakari-compute/etc/wakari/config.json` file.
2. Modify the `AEN_SUDO_CMD` line to read:

```
"AEN_SUDO_CMD": "/path/to/alternative/sudo",
```

NOTE: If the alternate sudo command is available on `PATH`, then the full path is not required.

## Restricting sudo access to a single gatekeeper

By default, sudoers is configured to allow AEN to run any command as a particular user which allows the platform to initiate processes as the logged-in end user. If more restrictive control is required, it should be implemented using a suitable sudoers policy. If that is not possible or practical, it is also possible to route all AEN ID-changing operations through a single gatekeeper.

This gatekeeper wraps the desired executable and provides an alternate way to log, monitor, or control which processes can be initiated by AEN on behalf of a user.

CAUTION: Gatekeeper is a special case configuration and should only be used if required.

To configure an AEN gatekeeper:

1. Modify the `/etc/sudoers.d/wakari_sudo` file to contain:

```
Defaults:wakari !requiretty, visiblepw
Runas_Alias    OP = ALL,!root
wakari ALL=(OP) NOPASSWD: /path/to/gatekeeper
```

2. In the `/opt/wakari/wakari-compute/etc/wakari/config.json` file, modify the `AEN_SUDO_SH` line to read:

```
"AEN_SUDO_SH": "/path/to/gatekeeper"
```

EXAMPLE: The gatekeeper can be as simple as a script with contents such as:

```
#!/bin/bash
first_cmd=$1
if [ 'bash' == $1 ]; then
    shift
    export HOME=~
    export SHELL=/bin/bash
    export PATH=$PATH:/opt/wakari/anaconda/bin
    bash "$@"
else
    exec $@
fi
```

## Configuring SSL

The server node uses NGINX to proxy all incoming http(s) requests to the server running on a local port, and uses NGINX for SSL termination. The default setup uses http—non-SSL—since cert files are required to configure SSL and each enterprise will have their own cert files.

The `www.enterprise.conf` file is the default `nginx.conf` file used for AEN. It is copied to the `/etc/nginx/conf.d` directory during server installation.

NOTE: This section describes setting up SSL after your gateway node has been installed and registered with the server node.

## Copying the required files

To configure SSL on AEN, you will need the following files:

- Server certificate and key
- Server CA bundle
- Gateway certificate and key
- Gateway CA bundle

Configure SSL on AEN:

1. Copy the Gateway certificate and key to `/opt/wakari/wakari-gateway/etc/` on the Gateway as `gateway.crt` and `gateway.key`.
2. Copy the Gateway CA bundle to `/opt/wakari/wakari-server/etc/` on the Server.
3. Copy the Server certificate and key to `/etc/nginx` on the Server as `server.crt` and `server.key`.
4. Copy the Server CA bundle to `/opt/wakari/wakari-gateway/etc/` on the Gateway.



If you have a certificate that was signed by a private root CA and/or an intermediate authority:

- The Gateway CA bundle must contain the full chain: root CA, any intermediate authority and the certificate.

```
cat gateway.crt intermediate.crt root.crt >> gateway-crt-int-root.crt
```

- The Server CA bundle must be separated into individual files for the root CA, any intermediate and the certificate.

## Configuring SSL on the server node

The `www.enterprise.https.conf` is an NGINX configuration file for SSL. It is set up to use the `server.crt` and `server.key` cert files.

CAUTION: You must change these values to point to the signed cert files for your domain.

NOTE: Self-signed certs or those signed by a private root CA require additional configuration.

Perform the following steps as root:

1. Stop NGINX:

```
service nginx stop
```

2. Move the `/etc/nginx/conf.d/www.enterprise.conf` file to a backup directory.

3. Copy the `/opt/wakari/wakari-server/etc/nginx/conf.d/www.enterprise.https.conf` file to `/etc/nginx/conf.d`.

NOTE: `/etc/nginx/conf.d` may have `www.enterprise.conf` or `www.enterprise.https.conf` but it may not have both.

4. Edit the `/etc/nginx/conf.d/www.enterprise.https.conf` file and change the `server.crt` and `server.key` values to the names of the real cert and key files if they are different.

5. Restart NGINX by running:

```
service nginx start
```

6. Update the WAKARI\_SERVER and CDN settings to use https instead of http in the following configuration files:

```
/opt/wakari/wakari-server/etc/wakari/config.json
/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json
/opt/wakari/wakari-compute/etc/wakari/config.json
```

7. Copy the gateway certificate, `gateway.crt` to `/opt/wakari/wakari-server/etc/`.

8. In an editor, open `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` and add:

```
"verify_gateway_certificate": "/opt/wakari/wakari-server/etc/gateway.crt"
```

9. Restart AEN services on the server by running:

```
service wakari-server restart
```

NOTE: This step may return an error since the gateway has not yet been configured for SSL.

10. In AEN, verify that the browser uses https. On the Admin Settings page, under Data Centers, click Gateway, then select https:

# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the administrator

The screenshot shows two side-by-side panels. The left panel, titled 'Staff', contains three links: 'Daily Report', 'Password Reset', and 'Notification'. The right panel, titled 'Data Centers / Register a datacenter', has a 'Name' field with 'Gateway 1' entered. Below this are two checkboxes: 'Subdomain Routing' (unchecked) and 'Https' (checked).

## Configuring SSL on the gateway

1. For all types of SSL certificates, in `/opt/wakari/wakari-gateway/etc/wakari/wk-gateway-config.json`, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt"
  }
}
```

2. For a server certificate signed by a private root CA or signed by an intermediate authority, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "ca": ["/opt/wakari/wakari-gateway/etc/server.crt"]
  }
}
```

NOTE: When the certificate chain has more than one intermediate cert signed by a higher root CA authority, you must manually break up the certs in the chain into individual files, and enumerate them in the `ca` key:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "ca": ["/opt/wakari/wakari-gateway/etc/server1.crt",
          "/opt/wakari/wakari-gateway/etc/server2.crt",
          "/opt/wakari/wakari-gateway/etc/server3.crt"]
  }
}
```

- For a gateway certificate that is encrypted using a passphrase, add:

```
{
  EXISTING_CONFIGURATION,
  "https": {
    "key": "/opt/wakari/wakari-gateway/etc/gateway.key",
    "cert": "/opt/wakari/wakari-gateway/etc/gateway.crt",
    "passphrase": "mysecretpassphrase"
  }
}
```

NOTE: Alternatively, the passphrase can be passed using an environment variable or entered when the wakari-gateway service is manually started.

EXAMPLES:

```
# using an environment variable
AEN_GATEWAY_SSL_PASSPHRASE='mysecretpassphrase' wk-gateway
```

```
# starting wakari-gateway manually
sudo service wakari-gateway start --ask-for-passphrase
Passphrase?
```

- Restart the gateway:

```
sudo service wakari-gateway restart
```

## Configuring SSL on compute nodes

Anaconda Enterprise does not support direct SSL on Compute Nodes. If you need SSL on Compute Nodes, you must install each Compute Node on the same server as a Gateway using `http://localhost:5002` for the URL value while adding it as a resource, and you must use a Gateway for each and every Compute Node.

## Security reminder

The permissions on the cert files must be set correctly to prevent them from being read by others. Since NGINX is run by the root user, only the root user needs read access to the cert files.

EXAMPLE: If the cert files are called `server.crt` and `server.key`, then use the root account to set permissions:

```
chmod 600 server.key
chmod 600 server.crt
```

## Enabling or disabling the Strict-Transport-Security header

By default, Strict-Transport-Security (STS) is enabled in the `www.enterprise.https.conf` file:

```
add_header Strict-Transport-Security max-age=31536000;
```

It can remain enabled if either of the following is true:

- The gateway is running on a different host than the server.
- or
- SSL has been enabled for the gateway.

You must comment out this line if both of the following are true:

- The gateway is running on the same host as the server.
- and
- SSL has not been enabled for the gateway.

Leaving STS enabled when these conditions are true will cause a mismatch in protocols between the server and gateway, causing your apps to fail to launch correctly.

## Configuring single sign-on

AEN's single sign-on (SSO) capability creates a new authentication provider that defers to your Anaconda Repository for login and authentication cookies.

To enable SSO:

1. Deploy AEN and Repository on the same machine.
2. In the `/opt/wakari/wakari-server/etc/wakari/config.json` file, add:

```
{
  EXISTING_CONFIGURATION,
  "SECRET_KEY": "<repo signing secret>",
  "REPO_LOGIN_URL":
    "http://example_repo.com:8080/account/login?next=http://example_repo.com/"
}
```

3. Copy the `SECRET_KEY` from the Repository configuration file.
4. In the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` file, modify:

```
{
  EXISTING_CONFIGURATION,
  "accounts": "wk_server.plugins.accounts.repo",
}
```

5. If you are using Repository version 2.33.3 through 2.33.10, set `USE_SERVER_BASED_SESSIONS: false` in the Repository configuration.

This setting affects the network security properties of AEN and Repository. Specifically, if `USE_SERVER_BASED_SESSIONS` is set to `false`, and if a new cross-site scripting (XSS) vulnerability is discovered, it could expose an additional server fixation vulnerability. Please discuss this with your Anaconda representative and be sure the feature is compatible with your network requirements before setting `USE_SERVER_BASED_SESSIONS: false`.

6. To activate the changes restart `wakari-server`:

```
sudo service wakari-server restart
```

SSO is enabled.

## Adding a third-party extension

Anaconda officially supports and tests functionality of the default environment(s) only for those extensions that ship with AEN.

It is possible to add third-party and custom extensions from conda-forge or pip, but doing so may cause instability in your default project environments or kernels.

CAUTION: Anaconda does not officially support third-party extensions. This section is informational only.

## Installing unofficial Jupyter Notebook extensions for AEN

TIP: Always back up and verify your complete system before installing extensions.

The `jupyter-contrib-nbextensions` extensions are installed on a compute node.

The default conda executable directory for AEN is `/opt/wakari/anaconda/bin/conda`. If you are installing a Jupyter extension, it must be installed in the `wakari-compute` directory.

EXAMPLE: Run:

```
/opt/wakari/anaconda/bin/conda install -p /opt/wakari/wakari-compute/ -c conda-forge ↵  
↵ jupyter_contrib_nbextension
```

For more information, see [Unofficial Jupyter Notebook Extensions](#).

## Configure search indexing

For search indexing to work correctly, verify that the AEN Compute node can communicate with the AEN Server.

```
curl -m 5 $AEN_SERVER > /dev/null
```

There must be at least one `inotify` watch available for the number of subdirectories within the project root filesystem. Some Linux distributions default to a low number of watches, which can prevent the search indexer from monitoring project directories for changes.

```
cat /proc/sys/fs/inotify/max_user_watches
```

If necessary, increase the number of max user watches with the following command:

```
echo fs.inotify.max_user_watches=1000000 | sudo tee -a /etc/sysctl.conf && sudo sysctl -p
```

There must be at least one `inotify` user instance available per project.

```
cat /proc/sys/fs/inotify/max_user_instances
```

If necessary, this can be increased with the following command:

```
echo fs.inotify.max_user_instances=1000 | sudo tee -a /etc/sysctl.conf && sudo sysctl -p
```

## Create custom Jupyter kernel for Pyspark

These instructions add a custom Jupyter Notebook option to allow users to select PySpark as the kernel.

### Install Spark

The easiest way to install Spark is with [Cloudera CDH](#).

You will use YARN as a resource manager. After installing Cloudera CDH, [install Spark](#). Spark comes with a PySpark shell.

### Create a notebook kernel for PySpark

You may create the kernel as an administrator or as a regular user. Read the instructions below to help you choose which method to use.

#### 1. As an administrator

Create a new kernel and point it to the root env in each project. To do so create a directory 'pyspark' in `/opt/wakari/wakari-compute/share/jupyter/kernels/`.

Create the following kernel.json file:

```
{ "argv": [ "/opt/wakari/anaconda/bin/python",
  "-m", "ipykernel", "-f", "connection_file", "--profile", "pyspark"],
  "display_name": "PySpark", "language": "python" }
```

You may choose any name for the 'display\_name'.

This configuration is pointing to the python executable in the root environment. Since that environment is under admin control, users cannot add new packages to the environment. They will need an admin to help update the environment.

#### 2. As an administrator without IPython profile

To have an admin level PySpark kernel without the user .ipython space:

```
{ "argv":
  [ "/opt/wakari/wakari-compute/etc/ipython/pyspark.sh", "-f", "{connection_file}" ],
  "display_name": "PySpark", "language": "python" }
```

NOTE: The pyspark.sh script is defined in *Without IPython profile* section below.

### 3. As a regular user

Create a new directory in the user's home directory: `.local/share/jupyter/kernels/pyspark/`. This way the user will be using the default environment and able to upgrade or install new packages.

Create the following kernel.json file:

```
{
  "argv": ["/projects/<username>/<project_name>/envs/default/bin/python",
    "-m", "ipykernel", "-f", "connection_file", "--profile", "pyspark"],
  "display_name": "PySpark",
  "language": "python"
}
```

NOTE: Replace “<username>” with the correct user name and “<project\_name>” with the correct project name.

You may choose any name for the ‘display\_name’.

### Create an IPython profile

The above profile call from the kernel requires that we define a particular PySpark profile. This profile should be created for each user that logs in to AEN to use the PySpark kernel.

In the user's home, create the directory and file `~/ipython/profile_pyspark/startup/00-pyspark-setup.py` with the file contents:

```
import os
import sys

# The place where CDH installed spark, if the user installed Spark locally it can be
↪ changed here.
# Optionally we can check if the variable can be retrieved from environment.

os.environ["SPARK_HOME"] = "/usr/lib/spark"

os.environ["PYSPARK_PYTHON"] = "/opt/wakari/anaconda/bin/python"

# And Python path
os.environ["PYLIB"] = os.environ["SPARK_HOME"] + "/python/lib"
sys.path.insert(0, os.environ["PYLIB"] + "/py4j-0.9-src.zip") #10.4-src.zip
sys.path.insert(0, os.environ["PYLIB"] + "/pyspark.zip")

os.environ["PYSPARK_SUBMIT_ARGS"] = "--name yarn pyspark-shell"
```

Now log in using the user account that has the PySpark profile.

### Without IPython profile

If it is necessary to avoid creating a local profile for the users, a script can be made to be called from the kernel. Create a bash script that will load the environment variables:

```
sudo -u $AEN_SRVC_ACCT mkdir /opt/wakari/wakari-compute/etc/ipython
sudo -u $AEN_SRVC_ACCT touch /opt/wakari/wakari-compute/etc/ipython/pyspark.sh
sudo -u $AEN_SRVC_ACCT chmod a+x /opt/wakari/wakari-compute/etc/ipython/pyspark.sh
```

The contents of the file should look like:

```
#!/usr/bin/env bash
# setup environment variable, etc.

export PYSPARK_PYTHON="/opt/wakari/anaconda/bin/python"
export SPARK_HOME="/usr/lib/spark"

# And Python path
export PYLIB=$SPARK_HOME:/python/lib
export PYTHONPATH=$PYTHONPATH:$PYLIB:/py4j-0.9-src.zip
export PYTHONPATH=$PYTHONPATH:$PYLIB:/pyspark.zip

export PYSPARK_SUBMIT_ARGS="--name yarn pyspark-shell"

# run the ipykernel
exec /opt/wakari/anaconda/bin/python -m ipykernel $@
```

## Using PySpark

When creating a new notebook in a project, now there will be the option to select PySpark as the kernel. When creating such a notebook you'll be able to import pyspark and start using it:

```
from pyspark import SparkConf
from pyspark import SparkContext
```

NOTE: You can always add those lines and any other command you may use frequently in the PySpark setup file `00-pyspark-setup.py` as shown above.

## Upgrading AEN

CAUTION: These instructions are for upgrading AEN to the current version 4.2.2 from 4.2.1 ONLY. Each version must be upgraded iteratively from the previous version. Do not skip versions.

Upgrade instructions for previous versions:

- [AEN 4.2.1 upgrade instructions](#)
- [AEN 4.2.0 upgrade instructions](#)
- [AEN 4.1.3 upgrade instructions](#)
- [AEN 4.1.2 upgrade instructions](#)

For upgrades from versions before those listed above, please contact your enterprise support representative.

NOTE: Named Service Account functionality is available with AEN 4.0.0+ for new installations only. It is not available for upgraded installations. Contact your enterprise support representative for more information.

An AEN platform update requires that each instance of the 3 node types be upgraded individually:

- AEN Server
- AEN Gateway
- AEN Compute

The upgrade process requires that all AEN service instances be stopped, upgraded, and then restarted.

NOTE: Any commands that call for the root user can also be done using `sudo`.



If you encounter any difficulty during the upgrade process, see [Troubleshooting](#) which provides guidance on:

- processes
- configuration files
- log files
- ports

If you are unable to resolve an installation or upgrade problem, please contact your enterprise support representative.

## Before you upgrade

**CAUTION:** Make a tested backup of your installation before starting the upgrade. Upgrading to a higher version of AEN is not reversible. Any errors during the upgrade procedure may result in partial or complete data loss and require restoring data from backups.

**CAUTION:** Terminate all AEN applications and stop all projects before starting the upgrade process.

Before upgrading each service on each host:

1. Suspend the services on each of the nodes:

```
sudo service wakari-server stop
sudo service wakari-gateway stop
sudo service wakari-compute stop
```

2. Set the AEN Functional ID (“NFI”) and AEN Functional Group (“NFG”) to the NFI and NFG of the current installation:

```
export AEN_SRVC_ACCT="wakari"
export AEN_SRVC_GRP="wakari"
```

**NOTE:** The default NFI is wakari, but aen\_admin or any other name may be used instead.

For more information on NFI and NFG, see the [installation instructions](#).

3. Install wget:

```
yum install wget
```

## Upgrading the AEN server node

**NOTE:** If you are using LDAP-based authentication, back up the `/opt/wakari/wakari-server/etc/wakari/wk-server-config.json` configuration file. After the server has been upgraded, copy that file back into the same location as before the upgrade.

Complete the following steps on the server host:

1. Stop the Elasticsearch service:

```
sudo service elasticsearch stop
```

2. Remove any previous index:

```
sudo rm -rf /var/lib/elasticsearch/*
```

NOTE: You can choose to keep the old index, but if you detect any issues with the search capabilities after the upgrade, you will need to run the following to start with a clean index:

```
sudo service wakari-server stop
sudo service elasticsearch stop
sudo rm -rf /var/lib/elasticsearch/*
sudo service elasticsearch start
sudo service wakari-server start
```

3. Upgrade the server:

```
pushd /tmp
wget http://j.mp/aen-server-update-4_2_2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-server \
    --file aen-server-update-4_2_2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-server \
    --no-deps \
    wakari-enterprise-server-conf-update=2.0.9

popd
```

4. Start Elasticsearch:

```
sudo service elasticsearch start
```

Or, if you do not want to use the search features, edit your server's `/opt/wakari/wakari-server/etc/wakari/config.json` file by adding the line `"SEARCH_ENABLED": false`.

5. Restart the *NGINX* server:

AEN server version `>= 4.1.3` uses Unix sockets for communication with *NGINX*. Restart *NGINX* to load this new configuration:

```
sudo service nginx restart
```

Alternatively, you can restart *NGINX* with:

```
sudo nginx -s stop
sudo nginx
```

6. Start the server:

```
sudo service wakari-server start
```

7. Check that the server is running properly:

```
sudo service wakari-server status
```

8. If you see *NGINX* errors, please check the configuration at `/opt/wakari/wakari-server/etc/nginx/conf.d/www.enterprise.conf:18`.

9. Connect to AEN server using your web browser with the correct protocol (`http` or `https`), hostname and port number.

## Upgrading the AEN gateway node

Complete the following steps on each gateway host:

1. Upgrade the gateway:

```
pushd /tmp
wget http://j.mp/aen-gateway-update-4_2_2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-gateway \
    --file aen-gateway-update-4_2_2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/miniconda/bin/conda install \
    -p /opt/wakari/wakari-gateway \
    --no-deps \
    wakari-enterprise-gateway-conf-update=2.0.9

popd
```

2. Start the gateway:

```
sudo service wakari-gateway start
```

3. Check that the gateway is running properly:

```
sudo service wakari-gateway status
```

4. Connect to the gateway using your web browser with the correct http/https, hostname and port number.

## Upgrading AEN compute nodes

Complete the following steps on each host where an AEN compute service is running:

1. Check for any `wakari-indexer` processes running:

```
ps aux | grep wakari-indexer
```

NOTE: If you stopped all the projects, you will not see any `wakari-indexer` processes running.

Terminate any remaining `wakari-indexer` processes:

```
sudo killall wakari-indexer
```

NOTE: The processes killed with `killall` are run by the `$AEN_SRVC_ACCT` user, so they can be killed as root with `sudo killall` or killed as the `$AEN_SRVC_ACCT` user with `sudo -u $AEN_SRVC_ACCT killall`. Example commands show the `sudo killall` option.

2. Check for any AEN applications processes running—Workbench, Viewer, Terminal or Notebook:

```
ps aux | grep wk-app-gateone
ps aux | grep wk-app-workbench
ps aux | grep wk-app-viewer
ps aux | grep wk-app-terminal
ps aux | grep jupyter-notebook
```

NOTE: If you stopped all the projects, you will not see any AEN app processes running.

Terminate any remaining AEN application processes by running one or more of the following:

```
sudo killall wk-app-gateone
sudo killall wk-app-workbench
sudo killall wk-app-viewer
sudo killall wk-app-terminal
sudo killall jupyter-notebook
```

3. Verify the contents of `/opt/wakari/anaconda/.condarc`. Modify it to contain the following entries, and possibly others if you customized the `.condarc` file.

NOTE: Modify the file as the `AEN_SRVC_ACCT` user (or be sure to keep the same ownership).

```
channels:
- https://conda.anaconda.org/t/<TOKEN>/anaconda-nb-extensions
- r
- https://conda.anaconda.org/wakari
- defaults

create_default_packages:
- anaconda-client
- ipykernel
```

NOTE: Contact your enterprise support representative to get your token for the Anaconda channel referenced above. Replace `<TOKEN>` with the actual token from your enterprise support representative.

4. Upgrade *Anaconda* in the root environment:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4_2_2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/anaconda \
    --file aen-anaconda-update-4_2_2

popd
```

5. Upgrade each compute service:

```
pushd /tmp
wget http://j.mp/aen-compute-update-4_2_2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/wakari-compute \
    --file aen-compute-update-4_2_2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    --no-deps \
    -p /opt/wakari/wakari-compute \
    wakari-enterprise-compute-conf-update=2.0.13

popd
```

NOTE: When upgrading the wakari-compute environment, you may see `ImportError` warnings with some nbextensions. As long as the Validating message is OK, the `ImportError` warnings are harmless—a consequence of the post-link presence on those packages.

6. Initialize the root environment to prime the package cache:

```
sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenv \
    --clone root
```

7. Test the offline cloning step:

```
sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenvoffline \
    --clone root --offline
```

8. Remove the test environments:

```
sudo rm -rf /opt/wakari/testenv
sudo rm -rf /opt/wakari/testenvoffline
```

9. Install necessary dependencies:

NOTE: Skip this step if you already have these dependencies installed from previous installations.

```
sudo yum groupinstall "X Window System" -y
sudo yum install git -y
```

NOTE: If you don't want to install the whole X Window System, you must install the following packages to have R plotting support:

```
sudo yum install -y libXrender libXext libXdmcpc libSM libICE libXt \
    dejavu-sans-fonts dejavu-serif-fonts dejavu-fonts-common \
    fontpackages-filesystem
```

10. Start the compute service:

```
sudo service wakari-compute start
```

11. Verify the compute service is running properly:

```
sudo service wakari-compute status
```

12. Restart the AEN Server with:

```
sudo service wakari-server restart
```

13. Repeat this upgrade procedure for all compute nodes in your Data Center.

## After upgrading

1. Restart the projects and start using AEN applications.
2. If you have a *customized default environment*, you may choose to upgrade it depending on the needs of your users.

Upgrade the customized default environment at `/opt/wakari/anaconda/envs/default` with the `$AEN_SRVC_ACCT` user:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4_2_2

sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/anaconda/envs/default \
    --file aen-anaconda-update-4_2_2

popd
```

To upgrade the customized default environments for every user and every project at `/projects/<USER>/<PROJECT>/envs/default`, run these commands for **every** user as that user:

```
pushd /tmp
wget http://j.mp/aen-anaconda-update-4_2_2

sudo -E -u <USER> /opt/wakari/anaconda/bin/conda install \
    -p /projects/<USER>/<PROJECT>/envs/default \
    --file aen-anaconda-update-4_2_2

popd
```

NOTE: Replace `<USER>` with the user's name. Replace `<PROJECT>` with the project name.

NOTE: Upgrading the default environment at `/opt/wakari/anaconda/envs/default` does NOT automatically upgrade the default environment in the users pre-existing projects. For pre-existing projects, the upgrade, if requested, should be done on a per-user basis.

NOTE: These commands update packages listed in `aen-anaconda-update-4_2_2` and do not update any other package.

3. If you did not stop all your projects before upgrading, then the first time you start an application you will see an error page requesting that you restart the application.
4. Restart the application to complete the upgrade.
5. If you still see old applications or icons after restart, reload the page to reset the browser cache.

## Uninstalling AEN

Each AEN node must be uninstalled separately.

Begin by setting the AEN Functional ID (NFI). The NFI is the username of the AEN Service Account which is used to run all AEN services and is also the username of the AEN Admin account. The NFI may be any name. The default NFI is `wakari`. The NFI is also often set to `aen_admin`. The NFI (and AEN Functional Group or NFG) are described in *the installation instructions*.

Set the NFI with this command:

```
export AEN_SRVC_ACCT="aen_admin"
```

Replace the name `aen_admin` with the NFI that was set in your installation of Anaconda Enterprise Notebooks.

## Uninstalling a server node

To remove a server node, run the following commands as root or sudo on the server node's host system:

1. Stop the server processes:

```
service wakari-server stop
```

2. Stop MongoDB:

```
service mongod stop
```

3. Remove AEN server software, AEN database files and NGINX configuration:

```
rm -Rf /opt/wakari/wakari-server
rm -Rf /opt/wakari/miniconda
rm -Rf /var/lib/mongo/wakari*
rm -Rf /etc/nginx/conf.d/www.enterprise.conf
```

NOTE: Remove /etc/nginx/conf.d/www.enterprise.https.conf if SSL is enabled on the Server node.

4. Restart MongoDB and NGINX:

```
service mongod restart
service nginx restart
```

5. Check for any outstanding server processes and stop them:

```
ps -ef | grep -e wakari-server -e wk-server
```

6. Remove the AEN Service Account:

```
userdel $AEN_SRVC_ACCT
```

7. Check for and remove any references to “aen” or “wakari” from the root user's .condarc file:

```
grep -i aen ~/.condarc
grep -i wakari ~/.condarc
```

## Uninstalling a gateway node

To uninstall a gateway node, run the following commands as root or sudo on the gateway host system:

1. Stop the gateway processes:

```
service wakari-gateway stop
```

2. Remove gateway software:

```
rm -Rf /opt/wakari/wakari-gateway
```

3. Check for any outstanding gateway processes and stop them:

```
ps -ef | grep -e wakari-gateway -e wk-gateway
```

4. Remove the AEN Service Account:

```
userdel $AEN_SRV_ACCT
```

5. Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc
grep -i wakari ~/.condarc
```

### Uninstalling a compute node

To remove a compute node, run the following commands as root or sudo on each compute node host system:

1. Stop the compute processes:

```
service wakari-compute stop
```

2. Remove the compute software:

```
rm -Rf /opt/wakari/wakari-compute
rm -Rf /opt/wakari/miniconda
rm -Rf /opt/wakari/anaconda
```

3. Check for any outstanding compute processes and stop them:

```
ps -ef | grep -e wakari-compute -e wk-compute
```

4. Remove the AEN Service Account:

```
userdel $AEN_SRV_ACCT
```

5. Check for and remove any references to “aen” or “wakari” from the root user’s `.condarc` file:

```
grep -i aen ~/.condarc
grep -i wakari ~/.condarc
```

### OPTIONAL: Removing projects from compute nodes

**CAUTION:** This is an extreme measure and is not necessary in most instances. We recommend you create and verify a backup before doing this or any other file removal.

To remove all AEN projects from all of your compute nodes:

```
rm -Rf /projects
```

This is a step-by-step guide to installing an Anaconda Enterprise Notebooks system comprised of a front-end server, a gateway and compute machines.

If you have any questions about these instructions or you encounter any issues while installing AEN, please contact your sales representative or Priority Support team.

When you have completed the installation process, review the [optional configuration tasks](#) to see if any are appropriate for your system.



## Distributed install

In a distributed install the server and gateway run on separate hosts.

## Single-box install

In a single-box install, both the server and the gateway need separate external ports since they are independent services that are running on the same host in the single-box installation.

Both port 80 and port 8089 must be open on the firewall for a single-box install.

The compute node only receives connections from the gateway and server nodes and typically runs on port 80 or port 443.

## User management

### Adding or removing an administrative user

An administrator can make any other user an administrator—or remove their administrator permissions—by using administrator commands in the Terminal application.

A user can also be designated as a superuser or as staff, giving them greater administrative privileges within the system.

### Designating a user as an administrator/superuser

To designate a user as an administrator and superuser:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add <username>
```

NOTE: Replace <username> with the actual username.

EXAMPLE: To give administrative privileges to the user named “jsmith” and set them as a superuser, run:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --add jsmith
```

### Removing an administrator/superuser

To remove a user’s administrative privileges:

```
/opt/wakari/wakari-server/bin/wk-server-admin superuser --remove <username>
```

NOTE: Replace <username> with the actual username.

## Allowing and restricting new user registration

When Open Registration is enabled, anyone who has access to the URL of your AEN server can create their own account.

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Accounts.

The screenshot shows the Admin Settings page. On the left, there are two navigation menus. The 'Staff' menu includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' menu includes links for 'General' and 'Accounts'. The main content area is titled 'Cloud Registration'. It contains a checkbox labeled 'Open Registration' with the text 'Allow new user signups' below it. The checkbox is checked. Below the checkbox is a green 'Update' button.

3. To open user registration, select the Open Registration checkbox. To close registration, clear the checkbox.
4. Click the Update button.

## Resetting a user password

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Password Reset:

Anaconda Enterprise Notebooks settings accessible only by the system administrator.

The screenshot shows the Admin Settings page. On the left, there are two navigation menus. The 'Staff' menu includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' menu includes links for 'General' and 'Accounts'. The main content area is titled 'Password Reset'. It contains a text input field with the value 'guest'. Below the input field is a button labeled 'Generate URL'.

3. Enter the username of the user whose password needs to be reset.
4. Click the Generate URL button.

A password reset link is generated that you can email to the user.

Alternatively you may use the command line interface:

1. Use ssh to log in to the server as root.

2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin reset-password -u SOME_USER -p SOME_
↪PASSWORD
```

NOTE: Replace SOME\_USER with the username and SOME\_PASSWORD with the password.

3. Log in to AEN as the user.

## Managing permissions

This page explains the admin commands used to manage user permissions.

### Checking file ownership

To verify that all files in the `/opt/wakari/anaconda` directory are owned by the `wakari` user or group:

```
root@server # find /opt/wakari/anaconda \! -user wakari -print
root@server # find /opt/wakari/anaconda \! -group wakari -print
```

### Fixing file ownership settings

To fix the ownership settings of any files that are listed in the output:

```
chown -R wakari:wakari /opt/wakari/anaconda
```

### Setting a file owner and permissions

To set a file owner and set its permissions:

```
chown wakari:wakari /opt/wakari/wakari-server/bin/wk-*
chmod 700 /opt/wakari/wakari-server/bin/wk-*
```

### Verifying that POSIX ACLs are enabled

The `acl` option must be enabled on the file system that contains the project root directory.

NOTE: By default, the project root directory is `/projects`.

To determine the project root directory where a custom `projectRoot` is configured:

```
root@compute # grep projectRoot /opt/wakari/wakari-compute/etc/wakari/config.json
```

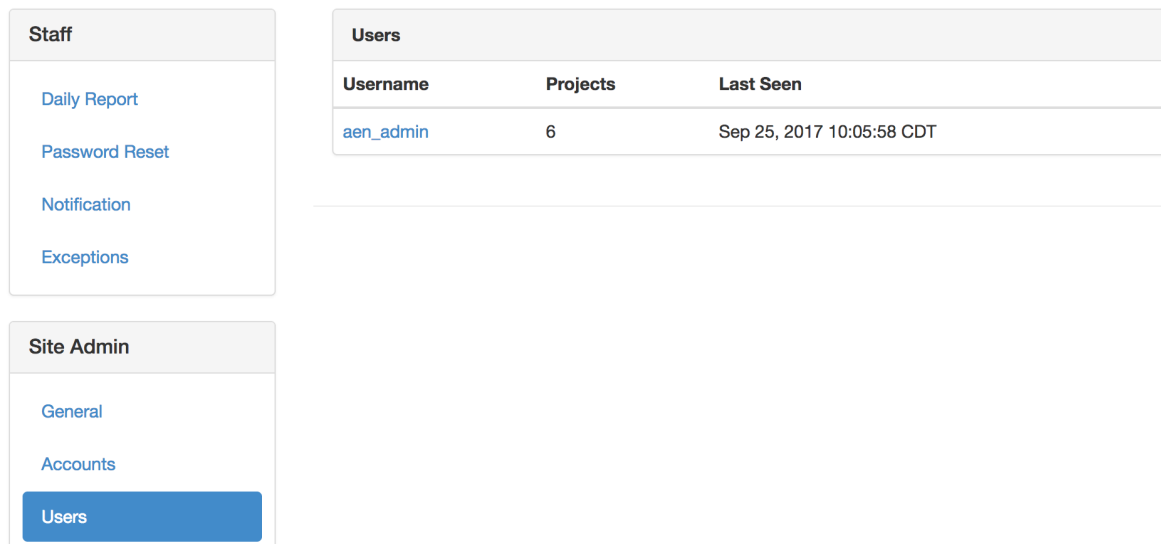
The mount options or default options listed by `tune2fs` should indicate that the `acl` option is enabled.

EXAMPLE:

```
root@compute # fs=`df /projects | tail -1 | cut -d " " -f 1`
root@compute # mount | grep $fs
/dev/vda on / type ext4 (rw)
root@compute # tune2fs -l $fs | grep options
Default mount options:    user_xattr acl
```

## Viewing a list of users

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Users:



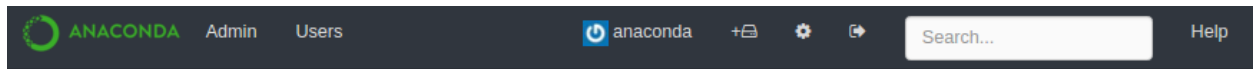
The screenshot shows the AEN Admin Settings page. On the left, there are two sidebars. The top sidebar, titled 'Staff', contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom sidebar, titled 'Site Admin', contains links for 'General', 'Accounts', and 'Users' (which is highlighted in blue). On the right, there is a table titled 'Users' with three columns: 'Username', 'Projects', and 'Last Seen'. The table contains one row with the username 'aen\_admin', 6 projects, and a last seen time of 'Sep 25, 2017 10:05:58 CDT'.

Users		
Username	Projects	Last Seen
aen_admin	6	Sep 25, 2017 10:05:58 CDT

The Users section lists the all users who are signed up, the number of projects they have created and the last time they logged on to AEN.

## Viewing a list of currently active users

In the AEN navigation bar, click Users.



# Users

List of currently active users in the system.

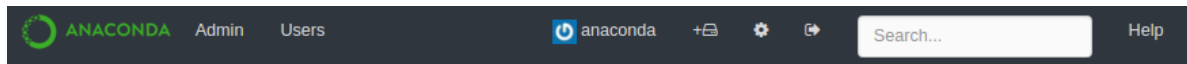
 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

Click a username to open the user's profile page.

## Viewing a user profile

A user's profile page includes a summary of the projects created by that user and a list of projects on which the user is a team member.

1. In the AEN navigation bar, click Users to see a list of users who are currently logged into the system.
2. On the Users page, click the username of the user whose profile page you want to view.



# Users

List of currently active users in the system.

	anaconda
	andrew
	bokeh
	christine
	guest
	hubert
	ivan
	paula
	simon
	tanya
	wakari

## Sending a system message

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Notification:

**Staff**

- Daily Report
- Password Reset
- Notification
- Exceptions

**Site Admin**

- General
- Accounts
- Users
- Security Log
- Data Centers
- Task Queue
- License

**Providers**

- Enterprise Resources

**Notification Settings**

☒ **Off**  
No email notification will be sent

☐ **SES - Amazon Simple Email Service**  
This requires a .boto file in the wakari home dir

☐ **SMTP Email Server**

**SMTP Settings**

SMTP Hostname

SMTP Username (optional)

SMTP Password (optional)

SMTP From Address (optional)

Update

The Notification Settings section allows you to create a system message that can be relayed to users.

By default, notifications are off.

- To turn on email notifications, select the radio button for the type of email service to use:
  - SES to use Amazon Simple Email Service (SES).
  - SMTP Email Server.

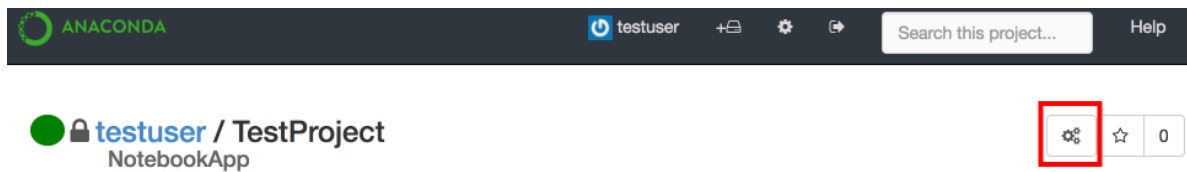
- If you select SMTP Email Server, complete the SMTP Settings.

NOTE: If you get an error message after changing the SMTP settings, you may need to restart the server.

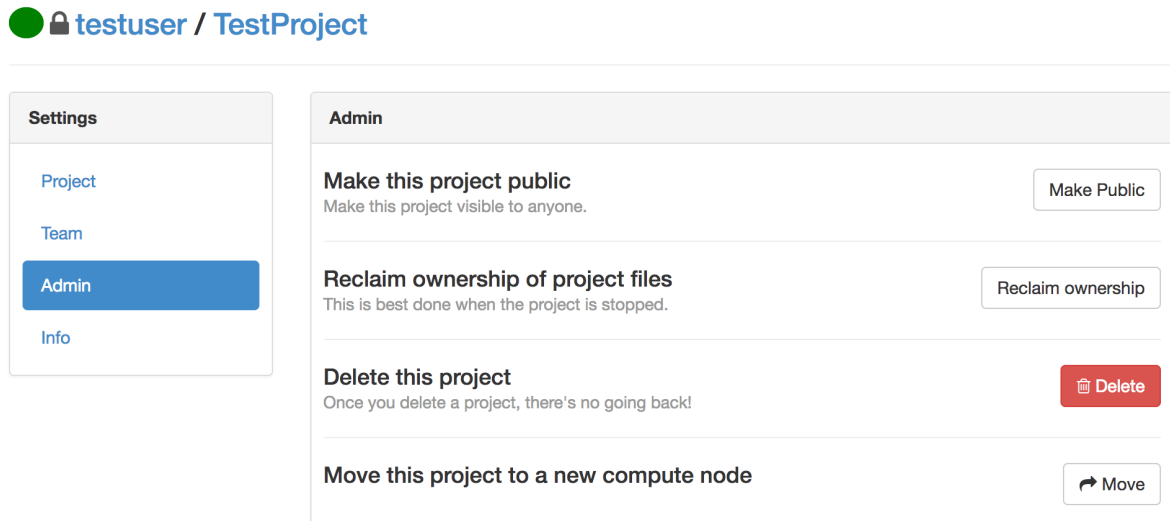
## Moving a project to another compute node

If you have multiple compute nodes available and want to move a project from one to another, the project must exist on both nodes.

- Verify that the project has been created on both compute nodes. You can use `rsync` for this job unless you have a shared file system like `nfs`.
- On the project home page, click the Project Settings icon to open the Project Settings page.

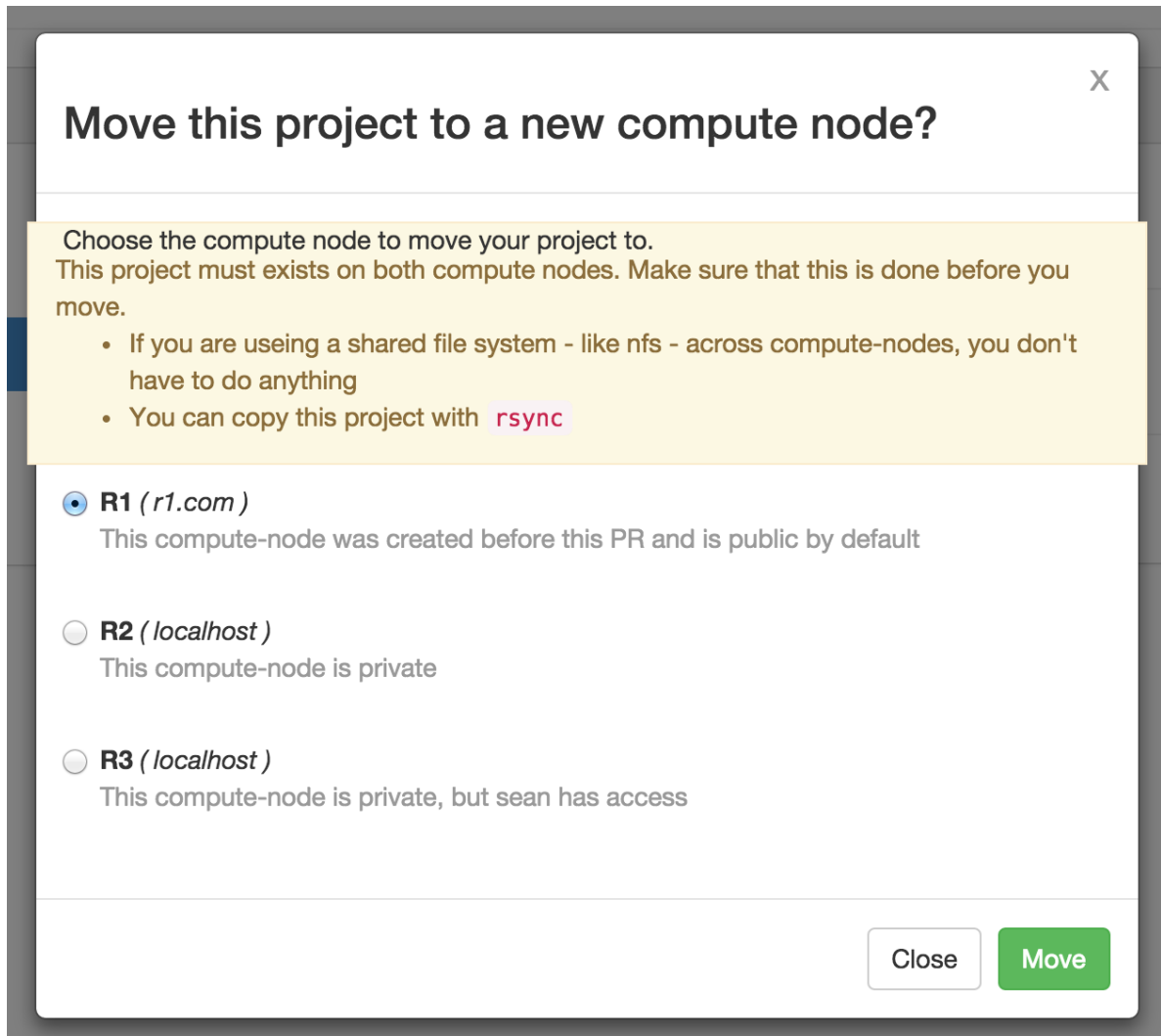


3. In the **Settings** menu, select Admin.



4. Click the Move button.
5. In the move dialog box, click to choose the compute node destination, and click the Move button.





## Deleting a user

To remove a user from the AEN database:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-user <username>
```

NOTE: Replace <username> with the actual username.

NOTE: Changing the owner of a project requires that both the previous owner and the new owner are still AEN users. Before deleting a user, *change the owner* of that user's projects.

## Deleting a project

To remove a project from the AEN database:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-project <username> <projectname>
```

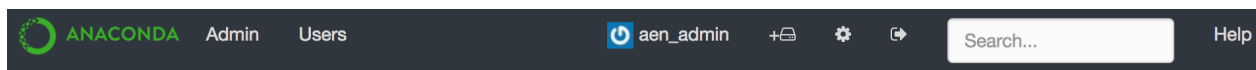
NOTE: Replace <username> with the actual username and <projectname> with the actual project name you are removing.

## System management

### Opening the Admin dashboard

If you have administrator privileges, you see two additional links in the AEN navigation bar—Admin and Users:

To open the Admin dashboard, click the Admin link.



# Admin Settings

Anaconda Enterprise Notebooks settings accessible only by the system administrator.

Staff
<a href="#">Daily Report</a>
<a href="#">Password Reset</a>
<a href="#">Notification</a>
<a href="#">Exceptions</a>

Site Admin
<a href="#">General</a>
<a href="#">Accounts</a>
<a href="#">Users</a>
<a href="#">Monitor</a>
<a href="#">Security Log</a>

## Backing up and restoring AEN

### Document purpose

This document lays out the steps to backup and restore Anaconda Enterprise Notebooks (AEN) for Disaster Recovery. It is not intended to provide High Availability. Each of the components (Server, Gateway and Compute) has its own instructions and each may be done individually as needed. The steps primarily involve creating tar files of important configuration files and data.

This document is written for a system administrator who is comfortable with basic Linux command line navigation and usage.

To migrate to a new cluster, use these backup and restore instructions to back up the system from the old cluster and restore it to the new cluster.

### Important notes

Review the [Concepts](#) page to become familiar with the different components and how they work together.

Root or sudo access is required for some commands.

**CAUTION:** All commands **MUST** be run by \$AEN\_SRVC\_ACCT (the account used to run AEN) except for those commands explicitly indicated to run as root or sudo. If the commands are not run by the correct user, the installation will not work, and a full uninstallation and reinstallation will be required!

These instructions assume that the fully qualified domain name (FQDN) has not changed for any of the component nodes. If any of the FQDNs are not the same, additional steps will be needed.

### Server component steps

#### Backup

##### Mongo database

This will create a single tar file called `aen_mongo_backup.tar` that includes only the database named “wakari” that is used by AEN. It also generates a log of the database backup.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
mongodump -db wakari -o aen_main >> mongo_backup.log
tar -cvf aen_mongo_backup.tar aen_main
```

##### AEN Server config files (including License file)

Create a tar file of all of the configuration files, including any license files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -cvf aen_server_config.tar -C /opt/wakari/ wakari-server/etc/wakari/
```

### Nginx config (if needed)

Make a copy of the nginx configuration file if it has been customized. The default configuration for the AEN server is a symlink.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
/etc/nginx/conf.d/www.enterprise.conf -> /opt/wakari/wakari-server/etc/nginx/conf.d/www.  
↪enterprise.conf
```

### SSL certificates (if needed)

Make a copy of the SSL certificates files (certfiles) for the server, including the key file, and a copy of the certfile for the gateway, which is needed for verification if using self-signed or private CA signed certs.

### Restore

#### Reinstall AEN-Server

See *the instructions for installing the current version of AEN-Server*.

It is not necessary to upload the license, because it will be restored with the config files.

NOTE: The new installation will generate a new password for the local \$AEN\_SRVC\_ACCT account.

#### Restore Mongo database

This assumes that mongo was reinstalled as part of the reinstallation of the server component. Untar the mongo database and restore it.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_mongo_backup.tar  
mongorestore --drop aen_main
```

NOTE: The --drop option resets the \$AEN\_SRVC\_ACCT user password and restores the database to the exact state it was in at the time of backup. Please see the [MongoDB documentation](#) for more information about mongorestore options for Mongo 2.6.

NOTE: AEN uses Mongo 2.6 by default. If you are using a different version, consult the documentation for your version.

#### AEN Server config files (including License file)

Untar the tar file of all of the configuration files, including any license files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_server_config.tar -C /opt/wakari/
```

Make sure the files are in /opt/wakari/wakari-server/etc/wakari/ and are owned by the \$AEN\_SRVC\_ACCT.

### Nginx config (if needed)

Make sure any modifications to the nginx configuration are either in `/etc/nginx/conf.d` or in `/opt/wakari/wakari-server/etc/nginx/conf.d/` with a proper symlink.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
/etc/nginx/conf.d/www.enterprise.conf -> /opt/wakari/wakari-server/etc/nginx/conf.d/www.  
↪enterprise.conf
```

### SSL certificates (if needed)

Move any SSL certificate files to the locations indicated in the config files.

### Restart server

Restart the server application.

NOTE: This command must be run as root or with `sudo`.

```
service wakari-server restart
```

## Gateway component steps

### Backup

### Config files

Create a tar file of all of the configuration files.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
tar -cvf aen_gateway_config.tar -C /opt/wakari/ wakari-gateway/etc/wakari/
```

### Custom .condarc file (if needed)

Make a copy of any `/opt/wakari/miniconda/.condarc` if it has been modified.

### SSL certificates (if needed)

Make a copy of SSL certificate files for the gateway (including the key file) and the certfile for the server (needed for verification if using self-signed or private CA signed certs).

### Restore

### Reinstall AEN-Gateway

#### Setting variables and changing permissions

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
export AEN_GATEWAY_PORT=8089
export AEN_GATEWAY=<FQDN HOSTNAME OR IP ADDRESS> # will be needed shortly
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change <FQDN HOSTNAME OR IP ADDRESS> to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists. If the terminal is closed before successful installation, export the variables to continue with the installation.

#### Running the AEN gateway installer

Run:

```
sudo -E ./aen-gateway-4.2.2-Linux-x86_64.sh -w $AEN_SERVER
<license text>
...
...

PREFIX=/opt/wakari/wakari-gateway
Logging to /tmp/wakari_gateway.log
...
...
Checking server name
Please restart the Gateway after running the following command
to connect this Gateway to the AEN Server
...
```

#### Config files

Untar the configuration files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_gateway_config.tar -C /opt/wakari
```

Verify that the files are in /opt/wakari/wakari-gateway/etc/wakari/ and are owned by the \$AEN\_SRVC\_ACCT.

### Custom .condarc file (if needed)

Move the custom .condarc file to /opt/wakari/miniconda/.condarc.

### SSL certificates (if needed)

Move any SSL certificate files to the locations indicated in the config files.

### Restart gateway

Restart the gateway application.

NOTE: This command must be run as root or with sudo.

```
service wakari-gateway restart
```

### Compute component steps

#### Backup

#### Config files

Create a tar file of all of the configuration files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -cvf aen_compute_config.tar -C /opt/wakari/ wakari-compute/etc/wakari
```

### Custom Changes (rare)

Manually backup any custom changes that were applied to the code. One change might be additional files in the skeleton folder:

```
/opt/wakari/wakari-compute/lib/node_modules/wakari-compute-launcher/skeleton
```

### Create user list

AEN uses POSIX access control lists (ACLs) for project sharing, so the backup must preserve the ACL information. This is done with a script that creates a file named `users.lst` containing a list of all users that have access to projects on a given compute node. Download and run the script.

NOTE: These commands must be run by \$AEN\_SRVC\_ACCT.

```
wget https://s3.amazonaws.com/continuum-airgap/misc/wk-compute-get-acl-users.py
chmod 755 wk-compute-get-acl-users.py
./wk-compute-get-acl-users.py
```

### Project files

Create a tar of the projects directory with ACLs enabled. The default projects base location is `/projects`.

NOTE: This command must be run as root or with sudo.

```
tar --acls -cpvf projects.tar -C <projects base location>/*
```

### Full Anaconda (option 1)

If any changes have been made to the default Anaconda installation (additional packages installed or packages removed), it is necessary to backup the entire Anaconda installation.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
tar -cvf aen_anaconda.tar -C /opt/wakari/anaconda/*
```

If no changes have been made to the default installation of Anaconda, you may just backup the `.condarc` file and any custom environments.

### Partial Anaconda (option 2)

#### Custom `.condarc` file

Make a copy of `/opt/wakari/anaconda/.condarc`.

#### Custom environments (if needed)

Create a tar file of any custom shared environments.

NOTE: This command must be run by `$AEN_SRVC_ACCT`.

```
tar -cvf aen_compute_envs.tar -C /opt/wakari/ anaconda/envs
```

NOTE: If no custom shared environments have been created, the `envs` folder will not be present.

### Restore

#### Reinstall AEN-Compute

#### Setting variables and changing permissions

NOTE: These commands must be run by `$AEN_SRVC_ACCT`.

Run:

```
export AEN_SERVER=<FQDN HOSTNAME OR IP ADDRESS> # Use the real FQDN
chmod a+x aen-*.sh # Set installer to be executable
```

NOTE: Change `<FQDN HOSTNAME OR IP ADDRESS>` to the actual fully qualified domain hostname or IP address.

NOTE: You must perform the entire procedure before closing the terminal to ensure the variable export persists.



## Running the AEN compute installer

Run:

```
sudo -E ./aen-compute-4.2.2-Linux-x86_64.sh -w $AEN_SERVER
...
...
PREFIX=/opt/wakari/wakari-compute
Logging to /tmp/wakari_compute.log
Checking server name
...
...
Initial clone of root environment...
Starting Wakari daemons...
installation finished.
Do you wish the installer to prepend the wakari-compute install location
to PATH in your /root/.bashrc ? [yes|no]
[no] >>> yes
```

## Config files

Untar the config files.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_compute_config.tar -C /opt/wakari
```

NOTE: Verify that they are located in /opt/wakari/wakari-compute/etc/wakari and are owned by the \$AEN\_SRVC\_ACCT.

## Custom changes (rare)

Manually restore any custom changes you saved in the backup section. If there are changes in the skeleton directory, these files must be world readable or projects will refuse to start.

## Create users

NOTE: Only create users with these instructions if your Linux machine is not bound to LDAP.

In order for the ACLs to be set properly on restore, all users that have permissions to the files must be available on the machine. Ask your system administrator for the proper way to do this for your system, such as using the “useradd” tool. A list of users that are needed was created in the backup process as a file named `users.lst`.

A process similar to the following `useradd` example will be suitable for most Linux systems.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
xargs -0 -n 1 useradd --user-group < users.lst
```

### Project files

Create the projects directory in the location specified in projectRoot in wk-compute-launcher-config.json.

NOTE: By default this directory is /projects.

Then untar the projects directory with ACLs.

NOTE: This command must be run as root or with sudo:

```
tar --acls -xpvf projects.tar -C <projects base location>
```

### Full Anaconda (option 1)

If you did a full backup of the full Anaconda installation, untar this file to /opt/wakari/anaconda.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_anaconda.tar -C /opt/wakari
```

### Partial Anaconda (option 2)

Restore the custom .condarc file.

If you did a partial backup of the Anaconda installation, move the copy of the .condarc file to /opt/wakari/anaconda/.condarc.

### Custom environments (if needed)

Untar any custom environments that were created to /opt/wakari/anaconda/envs.

NOTE: This command must be run by \$AEN\_SRVC\_ACCT.

```
tar -xvf aen_compute_envs.tar -C /opt/wakari
```

### Restart compute node

Restart the compute-launcher application.

NOTE: This command must be run as root or with sudo.

```
service wakari-compute restart
```

## Viewing a list of admin commands

A user who is promoted to administrator can access administrator commands to perform advanced administrator tasks.

NOTE: Utility files are owned by, and should only be executed by, the AEN user who owns the files.

To display a list of all administrator commands:

```
ls -al /opt/wakari/wakari-server/bin/wk-*
```

## Viewing help for admin commands

To view help information for command, run the command followed by `-h` or `--help`.

EXAMPLE: To view help for the `remove-user` command:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-user -h  
/opt/wakari/wakari-server/bin/wk-server-admin remove-project -h
```

## Running daily reports

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Daily Report:

Staff

[Daily Report](#)

[Password Reset](#)

[Notification](#)

[Exceptions](#)

Site Admin

[General](#)

[Accounts](#)

[Users](#)

[Monitor](#)

[Security Log](#)

[Data Centers](#)

[Task Queue](#)

[License](#)

Providers

[Enterprise Resources](#)

## Report

[Today](#)
[Yesterday](#)
[This Week](#)
[This Month](#)

**From:**  
Sun Sep 24 15:09:03 2017

**Until:**  
Mon Sep 25 15:09:03 2017

**Date Range**  
1 day, 0:00:00

### Users

	New	Total
<b>Users</b>	0	1
<b>Projects</b>	0	6

### New User Emails

Username	Email
----------	-------

### Actions

Count	Action
82	<a href="#">oauth.authenticate</a>

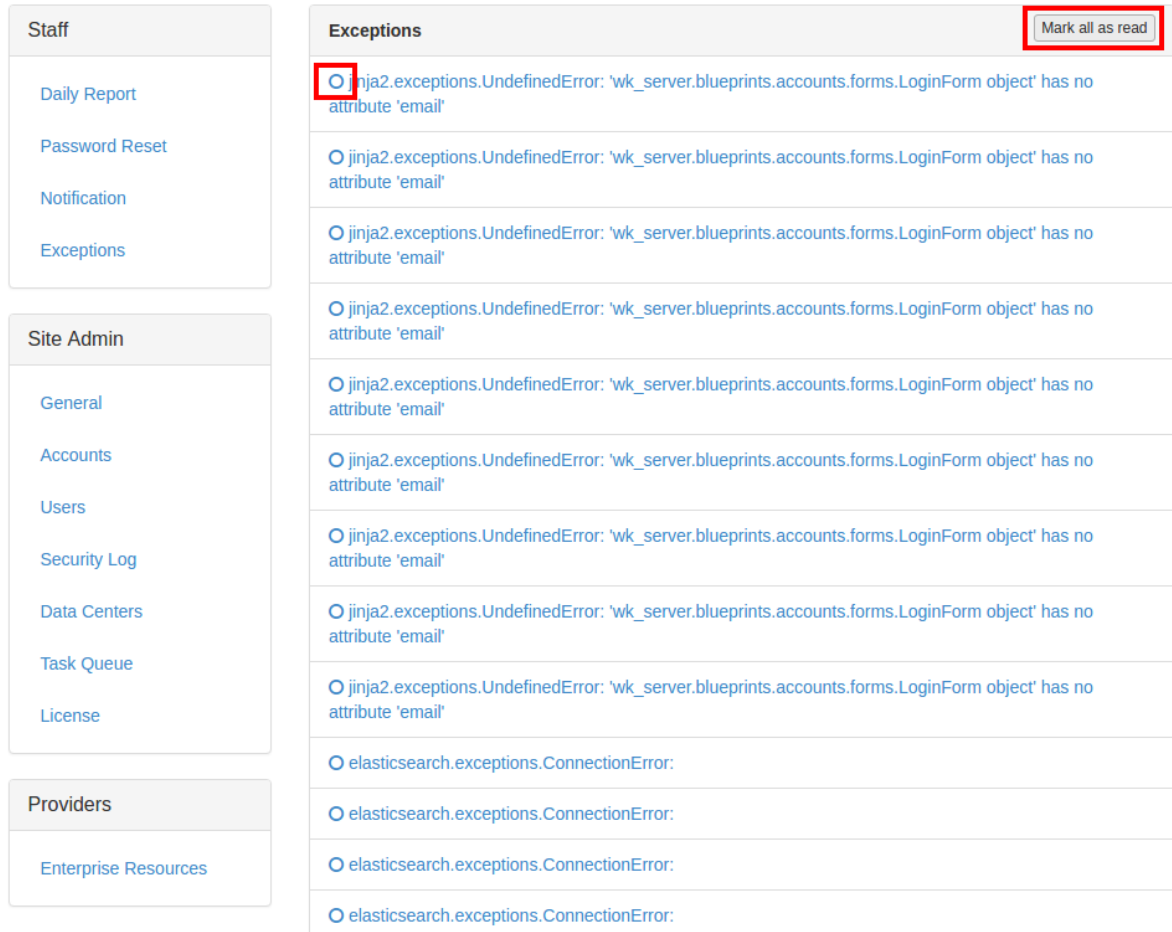
The Report section displays the following:

- Users—The number of users and projects.
- New User Emails—If *open registration is enabled*, the user names and emails for new users.
- Actions—The actions—projects created, projects updated, user authentications and added users—that have occurred in during the selected time frame—today, yesterday, this week, or this month.

## Viewing system errors

When an error occurs, a red dot is displayed in the AEN navigation bar next to the Admin link. The red dot is removed when all exceptions are marked as “read.”

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Staff** menu, select Exceptions:



The screenshot shows the AEN Admin Settings interface. On the left, there are three main menu sections: **Staff**, **Site Admin**, and **Providers**. The **Staff** menu is expanded, showing options like Daily Report, Password Reset, Notification, and Exceptions. The **Exceptions** option is selected. The main content area displays a list of exceptions. Each exception entry starts with a radio button, which is highlighted with a red box in the first entry. The text of the exceptions is as follows:

- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- jinja2.exceptions.UndefinedError: 'wk\_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'
- elasticsearch.exceptions.ConnectionError:
- elasticsearch.exceptions.ConnectionError:
- elasticsearch.exceptions.ConnectionError:
- elasticsearch.exceptions.ConnectionError:













In the top right corner of the Exceptions list, there is a button labeled "Mark all as read", which is also highlighted with a red box.

The Exceptions section lists all errors that have occurred while AEN is running.

3. To see the details of an error, click the radio button next to the error. This also marks the error as “read.”
4. To mark all errors as read without reviewing each one, click the Mark all as read button.

## Viewing security errors

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Security Log:

Staff	Security Log
<a href="#">Daily Report</a> <a href="#">Password Reset</a> <a href="#">Notification</a> <a href="#">Exceptions</a>	View   Actor   Action   Date
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 09:46:09 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 09:39:17 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 09:22:04 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 09:10:31 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 08:45:50 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 08:43:12 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 08:10:30 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 25, 2017 08:09:38 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 24, 2017 23:52:06 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 24, 2017 23:51:58 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 24, 2017 23:51:58 CDT
	 <a href="#">aen_admin</a> oauth.authenticate   Sep 24, 2017 23:51:58 CDT

The Security Log section lists all errors that have occurred that could potentially affect AEN security.

- To view a user's profile page, click their username in the Actor column.
- To see the details of an error, click the Eye icon next to the error.

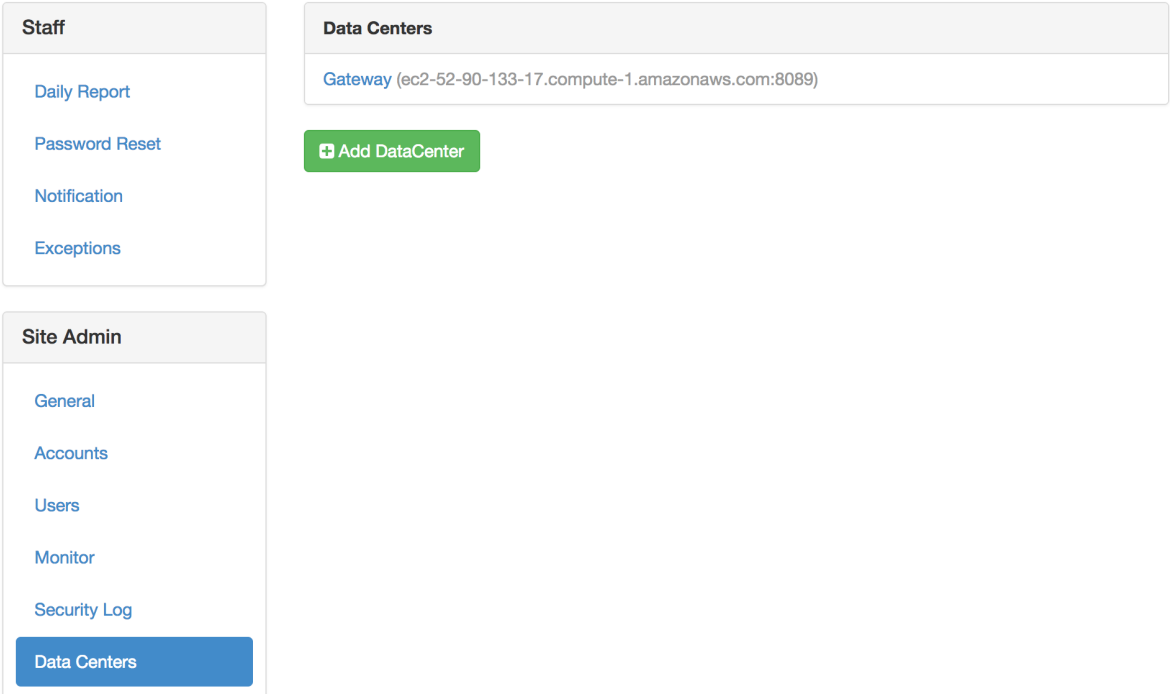
The error details are displayed:

<a href="#">Public Profile</a> <a href="#">Account Settings</a> <a href="#">Security Log</a> <a href="#">Applications</a>	oauth.authenticate
	_id   59c907f03f94c30fe45ffb9e
	action   oauth.authenticate
	actor_id   59c069b1ae55d1b3fe9fa45e
	actor_username   aen_admin
	client_id   59c119cd3f94c30fe45ff5db
	remote_addr   None
	time   2017-09-25 13:43:12.479000+00:00
	token_id   59c907f03f94c30fe45ffb9d
	<a href="#">⏪ Back</a>

- To close the error details, click the Back link.

Managing data centers

- 1. In the AEN navigation bar, click Admin to open the Admin Settings page.
- 2. In the **Site Admin** menu, select Data Centers:



The Data Centers section displays current data center information.

Adding a data center

- 1. Click the Add DataCenter button to display the the Register a datacenter form.
- 2. In the Name box, type a Name for the new data center:

**Data Centers / Register a datacenter**

**Name**

☐ Subdomain Routing  
☐ Https

**Base Domain Name**

**summary**

**Provider**

3. Select the Subdomain Routing and/or Https checkboxes.
4. In the Base Domain Name box, type the base domain name.
5. In the Summary box, type a description of the data center.
6. In the Provider list, select a provider.
7. Click the Submit button.

## Managing enterprise resources

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Providers** menu, select Enterprise Resources:



The screenshot displays the Anaconda web interface. On the left, a sidebar menu is organized into three sections: 'Staff' with links for Daily Report, Password Reset, Notification, and Exceptions; 'Site Admin' with links for General, Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License; and 'Providers' with a link for Enterprise Resources. The main content area is titled 'Resources' and features a green 'Add Resource' button in the top right corner. Below this, a table lists existing resources. The table has a header row with the title 'Gateway' and a data row containing the resource identifier 'ec2-54-210-232-251.compute-1.amazonaws.com' and a 'remove' button.

Resources		<a href="#">Add Resource</a>
Gateway		
ec2-54-210-232-251.compute-1.amazonaws.com		<a href="#">remove</a>

The Resources section lists your existing cloud and local resources.

### Adding a resource

1. Click the Add Resource button to open the new resource form.
2. Complete the form:

**Resources** / new

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
Compute Node1

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**  
Configuring Compute Node

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Add Resource

3. Click the Add Resource button.

### Viewing or changing the resource details

1. Click a resource name to open the Local Resource form.
2. If necessary, change the resource details:

**Data Center**  
Gateway 59c119cd3f94c30fe45ff5db

**Name**  
ec2-54-210-232-251.compute-1.amazonaws.com

**URL**  
http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**  
{ "status": "ok", "messages": [] }

- Click the Update button.

## Making a node public or private

1. Click the resource name to open the Local Resource form.
2. Select or clear the Public checkbox:

**Data Center**

Gateway 59c119cd3f94c30fe45ff5db

**Name**

ec2-54-210-232-251.compute-1.amazonaws.com

**URL**

http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**  
Uncheck this if you want to control exactly who has access to this compute node

Update

**status**

{"status": "ok", "messages": []}

3. Click the Update button.

## Removing a resource

Click the Remove button next to the resource you want to remove.

NOTE: When you remove a resource assigned to a project, the project becomes orphaned. To fix an orphaned project, *move the project to a valid Compute Resource*.

## Managing services

The tasks on this page assume that the 3 AEN nodes are installed in the following locations:

- Server—/opt/wakari/wakari-server/.
- Gateway—/opt/wakari/wakari-gateway/.
- Compute-Launcher—/opt/wakari/wakari-compute/.

## Checking the status of server node processes

1. Run:

```
# service wakari-server status
wk-server          RUNNING    pid 20758, uptime 5 days, 0:30:23
worker             RUNNING    pid 20757, uptime 5 days, 0:30:23
```

OR

```
root@server # ps -Hu wakari
  PID TTY          TIME CMD
 20756 ?           00:02:26 .supervisord
 20757 ?           00:05:58 mtq-worker
 20758 ?           00:00:08 wk-server
 20765 ?           00:02:00 wk-server
 20766 ?           00:01:55 wk-server
 20767 ?           00:02:20 wk-server
 20770 ?           00:02:02 wk-server
```

2. Run:

```
root@server # service nginx status
nginx (pid 26303) is running...
```

For more information on server processes, see [Server processes](#).

## Checking the status of gateway node processes

Run:

```
# service wakari-gateway status
wk-gateway                RUNNING    pid 1137, uptime 5 days, 1:59:28
```

OR

```
root@gateway # ps -Hu wakari
  PID TTY          TIME CMD
 1136 ?            00:01:59 .supervisord
 1137 ?            00:00:02  wk-gateway
```

For more information on gateway processes, see [Gateway processes](#).

## Checking the status of compute node processes

Run:

```
# service wakari-compute status
wk-compute                RUNNING    pid 22050, uptime 3 days, 1:03:19
```

OR

```
root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?            00:02:01 .supervisord
 1152 ?            00:00:01  wk-compute
```

For more information on compute node processes, see [Compute processes](#).

## Starting AEN services

Services should start automatically both when they are first installed and at any point when the system is restarted.

If you need to manually start an AEN service, you must start each node independently, because they may be running on separate machines.

NOTE: The process is basically the same for each node, but the path to the correct commands vary.

To manually start a service:

- On the server node, run:

```
service wakari-server start
```

- On the gateway node, run:

```
service wakari-gateway start
```

- On a compute node, run:

```
service wakari-compute start
```

## Verifying that AEN services are set to start with the system

To verify that AEN services are set up to start automatically:

1. Run the following command on each node:

```
chkconfig --list | grep wakari
```

2. If services are missing, add them:

```
chkconfig --add [wakari-server|wakari-gateway|wakari-compute]
```

3. *Restart the services.*

## Stopping AEN services

CAUTION: Do not stop or kill supervisord without first stopping wk-compute and any other processes that use it.

You must stop services on each node independently, because they may be running on separate machines.

To stop an AEN service:

- On the server node, run:

```
service wakari-server stop
```

- On the gateway node, run:

```
service wakari-gateway stop
```

- On a compute node, run:

```
service wakari-compute stop
```

Compute nodes may have running processes that are not automatically stopped. To stop them, run:

```
sudo /opt/wakari/wakari-compute/bin/wk-compute-apps kill-all
```

## Restarting AEN services

- On the server node, run:

```
service wakari-server restart
```

- On the gateway node, run:

```
service wakari-gateway restart
```

- On a compute node, run:

```
service wakari-compute restart
```

## Identifying extraneous processes

To get a complete list of the processes running under the wakari user account, run `ps -Hu wakari`.

EXAMPLE:

```
root@server # ps -Hu wakari
  PID TTY          TIME CMD
 20756 ?           00:02:26 .supervisord
 20757 ?           00:05:58 mtq-worker
 20758 ?           00:00:08 wk-server
 20765 ?           00:02:00 wk-server
 20766 ?           00:01:55 wk-server
 20767 ?           00:02:20 wk-server
 20770 ?           00:02:02 wk-server

root@server # ps -f -C nginx
UID      PID  PPID  C  STIME TTY          TIME CMD
root   26303      1   0  12:18 ?        00:00:00 nginx: master process /usr/sbin/nginx -c /etc/
↪nginx/nginx.conf
nginx  26305 26303   0  12:18 ?        00:00:00 nginx: worker process

root@gateway # ps -Hu wakari
  PID TTY          TIME CMD
 1136 ?           00:01:59 .supervisord
 1137 ?           00:00:02 wk-gateway

root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?           00:02:01 .supervisord
 1152 ?           00:00:01 wk-compute
```

- wk-server, wk-gateway and wk-compute should have PIDs reported by supervisorctl.
- The nginx master process should have a PID reported by service nginx status.
- If you have installed more than one AEN node on a single machine, the processes from all of the installed nodes should be displayed for that machine.
- On compute node(s), any AEN applications currently being run by users will be present.

EXAMPLE:

```
root@compute # ps -Hu wakari
  PID TTY          TIME CMD
 1150 ?           00:00:00 .supervisord
 1152 ?           00:00:00 wk-compute
 1340 ?           00:00:00 bash
 1341 ?           00:00:00 notebookwrapper
```



## Removing extraneous processes

If extra `wk-server`, `wk-gateway`, `wk-compute`, or `supervisord` processes are present, use the `kill` command to remove them to prevent issues with AEN.

You can safely *restart* any process that you remove in error.

## Making sure NGINX and MongoDB are running

In order for AEN to run, the dependencies `mongodb` and `nginx` must be up and running. If either of these fail to start, AEN will not be served on port 80.

Check if `nginx` and `mongod` are both running (RHEL 6x):

```
$ sudo service nginx status
nginx (pid 25956) is running...
```

```
$ sudo service mongod status
mongod (pid 25928) is running...
```

If either of these failed to start, tail the log files. The default location of log files is:

```
$ tail -n 50 /var/log/mongodb/mongod.log

# nginx errors reported in error.log
$ tail -n 50 /var/log/nginx/error.log
```

## Viewing, terminating, and relaunching applications

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Monitor:

The screenshot shows the AEN Admin interface. On the left, there is a navigation menu with 'Staff' and 'Site Admin' sections. Under 'Staff', there are links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. Under 'Site Admin', there are links for 'General', 'Accounts', 'Users', and 'Monitor' (which is highlighted in blue). On the right, the 'Running Apps' table is displayed, showing a list of running applications with columns for User, Project, Application, Status, Node, Last Seen, Terminate, Relaunch, and Logs.

User	Project	Application	Status	Node	Last Seen	Terminate	Relaunch	Logs
aen_admin	asd	notebook	running	localhost	Jul 24, 2017 15:15:24 CDT	⏻ Terminate	🔄 Relaunch	📄
aen_admin	Test	notebook	running	localhost	Jul 25, 2017 11:54:05 CDT	⏻ Terminate	🔄 Relaunch	📄

The Monitor menu lists started applications by user and project.

The list includes columns for the application name, current running status, running node and last seen date.

3. Use the buttons to terminate or relaunch an application.

4. To view an application's logs, click the Logs button with the document icon.

## Viewing the task queue

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Task Queue:

The screenshot shows the 'Task Queue' page. On the left is a navigation sidebar with two main sections: 'Staff' and 'Site Admin'. The 'Staff' section includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section includes links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', and a highlighted 'Task Queue' button. The main content area is titled 'Task Queue' and contains two sections: 'Workers' and 'Queues'. The 'Workers' section shows a single worker with ID 'ip-172-31-10-196.4053' and three priority buttons: 'high' (selected), 'default', and 'low'. The 'Queues' section lists two queues: 'high' with a backlog of 0 and 1 failed task, and 'default' with a backlog of 0 and 3 failed tasks.

Staff
<a href="#">Daily Report</a>
<a href="#">Password Reset</a>
<a href="#">Notification</a>
<a href="#">Exceptions</a>

Site Admin
<a href="#">General</a>
<a href="#">Accounts</a>
<a href="#">Users</a>
<a href="#">Monitor</a>
<a href="#">Security Log</a>
<a href="#">Data Centers</a>
<a href="#">Task Queue</a>

### Task Queue

Workers
ip-172-31-10-196.4053   <span>high</span> <span>default</span> <span>low</span>

Queues
<b>high</b> Backlog: 0 Failed: 1
<b>default</b> Backlog: 0 Failed: 3

The Workers section lists the workers in the task queue and whether each worker is set at high, default or low priority.

The Queues section provides information on the default and high priority queues.

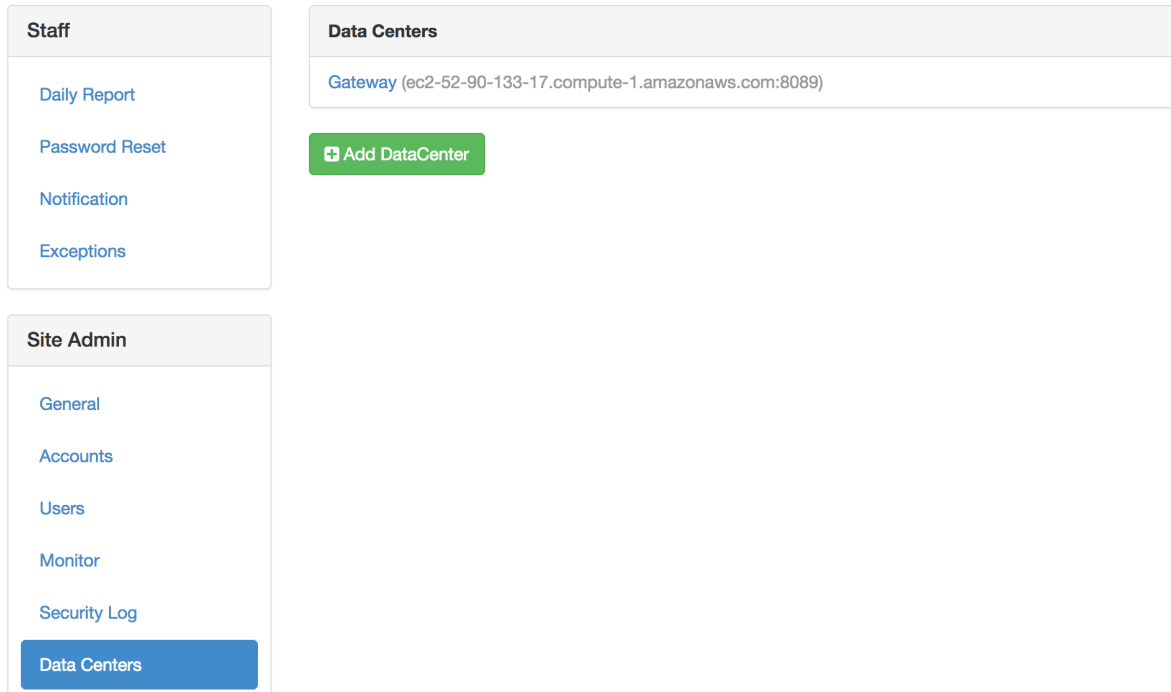
3. To view all the tasks in a particular queue, in the Queues section, click the queue name.

## Checking node connections

When the AEN nodes cannot communicate with each other as intended, it can cause issues with you AEN platform installation.

### Verifying server to gateway connectivity

1. On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select Data Centers:



3. For each data center in the list, check connectivity from the server to that gateway.

EXAMPLE: The gateway in this example is `http://gateway.example.com:8089`:

```
root@server # curl --connect-timeout 5 http://gateway.example.com:8089 > /dev/null
```

### Verifying gateway to compute node connectivity

1. On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Providers** menu, select Enterprise Resources:

**Staff**

[Daily Report](#)  
[Password Reset](#)  
[Notification](#)  
[Exceptions](#)

**Site Admin**

[General](#)  
[Accounts](#)  
[Users](#)  
[Monitor](#)  
[Security Log](#)  
[Data Centers](#)  
[Task Queue](#)  
[License](#)

**Providers**

[Enterprise Resources](#)

**Resources** [+ Add Resource](#)

**Gateway**  

[ec2-54-210-232-251.compute-1.amazonaws.com](#) [remove](#)

3. Open each compute node in the Resources section.
4. Verify that the contents of the URL field begin with either `http` or `https`.

**Data Center**

Gateway 59c119cd3f94c30fe45ff5db

**Name**

ec2-54-210-232-251.compute-1.amazonaws.com

**URL**

http://ec2-54-210-232-251.compute-1.amazonaws.com:5002

**Description**

☒ **Public**

Uncheck this if you want to control exactly who has access to this compute node

Update

**status**

{"status": "ok", "messages": []}

5. Check connectivity to that URL from the corresponding gateway.

EXAMPLE: The gateway in this example is `http://gateway.example.com:8089`:

```
root@gateway # curl --connect-timeout 5 http://compute.example.com:5002 > /dev/null
```

## Verifying gateway to server connectivity

The gateway-to-server path is used by the gateway configuration command `wk-gateway-configure`.

1. Verify that the gateway is linked to the correct server in the configuration file.
2. Verify that the full server URL is specified.
3. Check connectivity to the server:

```
root@gateway # grep WAKARI_SERVER /opt/wakari/wakari-gateway/etc/wakari/wk-gateway-
↪config.json
"WAKARI_SERVER": "http://wakari.example.com",

root@gateway # curl --connect-timeout 5 http://wakari.example.com > /dev/null
root@gateway # curl --connect-timeout 5 http://error.example.com > /dev/null
curl: (7) Failed to connect to error.example.com port 80: Connection refused
```

4. If a connection fails:
  1. Ensure that gateways (data centers) and compute nodes (Enterprise Resources) are correctly configured on the server.
  2. Verify that processes are listening on the configured ports:

```
$ sudo netstat -nplt
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address   Foreign Address State  PID/Program
tcp        0      0 *:80            *:.*           LISTEN 26409/nginx
tcp        0      0 *:22            *:.*           LISTEN 986/sshd
tcp        0      0 127.0.0.1:25    *:.*           LISTEN 1063/master
tcp        0      0 *:5000          *:.*           LISTEN 26192/python
tcp        0      0 127.0.0.1:27017 *:.*           LISTEN 29261/mongod
tcp        0      0 *:22            *:.*           LISTEN 986/sshd
tcp        0      0 127.0.0.1:25    *:.*           LISTEN 1063/master
```

3. Check the firewall setting and logs on both hosts to ensure that packets are not being blocked or discarded.

## Verifying and tuning search indexing

For search indexing to work correctly, a compute node must be able to communicate with the server. To verify this:

1. Run:

```
curl -m 5 $AEN_SERVER > /dev/null
```

2. Verify that there are sufficient inotify watches available for the number of subdirectories within the project root file system:

```
cat /proc/sys/fs/inotify/max_user_watches
```

NOTE: Some Linux distributions default to a low number of watches, which may prevent the search indexer from monitoring project directories for changes.

3. If necessary, increase the number of watches:

```
echo fs.inotify.max_user_watches=100000 | sudo tee -a /etc/sysctl.conf && sudo
↵ sysctl -p
```

4. Verify that there are sufficient inotify user instances available—at least one per project:

```
cat /proc/sys/fs/inotify/max_user_instances
```

5. If necessary, increase the number of inotify user instances:

```
echo fs.inotify.max_user_instances=1000 | sudo tee -a /etc/sysctl.conf && sudo
↵ sysctl -p
```

## Changing the AEN server URL

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

<p><b>Staff</b></p> <ul style="list-style-type: none"> <li>Daily Report</li> <li>Password Reset</li> <li>Notification</li> <li>Exceptions</li> </ul> <p><b>Site Admin</b></p> <ul style="list-style-type: none"> <li><b>General</b></li> <li>Accounts</li> <li>Users</li> <li>Monitor</li> <li>Security Log</li> <li>Data Centers</li> <li>Task Queue</li> <li>License</li> </ul> <p><b>Providers</b></p>	<p><b>General Admin Settings</b></p> <p><b>Wakari Server</b> Set the main URL where this site will be accessed</p> <input type="text" value="http://anaconda-enterprise.trl"/> <p><b>Static URL</b> Set static URL where the js can be accessed</p> <input type="text" value="http://anaconda-enterprise.trl/static/"/> <p><b>Default Project Access</b> This will be the default when a user creates a project</p> <p><input type="radio"/> <b>Public</b> Anyone can see this project. Collaborators have write access</p> <p><input checked="" type="radio"/> <b>Private</b> No one can see this project except collaborators.</p> <p><b>Account Type</b></p> <input type="text" value="wk_server;plugins.accounts.cloud"/> <p><input type="button" value="Update"/></p> <p><b>Config Files</b></p>
---	---

3. In the Wakari Server box, type the main URL where the site can be viewed.
4. Click the Update button.

## Changing the static URL for JavaScript files

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

The screenshot shows the Admin Settings page with a left sidebar and a main content area. The sidebar has three sections: 'Staff' with links for Daily Report, Password Reset, Notification, and Exceptions; 'Site Admin' with links for General (highlighted in blue), Accounts, Users, Monitor, Security Log, Data Centers, Task Queue, and License; and 'Providers'. The main content area is titled 'General Admin Settings' and contains three sections: 'Wakari Server' with a text input for the main URL (http://anaconda-enterprise.trl); 'Static URL' with a text input for the static URL (http://anaconda-enterprise.trl/static/); and 'Default Project Access' with two radio button options: 'Public' (unselected) and 'Private' (selected). Below these is an 'Account Type' dropdown menu showing 'wk\_server.plugins.accounts.cloud'. At the bottom of the main content area is a green 'Update' button.

Staff	General Admin Settings
<a href="#">Daily Report</a>	<b>Wakari Server</b> Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
<a href="#">Password Reset</a>	<b>Static URL</b> Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
<a href="#">Notification</a>	<b>Default Project Access</b> This will be the default when a user creates a project  <input type="radio"/> <b>Public</b> Anyone can see this project. Collaborators have write access  <input checked="" type="radio"/> <b>Private</b> No one can see this project except collaborators.
<a href="#">Exceptions</a>	<b>Account Type</b> <input type="text" value="wk_server.plugins.accounts.cloud"/>
	<input type="button" value="Update"/>

Site Admin	Config Files
<a href="#">General</a>	
<a href="#">Accounts</a>	
<a href="#">Users</a>	
<a href="#">Monitor</a>	
<a href="#">Security Log</a>	
<a href="#">Data Centers</a>	
<a href="#">Task Queue</a>	
<a href="#">License</a>	

Providers

3. In the Static URL box, type the static URL where JavaScript files can be accessed.
4. Click the Update button.

## Changing the AEN account type

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:



<div>Staff</div> <div>Daily Report</div> <div>Password Reset</div> <div>Notification</div> <div>Exceptions</div>	<div>General Admin Settings</div> <div> <b>Wakari Server</b>  Set the main URL where this site will be accessed  <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> <b>Static URL</b>  Set static URL where the js can be accessed  <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> <b>Default Project Access</b>  This will be the default when a user creates a project  <div> <input type="radio"/> <b>Public</b>  Anyone can see this project. Collaborators have write access </div> <div> <input checked="" type="radio"/> <b>Private</b>  No one can see this project except collaborators. </div> </div> <div> <b>Account Type</b>  <input type="text" value="wk_server.plugins.accounts.cloud"/> </div> <div>Update</div>
<div>Site Admin</div> <div>General</div> <div>Accounts</div> <div>Users</div> <div>Monitor</div> <div>Security Log</div> <div>Data Centers</div> <div>Task Queue</div> <div>License</div>	<div>Providers</div> <div>Config Files</div>

3. In the Account Type box, select the account type—cloud or LDAP.
4. Click the Update button.

### Changing the default for project access

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General:

<div>Staff</div> <div>Daily Report</div> <div>Password Reset</div> <div>Notification</div> <div>Exceptions</div>	<div>General Admin Settings</div> <div> <b>Wakari Server</b>  Set the main URL where this site will be accessed  <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> <b>Static URL</b>  Set static URL where the js can be accessed  <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> <b>Default Project Access</b>  This will be the default when a user creates a project  <div> <input type="radio"/> Public  Anyone can see this project. Collaborators have write access </div> <div> <input checked="" type="radio"/> Private  No one can see this project except collaborators. </div> </div> <div> <b>Account Type</b>  <input type="text" value="wk_server.plugins.accounts.cloud"/> </div> <div>Update</div>
<div>Site Admin</div> <div>General</div> <div>Accounts</div> <div>Users</div> <div>Monitor</div> <div>Security Log</div> <div>Data Centers</div> <div>Task Queue</div> <div>License</div>	<div>Providers</div> <div>Config Files</div>

- Under Default Project Access, select the default access type for new projects: Public or Private.
- Click the Update button.

## Changing the owner of a project

To change the owner of a project:

- Collect the project name, the user name of the previous owner, and the user name of the new owner.
- Run the `wakari-server` executable command `wk-server-admin`:

```
/opt/wakari/wakari-server/bin/wk-server-admin project-owner --project PROJECT --old_
↪OLD_OWNER --new NEW_OWNER --delete --keep-owner
```

- PROJECT:** The project name.
- OLD\_OWNER:** The user name of the previous owner.
- NEW\_OWNER:** The user name of the new owner.
- delete:** An optional flag that deletes the old project directory in the `projects` directory of `OLD_OWNER`. If this flag is not used, the old project directory is preserved but no longer used.
- keep-owner:** An optional flag that makes `OLD_OWNER` a collaborator of the project after it is transferred to `NEW_OWNER`. If this flag is not used, `OLD_OWNER` will no longer have collaborator access to the project.

**NOTE:** The `OLD_OWNER` user must still exist when the project's owner is changed. Before deleting any user, be sure to change the owner of the user's projects.

## Editing configuration files

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select General.

<div>Staff</div> <div>Daily Report</div> <div>Password Reset</div> <div>Notification</div> <div>Exceptions</div>	<div>General Admin Settings</div> <div> <b>Wakari Server</b>  Set the main URL where this site will be accessed  <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> <b>Static URL</b>  Set static URL where the js can be accessed  <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> <b>Default Project Access</b>  This will be the default when a user creates a project  <div> <input type="radio"/> <b>Public</b>  Anyone can see this project. Collaborators have write access </div> <div> <input checked="" type="radio"/> <b>Private</b>  No one can see this project except collaborators. </div> </div> <div> <b>Account Type</b>  <input type="text" value="wk_server.plugins.accounts.cloud"/> </div> <div> <input type="button" value="Update"/> </div>
<div>Site Admin</div> <div>General</div> <div>Accounts</div> <div>Users</div> <div>Monitor</div> <div>Security Log</div> <div>Data Centers</div> <div>Task Queue</div> <div>License</div>	<div>Providers</div> <div>Config Files</div>

3. In the Config Files section, change the configuration settings for your AEN installation. For more information on configuration files, see [Using configuration files](#).
4. Click the Update button.

## Managing your AEN license

1. In the AEN navigation bar, click Admin to open the Admin Settings page.
2. In the **Site Admin** menu, select License:

The screenshot shows the Admin Settings page with a left sidebar and a main content area. The sidebar has two sections: 'Staff' and 'Site Admin'. The 'Staff' section includes links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Site Admin' section includes links for 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and a highlighted 'License' button. The main content area is titled 'Current License' and displays a message: 'You have 166 days remaining on your current license.' with a 'Renew your license' button. Below this is a table of license details. At the bottom of the main content area is the 'Upload New License' section, which includes a 'License File' input field with a 'Choose File' button and an 'Update' button.

<b>product</b>	Anaconda Enterprise Notebooks
<b>vendor</b>	Continuum Analytics, Inc.
<b>name</b>	Continuum Development
<b>end_date</b>	2018-03-10
<b>issued</b>	2017-03-10
<b>company</b>	Continuum Analytics
<b>type</b>	undefined
<b>email</b>	dev@continuum.io

The Current License section displays information regarding your AEN license, including the name of the product, vendor, license holder's name, end and issued dates, company name, license type, and contact email.

## Renewing your AEN license

1. Click the Renew your license button.
2. In the Upload New License section, click the Choose File button.
3. Select the new license file.
4. Click the Open button.
5. Click the Update button.

Your renewed license information is displayed.

## Cheat sheet

The Admin dashboard includes three menus in the left column: **Staff**, **Site Admin** and **Providers**.

### Staff menu

- Daily Report—See the number of users and projects.
- Password Reset—Reset a user password.
- Notification—Send system messages to users via SES or SMTP.
- Exceptions—If errors are raised while AEN is running, a red dot appears in the AEN navigation bar. Review errors and mark them as read.

### Site Admin menu

- General—Change the configuration settings for your AE Notebook server installation.
- Accounts—Turns on or off Open Registration.
- Users—View usernames, number of projects and last logins.
- Monitor—View status of applications with related data, terminate or restart
- Security Log—View errors that could affect security.
- Data Centers—View current data centers and add a new data center.
- Task Queue—View workers in the task queue and priority.
- License—View current AEN license or upload a new license.

### Providers menu

Enterprise Resources—View, add or remove local or cloud services and designate public or private to control access to a compute node.

## Troubleshooting

This troubleshooting guide provides you with ways to deal with issues that may occur with your AEN installation.

### General troubleshooting steps

1. Clear browser cookies. When you change the AEN configuration or upgrade AEN, cookies remaining in the browser can cause issues. Clearing cookies and logging in again can help to resolve problems.
2. *Make sure NGINX and MongoDB are running.*
3. Make sure that AEN services are *set to start at boot*, on all nodes.
4. *Make sure that services are running* as expected. If any services are not running or are missing, *restart them*.
5. *Check for and remove extraneous processes.*
6. *Check the connectivity between nodes.*

7. *Check the configuration file syntax.*
8. *Check file ownership.*
9. *Verify that POSIX ACLs are enabled.*

### Browser error: too many redirects

#### Cause

Browser cookies are out of date.

#### Solution

1. Log out.
2. Clear the browser's cookies.
3. Clear the browser cache.
4. Log in.

### Browser error: too many redirects when starting project apps

Browser shows “Too many redirects” when the user tries to start an application.

#### Cause

The project's Compute Resource is invalid or was deleted.

#### Solution

*Move the project to a valid Compute Resource.*

### Exception: `exceptions.TypeError: 'NoneType' object has no attribute '__getitem__'`

This exception appears on the Admin > Exceptions page when a project does not have a Compute Resource assigned.

#### Cause

The project's Compute Resource is invalid or was deleted.

## Solution

*Move the project to a valid Compute Resource.*

### Error: `unix:///opt/wakari/wakari-server/etc/supervisor.sock` no such file

This is a supervisorctl error.

## Cause

supervisord is not running on the Server.

## Solution

Ensure that supervisord is included in the crontab. Then restart supervisord manually.

### Error: “Data Center Not Found” when deleting a project

## Cause

The data center has been removed.

## Solution

As root, run:

```
/opt/wakari/wakari-server/bin/wk-server-admin remove-project --db-only <user> <project>
```

## Forgotten administrator password

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin reset-password -u SOME_USER -p SOME_
↪PASSWORD
```

NOTE: Replace SOME\_USER with the administrator username and SOME\_PASSWORD with the password.

3. Log in to AEN as the administrator user with the new password.

Alternatively you may add an administrator user:

1. Use ssh to log in to the server as root.
2. Run:

```
/opt/wakari/wakari-server/bin/wk-server-admin add-user SOME_USER --admin -p SOME_
↪PASSWORD -e YOUR_EMAIL
```

NOTE: Replace SOME\_USER with the username, replace SOME\_PASSWORD with the password, and replace YOUR\_EMAIL with your email address.

3. Log in to AEN as the administrator user with the new password.

### Log files being deleted

Log files are being deleted.

NOTE: Locations of AEN log files for each process and application are shown in the node sections in *Concepts*.

### Cause

AEN installers log in to `/tmp/wakari\_{server,gateway,compute}.log`. If the log files grow too large, they might be deleted.

### Solution

To set the logs to be more or less verbose, Jupyter Notebooks uses `Application.log_level`.

To make the logs less verbose than the default, but still informative, set `Application.log_level` to `ERROR`.

### Error: This socket is closed

You receive the “This socket is closed” error message when you try to start an application.

### Cause

When the `supervisord` process is killed, information sent to the standard output `stdout` and the standard error `stderr` is held in a pipe that will eventually fill up.

Once full, attempting to start any application will cause the “This socket is closed” error.

### Solution

To prevent this issue:

- Follow the instructions in *Managing services* to stop and restart processes.
- Do not stop or kill `supervisord` without first stopping `wk-compute` and any other processes that use it.

To resolve the “This socket is closed” error:

1. Stop `wk-compute` by running `sudo kill -9`.
2. Restart the `supervisord` and `wk-compute` processes:

```
sudo /etc/init.d/wakari-compute stop
sudo /etc/init.d/wakari-compute start
```



## Service error 502: Cannot connect to the application manager

Gateway node displays “Service Error 502: Can not connect to the application manager.”

### Cause

A compute node is not responding because the wk-compute process has stopped.

### Solution

Stop and then restart the supervisord and wk-compute processes:

```
sudo /etc/init.d/wakari-compute stop
sudo /etc/init.d/wakari-compute start
```

## 502 communication error on Amazon web services (AWS)

You receive the “502 Communication Error: This gateway could not communicate with the Wakari server” error message.

### Cause

An AEN gateway cannot communicate with the Wakari server on AWS. There may be an issue with the IP address of the Wakari server.

### Solution

Configure your AEN gateway to use the DNS hostname of the server. On AWS this is the DNS hostname of the Amazon Elastic Compute Cloud (EC2) instance.

## Invalid username

### Cause

The username does not follow 1 or more of these rules:

- Must be at least 3 characters and no more than 25 characters.
- The first character must be a letter (A-Z) or a digit (0-9).
- Other characters can be a letter, digit, period (.), underscore (\_) or hyphen (-).
- The [POSIX standard](#) specifies that these characters are the portable filename character set, and that portable usernames have the same character set.

### Solution

Follow the above rules for usernames.

### Notebook Error: Cannot download notebook as PDF via LaTeX

#### Cause

LaTeX is not properly installed.

#### CentOS/6 Solution

1. Install TeXLive from the [TUG site](#). Follow the described steps. The installation may take some time.
2. Add the installation to the PATH in the file `/etc/profile.d/latex.sh`. Add the following, replacing the year and architecture as needed:

```
PATH=/usr/local/texlive/2017/bin/x86_64-linux:$PATH
```

3. Restart the compute node.

#### CentOS/7 Solution

1. Install the missing packages running the command:

```
yum install texlive texlive-xetex texlive-xetexconfig texlive-xetex-def texlive-  
↪adjustbox texlive-upquote texlive-ulem
```

### Unresponsive wk-server thread without error messages

#### Cause

Two things can cause the `wk-server` thread to freeze without error messages:

- LDAP freezing
- MongoDB freezing

If LDAP or MongoDB are configured with a long timeout, Gunicorn can time out first and kill the LDAP or MongoDB process. Then the LDAP or MongoDB process dies without logging a timeout error.

## Solution

1. Check for frozen LDAP or MongoDB server processes.
2. You may also wish to configure the Gunicorn timeout to more than 30 seconds.

## Unresponsive wk-gateway thread without error messages

### Cause

If TLS is configured with a passphrase protected private key, wk-gateway will freeze without any error messages.

### Solution

Update the TLS configuration so that it does not use a passphrase protected private key.

## Error starting projects

Project's status page shows "There was an error starting this project".

### Cause

Lack of disk space in compute nodes prevents projects from starting.

### Solution

1. Verify that the project node meets the *system requirements*.
2. Check if there is enough free space on the compute node's partition where `/projects` lives:

```
df -h /projects
```

3. Free up some disk space to meet the system requirements.
4. Restart the project.

## Changes in .condarc file are ignored

Changes applied to `.condarc` are ignored by conda.

### Cause

Conda loads its configuration by merging multiple files together.

### Solution

Check if you are applying the changes to the correct file.

To show the merged state that conda is currently using:

```
conda config --show
```

To show all config files that conda is currently reading:

```
conda config --show-sources
```

## Frequently asked questions

### What is AEN?

For information on AEN, see *Anaconda Enterprise Notebooks 4*.

### Can notebooks be shared with anyone?

Yes. When you share a Jupyter Notebook through AEN, it can be viewed and run without the need to install anything special, regardless of what libraries were used to create the notebook. Each notebook also includes the python environment that it needs to run in.

AEN allows users to clone a shared Jupyter Notebook into their AEN account to make whatever changes or modifications they want. The notebook's Python environment is also cloned, so it runs in the same environment as the shared Jupyter Notebook unless it is changed.

### Can I disable the option, “publish your notebook to anaconda.org”?

Yes. The upload button in the notebook app executes the option “publish your notebook to anaconda.org”. To disable it, log in as the AEN\_SRVC\_ACCT and run these commands:

```
source activate /opt/wakari/wakari-compute
jupyter-nbextension disable nb_anacondacloud --py --sys-prefix
jupyter-serverextension disable nb_anacondacloud --py --sys-prefix
```

### How can I check the version number of my AEN server?

Go to this URL in a browser: `http://$AEN_SERVER/admin/list`

NOTE: Replace `$AEN_SERVER` with the domain name or the domain name and port number of your AEN server.

### Can I use AEN to access CSV or Amazon S3 data?

Yes. If your data is in CSV files, upload the CSV files to your AEN account using the upload controls in the File Browser of the Workbench Application or the File Transfer Application.

To access data stored on Amazon S3, use the Boto interface from AEN. See the public data files in AEN for examples of how to use Boto to pull your data from Amazon S3 into AEN. For more information, see [Boto documentation](#).

You can also use IOPro to simplify and optimize the conversion of your data into Python arrays.

### Can I install other Python packages?

Yes, by creating a custom environment for your packages within your project.

For more information, see [Using the NBConda extension](#).

### Can I create a Python environment from the command line?

Yes, you can use the `conda create` command to create custom Python environments with whatever packages you choose. All AEN environments are shared with all the team members of a project.

EXAMPLE: In this example, `myenv` is a new environment containing the NumPy package.

```
conda create -n myenv numpy
```

NOTE: Python, Jupyter Notebooks and PIP are installed by default in all new AEN environments.

To use your new environment, activate it by running `source activate myenv`.

### Can I connect to GitHub with AEN?

Yes, you have full access to GitHub through an AEN Terminal application.

To generate an SSH key from your AEN account and add it to your GitHub account:

1. [Generate a GitHub SSH key](#).
2. Copy your key by running `cat ~/.ssh/id_rsa.pub`.
3. Select and copy the contents of the `id_rsa.pub` file to the clipboard.
4. Follow [GitHub's instructions](#) to go to your GitHub account and paste it from your clipboard into the appropriate box in your GitHub settings.

### Can I print or print preview my Jupyter Notebooks?

Yes, you can print your notebooks using your browser's regular printing capabilities.

You can also preview the printed page by clicking the **File** menu and selecting Print Preview.

### Is there a set amount of storage on AEN?

No, there is no set limit for storage in AEN. You are limited only by the size of the disk where AEN is installed.

If you need more storage, contact your system administrator.

### How do I get help, give feedback, suggest features or report a bug?

See *Help and support*.

### Help and support

Priority support is included with the purchase of an Anaconda subscription.

Contact your administrator first if you are having problems. Your administrator has a service level agreement where your issue will be responded to within a specific response time, depending on type and severity.

### Training and consulting

Training and consulting is available for AEN and any other Anaconda product.

For more information, please contact your account representative or [email the sales team](#).

### Providing feedback

Your feedback is very important to us!

Please, send us any [product feedback](#) while you are thinking about it.

TIP: Be sure to select AEN as the Platform Component Name.

### Submitting feature requests

We'd love to hear your ideas for consideration in future releases!

Your ideas help us build a better product. Your administrator can submit a support ticket for you.

NOTE: You can also request new features by using the [product feedback](#) form.

## Reporting a bug

If you think you have found a bug, please contact your administrator immediately. They will open a support ticket for your issue.

## Additional resources

The following resources are useful for getting started with Jupyter Notebooks:

- [Jupyter Notebook quick start guide](#)
- [Jupyter Notebook user documentation](#)
- [GitHub](#) shows the most popular Jupyter notebooks of the [month](#), [week](#), and [day](#).

## Release notes

### v4.2.2 March 1, 2018

Administrator-facing changes:

- Add admin command to change project owner
- Server: Add ability to disable public projects
- Gateway: Add support for SSL private key passphrase
- Docs: Add backup and restore runbook to the docs
- Docs: Emphasize backups before upgrading process
- Docs: Recommend putting AEN and projects folder on the same filesystem
- Docs: Add RHEL version 7.4 to supported versions
- Docs: Add troubleshooting instructions to fix problems when downloading notebook as PDF via LaTeX

User-facing changes:

- Upgrade bokeh to version 0.12.7
- Upgrade holoviews to version 1.8.3
- Upgrade numba to version 0.35.0
- Upgrade scikit-learn to version 0.19.0

Internal fixes:

- Fix bug in init scripts when requiretty is enabled
- Fix bugs related to AEN\_SUDO\_SSH option
- Fix bug in fix\_ownership function when directories contain spaces
- Docs: Fix error in Active Directory configuration example
- Server: Fix bug when updating user/group in supervisor configuration files in post-install for server and gateway
- Server: Fix bug Admin reports on user totals are inconsistent
- Server: Fix error in login screen when open registration and LDAP are enabled
- Server: Fix bug in Last seen date

- Server: Fix bug Monitor Report blank
- Server: Load JS files from local CDN
- Server: Fix error when terminating or relaunching an application from Monitor
- Server: Fix error creating projects when using Internet Explorer 11
- Compute: Fix 404 errors when using pivottablesjs
- Remove Wakari Cloud leftovers

### **v4.2.1 December 18, 2017**

Administrator-facing changes:

- None

User-facing changes:

- None

Internal fixes:

- Fix undetected “ca” key when using self-signed certificates signed by a private CA
- Fix login redirects when using SSL
- Add verify gateway SSL certificate for get and post requests

### **v4.2.0 November 22, 2017**

Administrator-facing changes:

- Feature/allow remote MongoDB
- Allow for configuration for login timeout and set default
- Add verbose option to conda create clone
- Avoid duplicate name for resources / compute-nodes
- Allow renaming main and message queue databases
- PAM-based authentication module
- Change wakari logos to Anaconda logos
- Replace ‘wakari’ wording
- New config option to move the user’s home directory into the user’s project directory
- Make logging less verbose in AEN
- Documentation for PySpark kernel installation
- Improve SSL documentation

User-facing changes:

- New config option to move the user’s home directory into the user’s project directory
- Package cache was moved from user’s home directory into the user’s project directory
- Change wakari logos to Anaconda logos



- Fix error for deleting tags to work
- Define shell prompt in `.projectrc` template
- Replace ‘wakari’ wording

Internal fixes:

- Move server unix socket from `/tmp` to `/opt/wakari/wakari-server/var/run`
- Make project deletion synchronous for consistency
- Avoid storing `csrf` token in the user profile
- Expire gateway session when server logs out
- Allow log rotation in the three components
- Fix permissions on static files
- Change log level to debug in gateway
- Do not log private keys in gateway
- Save request remote address when logging action
- Unify logs formatting and timezone in compute nodes with Winston
- Several fixes and documentation improvements

### **v4.1.3 August 16, 2017**

- Upgrade conda to version 4.3.24
- Upgrade anaconda to version 4.4.0
- Admin application monitor
- Block access to package list view
- Add placeholders in password reset form
- Change static content location
- Fix error when checking for package updates in notebook application
- Replace slashes in project tags
- Fix submit errors in password reset form
- Replace/remove “wakari” word from multiple places
- Fix missing commands missing `sudo` in `start-project`
- Improve gateway and compute node validators
- Check if `bzip2` is installed during server setup process
- Include port number in host header
- Forbid creation of empty tags
- Repair “Create Account” link in login page
- Use UTC for server logs
- Mark datacenters as trusted by default
- Disable heart beating

- Compute resource: Show full path to log file
- Improve init scripts
- Allow deleting all projects
- mtq: Implement exponential backoff on connection error to mongodb
- In the general admin display, do not show the bind password for LDAP
- The accelerate package has been removed from the installation
- Other minor bugfixes

### **v4.1.2 March 29, 2017**

This is mainly a maintenance release improving internal machinery and upgrading the root packages.

- Upgrade conda to version 4.3.14
- Upgrade Anaconda to 4.3.1
- Upgrade r-base to 3.2.2
- Fixed AEN nb\_conda to be compatible with conda 4.3.x series
- Several documentation fixes
- Other minor bugfixes

### **v4.1.1 December 15, 2016**

- Added CentOS 7 support
- Support dots in usernames
- More usernames validation
- Fixed creation (through nb\_conda) of single letter environment names
- Environment names (through nb\_conda) validation
- Fixed uploading of notebook using nb\_anacondacloud
- Fixed attaching of environments in published notebooks through nb\_anacondacloud
- Several documentation fixes
- Other bugfixes

### **v4.1.0 October 21, 2016**

- Added JupyterLab application
- Removed GateOne terminal application
- Included additional notebook extensions (nbpresent and nb\_anaconda\_theme)
- Updated to conda 4.2.9 in default project environments
- Added HTTP timeout setting for gateway and compute launcher
- Changed default gateway port to 8089

- Added support for all-numeric usernames
- Add R channel to default conda configuration file
- Other bugfixes

#### **v4.0.0 June 30, 2016**

- Customized installation with:
  - AEN Functional ID and Group
  - AEN (installation and run) `sudo` commands
  - Removal of root access from the AEN service account
  - Configurable `sudo` command
  - Restriction of `sudo` access to all the processes
- Upgrade Jupyter to 4.2
- Upgrade the `anaconda-nb-extensions` to the latest versions
- Upgrade Anaconda to 4.0
- Deprecate `wakari-publisher`
- Security enhancements
- SSL configuration documented between all AEN Server components
- Several bugfixes
- Overall documentation revision and general improvement

#### **v0.10.0 February 2, 2016**

- New projects dashboard
- Capability to star and tag a project
- Sticky searches
- New Jupyter Notebook extensions
- Updates to all packages. Highlights: bokeh 0.11, ipython/jupyter 4.1.

#### **v0.9.1 October 19, 2015**

- New Search capability to find projects and files within a project.
- Added “Related Projects” list to the project view, based on code similarity.
- New UI for fine-grained access control of project files in the Workbench app
- Viewer app now renders plain text files correctly
- Updated LDAP configuration docs
- Updates to all packages. Highlights: bokeh 0.10, ipython/jupyter 4.0.

**Note** Elasticsearch, and an Oracle JRE, must be installed on the server in order to use the new search features. Indexing of project files will begin when the project is started (or paused and re-started). If search features are not desired, set "SEARCH\_ENABLED": false in the server configuration file to avoid errors.

### v0.8.0 August 21, 2015

#### New Features

- Updated packages based on Anaconda 2.3, and removed older packages no longer in Anaconda.
- Updated IPython to version 3.2.1
- Documentation is now installed with the server (use the Help link in the top navigation bar)
- Added the ability for the administrator to define a customized default project environment.
- The server has been updated to use python 2.7.10.
- Init scripts are now provided for each Anaconda Enterprise Notebooks service.
- Added relevant links to some error pages

#### Problems Resolved in this Release

- Project status indicators (e.g. starting, pausing) now automatically update.
- If an access is unauthorized, the server now returns a 403 (Unauthorized) status code and prompts the user to log in.
- Modified nginx configuration to support running the server on non-standard ports.
- The server installation no longer uses a default password for the wakari user. A random password is generated and displayed during installation.
- Prevent double-click from attempting to create a project twice
- Removed an obsolete script reference that was causes a 404 error to be logged in the browser console when opening the Terminal app.
- The installer scripts no longer fail if the database already contains the 'wakari' user.
- Updated example notebooks to work with latest Bokeh release.
- Fixed terminal app key bindings to allow Mac command key to work normally
- Installers now indicate where the installation logs are stored
- LDAP user attributes containing binary data are now ignored.

#### Documentation Updates

- Updated and consolidated Troubleshooting guide.
- Simplified some steps in the installation procedure.
- Updated notebooks in the Examples directory for use with the latest IPython Notebook and Bokeh.
- Added a section on project permissions to the Troubleshooting guide.
- Added notes on how to remove a project if the datacenter has already been removed.

## v0.7.0 June 12, 2015

### New Features

- Updated Bokeh to v0.9
- Ability to list packages installed on the server
- Administrators now have full access to all projects.
- Added automated checking and display of connection status between server, data centers, and compute resources.
- When creating a new project, an environment for the project is automatically created as a clone of the root Anaconda environment.

### Problems Resolved in this Release

- Problem with checking in files with revision control extension
- Revision control extension can't handle notebook names with spaces
- Problem moving files from one compute node to another if configured for LDAP
- Should default to UTF-8 encoding and warn user if no locale is detected
- Adding a compute resource via the command line admin tool does not work
- The installer now sets `umask 0022` to ensure correct file permissions

### Documentation Updates

- Added a *Troubleshooting* section to the documentation.
- Added notes on how to configure crontab to start the Anaconda Enterprise Notebooks services at startup
- Example SSL config file now has correct log paths
- Added instructions on how to ensure that POSIX ACL support is enabled on the projects directory.
- Fixed syntax problem in sample LDAP config.json
- Added section on how to use self-signed or private CA certificates

## v0.6.3 March 27, 2015

- Updated LDAP module
- LDAP user filtering
- Added Notebook locking
- Added Notebook integrated revision control system
- Move projects between compute nodes
- User-specific binding to compute nodes (private compute nodes)
- Improved installation process and dependency checking
- Incorporated support for SSL for Server and Gateway nodes

- Improved Gateway error handling
- Fixed package dependencies for update process
- Documentation updates

### Previous versions

Previous version documentation is provided for users who have not yet upgraded to the current version of AEN.

- *AEN 4.2.1*
- *AEN 4.2.0*
- *AEN 4.1.3*
- *AEN 4.1.2*

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[Changing the AEN account type \(AEN 4.2.0\)](#)

[Changing the default for project access \(AEN 4.2.0\)](#)

[Editing configuration files \(AEN 4.2.0\)](#)

[Managing your AEN license \(AEN 4.2.0\)](#)

[Cheat sheet \(AEN 4.2.0\)](#)

[Troubleshooting \(AEN 4.2.0\)](#)

[Frequently asked questions \(AEN 4.2.0\)](#)

[Help and support \(AEN 4.2.0\)](#)

[Release notes \(AEN 4.2.0\)](#)

[Anaconda Enterprise Notebooks \(AEN 4.1.3\)](#)

[User guide \(AEN 4.1.3\)](#)

[Concepts \(AEN 4.1.3\)](#)

[Getting started \(AEN 4.1.3\)](#)

[Basic tasks \(AEN 4.1.3\)](#)

[Working with projects \(AEN 4.1.3\)](#)

[Searching for a project or file \(AEN 4.1.3\)](#)

[Adding and removing team members on a project \(AEN 4.1.3\)](#)

[Controlling access to your project \(AEN 4.1.3\)](#)

[Starting and stopping a project \(AEN 4.1.3\)](#)

[Making a project public or private \(AEN 4.1.3\)](#)

[Tagging a project \(AEN 4.1.3\)](#)

[Starring a project \(rating\) \(AEN 4.1.3\)](#)

[Claim ownership of a project \(AEN 4.1.3\)](#)

[Changing a project's summary or description \(AEN 4.1.3\)](#)

[Viewing a project's status \(AEN 4.1.3\)](#)

[Viewing related projects \(AEN 4.1.3\)](#)

[Viewing top-rated projects \(AEN 4.1.3\)](#)

[Using tags to find a project \(AEN 4.1.3\)](#)

[Viewing your top collaborators \(AEN 4.1.3\)](#)

[Sharing projects and notebooks \(AEN 4.1.3\)](#)

[Deleting a project \(AEN 4.1.3\)](#)



Using AEN applications (AEN 4.1.3)

Using Workbench (AEN 4.1.3)

Using Viewer (AEN 4.1.3)

Using JupyterLab (AEN 4.1.3)

Using Terminal (AEN 4.1.3)

Using Jupyter Notebook (AEN 4.1.3)

Using Jupyter Notebook extensions (AEN 4.1.3)

Using the Synchronize Environments extension (AEN 4.1.3)

Using the Locking extension (AEN 4.1.3)

Using the Revision Control Mechanism extension (AEN 4.1.3)

Using the NBConda extension (AEN 4.1.3)

Using the Conda Notebook extension (AEN 4.1.3)

Using the Anaconda Cloud extension (AEN 4.1.3)

Using the Notebook Present extension (AEN 4.1.3)

Using Compute Resource Configuration (AEN 4.1.3)

Managing your account (AEN 4.1.3)

Advanced tasks (AEN 4.1.3)

Working with environments (AEN 4.1.3)

Using visualization packages (AEN 4.1.3)

Using environment variables (AEN 4.1.3)

Cheat sheet (AEN 4.1.3)

Troubleshooting (AEN 4.1.3)

Admin guide (AEN 4.1.3)

Concepts (AEN 4.1.3)

Installation (AEN 4.1.3)

Installation requirements (AEN 4.1.3)

Preparing for installation (AEN 4.1.3)

Installing the AEN server (AEN 4.1.3)

Installing the AEN gateway (AEN 4.1.3)

Installing the AEN compute node(s) (AEN 4.1.3)

Configuring conda to use your local on-site AEN repository (AEN 4.1.3)

Optional configuration (AEN 4.1.3)

Using configuration files (AEN 4.1.3)

Increasing HTTP timeout between gateway and compute nodes (AEN 4.1.3)

Changing where projects are stored (AEN 4.1.3)

Creating groups with the same uid (AEN 4.1.3)

Using numeric usernames (AEN 4.1.3)

Setting up a default project environment (AEN 4.1.3)

Configuring a remote MongoDB (AEN 4.1.3)

Running SELinux in enforcing mode (AEN 4.1.3)

Changing domain name servers (AEN 4.1.3)

Authenticating with LDAP (AEN 4.1.3)

Configuring sudo customizations (AEN 4.1.3)

Configuring SSL (AEN 4.1.3)

wakari\_https.conf (AEN 4.1.3)

Configuring single sign-on (AEN 4.1.3)

**Adding a third-party extension (AEN 4.1.3)**

**Configure search indexing (AEN 4.1.3)**

**Create custom Jupyter kernel for Pyspark (AEN 4.1.3)**

**Upgrading AEN (AEN 4.1.3)**

**Uninstalling AEN (AEN 4.1.3)**

**User management (AEN 4.1.3)**

**Adding or removing an administrative user (AEN 4.1.3)**

**Allowing and restricting new user registration (AEN 4.1.3)**

**Resetting a user password (AEN 4.1.3)**

**Managing permissions (AEN 4.1.3)**

**Viewing a list of users (AEN 4.1.3)**

**Viewing a list of currently active users (AEN 4.1.3)**

**Viewing a user profile (AEN 4.1.3)**

**Sending a system message (AEN 4.1.3)**

**Moving a project to another compute node (AEN 4.1.3)**

**Deleting a user (AEN 4.1.3)**

**Deleting a project (AEN 4.1.3)**

**System management (AEN 4.1.3)**

**Opening the Admin dashboard (AEN 4.1.3)**

**Backing up and restoring AEN (AEN 4.1.3)**

**Viewing a list of admin commands (AEN 4.1.3)**

**Viewing help for admin commands (AEN 4.1.3)**

**Running daily reports (AEN 4.1.3)**

Viewing system errors (AEN 4.1.3)

Viewing security errors (AEN 4.1.3)

Managing data centers (AEN 4.1.3)

Managing enterprise resources (AEN 4.1.3)

Managing services (AEN 4.1.3)

Making sure NGINX and MongoDB are running (AEN 4.1.3)

Viewing, terminating, and relaunching applications (AEN 4.1.3)

Viewing the task queue (AEN 4.1.3)

Checking node connections (AEN 4.1.3)

Verifying and tuning search indexing (AEN 4.1.3)

Changing the AEN server URL (AEN 4.1.3)

Changing the static URL for JavaScript files (AEN 4.1.3)

Changing the AEN account type (AEN 4.1.3)

Changing the default for project access (AEN 4.1.3)

Editing configuration files (AEN 4.1.3)

Managing your AEN license (AEN 4.1.3)

Cheat sheet (AEN 4.1.3)

Troubleshooting (AEN 4.1.3)

Frequently asked questions (AEN 4.1.3)

Help and support (AEN 4.1.3)

Release notes (AEN 4.1.3)

Anaconda Enterprise Notebooks (AEN 4.1.2)

Anaconda Enterprise Notebooks user overview (AEN 4.1.2)

## Getting started (AEN 4.1.2)

## User guide (AEN 4.1.2)

After you've run through the *Getting started guide*, you're ready to learn the details of using Anaconda Enterprise Notebooks.

### Basic

These topics all use the web browser to manage your projects. They are suited for a beginning user.

## Projects (AEN 4.1.2)

## Using applications (AEN 4.1.2)

## Workbench Application (AEN 4.1.2)

## Viewer Application (AEN 4.1.2)

## JupyterLab Application (AEN 4.1.2)

## Terminal Application (AEN 4.1.2)

## Jupyter Notebook Application (AEN 4.1.2)

## Compute Resource Config Application (AEN 4.1.2)

## Team Collaboration (AEN 4.1.2)

## Account Administration (AEN 4.1.2)

### Advanced

If you are comfortable entering commands on the command line, there is a lot more you can do with Anaconda Enterprise Notebooks.

## Anaconda Environments (AEN 4.1.2)

## Data (AEN 4.1.2)

## Visualization (AEN 4.1.2)

## Project environment variables (AEN 4.1.2)

## Help & support

**Help and support (AEN 4.1.2)**

**Frequently Asked Questions (AEN 4.1.2)**

**Additional Resources (AEN 4.1.2)**

**Sharing in Anaconda Enterprise Notebooks (AEN 4.1.2)**

**Administration (AEN 4.1.2)**

**Configuration Files (AEN 4.1.2)**

**Start/Shutdown (AEN 4.1.2)**

**Backup/Restore (AEN 4.1.2)**

**Third Party Extensions (AEN 4.1.2)**

**Troubleshooting (AEN 4.1.2)**

**Compute-nodes (AEN 4.1.2)**

**Installation (AEN 4.1.2)**

### **Install Steps**

Carry out the procedures linked from the table below to perform a complete install of all Anaconda Enterprise Notebooks components.

**Installation preparation (AEN 4.1.2)**

**Install AEN Server (AEN 4.1.2)**

**Install AEN Gateway (AEN 4.1.2)**

**Install AEN Compute (AEN 4.1.2)**

The following optional install procedures may need to be performed, depending on how you set up your Data Center:

**Optional configuration (AEN 4.1.2)**

**Sudo configuration (AEN 4.1.2)**

**LDAP configuration (AEN 4.1.2)**

**SSL (AEN 4.1.2)**

**wakari\_https.conf (AEN 4.1.2)**

**Single sign on (AEN 4.1.2)**

Additional post-install information:

**Upgrading Anaconda Enterprise Notebooks (AEN 4.1.2)**

**Uninstall (AEN 4.1.2)**

**Release notes (AEN 4.1.2)**

## **Using Anaconda Distribution with AE4**

Anaconda Distribution includes two options for package and environment management on local systems, the [Conda](#) command line program, and the [Anaconda Navigator](#) graphical interface. If Anaconda Enterprise users will use either of these options, there are a few items you might want to configure:

### **Configuring firewall settings**

If platform users will use Navigator **online**, you may need to whitelist the necessary sites in your network's firewall settings so that Navigator can reach these sites:

- <https://repo.anaconda.com> (or for older versions of Navigator and Conda, <https://repo.continuum.io> )
- <https://conda.anaconda.org> for conda-forge and other channels on anaconda.org
- <https://vscode-update.azurewebsites.net/> for updating Visual Studio Code
- google-public-dns-a.google.com (8.8.8.8:53) to check internet connectivity with [Google Public DNS](#)

If platform users will use Navigator **offline**, conda environment creation will be limited to the packages available in their package cache. Using Navigator in offline mode is equivalent to using the `create`, `install`, `remove`, and `update conda` commands with the `--offline` flag so that conda does not connect to the internet. If your users will use Navigator offline, you may want to *change the Navigator icons* that link to the web.

**NOTE:** If Navigator detects that internet access is not available, it automatically enables offline mode. Users can also select **Anaconda Navigator > Preferences** and check the `Enable offline mode` option to work in offline mode any time, even when internet access is available.

## Configuring conda

If platform users will use conda to install packages, they can configure conda to search a specific set of channels for packages.

*As an Administrator*, you can also [configure conda at the system level](#), which will override any user-level configuration.

## Configuring Navigator

By default, Navigator includes icons linking to the GitHub, YouTube, and Twitter pages of Anaconda Inc. *Users* can change or remove these links by editing the configuration file located here: `HOME_DIR/.anaconda/navigator/anaconda-navigator-config.yml`.

The configuration file uses key-value pairs in the form `key: value`, such as `github_url: https://github.com`. Each of the three values `github_url`, `youtube_url` and `twitter_url` may be set to any URL or `null`. If the value is `null`, Navigator does not display that icon.

*As an Administrator*, you can create a configuration file for Navigator to enable users to access the Anaconda Enterprise 4 Repository and set additional parameters that are not exposed in the preferences dialog. This main configuration file stores *all user preferences* for Navigator, and is located here: `~/.anaconda/navigator/anaconda-navigator.ini`.

The configuration file includes `main` and `home` sections, each containing sets of key-value pairs in `.ini` format.

You can use it to customize the following options in the `main` section:

- `default_anaconda_api_url`: This points to the internal Anaconda Enterprise 4 Repository API endpoint.

**NOTE:** This URL must end with `/api`—it is not simply the homepage of your instance. This API reads the configuration data from your instance to set UI behavior and text, such as the **Sign in to...** link in the top right corner of the Navigator window.

- `default_ssl_certificate` — This can be set to `True`, `False`, or a path to an existing and valid SSL certificate file.

**NOTE:** If your Anaconda Enterprise 4 Repository instance requires an SSL cert/RSA key to access it, that information must exist in a text file on the user's machine, *and pointed to via the path specified here* in the `.ini` file. The format for the text file should resemble the following:

```
-----BEGIN CERTIFICATE-----
```

```
<actual cert here>
```

```
-----END CERTIFICATE-----
```

```
-----BEGIN RSA PRIVATE KEY-----
```

```
<actual key here>
```

```
-----END RSA PRIVATE KEY-----
```

- `twitter_url` — This can be configured to point to your company's account, or be set to `None` to display no icon.
- `youtube_url` — This can be configured to point to your company's account, or be set to `None` to display no icon.
- `github_url` — This can be configured to point to your company's account, or be set to `None` to display no icon.

And set this option in the `home` section:

- `vscode_enable` — This can be set to `True` or `False`, based on whether you want to enable or disable VSCode from appearing on the Home tab and making queries to the Microsoft endpoint from within the application.



For example:

```
```.ini
[main]
default_anaconda_api_url = https://www.your-domain.com:8443/api
default_ssl_certificate = /path/to/certificate/file.pem

# Custom URLs
twitter_url = https://twitter.com/your-company
youtube_url = https://www.youtube.com/c/your-company
github_url = https://github.com/your-company

[home]
vscode_enable = False
```.
```

After making your changes, save and close the `.ini` file, then launch Navigator to update the `.condarc` and `anaconda-client` configurations to reflect the customized settings you've specified within it.

## 2.12.6 Anaconda Toolbox

**Unlock the power of Python in your spreadsheets - no coding skills needed**

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**Note:** You must be part of the [Anaconda Early Adopter Program](#) and the [Microsoft 365 Insider Program](#) with Python in Excel enabled to access the Anaconda Toolbox.

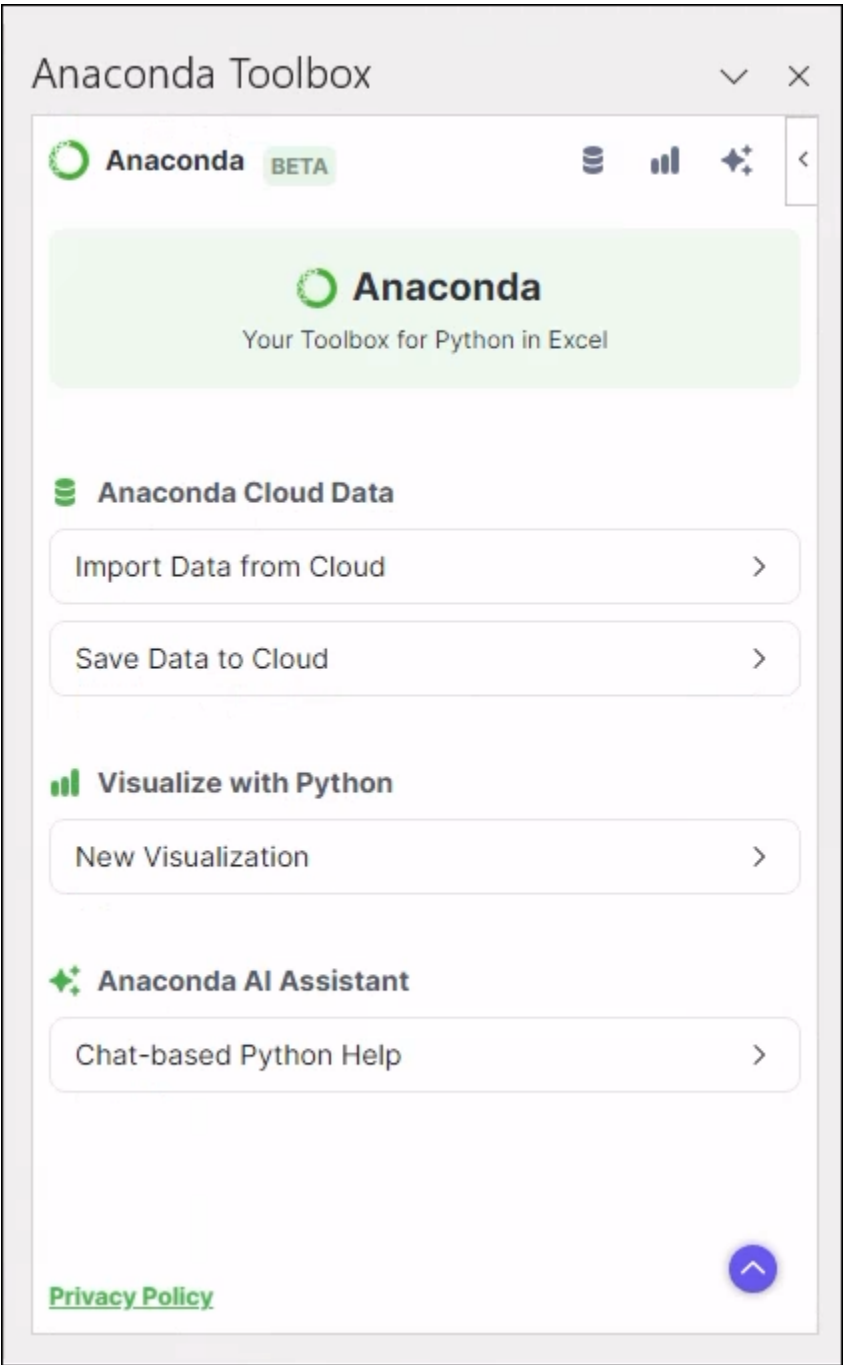
---

Anaconda Toolbox makes Python accessible, even if you're not an expert. Quickly generate code and visualizations, learning Python as you go.

Powered by Anaconda—the same team that provides the Python libraries for Microsoft's Python in Excel.

With Anaconda Toolbox, you can:

- **Sync Your Data Anywhere:** Start in one workbook, pick up in another—your data follows you when all your work is saved to Anaconda Cloud.
- **Transform Tables into Graphs:** Visualize your data through the power of plots.
- **Meet Anaconda Assistant:** Your AI-powered assistant for Python-centric tasks in Excel.



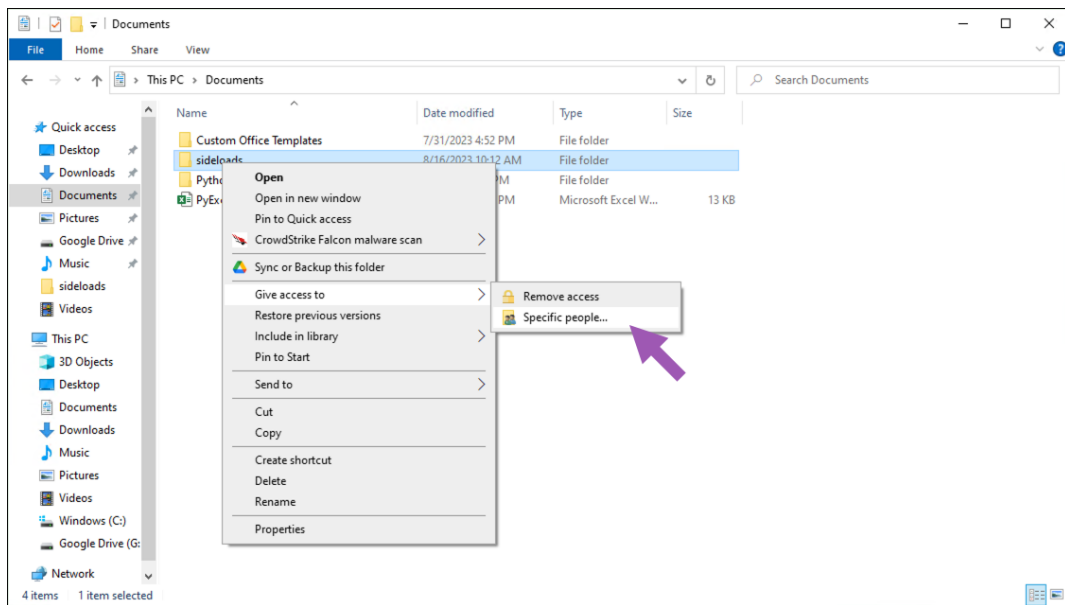
## Anaconda Toolbox installation

### Installing Anaconda Toolbox

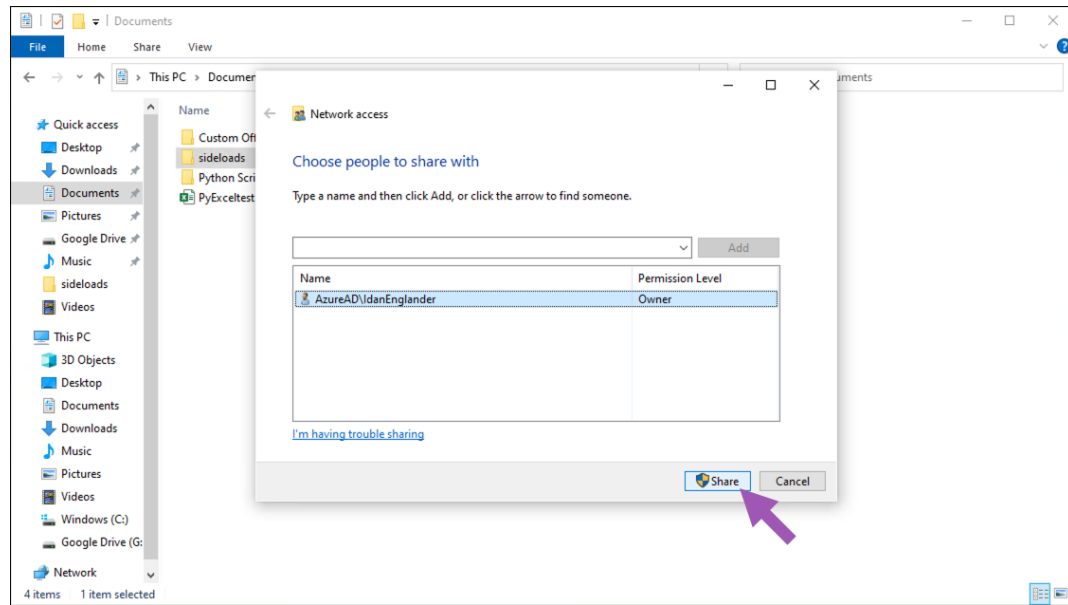
- 1.
2. Right-click in the body of the file and select **Save As...** from the dropdown. Save the file in a new folder.

**Caution:** Do *not* use keybindings to select, copy, and save the file text. This will erroneously copy plain text outside of the code as well, leading to installation issues.

3. Right-click the folder containing the saved copy of your manifest file. From the dropdown, Select **Give access to > Specific people...**

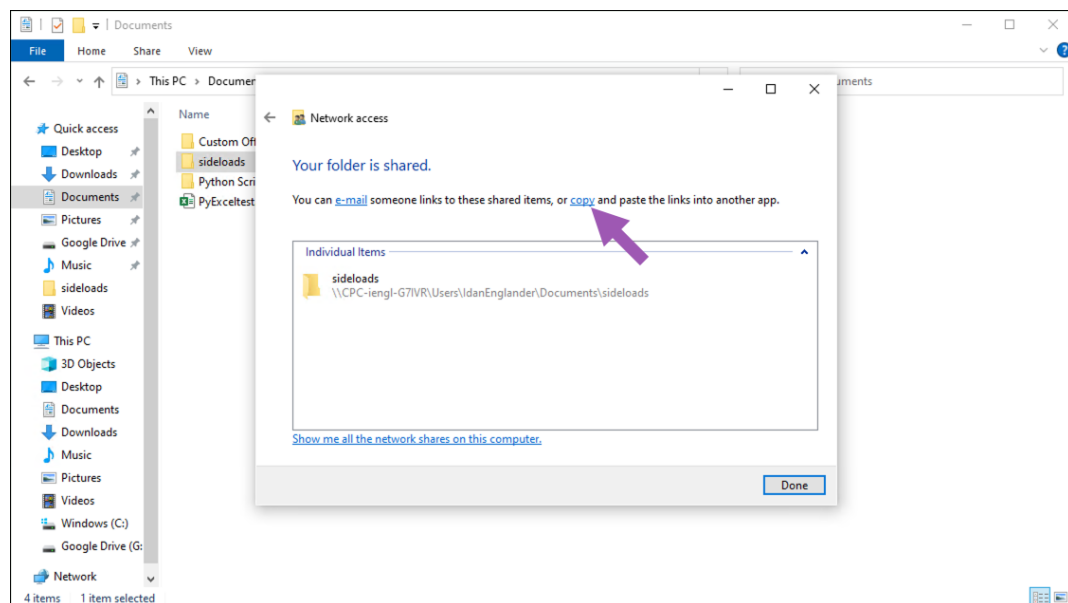


4. Select your name from the table, then click **Share**.

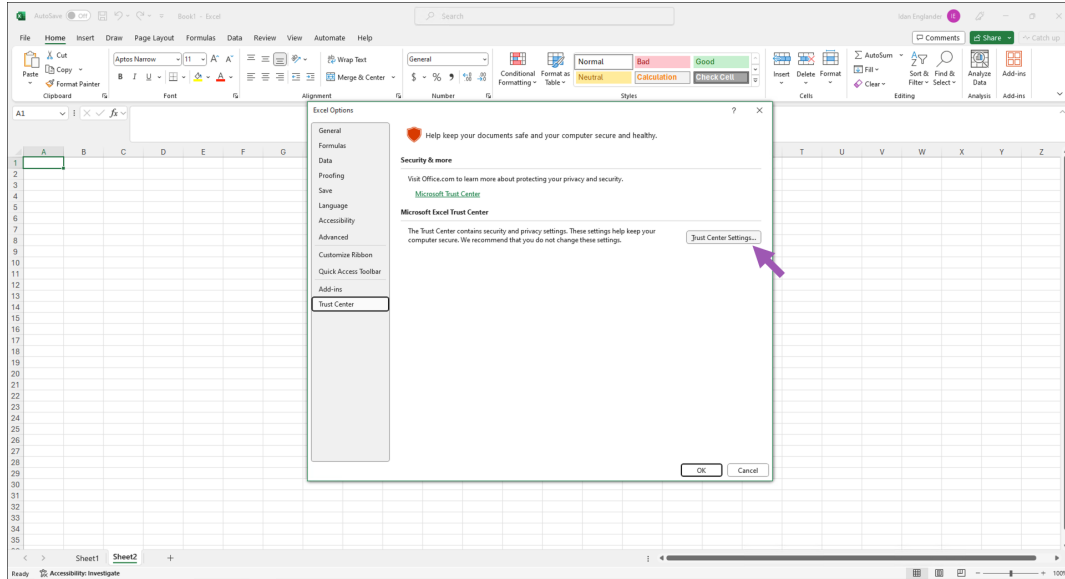


**Note:** You might be prompted to turn on network discovery and file sharing for all public networks. If so, you can select **Yes**, **No**, or simply click **Cancel**. Your decision does not affect installation.

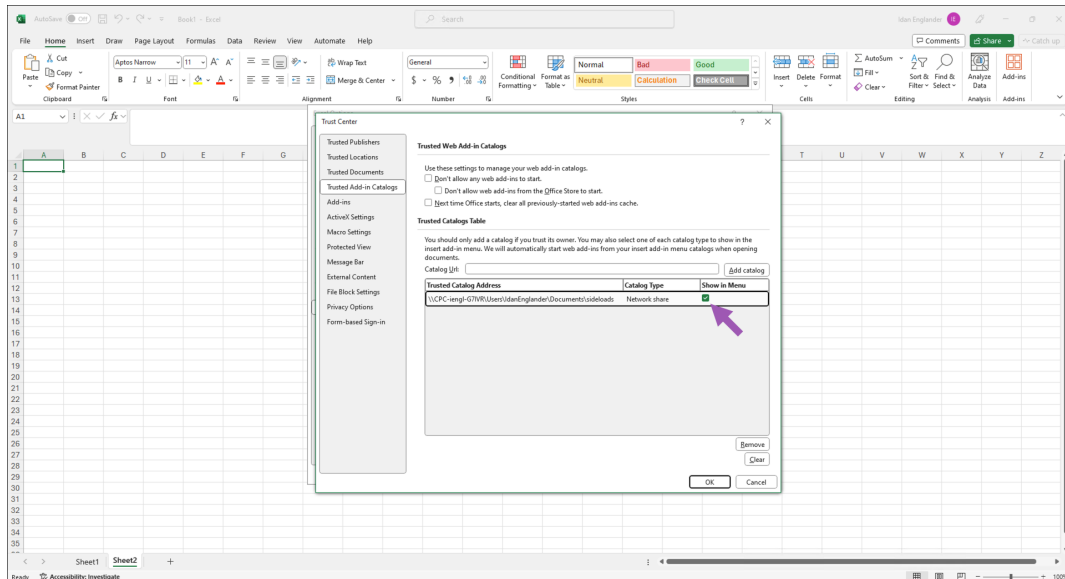
- On the success page, click the in-line **copy** link to copy the file path for the manifest file to your clipboard, then click **Done**.



- Open Excel. From the **File** tab, click **Options**, then **Trust Center**, and then click **Trust Center Settings...**



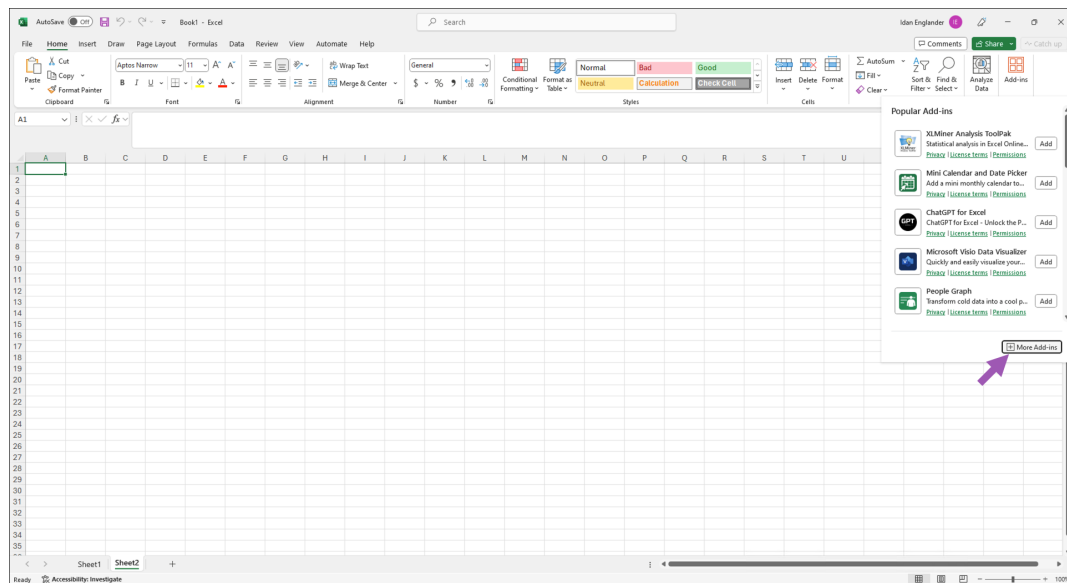
7. Go to **Trusted Add-in Catalogs**, then paste the file path in the **Catalog Url** cell.
8. Delete the word(s) before the parentheses—as well as the parentheses themselves—from the file path.
9. Click **Add catalog**.
10. In the table, select the checkbox in the **Show in Menu** column, then click **OK**.



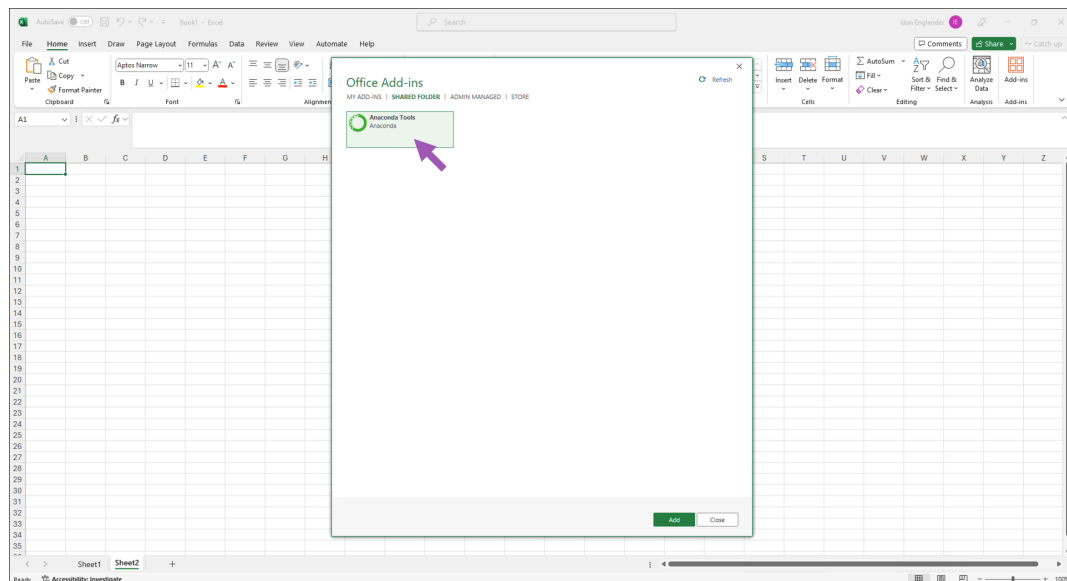
11. Close and reopen Excel for your changes to take effect.

## Accessing Anaconda Toolbox

1. From the **Home** tab, click **Add-ins**, then click **More Add-ins**.



2. At the top of the dialog, click **Shared Folder**. You should see **Anaconda Tools**.



3. Select **Anaconda Tools**, then click **Add**.

You can now open the Anaconda Toolbox from the **Formulas** tab.

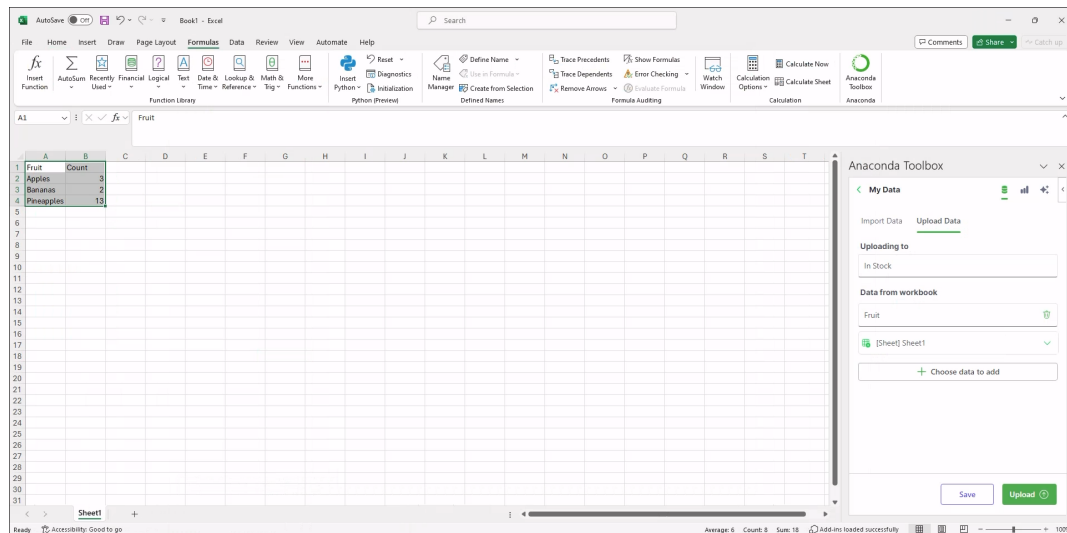
## Anaconda cloud data

Securely upload your data to Anaconda Cloud to access and version from anywhere, anytime. Import your data—as well as curated data catalogs created by Anaconda—to continue your data analysis.

### Save Data to Cloud

Follow these steps to upload your data to your private catalog. You can access your saved data by following the Import Data from Cloud steps below.

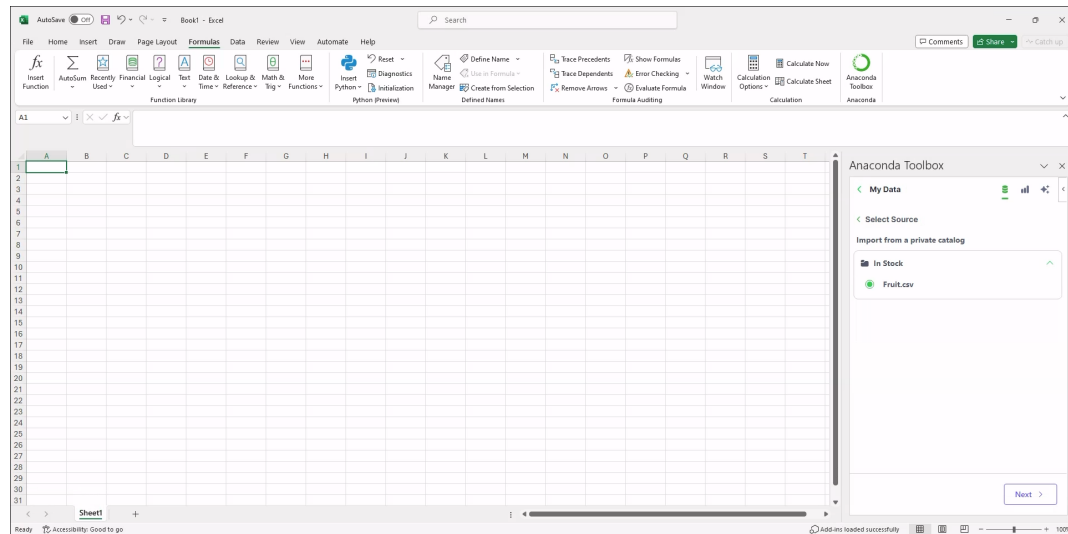
1. Under **Anaconda Cloud Data**, click **Save Data to Cloud**.
2. Under **Uploading to**, enter a catalog name. Under **Data from workbook**, enter a file name.
3. Use the dropdown to select the custom range, table, or sheet you want to save.
4. To save multiple sets of data, click **Choose data to add** and repeat the previous steps.
5. Click **Upload**.



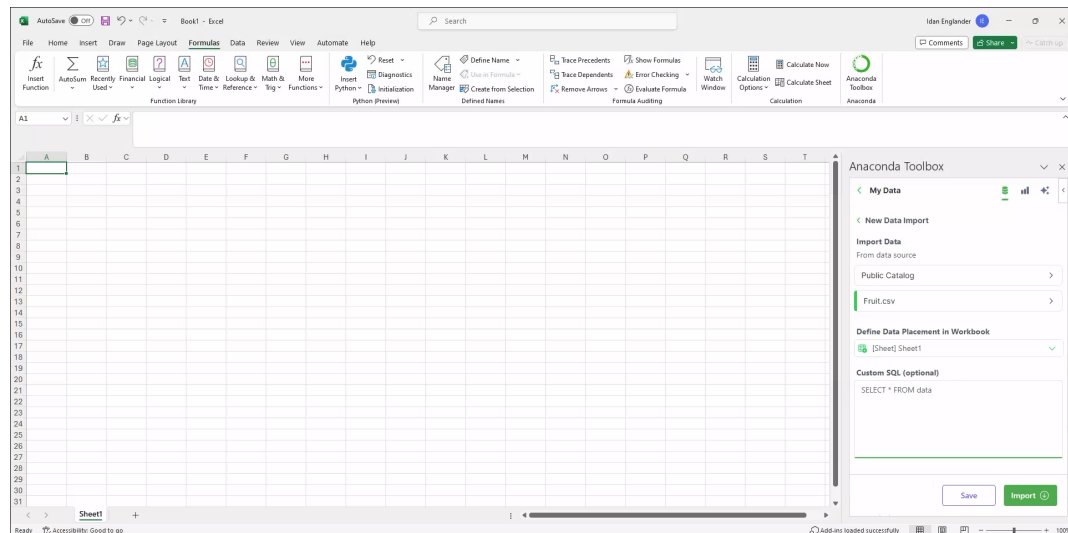
### Import Data from Cloud

Follow these steps to import data from your private catalog to your workbook.

1. Under **Anaconda Cloud Data**, click **Import Data from Cloud**.
2. Click **Import data**.
3. Select **Public Catalog** to import data from one of Anaconda's pre-constructed data catalogs, or **Private Catalog** to import your previously uploaded content.
4. Once you've made your data selection, click **Next**.



5. Under **Define Data Placement in Workbook**, click the dropdown, then select where you want to place the incoming data.
6. (Optional) Provide an SQL query to filter or aggregate the source.
7. Click **Import**.



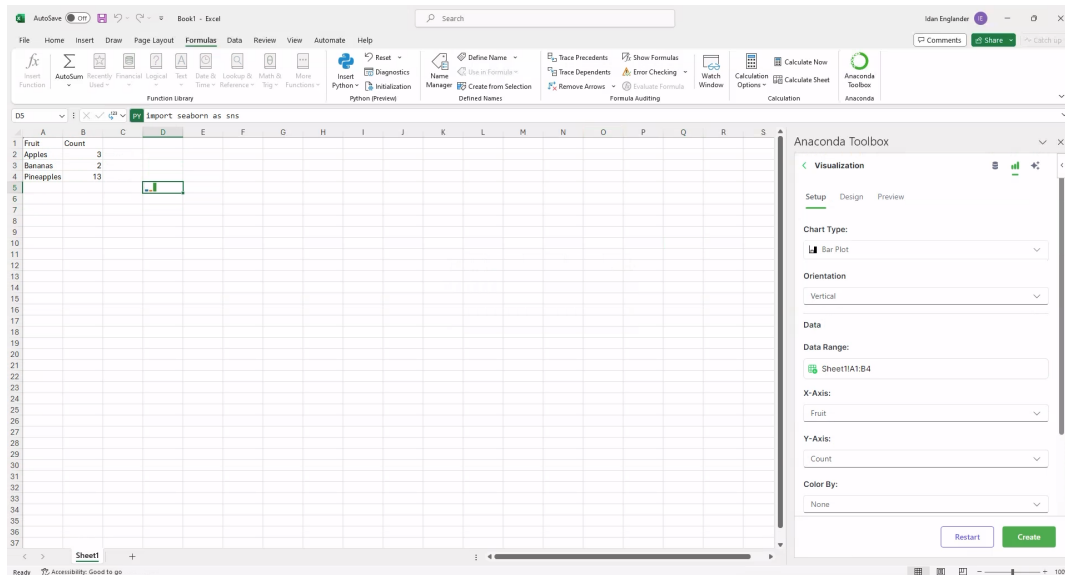
## Visualize with Python

Convert entire sheets or specific ranges into the plot best suited for visualizing your data.

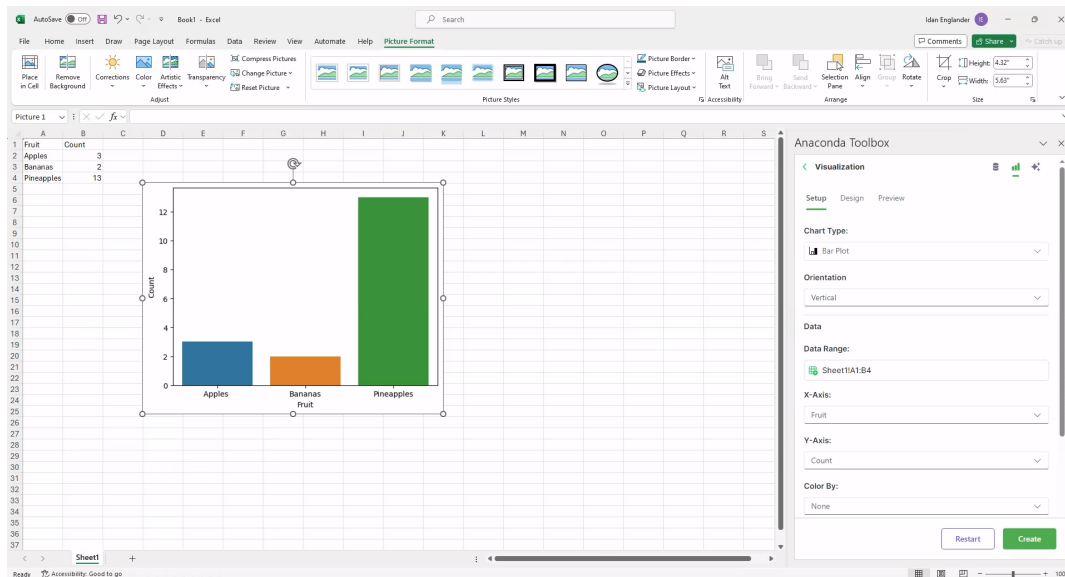
1. Under **Visualize with Python**, click **New Visualization**.
2. Select a plot type to visualize the data in your sheet.
3. Prepare your data:
  - Adjust the plot settings and select your source data range from the **Setup** tab.
  - (Optional) Customize your plot further with the options provided in the **Design** tab.
  - (Optional) Preview the plot and copy the visualization code directly from the **Preview** tab to add to other workbooks and notebooks.



- From the **Setup** tab, set the location for the plot to render under **Output**.
- Click **Create**.



- The plot renders in the cell you set under **Output**. Right-click the plot, and in the dropdown select **Picture in Cell > Place over Cells**.



## Anaconda Assistant

The Anaconda Assistant is an intuitive chat interface to help you generate, explain, and debug code, learn new topics, and more.

To access the Assistant, click **Chat-based Python help** under **Anaconda Assistant**.

## Ask the Assistant

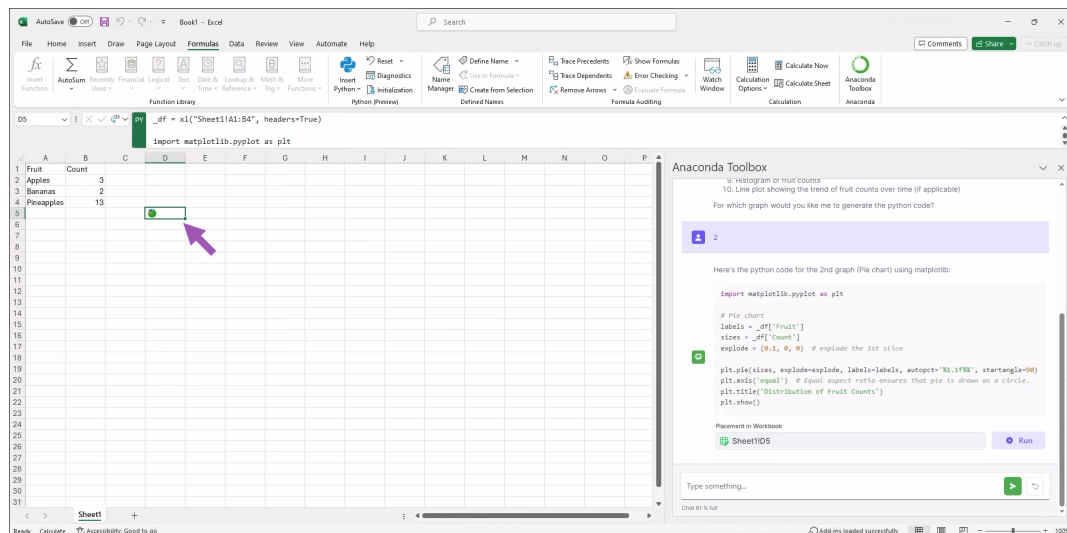
Use the Assistant to create Python code for analyzing your data.

1. Under **Help with coding tasks**, click **Generate python code to...**
2. Pose prompts to the Assistant for guidance on analyzing the data in your workbook.
3. When provided code to run, set the placement in your workbook and click **Run**.

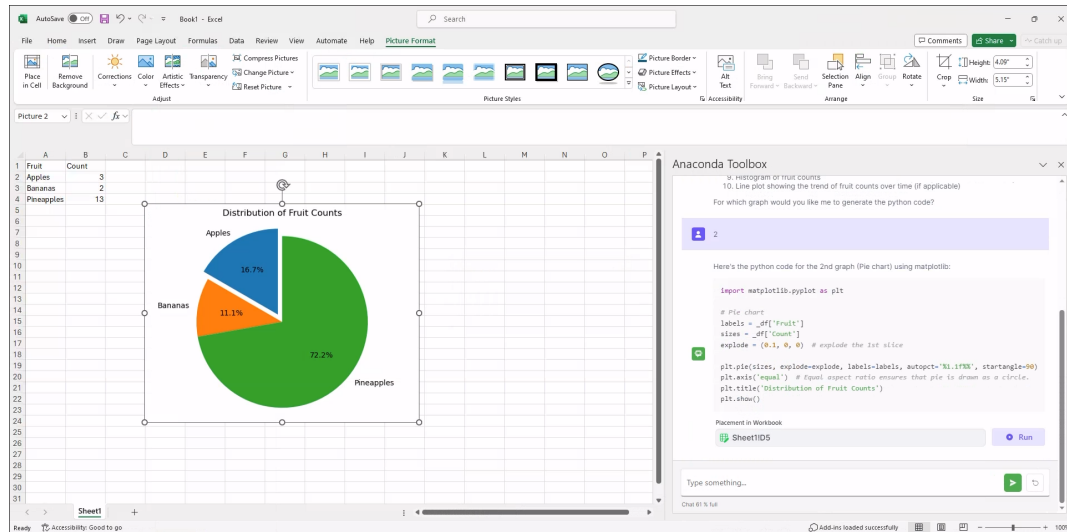
## Generate a chart

Use the Assistant to create Python code for rendering charts.

1. Under **Work with Tables and Ranges**, click **Generate a chart from a table or range**.
2. Click the input cell that appears, then, in the dropdown, select a specific sheet or manually select a range of cells.
3. The Assistant provides a list of possible charts it can generate Python code for. Use the text box to choose which chart you would like generated or to ask for a new set of possibilities. Type something like the following:
  - 1
  - Generate the second idea
  - chart #3, please
  - Give me new options!
4. Once the Assistant has provided the code, click the **Placement in Workbook** cell and select a cell in your workbook to render the code.
5. Click **Run**.



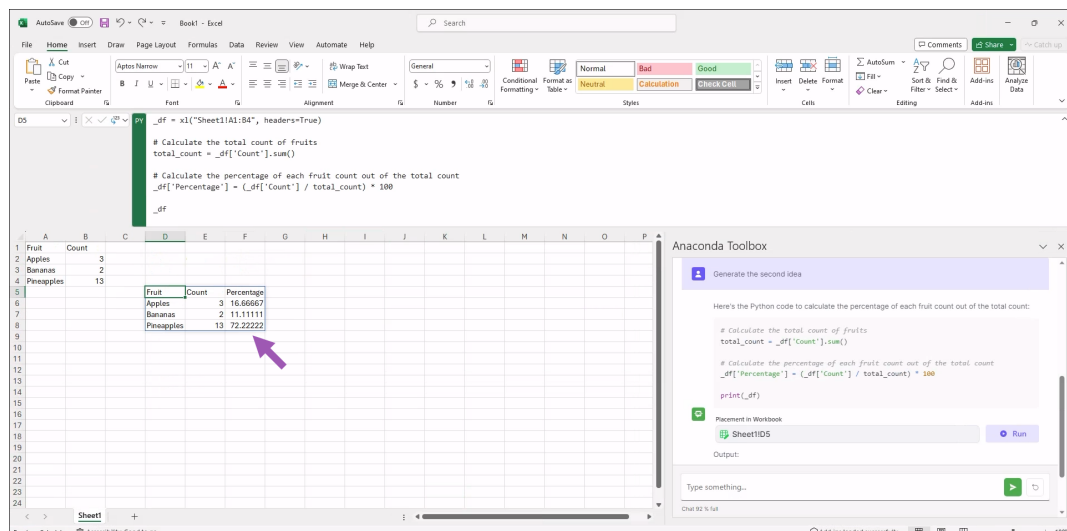
6. The plot renders in the cell you set under **Output**. Right-click the plot, and in the dropdown select **Picture in Cell > Place over Cells**.



## Aggregate or summarize a table or range

Use the Assistant to create Python code to aggregate your data.

1. Under **Work with Tables and Ranges**, click **Aggregate or summarize a table or range**.
2. Click the input cell that appears, then, in the dropdown, select a specific sheet or manually select a range of cells.
3. The Assistant provides a list of possible calculations it can generate Python code for. Use the text box to choose which chart you would like generated or to ask for a new set of possibilities. Type something like the following:
  - 1
  - Generate the second idea
  - calculation #3, please
  - Give me new options!
4. Once the Assistant has provided the code, click the **Placement in Workbook** cell and select a cell in your workbook to render the code.
5. Click **Run**.

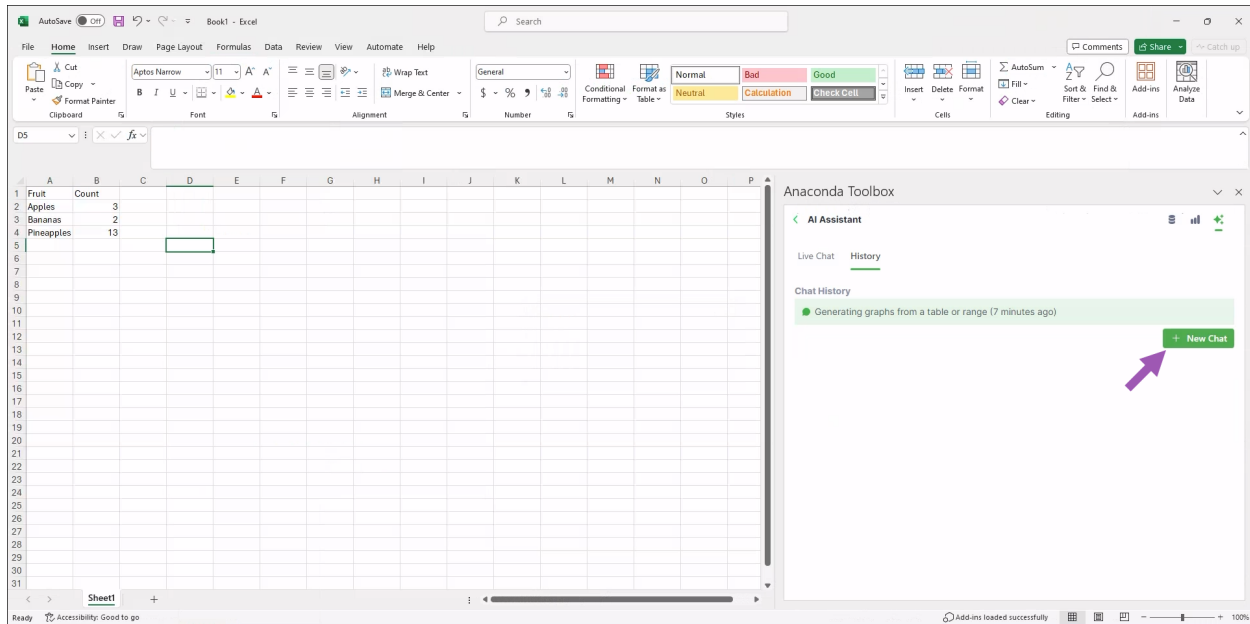


- The results render in the cell you set under **Output**.

**Note:** If the results shows up in the Diagnostics pane, manually remove the `print(` (and closing `)` from the formula bar above the sheet.

## Start a new chat

To start a new chat, click **History**, then **New Chat**.



## 2.12.7 Reference

### Glossary

#### Anaconda.org

A web-based public repository hosting service in the cloud. Anaconda.org hosts hundreds of useful Python packages, notebooks and environments for a wide variety of applications. You do not need a Anaconda.org account, or to be logged in, to search for public packages or to download and install them.

You can also publish *packages* to Anaconda.org. These packages are hosted in a *channel* connected to your Anaconda.org account and can be shared with the public. Users with paid subscriptions to Anaconda.org can designate packages as private, to be shared only with authorized users.

For more information on Anaconda.org, see [Anaconda.org](https://anaconda.org).

## Anaconda Client CLI

The Anaconda Client command line interface (CLI) allows you to log into Anaconda.org directly from your terminal window and manage your account. It is not necessary for downloading or installing packages from Anaconda.org.

## Anaconda Distribution

A downloadable, free, open-source, high-performance, optimized Python and R distribution with 250+ packages automatically included. Anaconda Distribution provides the option to easily install an additional 7,500+ open-source packages for data science, including advanced and scientific analytics.

Anaconda Distribution includes the `anaconda` package, [Anaconda Navigator](#), and the `conda` package and environment manager. Anaconda Distribution is available for Windows, macOS, and Linux.

After installing Anaconda Distribution, you can install or update over 250 additional open source packages contained in the Anaconda repository using the `conda install <PACKAGE-NAME>` command. Replace `<PACKAGE-NAME>` with the name of the desired package.

For more information on Anaconda Distribution, see [Anaconda Distribution](#).

For more information on Anaconda Navigator, see [Anaconda Navigator](#).

## Anaconda metapackage

A collection of packages at specific versions that are associated with Anaconda Distribution installers. Anaconda metapackage is used to pull all of the other packages into the installer. It contains several core, low-level libraries, including compression, encryption, linear algebra, and some GUI libraries.

The Anaconda metapackage is useful for creating environments that have all of the Anaconda Distribution packages in them and it has strong effects on conda's solver behavior.

For more information on the Anaconda metapackage, see [Anaconda metapackage](#).

For more information about the distinctions between Anaconda Distribution and the Anaconda metapackage, see the Anaconda blog, [What's in a Name? Clarifying the Anaconda Metapackage](#).

## Anaconda Navigator

A desktop graphical user interface (GUI) included in all versions of Anaconda that allows you to easily manage `conda` packages, environments, channels, and notebooks without the need to use the *command line interface (CLI)*.

For more information on Anaconda Navigator, see [Anaconda Navigator](#).

## Anaconda Professional Repository

A private enterprise server on your network where both open source and proprietary packages may be stored and retrieved for installation on a local computer. Anaconda Professional Repository is different from [Anaconda.org](#) or the [default conda repository](#). The Anaconda Professional Repository is used to govern access to data science assets, including packages and notebooks. It is available for commercial use both on-premises and in the cloud.

For more information on Anaconda's product tiers, see [Anaconda pricing](#).

### Channels

A location in a repository where conda looks for packages. Channels may point to an Anaconda.org repository or a private location on a remote or local repository that you or your organization manage. The defaults channel list includes, by default, the following public repository channels:

- <https://repo.anaconda.com/pkg/main>
- <https://repo.anaconda.com/pkg/r>
- <https://repo.anaconda.com/pkg/msys2> (for Windows computers only)

### ckey

An internal ID used to identify artifacts within Anaconda Server.

### Command line interface (CLI)

A program in which commands are entered as text, one line at a time, for a computer to execute. This is done in the Anaconda Prompt in Windows, and in a terminal in macOS and Linux. Conda is executed in a CLI. Contrast with *Graphical User Interface (GUI)*.

### Commit

To make a set of local changes permanent by copying them to the remote server. Anaconda Enterprise checks to see if your work will conflict with any commits that your colleagues have made on the same project, so the files will not be overwritten unless you so choose to do so.

### Conda

A package and environment manager program that is packaged with *Anaconda Distribution* and run in a *CLI*. Using conda, you can install and update *conda packages* and their dependencies, and switch between *conda environments* on your local computer. Contrast with *Anaconda Navigator*.

For more information on conda, see the [conda documentation](#).

### Conda-build

A command line tool that you can use to build conda packages from recipes.

### Conda environment

A folder or directory that contains a specific collection of *conda packages* and their dependencies, so they can be maintained and run independently without interfering with each other. A conda environment maintains its own files, directories, and paths, so that you can work with specific versions of libraries and/or Python itself without affecting other Python projects. Changes to one environment do not affect other environments. For example, if you upgrade a program in one environment, this will not upgrade the same program in another environment.

For example, you may use one conda environment for only Python 2.7 and Python 2.7 packages, and maintain another conda environment with only Python 3.9 and Python 3.9 packages.

The environments in *Anaconda Navigator* are conda environments.

## Conda package

An archive file that contains everything that a software program needs in order to be installed and run, so you do not have to manually find and install each dependency separately. This can include system-level libraries, Python modules, executable programs, and other components. Conda tracks dependencies between specific packages and platforms, making it simple to create operating system-specific environments using different combinations of packages.

Conda packages can be managed with *conda* in the *CLI* or with *Anaconda Navigator*.

## Conda recipe

Instructions used to tell conda-build how to build a package.

## Conda repository

A cloud-based repository that contains 720+ open source certified packages that are easily installed locally via the `conda install` command. Can be viewed directly at <https://repo.anaconda.com/pkg/> and used within *Anaconda Navigator* when downloading and installing packages from the Environments tab, or by using *conda* commands in a *CLI*.

## CVEs

Common Vulnerabilities and Exposures found in software components. Because modern software is complex with its many layers, interdependencies, data input, and libraries, vulnerabilities tend to emerge over time. Ignoring a high CVE score can result in security breaches and unstable applications.

To learn more about CVE's and how Anaconda mitigates and manages them, watch the [State of Data Science webinar](#).

## Deployment

A deployed Anaconda project containing a Notebook, web app, dashboard, or machine learning model (exposed via an API). When you deploy a project, Anaconda Enterprise builds a container with all the required dependencies and runtime components—the libraries on which the project depends in order to run—and launches it with the security and access permissions defined by the user. This allows you to easily run and share the application with others.

## Environments

A virtual environment allows multiple incompatible versions of the same (software) package to coexist on a single system. An environment is simply a file path containing a collection of mutually compatible packages. By isolating distinct versions of a given package (and their dependencies) in distinct environments, those versions are all available to work on particular projects or tasks.

### Graphical user interface (GUI)

A program with graphic images, icons, and menus into which commands are entered by clicking with a mouse and/or entering text in edit boxes. *Anaconda Navigator* is a graphical user interface that overlays the conda utility.

### Interactive data application

Visualizations with sliders, dropdowns, and other widgets that allow users to interact with them. Interactive data applications can drive new computations, update plots, and connect to other programmatic functionality.

### Interactive development environment (IDE)

A suite of software tools that combines everything a developer needs to write and test software. It typically includes a code editor, a compiler or interpreter, and a debugger that the developer accesses through a single Graphical User Interface (GUI). An IDE may be installed locally, or it may be included as part of one or more existing and compatible applications accessed through a web browser.

### Label

Part of the URLs on Anaconda.org where conda looks for packages. Labels are searched only if you specify a label.

The default label is `main`, so packages that are uploaded without specifying a label are automatically labeled `main`. The version labeled `main` is also downloaded by default, unless a user specifies a different label.

So, if a file is labeled `main`, then the label name may be omitted from the URL. For example, the following repositories are equivalent:

```
https://anaconda.org/sean/labels/main
https://anaconda.org/sean
```

Commands such as `conda install` can be used with a channel or used with a channel and a label:

```
conda install --channel sean selenium
conda install --channel sean/label/dev selenium
conda install --channel sean/label/stable selenium
```

### Miniconda

A minimal installer for conda that is run from a *CLI*. Like Anaconda Distribution, Miniconda is a free software package that includes the conda package and environment manager, but Miniconda does not include the anaconda package, Anaconda Navigator, or any packages other than those dependencies needed to install Miniconda. After Miniconda is installed, additional conda packages may be installed directly from the CLI with the command `conda install`. See also *Anaconda Distribution* and *conda*.

For more information on Miniconda, see the [Miniconda documentation](#).



## Mirror

Mirroring is the process of accurately copying data from a source and then storing it in a new location. A mirror can be either a subset of the original or an exact 1 to 1. Mirroring can be in real-time, on a fixed schedule, or a one-time event.

## Namespace

Each user and organization has their own location called a “namespace” where they may host packages. You can view the public packages in a user or organization’s namespace by navigating to their user page.

EXAMPLE: The `travis` user namespace located at <https://anaconda.org/travis> contains packages that were uploaded and shared by the user whose account is named `travis`.

## Noarch package

A conda package that contains nothing specific to any system architecture, so it may be installed on any system. When conda searches for packages on any system in a channel, conda always checks both the system-specific subdirectory—for example, `linux-64`—and the `noarch` directory.

For a list of noarch packages available in Anaconda’s main channel, see <https://repo.anaconda.com/pkg/main/noarch/>.

## Notebooks

Anaconda Notebooks is a hosted JupyterLab service, powered by PythonAnywhere, that enables you to run JupyterLab notebooks reliably online. The Notebooks service provides you with a hosted JupyterLab instance running in a dedicated JupyterHub environment, persistent cloud storage, pre-configured conda environments with common data science packages, and the ability to create your own custom environments.

For more information on Anaconda Notebooks, see [Anaconda Notebooks](#).

## Package

Software files and information about the software, such as its name, the specific version, and a description, that are bundled into a file that can be installed and managed by a package manager. While packages are generally used for files, they can also be used for metadata alone. When it is, it is called a metapackage.

## Package manager

A collection of software tools that automates the process of installing, updating, configuring, and removing packages. Also known as a package management system.

*Anaconda Navigator* includes the conda package manager with a *GUI* overlay for ease of use.

Anaconda.org supports two package managers: *conda* and *pip*.

### Project template

Contains all the base files and components to support a particular programming environment. For example, a Python Spark project template contains everything you need to write Python code that connects to Spark clusters. When creating a new project, you can select a template that contains a set of packages and their dependencies.

### R package

A *conda packages* that installs and runs the R computer language. Examples include R Essentials, a bundle of 210 popular open source software programs written in the R computer language.

For more information on R packages, see *Using R language with Anaconda*.

### Repository

Any storage location from which software or software assets, like packages, may be retrieved and installed on a local computer. See also: *Anaconda Professional Repository* and *conda repository*.

### REST API

A common way to operationalize a machine learning model is through a REST API. A REST API is a web server endpoint, or callable URL, which provides results based on a query. REST APIs allow developers to create applications that incorporate machine learning and prediction, without having to write models themselves.

### Session

An open project, running in an editor or IDE.

### Token

An access control token is a random alphanumeric string that is inserted into a package or channel URL. Tokens can be used with Anaconda.org, the Anaconda Professional Repository, or the AE4 Repository. The token allows you to download a package or add a channel that are restricted. Only those users with the correct access token can access the private file. You can use Anaconda Client in your CLI or your organization in Anaconda.org to generate tokens for various private package and channel purposes.

### Help and support

The following resources are available to help you:

- Free community support is available from the [Anaconda Community forums](#).
- Follow along with training videos in [Anaconda Learning](#).
- If you're in need of further technical assistance, please [file a support ticket](#).
- To find out if Anaconda is right for you, please contact Sales at [sales@anaconda.com](mailto:sales@anaconda.com) for product demos.

Package creators or maintainers may be able to help you with installing a package or building and publishing an updated version. Package creators may also contact Anaconda to submit their package for consideration to be included in Anaconda.

## Cloud Changelog

Due to their cloud-hosted SaaS nature, Anaconda's Cloud services, such as Anaconda Pro, Business, Notebooks, and Learning, do not have a traditional version history. Instead, we keep this chronological history of the platform and update it when significant changes have been made. The most recent changes are always listed at the top.

Release notes of our versioned products:

- [Anaconda Enterprise](#)
  - [Anaconda Server](#)
  - [Anaconda Distribution](#)
  - [Anaconda Navigator](#)
  - [Anaconda.org](#)
- 

## October 2023

### Your data science journey begins in the notebook

Access key training resources from the Anaconda Learning library, now in [Anaconda Notebooks](#). ([Learning in Notebooks blog](#))

### Anaconda's AI Assistant comes to the desktop

Take advantage of our AI chat assistant on your local machine, with our new Anaconda Toolbox. ([Desktop Assistant blog](#))

## September 2023

### Anaconda Pro & Business

**New feature: Channel change deltas and notification emails** - View changes to the contents of your channel due to emerging or updated CVE scores/status. Track your channels to receive emails at configurable intervals and keep up-to-date with the latest changes to your channels' contents.

## May 2023

### Anaconda Pro & Business

**New feature: Installers** - Miniconda installers are now available for download!

### April 2023

#### Anaconda Business

**Feature improvement: Channels** - Channel details and channel artifact files now load 30% faster!

### March 2023

#### Anaconda Pro & Business

**New feature: Public API organization management via Anacondas notebooks service** - You can now configure your Anaconda Business organization using the API and Anacondas pre-constructed notebooks!

#### Anaconda Business

**New feature: Policy report** - You can now download a .csv file of the policy report from the channels page! The report contains a list of packages that were removed from the channel, details about the packages, and a reason for why they were removed.

#### Feature improvements:

- **CVE information** - More detailed information about CVEs associated with a package can now be viewed by navigating into the channel, selecting the package, and then clicking on the CVE.
- **Channels** - The load time for the channels page has been improved by a drastic 54%!
- **Policy filter** - Policy filters can now include a package's license family, and supports conda spec (use of wildcard characters).
- **Organization management** - You can now invite members to your organization and assign/revoke seats to members in bulk! For more information, see [organizations](#).

### February 2023

#### Anaconda Business

**New feature: Groups** - Manage your organizations users and channels by arranging them into groups to connect specific users with specific channels. For more information, see [groups](#).

**Feature improvement: Channels** - Channels now have a permission level of either internal or private. For more information, see [channels](#).

### January 2023

#### Anaconda Pro & Business

**Feature improvement: Invitations** - Pagination on the invitations page has been improved! The number of entries per page can be adjusted, and you can navigate back and forth between entries.

## October 2022

### Anaconda Business

**New feature: External mirror channels** - You can now create channels using `anaconda.org` as a channel mirror source. This effectively allows you to pull your own custom packages into Anaconda Business! Anaconda plans to support any external mirror source URL soon!

## September 2022

### Anaconda Pro & Business

**New feature: Anaconda maintained channel** - The `msys2` channel has been included as a default Anaconda curated channel.

**Feature improvements:**

- **Channels** - Package dependencies and dependents are now listed with the package in the channel.
- **Public API** - API documentation has been provided here. API collections are available to download and import into Postman or Insomnia for public use.

### Anaconda Business

**New feature:** Copy channel button A button has been added to the channels page to automatically copy a channel's path for you. This is extremely helpful in adding organizations channels to your `.condarc` file.

## August 2022

### Anaconda Business

**Feature improvement: CVEs** - Artifacts removed by a policy filter are now marked as such within the channel, and a reason for filtering is provided.

## July 2022

### Anaconda Business

**Feature improvement: Subscription** - Enabled self service purchasing for small teams who want to use Anaconda Business.

June 2022

### Anaconda Pro & Business

#### Feature improvements: Public API

- Token management for your organization members is now possible via the API!
- You can now manage assigning your organization's seats via the API to save you time on importing your users and getting them up and running with Anaconda Business!

May 2023

### Anaconda Business

**Bug fix: Channels - Delete** - Fixed a bug that was preventing channels from deleting properly.

## 2.12.8 Anaconda API

Automate and integrate user, token, channel, and policy management into your application with our API. The Anaconda API follows the general patterns of REST.

### Anaconda Cloud User and Token Management with API (Anaconda Pro/Business)

Manually onboarding individual team members through the Anaconda Cloud graphical user interface (GUI) can be time consuming. For large teams, Anaconda recommends using API calls for a streamlined process.

The Anaconda Cloud API provides various calls to enable you to add users to an Anaconda Cloud organization and change their seat and token permissions. **You must be an admin of an Anaconda Cloud organization with an active paid subscription to use these API calls.**

You can use API interfaces, such as [Insomnia](#), [Postman](#), or [FastAPI](#), to work with these API calls, or create a script to run through a list of users that need to be added to your organization.

---

**Note:** Import the provided [Insomnia](#) or [Postman](#) collections for a quickstart of the process. The Postman zip file also contains an environment template.

---

This documentation outlines the endpoints and request and response variables for each API call you might need during this process.

### Authenticating to the API

The Anaconda Cloud API uses OAuth2 standard authentication with an organization admin's `anaconda.cloud` username and password.

## Create organization app

Creating organization apps allows the admin user to specify credentials for a specific machine or machines (like a build server or other machine for pipeline automation) and manage those machines in a similar capacity to a user. This organization app can then allow the other API calls to be made directly to the organization the machine user is a part of. If you'd like apps for different environments or machines, you can create multiple apps per organization. Once an organization app is created, use its credentials to add other users via the API with the calls described below.

### API call

*POST /organizations/ORG\_NAME/service-accounts*

- Replace ORG\_NAME with the name of your organization, which can be found in your Anaconda Cloud organization's URL after "anaconda.cloud/organizations/".

### Request

```
{
  "name": "<APP_NAME>"
}
```

### Request example

```
{
  "name": "CompanyCloudOrg"
}
```

### Response

```
{
  "name": "<APP_NAME>",
  "client_id": "<GUID>",
  "org_id": "<GUID>",
  "client_secret": "<SECRET_ID>"
}
```

### Response example

```
{
  "name": "CompanyCloudOrg",
  "client_id": "1234abcd-1a2b-3c4d-5e6f-123456abcdef",
  "org_id": "abcd1234-1234-abcd-1a2b-3c4d5e6f7g8h",
  "client_secret": "1234567890abcdefghijkl1234567_1a2b"
}
```

### Variables

**name:**

The name of your organization app.

**client\_id:**

A unique client ID for your organization app.

**org\_id:**

A unique organization ID for your organization app.

**client\_secret:**

A unique client secret for your organization app.

### Add user to organization

This call adds users to a given organization.

### API call

*POST /organizations/ORG\_NAME/users*

- Replace ORG\_NAME with the name of your organization, which can be found in your Anaconda Cloud organization's URL after "anaconda.cloud/organizations/".

### Request

```
{
  "email": "<EMAIL_ADDRESS>"
}
```

### Request example

```
{
  "email": "annie.conda@anaconda.com"
}
```

### Response

```
{
  "first_name": null,
  "last_name": null,
  "email": "<EMAIL_ADDRESS>",
  "id": "<GUID>"
}
```

### Response example

```
{
  "first_name": null,
  "last_name": null,
  "email": "annie.conda@anaconda.com",
  "id": "1a2b3c4d-1a2b-3c4d-5e6f-1a2b3c4d5f"
}
```



## Variables

**email:**

The email of the user you want to add.

**first\_name:**

The user's first name. This will return *null* via the API and can be updated by the user when they log in to Anaconda Cloud.

**last\_name:**

The user's last name. This will return *null* via the API and can be updated by the user when they log in to Anaconda Cloud.

**id:**

The unique ID of the added user.

## Assign seat to user

This call adds a seat to a given user for the subscription associated with the organization the user is in.

### API call

*POST /organizations/ORG\_NAME/users/ID/seats*

- Replace ORG\_NAME with the name of your organization, which can be found in your Anaconda Cloud organization's URL after "anaconda.cloud/organizations/".
- Replace ID with the ID of the user that you want to assign a seat. This ID will be returned by the Add user to organization API call.

### Request and response

There's no request or response information for this call. You will receive a 201 status code if the request is successful.

## Assign token to user

This call assigns a token to a given user. Tokens are a unique security key that enable users to access the subscription seat they have been assigned.

### API call

*POST /organizations/ORG\_NAME/users/ID/token*

- Replace ORG\_NAME with the name of your organization, which can be found in your Anaconda Cloud organization's URL after "anaconda.cloud/organizations/".
- Replace ID with the ID of the user that you want to assign a token. This ID will be returned by the Add user to organization API call.

### Request

```
{
  "expires_at": "<DATETIME>"
}
```

### Request example

```
{
  "expires_at": "2022-07-29T00:00:00+00:00"
}
```

### Response

```
{
  "token": "<TOKEN>",
  "expires_at": null
}
```

### Response example

```
{
  "token": "1a2b34567c8d9101112e13f14g151617h18i19202122i23j",
  "expires_at": null
}
```

## Variables

### **expires\_at:**

The datetime at which the token will expire.

### **token:**

The token assigned to the given user ID.

## Revoke token from user

This call revokes a token from a given user ID. It should be used when a user no longer needs access to their software subscription and can be used as the first part in a user removal process.

## API call

*DELETE /organizations/ORG\_NAME/users/ID/token*

- Replace ORG\_NAME with the name of your organization, which can be found in your Anaconda Cloud organization's URL after "anaconda.cloud/organizations/".
- Replace ID with the ID of the user whose token you want to revoke. This ID will be returned by the Add user to organization API call.

## Remove seat from user

This call removes a subscription seat from a given user and can be used as the second part in a user removal process.

### API call

*DELETE /organizations/ORG\_NAME/users/ID/seats*

- Replace ORG\_NAME with the name of your organization, which can be found in your Anaconda Cloud organization's URL after "anaconda.cloud/organizations/".
- Replace ID with the ID of the user whose seat you want to remove. This ID will be returned by the Add user to organization API call.

## Remove user from organization

This call removes a given user from a given organization and can be used as the final part in a user removal process.

### API call

*DELETE /organizations/ORG\_NAME/users/ID*

- Replace ORG\_NAME with the name of your organization, which can be found in your Anaconda Cloud organization's URL after "anaconda.cloud/organizations/".
- Replace ID with the ID of the user that you want to remove from the organization. This ID will be returned by the Add user to organization API call.

For more information, contact sales at [sales@anaconda.com](mailto:sales@anaconda.com).