
Anaconda Documentation

Anaconda Inc.

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CHAPTER 1

Anaconda Distribution

Anaconda Distribution is a Python/R data science distribution and a collection of over 7,500+ open-source packages, which includes a package and environment manager. Anaconda Distribution is platform-agnostic, so you can use it whether you are on Windows, macOS, or Linux. It's also free to install and offers [free community support](#).

View the [Anaconda Distribution documentation](#).

CHAPTER 2

Anaconda Professional

Formerly known as Commercial Edition

Anaconda Professional is the world's most popular open-source package distribution and management experience, optimized for commercial use and compliance with our Terms of Service.

View [Anaconda Professional documentation](#).

CHAPTER 3

Anaconda Business

Anaconda Business empowers organizations to enforce security policies for open-source software in our cloud environment without sacrificing the velocity of the data science team.

View [Anaconda Business documentation](#).

CHAPTER 4

Anaconda Server

Formerly known as Team Edition

Anaconda Server is our latest generation repository for all things Anaconda. With support for all major operating systems, the repository serves as your central conda, PyPI, and CRAN packaging resource for desktop users, development clusters, CI/CD systems, and production containers.

View [Anaconda Server documentation](#).

Anaconda Enterprise Edition

Anaconda Enterprise is an enterprise-ready, secure, and scalable data science platform that empowers teams to govern data science assets, collaborate, and deploy data science projects.

Enterprise 5 includes these capabilities:

- Easily deploy your projects into interactive data applications, live notebooks, and machine learning models with APIs.
- Share those applications with colleagues and collaborators.
- Manage your data science assets: notebooks, packages, environments, and projects in an integrated data science experience.

View [Anaconda Enterprise 5 documentation](#).

CHAPTER 6

Anaconda.org

Anaconda.org is a package management service that makes it easy to find, access, store, and share public notebooks and environments, as well as conda and PyPI packages.

View [Anaconda.org documentation](#).

Anaconda Embedded

The Anaconda Embedded Program allows you to power your products and services with the world's most popular open-source package distribution.

Anaconda Embedded enables you, as a product or service provider, to offer a seamless Python interface for your customers or use Anaconda behind the scenes to power your offering. All Embedded partners receive access to Anaconda's premium repository, experts, and developers, as well as additional benefits like SLAs, co-marketing, and custom development opportunities.

Look for the “Powered By Anaconda” logo to identify products and services that are backed by Anaconda's packages and software.

Learn more about Anaconda Embedded and contact a representative from the [Anaconda Embedded](#) product page.

7.1 Anaconda Distribution

The Most Trusted Distribution for Data Science

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.

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

Get the [Anaconda Starter Guide](#) and then [download Anaconda](#).

Want to install conda and use conda to install just the packages you need? Get [Miniconda](#).

Anaconda Navigator or conda?

After you install Anaconda or Miniconda, if you prefer a desktop graphical user interface (GUI) then use [Navigator](#). If you prefer to use Anaconda prompt (or terminal on Linux or macOS), then use that and conda. You can also switch between them.

You can install, remove, or update any Anaconda package with a few clicks in Navigator, or with a single `conda` command in Anaconda Prompt (terminal on Linux or macOS).

- **To try Navigator**, after installing Anaconda, click the Navigator icon on your operating system's program menu, or in Anaconda prompt (or terminal on Linux or macOS), run the command `anaconda-navigator`.
- **To try conda**, after installing Anaconda or Miniconda, take the [20-minute conda test drive](#) and download a [conda cheat sheet](#).

Packages available in Anaconda

- 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](#).
- 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](#), PyPI, or other repositories.

Previous versions

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](#).

7.1.1 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.

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

System requirements

- License: Free use and redistribution under the terms of the [EULA for Anaconda Distribution](#).
- Operating system: Windows 8 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, 32-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

Note: 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 [Anaconda Professional](#), [Anaconda Server](#), or [Anaconda Enterprise](#). If you have already purchased Professional, please proceed to the [Authenticating Anaconda Professional](#) section after completing your installation here.

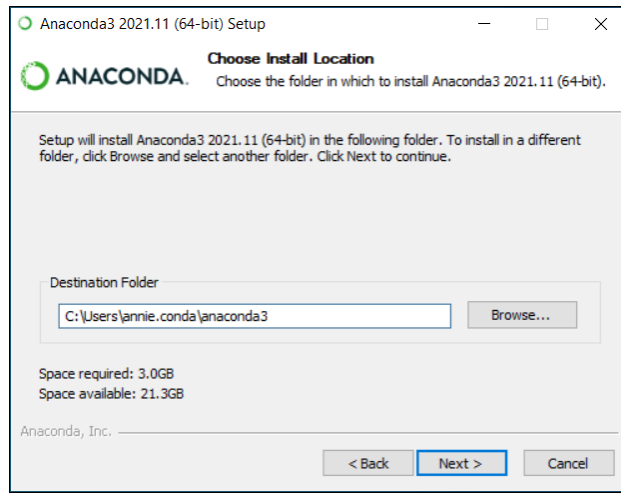
Haven't purchased Anaconda Professional yet? Visit <https://anaconda.cloud/register> to get started.

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](#).

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.

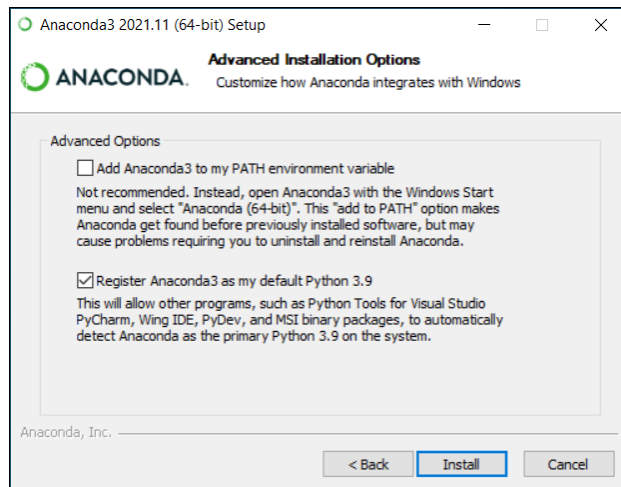
3. Click **Next**.
4. Read the licensing terms and click **I Agree**.
5. It is recommended that you install for **Just Me**, which will install Anaconda Distribution to just the current user account. Only select an install for **All Users** if you need to install for all users' accounts on the computer (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.

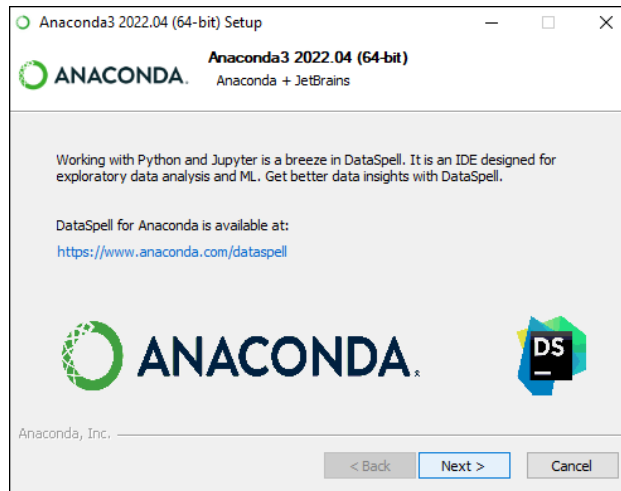


8. Choose whether to add Anaconda to your PATH environment variable or register Anaconda as your default Python. We **don't recommend** adding Anaconda to your PATH environment variable, since this can interfere with other software. Unless you plan on installing and running multiple versions of Anaconda 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.

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.

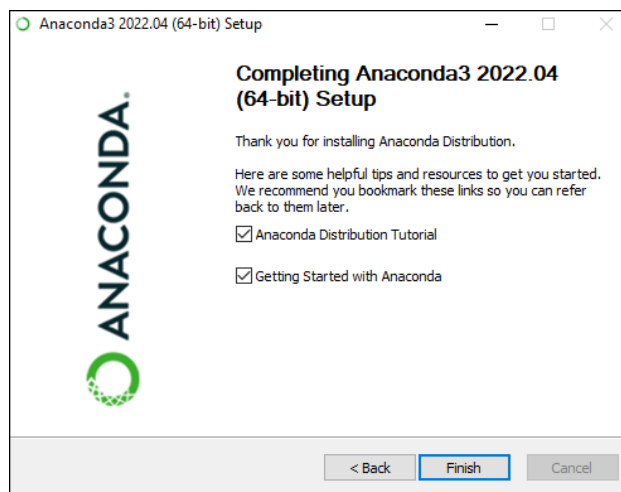


9. Click **Install**. If you want to watch the packages Anaconda is installing, click Show Details.
10. Click **Next**.
11. Optional: To install Dataspell for Anaconda, click <https://www.anaconda.com/dataspell>.



Or to continue without Dataspell, click **Next**.

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.*

Tip: If you are behind a company proxy, you may need to do some additional setup. See how to set up your [proxy](#).

Problems?

See [troubleshooting](#).

What's next?

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

Installing on macOS

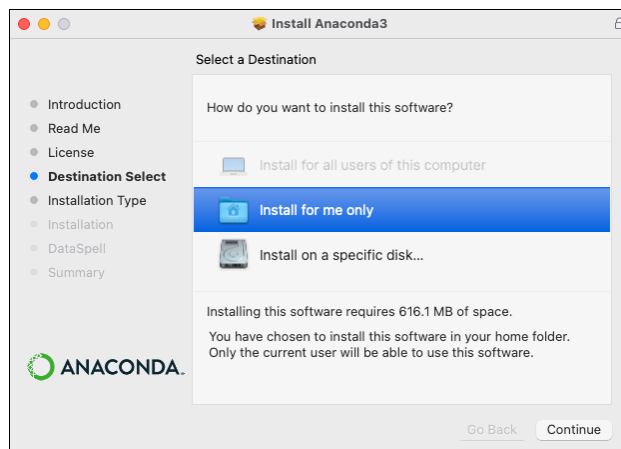
Note: Using Anaconda in a commercial setting? You may need to purchase a license to stay compliant with our [Terms of Service](#). This can be accomplished through [Anaconda Professional](#), [Anaconda Server](#), or [Anaconda Enterprise](#). If you have already purchased Professional, please proceed to the [Authenticating Anaconda Professional](#) section after completing your installation here.

Haven't purchased Anaconda Professional yet? Visit <https://anaconda.cloud/register> to get started.

Install Anaconda Distribution using either the graphical installer (“wizard”) or the command line (“manual”) instructions below. If you are unsure, choose the graphical install.

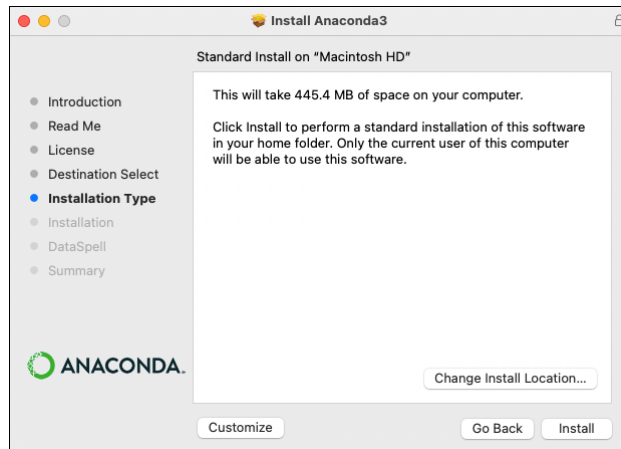
macOS graphical install

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. Click **Change Install Location** to install Anaconda Distribution for *all users* or on a specific disk. This is not recommended. **Install for me only** is the default (and recommended) selection. Click **Continue** to return to Installation Type.

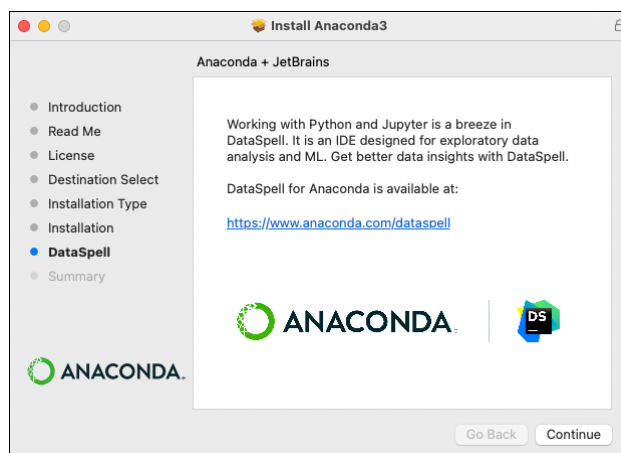


Note: If you get the error message “You cannot install Anaconda in this location,” reselect **Install for me only**.

5. Click **Install** to install Anaconda in the opt folder in your user directory (recommended).

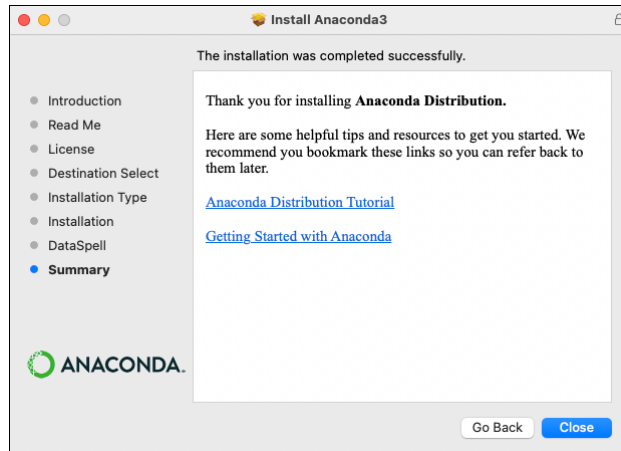


6. Once the install is complete, click **Continue**.
7. Optional: To install DataSpell for Anaconda, click <https://www.anaconda.com/dataspell>.



Or to continue without Dataspell, click **Continue**.

8. A successful installation displays the following screen:



9. *Verify your installation.*

Using the 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 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: Unlike the graphical install, installing the shell file will place it in `~/anaconda<2 or 3>` by default, not `~/opt`. This is due to limitations with installing .pkg files on macOS Catalina.

7. Installation 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.

8. The installer prompts you to choose whether to initialize Anaconda Distribution by running `conda init`. recommend 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, first run `source PATH-TO-CONDA/bin/activate` and then run `conda init`.

Note: If you are on macOS Catalina, the new default shell is zsh. To initialize after the installation process is done with a zsh shell, run `source <path to conda>/bin/activate` followed by `conda init zsh`.

9. The installer finishes and displays, “Thank you for installing Anaconda<2/3>!”
10. Optional: The installer describes the partnership between Anaconda and JetBrains and provides a link to install Dataspell for Anaconda at <https://www.anaconda.com/dataspell>.
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.

Problems?

See [troubleshooting](#).

What's next?

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

Installing on Linux

Note: 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 [Anaconda Professional](#), [Anaconda Server](#), or [Anaconda Enterprise](#). If you have already purchased Professional, please proceed to the [Authenticating Anaconda Professional](#) section after completing your installation here.

Haven't purchased Anaconda Professional yet? Visit <https://anaconda.cloud/register> to get started.

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.

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

8. 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 after the installation process is done, first run `source [PATH TO CONDA]/bin/activate` and then run `conda init`. See [FAQ](#).

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

10. Optional: The installer describes the partnership between Anaconda and JetBrains and provides a link to install Dataspell for Anaconda at <https://www.anaconda.com/dataspell>.

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.

Problems?

See *troubleshooting*.

What's next?

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

Installing on AWS Graviton2 (arm64)

Note: 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 [Anaconda Professional](#), [Anaconda Server](#), or [Anaconda Enterprise](#). If you have already purchased Professional, please proceed to the [Authenticating Anaconda Professional](#) section after completing your installation here.

Haven't purchased Anaconda Professional yet? Visit <https://anaconda.cloud/register> to get started.

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.

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 after the installation process is done, first run `source <path to conda>/bin/activate` and then run `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)

Note: 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 [Anaconda Professional](#), [Anaconda Server](#), or [Anaconda Enterprise](#). If you have already purchased Professional, please proceed to the [Authenticating Anaconda Professional](#) section after completing your installation here.

Haven't purchased Anaconda Professional yet? Visit <https://anaconda.cloud/register> to get started.

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 after the installation process is done, first run `source <path to conda>/bin/activate` and then run `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
```

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```
# 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

Note: 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 [Anaconda Professional](#), [Anaconda Server](#), or [Anaconda Enterprise](#). If you have already purchased Professional, please proceed to the [Authenticating Anaconda Professional](#) section after completing your installation here.

Haven't purchased Anaconda Professional yet? Visit <https://anaconda.cloud/register> to get started.

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 libXcompositel 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. 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 after the installation process is done, first run `source [PATH TO CONDA]/bin/activate` and then run `conda init`. See [FAQ](#).

8. The installer finishes and displays, “Thank you for installing Anaconda<2/3>!”
9. Optional: The installer describes the partnership between Anaconda and JetBrains and provides a link to install Dataspell for Anaconda at <https://www.anaconda.com/dataspell>.
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
```

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```
# 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: 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.

Miniconda installers

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

Anaconda Distribution installers

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

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 `1`
- `/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.
```

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```
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.
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

Note: 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 [Anaconda Professional](#), [Anaconda Server](#), or [Anaconda Enterprise](#). If you have already purchased Professional, please proceed to the [Authenticating Anaconda Professional](#) section after completing your installation here.

Haven’t purchased Anaconda Professional yet? Visit <https://anaconda.cloud/register> to get started.

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

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
Anaconda3-2022.05-Linux-aarch64.sh	567.6 MiB	2022-05-10 14:22:00	dc6bb4eab3996e0658f8bc4bbd229c18f
Anaconda3-2022.05-Linux-ppc64le.sh	367.3 MiB	2022-05-10 14:22:01	a50bf5bd26b5c5a2c24028c1aff6da2fa
Anaconda3-2022.05-Linux-s390x.sh	279.8 MiB	2022-05-10 14:22:01	c14415df69e439acd7458737a84a45c60
Anaconda3-2022.05-Linux-x86_64.sh	658.8 MiB	2022-05-10 14:22:00	a7c0afe862f6ea19a596801fc138bde04
Anaconda3-2022.05-MacOSX-arm64.pkg	316.4 MiB	2022-06-07 13:40:24	0140970944a3e6088be5995ef7ce8525c
Anaconda3-2022.05-MacOSX-arm64.sh	304.8 MiB	2022-06-07 13:40:25	a12119931945a9a1453993582259cc673
Anaconda3-2022.05-MacOSX-x86_64.pkg	591.0 MiB	2022-05-10 14:22:02	e884c5c384d4e5723b7b0c9fcd9756bb4
Anaconda3-2022.05-MacOSX-x86_64.sh	584.0 MiB	2022-05-10 14:22:01	1a10c06660ebe1204e538b4e9d8101424
Anaconda3-2022.05-Windows-x86.exe	487.8 MiB	2022-05-10 14:21:59	cd8c688349bcd1f429e3b383620fb0d19
Anaconda3-2022.05-Windows-x86_64.exe	593.9 MiB	2022-05-10 14:22:02	2766eb102f9d65da36d262b651777358d
Anaconda3-2021.11-Linux-aarch64.sh	487.7 MiB	2021-11-17 13:08:43	4daacb88fbd3a6c14e28cd3b37004ed4c
Anaconda3-2021.11-Linux-ppc64le.sh	254.9 MiB	2021-11-17 13:08:44	7eb6a95925ee756240818599f8dcbba7a
Anaconda3-2021.11-Linux-s390x.sh	241.7 MiB	2021-11-17 13:08:44	1504e9259816c5804eff1304fe7e33951
Anaconda3-2021.11-Linux-x86_64.sh	580.5 MiB	2021-11-17 13:08:44	fedf9e340039557f7b5e8a8a86affa9d2
Anaconda3-2021.11-MacOSX-x86_64.pkg	515.1 MiB	2021-11-17 13:08:44	203f5134d94390531b0cf1ff0f7e702ab
Anaconda3-2021.11-MacOSX-x86_64.sh	508.4 MiB	2021-11-17 13:08:44	6a9217d1a08c599f860045d56ef64fc6c
Anaconda3-2021.11-Windows-x86.exe	404.1 MiB	2021-11-17 13:08:45	dc0746dded06cc480328c20b73369803c
Anaconda3-2021.11-Windows-x86_64.exe	510.3 MiB	2021-11-17 13:08:45	1b3d593d1deb22b835be5c68897075e0f
Anaconda3-2021.05-Linux-aarch64.sh	412.6 MiB	2021-05-13 22:08:46	3a3d5a61df5422f7c8c7816217b926ec7
Anaconda3-2021.05-Linux-ppc64le.sh	285.3 MiB	2021-05-13 22:08:47	097064807a9adae3f91fc4c5852cd90df
Anaconda3-2021.05-Linux-s390x.sh	291.7 MiB	2021-05-13 22:08:48	a7d1a83279f439e7d8a6c53aa725552e1
Anaconda3-2021.05-Linux-x86_64.sh	544.4 MiB	2021-05-13 22:08:47	2751ab3d678ff0277ae80f9e8a74f218c
Anaconda3-2021.05-MacOSX-x86_64.pkg	440.3 MiB	2021-05-13 22:08:47	b61e6ca9c338ed39f41408774143f582f
Anaconda3-2021.05-MacOSX-x86_64.sh	432.7 MiB	2021-05-13 22:08:47	0407bee87eeecad521f1e38eb607b0a85
Anaconda3-2021.05-Windows-x86.exe	408.5 MiB	2021-05-13 22:08:48	b95b6ada0a54fe1df06f6cde84f8fa586
Anaconda3-2021.05-Windows-x86_64.exe	477.2 MiB	2021-05-13 22:08:48	93db42390444019e98b442ab281e10916
Anaconda3-2021.04-Linux-aarch64.sh	407.6 MiB	2021-05-07 08:44:23	4a2d3515e41660b3a0598bdd5513d388c
Anaconda3-2021.04-Linux-ppc64le.sh	285.3 MiB	2021-05-10 12:23:03	6954278e3eb85f98ad29a44b0da574156
Anaconda3-2021.04-Linux-s390x.sh	291.7 MiB	2021-05-07 08:45:26	b0b857aa68964cb1388ce1657cc6f32c6
Anaconda3-2021.04-Linux-x86_64.sh	539.9 MiB	2021-05-10 12:21:09	2d6dcbe4360d023c3cecf6a6be8678d90
Anaconda3-2021.04-MacOSX-x86_64.pkg	436.9 MiB	2021-05-10 12:21:10	d3fb9c189d2f7fdefe672dc454432cb82
Anaconda3-2021.04-MacOSX-x86_64.sh	429.3 MiB	2021-05-10 12:21:08	e945565945eb02fcc0755ca9d419ae36c
Anaconda3-2021.04-Windows-x86.exe	405.0 MiB	2021-05-10 12:21:09	61a4e246098886acc1b3cbb977d58ca6d
Anaconda3-2021.04-Windows-x86_64.exe	473.7 MiB	2021-05-10 12:21:09	65fd8be6ab9aed8106bd1c9a228ecd7fd
Anaconda3-2020.11-Linux-ppc64le.sh	278.9 MiB	2020-11-18 16:45:36	870535ada0a8ae75eeda8cd2bf7dde853

Table 1 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda3-2020.11-Linux-x86_64.sh	528.8 MiB	2020-11-18 16:45:36	cf2ff493f11eaa5d09ce2b4feaa5ea90
Anaconda3-2020.11-MacOSX-x86_64.pkg	435.3 MiB	2020-11-18 16:45:35	b230c042237ba3e89193d3144179dedda
Anaconda3-2020.11-MacOSX-x86_64.sh	427.8 MiB	2020-11-18 16:45:35	ec11e325c792a6f49dbdbe5e641991d0a
Anaconda3-2020.11-Windows-x86.exe	403.0 MiB	2020-11-18 16:45:34	362de9bc1e9e368dcbcddee1a175a52398
Anaconda3-2020.11-Windows-x86_64.exe	457.2 MiB	2020-11-18 16:45:34	aa523115daf31c431bb392faf75e70d35
Anaconda3-2020.07-Linux-ppc64le.sh	290.4 MiB	2020-07-23 12:16:47	0df7c3784973ab46a9ef9848aced01311
Anaconda3-2020.07-Linux-x86_64.sh	550.1 MiB	2020-07-23 12:16:50	38ce717758b95b3bd0b1797cc6ccfb76f
Anaconda3-2020.07-MacOSX-x86_64.pkg	462.3 MiB	2020-07-23 12:16:42	e095c487d2837e4c984d0fcd2217be42c
Anaconda3-2020.07-MacOSX-x86_64.sh	454.1 MiB	2020-07-23 12:16:44	3980c2a57fde5de2ccfd0f07973f95ac1
Anaconda3-2020.07-Windows-x86.exe	397.3 MiB	2020-07-23 12:16:51	19803e5ccc357b57051cf7fa272e6b499
Anaconda3-2020.07-Windows-x86_64.exe	467.5 MiB	2020-07-23 12:16:46	66acb9bdf7d2d5925df8762311a85ad72
Anaconda3-2020.02-Linux-ppc64le.sh	276.0 MiB	2020-03-11 10:32:32	d6d1827a38b988cbbe714d6e0357c9e25
Anaconda3-2020.02-Linux-x86_64.sh	521.6 MiB	2020-03-11 10:32:37	2b9f088b2022edb474915d9f69a803d64
Anaconda3-2020.02-MacOSX-x86_64.pkg	442.2 MiB	2020-03-11 10:32:57	4f7cc14b5b1d7aec3d9a5e781dede065e
Anaconda3-2020.02-MacOSX-x86_64.sh	430.1 MiB	2020-03-11 10:32:34	d237e6c976eb9c58368ca156a51bd913d
Anaconda3-2020.02-Windows-x86.exe	423.2 MiB	2020-03-11 10:32:58	d13381d6145c47755b198662af8a5f412
Anaconda3-2020.02-Windows-x86_64.exe	466.3 MiB	2020-03-11 10:32:35	83c2f53c7174253adcc2de7d1293a7408
Anaconda2-2019.10-Linux-ppc64le.sh	295.3 MiB	2019-10-15 09:26:13	0521743829c1b3c301542a20fa0daecda
Anaconda2-2019.10-Linux-x86_64.sh	477.4 MiB	2019-10-15 09:26:03	8b2e7dea2da7d8cc18e822e8ec1804052
Anaconda2-2019.10-MacOSX-x86_64.pkg	635.7 MiB	2019-10-15 09:27:30	d82b6aa37b41782b7823ff712b0899374
Anaconda2-2019.10-MacOSX-x86_64.sh	408.8 MiB	2019-10-15 09:27:31	463cbd0b90c47d02ec341377110653870
Anaconda2-2019.10-Windows-x86.exe	355.6 MiB	2019-10-15 09:26:15	b4731acd02f96923922d995bb16984d71
Anaconda2-2019.10-Windows-x86_64.exe	412.8 MiB	2019-10-15 09:26:08	3e09c8e95e10f077be1e1d26f26df8d6a
Anaconda3-2019.10-Linux-ppc64le.sh	320.3 MiB	2019-10-15 09:26:11	118c579f625555e1b116f0c3fd3842772
Anaconda3-2019.10-Linux-x86_64.sh	505.7 MiB	2019-10-15 09:26:05	46d762284d252e51cd58a8ca6c8adc9da
Anaconda3-2019.10-MacOSX-x86_64.pkg	653.5 MiB	2019-10-15 09:27:33	8b2192cbd586939d68bac00b0f9cbd2bf
Anaconda3-2019.10-MacOSX-x86_64.sh	424.2 MiB	2019-10-15 09:27:31	4f77299ff4170cda64fdfcc27ac609a37
Anaconda3-2019.10-Windows-x86.exe	409.6 MiB	2019-10-15 09:26:10	05e6738919673a6d57b5895b8b4df0b7e
Anaconda3-2019.10-Windows-x86_64.exe	461.5 MiB	2019-10-15 09:27:17	9e632439ed40620b8518f11469ded7316
Anaconda2-2019.07-Linux-ppc64le.sh	298.2 MiB	2019-07-25 09:36:29	ee7f61dab233cdd0acb376ad55e977b16
Anaconda2-2019.07-Linux-x86_64.sh	476.1 MiB	2019-07-25 09:36:01	189e16e7adf9ba4b7b7d06ecdc10ce4ad
Anaconda2-2019.07-MacOSX-x86_64.pkg	634.1 MiB	2019-07-25 09:37:04	7f8a0defa2905bd5e3ca679d6772c896b
Anaconda2-2019.07-MacOSX-x86_64.sh	407.8 MiB	2019-07-25 09:37:45	3e63919eed116826e683ed7d480d06517
Anaconda2-2019.07-Windows-x86.exe	360.5 MiB	2019-07-25 09:36:49	1bd676a51ccdee57c2c01a2bc87fa8b1b
Anaconda2-2019.07-Windows-x86_64.exe	427.2 MiB	2019-07-25 09:36:11	fb7493a5c40d28ab47e54c57f025186dc
Anaconda3-2019.07-Linux-ppc64le.sh	326.0 MiB	2019-07-25 09:36:56	e788094f7a18bfe14038accb26c8809a8
Anaconda3-2019.07-Linux-x86_64.sh	516.8 MiB	2019-07-25 09:36:20	69581cf739365ec7fb95608eef694ba95
Anaconda3-2019.07-MacOSX-x86_64.pkg	653.1 MiB	2019-07-25 09:38:03	bc1a4cb642b775159125521d1dbcf8bd1
Anaconda3-2019.07-MacOSX-x86_64.sh	435.4 MiB	2019-07-25 09:37:06	dcbbdbab37c5b5f3873fe24d2617a4325
Anaconda3-2019.07-Windows-x86.exe	418.4 MiB	2019-07-25 09:37:26	3d26ddf9ddb2287822a14ac1da3359a0d
Anaconda3-2019.07-Windows-x86_64.exe	485.8 MiB	2019-07-25 09:37:53	37e753801a881649ceb608449b66ff9da
Anaconda2-2019.03-Linux-ppc64le.sh	291.3 MiB	2019-04-04 16:00:36	3ab35c11b50ff26965266655d7dc76cf2
Anaconda2-2019.03-Linux-x86_64.sh	629.5 MiB	2019-04-04 16:00:35	cedfee5b5a3f62fcdac0a1d2d12396d0f
Anaconda2-2019.03-MacOSX-x86_64.pkg	624.3 MiB	2019-04-04 16:01:08	4e335d60fc9dcfb31caee809143352e28
Anaconda2-2019.03-MacOSX-x86_64.sh	530.2 MiB	2019-04-04 16:00:34	414917d00deaeefa38719992e6437470f
Anaconda2-2019.03-Windows-x86.exe	492.5 MiB	2019-04-04 16:00:43	76be4b3d1f7a1207b786cbb54b3ed5261
Anaconda2-2019.03-Windows-x86_64.exe	586.9 MiB	2019-04-04 16:00:53	96c21ae0d152755e8f4ac4a593da4063e
Anaconda3-2019.03-Linux-ppc64le.sh	314.5 MiB	2019-04-04 16:00:58	b4ecfca3b6d6c284a3f9370f6a5ccfac1
Anaconda3-2019.03-Linux-x86_64.sh	654.1 MiB	2019-04-04 16:00:31	45c851b7497cc14d5ca060064394569f7

Table 1 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda3-2019.03-MacOSX-x86_64.pkg	637.4 MiB	2019-04-04 16:00:33	1d89450ec2b8236404bab5a47aaa9c69f
Anaconda3-2019.03-MacOSX-x86_64.sh	541.6 MiB	2019-04-04 16:00:27	b232f0b16181f48667d2ca89c04a4ee4b
Anaconda3-2019.03-Windows-x86.exe	545.7 MiB	2019-04-04 16:00:28	03d94f55c4c5e1187382ff414c78e6624
Anaconda3-2019.03-Windows-x86_64.exe	661.7 MiB	2019-04-04 16:00:30	d2c90169879f40816eac91bec585a1f9f
Anaconda2-2018.12-Linux-ppc64le.sh	289.7 MiB	2018-12-21 13:14:33	4ff037544f9191e24887176b44b04100c
Anaconda2-2018.12-Linux-x86.sh	518.6 MiB	2018-12-21 13:13:15	e086c041695c0e50642aee8f4e7adad31
Anaconda2-2018.12-Linux-x86_64.sh	628.2 MiB	2018-12-21 13:13:10	1821d4b623ed449e0acb6df3ecbabd394
Anaconda2-2018.12-MacOSX-x86_64.pkg	640.7 MiB	2018-12-21 13:14:30	f07fb39c41f9cc7839adababdece209d9
Anaconda2-2018.12-MacOSX-x86_64.sh	547.1 MiB	2018-12-21 13:14:31	5c590b1b3cdc2eedd52edce0caabbce66
Anaconda2-2018.12-Windows-x86.exe	458.6 MiB	2018-12-21 13:16:27	d75d51c8f9a7c345128805a55db3856f6
Anaconda2-2018.12-Windows-x86_64.exe	560.6 MiB	2018-12-21 13:16:17	7571d334eac3b9bd4f3e199fc5f493f06
Anaconda3-2018.12-Linux-ppc64le.sh	313.6 MiB	2018-12-21 13:13:03	f636f747d5b581ea05e5f20edb1c9ae5d
Anaconda3-2018.12-Linux-x86.sh	542.7 MiB	2018-12-21 13:13:14	7895052814921d45ed0585d1fb19f8edd
Anaconda3-2018.12-Linux-x86_64.sh	652.5 MiB	2018-12-21 13:13:06	1019d0857e5865f8a6861eaf15bfe535b
Anaconda3-2018.12-MacOSX-x86_64.pkg	652.7 MiB	2018-12-21 13:14:32	e40e076194df57f3fce8734acd5b2e3f6
Anaconda3-2018.12-MacOSX-x86_64.sh	557.0 MiB	2018-12-21 13:13:13	4ccd3944d994fd47e5701c341725a63e9
Anaconda3-2018.12-Windows-x86.exe	509.7 MiB	2018-12-21 13:13:12	3f2955c1874ca452b985627a10859f690
Anaconda3-2018.12-Windows-x86_64.exe	614.3 MiB	2018-12-21 13:14:34	09d84a789013d5e2bfb0148bdd9f5d69a
Anaconda2-5.3.1-Linux-x86.sh	507.6 MiB	2018-11-19 13:37:35	a38017dfa59141c63ec9882a15bd35e7c
Anaconda2-5.3.1-Linux-x86_64.sh	617.8 MiB	2018-11-19 13:37:31	f0650ad2f9ca4ae3f3162d7204a32950b
Anaconda2-5.3.1-MacOSX-x86_64.pkg	628.4 MiB	2018-11-19 13:37:38	7dc614e281df33f09fa006b245a955b94
Anaconda2-5.3.1-MacOSX-x86_64.sh	539.0 MiB	2018-11-19 13:37:43	df81e9d5d7d4c6595609a8d353eab8010
Anaconda2-5.3.1-Windows-x86.exe	458.1 MiB	2018-11-19 13:38:32	59680be839aa8b58477a24519a7575756
Anaconda2-5.3.1-Windows-x86_64.exe	580.1 MiB	2018-11-19 13:37:47	63b8a687cddcf462f9f61993d07ba8838
Anaconda3-5.3.1-Linux-x86.sh	527.3 MiB	2018-11-19 13:38:49	5dab8b2c95595df7fa55b88643f837213
Anaconda3-5.3.1-Linux-x86_64.sh	637.0 MiB	2018-11-19 13:38:46	d4c4256a8f46173b675dd6a62d12f566e
Anaconda3-5.3.1-MacOSX-x86_64.pkg	634.0 MiB	2018-11-19 13:38:54	ee9fb23d4beb30e5ed9d27d5703b46a02
Anaconda3-5.3.1-MacOSX-x86_64.sh	543.7 MiB	2018-11-19 13:38:57	23c373abce2463d4df495f5a1c7e8b0fa
Anaconda3-5.3.1-Windows-x86.exe	509.5 MiB	2018-11-19 13:39:54	a028d0550bf307c69af7c3210f487e230
Anaconda3-5.3.1-Windows-x86_64.exe	632.5 MiB	2018-11-19 13:38:59	295fed5940369d4ea1e2c6d04d418619d
Anaconda2-5.3.0-Linux-ppc64le.sh	285.7 MiB	2018-09-27 16:00:22	b71cdf75ca10875d49170eb64a02920f4
Anaconda2-5.3.0-Linux-x86.sh	507.5 MiB	2018-09-27 16:00:27	58d4229ad7097e1f3387d7f6582dcf2bb
Anaconda2-5.3.0-Linux-x86_64.sh	617.6 MiB	2018-09-27 16:00:25	50eeaab24bfa2472bc6485fe8f0e612ed
Anaconda2-5.3.0-MacOSX-x86_64.pkg	628.3 MiB	2018-09-27 15:59:12	834c221b413bdcbbce434f0a3008511f5
Anaconda2-5.3.0-MacOSX-x86_64.sh	538.9 MiB	2018-09-27 16:00:31	bea3eb7667d265c8fe678dde8432ac1f
Anaconda2-5.3.0-Windows-x86.exe	457.2 MiB	2018-09-27 15:59:15	f18bdb9a38e5c444a3cb79c5c6bc927fb
Anaconda2-5.3.0-Windows-x86_64.exe	579.0 MiB	2018-09-27 15:59:14	30bf9131df2314c00a9cd5e5f0b7d6184
Anaconda3-5.3.0-Linux-ppc64le.sh	305.1 MiB	2018-09-27 16:01:33	550dd67626172a42eb0dd02a08bc78a67
Anaconda3-5.3.0-Linux-x86.sh	527.2 MiB	2018-09-27 16:01:37	c15ffac2ae35179a15dc5872e5bb405b4
Anaconda3-5.3.0-Linux-x86_64.sh	636.9 MiB	2018-09-27 16:01:35	cfbf5fe70dd1b797ec677e63c61f8efc9
Anaconda3-5.3.0-MacOSX-x86_64.pkg	633.9 MiB	2018-09-27 15:59:18	013e9968f437f91f7a1d7dfe4c7d6f9d3
Anaconda3-5.3.0-MacOSX-x86_64.sh	543.6 MiB	2018-09-27 16:01:41	bc073b6e6d3b2ef29d01a2caf1de7c206
Anaconda3-5.3.0-Windows-x86.exe	508.7 MiB	2018-09-27 16:00:05	1dceb687efbf5a609a66d19dc2528ef78
Anaconda3-5.3.0-Windows-x86_64.exe	631.4 MiB	2018-09-27 15:59:20	1083d05eeec45707940a6c7afb375a5f3
Anaconda2-5.2.0-Linux-ppc64le.sh	269.6 MiB	2018-05-30 13:04:31	a8fcac3f0884520c35103e76549fcc45d
Anaconda2-5.2.0-Linux-x86.sh	488.7 MiB	2018-05-30 13:05:30	402758c24767e9eb3b77312c388725a05
Anaconda2-5.2.0-Linux-x86_64.sh	603.4 MiB	2018-05-30 13:04:33	cb0d7a08b0e2cec4372033d3269979b4e
Anaconda2-5.2.0-MacOSX-x86_64.pkg	616.8 MiB	2018-05-30 13:05:32	f7695a3571eb8e8ae71fe9f413c36f57c
Anaconda2-5.2.0-MacOSX-x86_64.sh	527.1 MiB	2018-05-30 13:05:34	d7d46e566306da5979cd5632079497fe6

Table 1 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda2-5.2.0-Windows-x86.exe	443.4 MiB	2018-05-30 13:04:17	2b81916c477e64db917821bb48a97000f
Anaconda2-5.2.0-Windows-x86_64.exe	564.0 MiB	2018-05-30 13:04:16	e5ff95332d08a7b006a5bb723e0a5124c
Anaconda3-5.2.0-Linux-ppc64le.sh	288.3 MiB	2018-05-30 13:05:40	024c811526fffc40ed6fa243a25795fbab
Anaconda3-5.2.0-Linux-x86.sh	507.3 MiB	2018-05-30 13:05:46	f3527d085d06f35b6aeb96be2a9253ff9
Anaconda3-5.2.0-Linux-x86_64.sh	621.6 MiB	2018-05-30 13:05:43	09f53738b0cd3bb96f5b1bac488e5528d
Anaconda3-5.2.0-MacOSX-x86_64.pkg	613.1 MiB	2018-05-30 13:07:00	dae8befc73d32b480faef31fa6fb73332
Anaconda3-5.2.0-MacOSX-x86_64.sh	523.3 MiB	2018-05-30 13:07:03	c8089121dc89ffe8f9a0c01205bab75a1
Anaconda3-5.2.0-Windows-x86.exe	506.3 MiB	2018-05-30 13:04:19	64305a4c0041aaf4a3fd0fee4466d7b7f
Anaconda3-5.2.0-Windows-x86_64.exe	631.3 MiB	2018-05-30 13:04:18	2672f6537e2c8a79ae9540cf3c49b18bb
Anaconda2-5.1.0-Linux-ppc64le.sh	267.3 MiB	2018-02-15 09:08:49	ff9baa4d3710bb24bc3a6a40c0f4ef691
Anaconda2-5.1.0-Linux-x86.sh	431.3 MiB	2018-02-15 09:08:51	5af0c7a09a5f3aaf3666c0b362246d342
Anaconda2-5.1.0-Linux-x86_64.sh	533.0 MiB	2018-02-15 09:08:50	5f26ee92860d1dfdfcd20910ff2cf7557
Anaconda2-5.1.0-MacOSX-x86_64.pkg	588.0 MiB	2018-02-15 09:08:52	edbe9ef1ee5cfe62e131d7650e07c031a
Anaconda2-5.1.0-MacOSX-x86_64.sh	505.9 MiB	2018-02-15 09:08:53	b686e01aeadb33526d9c154a0ac6f691d
Anaconda2-5.1.0-Windows-x86.exe	419.8 MiB	2018-02-15 09:08:55	fa78c71d88b01e6367f0c3cbd23da1f82
Anaconda2-5.1.0-Windows-x86_64.exe	522.6 MiB	2018-02-15 09:08:54	3674c8d8c233dbea30842f14dc76cc3fe
Anaconda3-5.1.0-Linux-ppc64le.sh	285.7 MiB	2018-02-15 09:08:56	58d1d093450dabefef9279694c9345afe
Anaconda3-5.1.0-Linux-x86.sh	449.7 MiB	2018-02-15 09:08:58	0e940272517d8f8a6f26316a19e4be2bd
Anaconda3-5.1.0-Linux-x86_64.sh	551.2 MiB	2018-02-15 09:08:57	7e6785caad25e33930bc03fac4994a434
Anaconda3-5.1.0-MacOSX-x86_64.pkg	594.7 MiB	2018-02-15 09:09:06	d6bf6309ccaafa84314d85ca7421fddc16
Anaconda3-5.1.0-MacOSX-x86_64.sh	511.3 MiB	2018-02-15 09:10:24	be705b3c3a0ca29ee32ce7658890bb5ed
Anaconda3-5.1.0-Windows-x86.exe	435.5 MiB	2018-02-15 09:10:28	7a05da21fd592991d181ac8467faac513
Anaconda3-5.1.0-Windows-x86_64.exe	537.1 MiB	2018-02-15 09:10:26	7d192e58915d7e7fbfd0c987ddc4db38a
Anaconda2-5.0.1-Linux-x86.sh	413.2 MiB	2017-10-24 12:13:07	88c8d698fff16af15862daca10e94a0a4
Anaconda2-5.0.1-Linux-x86_64.sh	507.7 MiB	2017-10-24 12:13:52	23c676510bc87c95184ecaeb327c0b2c8
Anaconda2-5.0.1-MacOSX-x86_64.pkg	562.8 MiB	2017-10-23 20:01:12	22350fe830e6786a263d7727e537f066b
Anaconda2-5.0.1-MacOSX-x86_64.sh	486.5 MiB	2017-10-23 19:51:04	e3a9a5c84cb89ff079b0781ba773a3433
Anaconda2-5.0.1-Windows-x86.exe	403.4 MiB	2017-10-24 12:08:14	1a50fac8644f2128e318337b218299e53
Anaconda2-5.0.1-Windows-x86_64.exe	499.8 MiB	2017-10-23 21:57:22	c43f94c51623850b0c1a826710fe9c8e5
Anaconda3-5.0.1-Linux-x86.sh	431.0 MiB	2017-10-23 18:07:51	991a4b656fcb0236864fbb277f03bb7f3
Anaconda3-5.0.1-Linux-x86_64.sh	525.3 MiB	2017-10-23 17:52:55	55e4db1919f49c92d5abbf27a4be5986a
Anaconda3-5.0.1-MacOSX-x86_64.pkg	568.9 MiB	2017-10-23 20:01:19	50c28594c785f5828990c950534684885
Anaconda3-5.0.1-MacOSX-x86_64.sh	491.0 MiB	2017-10-23 19:51:10	f438a0af923bc1edc7bca53f496c59a66
Anaconda3-5.0.1-Windows-x86.exe	420.4 MiB	2017-10-24 12:37:10	9edc3012324c9c8c9aa5257688bd79327
Anaconda3-5.0.1-Windows-x86_64.exe	514.8 MiB	2017-10-24 12:37:59	0b1ec18b7425f8c8518d6dc2fc0bc8ec2
Anaconda2-5.0.0.1-Linux-x86.sh	411.9 MiB	2017-10-02 10:50:13	00fbd979c815ede0bbad48fb4ef62cda3
Anaconda2-5.0.0.1-Linux-x86_64.sh	506.3 MiB	2017-10-02 10:50:12	18730808d863a5c194ab3f59dd395c1a6
Anaconda3-5.0.0.1-Linux-x86.sh	429.8 MiB	2017-10-02 10:50:15	407576899d3aa546bc3c2c4a13cbc18ab
Anaconda3-5.0.0.1-Linux-x86_64.sh	524.0 MiB	2017-10-02 10:50:14	092c92427f44687d789a41922ce8426fb
Anaconda2-5.0.0-Linux-ppc64le.sh	282.3 MiB	2017-09-26 16:25:07	e0512f3c81251e5dcd48fcf02fe2044a6
Anaconda2-5.0.0-Linux-x86.sh	411.4 MiB	2017-09-26 14:48:02	a3ed8769d20d55a41c04cf7c04e81c959
Anaconda2-5.0.0-Linux-x86_64.sh	505.7 MiB	2017-09-26 14:37:21	58a7117f89c40275114bf7e824a613a96
Anaconda2-5.0.0-MacOSX-x86_64.pkg	561.3 MiB	2017-09-26 16:25:08	3ee5cfe80d51685d6f374f83a9b76fa7e
Anaconda2-5.0.0-MacOSX-x86_64.sh	485.3 MiB	2017-09-26 16:25:09	d85198c63657924fae11b6ea5961f50d8
Anaconda2-5.0.0-Windows-x86.exe	402.2 MiB	2017-09-26 16:25:09	078551cfb0df72779897026724f375671
Anaconda2-5.0.0-Windows-x86_64.exe	498.2 MiB	2017-09-26 14:30:49	5fb73395cdf003613f5d44844da9870db
Anaconda3-5.0.0-Linux-ppc64le.sh	296.3 MiB	2017-09-25 14:39:31	3574d423084e604a9d85a9f38ea481e0f
Anaconda3-5.0.0-Linux-x86.sh	429.3 MiB	2017-09-26 14:48:02	634d2dfa97d19f2cc15e941cb4d059bc8
Anaconda3-5.0.0-Linux-x86_64.sh	523.4 MiB	2017-09-26 14:37:22	67f5c20232a3e493ea3f19a8e273e0618

Table 1 – continued from previous page

Name	Size	Time modified	SHA256 hash
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Anaconda3-5.0.0-MacOSX-x86_64.sh	489.9 MiB	2017-09-26 16:25:11	23df1e3a38a6b4aaa0ab559d0c1e51be7
Anaconda3-5.0.0-Windows-x86.exe	415.8 MiB	2017-09-26 16:25:12	a0d5d8e328b1d3a1ed921cadeecda659c
Anaconda3-5.0.0-Windows-x86_64.exe	510.0 MiB	2017-09-26 14:14:53	53bd80727099b5767b9f20f99e908f9c1
Anaconda2-4.4.0.1-Linux-ppc64le.sh	271.4 MiB	2017-07-26 16:10:02	e14acab146181699e47ca108fc624eceb
Anaconda3-4.4.0.1-Linux-ppc64le.sh	285.6 MiB	2017-07-26 16:08:42	d7c367c9c4ffffec37c31c6570218c9944
Anaconda2-4.4.0-Linux-ppc64le.sh	276.6 MiB	2017-05-17 15:45:20	c19edfd9a3bd2fcb37ddb0c3aa09339c9
Anaconda2-4.4.0-Linux-x86.sh	415.0 MiB	2017-05-26 18:23:30	452aa91ac83d3b6a68b79cea3042170ec
Anaconda2-4.4.0-Linux-x86_64.sh	485.2 MiB	2017-05-26 18:22:48	2d30b91ed4d215b6b4a15162a3389e905
Anaconda2-4.4.0-MacOSX-x86_64.pkg	438.0 MiB	2017-05-26 18:36:08	e5acf026892eaeabb055e6317af96f295d
Anaconda2-4.4.0-MacOSX-x86_64.sh	375.4 MiB	2017-05-26 18:35:52	ab95aef1110c2a385fd39a17e5f11dfba
Anaconda2-4.4.0-Windows-x86.exe	354.4 MiB	2017-05-26 17:52:15	0decdd861f8839fdf2cbe4fa306c127f69
Anaconda2-4.4.0-Windows-x86_64.exe	430.7 MiB	2017-05-26 17:53:22	7a8ec1a36f385ebf28a1a8cf63b8b03ac
Anaconda3-4.4.0-Linux-ppc64le.sh	290.7 MiB	2017-05-17 15:45:50	605251829edecd0c39df8db856d4f09e4
Anaconda3-4.4.0-Linux-x86.sh	428.7 MiB	2017-05-26 18:23:45	b0e492206d43067314b25963bc7d1f012
Anaconda3-4.4.0-Linux-x86_64.sh	499.0 MiB	2017-05-26 18:23:04	3301b37e402f3ff3df216fe0458f1e6a4
Anaconda3-4.4.0-MacOSX-x86_64.pkg	442.5 MiB	2017-05-26 18:36:17	c5fc645f11505ac3ef710023b4072b7fb
Anaconda3-4.4.0-MacOSX-x86_64.sh	380.4 MiB	2017-05-26 18:35:59	10fe58f09ae524df2548d17b8bb1e75db
Anaconda3-4.4.0-Windows-x86.exe	362.2 MiB	2017-05-26 17:54:21	37afe00b8305cc09b7bd8dd07f65cec3f
Anaconda3-4.4.0-Windows-x86_64.exe	437.6 MiB	2017-05-26 17:55:34	ea582602541e748053df5505144604262
Anaconda2-4.3.1-Linux-x86.sh	387.7 MiB	2017-03-06 16:12:31	4519ac724d5120d21bb80289c5509c0d1
Anaconda2-4.3.1-Linux-x86_64.sh	462.0 MiB	2017-03-06 16:12:14	e9b8f2645df6b1527ba56d61343162e07
Anaconda2-4.3.1-MacOSX-x86_64.pkg	419.4 MiB	2017-03-06 16:26:18	f5d950451c038f9a7ca80d4036b6a8152
Anaconda2-4.3.1-MacOSX-x86_64.sh	358.2 MiB	2017-03-06 16:26:02	35261360f2b01793f441b29715a94052d
Anaconda2-4.3.1-Windows-x86.exe	339.0 MiB	2017-03-06 16:18:12	fc363cea3c321c17b43a0bf2137aa845f
Anaconda2-4.3.1-Windows-x86_64.exe	413.7 MiB	2017-03-06 16:18:59	c0e13a756a856d7b7757b10d65bee577d
Anaconda3-4.3.1-Linux-x86.sh	399.3 MiB	2017-03-06 16:12:47	7b70bdba282a18ddbdc167afe8131f753
Anaconda3-4.3.1-Linux-x86_64.sh	474.3 MiB	2017-03-06 16:12:24	4447b93d2c779201e5fb50cfc45de0ec9
Anaconda3-4.3.1-MacOSX-x86_64.pkg	424.1 MiB	2017-03-06 16:26:27	ca608d58b1acf77b5c77d10e937b9084e
Anaconda3-4.3.1-MacOSX-x86_64.sh	363.4 MiB	2017-03-06 16:26:09	a42267203e207cb5e0f539e0d879ead12
Anaconda3-4.3.1-Windows-x86.exe	348.1 MiB	2017-03-06 16:19:46	adf322f49542cf509d4f72152cea24e54
Anaconda3-4.3.1-Windows-x86_64.exe	422.1 MiB	2017-03-06 16:20:48	65ce6d7c09884935fee9eb8d318b30e95
Anaconda2-4.3.0.1-Windows-x86.exe	338.1 MiB	2017-02-02 14:19:05	863702665aa2b55ede2103a8ca7d26435
Anaconda2-4.3.0.1-Windows-x86_64.exe	412.8 MiB	2017-02-02 14:20:08	2198e28e9e8e3c43ab72a8371e5b2d0a9
Anaconda3-4.3.0.1-Windows-x86.exe	347.2 MiB	2017-02-02 14:21:02	7f8ffce6b2c3a968ce19171c9dc332dec
Anaconda3-4.3.0.1-Windows-x86_64.exe	421.2 MiB	2017-02-02 14:22:10	b5954bf7da9a92d351d905dfdfa0e7bee
Anaconda2-4.3.0-Linux-x86.sh	386.8 MiB	2017-01-27 14:14:15	b80d471839e8cf7b100e59308720cc13c
Anaconda2-4.3.0-Linux-x86_64.sh	461.1 MiB	2017-01-27 14:15:08	7c52e6e99aabb24a49880130615a48e68
Anaconda2-4.3.0-MacOSX-x86_64.pkg	418.4 MiB	2017-01-27 14:26:23	3e1d1026d2c0b87213a8b4a5f28431060
Anaconda2-4.3.0-MacOSX-x86_64.sh	357.3 MiB	2017-01-27 14:26:08	834ac0287062929ab5930661735ee617f
Anaconda2-4.3.0-Windows-x86.exe	338.1 MiB	2017-01-27 14:17:06	a98767acefdeda02fe8d3ef9dadda1a34
Anaconda2-4.3.0-Windows-x86_64.exe	412.8 MiB	2017-01-27 14:17:59	1117839746a8eabf7ed26ff311fc74e44
Anaconda3-4.3.0-Linux-x86.sh	398.4 MiB	2017-01-27 14:14:29	f7ce2eeec3e42c2ba1ee3b9fcd670478f
Anaconda3-4.3.0-Linux-x86_64.sh	473.4 MiB	2017-01-27 14:15:21	e9169c3a5029aa820393ac92704eb9ee0
Anaconda3-4.3.0-MacOSX-x86_64.pkg	423.1 MiB	2017-01-27 14:26:32	f4522ac099ba292940bb47429e8e53eb9
Anaconda3-4.3.0-MacOSX-x86_64.sh	362.6 MiB	2017-01-27 14:26:15	c53059b810c5e7a9a5ef9c46a7ed76675
Anaconda3-4.3.0-Windows-x86.exe	347.2 MiB	2017-01-27 14:18:45	4a5dfea30b926074b4d6e0f1cea3e9765
Anaconda3-4.3.0-Windows-x86_64.exe	421.2 MiB	2017-01-27 14:19:41	324568dbef777a6ac8a25c1e8ae1975ff
Anaconda2-4.2.0-Linux-x86.sh	365.0 MiB	2016-09-27 15:50:20	618b720f309fe8da4f235415f11b6ce3d

Table 1 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda2-4.2.0-Linux-x86_64.sh	446.0 MiB	2016-09-27 15:49:54	beee286d24fb37dd6555281bba39b3deb
Anaconda2-4.2.0-MacOSX-x86_64.pkg	403.9 MiB	2016-10-17 19:33:11	4a74d34c3a3a82df31673ab49497816b0
Anaconda2-4.2.0-MacOSX-x86_64.sh	346.4 MiB	2016-09-27 15:50:02	a8b3ef86233635d9dcc3499dc38498076
Anaconda2-4.2.0-Windows-x86.exe	324.1 MiB	2016-09-27 15:54:50	a97ca79cb771568d051ef7773d25c0dda
Anaconda2-4.2.0-Windows-x86_64.exe	381.0 MiB	2016-09-27 15:55:47	6254b150edee53000c94e9abfc9c51a2d
Anaconda3-4.2.0-Linux-x86.sh	373.9 MiB	2016-09-27 15:50:34	1a8320635f2f06ec9d8610e77d6d0f9cb
Anaconda3-4.2.0-Linux-x86_64.sh	455.9 MiB	2016-09-27 15:50:04	73b51715a12b6382dd4df3dd1905b531b
Anaconda3-4.2.0-MacOSX-x86_64.pkg	407.1 MiB	2016-10-17 19:33:47	44fe57910aa10967c4afe41ab5663cb49
Anaconda3-4.2.0-MacOSX-x86_64.sh	349.5 MiB	2016-09-27 15:50:07	95448921601e1952e01a17ba9767cd362
Anaconda3-4.2.0-Windows-x86.exe	333.4 MiB	2016-09-27 15:56:30	e7b79a9886da3f840b52882c47ecab3ed
Anaconda3-4.2.0-Windows-x86_64.exe	391.4 MiB	2016-09-27 15:57:21	84e30c99833e142a27fc9ee2c748b03f1
Anaconda2-4.1.1-Linux-x86.sh	324.6 MiB	2016-07-08 11:19:57	1ab001c7a469345a90d549ebf4afa3376
Anaconda2-4.1.1-Linux-x86_64.sh	399.6 MiB	2016-07-08 11:19:56	9413b1d3ca9498ba6f53913df9c43d685
Anaconda2-4.1.1-MacOSX-x86_64.pkg	345.0 MiB	2016-07-08 11:19:59	879385461cc65bd9dbf9639bbf4471ecf
Anaconda2-4.1.1-MacOSX-x86_64.sh	295.8 MiB	2016-07-08 11:20:00	3b2fb323eb26c1c58788f63c41e164c20
Anaconda2-4.1.1-Windows-x86.exe	286.0 MiB	2016-07-08 11:20:01	4708d73952a0a8040bf1594ea42027a30
Anaconda2-4.1.1-Windows-x86_64.exe	341.2 MiB	2016-07-08 11:20:01	7be13a69df254b86e47612c726b0b2ba9
Anaconda3-4.1.1-Linux-x86.sh	329.1 MiB	2016-07-08 11:20:02	931626363f4030c7a1e8897549b1d3589
Anaconda3-4.1.1-Linux-x86_64.sh	406.3 MiB	2016-07-08 11:20:02	4f5c95feb0e7efeadd3d348dcef117d77
Anaconda3-4.1.1-MacOSX-x86_64.pkg	347.9 MiB	2016-07-08 11:21:15	b5e8cf44958d0aa03a7cc2da15fa835b1
Anaconda3-4.1.1-MacOSX-x86_64.sh	298.7 MiB	2016-07-08 11:21:17	7c3c06e9281c41f1213d357cb5f233fd9
Anaconda3-4.1.1-Windows-x86.exe	293.8 MiB	2016-07-08 11:21:18	224e3dd90850651ae0dlc9216b4c317d1
Anaconda3-4.1.1-Windows-x86_64.exe	352.9 MiB	2016-07-08 11:21:17	b4889513dc574f9d6f96db089315d69d2
Anaconda2-4.1.0-Linux-x86.sh	324.4 MiB	2016-06-28 11:28:28	54c06cd1b11cb687db6ba3613df443c05
Anaconda2-4.1.0-Linux-x86_64.sh	398.8 MiB	2016-06-28 11:28:28	3b7e504ca0132fb555d1f10e174cae070
Anaconda2-4.1.0-MacOSX-x86_64.pkg	344.2 MiB	2016-06-28 11:28:29	a97840be50d8c86b28caf8be1786bbe74
Anaconda2-4.1.0-MacOSX-x86_64.sh	295.1 MiB	2016-06-28 11:28:30	8b2c2a32f5e0da75cf8c81c568124cc1e
Anaconda2-4.1.0-Windows-x86.exe	285.1 MiB	2016-06-28 11:28:31	c4ad4eefdfbf6d838424c62c8b524352d
Anaconda2-4.1.0-Windows-x86_64.exe	340.2 MiB	2016-06-28 11:28:30	7a62880ff9bb7f747d70f518f024dfd17
Anaconda3-4.1.0-Linux-x86.sh	328.4 MiB	2016-06-28 11:28:32	7764093f337a43e4962b12d01508c1a38
Anaconda3-4.1.0-Linux-x86_64.sh	405.0 MiB	2016-06-28 11:28:31	11d32cf4026603d3b327dc4299863be6b
Anaconda3-4.1.0-MacOSX-x86_64.pkg	346.7 MiB	2016-06-28 11:28:32	83772b5fcd3d6deb945316ec96ecc7b0c
Anaconda3-4.1.0-MacOSX-x86_64.sh	297.6 MiB	2016-06-28 11:28:33	4c45c8d75665fa5194ebe4e355d3427f5
Anaconda3-4.1.0-Windows-x86.exe	292.6 MiB	2016-06-28 11:28:34	4f444ed9400505e822bb475e986800fac
Anaconda3-4.1.0-Windows-x86_64.exe	351.4 MiB	2016-06-28 11:28:33	9acde60b591233452dba23ac15800f39f
Anaconda2-4.0.0-Linux-x86.sh	332.3 MiB	2016-03-29 11:14:57	41341c840cea4185ef5bd82520c1de72b
Anaconda2-4.0.0-Linux-x86_64.sh	392.5 MiB	2016-03-29 11:14:55	ae312143952ca00e061a656c2080e0e4f
Anaconda2-4.0.0-MacOSX-x86_64.pkg	339.2 MiB	2016-03-29 11:14:57	242691c7dc9e20143d7620fd9e0cc344f
Anaconda2-4.0.0-MacOSX-x86_64.sh	290.2 MiB	2016-03-29 11:14:59	aa7ba6e1a40e08e672660c00c3151f012
Anaconda2-4.0.0-Windows-x86.exe	281.0 MiB	2016-03-29 11:15:00	f8185ad2fe89356ab001e55a463b663bc
Anaconda2-4.0.0-Windows-x86_64.exe	334.6 MiB	2016-03-29 11:14:59	213c7d94bdb6f0931edd31bb14ae33ab5
Anaconda3-4.0.0-Linux-x86.sh	336.9 MiB	2016-03-29 11:15:03	e1469fa0d24de12f33661ce3d7a06d779
Anaconda3-4.0.0-Linux-x86_64.sh	398.4 MiB	2016-03-29 11:15:02	36a558a1109868661a5735f5f32607643
Anaconda3-4.0.0-MacOSX-x86_64.pkg	341.5 MiB	2016-03-29 11:16:08	32a089b1be465a8b03c837041bbfbc76
Anaconda3-4.0.0-MacOSX-x86_64.sh	292.7 MiB	2016-03-29 11:16:21	704a776c0cf3fcca6e0c5a1e6b6043728
Anaconda3-4.0.0-Windows-x86.exe	283.1 MiB	2016-03-29 11:16:22	b5a31a9d130a40c3110c0592a6c8fbd43
Anaconda3-4.0.0-Windows-x86_64.exe	345.4 MiB	2016-03-29 11:16:22	39bf467cd142c1f8fdb7d673fdea273d8
Anaconda2-2.5.0-Linux-x86.sh	330.4 MiB	2016-02-03 15:41:54	4911047df51c46661f551d6022aee21a7
Anaconda2-2.5.0-Linux-x86_64.sh	390.9 MiB	2016-02-03 15:41:18	e10abf459cde4a838bd6fc5ca03023c34

Table 1 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda2-2.5.0-MacOSX-x86_64.pkg	367.9 MiB	2016-02-03 15:55:31	0f546ed4f388299824e98a31ca9e3fe98
Anaconda2-2.5.0-MacOSX-x86_64.sh	316.1 MiB	2016-02-03 15:41:22	e7aa3b41210ee7ccf3c12e5b5ea43190d
Anaconda2-2.5.0-Windows-x86.exe	296.2 MiB	2016-02-03 15:45:21	a0336729f0400ff12fe18a7d5e20c3f9b
Anaconda2-2.5.0-Windows-x86_64.exe	348.6 MiB	2016-02-03 15:46:14	4423b43eb23184b4239abc426a564760d
Anaconda3-2.5.0-Linux-x86.sh	334.4 MiB	2016-02-03 15:42:07	22ac26c8bde7c4153ea859f6f6d8aca93
Anaconda3-2.5.0-Linux-x86_64.sh	395.6 MiB	2016-02-03 15:41:27	addadcb927f15cb0b5b6e36890563d335
Anaconda3-2.5.0-MacOSX-x86_64.pkg	369.8 MiB	2016-02-03 15:56:04	b1a6945f0f025086806624c59de5d92e5
Anaconda3-2.5.0-MacOSX-x86_64.sh	318.3 MiB	2016-02-03 15:41:27	9bb0f926927db210f8c2a8de881213d1a
Anaconda3-2.5.0-Windows-x86.exe	296.3 MiB	2016-02-03 15:46:53	4a3441aaaa269d06f39e1430155f9f25a
Anaconda3-2.5.0-Windows-x86_64.exe	361.1 MiB	2016-02-03 15:47:40	4728044d77da715e48d4c95d7f2e3c2a0
Anaconda2-2.4.1-Linux-x86.sh	248.5 MiB	2015-12-08 15:00:50	2388cc714567afe7697bf43b4063ff0ea
Anaconda2-2.4.1-Linux-x86_64.sh	265.0 MiB	2015-12-08 15:00:49	2de682c96edf8cca2852071a84ff86002
Anaconda2-2.4.1-MacOSX-x86_64.pkg	245.8 MiB	2015-12-08 15:00:50	1e2445aaf9faf84e801404bf89091fbf4
Anaconda2-2.4.1-MacOSX-x86_64.sh	212.0 MiB	2015-12-08 15:00:51	f4bd45a21e0dff106e36d11cfd532f2b5
Anaconda2-2.4.1-Windows-x86.exe	287.8 MiB	2015-12-08 15:00:52	65fb15559b0ddb5055c110ecdb84823a6
Anaconda2-2.4.1-Windows-x86_64.exe	354.2 MiB	2015-12-08 15:00:51	cfbe5539cb7f2e5807ec3d2fa2e59db3a
Anaconda3-2.4.1-Linux-x86.sh	253.2 MiB	2015-12-08 15:00:53	00d13413f5b8129e863dabcc2296a181c
Anaconda3-2.4.1-Linux-x86_64.sh	270.7 MiB	2015-12-08 15:00:53	0735e69199fc37135930ea2fd4fb6ad0a
Anaconda3-2.4.1-MacOSX-x86_64.pkg	247.6 MiB	2015-12-08 15:00:54	95e9f2d370f7816ed72b862c9413c973e
Anaconda3-2.4.1-MacOSX-x86_64.sh	213.9 MiB	2015-12-08 15:00:54	22a3267638da9b7d64210d7da90d8762d
Anaconda3-2.4.1-Windows-x86.exe	299.1 MiB	2015-12-08 15:00:56	dfe50d13473547b5230f6194dfe6bdf9
Anaconda3-2.4.1-Windows-x86_64.exe	363.7 MiB	2015-12-08 15:00:55	21d155a4b43805042499b8d008835bcd
Anaconda2-2.4.0-Linux-x86.sh	279.9 MiB	2015-11-02 16:22:19	478a8fdde3a6e4040a68c57d7bdd6fab1
Anaconda2-2.4.0-Linux-x86_64.sh	288.4 MiB	2015-11-02 16:22:19	49d19834da06b1b82b6fa85bc647d2e78
Anaconda2-2.4.0-MacOSX-x86_64.pkg	274.3 MiB	2015-11-02 16:22:20	d6842135062f3c3d2f8bd33318133376d
Anaconda2-2.4.0-MacOSX-x86_64.sh	239.5 MiB	2015-11-02 16:22:20	53c9123c9d508555100805fdb44d98455
Anaconda2-2.4.0-Windows-x86.exe	321.4 MiB	2015-11-02 16:22:21	2a05db81a0fe4155bc2dd83a689294d3a
Anaconda2-2.4.0-Windows-x86_64.exe	388.0 MiB	2015-11-02 16:22:21	7a40484e58e91f62d91961c8607de586d
Anaconda3-2.4.0-Linux-x86.sh	277.4 MiB	2015-11-02 16:22:22	f6080c6493cefc603cfeb67aaf6c3c4c6
Anaconda3-2.4.0-Linux-x86_64.sh	285.2 MiB	2015-11-02 16:22:22	fb4e480059e991f2fa632b5a9bcd284c
Anaconda3-2.4.0-MacOSX-x86_64.pkg	267.4 MiB	2015-11-02 16:22:23	791f045258bd39bbcd4b4c5425dce082e
Anaconda3-2.4.0-MacOSX-x86_64.sh	233.8 MiB	2015-11-02 16:22:23	f0cd785dbed0bab28dfc08a391c9de1b0
Anaconda3-2.4.0-Windows-x86.exe	316.4 MiB	2015-11-02 16:22:25	a69a9fe00ce337b0cfd7d024b79ba5141
Anaconda3-2.4.0-Windows-x86_64.exe	392.3 MiB	2015-11-02 16:22:24	beaa1b803dd30022c6aca1c6f05182bea
Anaconda-2.3.0-Linux-x86.sh	309.6 MiB	2015-07-01 13:35:09	73fdbbb3e38207ed18e5059f71676d18d
Anaconda-2.3.0-Linux-x86_64.sh	323.9 MiB	2015-07-01 13:35:08	7c02499e9511c127d225992cfe1cd815e
Anaconda-2.3.0-MacOSX-x86_64.pkg	283.7 MiB	2015-07-01 13:35:09	f920ae6211d9da3288b5e160100543667
Anaconda-2.3.0-MacOSX-x86_64.sh	249.9 MiB	2015-07-01 13:35:10	c4bb59a57bf44dde80612041bbbcfd2e5
Anaconda-2.3.0-Windows-x86.exe	277.4 MiB	2015-07-01 13:35:11	3b60ddfb84533539e767889706bd64298
Anaconda-2.3.0-Windows-x86_64.exe	334.7 MiB	2015-07-01 13:35:10	70b4a84e78c721bd46f3de39c75acb37d
Anaconda3-2.3.0-Linux-x86.sh	322.6 MiB	2015-07-01 13:35:13	4cc10d65c303191004ada2b6d75562c8e
Anaconda3-2.3.0-Linux-x86_64.sh	336.7 MiB	2015-07-01 13:35:12	3be5410b2d9db45882c7de07c554cf4f1
Anaconda3-2.3.0-MacOSX-x86_64.pkg	292.8 MiB	2015-07-01 13:35:13	0b936ab3067bbf32b5a52768f31ff437f
Anaconda3-2.3.0-MacOSX-x86_64.sh	257.4 MiB	2015-07-01 13:35:14	6a0c94a49f41f9fda0138c8e966bd7b0a
Anaconda3-2.3.0-Windows-x86.exe	281.1 MiB	2015-07-01 13:35:15	02d5f84da308f96d1a252a6669f3ca91e
Anaconda3-2.3.0-Windows-x86_64.exe	336.4 MiB	2015-07-01 13:35:14	bd693b61cf191666ae0473327f3c15bcf
Anaconda-2.2.0-Linux-x86.sh	303.2 MiB	2015-03-25 15:19:54	6437d5b08a19c3501f2f5dc3ae1ae16f9
Anaconda-2.2.0-Linux-x86_64.sh	317.3 MiB	2015-03-25 15:20:08	ca2582cb2188073b0f348ad42207211a2
Anaconda-2.2.0-MacOSX-x86_64.pkg	279.7 MiB	2015-03-25 15:27:27	65784323db94b0c297e998bc81db5978e

Table 1 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda-2.2.0-MacOSX-x86_64.sh	247.1 MiB	2015-03-25 15:17:33	20570e2f3911e38a78d8f888f3ff445d6
Anaconda-2.2.0-Windows-x86.exe	274.2 MiB	2015-03-25 15:28:48	247e8e7e386224a3df736ffe607596546
Anaconda-2.2.0-Windows-x86_64.exe	331.2 MiB	2015-03-25 15:30:13	1e01d7e1560668f4c05d1cfafcb59b79d
Anaconda3-2.2.0-Linux-x86.sh	313.3 MiB	2015-03-25 15:20:07	223655cd256aa912dfc83ab24570e47bb
Anaconda3-2.2.0-Linux-x86_64.sh	326.9 MiB	2015-03-25 15:20:14	4aac68743e7706adb93f042f970373a6e
Anaconda3-2.2.0-MacOSX-x86_64.pkg	288.8 MiB	2015-03-25 15:28:12	16a5154267d7d52d3e7e0d12ec3405077
Anaconda3-2.2.0-MacOSX-x86_64.sh	254.5 MiB	2015-03-25 15:17:44	81a2089ea6127717f146454e99ea0be2b
Anaconda3-2.2.0-Windows-x86.exe	277.7 MiB	2015-03-25 15:31:19	20c46fff048fb313aaf1a49171c1a7b96
Anaconda3-2.2.0-Windows-x86_64.exe	332.6 MiB	2015-03-25 15:32:30	28c5a13b27a9dbd57c7c633316c5f4beb
Anaconda-2.1.0-Linux-x86.sh	321.2 MiB	2014-09-25 10:50:30	fd70c08719e6b5caae45b7c8402c6975a
Anaconda-2.1.0-Linux-x86_64.sh	337.4 MiB	2014-09-25 10:50:15	191fbf290747614929d0bdd576e330c94
Anaconda-2.1.0-MacOSX-x86_64.pkg	275.0 MiB	2014-09-25 11:33:13	d8001bae990e7024b81e74c6b06d0f488
Anaconda-2.1.0-MacOSX-x86_64.sh	241.0 MiB	2014-09-25 10:53:13	128fd4f53e0895e0d23f33e924ae32e01
Anaconda-2.1.0-Windows-x86.exe	310.2 MiB	2014-09-25 11:05:03	c39193c9018a9c1e9e8f3c1d2692ac635
Anaconda-2.1.0-Windows-x86_64.exe	367.0 MiB	2014-09-25 11:07:11	d9d7c8ed1c914312848407f08fff3d193
Anaconda3-2.1.0-Linux-x86.sh	317.7 MiB	2014-09-25 10:50:35	657cb599004c21e37ce693515ea33922e
Anaconda3-2.1.0-Linux-x86_64.sh	332.8 MiB	2014-09-25 10:50:20	af3225ccbe8df0fffb918939e009aa5774
Anaconda3-2.1.0-MacOSX-x86_64.pkg	277.3 MiB	2014-09-25 11:40:54	2780df02f400e44c0adcd209825fddf95
Anaconda3-2.1.0-MacOSX-x86_64.sh	243.5 MiB	2014-09-25 10:53:23	efdb7e9d1e539cbcd62dc3874b0de6a14
Anaconda3-2.1.0-Windows-x86.exe	308.7 MiB	2014-09-25 11:09:01	8ffa252aa2b4f63889888ae85a81626ce
Anaconda3-2.1.0-Windows-x86_64.exe	363.3 MiB	2014-09-25 11:11:03	ea4059469b1820069f62bd6c256def625
Anaconda-2.0.1-Linux-x86.sh	309.1 MiB	2014-06-12 15:02:41	e8fffc63f31673b5ce41a95796a1f729dd
Anaconda-2.0.1-Linux-x86_64.sh	327.9 MiB	2014-06-12 15:02:33	074204fa26872b4a946123071d15b8390
Anaconda-2.0.1-MacOSX-x86_64.pkg	244.3 MiB	2014-06-12 15:02:50	d6a0ce0422daa004929a4aef6b485d94f
Anaconda-2.0.1-MacOSX-x86_64.sh	214.4 MiB	2014-06-12 15:02:56	4ecda163c6f46e70cc6a1fe62dece4c6e
Anaconda-2.0.1-Windows-x86.exe	287.3 MiB	2014-06-12 15:03:27	be5a341bc3f9bf8386c686cfc9ad253f3
Anaconda-2.0.1-Windows-x86_64.exe	343.7 MiB	2014-06-12 15:03:07	5b27e7de356312da711a19ae6a4438c1c
Anaconda3-2.0.1-Linux-x86.sh	287.7 MiB	2014-06-12 15:00:00	21293fabbbd3d5cfbb1afe0c9a8b39e0bc
Anaconda3-2.0.1-Linux-x86_64.sh	304.8 MiB	2014-06-12 14:59:53	3c3b834793e461f3316ad1d9a9178c678
Anaconda3-2.0.1-MacOSX-x86_64.pkg	230.7 MiB	2014-06-12 15:00:05	0d53815a83a50bdcfcb5ada686f582730
Anaconda3-2.0.1-MacOSX-x86_64.sh	203.3 MiB	2014-06-12 15:00:09	7a08509d4e45efcc7055a6d06d8406a77
Anaconda3-2.0.1-Windows-x86.exe	265.7 MiB	2014-06-12 15:00:27	b08803296d7439413d590fd1f967b2012
Anaconda3-2.0.1-Windows-x86_64.exe	319.8 MiB	2014-06-12 15:00:15	e2b6d3d6a9e378fc0d0dd63342417c02b
Anaconda-2.0.0-Linux-x86.sh	298.4 MiB	2014-05-28 16:50:36	efb9d3987134d484d88a9d915437b1bd5
Anaconda-2.0.0-Linux-x86_64.sh	316.9 MiB	2014-05-28 16:50:30	3aa27ddf4a0ba5046ba52b97da99e20eb
Anaconda-2.0.0-MacOSX-x86_64.pkg	236.2 MiB	2014-05-28 16:50:41	e2eb3805451a26235b2ed7f3e63535fc3
Anaconda-2.0.0-MacOSX-x86_64.sh	206.1 MiB	2014-05-28 16:50:45	ad6271ad21403166bf54d0734ba8c7f7e
Anaconda-2.0.0-Windows-x86.exe	278.2 MiB	2014-05-28 16:51:02	d86cc7100b4c04ec25768267b81798f70
Anaconda-2.0.0-Windows-x86_64.exe	334.4 MiB	2014-05-28 16:50:53	60078f8677e62e435e5a53f1084e6f39d
Anaconda3-2.0.0-Linux-x86.sh	277.5 MiB	2014-05-27 16:35:55	439761159d5604e182951650a478dd53c
Anaconda3-2.0.0-Linux-x86_64.sh	294.4 MiB	2014-05-27 16:26:59	57ce4f97e300cf94c5724f72d992e9eecd
Anaconda3-2.0.0-MacOSX-x86_64.pkg	222.9 MiB	2014-05-27 16:30:16	4d4189ec0c514d344389e216b3ad4eeac
Anaconda3-2.0.0-MacOSX-x86_64.sh	195.3 MiB	2014-05-27 17:02:53	776a1cf8a8e898b41bb6558c093632cc9
Anaconda3-2.0.0-Windows-x86.exe	256.9 MiB	2014-05-27 16:59:13	37986ce4c104ed3c82838de74b3a4de17
Anaconda3-2.0.0-Windows-x86_64.exe	310.9 MiB	2014-05-27 17:01:42	a8046fc82da7463ef53cdeaba97c72433
Anaconda-1.9.2-Linux-x86.sh	411.8 MiB	2014-04-08 17:33:09	1f7c850d0b98c011a717b3b757d82077a
Anaconda-1.9.2-Linux-x86_64.sh	484.0 MiB	2014-04-08 17:32:38	7181d399833a2549a9584255bb477487f
Anaconda-1.9.2-MacOSX-x86_64.pkg	281.0 MiB	2014-04-10 10:05:32	2fff6dca12507f675b04ed1f303d0ee99
Anaconda-1.9.2-MacOSX-x86_64.sh	245.4 MiB	2014-04-08 17:34:03	be4611ca671f80b984fa330d4ecf82244

Table 1 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda-1.9.2-Windows-x86.exe	311.8 MiB	2014-04-08 17:39:25	fe005aeacd1345b856c73d640856b79ed
Anaconda-1.9.2-Windows-x86_64.exe	367.3 MiB	2014-04-08 17:41:16	ef9cfb69c831210fc9000ee5482d2d98b
Anaconda-1.9.1-Linux-x86.sh	411.8 MiB	2014-02-20 13:34:56	9aa39c05f723fee18c54a9cc172998619
Anaconda-1.9.1-Linux-x86_64.sh	483.9 MiB	2014-02-20 13:35:16	f6455e06a72b8cc11c8a96fb88a85518a
Anaconda-1.9.1-MacOSX-x86_64.pkg	280.9 MiB	2014-02-20 15:44:04	2aa707b162e71d488495085fd13232f8c
Anaconda-1.9.1-MacOSX-x86_64.sh	245.3 MiB	2014-02-20 13:02:05	7e4358adbbae2db9e17d1e0e4263b9a01
Anaconda-1.9.1-Windows-x86.exe	311.7 MiB	2014-02-20 15:08:42	46cbe29a30cfcfd56018f7f69a35525708
Anaconda-1.9.1-Windows-x86_64.exe	367.3 MiB	2014-02-20 15:10:34	d0c3c2faca03b3820ff8fc39688f500bd
Anaconda-1.9.0-Linux-x86.sh	545.3 MiB	2014-02-10 10:23:30	16471e90b3deb7be1b3d449d8883983d8
Anaconda-1.9.0-Linux-x86_64.sh	618.8 MiB	2014-02-10 10:23:05	855f1265e4c0b40d50f5a3a0fe7bae05b
Anaconda-1.9.0-MacOSX-x86_64.pkg	279.8 MiB	2014-02-10 10:23:46	b74134e7626f10fc4d86209a3ebbb19de
Anaconda-1.9.0-MacOSX-x86_64.sh	244.4 MiB	2014-02-10 10:23:47	722fe4d4406e88c5023e7ee21dc1401bb
Anaconda-1.9.0-Windows-x86.exe	308.6 MiB	2014-02-10 10:24:52	2c8c58cf21e537e930535df5a0e8fd4b6
Anaconda-1.9.0-Windows-x86_64.exe	365.1 MiB	2014-02-10 10:24:18	265c7e849688164f7a7fe9df541be0186
Anaconda-1.8.0-Linux-x86.sh	393.0 MiB	2013-11-04 15:37:29	2c08a5cd6ccaa9dc84063b0ee9b007aa8
Anaconda-1.8.0-Linux-x86_64.sh	465.7 MiB	2013-11-04 15:37:12	69f42966d918f4197040e4dd126d2e3cc
Anaconda-1.8.0-MacOSX-x86_64.pkg	263.0 MiB	2013-11-04 13:57:20	fb92afc7750bc58ac12f3cbd65c18ee0f
Anaconda-1.8.0-MacOSX-x86_64.sh	228.8 MiB	2013-11-04 13:10:16	5844ca595b5930399a1213db64ab53e9b
Anaconda-1.8.0-Windows-x86.exe	290.0 MiB	2013-11-04 13:54:14	719bc0987be80b46f9c6b745822777fa1
Anaconda-1.8.0-Windows-x86_64.exe	342.1 MiB	2013-11-04 13:55:59	434c2b325a368958b66d52cee4cc710f5
Anaconda-1.7.0-Linux-x86.sh	381.0 MiB	2013-09-08 17:02:26	af372a27a1887e11061485e2a854c5357
Anaconda-1.7.0-Linux-x86_64.sh	452.6 MiB	2013-09-08 17:01:59	6115cfae55a0746b4ae4128be839c99db
Anaconda-1.7.0-MacOSX-x86_64.pkg	256.7 MiB	2013-09-09 12:15:34	d277f7e162c77043e416d03a754389a0d
Anaconda-1.7.0-MacOSX-x86_64.sh	223.3 MiB	2013-09-09 11:52:45	046b592245bc2c11e733acb9700dc5094
Anaconda-1.7.0-Windows-x86.exe	280.6 MiB	2013-09-08 17:10:23	b434776dfeac98f37328c6e538f5a1a53
Anaconda-1.7.0-Windows-x86_64.exe	330.1 MiB	2013-09-08 17:12:00	59a3667fd33f8de1ed476d7ff07917d72
Anaconda-1.6.2-Windows-x86.exe	244.4 MiB	2013-07-09 13:44:58	0873576bbd979e3b7859808bccc2311ed
Anaconda-1.6.2-Windows-x86_64.exe	289.9 MiB	2013-07-09 13:46:28	641fc25c1d13e49cc030df5f4040170d1
Anaconda-1.6.1-Linux-x86.sh	247.1 MiB	2013-07-02 11:59:07	745b9452fd18720deefb465a6687c0d66
Anaconda-1.6.1-Linux-x86_64.sh	317.6 MiB	2013-07-02 11:57:42	81d1819ba08069343f228b9c819cdba0e
Anaconda-1.6.1-MacOSX-x86_64.pkg	197.3 MiB	2013-07-02 17:30:12	7c79819dd40a14e52439664c3e88e89ec
Anaconda-1.6.1-MacOSX-x86_64.sh	170.0 MiB	2013-07-02 11:59:25	bbc15de34208ce8af5aceedeeal334636
Anaconda-1.6.1-Windows-x86.exe	244.4 MiB	2013-07-02 12:02:59	a823dc7688cec49499bb5922783377c26
Anaconda-1.6.1-Windows-x86_64.exe	289.9 MiB	2013-07-02 12:04:26	8cad320d4d6981644fbd1741bd5589d19
Anaconda-1.6.0-Linux-x86.sh	241.6 MiB	2013-06-21 14:23:39	d6aeedfcb39d648fdb5bd72c4d0b3063
Anaconda-1.6.0-Linux-x86_64.sh	309.5 MiB	2013-06-21 14:23:51	20f5b70193af4b0b8f10aa0e66aabca55
Anaconda-1.6.0-MacOSX-x86_64.sh	169.0 MiB	2013-06-21 14:26:14	e03317888c36c07451a349577b426f435
Anaconda-1.6.0-Windows-x86.exe	244.9 MiB	2013-06-21 14:36:46	3dc2588557455484b3b38feb14fa95d94
Anaconda-1.6.0-Windows-x86_64.exe	290.4 MiB	2013-06-21 14:38:20	6e95dc3612ed430ded28bb48fa1671b32
Anaconda-1.5.1-MacOSX-x86_64.sh	166.2 MiB	2013-05-09 14:26:20	6d3c86a2fdbaeec2a6c251d5c9034a32
Anaconda-1.5.0-Linux-x86.sh	238.8 MiB	2013-05-08 09:18:43	ca7e356dc1b8c8ef27dfb74b32c77563d
Anaconda-1.5.0-Linux-x86_64.sh	306.7 MiB	2013-05-08 09:18:36	f4cdc194f076e1b438c8a34e7e5f53e70
Anaconda-1.5.0-MacOSX-x86_64.sh	166.2 MiB	2013-05-08 09:18:44	c69609f0f48f33ca5a12d425a9e4d0fc9
Anaconda-1.5.0-Windows-x86.exe	236.0 MiB	2013-05-08 09:18:44	d3dd92fa00d999a94638513daf2d4aeed
Anaconda-1.5.0-Windows-x86_64.exe	280.4 MiB	2013-05-08 09:20:08	7edbe2e51b71c69e7e7a1ec01d8d83954
Anaconda-1.4.0-Linux-x86.sh	220.5 MiB	2013-03-09 16:46:53	065284c5de369c9b89dcae79e7169ce9b
Anaconda-1.4.0-Linux-x86_64.sh	286.9 MiB	2013-03-09 16:46:38	85ae8a0a6e3a41cf7845be3def36ed405
Anaconda-1.4.0-MacOSX-x86_64.sh	156.4 MiB	2013-03-09 16:46:57	e5d5dae6e93bb7df528abc19f5ed3a69c
Anaconda-1.4.0-Windows-x86.exe	210.1 MiB	2013-03-09 16:55:45	e590e45d36d3f164fcdf58cda6a3cb092

Table 1 – continued from previous page

Name	Size	Time modified	SHA256 hash
Anaconda-1.4.0-Windows-x86_64.exe	241.4 MiB	2013-03-09 16:57:09	6ff0a3bf82fdf5c6f0568d12ff030237e

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	1571149568.292862
time file was last modified, in human readable format	2019-10-15 09:26:08
exact file size, in bytes	432851808
file size, in human friendly format	412.8 MiB
md5	b152e6f36032ed414ad88cca9ace331a
sha256	3e09c8e95e10f077be1e1d26f26df8d6a13356449e06d7d47ddc066fbaf43

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	1564065371.0114431
time file was last modified, in human readable format	2019-07-25 09:36:11
exact file size, in bytes	447973832
file size, in human friendly format	427.2 MiB
md5	4813b22808b4042ed54120fd0e44327a
sha256	fb7493a5c40d28ab47e54c57f025186dc26309183b21c8a0df733837e86b1

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	1554411653.82107
time file was last modified, in human readable format	2019-04-04 16:00:53
exact file size, in bytes	615389640
file size, in human friendly format	586.9 MiB
md5	042809940fb2f60d979eac02fc4e6c82
sha256	96c21ae0d152755e8f4ac4a593da4063e0f3796064dbe25d9bbad163e926f9

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	1545419777.6148324
time file was last modified, in human readable format	2018-12-21 13:16:17
exact file size, in bytes	587793280
file size, in human friendly format	560.6 MiB
md5	10ff4176a94fcff86e6253b0cc82c782
sha256	7571d334eac3b9bd4f3e199fc5f493f0601890620c22e6d487246bde90497

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	1542656267.7349658
time file was last modified, in human readable format	2018-11-19 13:37:47
exact file size, in bytes	608275536
file size, in human friendly format	580.1 MiB
md5	ff29ffc1f767cde91bab71110c00294
sha256	63b8a687cddcf462f9f61993d07ba88389c413265d3035a1b1bdb2c481592

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	1538081954.248261
time file was last modified, in human readable format	2018-09-27 15:59:14
exact file size, in bytes	607139640
file size, in human friendly format	579.0 MiB
md5	19fb5f9eedf834b4329dcdeac9824516
sha256	30bf9131df2314c00a9cd5e5f0b7d6184c3aec38e4068eaa1c962f6201811

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	1527703456.9154801
time file was last modified, in human readable format	2018-05-30 13:04:16
exact file size, in bytes	591413392
file size, in human friendly format	564.0 MiB
md5	595e427e4b625b6eab92623a28dc4e21
sha256	e5ff95332d08a7b006a5bb723e0a5124c4c4c9a9e4289afdd05941791a79e

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	1518707334.896789
time file was last modified, in human readable format	2018-02-15 09:08:54
exact file size, in bytes	548001744
file size, in human friendly format	522.6 MiB
md5	b16d6d6858fc7decf671ac71e6d7cfdb
sha256	3674c8d8c233dbea30842f14dc76cc3feaf4badf7d9dfe4145aa5b6679fab

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	1508813842.7920458
time file was last modified, in human readable format	2017-10-23 21:57:22
exact file size, in bytes	524040968
file size, in human friendly format	499.8 MiB
md5	b8d9bc02edd61af3f7ece3d07e726e91
sha256	c43f94c51623850b0c1a826710fe9c8e50b0d73708874c9cf9b6ef03806ba

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 14:30:49
exact file size, in bytes	522426032
file size, in human friendly format	498.2 MiB
md5	8323b1d5f0b1c3fdb5b85efbb099beeb0
sha256	5fb73395cdf003613f5d44844da9870dbdc2a35cede0f928b02c38b5ee2eb

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 17:53:22
exact file size, in bytes	451651872
file size, in human friendly format	430.7 MiB
md5	0f60aa52ef3a5d6170aeb6f7e3651f91
sha256	7a8ec1a36f385ebf28a1a8cf63b8b03ac0f7744e1531f5d359ce6a6d90391

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 16:18:59
exact file size, in bytes	433804976
file size, in human friendly format	413.7 MiB
md5	bfd41f4de09a690f8b3525d3fb79bd2f
sha256	c0e13a756a856d7b7757b10d65bee577d8c9826317050eecec42d2e48d2ea

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 14:20:08
exact file size, in bytes	432863736
file size, in human friendly format	412.8 MiB
md5	56b181af1959de40e67fb5ef50612ae2
sha256	2198e28e9e8e3c43ab72a8371e5b2d0a9aa6574391aebbc94bf768a50a57

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 14:17:59
exact file size, in bytes	432864904
file size, in human friendly format	412.8 MiB
md5	2c02e21e542d61760c3e19bf0b3086fe
sha256	1117839746a8eabf7ed26ff311fc74e44a58e319555e306f241e04b32363a

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 15:55:47
exact file size, in bytes	399546128
file size, in human friendly format	381.0 MiB
md5	0a30d509568724dac0ae193e139b9c37
sha256	6254b150edee53000c94e9abfc9c51a2d2e5ef3453d8e7cc7ef0a848d6d3b

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 11:20:01
exact file size, in bytes	357765440
file size, in human friendly format	341.2 MiB
md5	1db0244dbf02579f452d1b19ce245144
sha256	7be13a69df254b86e47612c726b0b2ba9ffa35c060b4d28eqb348004c1f72

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 11:28:30
exact file size, in bytes	356677104
file size, in human friendly format	340.2 MiB
md5	6c1066a240b28dbb33e9293a97cd40f5
sha256	7a62880ff9bb7f747d70f518f024dfd1795a26d4130a20d1ff30043d05ec7

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 11:14:59
exact file size, in bytes	350807856
file size, in human friendly format	334.6 MiB
md5	6b2ad997c42fbf58bb1b54baa5619e4f
sha256	213c7d94bdb6f0931edd31bb14ae33ab557cee52c4ac949300e512397a29e

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 15:46:14
exact file size, in bytes	365581384
file size, in human friendly format	348.6 MiB
md5	57e42190411054333781c1208822659d
sha256	4423b43eb23184b4239abc426a564760d6ddf0187ce451468546b88931de4

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 15:00:51
exact file size, in bytes	371393960
file size, in human friendly format	354.2 MiB
md5	733ce916c4c392367c611efd493410b0
sha256	cfbe5539cb7f2e5807ec3d2fa2e59db3a419caa1ef8f0497516dd0c861f92

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 16:22:21
exact file size, in bytes	406819096
file size, in human friendly format	388.0 MiB
md5	00a09d300d13c9f4754165920396625d
sha256	7a40484e58e91f62d91961c8607de586d3ef14645319c0395683e5f718255

Hashes for Anaconda-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 13:35:10
exact file size, in bytes	350951272
file size, in human friendly format	334.7 MiB
md5	93d3d5d2aae82c175cd9ef4a570c2ab0
sha256	70b4a84e78c721bd46f3de39c75acb37d1980a3afa23cf3cef387569606f7

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 15:30:13
exact file size, in bytes	347294944
file size, in human friendly format	331.2 MiB
md5	27230171e315bcdee370ef97ef622158
sha256	1e01d7e1560668f4c05d1cfafcb59b79da1b352671dc913a5ec8b766dde12

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 11:07:11
exact file size, in bytes	384818768
file size, in human friendly format	367.0 MiB
md5	a80eea69583fcee6d3d0f6a63a900b2e
sha256	d9d7c8ed1c914312848407f08fff3d19350c20d754c8872d36ef45ce7541c

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 15:03:07
exact file size, in bytes	360443904
file size, in human friendly format	343.7 MiB
md5	b498d9bf6b266bc09507d2ef9d4b7b55
sha256	5b27e7de356312da711a19ae6a4438c1c857b9c4e357c4aa3275d014db73c

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 16:50:53
exact file size, in bytes	350647728
file size, in human friendly format	334.4 MiB
md5	9ec65c4cc0d640ff36f89193cb9e7b7d
sha256	60078f8677e62e435e5a53f1084e6f39df7f4874892b77d04fbd819033c4

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 17:41:16
exact file size, in bytes	385184016
file size, in human friendly format	367.3 MiB
md5	a610322f6752413c9b02abf72f960ff9
sha256	ef9c9b69c831210fc9000ee5482d2d98ba609d4f9e9e05746f93f569045ba

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 15:10:34
exact file size, in bytes	385134224
file size, in human friendly format	367.3 MiB
md5	b8a404c9f5bfd2452316db3710d2b8ef
sha256	d0c3c2faca03b3820ff8fc39688f500bd140f207aab7553c50005484ff755

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 10:24:18
exact file size, in bytes	382872112
file size, in human friendly format	365.1 MiB
md5	3c5e322e71428167e4d38725e1d92be0
sha256	265c7e849688164f7a7fe9df541be018675772f2e91be39d116e6d0e07181

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 13:55:59
exact file size, in bytes	358748424
file size, in human friendly format	342.1 MiB
md5	dccc94b5e1b77e56385a318c5c91b6d1
sha256	434c2b325a368958b66d52cee4cc710f5ea40e45657854a9be2b54dd50b9c

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 17:12:00
exact file size, in bytes	346131087
file size, in human friendly format	330.1 MiB
md5	c4e6987a83b00da8d36fc4e559df7d01
sha256	59a3667fd33f8de1ed476d7ff07917d726be51de239deaf79ce13ab277bb41

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 13:46:28
exact file size, in bytes	303973708
file size, in human friendly format	289.9 MiB
md5	80bc3fe5f8d2f83110eee775946ed3b8
sha256	641fc25c1d13e49cc030df5f4040170d123072e54b439e7097531a61cc385

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 12:04:26
exact file size, in bytes	303973712
file size, in human friendly format	289.9 MiB
md5	3e63a96cc45f665bf53fa38b18491f94
sha256	8cad320d4d6981644fbd1741bd5589d198f5e4ca1e1f66a10d57c704ee485

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 14:38:20
exact file size, in bytes	304462009
file size, in human friendly format	290.4 MiB
md5	d215a5aca9515f1875cf131b0c35d78d
sha256	6e95dc3612ed430ded28bb48fa1671b32a185c976eba905796707f9b5b44e

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 09:20:08
exact file size, in bytes	294062717
file size, in human friendly format	280.4 MiB
md5	058a62bb0fbaf53870b92798453e718a
sha256	7edbe2e51b71c69e7e7a1ec01d8d83954ada9e885e08adffdd624b9e1b10

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 16:57:09
exact file size, in bytes	253175221
file size, in human friendly format	241.4 MiB
md5	7e4ff5278e86cc88852abb5da453ae7a
sha256	6ff0a3bf82fdf5c6f0568d12ff030237ee90825bb0ea60e4cf3833db84753

Anaconda with Python 3 on 64-bit Windows

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

Hashes for Anaconda3-2022.05-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 14:22:02
exact file size, in bytes	622731992
file size, in human friendly format	593.9 MiB
md5	9dec53982beb2659b65107a6ad10e863
sha256	2766eb102f9d65da36d262b651777358de39fbe5f1a74f9854a2e5e29caee

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 13:08:45
exact file size, in bytes	535052832
file size, in human friendly format	510.3 MiB
md5	424c58208a444f06f0766dee1b69d5c6
sha256	1b3d593d1deb22b835be5c68897075e0fc9dea240ab4191c55674aba259a7

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 22:08:48
exact file size, in bytes	500375944
file size, in human friendly format	477.2 MiB
md5	d62d396a00c6dd51ebf70cde1b5f4c51
sha256	93db42390444019e98b442ab281e1091671b6dce64daf08928d337ffc83cf

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	65fd8be6ab9aed8106bd1c9a228ecd7fd3e23d0d15b9d72415e3a884a69a8

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 16:45:34
exact file size, in bytes	479396152
file size, in human friendly format	457.2 MiB
md5	0841ffcb927a3c2edbd682520f52e546
sha256	aa523115daf31c431bb392faf75e70d35ada935e36dc7b1dd8902baee240b

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	1595524606.6399345
time file was last modified, in human readable format	2020-07-23 12:16:46
exact file size, in bytes	490200880
file size, in human friendly format	467.5 MiB
md5	7c718535a7dd89fa46b147626ada9e46
sha256	66acb9bdf7d2d5925df8762311a85ad72f57dfd340447bf00636d35a28454

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	1583940755.8850853
time file was last modified, in human readable format	2020-03-11 10:32:35
exact file size, in bytes	488908696
file size, in human friendly format	466.3 MiB
md5	6b02c1c91049d29fc65be68f2443079a
sha256	83c2f53c7174253adcc2de7d1293a7408c37b295abbbb8feqa32cb8428a26

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	1571149637.6830847
time file was last modified, in human readable format	2019-10-15 09:27:17
exact file size, in bytes	483964816
file size, in human friendly format	461.5 MiB
md5	fafcd5f5feb6dc3081bf07cbb8af1dbe
sha256	9e632439ed40620b8518f11469ded7316eccb489d0dfc41770f72ca2b2202

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	1564065473.5581777
time file was last modified, in human readable format	2019-07-25 09:37:53
exact file size, in bytes	509439656
file size, in human friendly format	485.8 MiB
md5	56edfc7280fb8def19922a0296b45633
sha256	37e753801a881649ceb608449b66ff9daa35a393409c6e651e56a60c5043b

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	1554411630.4340134
time file was last modified, in human readable format	2019-04-04 16:00:30
exact file size, in bytes	693800272
file size, in human friendly format	661.7 MiB
md5	bfb4da8555ef5b1baa064ef3f0c7b582
sha256	d2c90169879f40816eac91bec585a1f9f788016fe0a8215ca066299e4b653

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	1545419674.9961112
time file was last modified, in human readable format	2018-12-21 13:14:34
exact file size, in bytes	644094168
file size, in human friendly format	614.3 MiB
md5	8d068f924a77e8d015906e81e91b31ab
sha256	09d84a789013d5e2bfb0148bdd9f5d69a6baa2127edabb9a8e50e77c6fc57

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	1542656339.6522474
time file was last modified, in human readable format	2018-11-19 13:38:59
exact file size, in bytes	663195528
file size, in human friendly format	632.5 MiB
md5	3e4d013223d8a71d0fa4d58fe5b31023
sha256	295fed5940369d4ea1e2c6d04d418619d9942c19d925921cbeeb941bbc5bd7

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	1538081960.392536
time file was last modified, in human readable format	2018-09-27 15:59:20
exact file size, in bytes	662059680
file size, in human friendly format	631.4 MiB
md5	1807a3c595ed2dab9fc7662f2cdf79fd
sha256	1083d05eeec45707940a6c7afb375a5f330d7a24a9de1e6f8d86b4f4e49be

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	1527703458.8495667
time file was last modified, in human readable format	2018-05-30 13:04:18
exact file size, in bytes	661987080
file size, in human friendly format	631.3 MiB
md5	62244c0382b8142743622fdc3526eda7
sha256	2672f6537e2c8a79ae9540cf3c49b18bb9ba35caec649191b5fa1e759f15b

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	1518707426.6260371
time file was last modified, in human readable format	2018-02-15 09:10:26
exact file size, in bytes	563168960
file size, in human friendly format	537.1 MiB
md5	83a8b1edcb21fa0ac481b23f65b604c6
sha256	7d192e58915d7e7fbfd0c987ddc4db38a22d5fc47a22db71ac5873ef9ba8a

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	1508866679.6710148
time file was last modified, in human readable format	2017-10-24 12:37:59
exact file size, in bytes	539829832
file size, in human friendly format	514.8 MiB
md5	3dde7dbbef158db6dc44fce495671c92
sha256	0b1ec18b7425f8c8518d6dc2fc0bc8ec2f06ba57f15727aee4731a4f98278

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 14:14:53
exact file size, in bytes	534742736
file size, in human friendly format	510.0 MiB
md5	fee3fad608d0006afa5c7bca4de3d02b
sha256	53bd80727099b5767b9f20f99e908f9c19cea7572c14f9538dc1c8ca7ab5e

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 17:55:34
exact file size, in bytes	458893576
file size, in human friendly format	437.6 MiB
md5	aa200a1c059a551e0ba9a5314a9554a5
sha256	ea582602541e748053df550514460426202fb4507edf9af4d7d706bc41044

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 16:20:48
exact file size, in bytes	442630816
file size, in human friendly format	422.1 MiB
md5	16f337426454eac463fd0d41c6d2bbb8
sha256	65ce6d7c09884935fee9eb8d318b30e95f75f6efe8a8ba221df282cf22c39

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 14:22:10
exact file size, in bytes	441680784
file size, in human friendly format	421.2 MiB
md5	07ea8c5a2306ac8fabf3902bd6623787
sha256	b5954bf7da9a92d351d905dfdfa0e7bee1cfdcf8c74ed0532a29416849a92b

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 14:19:41
exact file size, in bytes	441681320
file size, in human friendly format	421.2 MiB
md5	137043b3f9860519967759fc8ea76514
sha256	324568dbef777a6ac8a25c1e8ae1975ffbd95bb621dc91cb3869606cc5924

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 15:57:21
exact file size, in bytes	410431504
file size, in human friendly format	391.4 MiB
md5	0ca5ef4dcfe84376aad073bbb3f8db00
sha256	84e30c99833e142a27fc9ee2c748b03f16c8b1a3ced765024d5db4e68bfbf

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 11:21:17
exact file size, in bytes	370055720
file size, in human friendly format	352.9 MiB
md5	a3be394f8274c391148efdfbc63e8ca4
sha256	b4889513dc574f9d6f96db089315d69d293f8b17635da4d2e6eee118dc105

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 11:28:33
exact file size, in bytes	368509992
file size, in human friendly format	351.4 MiB
md5	50fe73c084b91e55837f4d090809a35e
sha256	9acde60b591233452dba23ac15800f39f2de9b7a180a89916dffa3b6edb326

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 11:16:22
exact file size, in bytes	362171448
file size, in human friendly format	345.4 MiB
md5	a6b7a787c6c574867cee3f2d12ecfc50
sha256	39bf467cd142c1f8fdb7d673fdea273d87ec011af1dbf4b4804c2b0994c61

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 15:47:40
exact file size, in bytes	378634984
file size, in human friendly format	361.1 MiB
md5	6572ceba288b6f145e9b3d0c02a5281c
sha256	4728044d77da715e48d4c95d7f2e3c2a02c4ea7de9d2c69acc851bf294500

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 15:00:55
exact file size, in bytes	381329960
file size, in human friendly format	363.7 MiB
md5	17c562ff74676f004ba8dd029718c09c
sha256	21d155a4b43805042499b8d008835bcd9c3a45fe53d1183de9e0a937170

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 16:22:24
exact file size, in bytes	411312288
file size, in human friendly format	392.3 MiB
md5	bc74a4fb4e8455e8e7c61b7f100e3bac
sha256	beaa1b803dd30022c6aca1c6f05182beaea3cd8a17130f73906851269dfe0

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 13:35:14
exact file size, in bytes	352774600
file size, in human friendly format	336.4 MiB
md5	ad4abc78581f6fa68b7f7fc342003f6c
sha256	bd693b61cf191666ae0473327f3c15bcf32b7d09961a0aa0284c10e7ea724

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 15:32:30
exact file size, in bytes	348764152
file size, in human friendly format	332.6 MiB
md5	cd7dae4fd482c94156b4d60bf21d8771
sha256	28c5a13b27a9dbd57c7c633316c5f4beb0cd32cf19b148debd1a81eac86f3

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 11:11:03
exact file size, in bytes	380970064
file size, in human friendly format	363.3 MiB
md5	5d559802f3c699a885c66ea6064f5440
sha256	ea4059469b1820069f62bd6c256def6259d801d7382be70523e081c5adbec

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 15:00:15
exact file size, in bytes	335317304
file size, in human friendly format	319.8 MiB
md5	139c6d32c484e0886c6cbe530b9fbd4c
sha256	e2b6d3d6a9e378fc0d0dd63342417c02bdf6a9676040e05ff8017396d6449

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 17:01:42
exact file size, in bytes	325992440
file size, in human friendly format	310.9 MiB
md5	35fb9536ccb1aca93ec34714e8e69a5b
sha256	a8046fc82da7463ef53cdeaba97c72433c37b211c50fa87f1bc19bdfe5163

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	1571149575.2411845
time file was last modified, in human readable format	2019-10-15 09:26:15
exact file size, in bytes	372892232
file size, in human friendly format	355.6 MiB
md5	0057a4b9d432ef0b78badee4f74a54a0
sha256	b4731acd02f96923922d995bb16984d71b4a934b7af6737984dd9eb5d8cc6

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	1564065409.7452314
time file was last modified, in human readable format	2019-07-25 09:36:49
exact file size, in bytes	378051296
file size, in human friendly format	360.5 MiB
md5	38d96b86f4266a125bf3180c225292d9
sha256	1bd676a51ccdee57c2c01a2bc87fa8b1bd48cf7a6c0b16c44a241374f798f

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	1554411643.769616
time file was last modified, in human readable format	2019-04-04 16:00:43
exact file size, in bytes	516464832
file size, in human friendly format	492.5 MiB
md5	4b055a00f4f99352bd29db7a4f691f6e
sha256	76be4b3d1f7a1207b786cbb54b3ed526126ee0d4facf41e662b4136224581

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	1545419787.3302794
time file was last modified, in human readable format	2018-12-21 13:16:27
exact file size, in bytes	480837024
file size, in human friendly format	458.6 MiB
md5	f123fda0ec8928bb7d55d1ca72c0d784
sha256	d75d51c8f9a7c345128805a55db3856f6999dd6aa11f31c0009c640fe0e8c

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	1542656312.8510244
time file was last modified, in human readable format	2018-11-19 13:38:32
exact file size, in bytes	480313024
file size, in human friendly format	458.1 MiB
md5	7286587bcfb6a5a164d70fe02c1968d5
sha256	59680be839aa8b58477a24519a7575756bead26b300eb7aae8c82086781bc

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	1538081955.8443325
time file was last modified, in human readable format	2018-09-27 15:59:15
exact file size, in bytes	479430240
file size, in human friendly format	457.2 MiB
md5	45a5880d1a56aa8e444b43edcc5e6aa2
sha256	f18bdb9a38e5c444a3cb79c5c6bc927fbcd863683b4197713337216af7300

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	1527703457.7225163
time file was last modified, in human readable format	2018-05-30 13:04:17
exact file size, in bytes	464889960
file size, in human friendly format	443.4 MiB
md5	4a3729b14c2d3fccd3a050821679c702
sha256	2b81916c477e64db917821bb48a97000fad78cd1041022b3433cec3cebf9e9

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	1518707335.7558289
time file was last modified, in human readable format	2018-02-15 09:08:55
exact file size, in bytes	440226936
file size, in human friendly format	419.8 MiB
md5	a09347a53e04a15ee965300c2b95dfde
sha256	fa78c71d88b01e6367f0c3cbd23da1f82e86e02088b0d281437789bfeba59

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	1508864894.4238315
time file was last modified, in human readable format	2017-10-24 12:08:14
exact file size, in bytes	422964800
file size, in human friendly format	403.4 MiB
md5	623e8d9ca2270cb9823a897dd0e9bfce
sha256	1a50fac8644f2128e318337b218299e53e92ee20ddaf47911ff2be22255c6

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	1506461109.7266462
time file was last modified, in human readable format	2017-09-26 16:25:09
exact file size, in bytes	421720568
file size, in human friendly format	402.2 MiB
md5	bd3ed48229db828cef4c6b371a8759d1
sha256	078551cfb0df72779897026724f375671e12a5fd384cabeaede5cc325cac1

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 17:52:15
exact file size, in bytes	371653096
file size, in human friendly format	354.4 MiB
md5	51f14d30b08b82cd5e44bbb6b0d63349
sha256	0dec861f8839fdf2cbe4fa306c127f69e50b54374e56d7960ba5217087bf

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 16:18:12
exact file size, in bytes	355485664
file size, in human friendly format	339.0 MiB
md5	4f5ed9917f8c2d2ae2e027e45a85fe8b
sha256	fc363cea3c321c17b43a0bf2137aa845fef349c534fcf511dc285ebb8ae57

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 14:19:05
exact file size, in bytes	354548480
file size, in human friendly format	338.1 MiB
md5	4bfff7044ecf0229a0974ba8429520cad
sha256	863702665aa2b55ede2103a8ca7d26435efef614e9d201909c21ec572878f

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 14:17:06
exact file size, in bytes	354550816
file size, in human friendly format	338.1 MiB
md5	ffd6296dc4b359684c54ce6f3d10e144
sha256	a98767acefdeda02fe8d3ef9dadda1a3439fec110ede9bf5d0e359be76ac1

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 15:54:50
exact file size, in bytes	339829096
file size, in human friendly format	324.1 MiB
md5	f4f12af8811759e56464eef5a484963d
sha256	a97ca79cb771568d051ef7773d25c0dda407c63e7ec91305f35dff790aeda

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 11:20:01
exact file size, in bytes	299852168
file size, in human friendly format	286.0 MiB
md5	b319d6867c67723ba74aef4f9dd35f82
sha256	4708d73952a0a8040bf1594ea42027a30e9bacb4d6760cc5d3e4414b6bfd9

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 11:28:31
exact file size, in bytes	298958864
file size, in human friendly format	285.1 MiB
md5	ec44ea5c92542ca0112a6be79aff79bf
sha256	c4ad4eefdfbf6d838424c62c8b524352d8b8e4752382b0a09e9d8b7e9e44b

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 11:15:00
exact file size, in bytes	294659856
file size, in human friendly format	281.0 MiB
md5	9fb16479d7eb3dd63cf4ad6704622c8a
sha256	f8185ad2fe89356ab001e55a463b663bcb9e7699ab7f7c1775a98d5332db

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 15:45:21
exact file size, in bytes	310590880
file size, in human friendly format	296.2 MiB
md5	506c08af8932332303561e822f285d9b
sha256	a0336729f0400ff12fe18a7d5e20c3f9b45f14cd07fe654029daa1ec611e2

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 15:00:52
exact file size, in bytes	301790720
file size, in human friendly format	287.8 MiB
md5	0e6cdba39322c28240f4dceaf7bf72f8
sha256	65fb15559b0ddb5055c110ecdb84823a6fbc8d3938932fbfa0110bb6d3395

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 16:22:21
exact file size, in bytes	337056800
file size, in human friendly format	321.4 MiB
md5	5a5225bd2f74a5be9ef840ae8e62c82a
sha256	2a05db81a0fe4155bc2dd83a689294d3ac7fa1d1a68a5ec6bdaafaac9140d4

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 13:35:11
exact file size, in bytes	290903240
file size, in human friendly format	277.4 MiB
md5	7efff6446dcb06e4c44607539c953689
sha256	3b60ddfb84533539e767889706bd64298a73d07a7bfe944a3c5c7f951e395

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 15:28:48
exact file size, in bytes	287557144
file size, in human friendly format	274.2 MiB
md5	32246b48658d4c3faeef425cec64a131
sha256	247e8e7e386224a3df736ffe607596546f4bdd64b44a945fd831db5603782

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 11:05:03
exact file size, in bytes	325285048
file size, in human friendly format	310.2 MiB
md5	4b4303ff83c94f6af128fe43c202756b
sha256	c39193c9018a9c1e9e8f3c1d2692ac635133e9b68e72d7864c75841086337

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 15:03:27
exact file size, in bytes	301248280
file size, in human friendly format	287.3 MiB
md5	579ed15c9599cc49bc073dbbe8870021
sha256	be5a341bc3f9bf8386c686cfc9ad253f3074670c96f130b345b731370ce89

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 16:51:02
exact file size, in bytes	291661544
file size, in human friendly format	278.2 MiB
md5	c3b147e0d5f6d708e884ee03d8856040
sha256	d86cc7100b4c04ec25768267b81798f70a8563a2bdb6dacfe6ec7e45bfbb

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 17:39:25
exact file size, in bytes	326939720
file size, in human friendly format	311.8 MiB
md5	7217cfa5c5b45de3e683ff09a10ce35b
sha256	fe005aeacd1345b856c73d640856b79ed94a6694245ea8df8cbf94aa7bac7

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 15:08:42
exact file size, in bytes	326889840
file size, in human friendly format	311.7 MiB
md5	5404da4f89dca1a4f5c9efd5ae6fbc5a
sha256	46cbe29a30cfcd56018f7f69a35525708f2d14211a613e7344f91ad4171a8

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 10:24:52
exact file size, in bytes	323587016
file size, in human friendly format	308.6 MiB
md5	02496bcd853574628adfbe1defe5c40f
sha256	2c8c58cf21e537e930535df5a0e8fd4b6d60d4dbe87f13b5964bf2f5f4d27

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 13:54:14
exact file size, in bytes	304130696
file size, in human friendly format	290.0 MiB
md5	3b3bbc639556499d62342f653443553a
sha256	719bc0987be80b46f9c6b745822777fa1f0cb7386ff746fa8e71763bfd997

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 17:10:23
exact file size, in bytes	294250542
file size, in human friendly format	280.6 MiB
md5	91a6398f63a8cc6fa3db3a1e9195b3bf
sha256	b434776dfeac98f37328c6e538f5a1a53199e0c6ca2ef3a39cb3cd2e64db2

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 13:44:58
exact file size, in bytes	256262643
file size, in human friendly format	244.4 MiB
md5	5d9ca457b14fe9af5f8f5e338f9db9e2
sha256	0873576bbd979e3b7859808bccc2311edaea3d34f4d6ed1f6b44b1ba1cf1a

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 12:02:59
exact file size, in bytes	256262655
file size, in human friendly format	244.4 MiB
md5	3cdf41952ad09f00ab03cca5a289fe50
sha256	a823dc7688cec49499bb5922783377c262cbf456830ff8db7c0d4018a2321

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 14:36:46
exact file size, in bytes	256780921
file size, in human friendly format	244.9 MiB
md5	156a48269ae6b2bfc0bede9c3ff719cc
sha256	3dc2588557455484b3b38feb14fa95d941de732e06678365860cd4961c19f

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 09:18:44
exact file size, in bytes	247436755
file size, in human friendly format	236.0 MiB
md5	871f9f4f2321cede8d25ff83f24e70da
sha256	d3dd92fa00d999a94638513daf2d4aead15a387b820eb08b1907387a4f2e8

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 16:55:45
exact file size, in bytes	220256092
file size, in human friendly format	210.1 MiB
md5	797f4a28462db075de4d21e7977f32a5
sha256	e590e45d36d3f164fcdf58cda6a3cb09252a502af5942e0909324b394710f

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 14:21:59
exact file size, in bytes	511528600
file size, in human friendly format	487.8 MiB
md5	f581359e0f0081a8cc83071556f9fd1d
sha256	cd8c688349bcd1f429e3b383620fb0d19f52be0f765b2eae78d63b41aefb2

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 13:08:45
exact file size, in bytes	423733040
file size, in human friendly format	404.1 MiB
md5	1e8811a592fced788a9ec13db808f350
sha256	dc0746dded06cc480328c20b73369803ce98df1971bda669d93859e02c1c0

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 22:08:48
exact file size, in bytes	428292816
file size, in human friendly format	408.5 MiB
md5	538586430492ddd24b5cb815034715ab
sha256	b95b6ada0a54fe1df06f6cde84f8fa586501ac86eeb86f760106cf87b8716

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	61a4e246098886acc1b3cbb977d58ca6dd1aeb7a1cd67f4e4f11b12cf6670

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 16:45:34
exact file size, in bytes	422586464
file size, in human friendly format	403.0 MiB
md5	ca1f6f3e75eb346f5ab2d87bab005878
sha256	362de9bc1e9e368dcbcdde1a175a523983c48dd8c04f83caf8d7ceaf7956b

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	1595524611.9741752
time file was last modified, in human readable format	2020-07-23 12:16:51
exact file size, in bytes	416619544
file size, in human friendly format	397.3 MiB
md5	aa7dcf4d02baa25d14baf5728e29d067
sha256	19803e5ccc357b57051cf7fa272e6b499dfedf13790778dc24af302f894e3b

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	1583940778.6121256
time file was last modified, in human readable format	2020-03-11 10:32:58
exact file size, in bytes	443796296
file size, in human friendly format	423.2 MiB
md5	64ae8d0e5095b9a878d4522db4ce751e
sha256	d13381d6145c47755b198662af8a5f412836adecdb68627bc297be6738a3b

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	1571149570.2669535
time file was last modified, in human readable format	2019-10-15 09:26:10
exact file size, in bytes	429475496
file size, in human friendly format	409.6 MiB
md5	0e71632df6a17f625c1103b34f66e8ba
sha256	05e6738919673a6d57b5895b8b4df0b7e3f4d7ed0e30faf9c9f1b7d3399e9

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	1564065446.9519494
time file was last modified, in human readable format	2019-07-25 09:37:26
exact file size, in bytes	438674400
file size, in human friendly format	418.4 MiB
md5	861c83778458be287f4739ef89413cce
sha256	3d26ddf9ddb2287822a14ac1da3359a0db6ceb302b57edb9fccc69061f3927

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	1554411628.9449463
time file was last modified, in human readable format	2019-04-04 16:00:28
exact file size, in bytes	572204080
file size, in human friendly format	545.7 MiB
md5	f1f636e5d34d129b6b996ff54f4a05b1
sha256	03d94f55c4c5e1187382ff414c78e66244893170fa7aacd0deb71536b7a92

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	1545419592.008293
time file was last modified, in human readable format	2018-12-21 13:13:12
exact file size, in bytes	534439744
file size, in human friendly format	509.7 MiB
md5	dc26da1eeae5cc78121b1d3f80a6e9c
sha256	3f2955c1874ca452b985627a10859f6906eb21d4f6a4c055b78049cf6822b

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	1542656394.173735
time file was last modified, in human readable format	2018-11-19 13:39:54
exact file size, in bytes	534242616
file size, in human friendly format	509.5 MiB
md5	52d9041d33c0134dd3824e6c15b458c4
sha256	a028d0550bf307c69af7c3210f487e23004fcb6384f94523e216cc8021390

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	1538082005.3295457
time file was last modified, in human readable format	2018-09-27 16:00:05
exact file size, in bytes	533359800
file size, in human friendly format	508.7 MiB
md5	72e4f7bf75eb46c60f496d326631fddd
sha256	1dceb687efbf5a609a66d19dc2528ef78a54439a74c98b239041744174c6a

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	1527703459.8546116
time file was last modified, in human readable format	2018-05-30 13:04:19
exact file size, in bytes	530914888
file size, in human friendly format	506.3 MiB
md5	285387e7b6ea81edba98c011922e235a
sha256	64305a4c0041aaf4a3fd0fee4466d7b7f238fddd9e44a4c8c10f5fa059e82

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	1518707428.264113
time file was last modified, in human readable format	2018-02-15 09:10:28
exact file size, in bytes	456610264
file size, in human friendly format	435.5 MiB
md5	7a2291ab99178a4cdec530861494531f
sha256	7a05da21fd592991d181ac8467faac51345fb64acca6553609b53c9825e5e

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	1508866630.5278003
time file was last modified, in human readable format	2017-10-24 12:37:10
exact file size, in bytes	440867256
file size, in human friendly format	420.4 MiB
md5	9d2ffb0aac1f8a72ef4a5c535f3891f2
sha256	9edc3012324c9c8c9aa5257688bd793277ee25bc99cffc8da6610b5f45585

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	1506461112.5017715
time file was last modified, in human readable format	2017-09-26 16:25:12
exact file size, in bytes	436033392
file size, in human friendly format	415.8 MiB
md5	4a48ded89f15b4a2e39ffa69f3532df2
sha256	a0d5d8e328b1d3a1ed921cadeecda659c49b6042980558f5c5f491e884bf8

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 17:54:21
exact file size, in bytes	379794600
file size, in human friendly format	362.2 MiB
md5	c7a66350b79354773dabbbef6f58a3af
sha256	37afe00b8305cc09b7bd8dd07f65cec3f4e1534966c275eb55df7c91fb660

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 16:19:46
exact file size, in bytes	365005040
file size, in human friendly format	348.1 MiB
md5	27fa7486dfe82cf31642eb355b9a184f
sha256	adf322f49542cf509d4f72152cea24e54edfb4ff279ba3ab19582a5f27461

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.

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exact time file was last modified, as Unix time stamp	1486066862.0
time file was last modified, in human readable format	2017-02-02 14:21:02
exact file size, in bytes	364057456
file size, in human friendly format	347.2 MiB
md5	5dd0a8b09a5eb6c9d002dc26d6f31492
sha256	7f8ffce6b2c3a968ce19171c9dc332dec61741113f7cac4b52953596f9e20

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 14:18:45
exact file size, in bytes	364059456
file size, in human friendly format	347.2 MiB
md5	ae7ec9752cf81c01983fcf0ddf8d7cc2
sha256	4a5dfea30b926074b4d6e0f1cea3e9765799fd33532b4347fa0d3d9aaacfe

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 15:56:30
exact file size, in bytes	349560232
file size, in human friendly format	333.4 MiB
md5	96e5fe052b22d667da9360fb4edce363
sha256	e7b79a9886da3f840b52882c47ecab3eda0c97505019c1f8f0c8b7eb15c2d

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 11:21:18
exact file size, in bytes	308116424
file size, in human friendly format	293.8 MiB
md5	39bd047c2169a9d072e98403f487c9e8
sha256	224e3dd90850651ae0d1c9216b4c317d1d553d8c118a83c9bc7e315daf85f

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 11:28:34
exact file size, in bytes	306794104
file size, in human friendly format	292.6 MiB
md5	2f96e23dd2e5f04f9a5059b8ef5d7fd2
sha256	4f444ed9400505e822bb475e986800fac058ef6f23298c2b00d285d05df0a

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 11:16:22
exact file size, in bytes	296840248
file size, in human friendly format	283.1 MiB
md5	ae5c9ba0c6f4639fbf94848f81c3d4b4
sha256	b5a31a9d130a40c3110c0592a6c8fbd43a51522e32fdddf20afe15595db80

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 15:46:53
exact file size, in bytes	310656088
file size, in human friendly format	296.3 MiB
md5	f7ce22122319026697cc8e7dda80300b
sha256	4a3441aaaa269d06f39e1430155f9f25a8a24122cf48b9fc6bdccb0e96a82

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 15:00:56
exact file size, in bytes	313632120
file size, in human friendly format	299.1 MiB
md5	78eef53e753cf9a72babe06c374db8ed
sha256	dfe50d13473547b5230f6194dfe6bdf961a8b7f5e3c22ede58df8c7788194b7

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 16:22:25
exact file size, in bytes	331748568
file size, in human friendly format	316.4 MiB
md5	0d3b78e2a4747d5975097c47129c0e70
sha256	a69a9fe00ce337b0cfd7d024b79ba5141cd04b1d51982196658df26c0d370

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 13:35:15
exact file size, in bytes	294752872
file size, in human friendly format	281.1 MiB
md5	8edec318e2957a934bd99a6062ddebd9
sha256	02d5f84da308f96d1a252a6669f3ca91e125c011d1b89ae33f05f6ebe4903

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 15:31:19
exact file size, in bytes	291166920
file size, in human friendly format	277.7 MiB
md5	7c49a4e76e1c383038c4a1e8c4ac506f
sha256	20c46fff048fb313aaf1a49171c1a7b96a42f5be09e1e1e7052800dcec7ac

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 11:09:01
exact file size, in bytes	323724400
file size, in human friendly format	308.7 MiB
md5	a2392f068d550bee23673529734ef5d4
sha256	8ffa252aa2b4f63889888ae85a81626ce952a1f9ac20d4c065070514acfac

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 15:00:27
exact file size, in bytes	278631456
file size, in human friendly format	265.7 MiB
md5	cbf8ff3b86731df7225bd2f7fb2af7f6
sha256	b08803296d7439413d590fd1f967b20127916c8d766802a27badc15a3a81b

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 16:59:13
exact file size, in bytes	269399872
file size, in human friendly format	256.9 MiB
md5	1fd12fc8c5c3defcdf3a0bee6f5129fa
sha256	37986ce4c104ed3c82838de74b3a4de17918cc2f408235b9de9d4283d3a55

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	1571149650.1876655
time file was last modified, in human readable format	2019-10-15 09:27:30
exact file size, in bytes	666625158
file size, in human friendly format	635.7 MiB
md5	67dba3993ee14938fc4acd57cef60e87
sha256	d82b6aa37b41782b7823ff712b0899374cf2ac4f87e0ccf85d0a79089ecb6

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	1564065424.138896
time file was last modified, in human readable format	2019-07-25 09:37:04
exact file size, in bytes	664854967
file size, in human friendly format	634.1 MiB
md5	10a47bc056e166569ed805455d04aaed
sha256	7f8a0defa2905bd5e3ca679d6772c896befe2fcf27cb3d6dfc211e596796a

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	1554411668.611738
time file was last modified, in human readable format	2019-04-04 16:01:08
exact file size, in bytes	654629979
file size, in human friendly format	624.3 MiB
md5	f45d327c921ec856da31494fb907b75b
sha256	4e335d60fc9dcfb31caee809143352e28d49e4b2df93a6eeed97ee5a97045

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	1545419670.279894
time file was last modified, in human readable format	2018-12-21 13:14:30
exact file size, in bytes	671854049
file size, in human friendly format	640.7 MiB
md5	c2bfeef310714501a59fd58166e6393d
sha256	f07fb39c41f9cc7839adababdece209d9da209a935418082f9a6270e9e56e

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	1542656258.683553
time file was last modified, in human readable format	2018-11-19 13:37:38
exact file size, in bytes	658971672
file size, in human friendly format	628.4 MiB
md5	d6139f371aa6cf81c3f002ecdd09b748
sha256	7dc614e281df33f09fa006b245a955b94883d37fdecea6bbdaee18ee42147

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	1538081952.1701682
time file was last modified, in human readable format	2018-09-27 15:59:12
exact file size, in bytes	658824275
file size, in human friendly format	628.3 MiB
md5	8e02050e148d48a31b99994d906900fb
sha256	834c221b413bdcbbce434f0a3008511f5bd5532d6b3e7f482d03c11bd0dc8

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	1527703532.6788743
time file was last modified, in human readable format	2018-05-30 13:05:32
exact file size, in bytes	646731039
file size, in human friendly format	616.8 MiB
md5	2836c839d29be8d9569a715f4c631a3b
sha256	f7695a3571eb8e8ae71fe9f413c36f57c92bc8882174c0dbff778e17550ff3

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	1518707332.6606853
time file was last modified, in human readable format	2018-02-15 09:08:52
exact file size, in bytes	616553453
file size, in human friendly format	588.0 MiB
md5	4f9c197dfe6d3dc7e50a8611b4d3cfa2
sha256	edbe9ef1ee5cfe62e131d7650e07c031ab14fd0e8bd12c15a095b73039eb8

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	1508806872.3056438
time file was last modified, in human readable format	2017-10-23 20:01:12
exact file size, in bytes	590135749
file size, in human friendly format	562.8 MiB
md5	46fc99d1cf1e27f3b2a3eb63fee1a532
sha256	22350fe830e6786a263d7727e537f066b13fd9f4646982796bd20248da3f3

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	1506461108.192577
time file was last modified, in human readable format	2017-09-26 16:25:08
exact file size, in bytes	588579426
file size, in human friendly format	561.3 MiB
md5	8a2bbf7eb66290eb0bc82963056fb96c
sha256	3ee5cfe80d51685d6f374f83a9b76fa7ecbf7dc1a20f49a506e963641f2e1

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 18:36:08
exact file size, in bytes	459233116
file size, in human friendly format	438.0 MiB
md5	d2d5d213764a0c849eb1d53acba0d418
sha256	e5acf026892eaeabb055e6317af96f295d39cf1d1a06ce6a1c6ca154ae3cab

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 16:26:18
exact file size, in bytes	439742086
file size, in human friendly format	419.4 MiB
md5	1961c7158bf89f4daf5b7a7d4f265075
sha256	f5d950451c038f9a7ca80d4036b6a8152c35d48fee685df3de486729dbae0

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 14:26:23
exact file size, in bytes	438746148
file size, in human friendly format	418.4 MiB
md5	899e90455db3120d584b2d4961c4eede
sha256	3e1d1026d2c0b87213a8b4a5f28431060b0cfe5cdc8a368b39248dbb66b53

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 19:33:11
exact file size, in bytes	423495522
file size, in human friendly format	403.9 MiB
md5	cd2ccc991b7f1503335367d80d0317b0
sha256	4a74d34c3a3a82df31673ab49497816b03547bab7054525fd92eef63c8bc

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 11:19:59
exact file size, in bytes	361721748
file size, in human friendly format	345.0 MiB
md5	e88beae19868dc01fae908dd1e067bda
sha256	879385461cc65bd9dbf9639bbf4471ecf1713611617eda8d3a05f33a45682

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 11:28:29
exact file size, in bytes	360909420
file size, in human friendly format	344.2 MiB
md5	b2e2a6ee2fc2436a099ed0a3cc5e8fda
sha256	a97840be50d8c86b28caf8be1786bbe7485770b14501911e3e7331d33f2a3

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 11:14:57
exact file size, in bytes	355703551
file size, in human friendly format	339.2 MiB
md5	7c4e4a25a38106d50dc3bc25a7a3009e
sha256	242691c7dc9e20143d7620fd9e0cc344fec7a2a534d1dba5f3b6522f04648

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 15:55:31
exact file size, in bytes	385762781
file size, in human friendly format	367.9 MiB
md5	3256a5000b44e4fec1466e509aa641e6
sha256	0f546ed4f388299824e98a31ca9e3fe9823a49a2143d1cbd982caeb536e3c

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 15:00:50
exact file size, in bytes	257787337
file size, in human friendly format	245.8 MiB
md5	0407becd94e2c67d500700863cccaf82
sha256	1e2445aaf9faf84e801404bf89091fbf4a018709712a3901490fb3f45d44c

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 16:22:20
exact file size, in bytes	287613909
file size, in human friendly format	274.3 MiB
md5	1da04d414117e3d5ffdae13a686f300f
sha256	d6842135062f3c3d2f8bd33318133376d4f2c789c32818b24f9010ca2240b

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 13:35:09
exact file size, in bytes	297482814
file size, in human friendly format	283.7 MiB
md5	1fdb7eb4db925edb48f678c72f70f795
sha256	f920ae6211d9da3288b5e160100543667cf1ceb21fa09b16d6cda82f113e8

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 15:27:27
exact file size, in bytes	293316812
file size, in human friendly format	279.7 MiB
md5	53777c4bbba5b6e6f9124e041f024bc9
sha256	65784323db94b0c297e998bc81db5978e8951801c44808589e2b9665ad199

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 11:33:13
exact file size, in bytes	288368463
file size, in human friendly format	275.0 MiB
md5	0632392578c6b4796c9c2a3964f9f2f9
sha256	d8001bae990e7024b81e74c6b06d0f488dd8717a9e0779db20d3e8831435b

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 15:02:50
exact file size, in bytes	256197898
file size, in human friendly format	244.3 MiB
md5	8c3fa107375b1c4782531b7f6e7eddae
sha256	d6a0ce0422daa004929a4aef6b485d94f5e60b67f6d727047719815949fd5

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 16:50:41
exact file size, in bytes	247641929
file size, in human friendly format	236.2 MiB
md5	39d1624555ddc087785bc9557ecaa7b7
sha256	e2eb3805451a26235b2ed7f3e63535fc39bf32b46bfa8407f8b6240924cf8

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 10:05:32
exact file size, in bytes	294660294
file size, in human friendly format	281.0 MiB
md5	432ac816e681c51f0238f30e4207e789
sha256	2fff6dca12507f675b04ed1f303d0ee99d755402c3b2b64c131d93c3b4f14

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 15:44:04
exact file size, in bytes	294577771
file size, in human friendly format	280.9 MiB
md5	772b8e5dc385bf5ea3f78cdd21a8ec71
sha256	2aa707b162e71d488495085fd13232f8c30ac0f5003e6dd983c99897813d2

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 10:23:46
exact file size, in bytes	293412173
file size, in human friendly format	279.8 MiB
md5	e702b99930507a43b59fd258744bd456
sha256	b74134e7626f10fc4d86209a3ebbb19de3c4404d0aecf071bedfa184bab22

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 13:57:20
exact file size, in bytes	275773973
file size, in human friendly format	263.0 MiB
md5	2b909458ddc208807efa3516c9ecab2f
sha256	fb92afc7750bc58ac12f3cbd65c18ee0f80ec22b80f07e236e739bf5ec5e7

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 12:15:34
exact file size, in bytes	269206281
file size, in human friendly format	256.7 MiB
md5	6e9e2fe69d3c1d847ca162b2f723f7b2
sha256	d277f7e162c77043e416d03a754389a0d9fb83636dc78bbb67e7433e29097

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 17:30:12
exact file size, in bytes	206839424
file size, in human friendly format	197.3 MiB
md5	01fe24a1c6605bec8d482dcda9de314a
sha256	7c79819dd40a14e52439664c3e88e89ecba29c5f4d2fd72726124d7a138f5

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 Anaconda3-2022.05-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 13:40:24
exact file size, in bytes	331776796
file size, in human friendly format	316.4 MiB
md5	fc81e4173742eba78eb097eaeaa1221
sha256	0140970944a3e6088be5995ef7ce8525c1b2f8d5080e317423b3671f38a04

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 14:22:02
exact file size, in bytes	619723042
file size, in human friendly format	591.0 MiB
md5	04f6171ffc042a9712f1365ad20dfd4f
sha256	e884c5c384d4e5723b7b0c9fcd9756bb48fa07f2de187eaf4ea94a8e14242

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 13:08:44
exact file size, in bytes	540170449
file size, in human friendly format	515.1 MiB
md5	22e457db954f17371ed163d7bdde3a9b
sha256	203f5134d94390531b0cf1ff0f7e702abba60a77ba60559d93745c0475aef

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 22:08:47
exact file size, in bytes	461691073
file size, in human friendly format	440.3 MiB
md5	0198acd5268012b81c66d11b9ddeb2c8
sha256	b61e6ca9c338ed39f41408774143f582fc1e05a3aeaf0d2e986b6b16b2c5e

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	e2aaba1dc1a4d4a4fc01281fc2a34c7
sha256	d3fb9c189d2f7fdefe672dc454432cb822af4781f61c756ad0a332a5771e9

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 16:45:35
exact file size, in bytes	456476867
file size, in human friendly format	435.3 MiB
md5	2f96bb47eb5a949da6f99a71d7d66420
sha256	b230c042237ba3e89193d3144179deddae0393facc6d8a6e599b1df1ae0b1

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	1595524602.8617642
time file was last modified, in human readable format	2020-07-23 12:16:42
exact file size, in bytes	484710586
file size, in human friendly format	462.3 MiB
md5	2941ddbaf0cdb49b342c18cde51fee43
sha256	e095c487d2837e4c984d0fcd2217be42c615504a2d7d6651095d34c2fa980

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	1583940777.1370583
time file was last modified, in human readable format	2020-03-11 10:32:57
exact file size, in bytes	463718746
file size, in human friendly format	442.2 MiB
md5	d1e7fe5d52e5b3ccb38d9af262688e89
sha256	4f7cc14b5b1d7aec3d9a5e781dede065e21cfe61915de4d3de192b9329195

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	1571149653.2468076
time file was last modified, in human readable format	2019-10-15 09:27:33
exact file size, in bytes	685285794
file size, in human friendly format	653.5 MiB
md5	5b051bf25188cd4bdcb7794f5bea6886
sha256	8b2192cbd586939d68bac00b0f9cbd2bfe555798c52b4cf4a6ecf6f9442123

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	1564065483.724647
time file was last modified, in human readable format	2019-07-25 09:38:03
exact file size, in bytes	684809889
file size, in human friendly format	653.1 MiB
md5	1c50485dde8e6a2c28e33c09b619ea78
sha256	bc1a4cb642b775159125521d1dbcf8bd1dd811b0880fd0c2a6612070d7b78

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	1554411633.2091389
time file was last modified, in human readable format	2019-04-04 16:00:33
exact file size, in bytes	668331738
file size, in human friendly format	637.4 MiB
md5	c0c6fbeb5c781c510ba7ee44a8d8efcb
sha256	1d89450ec2b8236404bab5a47aaa9c69fd85b63c6a9b8c35960dfa11f7550

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	1545419672.5039964
time file was last modified, in human readable format	2018-12-21 13:14:32
exact file size, in bytes	684396431
file size, in human friendly format	652.7 MiB
md5	34741dbb84e8b0f25c53acd056e7b95d
sha256	e40e076194df57f3fce8734acd5b2e3f60901ceeaea8ddb5bd42284a2bce

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	1542656334.2480006
time file was last modified, in human readable format	2018-11-19 13:38:54
exact file size, in bytes	664821768
file size, in human friendly format	634.0 MiB
md5	6a5cbe559a5b83e2508b39a3b72e90c8
sha256	ee9fb23d4beb30e5ed9d27d5703b46a02e23a93601373bc0de18bf6282116

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	1538081958.0784323
time file was last modified, in human readable format	2018-09-27 15:59:18
exact file size, in bytes	664674040
file size, in human friendly format	633.9 MiB
md5	d3075bb9e63d560af3908d5f092e1c07
sha256	013e9968f437f91f7a1dfdfc4c7d6f9d3b7f7aeab5c6766a867ecb01c13ee

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	1527703620.9068272
time file was last modified, in human readable format	2018-05-30 13:07:00
exact file size, in bytes	642866657
file size, in human friendly format	613.1 MiB
md5	9c35bf27e9986701f7d80241616c665f
sha256	dae8befc73d32b480faef31fa6fb73332579442a524bc68f6d475743f5bb8

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	1518707346.8513427
time file was last modified, in human readable format	2018-02-15 09:09:06
exact file size, in bytes	623585451
file size, in human friendly format	594.7 MiB
md5	6ed496221b843d1b5fe8463d3136b649
sha256	d6bf6309cca84314d85ca7421fddc16057ac2d824d698a213ccd597e896

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	1508806879.6149647
time file was last modified, in human readable format	2017-10-23 20:01:19
exact file size, in bytes	596524910
file size, in human friendly format	568.9 MiB
md5	eef112a1b8cbe8854e189eea1969f699
sha256	50c28594c785f5828990c95053468488563c775038b6744951847f9853ed0

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	1506461110.7116904
time file was last modified, in human readable format	2017-09-26 16:25:10
exact file size, in bytes	594734978
file size, in human friendly format	567.2 MiB
md5	de004893c4d5714e06d4903e0780aabd
sha256	06d959384869290845bc61346bb33a18dd02573836f50ba263b72028d2a6a

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 18:36:17
exact file size, in bytes	464033256
file size, in human friendly format	442.5 MiB
md5	c6cd9c30b94c2ba2a5449e6f234d15f5
sha256	c5fc645f11505ac3ef710023b4072b7fb24ad31634b48e793e50b067dc301

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 16:26:27
exact file size, in bytes	444660396
file size, in human friendly format	424.1 MiB
md5	390ba506140e4dfb7e0ab368f6ab18d6
sha256	ca608d58b1acf77b5c77d10e937b9084e5997b8706445bac3754459e54c43

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 14:26:32
exact file size, in bytes	443649282
file size, in human friendly format	423.1 MiB
md5	30b108a9cbc5d215a60187c5de89c459
sha256	f4522ac099ba292940bb47429e8e53eb9a0fe2ad3421513b2d618d0766337

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 19:33:47
exact file size, in bytes	426843208
file size, in human friendly format	407.1 MiB
md5	51ed7f9af7436a1a23068eb00509d6ad
sha256	44fe57910aa10967c4afe41ab5663cb49235bc718a9b7c8912d3ec7f95485

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 11:21:15
exact file size, in bytes	364773025
file size, in human friendly format	347.9 MiB
md5	9d396421683249ae850bd19637577f6e
sha256	b5e8cf44958d0aa03a7cc2da15fa835b1e14612b43b9772aef3270079d9b5

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 11:28:32
exact file size, in bytes	363587059
file size, in human friendly format	346.7 MiB
md5	665bf91beb7df29cfe36e6c135651ff5
sha256	83772b5fcd3d6deb945316ec96ecc7b0cdcd58c2c7a23f8f616771704e75a

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 11:16:08
exact file size, in bytes	358139390
file size, in human friendly format	341.5 MiB
md5	b25796c49f9d3b47561c6eac9bbc77f0
sha256	32a089b1be465a8b03c837041bbfbc761d644893719329ee59b253221456

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 15:56:04
exact file size, in bytes	387740293
file size, in human friendly format	369.8 MiB
md5	a3c5835e965b3afb05e4a0472fe36267
sha256	b1a6945f0f025086806624c59de5d92e5234bb39a18b5517d8b1e0dc30b3b

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 15:00:54
exact file size, in bytes	259674929
file size, in human friendly format	247.6 MiB
md5	feb6c8b1553b4de35cfa8c8c18c50d34
sha256	95e9f2d370f7816ed72b862c9413c973efb2ca17edd4d84550ce33e0d16d8

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 16:22:23
exact file size, in bytes	280419790
file size, in human friendly format	267.4 MiB
md5	64db05cc4c185354453c450ba7551331
sha256	791f045258bd39bbcd4c5425dce082ecd194074edd99fb401d746ad58da

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 13:35:13
exact file size, in bytes	307072618
file size, in human friendly format	292.8 MiB
md5	51e3b628d2f7580d0753a4dabd46f1d3
sha256	0b936ab3067bbf32b5a52768f31ff437f0e01fbcee028698444d1a964209c

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 15:28:12
exact file size, in bytes	302853736
file size, in human friendly format	288.8 MiB
md5	f6963a1d098dc1aa70b198490cde34cf
sha256	16a5154267d7d52d3e7e0d12ec3405077df799c77ce382a3358238352656a

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 11:40:54
exact file size, in bytes	290765346
file size, in human friendly format	277.3 MiB
md5	c863fb1f7f714917e4cb4dfaafd9d03f
sha256	2780df02f400e44c0adcd209825fdcf955559fe42f5b3689d5c46a01bdec2

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 15:00:05
exact file size, in bytes	241942876
file size, in human friendly format	230.7 MiB
md5	1c22595eedfc62ff18a8786934e19c9c
sha256	0d53815a83a50bdcfcb5ada686f582730bcc93b95295dd04572ee5162724e

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 16:30:16
exact file size, in bytes	233699227
file size, in human friendly format	222.9 MiB
md5	e59bdfb282ec34a1a54db3eb3bb4eea0
sha256	4d4189ec0c514d344389e216b3ad4eeacd667426d902c5da416ebd7caa54d

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	1571149651.059706
time file was last modified, in human readable format	2019-10-15 09:27:31
exact file size, in bytes	428689022
file size, in human friendly format	408.8 MiB
md5	311aeb49cbe6d296f499efcd01a73f5e
sha256	463cbd0b90c47d02ec341377110653870c7cc9d65572c655c5e44aaf2ccb2

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	1564065465.266795
time file was last modified, in human readable format	2019-07-25 09:37:45
exact file size, in bytes	427641100
file size, in human friendly format	407.8 MiB
md5	14efcfe8646ad0a00f2e3ca2959dec94
sha256	3e63919eed116826e683ed7d480d06517de79564788fbc27cb8d8879697eb

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	1554411634.2571862
time file was last modified, in human readable format	2019-04-04 16:00:34
exact file size, in bytes	555971416
file size, in human friendly format	530.2 MiB
md5	f4d8b10e9a754884fb96e68e0e0b276a
sha256	5c590b1b3cdc2eedd52edce0caabbce6665d84084d31b913e789e8c46a948

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	1545419671.3559437
time file was last modified, in human readable format	2018-12-21 13:14:31
exact file size, in bytes	573645950
file size, in human friendly format	547.1 MiB
md5	f4d8b10e9a754884fb96e68e0e0b276a
sha256	5c590b1b3cdc2eedd52edce0caabbce6665d84084d31b913e789e8c46a948

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	1542656263.4707713
time file was last modified, in human readable format	2018-11-19 13:37:43
exact file size, in bytes	565177387
file size, in human friendly format	539.0 MiB
md5	559606f0dda021daa1afd612b2e3e37c
sha256	df81e9d5d7d4c6595609a8d353eab80102a83b49cf8c19e5c1e5ad4ac0f39

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	1538082031.4787154
time file was last modified, in human readable format	2018-09-27 16:00:31
exact file size, in bytes	565054507
file size, in human friendly format	538.9 MiB
md5	de3314d20376ff56a7c0a62087962c86
sha256	bea3eb7667d265c8fe678ddde8432ac1f8286224baae498d092bb068b8185

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	1527703534.8069696
time file was last modified, in human readable format	2018-05-30 13:05:34
exact file size, in bytes	552703968
file size, in human friendly format	527.1 MiB
md5	b1f3fcf58955830b65613a4a8d75c3cf
sha256	d7d46e566306da5979cd5632079497fe6103b980e3a089ccf27a9f30cbee8

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	1518707333.7077339
time file was last modified, in human readable format	2018-02-15 09:08:53
exact file size, in bytes	530462553
file size, in human friendly format	505.9 MiB
md5	e9845ccf67542523c5be09552311666e
sha256	b686e01aeadb33526d9c154a0ac6f691dfad135080df96fb44d3ae1e4b128

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	1508806264.3489628
time file was last modified, in human readable format	2017-10-23 19:51:04
exact file size, in bytes	510164626
file size, in human friendly format	486.5 MiB
md5	17314016dced36614a3bef8ff3db7066
sha256	e3a9a5c84cb89ff079b0781ba773a3433d490fe0cfc24042c613a5674748c

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	1506461109.035615
time file was last modified, in human readable format	2017-09-26 16:25:09
exact file size, in bytes	508843477
file size, in human friendly format	485.3 MiB
md5	b8d555fae2b4994f1094c2da85c7e9a4
sha256	d85198c63657924fae11b6ea5961f50d81d09a1185d6f0a9a9d5bc69eb788

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 18:35:52
exact file size, in bytes	393583324
file size, in human friendly format	375.4 MiB
md5	a57e5c631a7d0c63552519f05ab243a4
sha256	ab95aef1110c2a385fd39a17e5f11dfbaabce25c1a5944598de164d7a2772

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 16:26:02
exact file size, in bytes	375651870
file size, in human friendly format	358.2 MiB
md5	eb1e7f853f64ad8babe1330a068e94e9
sha256	35261360f2b01793f441b29715a94052dceaf1137866b7323c76be83c5bc

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 14:26:08
exact file size, in bytes	374699540
file size, in human friendly format	357.3 MiB
md5	80b7958fc805d371d60e133af826752c
sha256	834ac0287062929ab5930661735ee617fd379bdfef79f3e0a20aebd614835b

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 15:50:02
exact file size, in bytes	363251366
file size, in human friendly format	346.4 MiB
md5	52f8b74e0c462575efc297c8f4e6cf14
sha256	a8b3ef86233635d9dcc3499dc384980762a0b42d354a318f8307029c399db

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 11:20:00
exact file size, in bytes	310125837
file size, in human friendly format	295.8 MiB
md5	f62a0a47a42504e139a5122ad641b40c
sha256	3b2fb323eb26c1c58788f63c41e164c20c417f7f24e30b8057e92ab4d6102

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 11:28:30
exact file size, in bytes	309460309
file size, in human friendly format	295.1 MiB
md5	c18a0f560668e9d1215ed600fb64b0cf
sha256	8b2c2a32f5e0da75cf8c81c568124cc1ea701a58cd46b7816133573a7f5b7

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 11:14:59
exact file size, in bytes	304288480
file size, in human friendly format	290.2 MiB
md5	a3443b46f99bc6680c77c688af1b1f5a
sha256	aa7ba6e1a40e08e672660c00c3151f0124faa61b598d75bdd07ebe1d24873

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 15:41:22
exact file size, in bytes	331485310
file size, in human friendly format	316.1 MiB
md5	57c024647fd3a149aa6d787feb35daa2
sha256	e7aa3b41210ee7ccf3c12e5b5ea43190d1811b58eaeca8584ccffa468ac8a

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 15:00:51
exact file size, in bytes	222326344
file size, in human friendly format	212.0 MiB
md5	1aecf1e5808dbfb9fa81d139abdbeb34
sha256	f4bd45a21e0dff106e36d11cfd532f2b5050d3b792cc0627ab231089341d2

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 16:22:20
exact file size, in bytes	251172115
file size, in human friendly format	239.5 MiB
md5	6e39a0b4470f6517c98f6edd21becd35
sha256	53c9123c9d508555100805fdb44d9845511c937e7a34f237beeb19168d655e

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 13:35:10
exact file size, in bytes	262015432
file size, in human friendly format	249.9 MiB
md5	a9c057a22f106748956b708c50f52239
sha256	c4bb59a57bf44dde80612041bbbcfd2e5cab8534842209ef456da7a46f919

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 15:17:33
exact file size, in bytes	259147994
file size, in human friendly format	247.1 MiB
md5	453ab3de72ee95b7cb7ee5ee7298fbdf
sha256	20570e2f3911e38a78d8f888f3ff445d6c0cf97a2fca40d6956b48d12aaef

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 10:53:13
exact file size, in bytes	252758049
file size, in human friendly format	241.0 MiB
md5	4d323aea34408b16a316ee5596817d47
sha256	128fd4f53e0895e0d23f33e924ae32e01171c2914b044d2b157a949710810

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 15:02:56
exact file size, in bytes	224812734
file size, in human friendly format	214.4 MiB
md5	85d261fd4e651f891ca5d0df69441e00
sha256	4ecda163c6f46e70cc6a1fe62dece4c6ecd6474845129cc95a1d4e18c42f8

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 16:50:45
exact file size, in bytes	216067773
file size, in human friendly format	206.1 MiB
md5	ec288bc9901facac5a1e098ded8c9936
sha256	ad6271ad21403166bf54d0734ba8c7f7eb65bb78a70d67c58c15b6874cddc

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 17:34:03
exact file size, in bytes	257273472
file size, in human friendly format	245.4 MiB
md5	9d4bfe3f859718c4ab9c06209c5b8175
sha256	be4611ca671f80b984fa330d4ecf82244c388abdbb5c7679a4e6e806b4dca

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 13:02:05
exact file size, in bytes	257212033
file size, in human friendly format	245.3 MiB
md5	6ef81bc54a6ab506f352b5589ea80f81
sha256	7e4358adbbae2db9e17d1e0e4263b9a0174394c8f115c89d285c3f0f9206f

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 10:23:47
exact file size, in bytes	256300639
file size, in human friendly format	244.4 MiB
md5	ddd474c01696cc02dcaea91da1d72389
sha256	722fe4d4406e88c5023e7ee21dc1401bb2a540d6c031d303f0330a95e6013

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 13:10:16
exact file size, in bytes	239935643
file size, in human friendly format	228.8 MiB
md5	9fd7dd485c5f04fb65699a290e69671c
sha256	5844ca595b5930399a1213db64ab53e9b7e2fc1c26d8f11769c161fe4f566

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 11:52:45
exact file size, in bytes	234119145
file size, in human friendly format	223.3 MiB
md5	16194eb9be2301eeb135f9f01695a566
sha256	046b592245bc2c11e733acb9700dc50947f2eff0f30fec4a4a5bf79368dfa

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 11:59:25
exact file size, in bytes	178279644
file size, in human friendly format	170.0 MiB
md5	4b60123e71864c447a0adc16398d5386
sha256	bbc15de34208ce8af5aceedeeal334636fe94c578b9890896729f1a61ace5

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 14:26:14
exact file size, in bytes	177173725
file size, in human friendly format	169.0 MiB
md5	cccdd0353bfd46d3a93143fc6e47d728
sha256	e03317888c36c07451a349577b426f435a75075d1ee71e204eb9d5dd23936

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 14:26:20
exact file size, in bytes	174295689
file size, in human friendly format	166.2 MiB
md5	03942512daf1b39eb3ff9016fc7efa0c
sha256	6d3c86a2fdbaeec2a6c251d5c9034a32b7c68a0437f2fac0b8f25125fe68

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 09:18:44
exact file size, in bytes	174295630
file size, in human friendly format	166.2 MiB
md5	6fe90601dbcecb29a2afcaf44aeb37f6
sha256	c69609f0f48f33ca5a12d425a9e4d0fc91b2c09d0345a590e1d7772644672

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 16:46:57
exact file size, in bytes	163952262
file size, in human friendly format	156.4 MiB
md5	db8779f0a663e025da1b19755f372a57
sha256	e5d5dae6e93bb7df528abc19f5ed3a69cc4bc867836bdc56886c5a3768fcc

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 Anaconda3-2022.05-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 13:40:25
exact file size, in bytes	319634866
file size, in human friendly format	304.8 MiB
md5	24d985d2d380c51364d4793eb1840d29
sha256	a12119931945a9a1453993582259cc67318a9a75a15731e5ccc15365e7f88

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 14:22:01
exact file size, in bytes	612376186
file size, in human friendly format	584.0 MiB
md5	5319de6536212892dd2da8b70d602ee1
sha256	1a10c06660ebe1204e538b4e9d810142441af9dfd74b077ee2761ec6e675

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 13:08:44
exact file size, in bytes	533074447
file size, in human friendly format	508.4 MiB
md5	bd343cbbe464cca9baf5e6e179d51ece
sha256	6a9217d1a08c599f860045d56ef64fc6c3e3112b55cc97f3d07c573d7bbcc

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 22:08:47
exact file size, in bytes	453744548
file size, in human friendly format	432.7 MiB
md5	5e0e2b3a39f58d9b2458670a95f7625b
sha256	0407bee87eeecad521f1e38eb607b0a85babef4c1b47516dc5c090e152eba

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	e945565945eb02fcc0755ca9d419ae36cb0f05f325790bec53d8f4ec7dedf

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 16:45:35
exact file size, in bytes	448532506
file size, in human friendly format	427.8 MiB
md5	918de9a9936908fe62514e0ca6873a21
sha256	ec11e325c792a6f49dbdbe5e641991d0a29788689176d7e54da97def9532c

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	1595524604.7698503
time file was last modified, in human readable format	2020-07-23 12:16:44
exact file size, in bytes	476160269
file size, in human friendly format	454.1 MiB
md5	50f20c90b8b5b5b5b5b5b5b5b5b5b5b5
sha256	3980c2a57fde5de2ccfd0d7973f95ac1a3fa63351642e6735c50fc3791ef

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	1583940754.2270095
time file was last modified, in human readable format	2020-03-11 10:32:34
exact file size, in bytes	450989230
file size, in human friendly format	430.1 MiB
md5	f0229959e0bd45dee0c14b20e58ad916
sha256	d237e6c976eb9c58368ca156a51bd913d63a3b5fea32689342733c99d14b6

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	1571149651.9097455
time file was last modified, in human readable format	2019-10-15 09:27:31
exact file size, in bytes	444796542
file size, in human friendly format	424.2 MiB
md5	1a56194e89795b7ebbf405b09d9c42d
sha256	4f77299ff4170cda64fdfcc27ac609a37d654c158f36c9ff25048793fe8a3

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	1564065426.3799994
time file was last modified, in human readable format	2019-07-25 09:37:06
exact file size, in bytes	456538380
file size, in human friendly format	435.4 MiB
md5	0596eb617cfa30e4666ae3498a958bba
sha256	dcbddb37c5b5f3873fe24d2617a4325bc7da28c0cd1d23a2edc7f0ebe08

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	1554411627.8518968
time file was last modified, in human readable format	2019-04-04 16:00:27
exact file size, in bytes	567859422
file size, in human friendly format	541.6 MiB
md5	46709a416be6934a7fd5d02b021d2687
sha256	b232f0b16181f48667d2ca89c04a4ee4b3932475282b41c52acb87b4cdfc

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	1545419593.1093435
time file was last modified, in human readable format	2018-12-21 13:13:13
exact file size, in bytes	584008163
file size, in human friendly format	557.0 MiB
md5	910c8f411f16b02813b3a2cd95462a81
sha256	4ccd3944d994fd47e5701c341725a63e984f8c042bf4dc19c9dfc7c135e7c

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	1542656337.3351417
time file was last modified, in human readable format	2018-11-19 13:38:57
exact file size, in bytes	570132815
file size, in human friendly format	543.7 MiB
md5	3c9d849a305653f67edfefdbacddce4d
sha256	23c373abce2463d4df495f5a1c7e8b0faec6eda09542d98f41ed65a0fa0db

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	1538082101.527849
time file was last modified, in human readable format	2018-09-27 16:01:41
exact file size, in bytes	570009935
file size, in human friendly format	543.6 MiB
md5	e03e91c0aec76d4188b7656e1cec1b74
sha256	bc073b6e6d3b2ef29d01a2caf1de7c206c95968231ef0492d958eae1a314b

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	1527703623.1079257
time file was last modified, in human readable format	2018-05-30 13:07:03
exact file size, in bytes	548669102
file size, in human friendly format	523.3 MiB
md5	b5b789c01e1992de55ee911754c310d4
sha256	c8089121dc89ffe8f9a0c01205bab75a112821a13d413152d6690f5eef094

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	1518707424.3679326
time file was last modified, in human readable format	2018-02-15 09:10:24
exact file size, in bytes	536124653
file size, in human friendly format	511.3 MiB
md5	047e12523fd287149ecd80c803598429
sha256	be705b3c3a0ca29ee32ce7658890bb5edb32a9eadcdc09dec3d7e3cfbfd23

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	1508806270.7502434
time file was last modified, in human readable format	2017-10-23 19:51:10
exact file size, in bytes	514894862
file size, in human friendly format	491.0 MiB
md5	3c0f4bf6d9a68d91f6da65051046e106
sha256	f438a0af923bc1edc7bca53f496c59a668d1a08b48c768f443ad7f5ea2b8b

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	1506461111.7357368
time file was last modified, in human readable format	2017-09-26 16:25:11
exact file size, in bytes	513706836
file size, in human friendly format	489.9 MiB
md5	a72e7b22c29f0b4e05579cb8453f89fa
sha256	23df1e3a38a6b4aaa0ab559d0c1e51be76eca5d75cb595d473d223c8d17e7

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 18:35:59
exact file size, in bytes	398907650
file size, in human friendly format	380.4 MiB
md5	3958ac6cb84731e560dd833256aa5b15
sha256	10fe58f09ae524df2548d17b8bb1e75db17da597a6ec10d695ce01387a2d7

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 16:26:09
exact file size, in bytes	381078558
file size, in human friendly format	363.4 MiB
md5	fdf4ad01fadb58415bb4c6119153e04a
sha256	a42267203e207cb5e0f539e0d879ead12e436311825c7114d0edd880d001b

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 14:26:15
exact file size, in bytes	380197908
file size, in human friendly format	362.6 MiB
md5	e080c503c27d5c072d3e324ee1822641
sha256	c53059b810c5e7a9a5ef9c46a7ed76675dfc7183f4ea867b4d81449cbd5a0

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 15:50:07
exact file size, in bytes	366497043
file size, in human friendly format	349.5 MiB
md5	7cb61e355eb860e342a5e27236e3f375
sha256	95448921601e1952e01a17ba9767cd3621c154af7fc52dd6b7f57d462155a

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 11:21:17
exact file size, in bytes	313217912
file size, in human friendly format	298.7 MiB
md5	185aa68d5841869cb7cb3a031bd63936
sha256	7c3c06e9281c41f1213d357cb5f233fd99d6d0db6bdba8d9fd7cfad1f1a85

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 11:28:33
exact file size, in bytes	312081344
file size, in human friendly format	297.6 MiB
md5	262c5c9a12d94a956ceb301d9f258c77
sha256	4c45c8d75665fa5194ebe4e355d3427f5aa385f77eb2b5002c0c78d8ae7f2

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 11:16:21
exact file size, in bytes	306950558
file size, in human friendly format	292.7 MiB
md5	efd870aa3fab8f4865a1b9567e69b69
sha256	704a776c0cf3fcca6e0c5a1e6b6043728229cfac813bfff28f003157771824

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 15:41:27
exact file size, in bytes	333727463
file size, in human friendly format	318.3 MiB
md5	7223be67e908fe3db8199129e7253da1
sha256	9bb0f926927db210f8c2a8de881213d1a44c7b3d6dbcb93dfa6b99ed4bbd3

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 15:00:54
exact file size, in bytes	224240817
file size, in human friendly format	213.9 MiB
md5	a5831d2a9b7baa9cdd42d7979b32f02c
sha256	22a3267638da9b7d64210d7da90d8762da7948234c21c0010a74f2621ee0e

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 16:22:23
exact file size, in bytes	245160775
file size, in human friendly format	233.8 MiB
md5	9deaaec2262bbac751a75f8bed4c5ab6
sha256	f0cd785dbed0bab28dfc08a391c9de1b01633422fa317cb8365513a1ae5ae

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 13:35:14
exact file size, in bytes	269910147
file size, in human friendly format	257.4 MiB
md5	96fb1d4ba62529e5534f23e143ce3967
sha256	6a0c94a49f41f9fda0138c8e966bd7b0a8965d6648fd21ffbd645d1453848

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 15:17:44
exact file size, in bytes	266868602
file size, in human friendly format	254.5 MiB
md5	793f030f8694659f125399b66123bb78
sha256	81a2089ea6127717f146454e99ea0be2bd595193e4151bb05b4c15749b1d8

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 10:53:23
exact file size, in bytes	255307129
file size, in human friendly format	243.5 MiB
md5	59e2ffc9366dd32975c2da9e6eb8854a
sha256	efdb7e9d1e539cbcd62dc3874b0de6a141f36684e6fbc05018e072b217e24

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 15:00:09
exact file size, in bytes	213128084
file size, in human friendly format	203.3 MiB
md5	65dfe2f379cc14d5c8f7e05a57ce32aa
sha256	7a08509d4e45efcc7055a6d06d8406a773716500bd869a4e85312ff131155

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 17:02:53
exact file size, in bytes	204782483
file size, in human friendly format	195.3 MiB
md5	ba8d37fdafb2381585ddb24bde34b9ff
sha256	776a1cf8a8e898b41bb6558c093632cc922698dc48486fee35d1e8eae3f60

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	1571149573.5411055
time file was last modified, in human readable format	2019-10-15 09:26:13
exact file size, in bytes	309606026
file size, in human friendly format	295.3 MiB
md5	6b9809bf5d36782bfa1e35b791d983a0
sha256	0521743829c1b3c301542a20fa0daecda20ee85a69e57b5751a07c6290015

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	1571149563.4156353
time file was last modified, in human readable format	2019-10-15 09:26:03
exact file size, in bytes	500592001
file size, in human friendly format	477.4 MiB
md5	69c64167b8cf3a8fc6b50d12d8476337
sha256	8b2e7dea2da7d8cc18e822e8ec1804052102f4eeffb94c1b3cd0e586e126e8c

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	1564065389.6823053
time file was last modified, in human readable format	2019-07-25 09:36:29
exact file size, in bytes	312635356
file size, in human friendly format	298.2 MiB
md5	3b13ff785a73da85540d37d5aeac13af
sha256	ee7f61dab233cdd0acb376ad55e977b16fdc03602f87a98dafb10d5fe9f5a

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	1564065361.519005
time file was last modified, in human readable format	2019-07-25 09:36:01
exact file size, in bytes	499266771
file size, in human friendly format	476.1 MiB
md5	63f63df5ffedf3dbbe8bbf3f56897e07
sha256	189e16e7adf9ba4b7b7d06ecdc10ce4ad4153e5e3505b9331f3d142243e18

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	1554411636.0422668
time file was last modified, in human readable format	2019-04-04 16:00:36
exact file size, in bytes	305498479
file size, in human friendly format	291.3 MiB
md5	c65edf84f63c64a876aabc704a090b97
sha256	3ab35c11b50ff26965266655d7dc76cf229336ee11b8b0c364ec1ba596ba9

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	1554411635.469241
time file was last modified, in human readable format	2019-04-04 16:00:35
exact file size, in bytes	660030560
file size, in human friendly format	629.5 MiB
md5	dd87c316e211891df8889c52d9167a5d
sha256	cedfee5b5a3f62fcdac0a1d2d12396d0f232d2213d24d6dc893df5d8e64b8

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	1545419673.7410533
time file was last modified, in human readable format	2018-12-21 13:14:33
exact file size, in bytes	303768125
file size, in human friendly format	289.7 MiB
md5	d50ce6eb037f72edfe8f94f90d61aca6
sha256	4ff037544f9191e24887176b44b04100c27b846220d978ae35daa85507f5c

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	1545419590.9742453
time file was last modified, in human readable format	2018-12-21 13:13:10
exact file size, in bytes	658699654
file size, in human friendly format	628.2 MiB
md5	84f39388da2c747477cf14cb02721b93
sha256	1821d4b623ed449e0acb6df3ecbabd3944cffa98f96a5234b7a102a7c0853

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	1542656251.7872381
time file was last modified, in human readable format	2018-11-19 13:37:31
exact file size, in bytes	647814227
file size, in human friendly format	617.8 MiB
md5	4da47b83b1eeac1ca8df0a43f6f580c8
sha256	f0650ad2f9ca4ae3f3162d7204a32950bc794f37f322eb47b5ad9412454f9

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	1538082022.933332
time file was last modified, in human readable format	2018-09-27 16:00:22
exact file size, in bytes	299539043
file size, in human friendly format	285.7 MiB
md5	20a0fad5ef7c3f3df10d350b8ec41bd2
sha256	b71cdf75ca10875d49170eb64a02920f47a69167d168fad694bb95ab91dbb

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	1538082025.1844337
time file was last modified, in human readable format	2018-09-27 16:00:25
exact file size, in bytes	647650387
file size, in human friendly format	617.6 MiB
md5	ae1da610739f953ea12e3c7d24bdef63
sha256	50eeaab24bfa2472bc6485fe8f0e612ed67e561eda1ff9fbf07b62c96443c

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	1527703471.0561135
time file was last modified, in human readable format	2018-05-30 13:04:31
exact file size, in bytes	282733770
file size, in human friendly format	269.6 MiB
md5	479633a95906ea6d41056ebe84a4c47b
sha256	a8fcac3f0884520c35103e76549fcc45d64d8806517ba02d8ade4028e1f77

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	1527703473.7962363
time file was last modified, in human readable format	2018-05-30 13:04:33
exact file size, in bytes	632688935
file size, in human friendly format	603.4 MiB
md5	5c034a4ab36ec9b6ae01fa13d8a04462
sha256	cb0d7a08b0e2cec4372033d3269979b4e72e2353ffd1444f57cb38bc96212

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	1518707329.6225448
time file was last modified, in human readable format	2018-02-15 09:08:49
exact file size, in bytes	280296529
file size, in human friendly format	267.3 MiB
md5	e894dcc547a1c7d67deb04f6bba7223a
sha256	ff9baa4d3710bb24bc3a6a40c0f4ef69150f7608af5be6ada1ff99d01d1be

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	1518707330.5935898
time file was last modified, in human readable format	2018-02-15 09:08:50
exact file size, in bytes	558878810
file size, in human friendly format	533.0 MiB
md5	5b1b5784cae93cf696e11e66983d8756
sha256	5f26ee92860d1dfcdcd20910ff2cf75572c39d2892d365f4e867a611cca2a

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	1508865232.4529853
time file was last modified, in human readable format	2017-10-24 12:13:52
exact file size, in bytes	532375438
file size, in human friendly format	507.7 MiB
md5	dc13fe5502cd78dd03e8a727bb9be63f
sha256	23c676510bc87c95184ecaeb327c0b2c88007278e0d698622e2dd8fb14d9f

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	1506959412.7513092
time file was last modified, in human readable format	2017-10-02 10:50:12
exact file size, in bytes	530931450
file size, in human friendly format	506.3 MiB
md5	35bea553072ea1f28090e851105c1b00
sha256	18730808d863a5c194ab3f59dd395c1a63cbd769c9bfb1df65efe61ee62fc

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	1506461107.2145326
time file was last modified, in human readable format	2017-09-26 16:25:07
exact file size, in bytes	296001230
file size, in human friendly format	282.3 MiB
md5	157890d591c61a9b511f8452476d6d19
sha256	e0512f3c81251e5dcd48fcf02fe2044a66071dc8681269b1375ac5443f971

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	1506454641.7079751
time file was last modified, in human readable format	2017-09-26 14:37:21
exact file size, in bytes	530296562
file size, in human friendly format	505.7 MiB
md5	2272857fcf773fc75a1bc49f6d507a48
sha256	58a7117f89c40275114bf7e824a613a963da2b0fe63f2ec3d1175fea785b4

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 16:10:02
exact file size, in bytes	284629257
file size, in human friendly format	271.4 MiB
md5	ce166de6f116acd08cd313f9c55c04d6
sha256	e14acab146181699e47ca108fc624ecebbaaac52851312962c649899459d9

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 15:45:20
exact file size, in bytes	290045511
file size, in human friendly format	276.6 MiB
md5	511fdc6f6c29b1c3a702f3792182faf0
sha256	c19edfd9a3bd2fcb37ddb0c3aa09339c9e23145269957fac75e9b2abca408

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 18:22:48
exact file size, in bytes	508722275
file size, in human friendly format	485.2 MiB
md5	d72add23bc937ccdfc7de4f47deff843
sha256	2d30b91ed4d215b6b4a15162a3389e9057b15445a0c02da71bd7bd272e7b8

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 16:12:14
exact file size, in bytes	484472684
file size, in human friendly format	462.0 MiB
md5	51336ab38e15ce607b55539c60be2c29
sha256	e9b8f2645df6b1527ba56d61343162e0794acc3ee8dde2a6bba353719e2d8

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 14:15:08
exact file size, in bytes	483530594
file size, in human friendly format	461.1 MiB
md5	5f2c3bd60ddbd0e213f7a1fc25bb88b4
sha256	7c52e6e99aabb24a49880130615a48e685da444c3c14eb48d6a65f3313bf7

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 15:49:54
exact file size, in bytes	467689464
file size, in human friendly format	446.0 MiB
md5	a0d1fbe47014b71c6764d76fb403f217
sha256	beee286d24fb37dd6555281bba39b3deb5804baec509a9dc5c69185098cf6

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 11:19:56
exact file size, in bytes	419038579
file size, in human friendly format	399.6 MiB
md5	f7bb3c0ccf23c9789bb895335aa68bf3
sha256	9413b1d3ca9498ba6f53913df9c43d685dd973440ff10b7fe0c45b1cbdc5

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 11:28:28
exact file size, in bytes	418188731
file size, in human friendly format	398.8 MiB
md5	e24d4264205d8d0c8533617db99ff1d3
sha256	3b7e504ca0132fb555d1f10e174cae07007f1bc6898cad0f7d416a68aca01

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 11:14:55
exact file size, in bytes	411562823
file size, in human friendly format	392.5 MiB
md5	31ed3ef07435d7068e1e03be49381b13
sha256	ae312143952ca00e061a656c2080e0e4fd3532721282ba8e2978177cad71a

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 15:41:18
exact file size, in bytes	409842279
file size, in human friendly format	390.9 MiB
md5	f8eb687af8c9b4e81968de8c63b0d991
sha256	e10abf459cde4a838bd6fc5ca03023c3401b81ad470627acde5a298d56715

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 15:00:49
exact file size, in bytes	277827702
file size, in human friendly format	265.0 MiB
md5	c9317dcb28a2e0c98c34ebc341e0d145
sha256	2de682c96edf8cca2852071a84ff860025f8e8c502218e1995acd5ab47e8c

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 16:22:19
exact file size, in bytes	302444354
file size, in human friendly format	288.4 MiB
md5	1ab870a0184b84594fccf2027c9be887
sha256	49d19834da06b1b82b6fa85bc647d2e78fa5957d0cbae3cccd6c695a541bef

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 13:35:08
exact file size, in bytes	339594168
file size, in human friendly format	323.9 MiB
md5	c3100392685b5a62c8509c0588ce9376
sha256	7c02499e9511c127d225992cfe1cd815e88fd46cd8a5b3cdf764f3fb4d8d4

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 15:20:08
exact file size, in bytes	332753610
file size, in human friendly format	317.3 MiB
md5	3234b2b2d7f7031432c1fd9870d15f58
sha256	ca2582cb2188073b0f348ad42207211a2b85c10b244265b5b27bab04481b8

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 10:50:15
exact file size, in bytes	353806962
file size, in human friendly format	337.4 MiB
md5	74a888f8683f67053a030e37d0eae1cf
sha256	191fbf290747614929d0bdd576e330c944b22a67585d1c185e0d2b3a3e65e

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 15:02:33
exact file size, in bytes	343791922
file size, in human friendly format	327.9 MiB
md5	ae96da7de52ab1a64d4ed3fa4b43da25
sha256	074204fa26872b4a946123071d15b8390c0e5441352c6b65b2abd32511bffa

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 16:50:30
exact file size, in bytes	332323121
file size, in human friendly format	316.9 MiB
md5	480ba8864579a457db91cd774bd373c1
sha256	3aa27ddf4a0ba5046ba52b97da99e20eb0614273d905bd73e016852451908

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 17:32:38
exact file size, in bytes	507498869
file size, in human friendly format	484.0 MiB
md5	863ee49f52bda17810ab1b94a52f8c95
sha256	7181d399833a2549a9584255bb477487f2fde1fda4c7f7215d6034ea2fcfa

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 13:35:16
exact file size, in bytes	507437430
file size, in human friendly format	483.9 MiB
md5	9d973e9ac715ce3241c3785704565971
sha256	f6455e06a72b8cc11c8a96fb88a85518a2f7b2a1d6f1065f777d7ab4386f0

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 10:23:05
exact file size, in bytes	648831310
file size, in human friendly format	618.8 MiB
md5	52ed5f32f7e36b75b5f951ab58a4bc08
sha256	855f1265e4c0b40d50f5a3a0fe7bae05b1cccb0a5301b378a19e0a8f72629

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 15:37:12
exact file size, in bytes	488287119
file size, in human friendly format	465.7 MiB
md5	398d4b7ddc5c0a16c556c415b2444266
sha256	69f42966d918f4197040e4dd126d2e3cc3c267bb49869dbf2d6ef277ed5de

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 17:01:59
exact file size, in bytes	474606301
file size, in human friendly format	452.6 MiB
md5	01dc7d6df2ed592e5401ab4fbe3aed4a
sha256	6115cfae55a0746b4ae4128be839c99db39d02124160d9c531ca086c4d606

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 11:57:42
exact file size, in bytes	333017000
file size, in human friendly format	317.6 MiB
md5	70a1294c01e3ab5925fc52f2603de159
sha256	81d1819ba08069343f228b9c819cdba0e4d15f2142c0c033657599808c396

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 14:23:51
exact file size, in bytes	324528041
file size, in human friendly format	309.5 MiB
md5	207a0b4ebde49bcde67925ac8c72fe37
sha256	20f5b70193af4b0b8f10aa0e66aabca552846ec8f4958757ff3f4b79ef7b3

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 09:18:36
exact file size, in bytes	321578266
file size, in human friendly format	306.7 MiB
md5	8319288082262fefbe322451aeae06ce
sha256	f4cdc194f076e1b438c8a34e7e5f53e70c2200b411b2d0af719e23fe35c64

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 16:46:38
exact file size, in bytes	300831068
file size, in human friendly format	286.9 MiB
md5	9be0e7340f0cd2d2cbd5acbe8e988f45
sha256	85ae8a0a6e3a41cf7845be3def36ed40582d3dc6e6a50e99063eaf6f1abee

Anaconda with Python 3 on 64-bit Linux

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

Hashes for Anaconda3-2022.05-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 14:22:00
exact file size, in bytes	595119528
file size, in human friendly format	567.6 MiB
md5	7e822f5622fa306c0aa42430ba884454
sha256	dc6bb4eab3996e0658f8bc4bbd229c18f55269badd74acc36d9e23143268b

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 14:22:01
exact file size, in bytes	385106099
file size, in human friendly format	367.3 MiB
md5	166b576c7e9d438b0a80840f94b44827
sha256	a50bf5bd26b5c5a2c24028c1aff6da2fa4d4586ca43ae3acd7fffb9b50d7f

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 14:22:01
exact file size, in bytes	293422528
file size, in human friendly format	279.8 MiB
md5	00ba3bf29ac51db5e0954b6f217fa468
sha256	c14415df69e439acd7458737a84a45c6067376cbec2fccf5e2393f9837760

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 14:22:00
exact file size, in bytes	690850711
file size, in human friendly format	658.8 MiB
md5	a01150aff48fcb6fcd6472381652de04
sha256	a7c0afe862f6ea19a596801fc138bde0463abcbce1b753e8d5c474b506a2c

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 13:08:43
exact file size, in bytes	511400791
file size, in human friendly format	487.7 MiB
md5	eeb286c02146b68a5a6c26e613fbb0e4
sha256	4daacb88fbd3a6c14e28cd3b37004ed4c2643e2b187302e927eb81a074e83

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 13:08:44
exact file size, in bytes	267255711
file size, in human friendly format	254.9 MiB
md5	f1067848601ea8d4bcac3983a700527e
sha256	7eb6a95925ee756240818599f8dcbba7a155adfb05ef6cd5336aa3c083de6

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 13:08:44
exact file size, in bytes	253479308
file size, in human friendly format	241.7 MiB
md5	576b077c52ebf7be38ff1b81018633bd
sha256	1504e9259816c5804eff1304fe7e339517b9fc1a08bfd991bc525a7efb656

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 13:08:44
exact file size, in bytes	608680744
file size, in human friendly format	580.5 MiB
md5	40354cb10cada6b1cfeed36610839f4
sha256	fedf9e340039557f7b5e8a8a86affa9d299f5e9820144bd7b92ae9f7ee08a

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 22:08:46
exact file size, in bytes	432601432
file size, in human friendly format	412.6 MiB
md5	48dc04abc2ed7d58c38ab217be0c9cad
sha256	3a3d5a61df5422f7c8c7816217b926ec7e200cc6d62967541adead8ec46d9

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 22:08:47
exact file size, in bytes	299204304
file size, in human friendly format	285.3 MiB
md5	53c6b519cb837df177f9474a546222b1
sha256	097064807a9adae3f91fc4c5852cd90df2b77fc96505929bb25bf558f1ee

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 22:08:48
exact file size, in bytes	305919028
file size, in human friendly format	291.7 MiB
md5	b78358a0e3098a8e15e87c9bef248895
sha256	a7d1a83279f439e7d8a6c53aa725552e195c0b96ae7e7fa63baefdf0118f7

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 22:08:47
exact file size, in bytes	570853747
file size, in human friendly format	544.4 MiB
md5	25e3ebae8905450ddac0f5c93f89c467
sha256	2751ab3d678ff0277ae80f9e8a74f218cfc70fe9a9cdc7bb1c137d7e47e33

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	4a2d3515e41660b3a0598bdd5513d388cad68b0df0397716c8b0e468c99f3

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	6954278e3eb85f98ad29a44b0da574156cebe365687b831d3d865969d997f

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	b0b857aa68964cb1388ce1657cc6f32c689cb0a0f95824e796acd1ed70cf1

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	2d6dcbe4360d023c3cecf6a6be8678d906c918e9afb50407a0f51558a48ca

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 16:45:36
exact file size, in bytes	292492041
file size, in human friendly format	278.9 MiB
md5	bc09710e65cdbba68688061b149281dc
sha256	870535ada0a8ae75eeda8cd2bf7dde853ac9f4949b20e1b5641f1843a655f

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 16:45:36
exact file size, in bytes	554535580
file size, in human friendly format	528.8 MiB
md5	4cd48ef23a075e8555a8b6d0a8c4bae2
sha256	cf2ff493f11eaad5d09ce2b4feaa5ea90db5174303d5b3fe030e16d29aee

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	1595524607.8539894
time file was last modified, in human readable format	2020-07-23 12:16:47
exact file size, in bytes	304505170
file size, in human friendly format	290.4 MiB
md5	daf3de1185a390f435ab80b3c2212205
sha256	0df7c3784973ab46a9ef9848aced01311d08a71d79a18d5ee79dcccdae8c8d

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	1595524610.0520885
time file was last modified, in human readable format	2020-07-23 12:16:50
exact file size, in bytes	576830621
file size, in human friendly format	550.1 MiB
md5	1046c40a314ab2531e4c099741530ada
sha256	38ce717758b95b3bd0b1797cc6ccfb76f29a90c25bdfa50ee45f11e583edf

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	1583940752.6769385
time file was last modified, in human readable format	2020-03-11 10:32:32
exact file size, in bytes	289452147
file size, in human friendly format	276.0 MiB
md5	fef889d3939132d9caf7f56ac9174ff6
sha256	d6d1827a38b988cbb714d6e0357c9e251c84641a0c70cda51861ed9abb38

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	1583940757.9001777
time file was last modified, in human readable format	2020-03-11 10:32:37
exact file size, in bytes	546910666
file size, in human friendly format	521.6 MiB
md5	17600d1f12b2b047b62763221f29f2bc
sha256	2b9f088b2022edb474915d9f69a803d6449d5fdb4c303041f60ac4aefcc20

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	1571149571.932031
time file was last modified, in human readable format	2019-10-15 09:26:11
exact file size, in bytes	335851146
file size, in human friendly format	320.3 MiB
md5	9dd413b0f2d0c68f387541428fe8d565
sha256	118c579f625555e1b116f0c3fd3842772e8fa0254cb2262c1c94e9eb40ba5

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	1571149565.9347522
time file was last modified, in human readable format	2019-10-15 09:26:05
exact file size, in bytes	530308481
file size, in human friendly format	505.7 MiB
md5	b77a71c3712b45c8f33c7b2ecade366c
sha256	46d762284d252e51cd58a8ca6c8adc9da2eadc82c342927b2f66ed011d1d8

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	1564065416.491543
time file was last modified, in human readable format	2019-07-25 09:36:56
exact file size, in bytes	341809116
file size, in human friendly format	326.0 MiB
md5	d085409443c102cc5b75f80ebcca8c89
sha256	e788094f7a18bfe14038accb26c8809a81291ed97f1f9ce29425f366aa8105

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	1564065380.5078816
time file was last modified, in human readable format	2019-07-25 09:36:20
exact file size, in bytes	541906131
file size, in human friendly format	516.8 MiB
md5	ec6a6bf96d75274c2176223e8584d2da
sha256	69581cf739365ec7fb95608eef694ba959d7d33b36eb961953f2b82cb25b0

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	1554411658.5022814
time file was last modified, in human readable format	2019-04-04 16:00:58
exact file size, in bytes	329736128
file size, in human friendly format	314.5 MiB
md5	510c8d6f10f2ffad0b185adbbdddf7f9
sha256	b4ecfca3b6d6c284a3f9370f6a5ccfac1b6be7fa75af9f6750a98fb315601

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	1554411631.8810787
time file was last modified, in human readable format	2019-04-04 16:00:31
exact file size, in bytes	685906562
file size, in human friendly format	654.1 MiB
md5	43caea3d726779843f130a7fb2d380a2
sha256	45c851b7497cc14d5ca060064394569f724b67d9b5f98a926ed49b834a6bb

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	1545419583.4789004
time file was last modified, in human readable format	2018-12-21 13:13:03
exact file size, in bytes	328855685
file size, in human friendly format	313.6 MiB
md5	a775fb6d6c441b899ff2327bd9dad6c6d
sha256	f636f747d5b581ea05e5f20edb1c9ae5db7d9a7923f404761495dfc75966a

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	1545419586.1690242
time file was last modified, in human readable format	2018-12-21 13:13:06
exact file size, in bytes	684237703
file size, in human friendly format	652.5 MiB
md5	c9af603d89656bc89680889ef1f92623
sha256	1019d0857e5865f8a6861eaf15bfe535b87e92b72ce4f531000dc672be7fc

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	1542656326.2786372
time file was last modified, in human readable format	2018-11-19 13:38:46
exact file size, in bytes	667976437
file size, in human friendly format	637.0 MiB
md5	334b43d5e8468507f123dbfe7437078f
sha256	d4c4256a8f46173b675dd6a62d12f566ed3487f932bab6bb7058f06c124bc

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	1538082093.2364779
time file was last modified, in human readable format	2018-09-27 16:01:33
exact file size, in bytes	319895712
file size, in human friendly format	305.1 MiB
md5	ee13966b6528f0398a8216f394539255
sha256	550dd67626172a42eb0dd02a08bc78a67e8c8e97a08a5914e402f31e14f48

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	1538082095.448577
time file was last modified, in human readable format	2018-09-27 16:01:35
exact file size, in bytes	667822837
file size, in human friendly format	636.9 MiB
md5	4321e9389b648b5a02824d4473cfdb5f
sha256	cfbf5fe70dd1b797ec677e63c61f8efc92dad930fd1c94d60390bb07fdc09

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	1527703540.2002113
time file was last modified, in human readable format	2018-05-30 13:05:40
exact file size, in bytes	302261137
file size, in human friendly format	288.3 MiB
md5	cbd1d5435ead2b0b97dba5b3cf45d694
sha256	024c811526ffc40ed6fa243a25795fbab5b41413372cd5a276aca69a930ef

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	1527703543.880376
time file was last modified, in human readable format	2018-05-30 13:05:43
exact file size, in bytes	651745206
file size, in human friendly format	621.6 MiB
md5	3e58f494ab9fbc12db4460dc152377b5
sha256	09f53738b0cd3bb96f5b1bac488e5528df9906be2480fe61df40e0e0d19e3

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	1518707336.279853
time file was last modified, in human readable format	2018-02-15 09:08:56
exact file size, in bytes	299557404
file size, in human friendly format	285.7 MiB
md5	47b5b2b17b7dbac0d4d0f0a4653f5b1c
sha256	58d1d093450dabefef9279694c9345afed78acf1c334d64a9241bc725f45a

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	1518707337.4719083
time file was last modified, in human readable format	2018-02-15 09:08:57
exact file size, in bytes	577996269
file size, in human friendly format	551.2 MiB
md5	966406059cf7ed89cc82eb475ba506e5
sha256	7e6785caad25e33930bc03fac4994a434a21bc8401817b7efa28f53619fa9

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	1508799175.9727552
time file was last modified, in human readable format	2017-10-23 17:52:55
exact file size, in bytes	550796553
file size, in human friendly format	525.3 MiB
md5	c989ecc8b648ab8a64731aaee9ed2e7e
sha256	55e4db1919f49c92d5abbf27a4be5986ae157f074bf9f8238963cd4582a40

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	1506959414.4703865
time file was last modified, in human readable format	2017-10-02 10:50:14
exact file size, in bytes	549434488
file size, in human friendly format	524.0 MiB
md5	614cc8f244e956b41c75417dd1ec96fd
sha256	092c92427f44687d789a41922ce8426fbdc3c529cc9d6d4ee6de5b62954b9

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	1506368371.0870926
time file was last modified, in human readable format	2017-09-25 14:39:31
exact file size, in bytes	310695077
file size, in human friendly format	296.3 MiB
md5	8fe5b29ca5be3ff11411621f79babfc2
sha256	3574d423084e604a9d85a9f38ea481e0fc9e678923e2d3b9c4ec7340e164

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	1506454642.7570226
time file was last modified, in human readable format	2017-09-26 14:37:22
exact file size, in bytes	548789360
file size, in human friendly format	523.4 MiB
md5	bb2656314d22aeca6af243ddbfbfb32c
sha256	67f5c20232a3e493ea3f19a8e273e0618ab678fa14b03b59b178361306214

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 16:08:42
exact file size, in bytes	299425582
file size, in human friendly format	285.6 MiB
md5	fe7c87abd9fd70dc0cb4f83cc22d336f
sha256	d7c367c9c4fffec37c31c6570218c9944867c96fde5e9b0249673beda24ba

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 15:45:50
exact file size, in bytes	304862316
file size, in human friendly format	290.7 MiB
md5	8c663e2056c7c57ac0075774b1f790be
sha256	605251829edecd0c39df8db856d4f09e406454468c3f128c14a7446a4efdf

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 18:23:04
exact file size, in bytes	523283080
file size, in human friendly format	499.0 MiB
md5	50f19b935dae7361978a04d9c7c355cd
sha256	3301b37e402f3ff3df216fe0458f1e6a4ccbb7e67b4d626eae9651de5ea3a

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 16:12:24
exact file size, in bytes	497343851
file size, in human friendly format	474.3 MiB
md5	9209864784250d6855886683ed702846
sha256	4447b93d2c779201e5fb50cfc45de0ec96c3804e7ad0fe201ab6b99f73e90

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 14:15:21
exact file size, in bytes	496412001
file size, in human friendly format	473.4 MiB
md5	dbe2e78adeca1923643be2ecaacd6227
sha256	e9169c3a5029aa820393ac92704eb9ee0701778a085ca7bd3c57b388ac1b

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 15:50:04
exact file size, in bytes	478051940
file size, in human friendly format	455.9 MiB
md5	4692f716c82deb9fa6b59d78f9f6e85c
sha256	73b51715a12b6382dd4df3dd1905b531bd6792d4aa7273b2377a0436d45f0

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 11:20:02
exact file size, in bytes	425991075
file size, in human friendly format	406.3 MiB
md5	d0dc08d241f83ffc763504db50008e5b
sha256	4f5c95feb0e7efeadd3d348dcef117d7787c799f24b0429e45017008f3534

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 11:28:31
exact file size, in bytes	424649707
file size, in human friendly format	405.0 MiB
md5	487d9ba7ae4955e1481ec59de40e51c5
sha256	11d32cf4026603d3b327dc4299863be6b815905ff51a80329085e1bb9f96c

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 11:15:02
exact file size, in bytes	417798602
file size, in human friendly format	398.4 MiB
md5	546d1f02597587c685fa890c1d713b51
sha256	36a558a1109868661a5735f5f32607643f6dc05cf581fefb1c10fb8abbe22

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 15:41:27
exact file size, in bytes	414838933
file size, in human friendly format	395.6 MiB
md5	02bac549e486be7096070db8d50d0c7f
sha256	addadcb927f15cb0b5b6e36890563d3352a8ff6a901ea753d389047d274a2

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 15:00:53
exact file size, in bytes	283797156
file size, in human friendly format	270.7 MiB
md5	45249376f914fdc9fd920ff419a62263
sha256	0735e69199fc37135930ea2fd4fb6ad0adef215a2a7ba9fd6b0a0a4daadb

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 16:22:22
exact file size, in bytes	299023674
file size, in human friendly format	285.2 MiB
md5	48b6d696c73b5f3d573da3300946591d
sha256	fb4e480059e991f2fa632b5a9bcd284c7f0677814cd719c11d524453f96a

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 13:35:12
exact file size, in bytes	353018424
file size, in human friendly format	336.7 MiB
md5	7e10dbd2b620b4aaa360fe90cf5c6790
sha256	3be5410b2d9db45882c7de07c554cf4f1034becc274ec9074b23fd37a5c87

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 15:20:14
exact file size, in bytes	342778122
file size, in human friendly format	326.9 MiB
md5	a271fee559b46cf15ba98f21b8549235
sha256	4aac68743e7706adb93f042f970373a6e7e087dbf4b02ac467c94ca4ce33d

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 10:50:20
exact file size, in bytes	349003566
file size, in human friendly format	332.8 MiB
md5	934cccdcf6fa894820d2942ea567dca93
sha256	af3225ccbe8df0fffb918939e009aa57740e35058ebf9dfcf5fec794a77556

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 14:59:53
exact file size, in bytes	319624556
file size, in human friendly format	304.8 MiB
md5	aa7c27b54f710f3004cc17f2db5ff761
sha256	3c3b834793e461f3316ad1d9a9178c67859a9d74aaf7bcade076f04134dd1

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 16:26:59
exact file size, in bytes	308739435
file size, in human friendly format	294.4 MiB
md5	c9af4bee8d2da4d74de0d02400ac1c10
sha256	57ce4f97e300cf94c5724f72d992e9eecef708fdaa13bc672ae9779773056

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	1545419595.0644333
time file was last modified, in human readable format	2018-12-21 13:13:15
exact file size, in bytes	543837797
file size, in human friendly format	518.6 MiB
md5	7d26c7551af6802eb83ecd34282056d7
sha256	e086c041695c0e50642aee8f4e7adad3185c6ce1d11737665653497d2edd7

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	1542656255.5344093
time file was last modified, in human readable format	2018-11-19 13:37:35
exact file size, in bytes	532286994
file size, in human friendly format	507.6 MiB
md5	5685ac1d4a14c4c254cba6c612c77e77
sha256	a38017dfa59141c63ec9882a15bd35e7ce63810ae0d1bcf47c79b7fb9f83e

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	1538082027.2525263
time file was last modified, in human readable format	2018-09-27 16:00:27
exact file size, in bytes	532194834
file size, in human friendly format	507.5 MiB
md5	a476ae6c3fe66711ec9e99f1d46f68e0
sha256	58d4229ad7097e1f3387d7f6582dcf2bbc684bffa284cd25096bd87530ba

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	1527703530.1317601
time file was last modified, in human readable format	2018-05-30 13:05:30
exact file size, in bytes	512451078
file size, in human friendly format	488.7 MiB
md5	758e172a824f467ea6b55d3d076c132f
sha256	402758c24767e9eb3b77312c388725a058f76e03316464797c3ca404e6eeb

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	1518707331.3896265
time file was last modified, in human readable format	2018-02-15 09:08:51
exact file size, in bytes	452219193
file size, in human friendly format	431.3 MiB
md5	e26fb9d3e53049f6e32212270af6b987
sha256	5af0c7a09a5f3aaf3666c0b362246d342d80e782128ef043998c9ead5ad41

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	1508865187.3479636
time file was last modified, in human readable format	2017-10-24 12:13:07
exact file size, in bytes	433272941
file size, in human friendly format	413.2 MiB
md5	ae155b192027e23189d723a897782fa3
sha256	88c8d698fff16af15862daca10e94a0a46380dcffda45f8d89f5fe03f6bd2

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	1506959413.5703459
time file was last modified, in human readable format	2017-10-02 10:50:13
exact file size, in bytes	431941593
file size, in human friendly format	411.9 MiB
md5	5d4b38769f4ee4c33b5cffaa8603356e
sha256	00fbd979c815ede0bbad48fb4ef62cda333c7ad6330184962862a30724792

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	1506455282.2088542
time file was last modified, in human readable format	2017-09-26 14:48:02
exact file size, in bytes	431409105
file size, in human friendly format	411.4 MiB
md5	a574e495c157d59bf4ec337fa4f72ddd
sha256	a3ed8769d20d55a41c04cf7c04e81c95974ea8eb614afab7bbbc0c06fa6a52

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 18:23:30
exact file size, in bytes	435148039
file size, in human friendly format	415.0 MiB
md5	b0f8f5ade832b0238357c2f973338b17
sha256	452aa91ac83d3b6a68b79cea3042170ec591d468d6966307ff9af18fdbce9

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 16:12:31
exact file size, in bytes	406525905
file size, in human friendly format	387.7 MiB
md5	aae1a3192abee1f0abba6c0e1b292cec
sha256	4519ac724d5120d21bb80289c5509c0d1fd9f99c6e9b9a4c6fb352d8bda4a

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 14:14:15
exact file size, in bytes	405573575
file size, in human friendly format	386.8 MiB
md5	65546028c4a48f4bb582c4ee3e43b893
sha256	b80d471839e8cf7b100e59308720cc13c141deb1ba903a4776c9a05f613e5

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 15:50:20
exact file size, in bytes	382758938
file size, in human friendly format	365.0 MiB
md5	e26582ebdf1d982e18efb2bdf52c5ee6
sha256	618b720f309fe8da4f235415f11b6ce3db0a16d702ca67fdceeecf6bec78c

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 11:19:57
exact file size, in bytes	340385173
file size, in human friendly format	324.6 MiB
md5	8813071788e08e236a323b5f7d337759
sha256	1ab001c7a469345a90d549ebf4afa3376f0f3a57a0df5f042cac7d773b0e0

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 11:28:28
exact file size, in bytes	340190685
file size, in human friendly format	324.4 MiB
md5	96e842ef2d5789411c550b0f9bce2314
sha256	54c06cd1b11cb687db6ba3613df443c057f769cdb87693e11674d956d8e5d

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 11:14:57
exact file size, in bytes	348392297
file size, in human friendly format	332.3 MiB
md5	f87d5a014499bd9a579ada3939eb22b1
sha256	41341c840cea4185ef5bd82520c1de72b42e7dc43c703fb13b032f04dc0e3

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 15:41:54
exact file size, in bytes	346405513
file size, in human friendly format	330.4 MiB
md5	aeFe284ae4b870ca252da9e46c5d46c9
sha256	4911047df51c46661f551d6022aee21a7e5d31df051d3433b8ff3ea3c2e77

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 15:00:50
exact file size, in bytes	260583576
file size, in human friendly format	248.5 MiB
md5	2e6983f8fdd5f07025f3a81587c82549
sha256	2388cc714567afe7697bf43b4063ff0ea2150a71b9beb17f75bc7e4879d9b

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 16:22:19
exact file size, in bytes	293453735
file size, in human friendly format	279.9 MiB
md5	3fc53407f4a14fe18974d6fb59fc4d3e
sha256	478a8fdde3a6e4040a68c57d7bdd6fab1a4f7f6e813948d46dad54867014c

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 13:35:09
exact file size, in bytes	324643869
file size, in human friendly format	309.6 MiB
md5	f2459d60a668eb82ff590f97755d93e0
sha256	73fdbbbb3e38207ed18e5059f71676d18d48fdccbc455a1272eb45a60376cc

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 15:19:54
exact file size, in bytes	317885231
file size, in human friendly format	303.2 MiB
md5	e3c3a2dae51a41c5a1cbb959ef68ef2c
sha256	6437d5b08a19c3501f2f5dc3ae1ae16f91adf6bed0f067ef0806a9911b1be

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 10:50:30
exact file size, in bytes	336767704
file size, in human friendly format	321.2 MiB
md5	3289883a21fdd9fe4fb84748bff677bf
sha256	fd70c08719e6b5caae45b7c8402c6975a8cbc0e3e2a9c4c977554d1784f28

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 15:02:41
exact file size, in bytes	324151704
file size, in human friendly format	309.1 MiB
md5	0f680aa6dc7150d15123e5490e46eaa
sha256	e8ffc63f31673b5ce41a95796a1f729ddcf4c7db19d6dbe29bedaeaf8478

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 16:50:36
exact file size, in bytes	312856983
file size, in human friendly format	298.4 MiB
md5	48b6773dacf45e4df0da91cfc149bb23
sha256	efb9d3987134d484d88a9d915437b1bd568d065b4fefbd538e0281694bd90

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 17:33:09
exact file size, in bytes	431825310
file size, in human friendly format	411.8 MiB
md5	c8f72746dd5dc68f014d5fccd1f060e8
sha256	1f7c850d0b98c011a717b3b757d82077accf0704dd7627f6962267bfb4476

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 13:34:56
exact file size, in bytes	431763871
file size, in human friendly format	411.8 MiB
md5	f1505963a1c7d2bfe7a73c079b22762d
sha256	9aa39c05f723fee18c54a9cc1729986193216affedbae125ca5faa0674030

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 10:23:30
exact file size, in bytes	571806071
file size, in human friendly format	545.3 MiB
md5	11af2251aece5fc4333822dc25f78938
sha256	16471e90b3deb7be1b3d449d8883983d81f035dfaa1a3391497de20577de6

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 15:37:29
exact file size, in bytes	412040120
file size, in human friendly format	393.0 MiB
md5	5028bf0aa7ff8a071d5532b8f8ec924c
sha256	2c08a5cd6ccaa9dc84063b0ee9b007aa82e35a75c340fb272b394896de853

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 17:02:26
exact file size, in bytes	399536902
file size, in human friendly format	381.0 MiB
md5	bbde22bd0346ad9c8932b4d98c0f4000
sha256	af372a27a1887e11061485e2a854c535775fd519713e028c38901f90c869c

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 11:59:07
exact file size, in bytes	259053521
file size, in human friendly format	247.1 MiB
md5	06412ae8de02c87b8de7d7e6d35ed092
sha256	745b9452fd18720deefb465a6687c0d66df8f11edceadcee758082dea1b8e

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 14:23:39
exact file size, in bytes	253329362
file size, in human friendly format	241.6 MiB
md5	7a7f1f53684d38a7aa36935e34af30a3
sha256	d6aeedfcb39d648fdb5bd72c4d0b3063a9d4f4866baf5052aa0645bf5d2c

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 09:18:43
exact file size, in bytes	250369347
file size, in human friendly format	238.8 MiB
md5	2a75cab6536838635fd38ee7fd3e2411
sha256	ca7e356dc1b8c8ef27dfb74b32c77563df704c6ddb39e69cac65ec416ebfe

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 16:46:53
exact file size, in bytes	231260549
file size, in human friendly format	220.5 MiB
md5	d5826bb10bb25d2f03639f841ef2f65f
sha256	065284c5de369c9b89dcae79e7169ce9b734dc3bbe6c409a67a5ec6480cc0

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	1545419594.11939
time file was last modified, in human readable format	2018-12-21 13:13:14
exact file size, in bytes	569068646
file size, in human friendly format	542.7 MiB
md5	4c9922d1547128b866c6b9cf750c03c7
sha256	7895052814921d45ed0585d1fb19f8edd6fbd02b61639310f770e2ebe85cc

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	1542656329.3057752
time file was last modified, in human readable format	2018-11-19 13:38:49
exact file size, in bytes	552879060
file size, in human friendly format	527.3 MiB
md5	6878b6393add83e5fe77d7a1a27ee789
sha256	5dab8b2c95595df7fa55b88643f8372135c14faabd9ec05a34021551bb099

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	1538082097.2866592
time file was last modified, in human readable format	2018-09-27 16:01:37
exact file size, in bytes	552786900
file size, in human friendly format	527.2 MiB
md5	34fe38d086f069656c2f3cbf13b87460
sha256	c15ffac2ae35179a15dc5872e5bb405b4027a0fd76c6817e9cee39545bc5c

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	1527703546.172479
time file was last modified, in human readable format	2018-05-30 13:05:46
exact file size, in bytes	531957909
file size, in human friendly format	507.3 MiB
md5	81d5a1648e3aca4843f88ca3769c0830
sha256	f3527d085d06f35b6aeb96be2a9253ff9ec9ced3dc913c8e27e086329f3db

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	1518707338.3619494
time file was last modified, in human readable format	2018-02-15 09:08:58
exact file size, in bytes	471561932
file size, in human friendly format	449.7 MiB
md5	793a94ee85baf64d0ebb67a0c49af4d7
sha256	0e940272517d8f8a6f26316a19e4be2bdaea8477a3a32cc2ecee7b48fd0fa

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	1508800071.267042
time file was last modified, in human readable format	2017-10-23 18:07:51
exact file size, in bytes	451929576
file size, in human friendly format	431.0 MiB
md5	d967f023a23698109fe213103a2c07bf
sha256	991a4b656fcb0236864fbb27ff03bb7f3d98579205829b76b66f65cfa6734

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	1506959415.21842
time file was last modified, in human readable format	2017-10-02 10:50:15
exact file size, in bytes	450639191
file size, in human friendly format	429.8 MiB
md5	8b6902d20063e6c3b98ebe70060f3131
sha256	407576899d3aa546bc3c2c4a13cbc18ab5bab372c3388ea80087f29b32184

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	1506455282.9808888
time file was last modified, in human readable format	2017-09-26 14:48:02
exact file size, in bytes	450106703
file size, in human friendly format	429.3 MiB
md5	8120fcd072916e4a28d0179be8d29053
sha256	634d2dfa97d19f2cc15e941cb4d059bc83a31facedfb9d02a980c4fa74f27

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 18:23:45
exact file size, in bytes	449473324
file size, in human friendly format	428.7 MiB
md5	8556e85f81206c08ee2a30b67d1bb707
sha256	b0e492206d43067314b25963bc7d1f012096ca0323b7629f4ebcd071b0390

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 16:12:47
exact file size, in bytes	418659792
file size, in human friendly format	399.3 MiB
md5	d8986b1503f3b42220be9bfb8a92100e
sha256	7b70bdba282a18ddbdc167afe8131f7532076cb1df8d3fbbd13e79ca3afaa

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 14:14:29
exact file size, in bytes	417717702
file size, in human friendly format	398.4 MiB
md5	3f173aa1ab2c2b6ab3f8a6bd22827fd7
sha256	f7ce2eeec3e42c2ba1ee3b9fcd670478fd30f4be547c6e0a675d183c4ca9d

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 15:50:34
exact file size, in bytes	392066694
file size, in human friendly format	373.9 MiB
md5	7aca10e1ea5b9db0a318b4eed5253747
sha256	1a8320635f2f06ec9d8610e77d6d0f9cb2c5d11d20a4ff7fcda113e04b0a8

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 11:20:02
exact file size, in bytes	345064389
file size, in human friendly format	329.1 MiB
md5	0576a0df8987ca62d5c13491102547d9
sha256	931626363f4030c7a1e8897549b1d3589dc3f429874dc3dd8a79869ecf5c8

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.

If the MD5 or SHA-256 hash that you generate does not match the one here, the file may not have downloaded completely. Please download it again and re-check. If repeated downloads produce the same result, please [contact us](#) to report the problem, including the file name, whether you used 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 11:28:32
exact file size, in bytes	344388621
file size, in human friendly format	328.4 MiB
md5	302fddc310233f5e6f120753ec3e392d
sha256	7764093f337a43e4962b12d01508c1a385f0f62c1ddc006b69af95ae763fc

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 11:15:03
exact file size, in bytes	353266156
file size, in human friendly format	336.9 MiB
md5	c88cbe27cc8fb4976e6bd38068cc57d6
sha256	e1469fa0d24de12f33661ce3d7a06d77968be8822f366a61a0018a3850ab5

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 15:42:07
exact file size, in bytes	350634167
file size, in human friendly format	334.4 MiB
md5	e1d4e9480b44ea0905cbf39846778f8b
sha256	22ac26c8bde7c4153ea859f6f6d8aca93bbf1e213d800167ad5ea530c6295

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 15:00:53
exact file size, in bytes	265518790
file size, in human friendly format	253.2 MiB
md5	82f1f438ac83ed8b7d36284995f6939b
sha256	00d13413f5b8129e863dabcc2296a181c697056c5ed210739a0aa06454ab7

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 16:22:22
exact file size, in bytes	290842015
file size, in human friendly format	277.4 MiB
md5	423f0300cbec30c206a6c61f7e5dc9bd
sha256	f6080c6493cefc603cfeb67aaf6c3c4c6b80a66788f03db48ffd3cfa52017b

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 13:35:13
exact file size, in bytes	338272927
file size, in human friendly format	322.6 MiB
md5	72b14bfd85f2597089c4372225a96d42
sha256	4cc10d65c303191004ada2b6d75562c8ed84e42bf9871af06440dd956077b

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 15:20:07
exact file size, in bytes	328483185
file size, in human friendly format	313.3 MiB
md5	fe3681d49ff5b0d755181f553689ed9e
sha256	223655cd256aa912dfc83ab24570e47bb3808bc3b0c6bd21b5db0fcf27508

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 10:50:35
exact file size, in bytes	333141910
file size, in human friendly format	317.7 MiB
md5	462665c149b14f7c3993bc51e4d10f88
sha256	657cb599004c21e37ce693515ea33922e0084fd7c159ef1b96b57c86eed83

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 15:00:00
exact file size, in bytes	301673940
file size, in human friendly format	287.7 MiB
md5	86213516c4c2e479d8d9834b89c95bed
sha256	21293fabbd3d5cfbb1afe0c9a8b39e0bc4d283cd7dbe3c84a60b335481a41

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 16:35:55
exact file size, in bytes	290973139
file size, in human friendly format	277.5 MiB
md5	860a11c39e58bb574bad5be9d44e2063
sha256	439761159d5604e182951650a478dd53cafff52e9dccf17c20ae66689b7b28

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.

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 pkg=<NEW_VERSION>`.

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 2: Outdated operating system support

Operating system	How to install Anaconda
macOS 10.10-10.12; Windows 7	Use the command line or graphical installers for Anaconda versions 2019.10 and earlier. Download from our archive .
macOS 10.9	Use the command line or graphical installers for Anaconda versions 5.1 and earlier. Note: 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. Note: 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

When uninstalling Anaconda, you have two options: a full uninstall or a simple remove. A simple remove is fine for most users. If you don't want to completely remove every aspect of Anaconda Distribution from your computer, skip to *Simple remove*.

Full Uninstall

A full uninstall removes all traces of the configuration files and directories from Anaconda and its programs with the `anaconda-clean` program.

1. In Windows, open Anaconda Prompt. In Mac or Linux, open your terminal application.
2. Install the `anaconda-clean` package:

```
conda install anaconda-clean
```

3. Then, run `anaconda-clean`. Run the command by itself to remove all Anaconda-related files and directories with a confirmation prompt before deleting each one, or use the `--yes` argument to remove all those files and directories without being asked to confirm each one.

```
# If you want to confirm each file and directory you are deleting
anaconda-clean

# If you don't want to be asked about each file and directory
anaconda-clean --yes
```

4. `anaconda-clean` creates a backup of all files and directories that might be removed in a folder named `.anaconda_backup` in your home directory. Also note that `anaconda-clean` leaves your data files in the `AnacondaProjects` directory untouched.

- After using `anaconda-clean`, follow the instructions in *Simple remove* to finish uninstalling Anaconda Distribution.

Simple remove

A simple remove will leave a few files behind, which for most users is just fine.

Windows

1. Open the file explorer.
2. Delete your environment (`anaconda3\envs`) and package (`anaconda3\pkgs`) folders in your user folder.
3. Open **Add or remove programs** and uninstall your Anaconda installation or your version of Python.

macOS or Linux

1. Open your terminal application.
2. Remove your entire Anaconda directory with `rm -rf`. Depending on your installation, your `anaconda2` or `anaconda3` 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
```

Removing Anaconda path from `.bash_profile`

If you use Linux or macOS, you may also wish to check your `.bash_profile` or `.zprofile` file in your home directory for a line such as:

```
export PATH="/Users/jsmith/anaconda3/bin:$PATH"
```

Note: Replace `/Users/jsmith/anaconda3/` with your actual path.

This line adds the Anaconda path to your `PATH` environment variable. It may refer to either Anaconda or Miniconda. After uninstalling Anaconda, delete this line.

1. Make sure you're in your home directory. The easiest way to do this is to open a new terminal window.
2. Enter `open .bash_profile` or `open .zprofile` to open your terminal's profile file.
3. Delete the above line from the file.
4. Save.

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](#)*.

7.1.2 User guide

Use the following resources to learn how to use Anaconda Distribution, including Anaconda Navigator and conda.

Just starting out?

If you're new to Anaconda, follow the directions at [Getting started with Anaconda](#) to write your first Python project using Anaconda. Use the navigation tabs at the bottom of the page to go through the user guide in order.

New to Navigator?

Read the [Navigator user guide](#) to learn how to use Anaconda's graphical user interface. Get an [overview of the interface](#) and take your first steps using Navigator at [Getting started with Navigator](#).

Interested in conda?

[Conda](#) is an open source package management system and environment management system included in Anaconda and Miniconda. Learn [how to get started with conda](#).

Ready to dive deeper?

Explore what you can do with Anaconda. The [tasks page](#) shows you how to [install conda packages](#), [switch between environments](#), [use IDEs](#), and more.

Ready to contribute to Anaconda?

See [How to contribute to Anaconda](#) by helping resolve issues, improve documentation, add to feedstocks, and contribute code.

Additional resources

- [Anaconda Starter Guide](#)
- [Frequently asked questions](#)

Getting started with Anaconda

Anaconda Distribution contains [conda](#) and [Anaconda Navigator](#), as well as Python and hundreds of scientific [packages](#). When you installed Anaconda, you installed all these too.

Conda works on your command line interface such as Anaconda Prompt on Windows and terminal on macOS and Linux.

Navigator is a desktop graphical user interface that allows you to launch applications and easily manage conda packages, environments, and channels without using command-line commands.

You can try both conda and Navigator to see which is right for you to manage your packages and environments. You can even switch between them, and the work you do with one can be viewed in the other.

Try this simple programming exercise, with [Navigator](#) and the [command line](#), to help you decide which approach is right for you.

When you're done, see [What's next?](#).

Your first Python program: Hello, Anaconda!

Use Anaconda Navigator to launch an application. Then, create and run a simple Python program with Spyder and Jupyter Notebook.

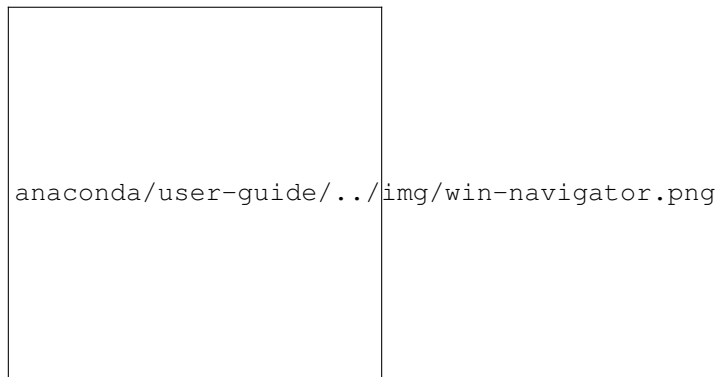
Open Navigator

Choose the instructions for your operating system.

- [Windows](#).
- [macOS](#).
- [Linux](#).

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 type `anaconda-navigator`.



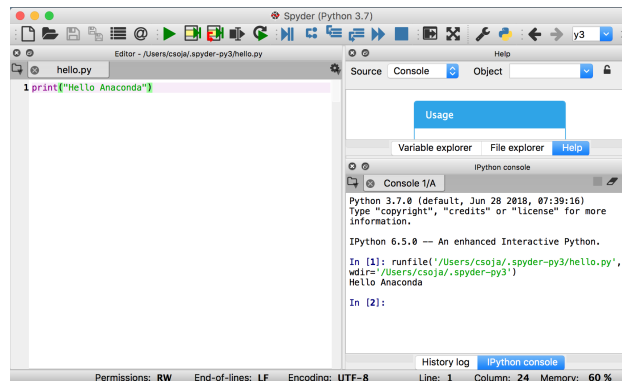
Run Python in Spyder IDE (integrated development environment)

Tip: Navigator's Home screen displays several applications for you to choose from. For more information, see links at the bottom of this page.

1. On Navigator's Home tab, in the Applications pane on the right, scroll to the Spyder tile and click the Install button to install Spyder.

Note: If you already have Spyder installed, you can jump right to the Launch step.

2. Launch Spyder by clicking Spyder's Launch button.
3. In the new file on the left, delete any placeholder text, then type or copy/paste `print ("Hello Anaconda")`.
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. You can see your program's output in the bottom right Console pane.



Close Spyder

From Spyder's top menu bar, select Spyder - Quit Spyder (In macOS, select Python - Quit Spyder).

Run Python in a Jupyter Notebook

1. On Navigator's Home tab, in the Applications pane on the right, scroll to the Jupyter Notebook tile and click the Install button to install Jupyter Notebook.

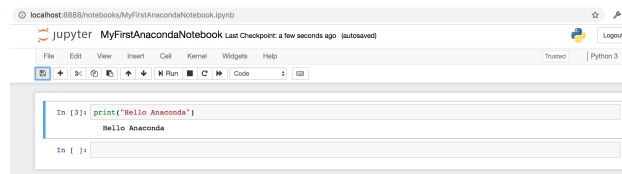
Note: If you already have Jupyter Notebook installed, you can jump right to the Launch step.

2. Launch Jupyter Notebook by clicking Jupyter Notebook's Launch button.

This will launch a new browser window (or a new tab) showing the [Notebook Dashboard](#).



3. On the top of the right hand side, there is a dropdown menu labeled “New”. Create a new Notebook with the Python version you installed.
4. Rename your Notebook. Either click on the current name and edit it or find rename under File in the top menu bar. You can name it to whatever you'd like, but for this example we'll use MyFirstAnacondaNotebook.
5. In the first line of the Notebook, type or copy/paste `print("Hello Anaconda")`.
6. Save your Notebook by either clicking the save and checkpoint icon or select File - Save and Checkpoint in the top menu.
7. Run your new program by clicking the Run button or selecting Cell - Run All from the top menu.



Close Jupyter Notebook

1. From Jupyter Notebooks top menu bar, select File - Close and Halt.
2. Click the Quit button at the upper right of the Notebook Dashboard and close the window or tab.

Close Navigator

From Navigator's top menu bar, select Anaconda Navigator - Quit Anaconda-Navigator.

Write a Python program using Anaconda Prompt or terminal

Open Anaconda Prompt

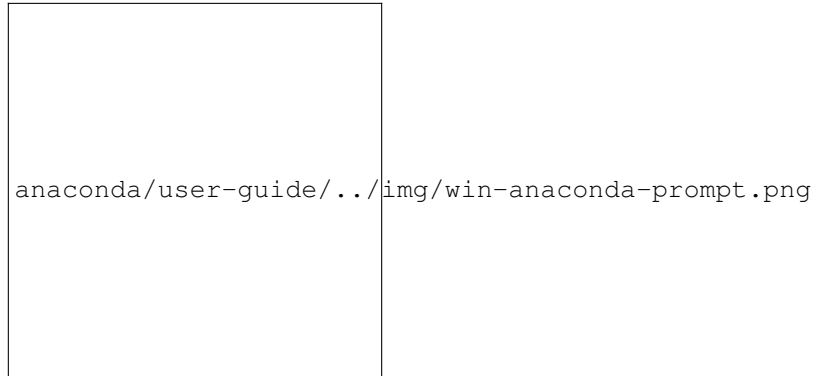
Choose the instructions for your operating system.

- *Windows.*
- *macOS.*

- *Linux*.

Windows

From the Start menu, search for and open “Anaconda Prompt”:



macOS

Open Launchpad, then click the terminal icon.

Linux

Open a terminal window.

Start Python

At Anaconda Prompt (terminal on Linux or macOS), type `python` and press Enter.

The `>>>` means you are in Python.

Write a Python program

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

When you press enter, your program runs. The words “Hello Anaconda!” print to the screen. You’re programming in Python!

Exit Python

On Windows, press CTRL-Z and press Enter. On macOS or Linux type `exit()` and press Enter.

Optional: Launch Spyder or Jupyter Notebook from the command line

1. At the Anaconda Prompt (terminal on Linux or macOS), type `spyder` and press Enter. Spyder should start up just like it did when you launched it from Anaconda Navigator.
2. Close Spyder the same way you did in the previous exercise.

3. At the Anaconda Prompt (terminal on Linux or macOS), type `jupyter-notebook` and press Enter.

Jupyter Notebook should start up just like it did when you launched it from Anaconda Navigator. Close it the same way you did in the previous exercise.

What's next?

Using Navigator

- [Getting started with Navigator \(10 minutes\)](#)
- [Navigator user guide](#)

Using conda

- [Getting started with conda \(20 minutes\)](#)
- [Conda cheat sheet](#)
- [Conda user guide](#)

Using Spyder

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

Using Jupyter Notebook

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

Links to IDE documentation

- [Eclipse and PyDev](#)
- [IDLE](#)
- [Sublime Text](#)
- [Ninja IDE](#)
- [Python Tools for Visual Studio \(PTVS\)](#)
- [Python for Visual Studio Code](#)
- [Spyder](#)
- [Wing IDE](#)
- [IntelliJ](#)

Tasks

Installing conda packages

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.

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
```

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 - ~/opt/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.

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:

```
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 Anaconda 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.

Using MRO with Anaconda

If you prefer to use the Microsoft R Open (MRO) platform with Anaconda, as opposed to R, you can switch the default R interpreter from R to MRO. To get MRO, you need to explicitly include `mro-base`. Anaconda will maintain an archive of MRO packages but will not update MRO packages. Support for MRO packages will be on a case-by-case basis.

If you are using MRO, it is recommended to migrate to R. Follow the [migration directions](#).

Switch the default R interpreter from R to MRO

Run `conda info` and check your version of conda. If your version of conda is below 4.6, run `conda update conda` to update conda to the latest version.

Run:

```
conda config --system --set pinned_packages _r-mutex==anacondar*
```

The default R interpreter will switch from R to MRO.

To learn more about how to use MRO with Anaconda, see [Using MRO language with Anaconda](#).

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.

Using MRO language with Anaconda

Microsoft R Open (MRO) is the enhanced distribution of R from Microsoft, a complete and free open source platform for statistical analysis and data science.

MRO was previously the default R interpreter in Anaconda. As of 2019 releases, Anaconda defaults to internal builds of R, henceforth the “Anaconda R ecosystem.” [Learn more about how to use R with Anaconda.](#)

Anaconda maintains an archive of MRO packages but will not update MRO packages. Support for MRO packages will be on a case-by-case basis.

If you are using MRO, it is recommended to migrate to R. Follow the migration directions below.

Migrate MRO conda environments to use Anaconda R

If you have an MRO-based conda environment and you want to shift over to Anaconda R to fix library errors or for updates, using conda will fail:

```
conda install r-base
```

Using conda will result in unsatisfiable errors because the MRO packages in your environment will conflict with Anaconda R counterparts. They’re not compatible and the metadata is designed to prevent this coexistence. You can create a new environment but that could require more effort depending on how many dependencies you have.

To resolve this, use the [MRO-migrator tool](#). This tool removes all MRO-specific packages then updates the remaining packages to use Anaconda R instead of MRO. The remove-update cycle takes care of the unsatisfiability.

Warning: There’s minimal error handling in this tool. Back up your environments before running this tool.

To use the MRO-migrator tool, run its command line:

```
mro-migrator ~/miniconda3/envs/your-r-env
```

The default behavior lists which MRO-only packages will be removed. The tool does not change anything by default. To perform a migration, pass the `--execute` flag:

```
mro-migrator --execute ~/miniconda3/envs/your-r-env
```

MRO-supported operating systems

64-bit systems only for all operating systems - Windows, macOS, and Linux.

Windows 7.0 SP1, Windows 8.1, Windows 10, Windows Server 2008 R2 SP1, and Windows Server 2012.

Linux - CentOS, Red Hat Enterprise Linux, Debian, and Ubuntu.

When using MRO conda packages, starting the R interactive interpreter shows Microsoft R Open in the startup message. Anaconda Navigator, the Anaconda graphical package manager and application launcher, also creates R environments by default. You may instead select MRO when creating a new conda environment from within Navigator.

Microsoft R Client

Microsoft R Client is a free, community-supported data science tool for high-performance analytics built on top of MRO. Additionally, R Client introduces the powerful ScaleR technology and its proprietary functions to benefit from parallelization and remote computing.

Microsoft R Client is available as a conda package (`r-mrclient`). Users of Windows or RHEL-7/CentOS7/Ubuntu 14.04 and above also have the option to conda install the MicrosoftML R package for machine learning (`r-mrclient-mml`) and the pre-trained models for sentiment analysis and image detection (`r-mrclient-mlm`).

Creating a new environment with MRO instead of R

When creating a new environment, you can use MRO and not R by explicitly including `mro-base` in your list of packages.

With conda 4.6.4:

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

Switch an environment from R to MRO

We recommend using R as your default interpreter in Anaconda, however the directions below show you how to switch an environment from R to MRO.

Activate the environment containing R

If you use conda 4.4 or later, run:

```
conda install mro-base
```

If you use conda 4.3, run:

```
conda remove --force r-base _r-mutex
conda install mro-base
```

The environment's R interpreter will switch from R to MRO.

mro-basics: The MRO Basics metapackage contains everything in the Microsoft MRO installers. It does not include `r-mrclient`, `r-mrclient-mml`, or `r-mrclient-mlm`.

r-mrclient: Microsoft R Client is a free, community-supported, data science tool for high performance analytics.

r-mrclient-mml: MicrosoftML provides state-of-the-art fast, scalable machine learning algorithms and transforms for R. Depends on `r-mrclient`.

r-mrclient-mlm: MicrosoftML Machine Learning Models are pre-trained machine learning models for sentiment analysis and image detection. Depends on `r-mrclient-mml`.

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*
- *Adding a package to a project*
- *Adding a repository to a project*

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.

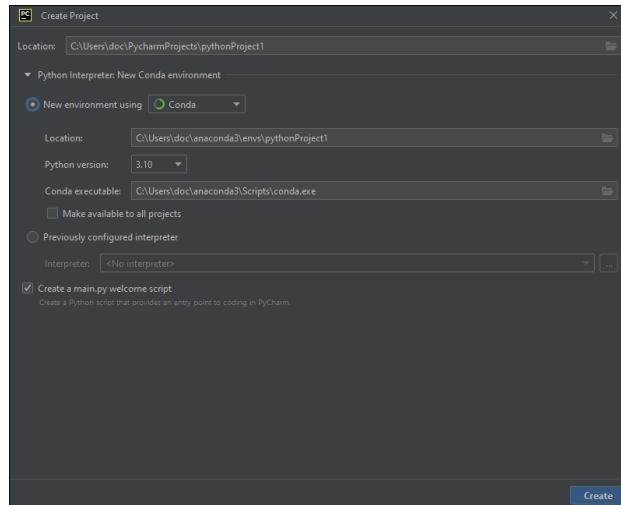
Creating a new conda environment from a PyCharm project

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**.
 1. Use **Location** to change your project's name and file location, if necessary.
 2. Expand **Python Interpreter**, if necessary.
 3. Your **New environment** should use Conda instead of the default Virtualenv.
 4. Specify the location and name of the new conda environment in **Location**.

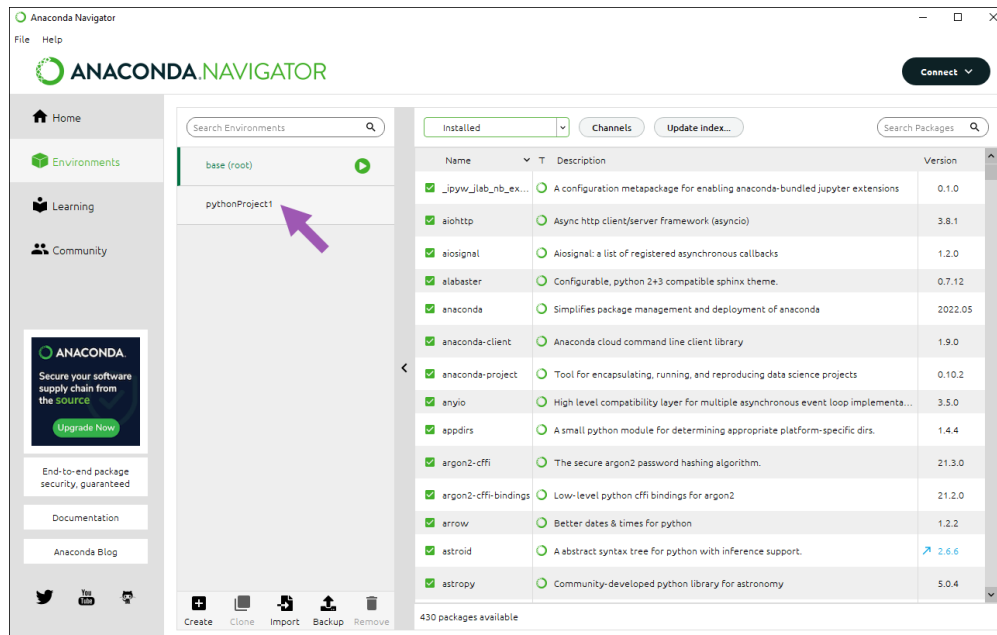
Note: The directory where the new conda environment is located must be empty.

5. Select the correct **Python version**.
 6. Specify the location of the **Conda executable** file.
 7. 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:

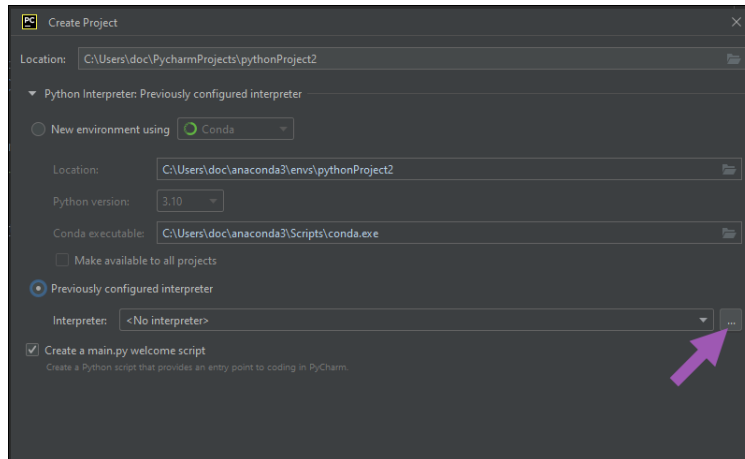


Configuring a PyCharm Project with an existing conda environment

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**.

1. Use **Location** to change your project's name and file location, if necessary.
2. Expand **Python Interpreter**, if necessary.
3. Choose **Previously configured interpreter**.
4. Click the three dots to add a Python Interpreter.



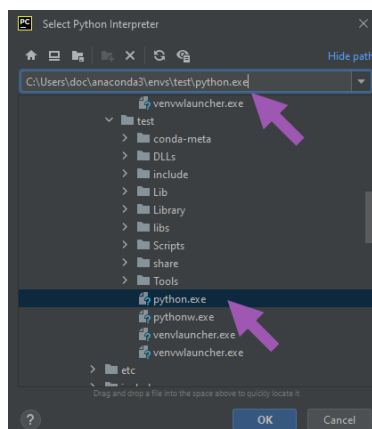
5. Choose **Conda Environment**.
6. If the link to the correct environment's bin folder does not appear in the **Interpreter** dropdown, you can easily find the file path using your Terminal or Anaconda Prompt:
 - Open the correct environment using `conda activate ENV-NAME`, replacing ENV-NAME with the 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
```


7. 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.

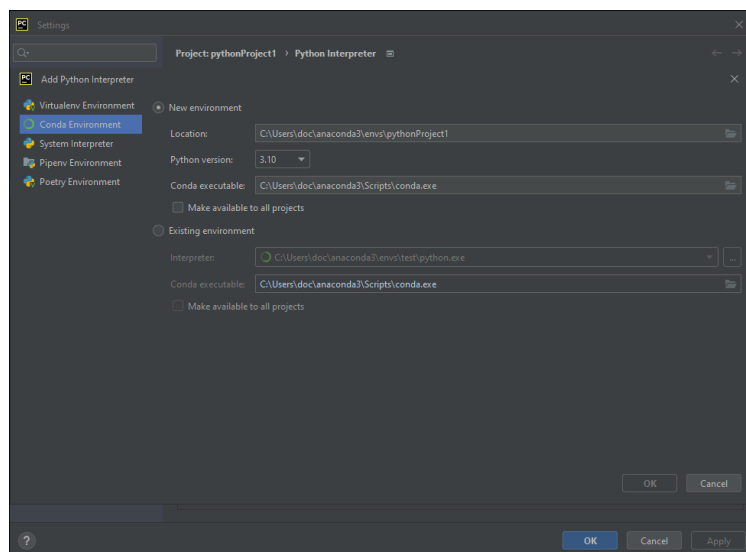


8. If necessary, change the file path to your conda installation and choose whether to make this environment available to all PyCharm projects.
2. Click **OK** and then **Create** to finish creating your new project.

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:
 1. Select **New environment**.
 2. 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.

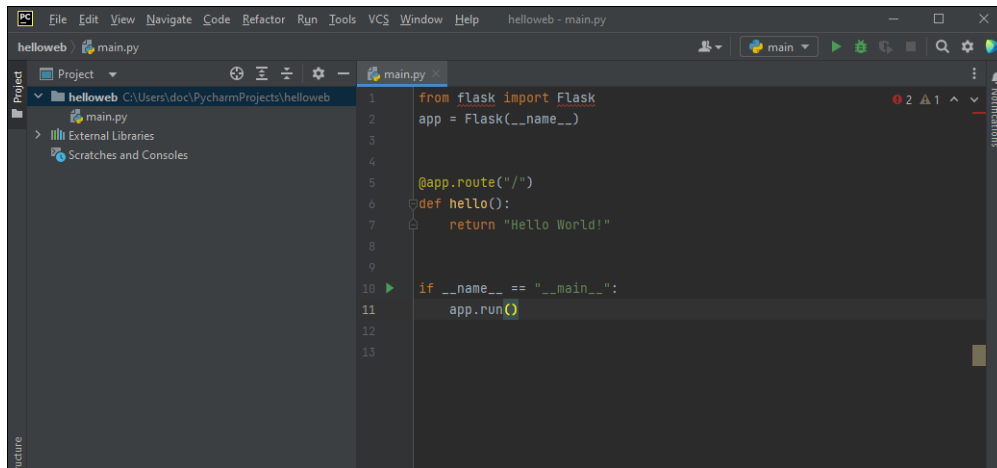
3. Select the correct **Python version**.
 4. Specify the location of the **Conda executable** file.
 5. Select whether to **Make available to all projects**.
7. To use an existing environment:
 1. Select **Existing environment**.

2. Specify the required interpreter. For more information on finding the correct environment, see [Configuring a PyCharm Project with an existing conda environment](#).
3. 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

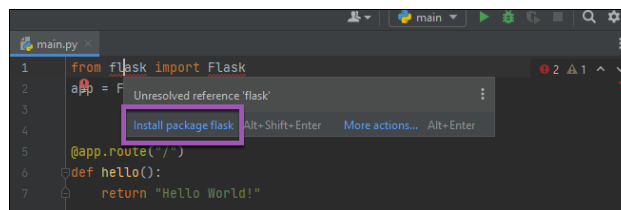
If you've added a package to your PyCharm project that is not within the standard Python library, you can add it to your project's conda environment with PyCharm.

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

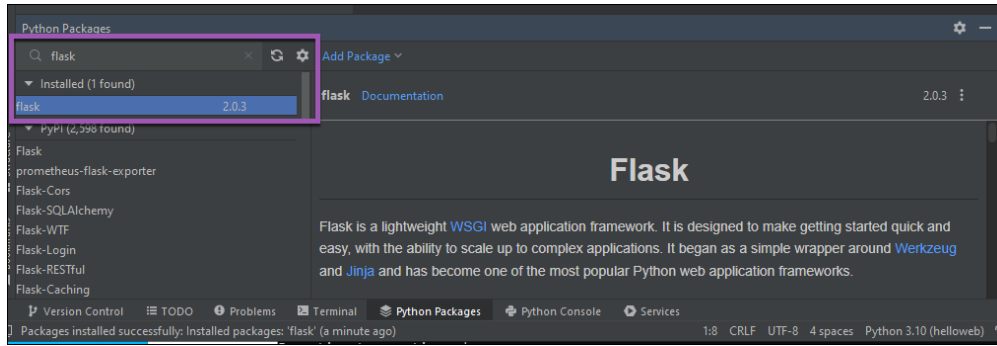


You can see that the package import is red underlined in the code. If you hover over one of them, PyCharm tells you that the reference to `flask` is unresolved. That means that the package is not available to the program and needs to be installed.

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](#).

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.

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

Update the .condarc file

We recommend 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.](#)

TensorFlow

Anaconda makes it easy to install TensorFlow, enabling your data science, machine learning, and artificial intelligence workflows.

This page shows how to install [TensorFlow](#) with the conda package manager included in Anaconda and Miniconda.

TensorFlow with conda is supported on 64-bit Windows 7 or later, 64-bit Ubuntu Linux 14.04 or later, 64-bit CentOS Linux 6 or later, and macOS 10.10 or later.

The instructions are the same for all operating systems. No `apt install` or `yum install` commands are required.

Install TensorFlow

1. Download and install [Anaconda](#) or the smaller [Miniconda](#).
2. On Windows open the Start menu and open an Anaconda Command Prompt. On macOS or Linux open a terminal window. Use the default bash shell on macOS or Linux.
3. Choose a name for your TensorFlow environment, such as “tf”.
4. To install the current release of CPU-only TensorFlow, recommended for beginners:

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

Or, to install the current release of GPU TensorFlow on Linux or Windows:

```
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](#) on the topic, specifically the section on [device placement](#).

CUDA versions

GPU TensorFlow uses CUDA. On Windows and Linux only CUDA 10.0 is supported for the TensorFlow 2.0 release. Previous versions of TensorFlow support other version of CUDA.

To install GPU TensorFlow with a non-default CUDA version such as 9.0 run:

```
conda create -n tf-gpu-cuda8 tensorflow-gpu cudatoolkit=9.0
conda activate tf-gpu-cuda8
```

Python 2

We recommend Python 3, but it is possible to use TensorFlow with Python 2 on Linux and macOS.

CPU-only TensorFlow on Python 2 on Linux or macOS:

```
conda create -n tf-2 tensorflow python=2
conda activate tf-2
```

GPU TensorFlow on Python 2 on Linux:

```
conda create -n tf-2-gpu tensorflow python=2
conda activate tf-2-gpu
```

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
```

Nightly build of CPU-only TensorFlow on Python 2 on Linux or macOS:

```
conda create -n tf-2-n python=2
conda activate tf-2-n
pip install tf-nightly
```

Nightly build of GPU TensorFlow on Python 2 on Linux:

```
conda create -n tf-2-n-gpu python=2
conda activate tf-2-n-gpu
pip install tf-nightly-gpu
```

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 for more information about custom Anaconda parcel builds or other enterprise solutions for using Anaconda with cluster computing.

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

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

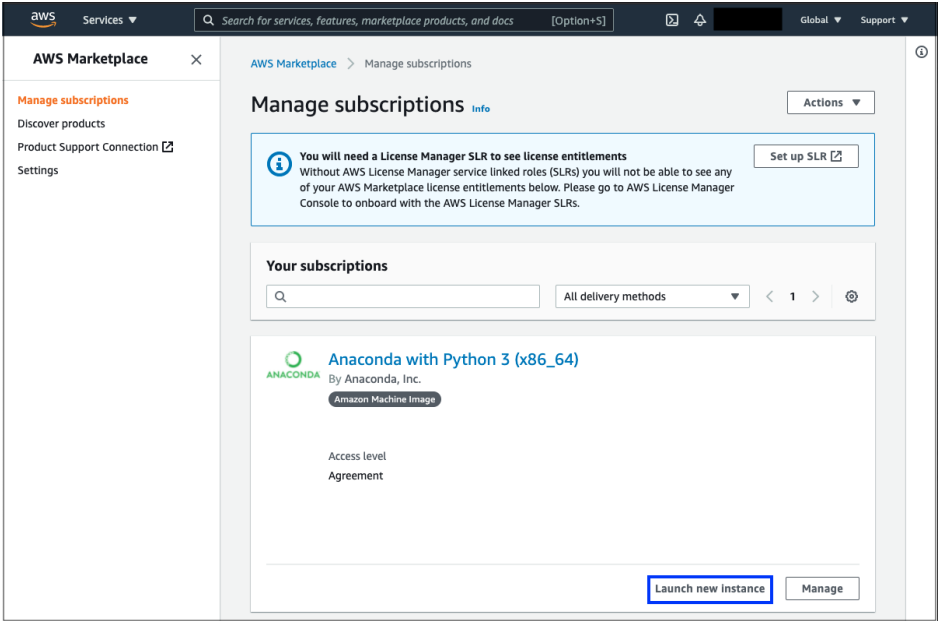
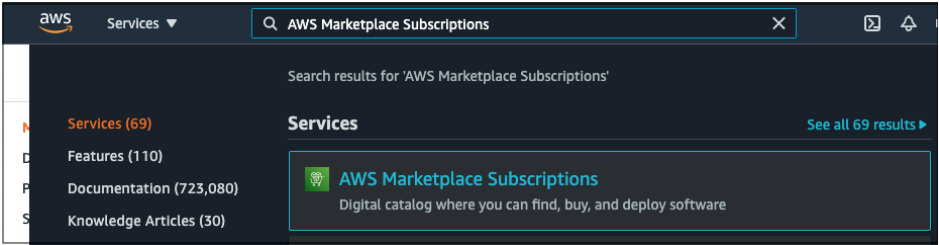
Launch an Anaconda AMI on AWS

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*).

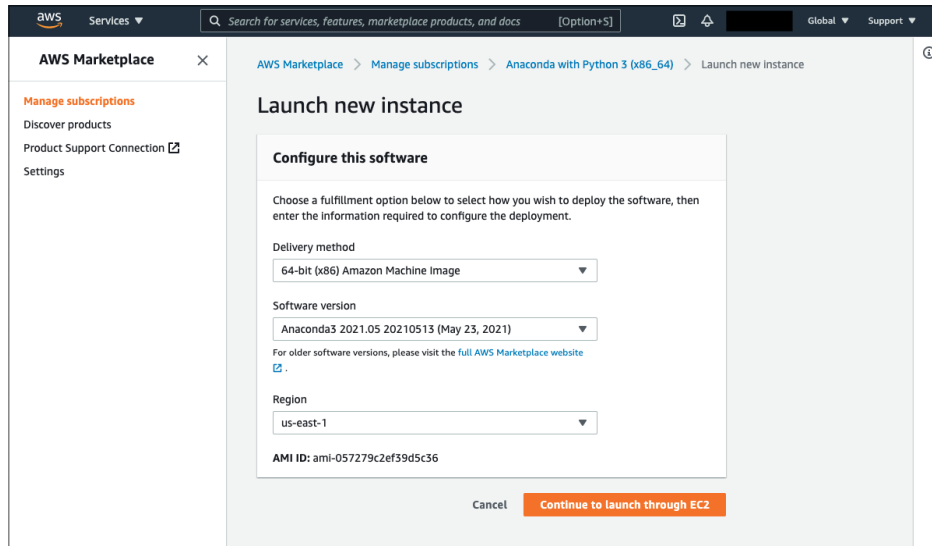
1. Log in to your [AWS Management Console](#).
2. Subscribe to an Anaconda AMI product. (If you've already done this, skip to step 3.)
 1. Go to [Anaconda's AWS Marketplace product page](#) and select the product you wish to use. We currently support AMIs with the following specifications:

Architecture	Anaconda Product	Python	AWS Marketplace Product Name
Linux x86_64	Anaconda Distribution	3.8	Anaconda with Python 3 (x86_64)
Linux x86_64	Miniconda	3.8	Miniconda with Python 3 (x86_64)
Linux aarch64/arm64	Anaconda Distribution	3.8	Anaconda with Python 3 (aarch64/arm64)

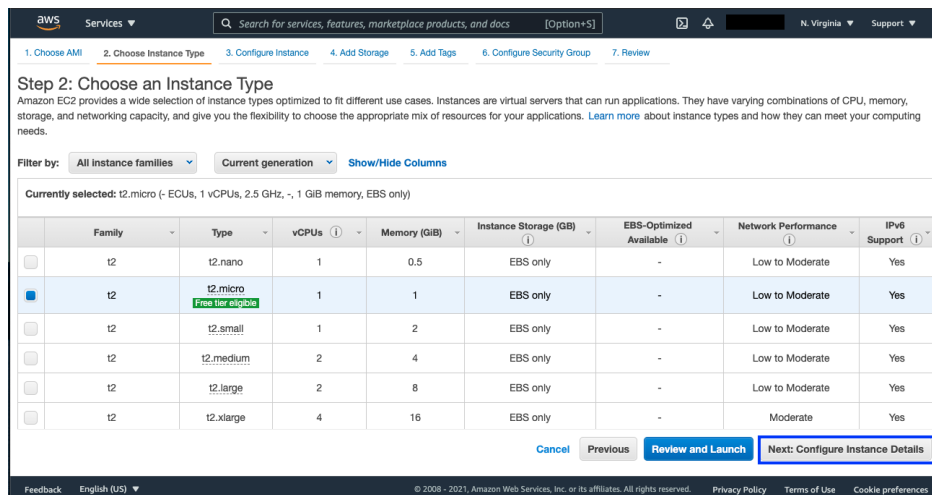
2. On the product's page, click **Continue to Subscribe**.
3. Review and accept the terms. The subscription should take a few minutes to take effect.
3. From the **AWS Management Console**, in the search field, enter "AWS Marketplace Subscriptions" and select the result.
4. On the **Manage subscriptions** page, find the Anaconda product you wish to launch and click **Launch new instance**.



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



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



- 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.
- Select an existing key pair or create a new key pair, check the acknowledge agreement box, and then click **Launch Instances**.
- Click **View Instances** to check the status of your instance.

aws Services Search for services, features, marketplace products, and docs [Option+S] N. Virginia Support

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

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 (GiB)	EBS-Optimized Available	Network Performance
t2.micro	-	1	1	EBS only	-	Low to Moderate

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

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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](#)

Additional resources

- [Anaconda Starter Guide](#)
- [FAQ](#)

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.

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

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

Microsoft Excel—Anaconda on Windows comes ready to bring the power of Python into Excel. Use one of the many packages included in Anaconda or connect to an outside integration tool.

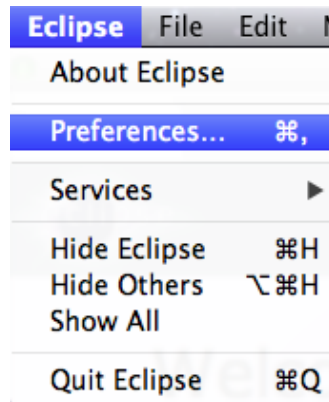
Eclipse and PyDev

[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.

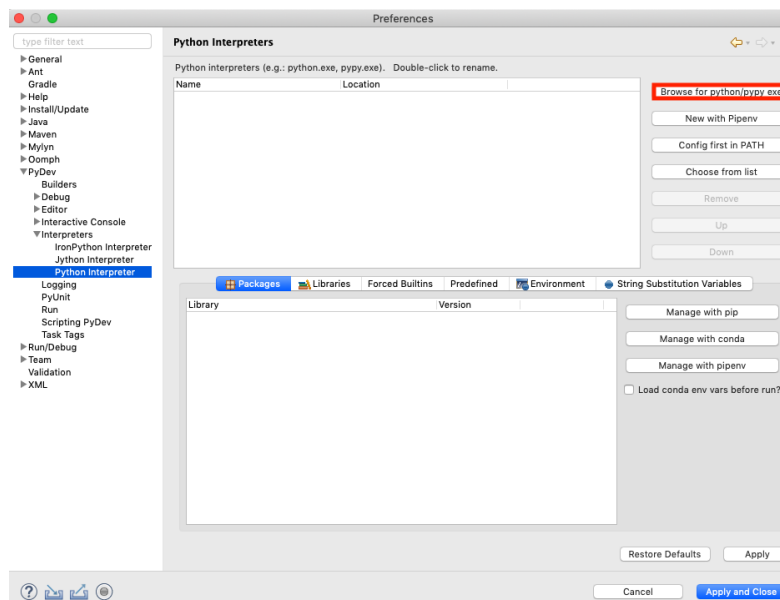
If you do not already have Eclipse and PyDev installed:

- [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](#).

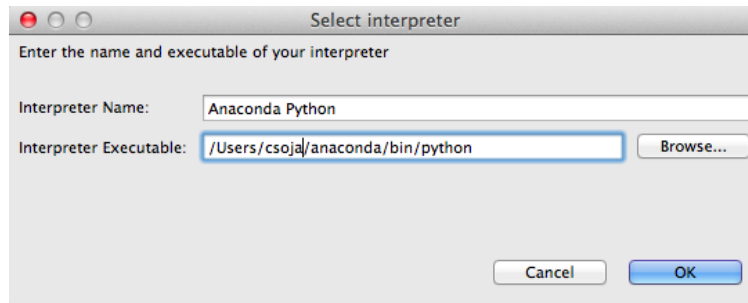
After you have Eclipse, PyDev, and Anaconda installed, set Anaconda Python as your default:



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:

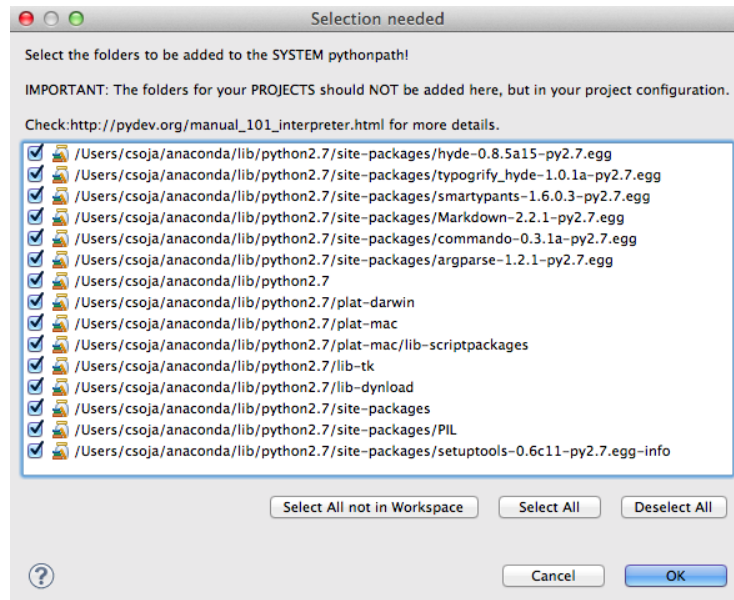


4. In the Interpreter Name box, type `Anaconda Python`.
5. Browse to your *Anaconda Python interpreter path*. The interpreter you choose is related to your environment, so Eclipse will have access to all of the packages in that environment. To add new packages, you may need to `conda install package-name`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

1. Select all the folders:

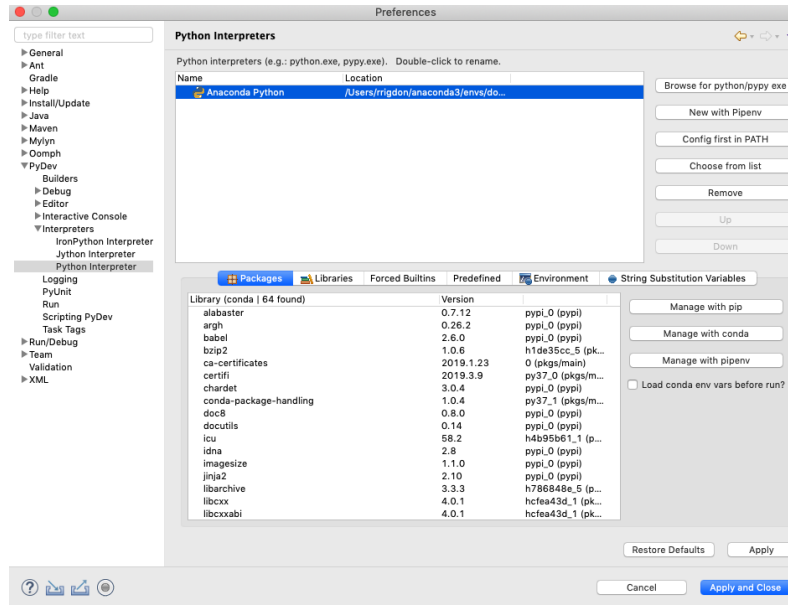


2. Click the OK button.

The Python Interpreters window now displays Anaconda Python:

3. 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...)`

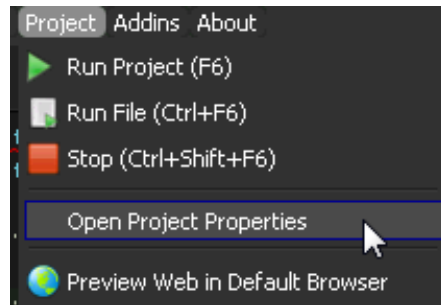
For more information, see the [IntelliJ IDEA documentation](#).

Ninja IDE

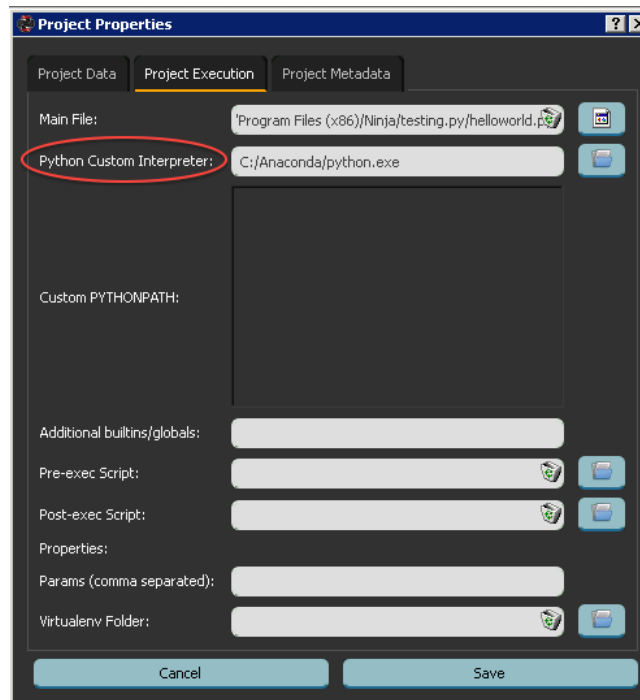
[Ninja IDE](#) is a cross-platform, free, open-source IDE specially designed for Python application development.

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:



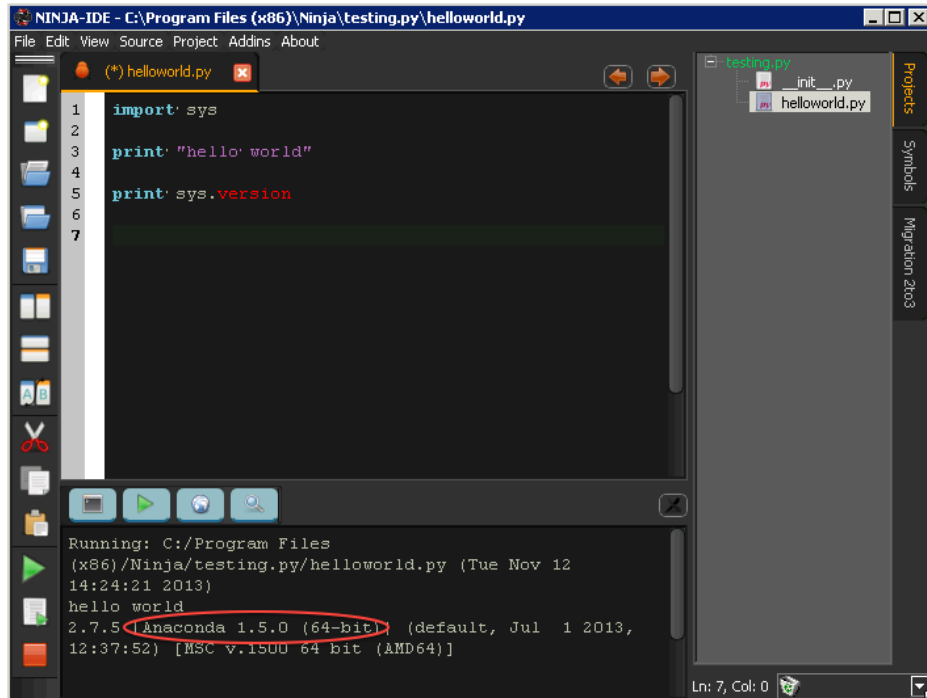
3. Verify the setup with a test script:
 - a. To create the test script, enter this code:

```
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](#).



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.

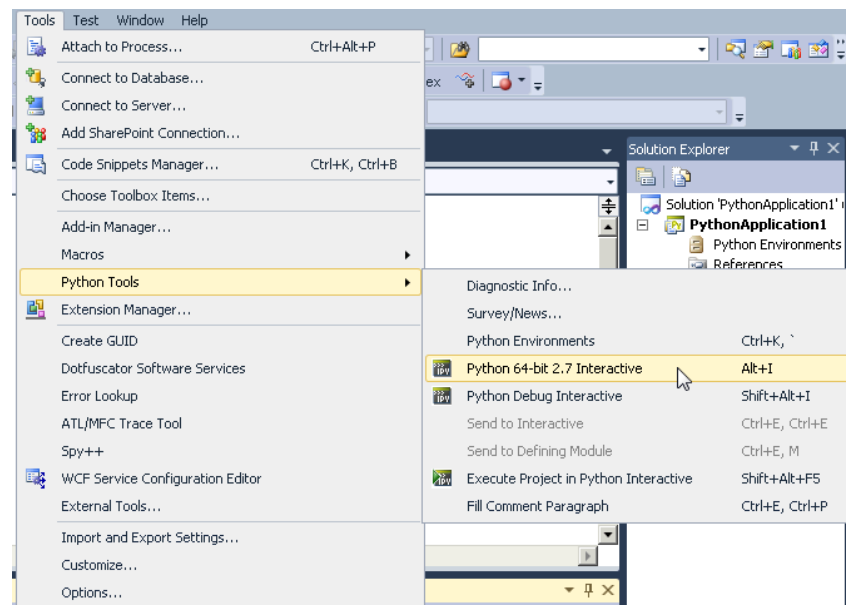
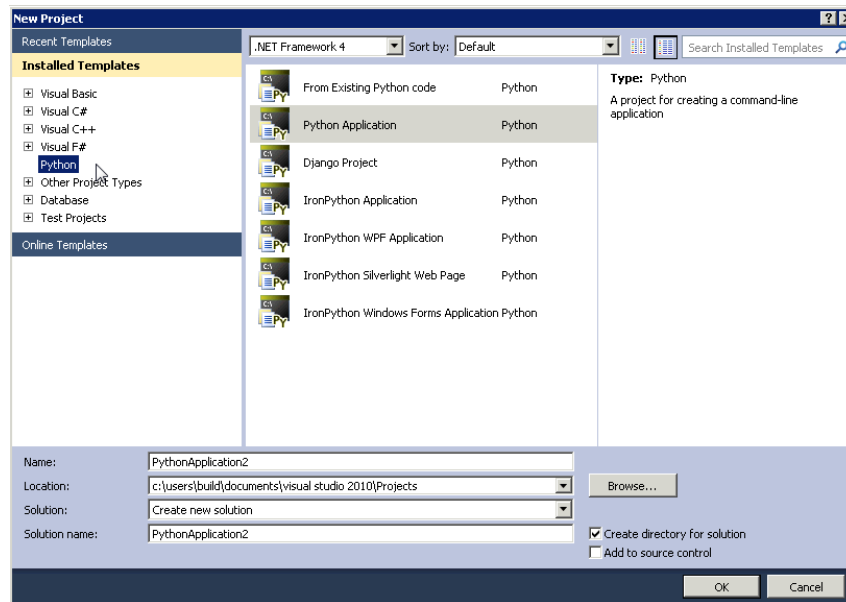
To verify this, create a new Python project and then check whether Anaconda is the Python that it uses.

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:

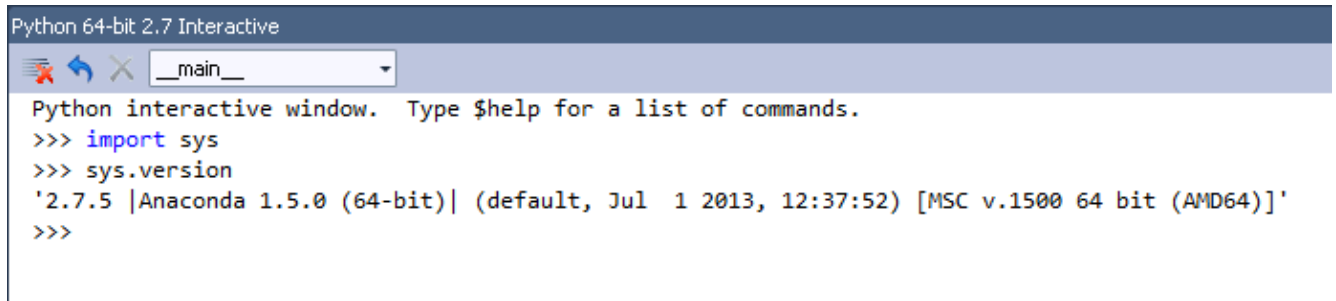
To check which Python the project uses:

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)]'
>>>
```

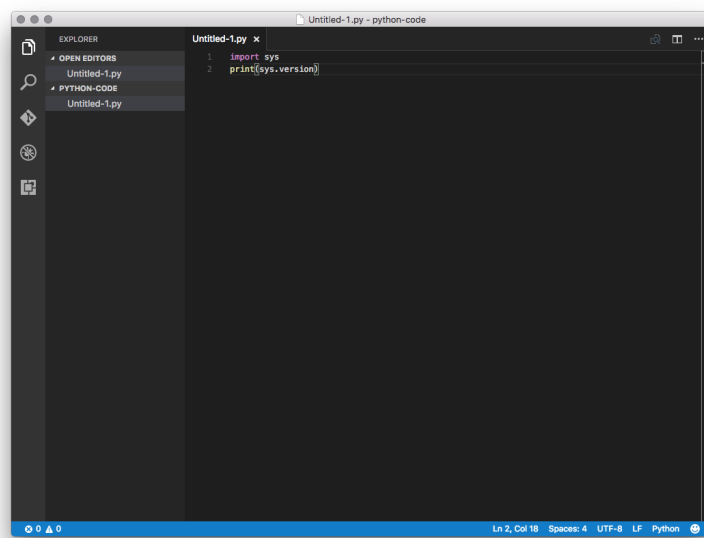
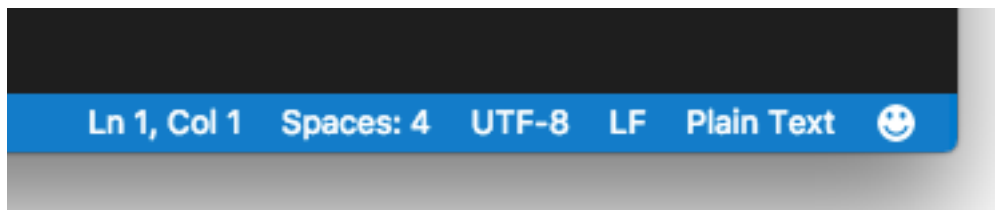
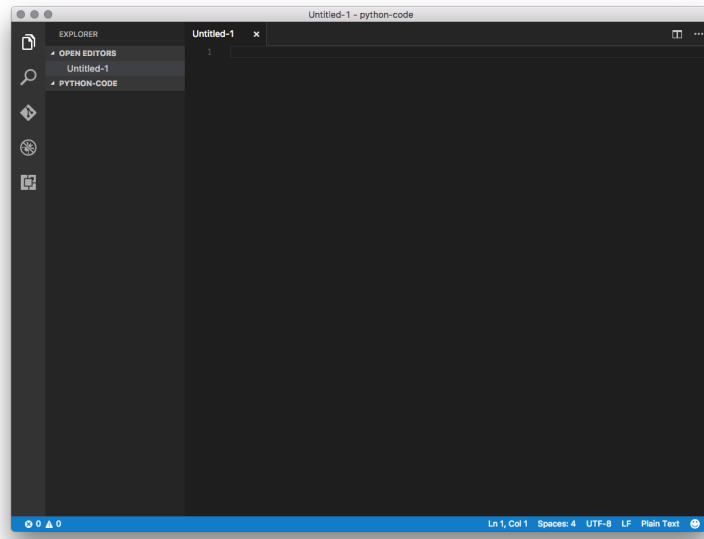
If PTVS does not automatically discover Anaconda, see the [official PTVS documentation](#), especially the section on [Selecting and Installing Python Interpreters](#) and the [PTVS installation instructions](#).

Python for Visual Studio Code

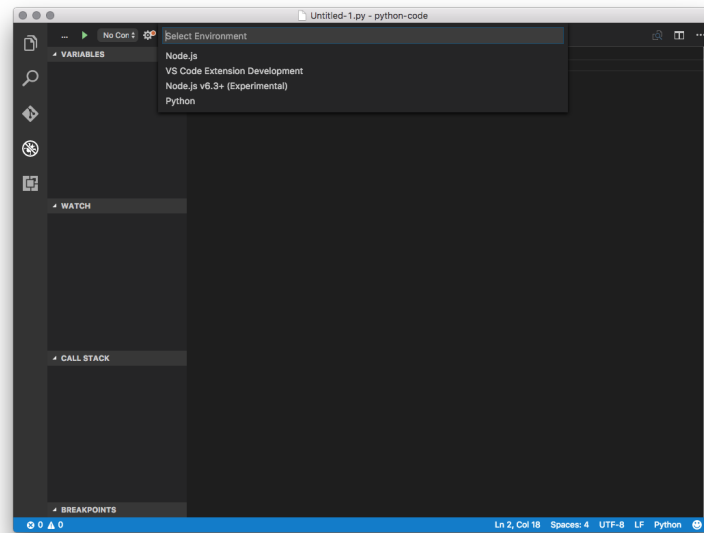
[Visual Studio Code](#) (VSC) is a free cross-platform source code editor. The [Python for Visual Studio Code extension](#) allows VSC to connect to Python distributions installed on your computer.

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.

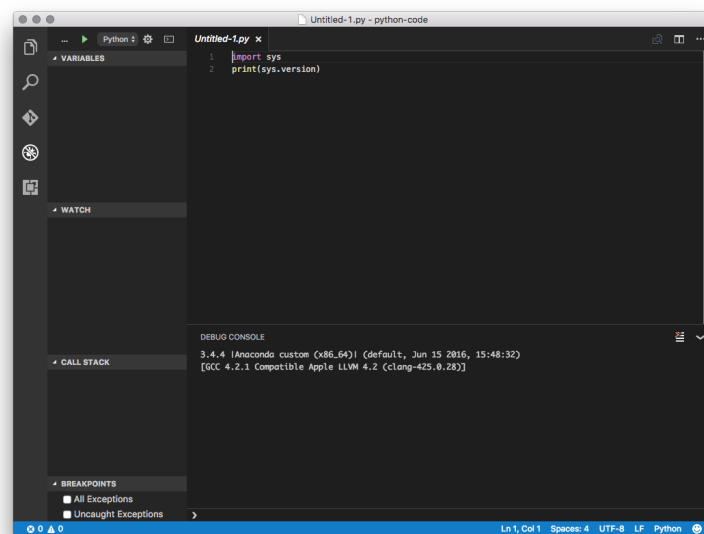
1. Create a new Python source code file:
 1. In the **File** menu, select Open to choose a directory to place the code.
 2. In the **File** menu, select New File. Your screen will now look like this:
2. Click Plain Text at the bottom of the window to associate the new file with the Python interpreter.
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:



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.

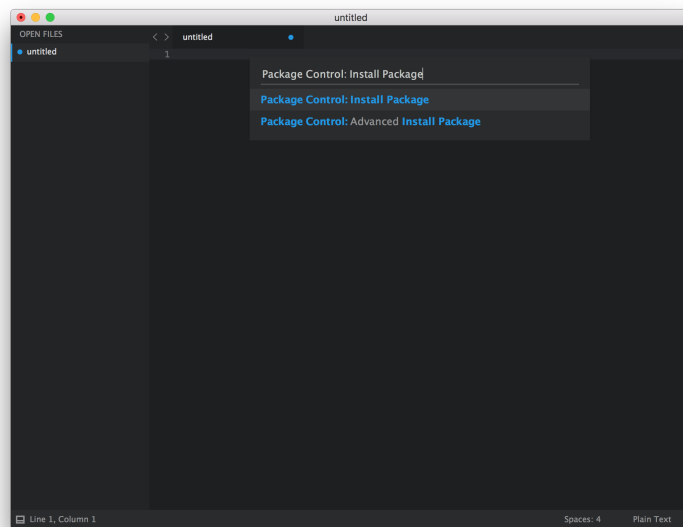
For more information about Spyder, see the [Spyder web page](#) or the [Spyder documentation](#).

Sublime Text

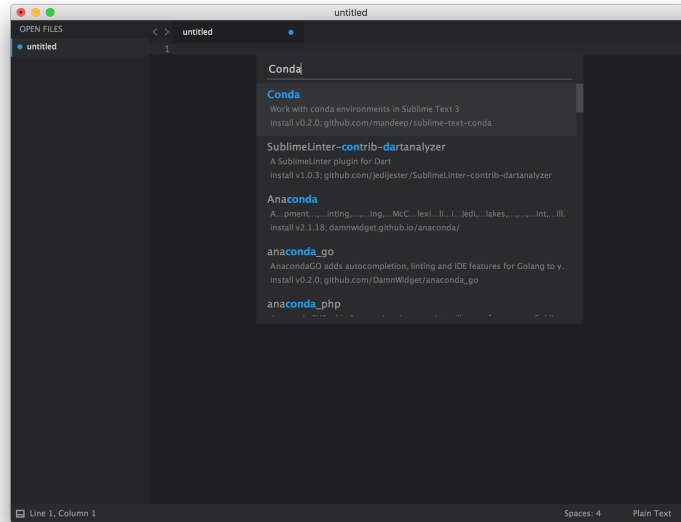
Sublime Text is a cross-platform text editor for code, markup, and prose. [Download and Install Sublime Text](#).

To use your Anaconda installation with Sublime Text:

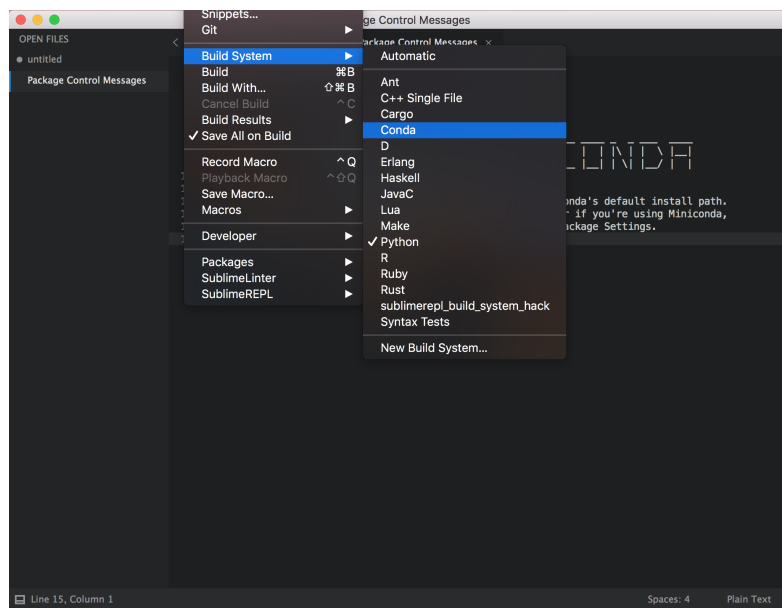
1. [Download Package control](#).
2. Open the Sublime Text command palette by pressing CTRL+Shift+p (Windows, Linux) or CMD+Shift+p (macOS).
3. All Package Control commands begin with “Package Control:”. Start by typing “Package”.
4. Select “Package Control: Install Package”.



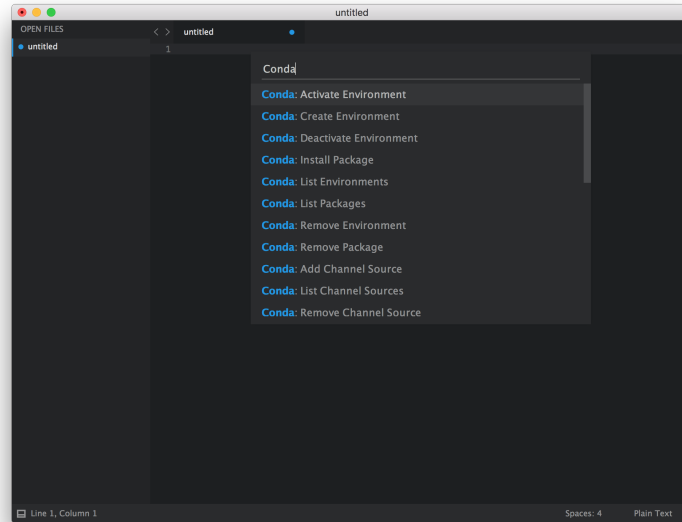
5. Search for `conda` in the command palette and select the conda plugin. When the plugin is installed, a Package Control Message will open in the Sublime Text window.



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.



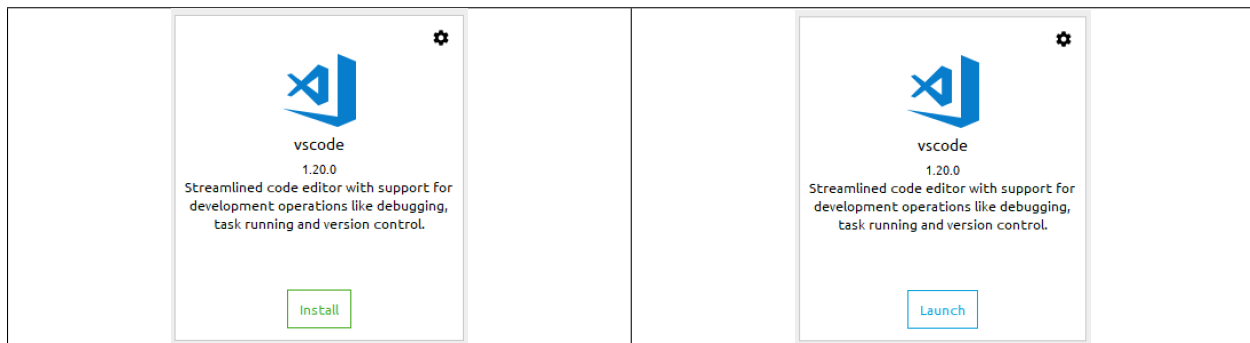
Microsoft Visual Studio Code (VS Code)

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.

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:

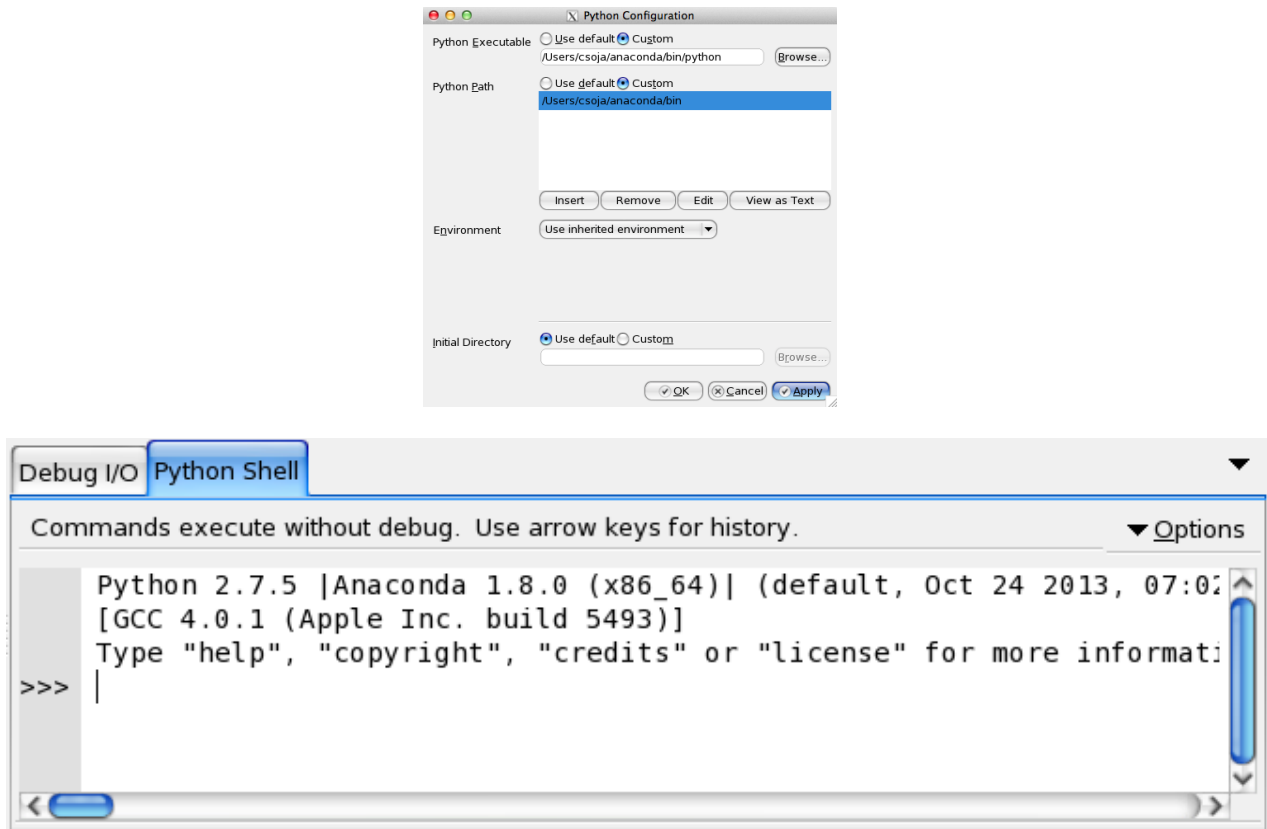
1. Navigate to the Python configuration window:
 - In Wing 101, in the **Edit** menu, select Configure Python.
 - In Wing Personal and Wing Pro, in the **Project** menu, select Project Properties.

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](#).

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`

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.

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/pkgs>.

Active default channels

Main channel

<https://repo.anaconda.com/pkgs/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/pkgs/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](#).

MRO channel

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

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

As of Dec. 19, 2017, this is an empty channel to maintain compatibility with older versions of Conda. Packages in this channel have been moved to `pkgs/mro-archive`. New MRO packages are in the `pkgs/r` channel.

MRO archive

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

An archive of the full contents of the `pkgs/mro` channel, taken on Dec 12, 2017. Outdated versions of Microsoft's MRO and MRAN available for archival/reproducibility purposes only.

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/pkgs/main>.

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. As of August 27th, 2018, experimental AMD GPU packages for Anaconda are in progress but not yet officially supported.

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 5 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 Xp or V
- GeForce 1080 or 1080 Ti
- 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 M4, M40, P4, and P40.

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. We recommend 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 8, 9.0 and 9.2. The NVIDIA drivers are designed to be backward compatible to older CUDA versions, so a system with NVIDIA driver version 384.81 can support CUDA 9.0 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=8.0` 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 8.0 (8.0.61 GA2)	≥ 375.26	≥ 376.51
CUDA 9.0 (9.0.76)	≥ 384.81	≥ 385.54
CUDA 9.2 (9.2.88)	≥ 396.26	≥ 397.44
CUDA 9.2 (9.2.148 Update 1)	≥ 396.37	≥ 398.26

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 easy 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

Caffe was one of the first popular deep learning libraries.

```
conda install caffe-gpu
```

Chainer/CuPy (Linux only)

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

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

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 Anaconda Enterprise

GPU-enabled conda packages can be used in AE 5 projects when the cluster has resource profiles which include GPUs. For more details see [the GPU support section of the AE 5 FAQ](#).

Using Jupyter Notebook extensions

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

- *Obtaining the extensions*
- *Uninstalling the extensions*
- *RISE*
- *Notebook anaconda.org*
- *Notebook conda*
- *Notebook Conda Kernels*

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

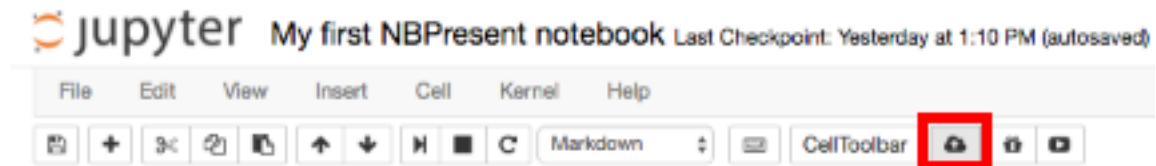
You can access the install instructions for the [RISE extension](#) from [anaconda.org](#).

[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.

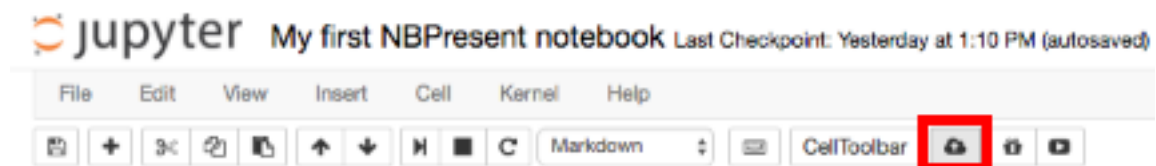
2. Sign in to Cloud:

- 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:

Publish My first NBPpresent notebook to ANACONDA CLOUD ×

User/Organization


ContinuumCrew (Continuum Crew) ⬆⬇⬆

Summary

This is a description of the notebook I am uploading

Environment

☒ Attach conda environment

 Publish

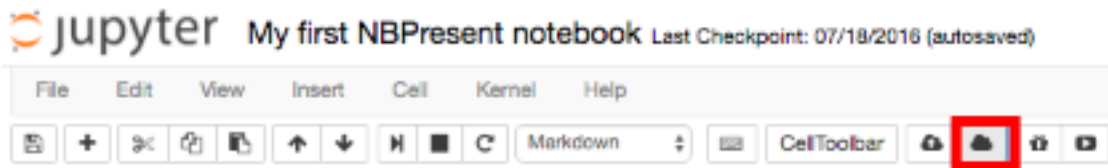
This notebook was previously published as <https://anaconda.org/continuumcrew/my-first-nbpresent-notebook>

Initially, all published notebooks will be public .

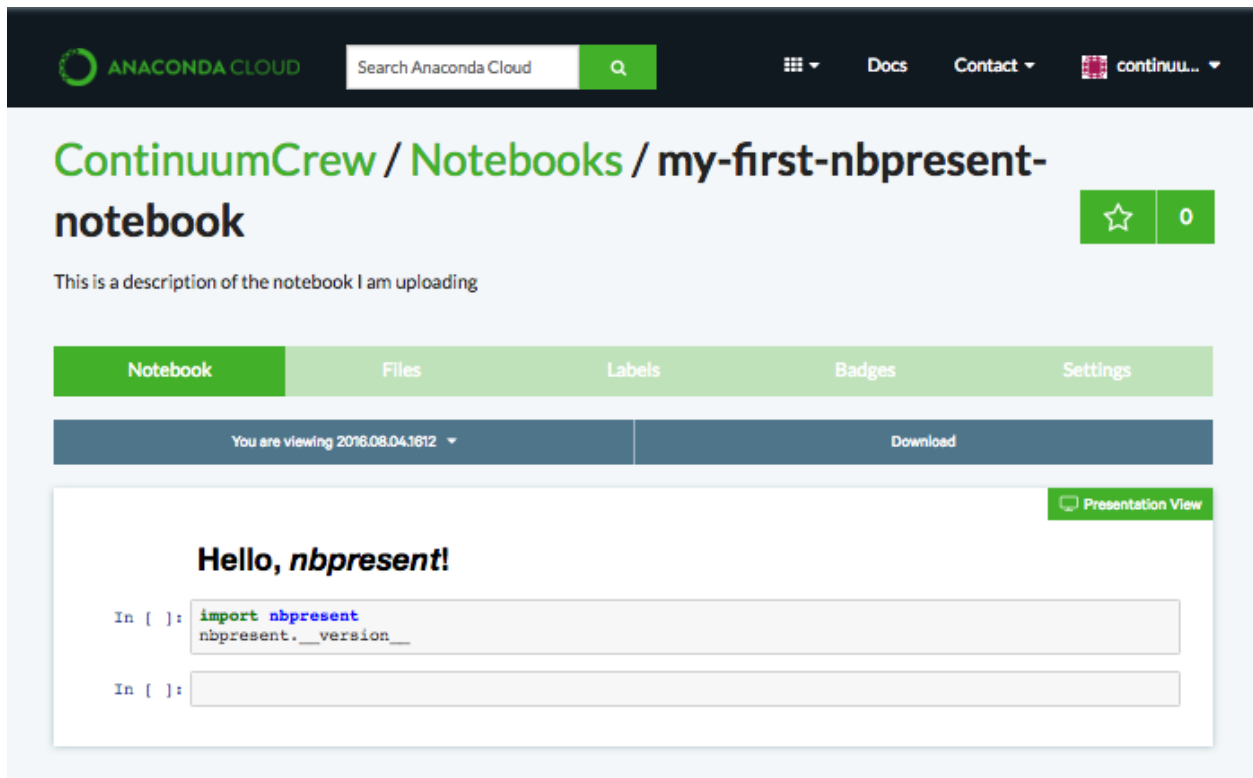
Make **My first NBPpresent notebook** private or authenticated on the [Anaconda Cloud settings page](#).

Close

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](https://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 + ↺			
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.

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](#).

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_cudalib	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	

Kernel

Help

Interrupt

Restart

Restart & Clear Output

Restart & Run All

Reconnect

Change kernel ▶

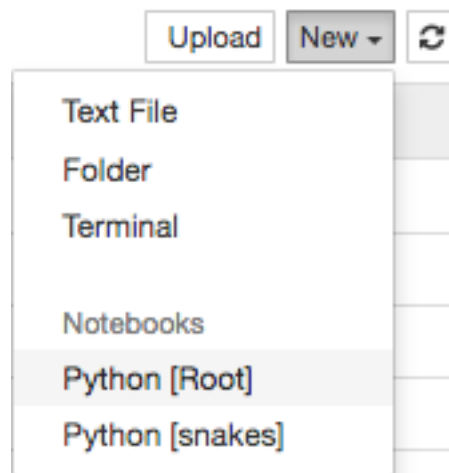
Conda Packages

Visit anaconda.org

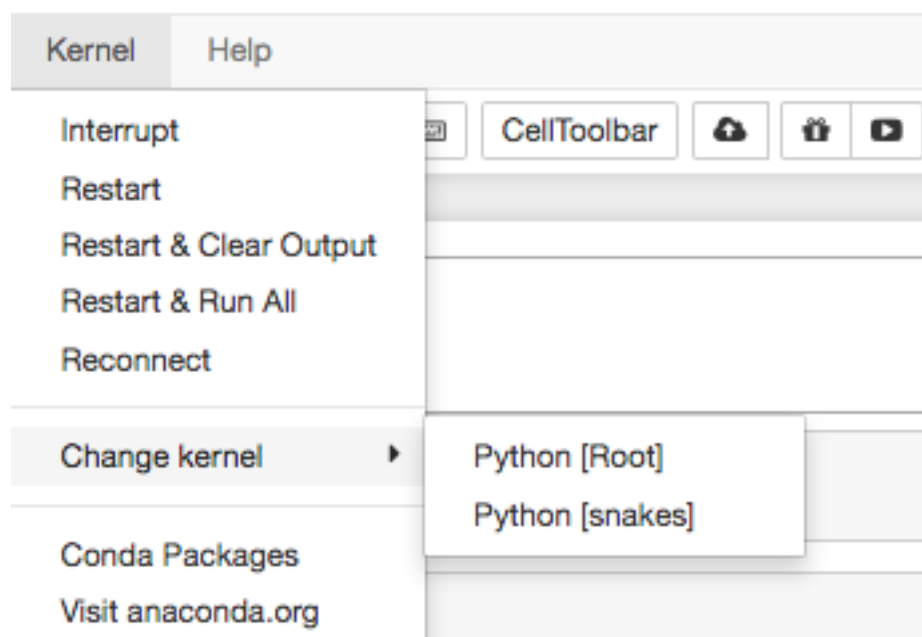
Notebook Conda Kernels

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:



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.

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.

Cheat sheet

Download the `Anaconda Starter Guide` for a quick guide to using Anaconda.

Frequently asked questions

- [*Getting Anaconda*](#)
- [*Installing Anaconda*](#)
- [*Using conda packages*](#)
- [*General*](#)

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:

- We recommend that you download the latest version of Anaconda and then [make 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?

We recommend 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, we recommend 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?

We do not recommend adding Anaconda to the PATH manually. During installation, you will be asked “Do you wish the installer to initialize Anaconda3 by running `conda init`?” We recommend “yes”. 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 configure or opt out of the Intel Math Kernel Library (MKL)?

For information on configuring and uninstalling MKL, see the [Anaconda MKL documentation](#).

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>>.

7.1.3 Anaconda Navigator

Desktop Portal to Data Science

Overview

This page describes the tabs, menus, and buttons in the Anaconda Navigator window.

- *Online and offline modes*
- *Home tab*
- *Environments tab*
- *Learning tab*
- *Community tab*
- *File menu*
- *Help menu*
- *Navigator window buttons*

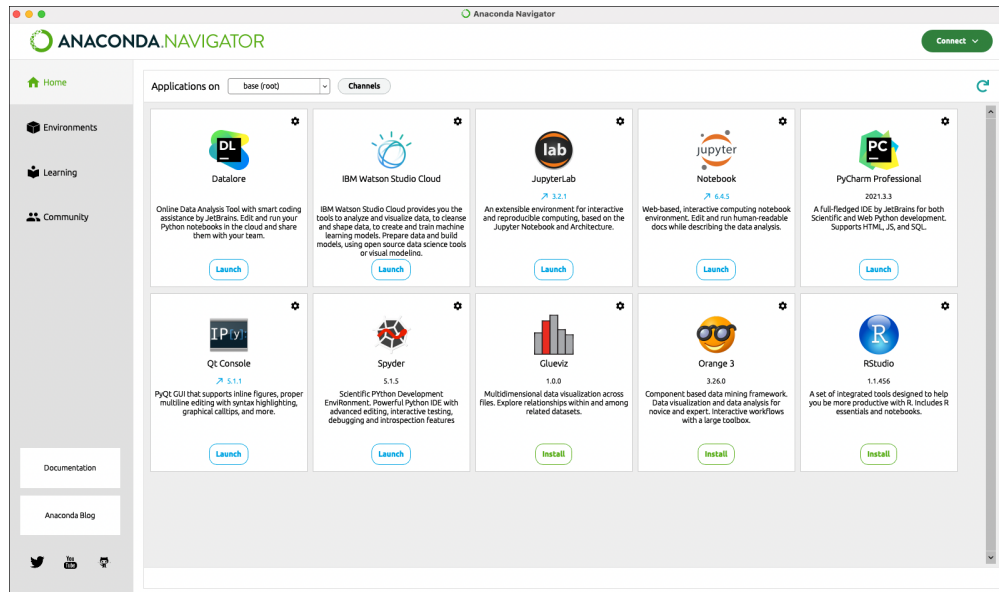
The tabs in the left column represent the main components in Navigator. Click a tab to open it.

Tip: To learn more about terms used in Anaconda, see the *Glossary*.

Online and offline modes

Normally Navigator is used online so that it can download and install packages.

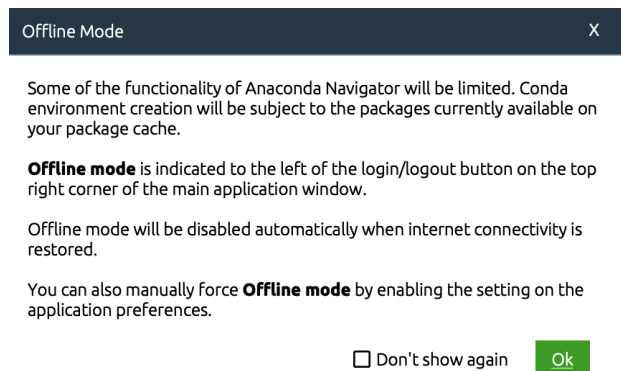
In online mode, Navigator must be able to reach these sites, so they may need to be whitelisted in your network's firewall settings.



- <https://repo.anaconda.com>
- <https://conda.anaconda.org> for conda-forge and other channels on anaconda.org
- google-public-dns-a.google.com (8.8.8.8:53) to check internet connectivity with Google Public DNS

Offline mode

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.

Home tab

The **Home** tab, shown in the image above, 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:

- JupyterLab
- Jupyter notebook
- Orange data visualization
- Spyder IDE
- Glueviz multidimensional data visualization
- R Studio IDE
- PyCharm
- VS Code
- Anaconda Prompt (Windows only)
- Anaconda PowerShell (Windows only)

You can also *build your own Navigator applications*.

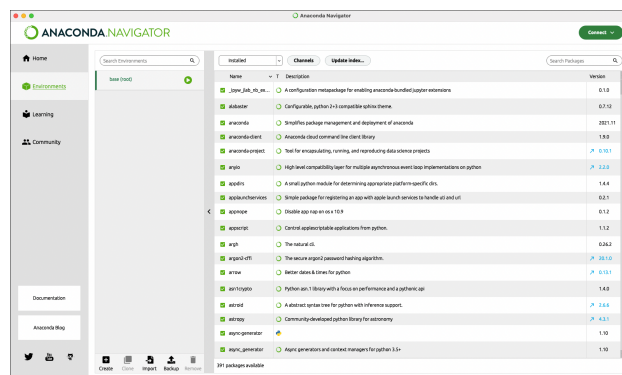
In each application box, you can:

- 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 box.

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 in the list, then click the application’s Install button. You can also create a new environment on the **Environments** tab, then return to the **Home** tab to install packages in the new environment.

Environments tab

The **Environments** tab allows you to manage installed *environments*, *packages*, and *channels*.



The left column lists your environments. Click an environment to activate it.

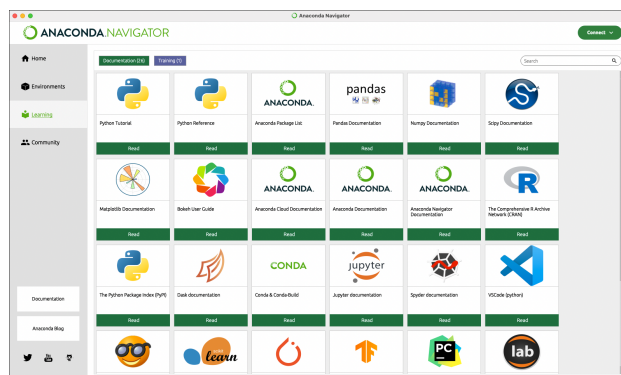
With Navigator, like with conda, you can create, export, list, remove, and update environments that have different versions of Python and/or packages installed. Switching or moving between environments is called activating the environment. Only one environment is active at any point in time. For more information, see [Managing environments](#).

The right column lists packages in the current environment. The default view is Installed packages. To change which packages are displayed, click the arrow next to the list, then select Not Installed, Upgradeable, or All packages. For more information, see [Managing packages](#).

Channels are locations where Navigator or conda looks for packages. Click the Channels button to open the Channels Manager. For more information, see [Managing channels](#).

Learning tab

On the **Learning** tab you can learn more about Navigator, the Anaconda platform and open data science. Click the Documentation, Training, Webinars, or Video buttons, then click any item to open it in a browser window.



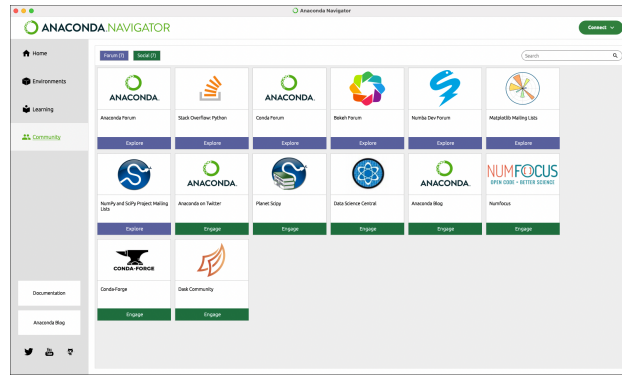
Community tab

On the **Community** tab you can learn more about events, free support forums, and social networking relating to Navigator. Click the Events, Forum, or Social buttons, then click any item to open it in a browser window.

Tip: To get help with Anaconda and Navigator from the community, join the [Nucleus community](#).

File menu

The **Anaconda Navigator** menu (name may differ based on OS and launch method contains the following options:



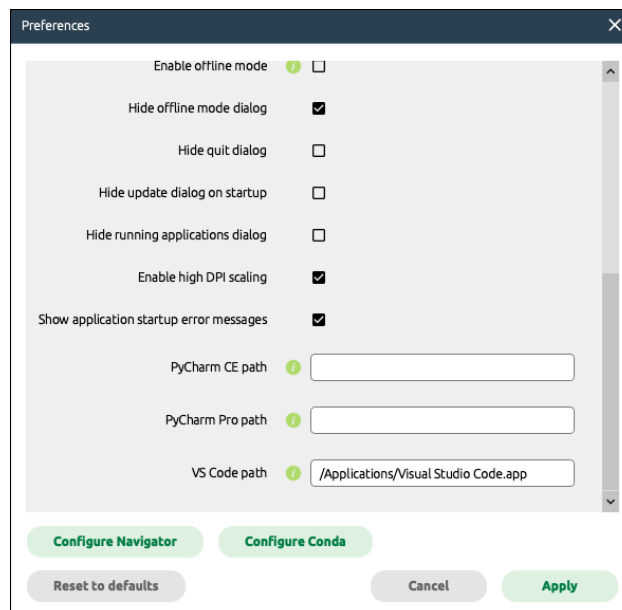
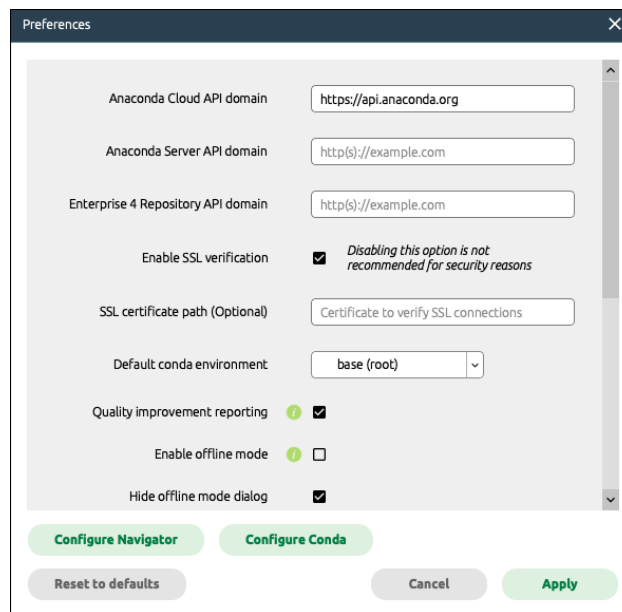
About — displays information about Navigator, including a link for bug reports and feature requests. In Linux this is in the Help menu.

Preferences — allows you to set your Navigator preferences.

In the Preferences window you can:

- Set the Anaconda.org API domain if you are going to use channels and packages from anaconda.org.
- Set the Anaconda Server API domain if you are going to use channels and packages from Anaconda Server.
- Set the Enterprise 4 Repository API domain if you are going to use channels and packages from your Repo 4 server.
- Enable or disable SSL verification.
- Optionally set a certificate to verify SSL connections.
- Toggle the option to provide personally non-identifiable information to help improve the product.
- Enable or disable offline mode.
- Hide the offline mode dialog box.
- Hide the Quit dialog box when exiting the program.
- Hide the Update dialog box when starting the program.
- Hide the Close running applications dialog, which normally displays when exiting the program if there are still running applications that were launched from Navigator.
- Modify Navigator's display with Enable High DPI scaling option. This option can be useful if Navigator isn't displaying correctly on some high DPI screens.
- Show application startup error messages.
- Set the PyCharm Community Edition path if it was not installed in the default location.
- Set the PyCharm Pro path if it was not installed in the default location.
- Set the Visual Studio Code path if it was not installed in the default location.

Tip: Click the Reset to defaults button to change preferences back to their default values.



Caution: Be careful when changing values directly in the configuration files for Navigator or conda. Incorrect configuration can cause issues with these products.

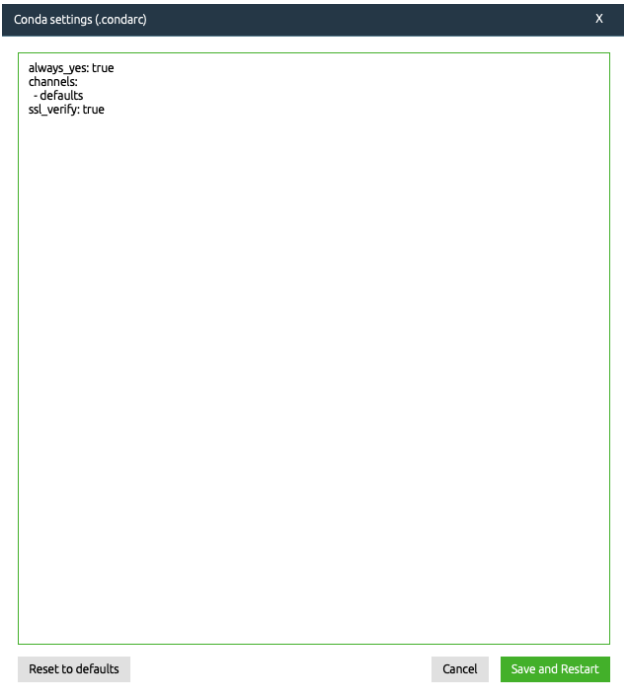
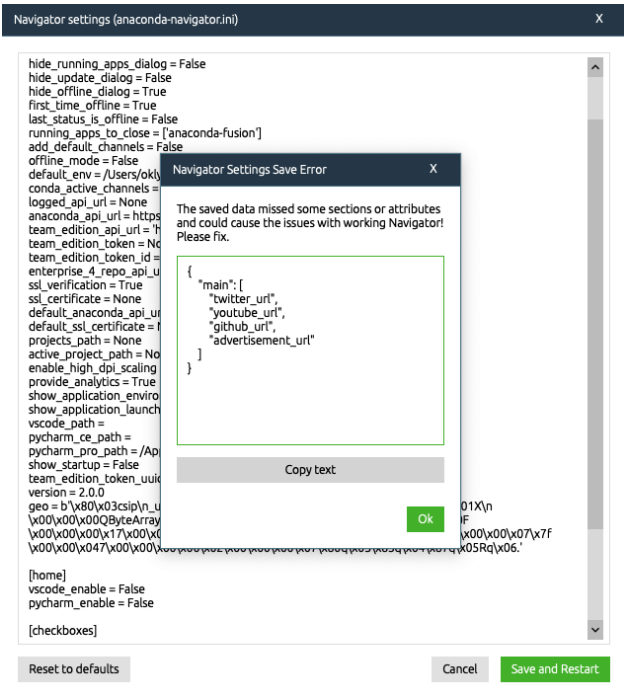
- Make changes to the Navigator configuration file (anaconda-navigator.ini).

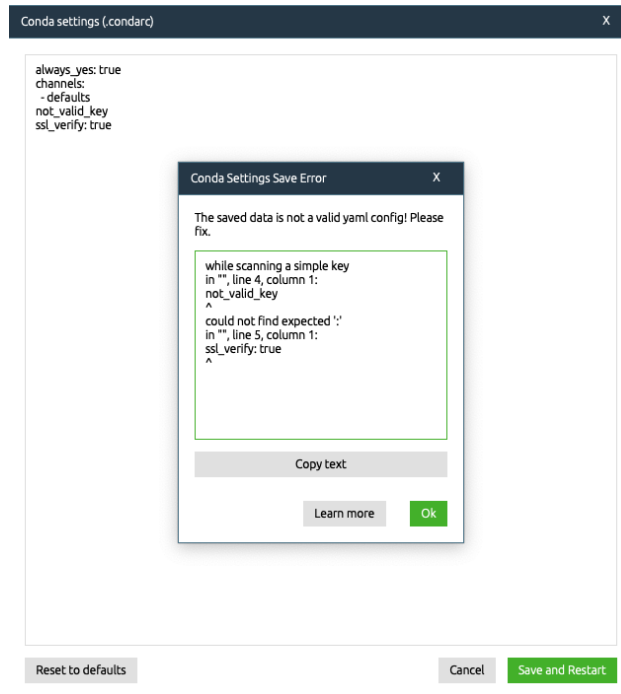


Note: There is a base configuration validation tool included, so if the user misses any required section or option they will be informed through a popup box. See figure below.

- Make changes to the Conda configuration file (.condarc).

Note: There is a base configuration validation tool included. The .condarc file must be a valid yaml format file. If the content is not in a valid yaml format, the user will receive an error. See figure below.





- Services (macOS only)—links to your computer's system preferences menu.
- Hide Anaconda-Navigator (macOS only)—hides the Navigator window.
- Hide Others (macOS only)—hides all windows except the Navigator window.
- Show All (macOS only)—shows all windows including the Navigator window.
- Quit Anaconda-Navigator—exits Navigator.

Help menu

The **Help** menu contains the following options:

- Search—links to your computer's Help (Windows and macOS only).
- Online Documentation—links to this documentation, which you can read in any web browser. You can also open the documentation by clicking the Documentation button at the bottom left of the Navigator window.
- Logs viewer—allows you to review the logs of all actions performed in Navigator in the current session. This option displays a list of log files, including `navigator.log`, which contains Navigator application logs, and `condamanager.log`, which contains logs written by the conda-manager component.

Note: A new log file is created every time you run Navigator, with a sequential number appended to the file name. More recent log files have higher numbers.

Navigator window buttons

- Sign in to [anaconda.org](#)—displayed at the top right. Click to sign into [anaconda.org](#) and enable searching for packages on it. After you have logged in, the button label changes to “Signed in as [username].”
- Documentation—displayed at the bottom left. Click to open Navigator documentation in a browser.
- Developer Blog—displayed at the bottom left. Click to read what our developers have to say about Navigator development.
- Social media—displayed at the bottom left. Click to see our Twitter, YouTube, and GitHub pages.

Installation

System requirements

Operating systems: Navigator supports the same operating systems that the Anaconda Distribution supports. These include:

- Windows 8 or newer, 32-bit or 64-bit.
- macOS 10.13+, 64-bit.
- Ubuntu 14+/Centos7+, 64-bit.

Python: Versions 3.7, 3.8, and 3.9.

To use Navigator in *online mode*, you must be able to reach these sites, so you may need to add them to a whitelist in your network’s firewall settings.

- <https://repo.anaconda.com> for repositories and installers
- <https://conda.anaconda.org> for conda-forge and other channels on [anaconda.org](#)
- [google-public-dns-a.google.com](#) (8.8.8.8:53) to check internet connectivity with [Google Public DNS](#)

Installing Navigator

Navigator is automatically installed when you install *Anaconda* version 4.0.0 or higher.

If you have *Miniconda* or an older version of Anaconda installed, you can install Navigator from an Anaconda Prompt by running the command `conda install anaconda-navigator`.

To start Navigator, see *Getting Started*.

Uninstalling Navigator

To uninstall Anaconda Navigator, open the Anaconda Prompt (terminal on macOS or Linux), and enter this command:

```
conda remove anaconda-navigator
```

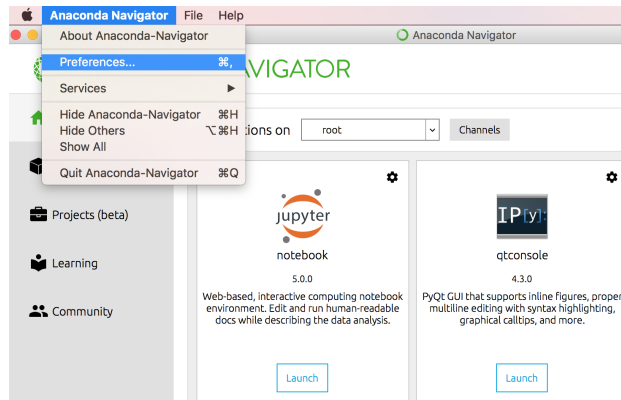
To uninstall all of Anaconda see *Uninstalling Anaconda Distribution*.

Configuring Navigator to work with a local Anaconda Repository

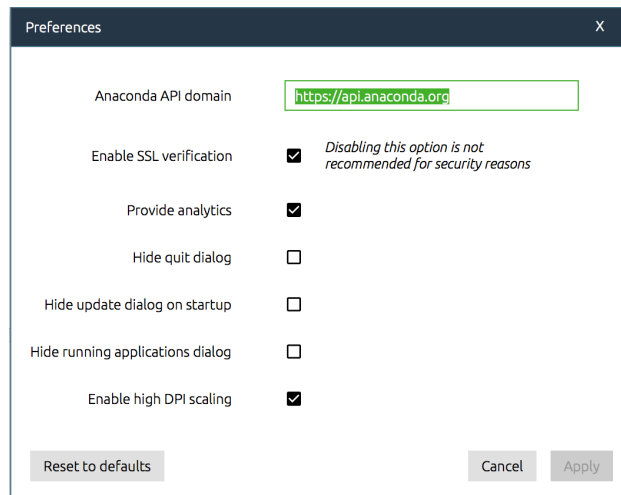
If you're an Anaconda Enterprise subscriber, you can configure Navigator to search for packages in your local Anaconda Repository instead of searching on [Anaconda.org](https://anaconda.org).

To configure Navigator to search in a local Anaconda Repository:

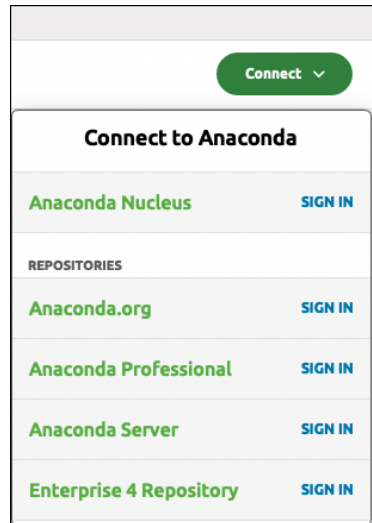
1. In the top menu bar's **Anaconda Navigator** menu (name may differ based on OS and launch method), select **Preferences**.



2. In the Anaconda API domain field, type the address of your local Anaconda Repository.



3. Click **Apply**.
4. At the top of the Navigator window, click **Connect**.



5. In the Connect dropdown, click **Sign in** for your preferred repository.
6. Follow the instructions in the dialog box that appears to finish connecting Navigator to your repository.

Configuring Navigator to work with Nucleus

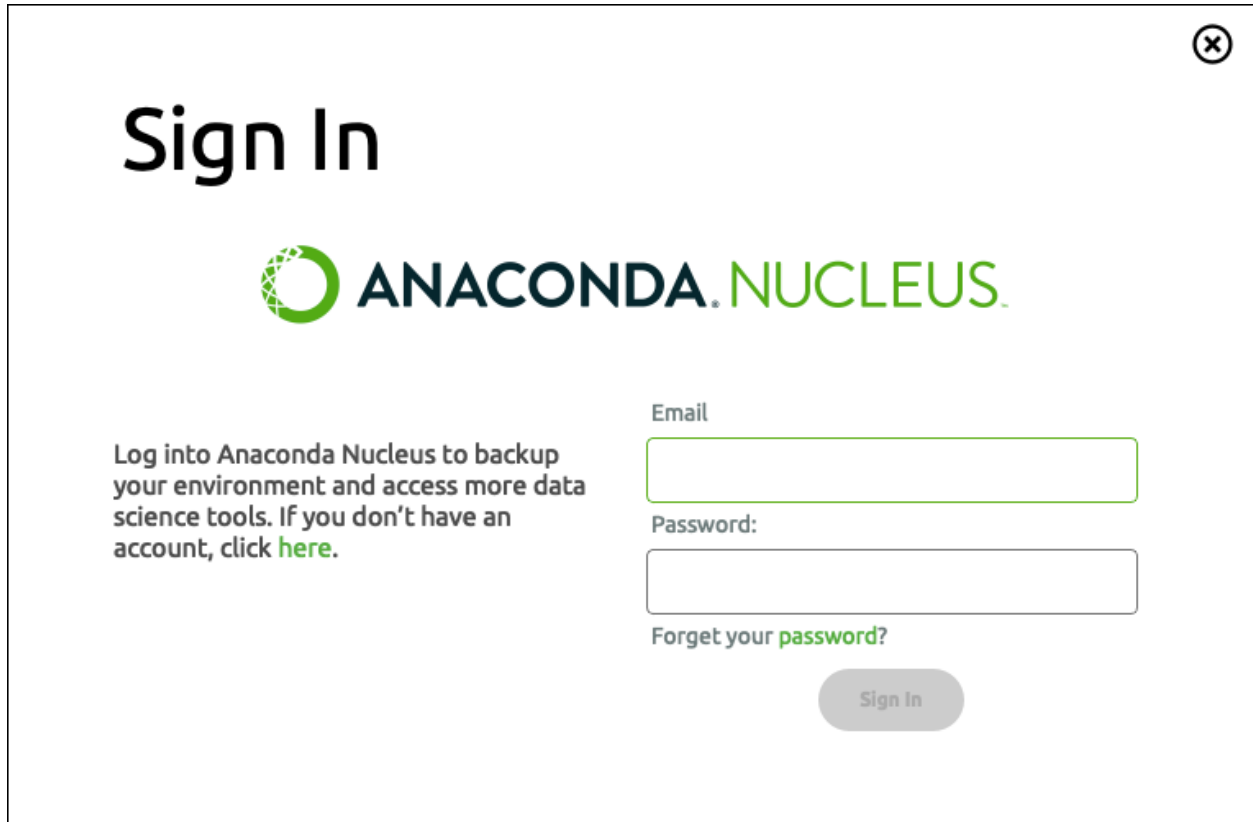
Once you have [become a Nucleus member](#), you can sign in to Nucleus from Navigator. This allows you to back up your environments to the cloud and import them at a later time. You also gain access to even more data tools.

To connect Navigator to Nucleus:

1. At the top of the Navigator window, click **Connect**.



2. In the Connect dropdown, click **Sign in** by Anaconda Nucleus.
3. In the Email and Password fields, type your email address and password.

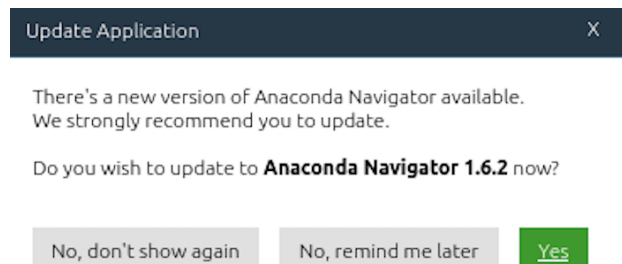


The image shows a 'Sign In' dialog box for Anaconda Nucleus. It has a title bar with a close button (X) in the top right corner. The main content area has the heading 'Sign In' and the Anaconda Nucleus logo. Below the logo, there is a text prompt: 'Log into Anaconda Nucleus to backup your environment and access more data science tools. If you don't have an account, click [here](#).' To the right of this text are two input fields: 'Email' and 'Password:'. Below the password field is a link 'Forget your password?'. At the bottom center is a 'Sign In' button.

4. Click **Sign in**.

Updating Navigator

Every time Navigator starts, it checks whether a new version is available. If one is available, a dialog box is displayed that allows you to upgrade to a new Navigator version or keep your current version.



The image shows an 'Update Application' dialog box. It has a title bar with the text 'Update Application' and a close button (X) in the top right corner. The main content area contains the following text: 'There's a new version of Anaconda Navigator available. We strongly recommend you to update.' followed by 'Do you wish to update to **Anaconda Navigator 1.6.2** now?'. At the bottom are three buttons: 'No, don't show again', 'No, remind me later', and 'Yes'.

Note: We recommend that you keep Navigator updated to the latest version.

Alternate method

If you prefer, you may update Navigator manually.

Open the Anaconda prompt (terminal on Linux or macOS):

Run this command to deactivate conda:

```
conda deactivate
```

Then run this command to update Navigator:

```
conda update anaconda-navigator
```

Getting started with Navigator

Anaconda Navigator is a graphical user interface to the conda package and environment manager.

This 10-minute 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

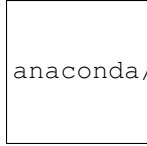
- *Starting Navigator* on Windows, macOS, or Linux. 1 MINUTE
- *Managing Navigator*. Verify that Anaconda is installed and check that Navigator is updated to the current version. 1 MINUTE
- *Managing environments*. Create environments and move easily between them. 3 MINUTES
- *Managing Python*. Create 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: 10 MINUTES

Starting Navigator


Windows

- From the Start menu, click the Anaconda Navigator desktop app.



anaconda/navigator/../../img/win-navigator.png

- Or from the Start menu, search for and open “Anaconda Prompt” and type the command `anaconda-navigator`.



anaconda/navigator/../../img/win-anaconda-prompt.png

MacOS

- Open Launchpad, then click the Anaconda-Navigator icon.
- Or open Launchpad and click the terminal icon. Then in terminal, type `anaconda-navigator`.

Linux

- Open a terminal window and type `anaconda-navigator`.

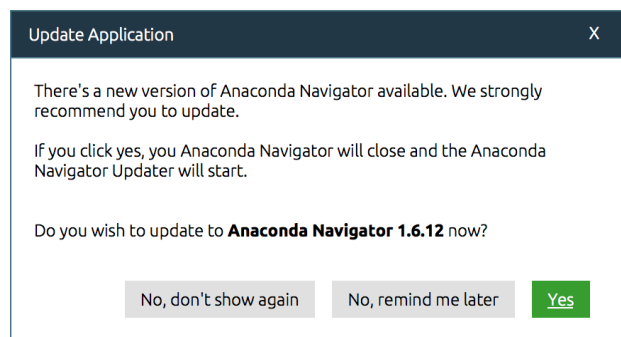
Managing Navigator

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.

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 the “Yes” button to update Navigator to the current version.

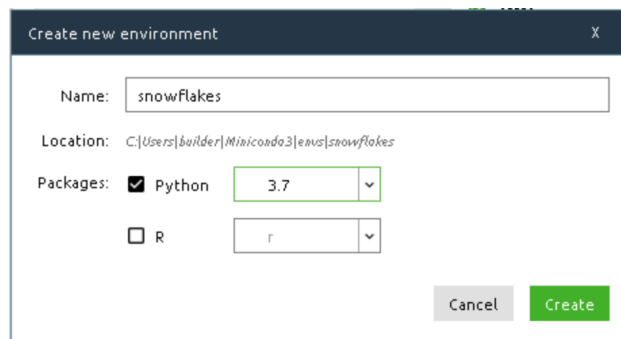
Tip: We recommend that you always keep Navigator updated to the latest version.

Managing Environments

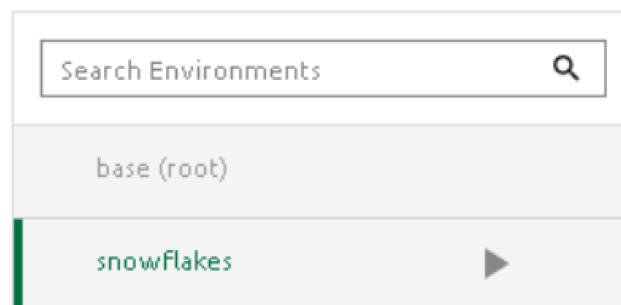
Navigator uses conda to create separate environments containing files, packages, and their dependencies that will not interact with other environments.

Create a new environment named `snowflakes` and install a package in it:

1. In Navigator, click the **Environments** tab, then click the Create button. The **Create new environment** dialog box appears.
2. In the **Environment** name field, type a descriptive name for your environment.



3. Click **Create**. Navigator creates the new environment and activates it.



Now you have two environments, the default environment `base (root)`, and `snowflakes`.

4. 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.

5. 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 “snakes” that contains Python 3.5:

1. In Navigator, click the **Environments** tab, then click the Create button.

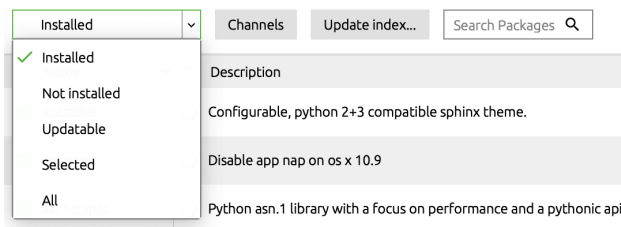
The Create new environment dialog box appears.

2. In the Environment name field, type the descriptive name “snakes” and select the version of Python you want to use from the Python Packages box (3.8, 3.7, 3.6, 3.5, or 2.7). Select a different version of Python than is in your other environments, base or snowflakes.
3. Click the Create button.
4. Activate the version of Python you want to use by clicking the name of that environment.

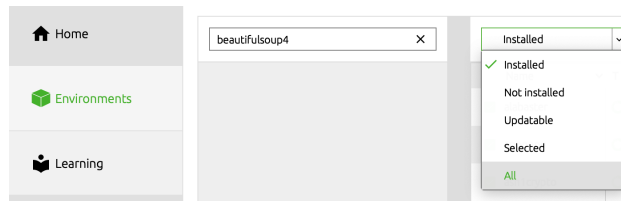
Managing packages

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 drop-down 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 Search Subset box select All or Not Installed.



- To install the package into the current environment, check the checkbox next to the package name, then click the bottom Apply button.

Not installed	Channels	Update index...	Search Packages
Name	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		Apply	Clear

The newly installed program is displayed in your list of installed programs.

More information

- [Full documentation](#)
- [Free community support](#)
- [Paid support options](#)
- [Training](#)

Troubleshooting

- [Navigator error on start up](#)
- [Issues launching or initializing](#)
- [PermissionError on macOS Catalina](#)
- [Access denied error](#)

- *Navigator buttons are missing*
- *Navigator ignores the “Ok, and don’t show again” option on the help Anaconda improve pop up*
- *RStudio fails to install in Navigator 1.6.2 if special characters are in install path*
- *Trouble logging in to Anaconda Server from Navigator*
- *VS Code is not appearing on my Anaconda Navigator home tab*

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 so you can 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`.

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.

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 terminal or Anaconda Prompt:

```
conda remove anaconda-navigator
conda install anaconda-navigator
```

If none of the above work, please reset 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, you can have Navigator generate the permissions prompt for the first time by launching Spyder and running something like this in the console (you can replace Desktop with Downloads/Documents folder depending on which you need access to):

```
import os
os.listdir('Desktop')
```

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:

- Run “Update Index” from the Environments tab of Navigator.
- Quit and restart Navigator.
- If 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, you can edit the `.anaconda/navigator/anaconda-navigator.ini` configuration file such that `show_startup = False`. If `show_startup = True`, you will continue to see the pop up box.

RStudio fails to install in Navigator 1.6.2 if special characters are in install path

This is a known issue in Navigator 1.6.2 on Windows 7 64-bit.

Trouble logging in to Anaconda Server from 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**, **team_edition_token**, and **team_edition_token_id** in the Navigator config file (`anaconda-navigator.ini`) to **None**.
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*

You can 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.

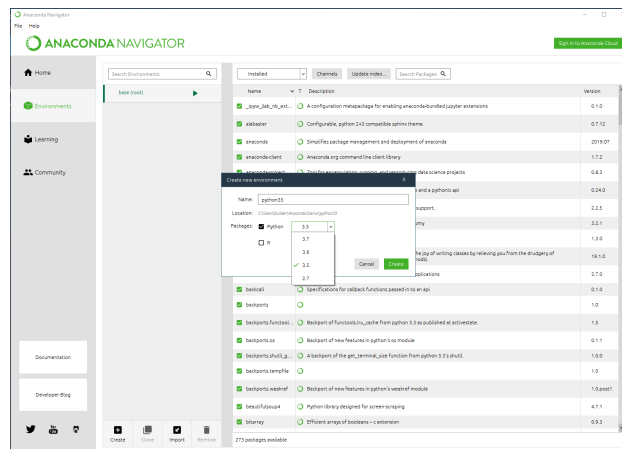
4. Close and reopen Anaconda Navigator.

Tutorials

General tasks:

Creating a Python 3.5 environment from Anaconda2 or Anaconda3

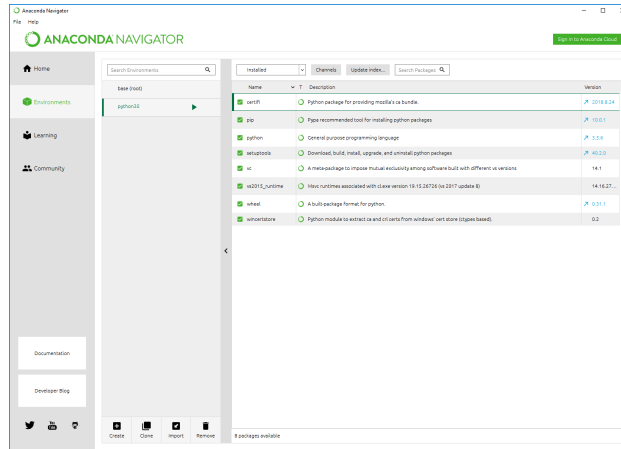
1. In Navigator, click the Environments tab, then click the Create button. The Create new environment dialog box appears.
2. In the Environment name field, type a descriptive name for your environment.



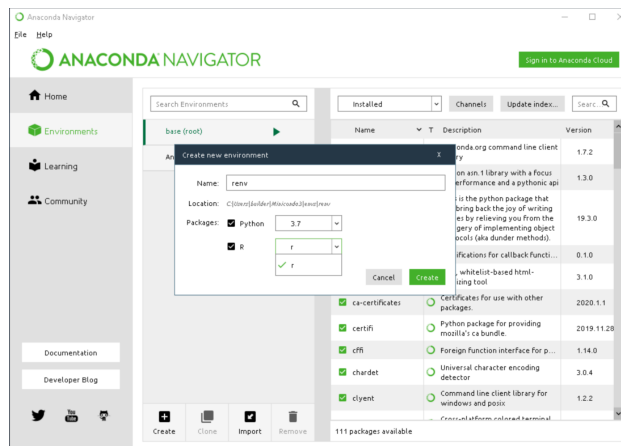
3. In the Packages list, select “Python” and in the Python version list select “3.5”.
4. Click the Create button.
5. Navigator creates the new environment and activates it, as shown by the highlighted green bar. All actions take place in the active environment.

Creating an R environment and running RStudio

1. In Navigator, click the Environments tab, then click the Create button. The Create new environment dialog box appears.



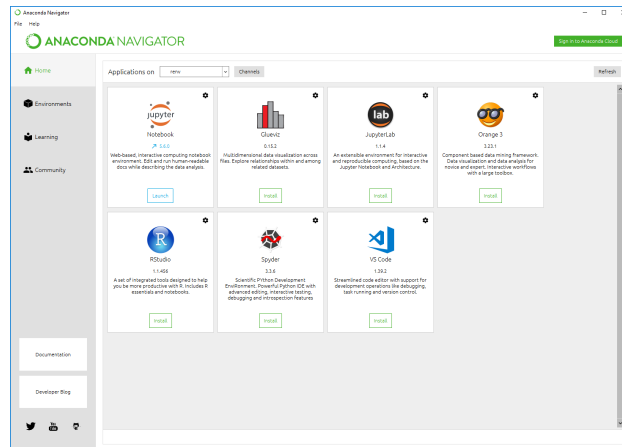
2. In the Environment name field, type a descriptive name for your environment.



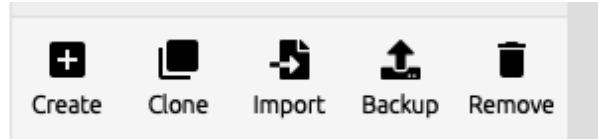
3. In the Packages list, select “R”.
4. On the drop-down menu, select `r` to install R with the packages `r-base` and `r-essentials`. For more information please see [Using R language with Anaconda](#).
5. Click the Create button.
6. Navigator creates the new environment and activates it, as shown by the highlighted green bar. All actions take place in the active environment.
7. With the new environment active, click the Home button and then click the Install button on the RStudio application.
8. Click Launch to run RStudio from Navigator.
9. You will see RStudio running from Navigator.

Managing environments

- *Searching for an environment*
- *Creating a new environment*



- _____



Searching for an environment

In the **Search Environments** box, type all or part of the environment name.

Creating a new environment

1. At the bottom of the environments list, select **Create**.
2. In the **Create new environment** dialog box, type a descriptive name for the new environment.

1. Select Python, R, or both for a mixed environment.
2. If applicable, choose a Python version for the new environment.
3. Select **Create**.

Using an environment

1. In the environments list, select the environment name.
2. Select the arrow button next to the name. The activation options dropdown appears.
3. Select one of the following options for opening the environment: terminal, Python interpreter, IPython Console, or Jupyter Notebook.

Note: Some of these options may not be available if they were not installed in the environment.

Cloning an environment

1. Select the name of the environment you want to clone.
2. At the bottom of the environments list, select **Clone**.
3. Type a descriptive name for the new environment.

Backing up an environment

Warning: Don't delete the backup when removing and reinstalling Anaconda. If you do, you will not be able to import your existing environments into your new installation.

1. Select the name of the environment you want to back up from the Environments list.
2. At the bottom of the environments list, select **Backup**.
3. In the **Backup Environment** dialog box, select either **Local drive** or **Anaconda Nucleus** as the backup location.

Note: By backing up to the cloud (Nucleus), your environment is safe from hard drive failure and malfunctions with your machine that could cost you your current, working environment.

Backing up locally can be useful for rolling back conda to an earlier state feature.

Backup Environment

Select location to backup environment:

☐ Local drive

☒ **Anaconda Nucleus**
You are signed in as ienglander@anaconda.com

Backup as:

miniconda3_20210917

☐ Overwrite existing environment

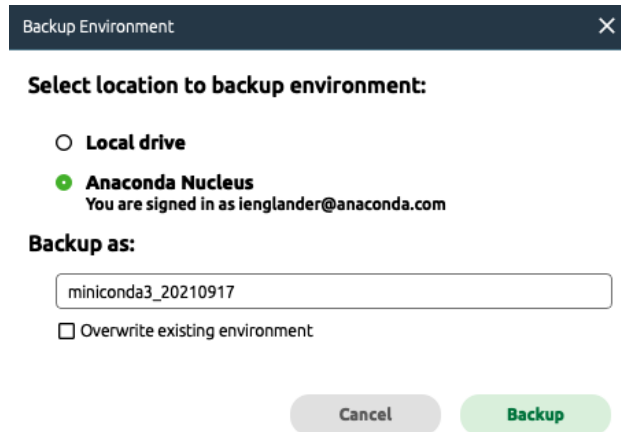
Cancel Backup

4. Type a descriptive name for the backup. By default, the environment name and current date is entered as the backup name.
5. Select **Backup**.

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. Further, if you have backed up an environment locally or to Nucleus, 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 box, choose whether to import from your **Local drive** or from **Anaconda Nucleus**. Then, select the corresponding folder icon to choose the environment from which you wish to import.



Backup Environment

Select location to backup environment:

☐ Local drive

☒ **Anaconda Nucleus**
You are signed in as ienglander@anaconda.com

Backup as:

miniconda3_20210917

☐ Overwrite existing environment

Cancel Backup

3. Type a descriptive name for the new environment, or use the existing name.
4. Select **Import**.

Your newly imported environment will appear in the Environments list.

Removing an environment

In Navigator

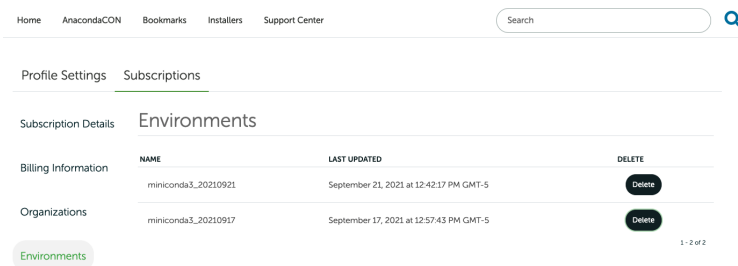
1. In the environments list, select the environment you want to remove.
2. At the bottom of the list, select **Remove**.

Note: Removing an environment in Navigator only removes your local copy. It will not remove or delete environments you have backed up to Nucleus.

In Nucleus

1. In a browser, open [Anaconda Nucleus](#).
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** tab.
5. Select **Delete** in the row associated with the environment you wish to remove.

Note: Removing an environment in Nucleus only removes it from Nucleus. It does not affect any local copies.



1. In the environments list, click the environment you want to remove.
2. At the bottom of the list, click the Remove button.

Advanced environment management

Navigator provides a convenient graphical interface for managing conda environments, channels, and packages. 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 environments](#) with conda.

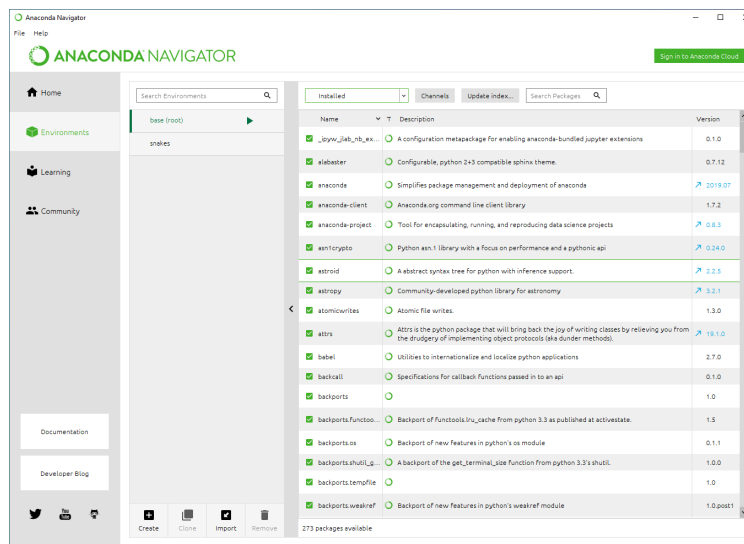
Managing packages

- *Filtering the packages table*
- *Finding a package*
- *Installing a package*
- *Updating a package*
- *Installing a different package version*
- *Removing a package*
- *Advanced package management*

On the Navigator **Environments** tab, 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.

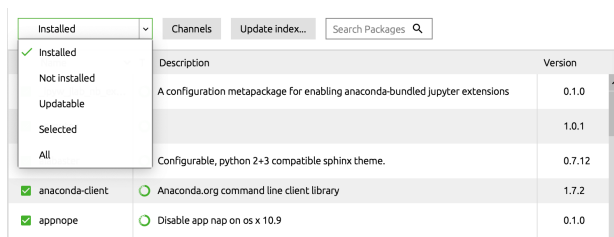
Tip: Click a column heading in the table to sort the table by package name, description, or version.



Tip: The Update Index button updates 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, click the arrow next to Installed, then select which packages to display: Installed, Not installed, Updatable, Selected, or All.



Note: Selecting the Updatable filter lists packages that are installed and have updates available.

Finding a package

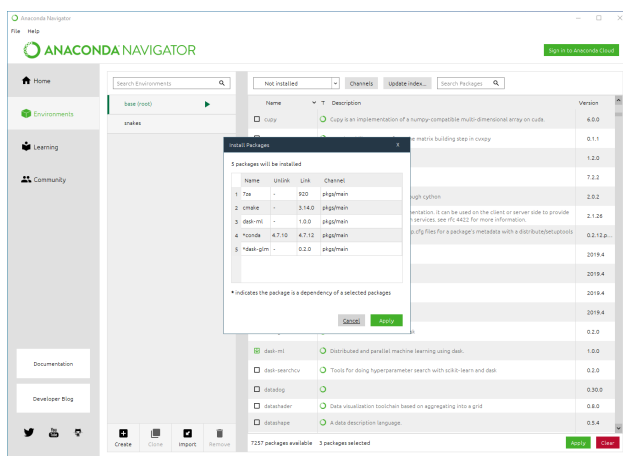
In the Search Packages box, type the name of the package.

Installing a package

1. Select the Not Installed filter to list all packages that are available in the environment's channels but are not installed.

Note: Only packages that are compatible with your current environment are listed.

2. Select the name of the package you want to install.
3. Click the Apply button.
4. Review the Install Packages information.



You can filter your packages to be installed by Name, Unlink, Link, and Channel. Unlink indicates what is being removed. Link is what is being installed in place of the package that is unlinked. Channel shows from where the package is being installed.

Packages are in a cache and they rely on other packages using hard links, which essentially point to a package instead of copying it to the environment. Unlink removes the hard link to that package. If the package you are trying to install is a dependency of other packages, the Link column will show the hard link to the package version that is being created in order to install your selected package.

Tip: If after installing a new package it doesn't appear in the packages table, select the **Home** tab, then click the Refresh button to reload the packages table.

Updating a package

1. Select the Updatable filter to list all installed packages that have updates available.
2. Click the checkbox next to the package you want to update, then in the menu that appears select Mark for Update.

OR

In the Version column, click the blue up arrow that indicates there is a newer version available.

3. Click the Apply button.

Installing a different package version

1. Click the checkbox next to the package whose version you want to change.
2. In the menu that appears, select Mark for specific version installation.

If other versions are available for this package, they are displayed in a list.

3. Click the package version you want to install.
4. Click the Apply button.

Removing a package

1. Click the checkbox next to the package you want to remove.
2. In the menu that appears, select Mark for removal.
3. Click the Apply button.

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 with conda](#).

Managing channels

- [Adding a channel](#)

- *Deleting a channel*

Channels are locations where Navigator and conda look for packages.

You can search and browse packages and channels on anaconda.org.

Note: Navigator and conda only search for packages in active channels. You can temporarily disable a channel by making it inactive.

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 Cloud:

- By URL—<https://anaconda.org/milagro>.
- By conda URL—<https://conda.anaconda.org/milagro>.
- By name—milagro.

On the **Environment** tab, click the Channels button to open the Channels Manager.

Adding a channel

1. Click the Add button.
2. Type or paste the channel name, the URL, or the conda URL.

Note: A URL can also contain an access token parameter and value. A URL will automatically be transformed to a conda URL.

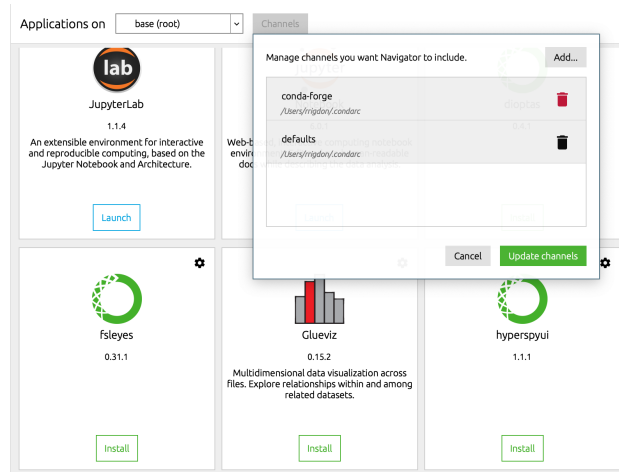
3. Click the Save button.

Deleting a channel

1. Click the trash can icon next to the channel name.
2. Click the Update Channels button.

Building Anaconda Navigator applications

- *Who is this for?*
- *Before you start*
- *Using a recipe*



- *Build architecture*
- *App entry in meta.yaml*
- *Build*
- *Upload to Anaconda.org*
- *Configure Anaconda Navigator*
- *Troubleshooting*
- *Additional Information*

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 recipe from the [feedstock](#):

```
{% set version = "1.2.4" %}
{% set sha256 = "6adb88acd05b51512c37df477a18c36240823a591c2a51bf6556198414026d8f" %}

package:
  name: jupyterlab
  version: {{ version }}

source:
  fn: jupyterlab-{{ version }}.tar.gz
  url: https://pypi.io/packages/source/j/jupyterlab/jupyterlab-{{ version }}.tar.gz
  sha256: {{ sha256 }}
build:
  noarch: python
  number: 0
  script: {{ PYTHON }} -m pip install --install-option="--skip-npm" . -vv
  entry_points:
    - jupyter-lab = jupyterlab.labapp:main
    - jupyter-labextension = jupyterlab.labextensions:main
    - jupyter-labhub = jupyterlab.labhubapp:main
    - jupyterlab = jupyterlab.jupyterlab:main
app:
  entry: jupyter lab
  icon: icon.png
  summary: JupyterLab PRE-ALPHA
  type: desk

requirements:
  host:
    - python >=3.5
    - pip
    - nodejs >=8
  run:
    - python >=3.5
    - jupyterlab_server >=1.0.0,<2.0.0
    - notebook >=4.3.1
    - tornado !=6.0.0,!6.0.1,!6.0.2
    - jinja2 >=2.10
test:
  requires:
```

(continues on next page)

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```

    - nodejs
imports:
  - jupyterlab
commands:
  - jupyter lab --version
  - jlpm --version
  - jlpm versions
  - jupyter labextension list
  - jupyter lab path
  - jupyter lab build
  - jupyter lab clean

about:
  home: https://github.com/jupyterlab/jupyterlab
  license: BSD-3-Clause
  license_family: BSD
  license_file: LICENSE
  summary: >
    An extensible environment for interactive and reproducible computing, based
    on the Jupyter Notebook and Architecture.
  doc_url: https://jupyterlab.readthedocs.io
  dev_url: https://github.com/jupyterlab/jupyterlab
  description: >
    JupyterLab is the next-generation user interface for Project Jupyter. It
    offers all the familiar building blocks of the classic Jupyter Notebook
    (notebook, terminal, text editor, file browser, rich outputs, etc.) in a
    flexible and powerful user interface. Eventually, JupyterLab will replace
    the classic Jupyter Notebook.
    JupyterLab can be extended using extensions that are npm packages and use
    our public APIs. You can search for the GitHub topic or npm keyword
    `jupyterlab-extension` to find extensions. To learn more about extensions,
    see our user documentation.
    JupyterLab is suitable for general usage. For JupyterLab extension
    developers, the extension APIs will continue to evolve.

extra:
  recipe-maintainers:
    - jasongrout
    - blink1073
    - jochym
    - ian-r-rose
    - afshin
    - ellisonbg

```

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.

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]
```

Launch script

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/jupyterlab_mac.command ${HOME}
```

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
```

Entry key

Then in the meta.yaml, add this line to the app section:

The completed app section should look like this:

Note: The app icon defaults to the Anaconda logo.

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/bjupyterlab-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:

Caution: This step must be done in the root 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.

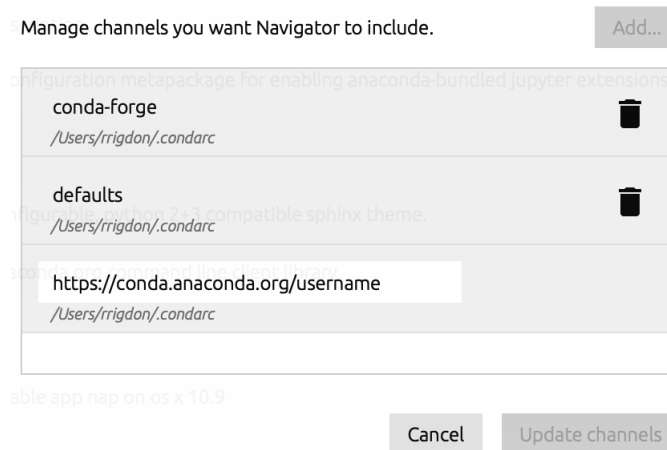
Configure Anaconda Navigator

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. Open the Environments pane on the far left.
3. To add your channel, first click the Channel button. Second, click the Add button. Third, type in the URL to your Anaconda.org channel: <https://conda.anaconda.org/channel>

Note: Replace “channel” with your Anaconda.org username.

4. Press Enter and select Update Channels.



5. 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 after installing the application it does not launch, check that it works correctly on the command line with the following command: `conda run jupyterlab`

If JupyterLab starts correctly then you may have to remove your `.anaconda/navigator` directory and restart Navigator. This directory is in your Home directory.

Additional Information

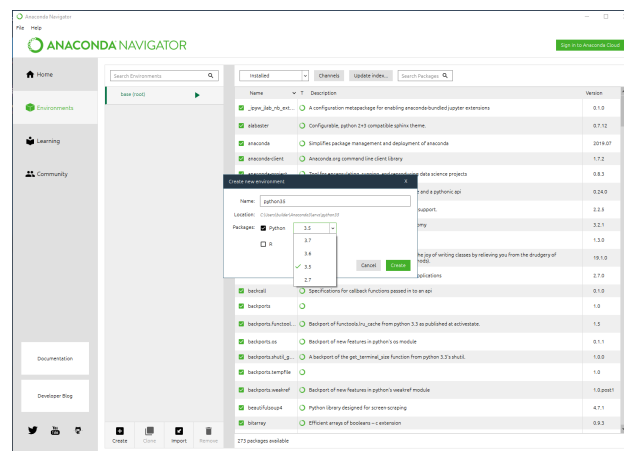
For more information about adding Start Menu entries in Windows, see the [menuinst](#) documentation.

Using multiple versions of Python with Navigator

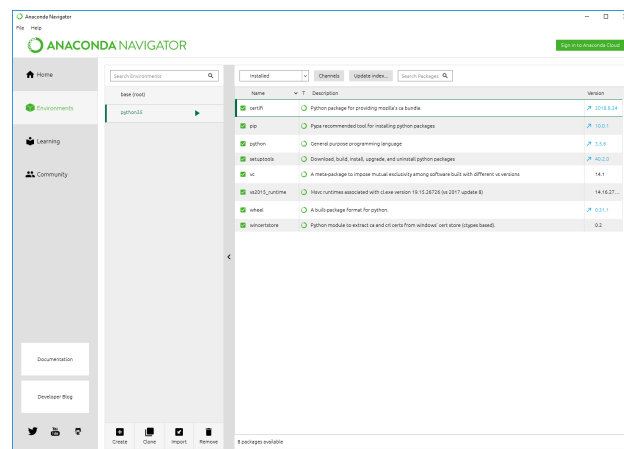
With Navigator you can have different versions of Python on your computer and easily switch between them by keeping them in different **environments**.

To use a different version of Python than the one you are currently using, set up a new environment:

1. In Navigator, click the Environments tab, then click the Create button. The Create new environment dialog box appears.
2. In the Environment name field, type a descriptive name for your environment.



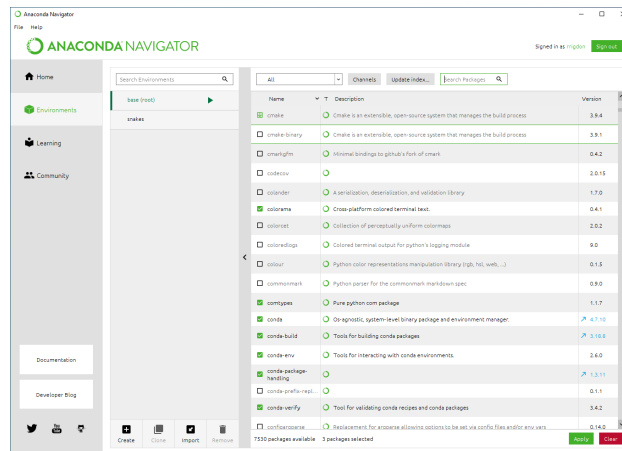
3. In the Packages list select “Python” and in the Python version list select the version you want to use.
4. Click the Create button.
5. Navigator creates the new environment and activates it, as shown by the highlighted green bar. All actions take place in the active environment.



Searching anaconda.org

To search anaconda.org using Anaconda Navigator:

1. If you haven't already, sign into anaconda.org by clicking the top right sign-in button. If you don't yet have an account, you can create one.
2. In Navigator, click the left Environments tab.
3. In the list at the top left of the packages area, select All to search All packages on anaconda.org.
4. In the Search Packages box, type the name of the package you want to search for on anaconda.org.



All packages with that text string are displayed in the Search Results.

For more information on installing and using the packages you find on Anaconda Cloud, see [Package installation for Anaconda](#).

Integration with Anaconda Server

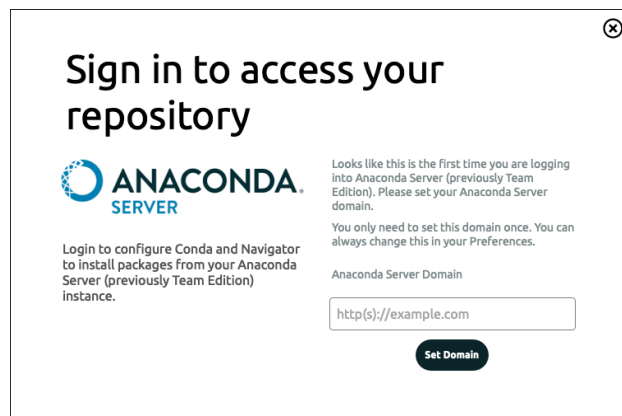
- *Login Action*
- *Add default channels action*
- *CLI Login Detection*
- *Login Mechanism*
- *Integration*
- *Logout Action*
- *Change Anaconda Server API domain*
- *Troubleshooting*

Anaconda Navigator has everything a user needs to set up the Anaconda Server API domain, login with credentials, add channels, and install/update packages from Anaconda Server with Anaconda Navigator.

Login Action

To integrate with Anaconda Server, click **Connect** in the top-right corner of the Navigator application. Then, click **Sign In** next to Anaconda Server. If this is the first time you are logging in to Anaconda Server, you'll be asked to set your Anaconda Server domain.

Enter your domain and click **Set Domain**.



Sign in to access your repository

ANACONDA SERVER

Login to configure Conda and Navigator to install packages from your Anaconda Server (previously Team Edition) instance.

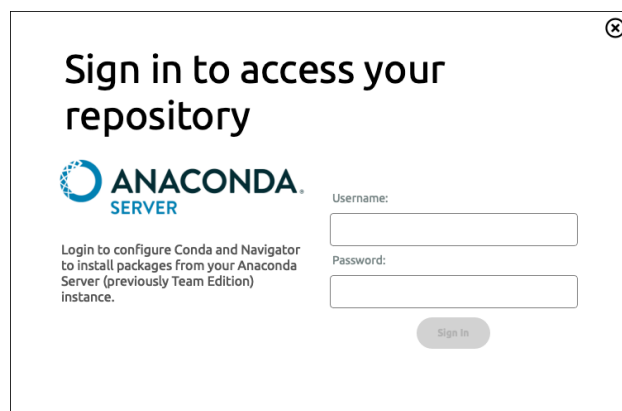
Looks like this is the first time you are logging into Anaconda Server (previously Team Edition). Please set your Anaconda Server domain.

You only need to set this domain once. You can always change this in your Preferences.

Anaconda Server Domain

Set Domain

If your domain is correct, you'll see the login pop-up. Enter the credentials you use to log in to your Anaconda Server instance, and then click **Login**. If all credentials are correct, you will be signed in.



Sign in to access your repository

ANACONDA SERVER

Login to configure Conda and Navigator to install packages from your Anaconda Server (previously Team Edition) instance.

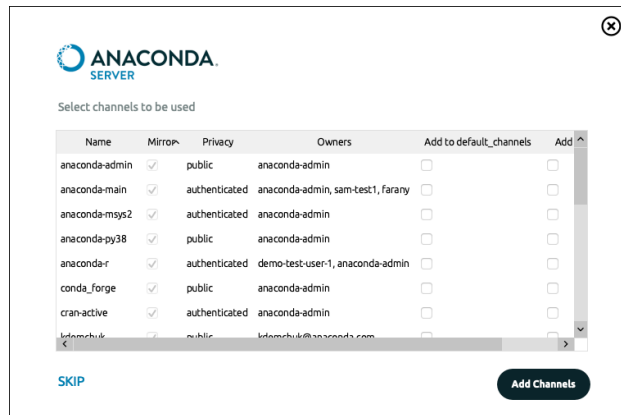
Username:

Password:

Sign In

Add default channels action

After signing in, you'll see a pop-up 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
This token expires on 12/31/20
```

- logged_api_url**, **team_edition_token**, and **team_edition_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.

```
logged_api_url = 'http://repo-qa.dev.anaconda.com'
anaconda_api_url = 'https://api.anaconda.org'
team_edition_api_url = 'http://repo-qa.dev.anaconda.com'
team_edition_token = '8e435d2f812f321c82e30f0d52d6d457c7ed3c9b995fe830'
team_edition_token_id = '085f07a2-4b7b-405f-9a81-225af15fa2a5'
```

- The Conda configuration file (.condarc) is modified:

- 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” popup 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.

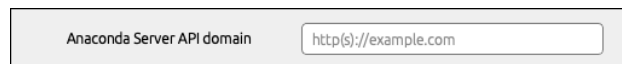
Logout Action

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**, **team_edition_token**, and **team_edition_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

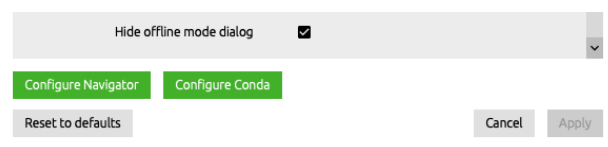
To set the Anaconda Server API domain, go to the navigation bar and click on **Preferences**. In the text field labeled **Anaconda Server API domain**, enter the valid domain name:



Anaconda Server API domain

Alternatively, this API domain can be set through the **Configure Conda** action:

1. Click the button **Configure Navigator**:

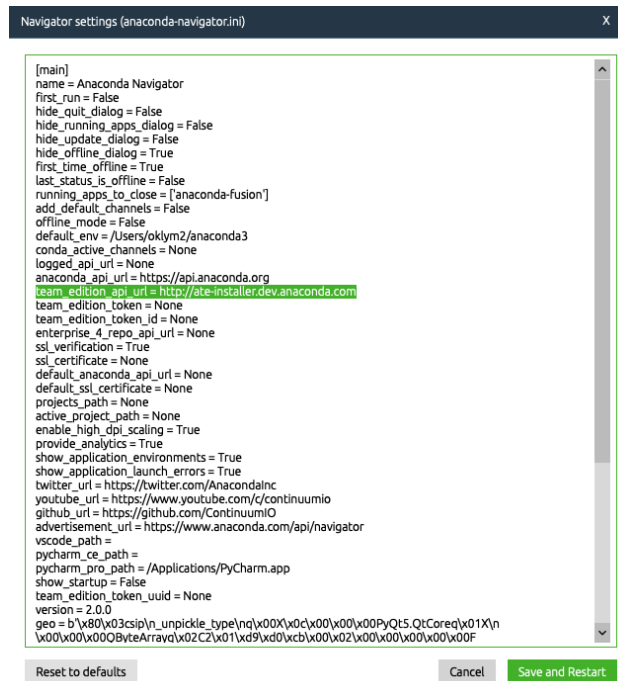


Hide offline mode dialog ☒

Configure Navigator **Configure Conda**

Reset to defaults Cancel Apply

1. In the pop-up, find the option **team_edition_api_url** in the section **[main]** and enter your domain name (by default, the value is set to **None**):



3. Click **Save and Restart**. The application will restart and the setting will be set.

Yet another option for users is to change this setting directly where the **anaconda-navigator.ini** file is located by default.

Note: The domain must be a full path without a trailing slash. For example: `http(s)://ate-mysite.com`

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 Anaconda Server from Navigator](#).

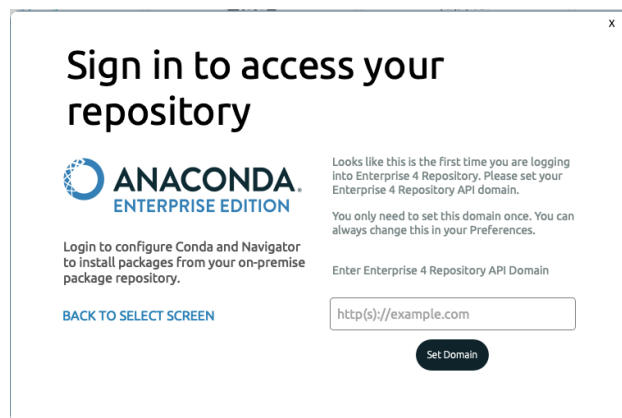
Integration with Enterprise Edition

- *Login Action*
- *Logout Action*
- *Change Enterprise Edition API domain*

Anaconda Navigator has everything a user needs to setup the Enterprise Edition API domain and login with credentials. It is easy to add channels and install/update packages from Anaconda Enterprise Edition with Anaconda Navigator.

Login Action

To integrate with Enterprise Edition, click **Sign in** in the top right corner of the Navigator application. In the main login pop-up, click **Sign in** on the Enterprise Edition tab. If this is the first time you are logging in to Enterprise Edition you'll be asked to set your Enterprise Edition domain. Enter your domain and click **Set Domain**.



The screenshot shows a login window titled "Sign in to access your repository". It features the Anaconda Enterprise Edition logo. The text explains that this is the first time logging into the Enterprise 4 Repository and that the user needs to set their API domain. A text input field contains "http(s)://example.com", and a "Set Domain" button is visible. A "BACK TO SELECT SCREEN" link is also present.

Sign in to access your repository

ANACONDA
ENTERPRISE EDITION

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

[http\(s\)://example.com](#)

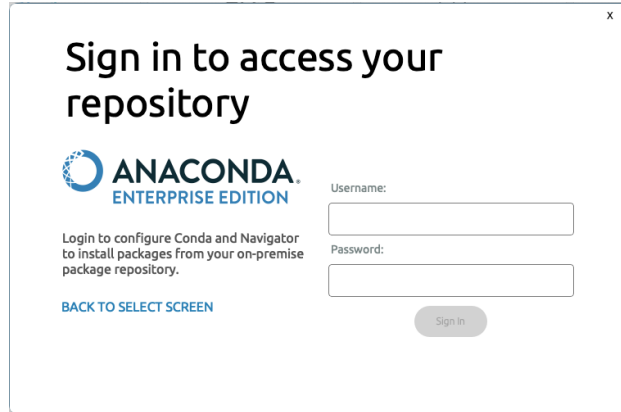
[BACK TO SELECT SCREEN](#)

Set Domain

If your domain is correct, you'll see the login pop-up. Enter the credentials you use to log in to your Enterprise Edition platform, and then click **Login**. If all credentials are correct, you will be signed in.

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.)
- The access token created in the Enterprise Edition instance is removed.
- The access token that was stored locally is removed.

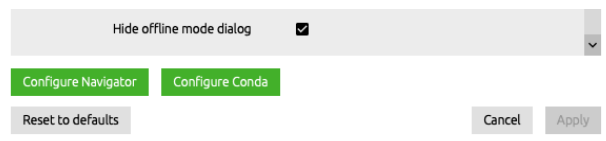
Change Enterprise Edition API domain

To set the Enterprise Edition API domain, go to the navigation bar and click on **Preferences**. In the text field labeled **Enterprise Edition API domain**, enter the valid domain name:

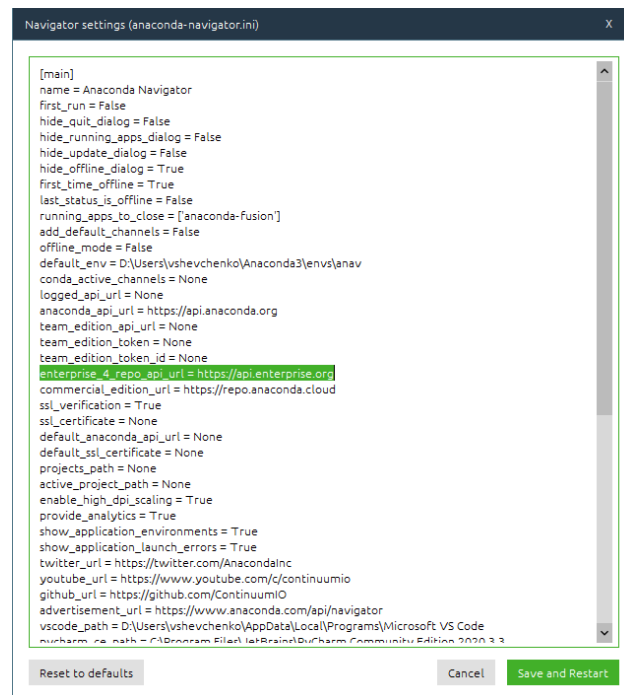


Alternatively, this API domain can be set through the **Configure Conda** action:

1. Click the button **Configure Navigator**:



2. In the pop-up, find the option **enterprise_edition_api_url** in the section **[main]** and enter your domain name (by default, the value is set to **None**):



3. Click **Save and Restart**. The application will restart and the setting will be set.

Yet another option for users is to change this setting directly where the **anaconda-navigator.ini** file is located by default.

Note: The domain must be a full path without a trailing slash. For example: `http(s)://enterprise-mysite.com`

Integration with Anaconda Professional

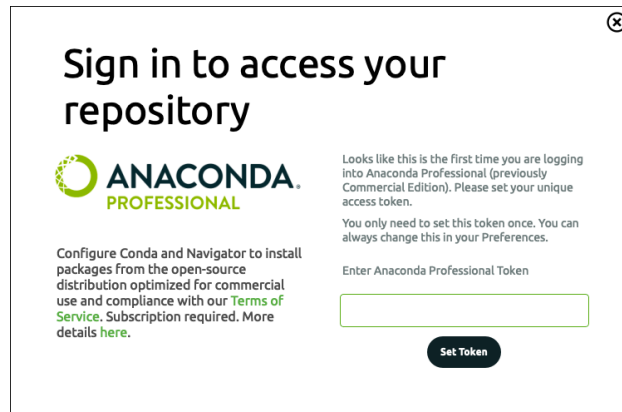
- *Login Action*
- *CLI Login Detection*
- *Login Mechanism*
- *Integration*

Anaconda Navigator has everything a user needs to setup the Anaconda Professional token. It is easy to add channels and install/update packages from Anaconda Professional Professional with Anaconda Navigator.

Login Action

To integrate with Anaconda Professional, click **Connect** in the top-right corner of the Navigator application. Then, click **Sign In** next to Anaconda Professional.

Enter your token to log in to your Anaconda Professional instance, and then click **Set Token**. If your token is valid, you will be signed in.



CLI Login Detection

If you have already logged in using 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 *conda-token* tool “under the hood.” See [../../anaconda-professional/quickstart#auth-ce](#) for more details.

Integration

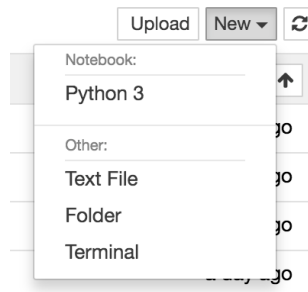
Once signed in, you will be able to add private channels in the “Manage Channels” pop-up using the `<my_channel_name>` format, rather than `repo.anaconda.cloud/t/<token>/<my_channel_name>`.

Specific examples:

Displaying BioPython help text

After installing a package, you can confirm that the package was installed correctly by opening a Jupyter Notebook in that environment, importing the package and displaying its help text. In this example we will use the BioPython package.

1. *Start Navigator*.
2. To install the BioPython package, follow the instructions in *Managing packages*.
3. Click the icon to open a Jupyter Notebook.
4. In the Jupyter Notebook, click the New button and select your installed Python version.



5. Copy and paste the following code into the first cell:

```
import Bio
help(Bio)
```

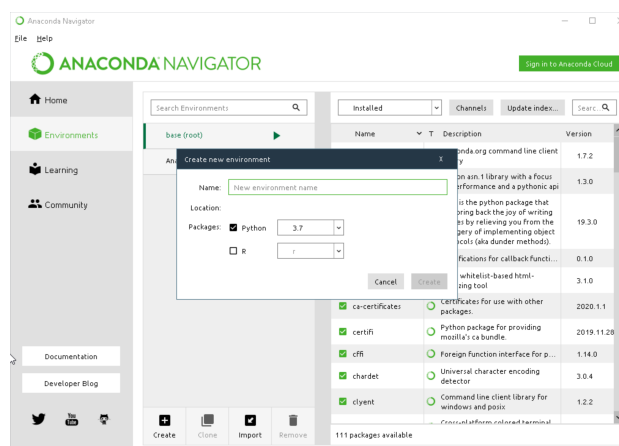
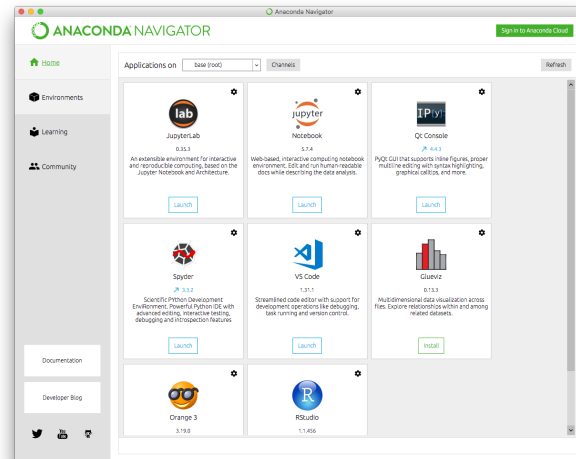
6. To run the code, in the menu bar, click Cell then select Run Cells, or use the keyboard shortcut Ctrl-Enter.
The BioPython help text is displayed.

Using the R programming language in Jupyter Notebook

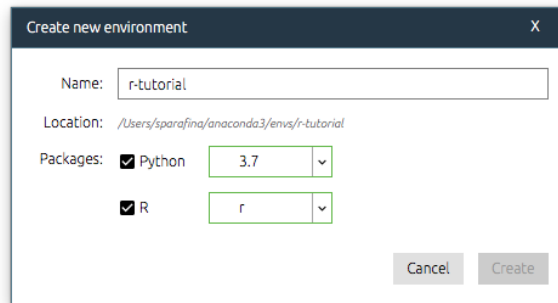
R is a popular programming language for statistics.

To install and run R in a Jupyter Notebook:

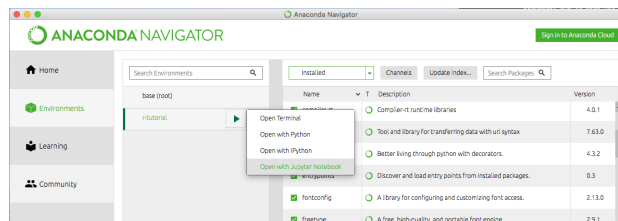
1. *Start Navigator*.
2. To install the R language and r-essentials packages, select **Environments** to create a new environment. Click **Create**.



Name the environment “r-tutorial”. Next to Packages, select Python 3.7 and R. Select **r** from the dropdown menu. Click **Create**.



3. *Open the environment with the R package* using the Open with Jupyter Notebook option.



4. To create a new notebook for the R language, in the Jupyter Notebook menu, select **New**, then select **R**.



5. 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:

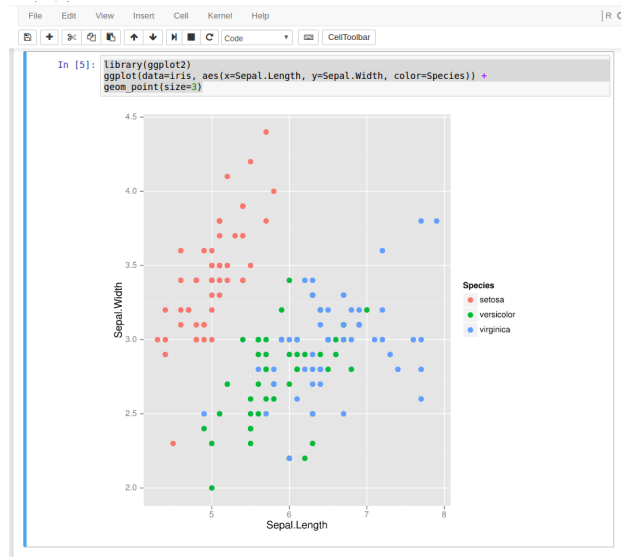
```
library(dplyr)
iris
```

6. To run the code, in the menu bar, click **Cell** then select **Run Cells**, or use the keyboard shortcut Ctrl-Enter.

7. The iris data table is displayed.
8. 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)
```

9. To run the code, in the menu bar, click **Cell** then select **Run Cells**, or use the keyboard shortcut Ctrl-Enter.



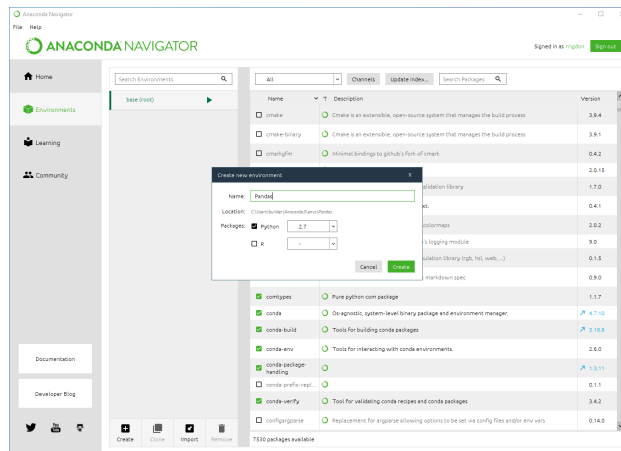
For more resources on using R with Anaconda, see [Using R language with Anaconda](#).

Installing and running Pandas

Pandas is a common Python tool for data manipulation and analysis. This task explains how to use Navigator to set up and begin working with Pandas in your choice of terminal, Python, IPython, or Jupyter Notebook. The steps are similar for *installing and opening* nearly any package.

1. *Start Navigator*.
2. Click the **Environments** tab.
3. Click the Create button. When prompted, enter a descriptive name for the environment, such as “Pandas.”
4. Select a Python version to run in the environment.
5. Click OK.

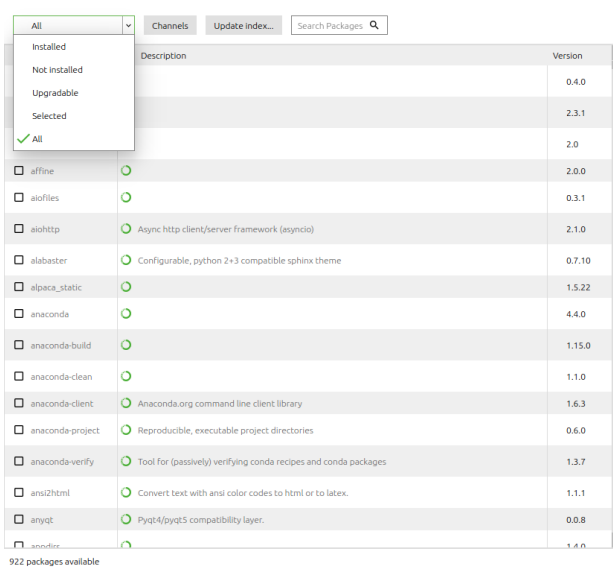
The new environment appears in the environments list.



6. Click the name of the new environment to activate it.

The environment is highlighted with a green background.

7. In the list above the packages table, select All to filter the table to show all packages in all channels.

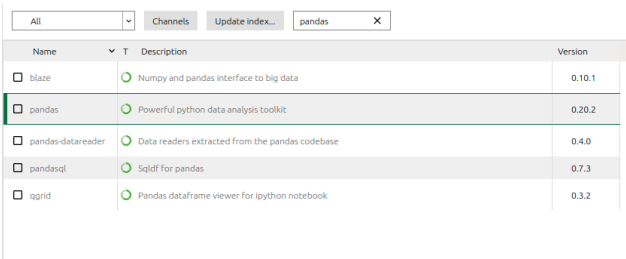


8. In the Search Packages box, type Pandas.

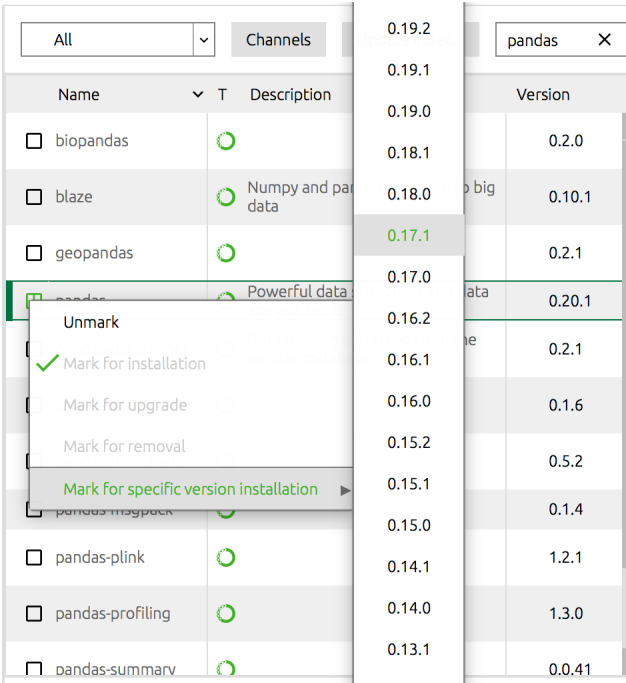
Pandas appears as a package available for installation.

9. Select the checkbox in front of the Pandas package name.

10. In the menu that appears, select Mark for specific version installation.



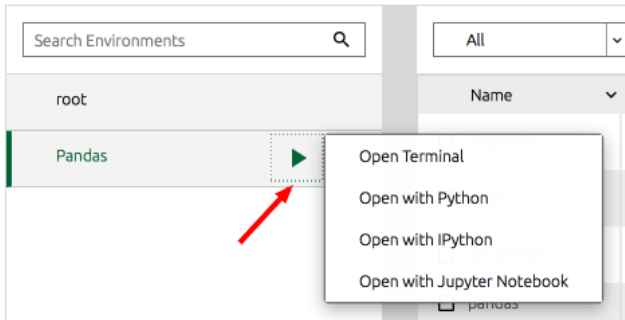
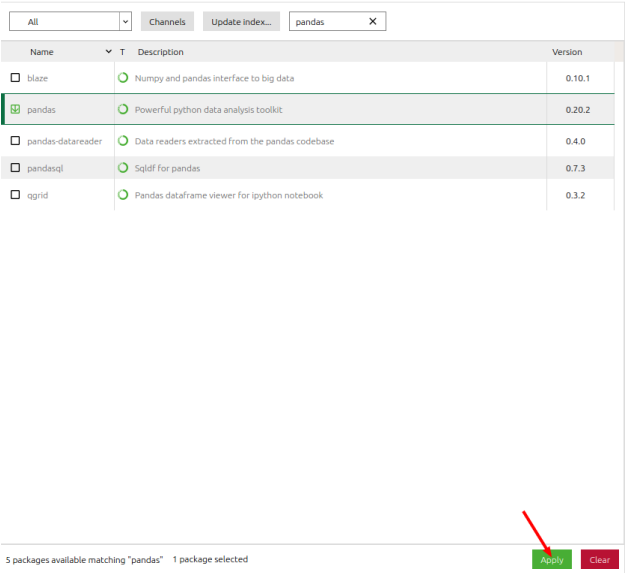
11. In the list that appears, select the Pandas version you want to install.



12. Click the Apply button.

A progress bar appears below the Packages pane while Pandas and its dependencies are installed.

- 13. To begin using your new environment, click the **Environments** tab.
- 14. Click the arrow button next to the Pandas environment name.
- 15. In the list that appears, select the tool to use to open Pandas: Terminal, Python, IPython, or Jupyter Notebook.



Learn more about Pandas

- [10 Minutes to Pandas](#)
- [Pandas Cookbook](#)
- [Panda's Diet](#)

Help and support

Anaconda Navigator is copyright 2016-2017 Anaconda®, Inc. It may be copied and distributed freely only as part of an Anaconda or Miniconda installation.

For free community support for Anaconda and Navigator, see the [Nucleus Community forums](#).

For Anaconda installation or technical support options, visit our [support offerings page](#).

Training and consulting

Training and consulting is available for all Anaconda products, including Navigator. For more information, please contact your account representative or email sales@anaconda.com.

Reporting bugs

Please report bugs on the [Anaconda GitHub issue tracker](#).

Release notes

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 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 into an Anaconda Nucleus account.
- Added new **Connect** dropdown menu with options to log into 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`, 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` 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 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** / **Team Edition** / **Repo4 Enterprise**.
- Extended Navigator settings/preferences by adding the following functionalities:
 - 1) Modify Conda configuration file (**.condarc**) directly from Navigator.
 - 2) Modify Navigator settings file (**anaconda-navigator.ini**) directly from Navigator.
 - 3) Setup 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 **Navigator Updater tool**:

The bug was a part of the **1.9.12** release, so user 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** at Home tab.
- Fixed bug with missing **Visual Studio Code** tile on the Home tab.
- Fixed bug where the environment would 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

- Add PyCharm Tile to homepage when installed.
- Add Anaconda Prompt, Anaconda PowerShell Tiles on homepage (Windows only).
- Display 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

- Add support for **Offline Mode** for all environment related actions.
- Add support for custom configuration of main windows links.

- Numerous bug fixes and performance enhancements.

1.8 – February 28, 2018

- **Remove “Projects” tab.**
- Support environment names with spaces on Windows.
- Improve switching between Anaconda API domains.
- Better integration with Visual Studio Code.
- Numerous bug fixes and performance enhancements.

1.7 – February 13, 2018

- Add R and MRO documentation tiles.
- Add 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 tab now selects it on both.
- Numerous bug fixes and performance enhancements.

1.5 – March 2, 2017

- New Projects tab 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** tab.

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** tab. To install and launch R Studio, in the R Studio pane, click the Install button, then click the Launch button.

- Orange app returns to the **Home** tab.

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 the Launch button 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, then click the Apply button.

- 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. 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.

- Correct display of “no arch” packages.

When Navigator installs “no arch” packages, they now appear correctly on the **Environments** tab.

- 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** tab, click the **Applications** menu, 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** tab, 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** tab and the **Environments** tab.

- 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 window's being maximized upon startup.

1.2 – August 1, 2016

- Improved conda rc 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 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](#).

Glossary

Anaconda

A downloadable, free, open-source, high-performance, optimized Python and R distribution with 250+ packages automatically included. Anaconda provides the option to easily install an additional 7,500+ open-source packages for data science, including advanced and scientific analytics.

Anaconda includes *Anaconda Navigator* and *conda* management utilities. Available for Windows, macOS and Linux. All versions are supported by the development community.

Anaconda.org

A web-based repository hosting service in the cloud. *Packages* created locally can be published to your *channel* on Anaconda Cloud to be shared with the public. Paid subscriptions to Anaconda.org can designate packages as private, to be shared only with authorized users. Anaconda Cloud is Anaconda's repository product made available to the public. Anaconda repository is also available for purchase by companies that wish to maintain their own on-site version of Anaconda.org. See [Anaconda business subscriptions](#).

Anaconda Enterprise

Anaconda version that includes enterprise technical support, indemnification for a select number of open source packages, collaborative notebooks, high performance scalability, Hadoop, interactive visualization, governance and security. See [Anaconda business subscriptions](#).

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)*.

Anaconda Repository

A private enterprise server on your network where open source and proprietary packages may be stored and retrieved for installation on a local computer. Anaconda Repository is different from [Anaconda.org](#) or the [default conda repository](#). The Anaconda Repository is used to govern access to data science assets including packages and notebooks.

Channels

The locations of the repositories where conda looks for packages, often on Anaconda.org (Anaconda.org). Channels may also go to a private location on a remote or local repository that you or your organization manage.

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)*.

Conda

A package and environment manager program that is packaged with *Anaconda* 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 to *Anaconda Navigator*.

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. Environments in Anaconda Navigator are conda environments.

EXAMPLE: It can be useful to create one environment for packages that run on Python 2, and another for packages that run on Python 3.

Changes to one environment do not affect other environments.

EXAMPLE: If you upgrade a program in one environment, this will not upgrade the same program in another environment.

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. Managed with *conda* or *Anaconda Navigator*. Packages in Anaconda Navigator are conda packages.

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/pkgs/> and used within *Anaconda Navigator* when downloading and installing packages from their Environments tab, or by using *conda* commands in a *Command Line Interface*.

Graphical user interface (GUI)

A program with graphic images, icons and menus in 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.

Miniconda

A minimal installer for conda that is run from a command line interface (CLI). Like Anaconda, Miniconda is a free software package that includes the conda package and environment manager, but Miniconda does not include Anaconda, Anaconda Navigator, or any packages other than those dependencies needed to install it. After Miniconda is installed, additional conda packages may be installed directly from the command line interface with the command `conda install`. See also *Anaconda* and *conda*.

Package manager

A collection of software tools that automates the process of installing, updating, configuring, and removing computer programs on a computer. Also known as a package management system. *Anaconda Navigator* includes the conda package manager with a GUI overlay for ease of use.

Packages

Software program files and information about the software, such as its name, the specific version and a description, bundled into a file that can be installed and managed by a package manager.

R packages

Conda packages that install and run the R computer language. Examples include R Essentials, a bundle of 210 popular open source software programs written in the R computer language. To learn more, see <http://conda.pydata.org/docs/r-with-conda.html>.

Repository

Any storage location from which software or software assets may be retrieved and installed on a local computer. See also: *Anaconda Repository* and *conda repository*.

Review this page to learn what Anaconda Navigator is. When you're ready to start working in Navigator, check out the user guide topics:

Overview | *Installation* | *Glossary* | *Getting started with Navigator* | *Tutorials* | *Troubleshooting* | *Release notes* | *Help and support*

What is Anaconda Navigator?

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

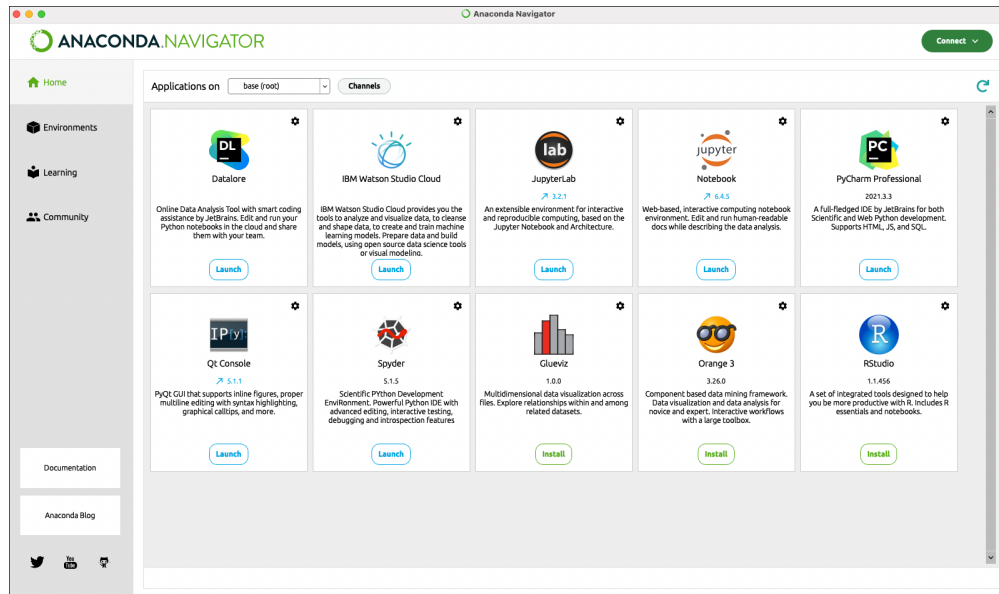
To get Navigator, get the *Anaconda Cheat Sheet* and *install Anaconda*.

The *Getting started with Navigator* section shows how to start Navigator from the shortcuts or from a terminal window.

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 command-line 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 an easy, point-and-click way to 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?

The following applications are available by default in Navigator:

- JupyterLab
- Jupyter Notebook
- Spyder
- PyCharm
- VSCode
- Glueviz
- Orange 3 App
- RStudio
- Anaconda Prompt (Windows only)
- Anaconda PowerShell (Windows only)

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 tab, click Spyder, and write and execute your code.

You can also use Jupyter Notebooks the same way. Jupyter Notebooks are an increasingly popular system that combine your code, descriptive text, output, images, and interactive interfaces into a single notebook file that is edited, viewed, and used in a web browser.

Navigator user guide

- *Overview*
- *Getting started with Navigator*
- *Tutorials*
- *Troubleshooting*
- *Release notes*

Note: We do not support macOS<10.12 for Anaconda Navigator.

7.1.4 Reference

The following information is provided for your reference, to help you understand some of the *core terminology* used in Anaconda Distribution as well as information about the various *packages* available.

Consult the *release notes* to see what changes were made between releases. We also include several *support resources*, and workarounds for *known issues* you may encounter while using the product.

Glossary

Anaconda.org

A cloud package repository hosting service at <https://www.anaconda.org>. With a free account, you can publish packages you create to be used publicly.

Anaconda Distribution

Open-source repository of hundreds of popular data science packages, along with the conda package and virtual environment manager for Windows, macOS, and Linux. Conda makes it quick and easy to install, run, and upgrade complex data science and machine learning environments like scikit-learn, TensorFlow, and SciPy.

Anaconda Enterprise

A software platform for developing, governing, and automating data science and AI pipelines from laptop to production. Enterprise enables collaboration between teams of thousands of data scientists running large-scale model deployments on high-performance production clusters.

Anaconda metapackage

A collection of packages at specific versions that are associated with 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.

Read more about the [Anaconda metapackage](#). Read more about the distinctions between [Anaconda Distribution](#) and the [Anaconda metapackage](#).

Anaconda Navigator

A desktop Graphical User Interface (GUI) included in Anaconda Distribution that allows you to easily use and manage IDEs, conda packages, environments, channels, and notebooks without the need to use the Command Line Interface (CLI).

channel

A location in a repository where conda looks for packages. Channels may point to a Cloud repository or a private location on a remote or local repository that you or your organization created. The `conda channel` command has a default set of channels to search beginning with <https://repo.anaconda.com/pkg/>. You may override the default channels to, for example, maintain a private or internal channel. In conda commands and in the `.condarc` file, these default channels are referred to by the channel name `defaults`.

conda

An open-source package and environment manager bundled with Anaconda Distribution that finds, installs, and updates conda packages and their dependencies. Conda also lets you easily switch between conda environments on your local computer.

conda-build

A tool used to build conda packages from recipes.

conda environment

A superset of Python virtual environments, conda environments make it easy to create projects with different versions of Python and avoid issues related to dependencies and version requirements. 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. 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 3.5 and Python 3.5 packages.

conda package

A binary tarball file containing system-level libraries, Python and R modules, executable programs, or 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 recipe

Instructions used to tell conda-build how to build a package.

Miniconda

A minimal installer for conda. Like Anaconda Distribution, Miniconda is a free software package that includes the Anaconda Distribution and conda. Miniconda does not include any packages other than those dependencies needed to install it. After installing Miniconda, you can install additional conda packages directly from the command line using `conda install`.

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.

repository

Any storage location from which software or software assets may be retrieved and installed on a local computer.

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*
- *Community Help*
- *GitHub issues*
- *Stack Overflow*
- *Documentation*
- *Conda-forge feedstocks*
- *Anaconda Enterprise*

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 [Nucleus 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, we recommend 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.

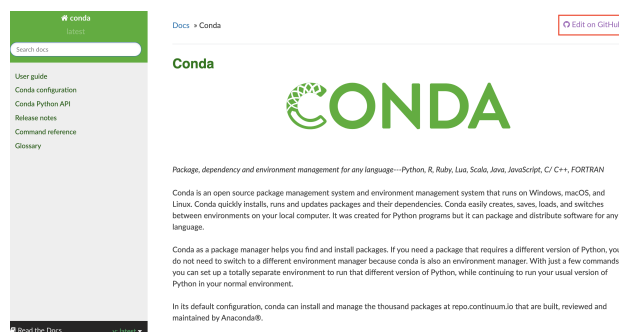
- [Conda documentation](#).
- [Conda GitHub](#).
- [Conda-build documentation](#).
- [Conda-build GitHub](#).

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

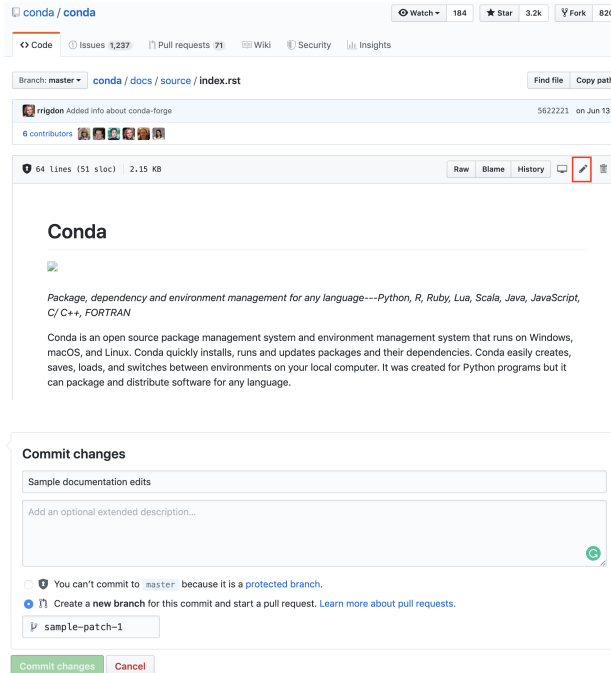
Example documentation contribution

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.



3. Edit the file in GitHub.
4. Commit your changes.
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.

Anaconda Enterprise

Ready to scale up your projects? Anaconda Enterprise 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 [Anaconda Enterprise](#) to see if it's the right option for you and your team.

Release notes

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
- cycler 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 2.10.0 -> 2.11.0
- 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
- queueilib 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`
- `unicodcsv`
- `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
- wurlitzer 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
- libnghttp2 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-libs
- m2w64-gcc-libs-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
- 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:

- 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
- mkl 2021.2.0 -> 2021.4.0
- mkl-service 2.3.0 -> 2.4.0
- mkl_fft 1.3.0 -> 1.3.1

- mkl_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

- `xlsxwriter` 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
- tifffile 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
- tifffile 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
- tifffile 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

- tiff file 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
- unicodcsv 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
- 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
- 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
- tiffle 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
- tiffle 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
- tifffile 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 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:

- liblvm9
- 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:

- libllvm10 10.0.1
- tiff file 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:

- libcxxabi

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
- event 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
- libstdcxx-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

- `xlsxwriter` 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
- 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 1.19.2.1
- 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 -> 0.9999999
- 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
- `xlsxwriter` 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
- olefile 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
- jdcalf 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
- xlswriter 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

- xlsxwriter 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
- unicodedsv 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 is 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
- jdcals 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
- enam1 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
- sympy 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 fomr 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 may 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 are now 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._imaging 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 form 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

Help and support

The following resources are available to help you:

- Free community support is available in the [Nucleus Community forums](#).
- Anaconda offers [support and training](#).
- 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.

- Report bugs on the [Anaconda GitHub issue tracker](#).

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. We recommend 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 Anaconda Enterprise 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 have a troubleshooting issue that is not listed here, obtain free support for Anaconda through the [Nucleus community](#). For Anaconda installation or technical support options, visit our [support offerings page](#).

You may also wish to see the [Anaconda Navigator Troubleshooting guide](#).

- [403 error](#)
- [HTTP 000 CONNECTION FAILED](#)
- [Anaconda installer download problems](#)
- [Cannot open Anaconda Prompt after installation](#)
- [Cannot see Anaconda menu shortcuts after installation on Windows](#)
- [Windows error: Failed to create Anaconda menus or Failed to add Anaconda to the system PATH](#)
- [I'm having trouble with the Anaconda installer on Windows. How can I debug my issue?](#)
- [Cannot get conda to run after installing](#)
- [Recovering your Anaconda installation](#)

- *Using Anaconda behind a firewall or proxy*
- *.zshrc not updated under macOS Catalina*
- *Insecure Platform Warning*
- *Conda: command not found on macOS or Linux*
- *Conda: Channel is unavailable/missing or package itself is missing*
- *Collecting package metadata (repodata.json): - Killed*
- *Anaconda interfering with other software on Windows*
- *Windows error: no environment named “search” exists*
- *MKL Trial warning is displayed even though MKL-linked packages are now free and installed by default*
- *Error message: Permission denied, when loading MKL shared libraries*
- *Error message on Miniconda install: Already installed*
- *Conda update anaconda command does not install the latest version of Anaconda*
- *Linking problems when Python extensions are compiled with gcc*
- *Error message: Unable to remove files*
- *Files left behind after uninstalling Anaconda on Windows*
- *Spyder errors or failure to launch on Windows*
- *Problems running Anaconda on macOS 10.12.2*
- *“execution error: localhost doesn’t understand the “open location” message. (-1708)” when opening a Jupyter notebook on macOS 10.12.5*
- *Missing libgfortran on Power8*
- *Missing libgomp on Power8*
- *Anaconda on Power8 reports “can not execute binary file”*
- *Uninstaller requests admin privileges on Windows*
- *Windows permission errors when installing from Favorites folder*
- *Trouble with activation on PowerShell on Windows*
- *Cannot install Distribution 2019.07 on a webfaction server*
- *Segmentation fault on package import with macOS Python 3.7 interpreter*
- *Using 32- and 64-bit libraries and CONDA_FORCE_32BIT*
- *“The installation failed” message when running a .pkg installer on OSX*

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

1. First, run the following to undo your configuration of Anaconda Professional:

```
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, we recommend 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
```

Anaconda installer download problems

Cause

The Anaconda installer files are large (over 300 MB), and some users have problems with errors and interrupted downloads when downloading large files.

Solution

One option is to download and install the smaller [Miniconda](#) (under 60MB) and then use the command `conda install anaconda` to download and install all the remaining packages in Anaconda. 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.

A second option is to download the large Anaconda installer file, and restart it if the download is interrupted or you need to pause it.

Windows

If you use Internet Explorer:

1. Click the Settings icon.
2. Click “View Downloads” to open the Download Manager.
3. Click on the “Resume” button next to the stopped download to restart downloading. The download resumes at the point where it stopped.

If you use Edge browser:

1. In Windows Explorer, open your downloads folder. There will be temporary files there associated with the partial downloads. Delete all of the temporary files except for the download you want to resume.
2. In Edge, click the file to download it again. Pause the download but do not cancel it.
3. In Windows Explorer, open your downloads folder. You will see two files: the partially downloaded file from earlier, and the paused download you just started. Copy the name of the file you just started, delete this file, and rename the other file with the copied name.
4. In Edge, resume the download.

If you use Chrome browser:

Download the plugin for Chrome called Chrono Download manager. In your Chrome browser, go to <https://chrome.google.com/webstore/category/extensions>, search on “Chrono Download” and select, “Add to Chrome.”

To resume the download using Chrono Download, from your top browser menu, click on the Chrome menu button, then click “Downloads.” Select the filename, then click “Resume” to restart your download.

macOS and Linux

- In your terminal window, download the file with the command `curl -O FILENAME`.

Note: Replace FILENAME with the full path and name of the file, including `http://` or `https://`.

- To pause the download, use `CTRL-C`.

Note: While a download is paused, you can shut down or restart your computer.

- When ready to resume your download, use `curl -O -C FILENAME`.

Where “-C” is the option for “continue”. You can pause and restart a download as many times as you wish.

Cannot open Anaconda Prompt after installation

I get an error message that says “activate.bat is not a recognized file or command”.

Cause

Anaconda 5.0.1 sometimes does not install completely on Windows.

Solution

Until a new version is released, you can install Miniconda, and then use conda to install the rest of the packages in Anaconda with these instructions:

Open the command prompt (Windows key + the R key on your keyboard) which brings up the Run... dialog box. Enter `cmd.exe` and then press enter)

Copy the following text:

```
cd %UserProfile%
powershell -command "& { (New-Object Net.WebClient).DownloadFile('https://repo.
↪anaconda.com/miniconda/Miniconda3-latest-Windows-x86_64.exe', 'mc3.exe') }"
start /wait "" mc3.exe /InstallationType=JustMe /AddToPath=0 /RegisterPython=0 /
↪NoRegistry=0 /S /D=%UserProfile%\anaconda3
%UserProfile%\anaconda3\Scripts\activate.bat
conda install -y anaconda=5.0.1 conda-build _ipyw_jlab_nb_ext_conf
```

Then paste it into the command prompt window.

Note: This installs to a subdirectory in your User directory named `anaconda3`. If you use a different directory, replace `anaconda3` with the actual name.

Cannot see Anaconda menu shortcuts after installation on Windows

After installing on Windows, in the Windows Start menu I cannot see Anaconda prompt, `anaconda.org`, or Navigator shortcuts.

Cause

This may be caused by the way Windows updates the Start menu, or by having multiple versions of Python installed, where they 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 `$PYTHONPATH` 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 during install, then turn 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.

I'm having trouble with the Anaconda installer on Windows. How can I debug my issue?

Cause

The cause could be any number of issues.

Solution

Anaconda 4.4 added a feature to the Windows installer so that the “verbose” install information is printed out to a special debug stream via the Win32 API function OutputDebugStream. To see these messages, during installation you need to run the Microsoft utility <https://technet.microsoft.com/en-us/sysinternals/debugview.aspx>. This may provide useful clues for troubleshooting or submitting bug reports.

Cannot get conda to run after installing

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.

Cause

Most likely when you were installing Anaconda or Miniconda, you answered “NO” to the question whether or not to prepend the conda prompt to your path.

Solution

Uninstall and then reinstall Anaconda or Miniconda, answering “YES” to the question about prepending the conda prompt.

Or, you can manually edit your .bashrc file to prepend the Anaconda or Miniconda install location. Open a text editor and in your home directory, locate the hidden file .bashrc. Add this line to it and save:

```
export PATH=/Users/your-username/anaconda3/bin:$PATH
```

Close your terminal window and re-open before running a conda command.

Recovering your Anaconda installation

If your Anaconda installation 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 system Windows, macOS, or Linux.

Note: Use the actual path, filename, and directory name for your installation.

Windows

Change your original installer's name so you do not overwrite it:

```
move Anaconda Professional_old
```

Run the Anaconda.exe installer as usual and use robocopy to sync the directories:

```
robocopy Anaconda_old Anaconda /S
rd /s Anaconda_old
```

macOS

Change your original installer's name so you do not overwrite it:

```
mv Anaconda Professional_orig
```

Install to same directory as your original installer:

```
bash Anaconda3-4.0.0-MacOSX-x86_64.sh
rsync -a anaconda_orig/ anaconda/
rm -rf anaconda_orig
```

Linux

Change your original installer's name so you do not overwrite it:

```
mv Anaconda Professional_orig
```

Install to same directory as your original installer:

```
bash Anaconda3-4.0.0-Linux-x86_64.sh
rsync -a anaconda_orig/ anaconda/
```

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.

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.

MacOS/Linux

```
export HTTP_PROXY=http://username:password@proxyurl.com:8080
export HTTPS_PROXY=https://username:password@proxyurl.com:8443
```

Windows

```
set HTTP_PROXY=http://username:password@proxyurl.com:8080
set 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>.

.zshrc not updated under macOS Catalina

Cause

MacOS Catalina changed the default shell from Bash to zsh.

Solution

Run `bash -c "conda init zsh"` and then restart your shell to initialize conda for zsh.

Insecure Platform Warning

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 on Windows, 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.

Conda: command not found on macOS or Linux

Cause

The conda shell function is not available, or is not working properly. Some causes:

- You have set `conda_auto_activate_base` to false. You need to run `conda activate [env]`. Env is optional, the default if not provided is base.
- 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
- Conda has been corrupted, usually by a change in the Python package (e.g. 3.6->3.7)

Solution

Run `/full/path/to/bin/conda init` to modify `~/.bashrc`.

Either start a new shell or source the modified `~/.bash_profile` (Windows/MSYS2, Windows/Cygwin and macOS) or `~/.bashrc` (Linux and Windows Subsystem for Linux). Source them via `. ~/.bash_profile`.

You may prefer that conda not automatically activate your base environment when a new shell is started. This behavior shadows your system Python, and some users prefer to have their conda environment be inactive until they need it. To achieve this, you can set a `.condarc` setting:

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

If you have this set, 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 Anaconda Professional or Anaconda Server, 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](#).

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 such as Python and not the versions that were already in place. In some cases this can cause incompatibility and errors.

Solution

We recommend not adding Anaconda to the Windows PATH. Instead, use Anaconda software by opening Anaconda Navigator or the Anaconda Prompt from the Start Menu.

Windows error: no environment named “search” exists

If `anaconda-client` is not installed and you search for a package on `anaconda.org` using the Anaconda search command:

```
anaconda search -t conda packagename
```

You will receive the following error message:

```
C:\Users\username>anaconda search -t conda packagename
No environment named "search" exists in C:\Anaconda\envs
Solution
```

Anaconda on Windows contains an `anaconda.bat` file, which is used for setting environment paths and switching environments. If `anaconda-client` is not installed, this batch file is called instead and produces the error.

To resolve the error, install `anaconda-client`:

```
conda install anaconda-client
```

And then search for a package:

```
anaconda search -t conda packagename
```

MKL Trial warning is displayed even though MKL-linked packages are now free and installed by default

See [Dismissing MKL Trial warnings](#).

Error message: Permission denied, when loading MKL shared libraries

See [Resolving MKL shared library permission denied errors](#).

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:

```
bash Miniconda3-latest-MacOSX-x86_64.sh -f
```

Note: For `Miniconda3-latest-MacOSX-x86_64`, substitute the appropriate filename and version for your operating system.

Be sure that you 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

Obtain a list of the conflicting packages by running `conda update anaconda` or `conda install anaconda=5.2`.

Note: Replace 5.2 with the latest version number.

Once you know which packages are conflicting, you can update all current packages without upgrading to the latest version of Anaconda, or you can 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. Use `conda remove anaconda` to remove the Anaconda metapackage itself. (This will not remove any of the packages included with Anaconda.)
2. Use `conda update --all` to update all currently installed packages.

To remove the conflicting packages and upgrade to the latest version of Anaconda:

1. Remove the conflicting packages by running `conda remove package-name` for each one.

Note: Replace `package-name` with the name of the package.

2. Run `conda update anaconda`.

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 mingw import library—the conda package `libpython`—which 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 Spyder or IPython.

You can also force the installation of the package: `conda install -f package-name`.

Note: Replace `package-name` with the name of the package that you want to install.

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\Your_User_Name` or in `C:\Users\Your_User_Name`.

Note: Replace `Your_User_Name` with your Windows user name 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

1. Close and relaunch Spyder and see if the problem remains.
2. On the menu, select `Start`, then select `Reset Spyder Settings` and see if the problem remains.
3. Close Spyder and relaunch it from the Anaconda Prompt:
 1. From the `Start` menu, open the Anaconda Prompt.
 2. At the Anaconda Prompt, enter `Spyder`.
 3. See if the problem remains.

4. Delete the directory `.spyder2` and then repeat the previous steps from Step 1. Depending on your version of Windows, `.spyder2` may be in `C:\Documents and Settings\Your_User_Name` or in `C:\Users\Your_User_Name`.

Note: Replace `Your_User_Name`, with your Windows user name as it appears in the *Documents and Settings* folder.

Problems running Anaconda on macOS 10.12.2

Cause

Some installations of Anaconda on macOS 10.12.2 experienced incorrect file and directory permissions, which caused a range of errors with Navigator and other parts of Anaconda.

Solution

We recommend that any users with Anaconda on macOS 10.12.2 follow these steps:

1. Uninstall Anaconda. Open the Terminal.app or iTerm2 terminal application and remove your Anaconda directory, which will have a name such as “anaconda2” or “anaconda3”, by entering a command such as this: `rm -rf ~/anaconda3`
2. Use a text editor such as TextEdit to open the file named `.bash_profile` in your home directory. If you see a line that adds Anaconda or Miniconda to your PATH environment variable, remove this line, and then save and close the file. For example, if you see a line such as `export PATH="/Users/jsmith/anaconda3/bin:$PATH"`, remove that line.
3. Update to macOS 10.12.3 or later.
4. [Reinstall Anaconda](#).

“execution error: localhost doesn’t understand the “open location” message. (-1708)” when opening a Jupyter notebook on macOS 10.12.5

Cause

This version of macOS seems to have a bug affecting some of the ways for a program to open a web page in a browser.

Solution

Several possible workarounds have been found for this bug.

You can explicitly set the browser in `~/jupyter/jupyter_notebook_config.py` with a line such as this:

```
c.NotebookApp.browser = u'Safari'
```

Or you can copy the Jupyter notebook URL from the log messages on the command line and paste it into your browser.

Or you can set the `BROWSER` environment variable: `export BROWSER=/Applications/Google\ Chrome.app/Contents/MacOS/Google\ Chrome`

Further information is available at the [Jupyter bug tracker](#), the [Python bug tracker](#), and [this blog post](#).

Missing libgfortran on Power8

Cause

Anaconda 4.4.0.0 for Power8 did not include libgfortran.

Solution

Anaconda 4.4.0.1 and later for Power8 do include libgfortran.

Upgrade to the latest version of Anaconda:

```
conda update anaconda
```

Anaconda 4.4.0.0 users who do not wish to upgrade may instead install libgfortran with this command:

```
conda install libgfortran
```

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 with this 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 with this command:

```
apt install libgomp1
```

Install libgomp on Red Hat Enterprise Linux (RHEL) or CentOS with this 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.

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, System, Apps & features, Python x.x.x (Miniconda3 4.3.xx 64-bit), Uninstall.

Solution

Open the Anaconda or Miniconda installation folder 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

Solution

If you 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
```

Open a cmd.exe prompt. `cd` to where you installed conda and run:

```
python -m conda init
```

Close the cmd.exe prompt and the Anaconda Prompt or the Anaconda PowerShell Prompt as usual.

If this doesn't work, try running:

```
conda update conda
```

Cannot install Distribution 2019.07 on a webfaction server

You may receive an error when trying to install Distribution 2019.07 for Linux on a webfaction server:

```
PREFIX=/home/myname/anaconda3
Unpacking payload ...
[13822] Error loading Python lib '/tmp/_MEI<randomstring>/libpython3.6m.so.1.0':
↳ dlopen /tmp_MEI<randomstring>/libpython3.6m.so.1.0: failed to map segment from
↳ shared object: Operation not permitted
ERROR: could not extract tar starting at offset 00000000000020980+9231072+2
```

Cause

This is caused by having TMP as a noexec.

Solution

To enable installation, you can temporarily set TMP to somewhere else from which you can execute software.

For example:

```
cd
mkdir TMPconda
TMP=~ /TMPconda bash Anaconda3-2019.07-Linux-x86_64.sh
```

After installing, set the TMP folder back to its initial location.

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('LDSSHARED'))"</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('LDSSHARED').
↳split(' ')[1:]))"
```

Using 32- and 64-bit libraries and CONDA_FORCE_32BIT

To work with both 32- and 64-bit libraries, we recommend 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: `conda info -a`

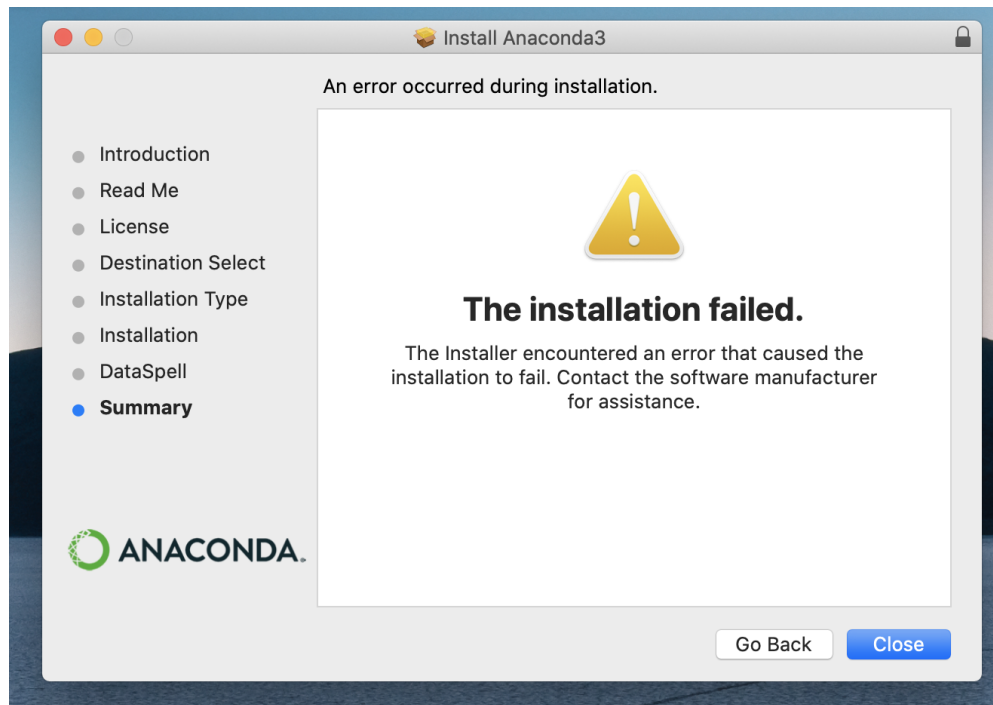
Using `CONDA_FORCE_32BIT` is not recommended because it forces 32-bit packages to be installed in the environment, but does not force 32-bit libraries to load at runtime.

`CONDA_FORCE_32BIT` should be used only when running `conda-build` to build 32-bit packages on a 64-bit system.

“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

OR

vim /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.

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, 3.7, or 3.9) 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 3.9	Python 3.8	Python 3.7
64-bit Windows	64-bit Windows, Py3.9	64-bit Windows, Py3.8	64-bit Windows, Py3.7
32-bit Windows	32-bit Windows, Py3.9	32-bit Windows, Py3.8	32-bit Windows, Py3.7
64-bit macOS Intel x86	macOS Intel x86, Py3.9	macOS Intel x86, Py3.8	macOS Intel x86, Py3.7
64-bit macOS Apple M1	macOS Apple M1, Py3.9	macOS Apple M1, Py3.8	Not supported
64-bit Linux	64-bit Linux, Py3.9	64-bit Linux, Py3.8	64-bit Linux, Py3.7
64-bit Linux Graviton2 ARM64	Linux on ARM64, Py3.9	Linux on ARM64, Py3.8	Linux on ARM64, Py3.7
64-bit Linux on IBM Z	Linux on IBM Z, Py3.9	Linux on IBM Z, Py3.8	Linux on IBM Z, Py3.7
64-bit Linux on IBM Power CPUs	Linux on IBM Power, Py3.9	Linux on IBM Power, Py3.8	Linux on IBM Power, Py3.7

Packages for 64-bit Windows with Python 3.7

Packages for 64-bit Windows with Python 3.8

Packages for 64-bit Windows with Python 3.9

Packages for 32-bit Windows with Python 3.7

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 3.7

Packages for macOS on x86_64 with Python 3.8

Packages for macOS on x86_64 with Python 3.9

Packages for macOS on Apple M1 with Python 3.8

Packages for macOS on Apple M1 with Python 3.9

Packages for 64-bit Linux on x86_64 CPUs with Python 3.7

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 ARMv8 CPUs with Python 3.7

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 IBM Z CPUs with Python 3.7

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 Power CPUs with Python 3.7

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

R language packages for Anaconda

- *R Essentials bundle*
- *More resources*

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
- Latest index of R packages built by Anaconda, Inc. on 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 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 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 offers documentation for Anaconda Enterprise 5.

You can download a PDF or zipped HTML copy of 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 and 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 v.1.0

<ul style="list-style-type: none"> • anaconda launcher • bitarray 0.8.0 • bitey • cython 0.16 • dateutil 1.5 • disco 0.4.2 (Linux only) • erlang (Linux only) • flask 0.9 • gevent 0.13.7 • gevent-websocket 0.3.6 • gevent_zeromq 0.2.5 • greenlet0.4.0 • h5py 2.0.1 • hdf5 1.8.9 • PIL 1.1.7 	<ul style="list-style-type: none"> • iopro 1.0 * • ipython 0.13 • jinja2 2.6 • llvm 3.1 • llvmpy 0.8.2.dev • matplotlib 1.1.1 • mpi4py 1.3 • mpich2 1.4.1p1 • networkx 1.7 • nose 1.1.2 • numba 0.1.dev • numbapro 1.0 * • numexpr 2.0.1 • numpy 1.7.dev • opencv 2.4.2 	<ul style="list-style-type: none"> • openssl 1.0.1c • pandas 0.8.1 • pip 1.1 • pixman 0.26.2 • py2cairo 1.10.0 • pycurl 7.19.0 • pygments 1.5 • pysal 1.4.0 • pysam 0.6 • pytables 2.4.0 • python 2.7.3 • pytz 2012c • pyyaml 3.10 • pyzmq 2.2.0 	<ul style="list-style-type: none"> • redis 2.4.15 (Linux only) • redis py-2.4.13 • requests 0.13.5 • scikit-learn 0.11 • scikits-image 0.6.1 • scipy 0.11.0rc2 • sqlalchemy 0.7.8 • sqlite 3.7.13 • statsmodels 0.4.3 • sympy 0.7.1 • theano 0.5.0 • tornado 2.3 • werkzeug 0.8.3 • wiseRF *
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* Included in Anaconda Pro Only

CONTINUUM[®]
ANALYTICS

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
• greenlet 0.4.0	• 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 1.2.1

<ul style="list-style-type: none"> • bitarray 0.8.0 • bitey 0.0 • boto 2.6.0 • cairo 1.12.2 <i>L</i> • chaco 4.2.1.dev <i>M</i> • conda 1.2.1 • cython 0.17.1 • dateutil 1.5 • disco 0.4.2 <i>L</i> • distribute 0.6.30 • docutils 0.9.1 • erlang R15B01 <i>L</i> • flask 0.9 • freetype 2.4.10 • gevent 0.13.7 • gevent-websocket 0.3.6 • gevent_zeromq 0.2.5 • greenlet 0.4.0 • grin 1.2.1 • h5py 2.1.0 • hdf5 1.8.9 	<ul style="list-style-type: none"> • imaging 1.1.7 • iopro 1.2.2 <i>P</i> • ipython 0.13.1 • jinja2 2.6 • jpeg 8d • libevent 2.0.20 • libpng 1.5.13 • llvm 3.1 • llvmpy 0.9 • matplotlib 1.2.0 • mdp 3.3 • meta 0.4.2.dev • mingw 4.7 <i>W</i> • mkl 10.3 <i>LP</i> • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • networkx 1.7 • nltk 2.0.3 • nose 1.1.2 • numba 0.3.2 • numbapro 0.7.3 <i>P</i> 	<ul style="list-style-type: none"> • numexpr 2.0.1 • numpy 1.6.2 <i>W</i> • numpy 1.7.0b2 <i>U</i> • opencv 2.4.2 <i>L</i> • pandas 0.9.0 • pip 1.2.1 • psutil 0.6.1 • py 1.4.12 • py2cairo 1.10.0 <i>L</i> • pyaudio 0.2.6 <i>M</i> • pycurl 7.19.0 • pyflakes 0.5.0 • pyreadline 1.7.1 <i>W</i> • pysal 1.4.0 • pysam 0.6 <i>U</i> • pyside 1.1.2 • pytables 2.4.0 • pytest 2.3.3 • python 2.7.3 • pytz 2012d 	<ul style="list-style-type: none"> • pyyaml 3.10 • pyzmq 2.2.0.1 • qt 4.7.4 • redis 2.4.15 <i>L</i> • redis-py 2.4.13 <i>L</i> • requests 0.13.9 • scikit-learn 0.11 • scikits-image 0.6.1 • scipy 0.11.0 • sphinx 1.1.3 • spyder 2.1.11 • sqlalchemy 0.7.8 • statsmodels 0.4.3 • sympy 0.7.1 • theano 0.5.0 <i>L</i> • tornado 2.3 • werkzeug 0.8.3 • wisef 1.1 <i>UP</i> • yaml 0.1.4 • zeromq 2.2.0 • zlib 1.2.7
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U: Unix - *L*: Linux - *M*: macOS - *W*: Windows - *P*: not in CE

Packages included in Anaconda 1.3.1

<ul style="list-style-type: none"> • biopython 1.60 • bitarray 0.8.0 • bitey 0.0 • boto 2.7.0 • cairo 1.12.2 <i>L</i> • conda 1.3.5 • cubes 0.10.1 • cython 0.17.4 • dateutil 1.5 • disco 0.4.4 <i>L</i> • distribute 0.6.34 • docutils 0.10 • erlang R15B01 <i>L</i> • flask 0.9 • freetype 2.4.10 • gdata 2.0.17 • gevent 0.13.8 • gevent-websocket 0.3.6 • gevent_zeromq 0.2.5 • googlecl 0.9.12 • greenlet 0.4.0 • grin 1.2.1 	<ul style="list-style-type: none"> • h5py 2.1.1 • hdf5 1.8.9 • imaging 1.1.7 • iopro 1.3.2 <i>P</i> • ipython 0.13.1 • jinja2 2.6 • libevent 2.0.20 • libnvvm 1.0 <i>P</i> • libpng 1.5.13 • llvm 3.2 • llvmpy 0.10.2 • matplotlib 1.2.0 • mdp 3.3 • meta 0.4.2.dev • mingw 4.7 <i>W</i> • mkl 10.3 <i>LP</i> • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • networkx 1.7 • nltk 2.0.4 • nose 1.2.1 • numba 0.6.0 	<ul style="list-style-type: none"> • numbapro 0.8.1 <i>P</i> • numexpr 2.0.1 • numpy 1.6.2 <i>W</i> • numpy 1.7.0rc1 <i>U</i> • opencv 2.4.2 <i>L</i> • pandas 0.10.1 • pip 1.2.1 • ply 3.4 • psutil 0.6.1 • py 1.4.12 • py2cairo 1.10.0 <i>L</i> • pyaudio 0.2.7 <i>M</i> • pycrypto 2.6 • pycurl 7.19.0 • pyflakes 0.5.0 • pygments 1.5 • pyparsing 1.5.6 • pysal 1.4.0 • pysam 0.6 <i>U</i> • pyside 1.1.2 • pytables 2.4.0 • pytest 2.3.4 	<ul style="list-style-type: none"> • python 2.7.3 • pytz 2012d • pyyaml 3.10 • pyzmq 2.2.0.1 • qt 4.7.4 • redis 2.6.9 <i>U</i> • redis-py 2.7.2 <i>U</i> • requests 0.13.9 • scikit-learn 0.13 • scikits-image 0.7.1 • scipy 0.11.0 • sphinx 1.1.3 • spyder 2.1.13 • sqlalchemy 0.7.8 • statsmodels 0.4.3 • sympy 0.7.1 • theano 0.5.0 <i>L</i> • tornado 2.4.1 • werkzeug 0.8.3 • wisef 1.1 <i>UP</i> • zeromq 2.2.0 • zlib 1.2.7
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U: Unix - *L*: Linux - *M*: macOS - *W*: Windows - *P*: not in CE

Packages included in Anaconda 1.4.0

Python 2.7 (what is included in the installers):

<ul style="list-style-type: none"> • astropy 0.2 • biopython 1.60 • bitarray 0.8.0 • bitey 0.0 • boto 2.8.0 • cairo 1.12.2 <i>L</i> • conda 1.4.4 • cubes 0.10.2 • cython 0.18 • dateutil 2.1 • disco 0.4.4 <i>L</i> • distribute 0.6.34 • docutils 0.10 • erlang R15B01 <i>L</i> • flask 0.9 • freetype 2.4.10 • gdata 2.0.17 • gevent 0.13.8 • gevent-websocket 0.3.6 • gevent_zeromq 0.2.5 • googlecl 0.9.12 • greenlet 0.4.0 	<ul style="list-style-type: none"> • grin 1.2.1 • h5py 2.1.1 • hdf5 1.8.9 • imaging 1.1.7 • ipython 0.13.1 • jinja2 2.6 • libevent 2.0.20 • libpng 1.5.13 • llvm 3.2 • llvmpy 0.11.1 • lxml 3.0.2 • matplotlib 1.2.0 • mdp 3.3 • menuinst 1.0.0 <i>W</i> • meta 0.4.2.dev • mingw 4.7 <i>W</i> • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • networkx 1.7 • nltk 2.0.4 • nose 1.2.1 • numba 0.7.0 	<ul style="list-style-type: none"> • numexpr 2.0.1 • numpy 1.7.0 • opencv 2.4.2 <i>L</i> • pandas 0.10.1 • pip 1.2.1 • ply 3.4 • psutil 0.6.1 • py 1.4.12 • py2cairo 1.10.0 <i>L</i> • pyaudio 0.2.7 <i>M</i> • pycparser 2.9.1 • pycrypto 2.6 • pycurl 7.19.0 <i>LM</i> • pyflakes 0.6.1 • pygments 1.6 • pyparsing 1.5.6 • pysal 1.5.0 • pysam 0.6 <i>LM</i> • pyside 1.1.2 • pytables 2.4.0 • pytest 2.3.4 • python 2.7.3 	<ul style="list-style-type: none"> • pytz 2012j • pyyaml 3.10 • pyzmq 2.2.0.1 • qt 4.7.4 • redis 2.6.9 <i>LM</i> • redis-py 2.7.2 <i>LM</i> • requests 0.13.9 • scikit-image 0.8.2 • scikit-learn 0.13 • scipy 0.11.0 • six 1.2.0 • sphinx 1.1.3 • spyder 2.1.13 • sqlalchemy 0.7.8 • statsmodels 0.4.3 • sympy 0.7.1 • theano 0.5.0 <i>L</i> • tornado 2.4.1 • werkzeug 0.8.3 • xlrd 0.9.0 • xlwt 0.7.4 • zlib 1.2.7
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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"> • astropy 0.2 • bitarray 0.8.0 • cython 0.18 • dateutil 2.1 • distribute 0.6.34 • docutils 0.10 • freetype 2.4.10 • greenlet 0.4.0 • ipython 0.13.1 • jinja2 2.6 • libpng 1.5.13 	<ul style="list-style-type: none"> • llvm 3.2 • llvmpy 0.11.1 • lxml 3.0.2 • matplotlib 1.2.0 • mdp 3.3 • mingw 4.7 <i>W</i> • networkx 1.7 • nose 1.2.1 • numpy 1.7.0 • pandas 0.10.1 <i>LM</i> • pip 1.2.1 	<ul style="list-style-type: none"> • ply 3.4 • psutil 0.6.1 • pycparser 2.9.1 • pycrypto 2.6 • pyflakes 0.6.1 • pygments 1.6 • python 3.3.0 • pytz 2012j • pyyaml 3.10 • pyzmq 2.2.0.1 • requests 0.13.9 	<ul style="list-style-type: none"> • scikit-image 0.8.2 <i>LM</i> • scipy 0.11.0 <i>LM</i> • six 1.2.0 • sphinx 1.1.3 • sqlalchemy 0.7.8 • tornado 2.4.1 • xlrd 0.9.0 • zlib 1.2.7
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Python 2.6 (available through conda):

<ul style="list-style-type: none"> • argparse 1.2.1 • astropy 0.2 • biopython 1.60 • bitarray 0.8.0 • boto 2.8.0 • cairo 1.12.2 <i>L</i> • cython 0.18 • dateutil 2.1 • disco 0.4.4 <i>L</i> • distribute 0.6.34 • docutils 0.10 • erlang R15B01 <i>L</i> • flask 0.9 • freetype 2.4.10 • gdata 2.0.17 • gevent 0.13.8 • gevent-websocket 0.3.6 • gevent_zeromq 0.2.5 • googlecl 0.9.12 • greenlet 0.4.0 	<ul style="list-style-type: none"> • grin 1.2.1 • h5py 2.1.1 • hdf5 1.8.9 • imaging 1.1.7 • ipython 0.13.1 • jinja2 2.6 • libevent 2.0.20 • libpng 1.5.13 • llvm 3.2 • llvmpy 0.11.1 • lxml 3.0.2 • matplotlib 1.2.0 <i>LM</i> • mdp 3.3 • mingw 4.7 <i>W</i> • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • networkx 1.7 • nltk 2.0.4 • nose 1.2.1 • numba 0.7.0 	<ul style="list-style-type: none"> • numexpr 2.0.1 • numpy 1.7.0 • opencv 2.4.2 <i>L</i> • pandas 0.10.1 • pip 1.2.1 • ply 3.4 • psutil 0.6.1 • py 1.4.12 • py2cairo 1.10.0 <i>L</i> • pycparser 2.9.1 • pycrypto 2.6 • pycurl 7.19.0 <i>LM</i> • pyflakes 0.6.1 • pygments 1.6 • pyparsing 1.5.6 • pysam 0.6 <i>LM</i> • pytables 2.4.0 <i>LM</i> • pytest 2.3.4 • python 2.6.8 • pytz 2012j 	<ul style="list-style-type: none"> • pyyaml 3.10 • pyzmq 2.2.0.1 • redis 2.6.9 <i>LM</i> • redis-py 2.7.2 <i>LM</i> • requests 0.13.9 • scikit-image 0.8.2 • scikit-learn 0.13 • scipy 0.11.0 • six 1.2.0 • sphinx 1.1.3 • sqlalchemy 0.7.8 • statsmodels 0.4.3 • sympy 0.7.1 <i>LM</i> • theano 0.5.0 <i>L</i> • tornado 2.4.1 • werkzeug 0.8.3 • xlrd 0.9.0 • xlwt 0.7.4 • zlib 1.2.7
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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"> • astropy 0.2.1 • atom 0.2.3 • biopython 1.61 • bitarray 0.8.1 • boto 2.9.2 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • conda 1.5.2 • cubes 0.10.2 • curl 7.30.0 <i>LM</i> • cython 0.19 • dateutil 2.1 • disco 0.4.4 <i>L</i> • distribute 0.6.36 • docutils 0.10 • dynd-python 0.3.0 • enaml 0.7.6 • erlang R15B01 <i>L</i> • flask 0.9 • freetype 2.4.10 • gevent 0.13.8 • gevent-websocket 0.3.6 • gevent_zeromq 0.2.5 	<ul style="list-style-type: none"> • greenlet 0.4.0 • grin 1.2.1 • h5py 2.1.1 • hdf5 1.8.9 • imaging 1.1.7 • ipython 0.13.2 • jinja2 2.6 • libevent 2.0.20 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 • llvm 3.2 • llvmpy 0.11.2 • lxml 3.2.0 • matplotlib 1.2.1 • mdp 3.3 • menuinst 1.0.0 <i>W</i> • meta 0.4.2.dev • mingw 4.7 <i>W</i> • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.4 <i>LM</i> • networkx 1.7 • nltk 2.0.4 	<ul style="list-style-type: none"> • nose 1.3.0 • numba 0.8.1 • numexpr 2.0.1 • numpy 1.7.1 • opencv 2.4.2 <i>L</i> • pandas 0.11.0 • pip 1.3.1 • ply 3.4 • psutil 0.7.1 • py 1.4.12 • py2cairo 1.10.0 <i>L</i> • pyaudio 0.2.7 <i>M</i> • pycosat 0.6.0 • pycparser 2.9.1 • pycrypto 2.6 • pycurl 7.19.0 <i>LM</i> • pyflakes 0.7.2 • pygments 1.6 • pyparsing 1.5.6 • pysal 1.5.0 • pysam 0.6 <i>LM</i> • pyside 1.1.2 • pytables 2.4.0 	<ul style="list-style-type: none"> • pytest 2.3.4 • python 2.7.4 • pytz 2013b • pyyaml 3.10 • pyzmq 2.2.0.1 • qt 4.7.4 • redis-py 2.7.2 <i>LM</i> • requests 1.2.0 • scikit-image 0.8.2 • scikit-learn 0.13.1 • scipy 0.12.0 • six 1.3.0 • sphinx 1.1.3 • spyder 2.2.0 • sqlalchemy 0.8.1 • statsmodels 0.4.3 • sympy 0.7.2 • theano 0.5.0 <i>L</i> • tornado 3.0.1 • werkzeug 0.8.3 • xlrd 0.9.2 • xlwt 0.7.5 • zlib 1.2.7
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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"> • astropy 0.2.1 • bitarray 0.8.1 • curl 7.30.0 <i>LM</i> • cython 0.19 • dateutil 2.1 • distribute 0.6.36 • docutils 0.10 • dynd-python 0.3.0 • freetype 2.4.10 • greenlet 0.4.0 • hdf5 1.8.9 • ipython 0.13.2 • jinja2 2.6 	<ul style="list-style-type: none"> • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 • llvm 3.2 • llvmpy 0.11.2 • lxml 3.2.0 • matplotlib 1.2.1 • mdp 3.3 • mingw 4.7 <i>W</i> • netcdf4 1.0.4 <i>LM</i> • networkx 1.7 • nose 1.3.0 • numba 0.8.1 • numpy 1.7.1 	<ul style="list-style-type: none"> • pandas 0.11.0 • pip 1.3.1 • ply 3.4 • psutil 0.7.1 • pycosat 0.6.0 • pycparser 2.9.1 • pycrypto 2.6 • pyflakes 0.7.2 • pygments 1.6 • pyside 1.1.2 <i>W</i> • python 3.3.1 • pytz 2013b • pyyaml 3.10 	<ul style="list-style-type: none"> • pyzmq 2.2.0.1 • requests 1.2.0 • scikit-image 0.8.2 • scipy 0.12.0 • six 1.3.0 • sphinx 1.1.3 • sqlalchemy 0.8.1 • sympy 0.7.2 • tornado 3.0.1 • xlrd 0.9.2 • zlib 1.2.7
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Python 2.6 (available through conda):

<ul style="list-style-type: none"> • argparse 1.2.1 • astropy 0.2.1 • atom 0.2.3 • biopython 1.61 • bitarray 0.8.1 • boto 2.9.2 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • curl 7.30.0 <i>LM</i> • cython 0.19 • dateutil 2.1 • disco 0.4.4 <i>L</i> • distribute 0.6.36 • docutils 0.10 • dynd-python 0.3.0 • erlang R15B01 <i>L</i> • flask 0.9 • freetype 2.4.10 • gevent 0.13.8 • gevent-websocket 0.3.6 • gevent_zeromq 0.2.5 	<ul style="list-style-type: none"> • greenlet 0.4.0 • grin 1.2.1 • h5py 2.1.1 • hdf5 1.8.9 • imaging 1.1.7 • ipython 0.13.2 • jinja2 2.6 • libevent 2.0.20 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 • llvm 3.2 • llvmpy 0.11.2 • lxml 3.2.0 • matplotlib 1.2.1 <i>LM</i> • mdp 3.3 • mingw 4.7 <i>W</i> • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.4 <i>LM</i> • networkx 1.7 • nltk 2.0.4 	<ul style="list-style-type: none"> • nose 1.3.0 • numba 0.8.1 • numexpr 2.0.1 • numpy 1.7.1 • opencv 2.4.2 <i>L</i> • ordereddict 1.1 • pandas 0.11.0 • pip 1.3.1 • ply 3.4 • psutil 0.7.1 • py 1.4.12 • py2cairo 1.10.0 <i>L</i> • pycosat 0.6.0 • pycparser 2.9.1 • pycrypto 2.6 • pycurl 7.19.0 <i>LM</i> • pyflakes 0.7.2 • pygments 1.6 • pyparsing 1.5.6 • pysam 0.6 <i>LM</i> • pytables 2.4.0 <i>LM</i> 	<ul style="list-style-type: none"> • pytest 2.3.4 • python 2.6.8 • pytz 2013b • pyyaml 3.10 • pyzmq 2.2.0.1 • redis-py 2.7.2 <i>LM</i> • requests 1.2.0 • scikit-image 0.8.2 • scikit-learn 0.13.1 • scipy 0.12.0 • six 1.3.0 • sphinx 1.1.3 • sqlalchemy 0.8.1 • statsmodels 0.4.3 • sympy 0.7.2 <i>LM</i> • theano 0.5.0 <i>L</i> • tornado 3.0.1 • werkzeug 0.8.3 • xlrd 0.9.2 • xlwt 0.7.5 • zlib 1.2.7
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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"> • astropy 0.2.3 • atom 0.2.3 • binstar 0.1.2 • biopython 1.61 • bitarray 0.8.1 • boto 2.9.6 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • conda 1.7.2 • cubes 0.10.2 • curl 7.30.0 <i>LM</i> • cython 0.19.1 • dateutil 2.1 • disco 0.4.4 <i>L</i> • distribute 0.6.45 • docutils 0.10 • dynd-python 0.4.0 • enaml 0.7.6 • erlang R15B01 <i>L</i> • flask 0.10.1 • freetype 2.4.10 • gevent 0.13.8 • gevent-websocket 0.3.6 • gevent_zeromq 0.2.5 • greenlet 0.4.1 	<ul style="list-style-type: none"> • grin 1.2.1 • h5py 2.1.1 • hdf5 1.8.9 • imaging 1.1.7 • ipython 0.13.2 • itsdangerous 0.21 • jinja2 2.6 • keyring 1.4 • launcher 0.1.2 • libevent 2.0.20 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 • llvm 3.2 • llvmmath 0.1.0 • llvmpy 0.11.3 • lxml 3.2.1 • matplotlib 1.2.1 • mdp 3.3 • menuinst 1.0.1 <i>W</i> • meta 0.4.2.dev • mingw 4.7 <i>W</i> • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.4 <i>LM</i> • networkx 1.7 	<ul style="list-style-type: none"> • nltk 2.0.4 • nose 1.3.0 • numba 0.9.0 • numexpr 2.0.1 • numpy 1.7.1 • opencv 2.4.2 <i>L</i> • pandas 0.11.0 • pep8 1.4.5 • pip 1.3.1 • ply 3.4 • psutil 0.7.1 • py 1.4.14 • py2cairo 1.10.0 <i>L</i> • pyaudio 0.2.7 <i>M</i> • pycosat 0.6.0 • pycparser 2.9.1 • pycrypto 2.6 • pycurl 7.19.0 <i>LM</i> • pyflakes 0.7.2 • pygments 1.6 • pyparsing 1.5.6 • pysal 1.5.0 • pysam 0.6 <i>LM</i> • pyside 1.1.2 • pytables 2.4.0 	<ul style="list-style-type: none"> • pytest 2.3.5 • python 2.7.5 • pytz 2013b • pywin32 218.4 <i>W</i> • pyyaml 3.10 • pyzmq 2.2.0.1 • qt 4.7.4 • redis-py 2.7.2 <i>LM</i> • requests 1.2.3 • rope 0.9.4 • scikit-image 0.8.2 • scikit-learn 0.13.1 • scipy 0.12.0 • six 1.3.0 • sphinx 1.1.3 • spyder 2.2.0 • sqlalchemy 0.8.1 • statsmodels 0.4.3 • sympy 0.7.2 • theano 0.5.0 <i>L</i> • tornado 3.1 • werkzeug 0.9.1 • xlrd 0.9.2 • xlwt 0.7.5 • zlib 1.2.7
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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"> • astropy 0.2.3 • bitarray 0.8.1 • curl 7.30.0 <i>LM</i> • cython 0.19.1 • dateutil 2.1 • distribute 0.6.45 • docutils 0.10 • dynd-python 0.4.0 • freetype 2.4.10 • greenlet 0.4.1 • hdf5 1.8.9 • ipython 0.13.2 • jinja2 2.6 	<ul style="list-style-type: none"> • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 • llvm 3.2 • llvmmath 0.1.0 • llvmpy 0.11.3 • lxml 3.2.1 • matplotlib 1.2.1 • mdp 3.3 • mingw 4.7 <i>W</i> • netcdf4 1.0.4 <i>LM</i> • networkx 1.7 • nose 1.3.0 • numba 0.9.0 	<ul style="list-style-type: none"> • numpy 1.7.1 • pandas 0.11.0 • pip 1.3.1 • ply 3.4 • psutil 0.7.1 • pycosat 0.6.0 • pycparser 2.9.1 • pycrypto 2.6 • pyflakes 0.7.2 • pygments 1.6 • pyside 1.1.2 <i>W</i> • python 3.3.2 • pytz 2013b 	<ul style="list-style-type: none"> • pyyaml 3.10 • pyzmq 2.2.0.1 • requests 1.2.3 • scikit-image 0.8.2 • scipy 0.12.0 • six 1.3.0 • sphinx 1.1.3 • sqlalchemy 0.8.1 • sympy 0.7.2 • tornado 3.1 • xlrd 0.9.2 • zlib 1.2.7
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Python 2.6 (available through conda):

<ul style="list-style-type: none"> • argparse 1.2.1 • astropy 0.2.3 • atom 0.2.3 • biopython 1.61 • bitarray 0.8.1 • boto 2.9.6 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • curl 7.30.0 <i>LM</i> • cython 0.19.1 • dateutil 2.1 • disco 0.4.4 <i>L</i> • distribute 0.6.45 • docutils 0.10 • dynd-python 0.4.0 • erlang R15B01 <i>L</i> • flask 0.10.1 • freetype 2.4.10 • gevent 0.13.8 • gevent-websocket 0.3.6 • gevent_zeromq 0.2.5 • greenlet 0.4.1 	<ul style="list-style-type: none"> • grin 1.2.1 • h5py 2.1.1 • hdf5 1.8.9 • imaging 1.1.7 • ipython 0.13.2 • itsdangerous 0.21 • jinja2 2.6 • libevent 2.0.20 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 • llvm 3.2 • llvmmath 0.1.0 • llvmpy 0.11.3 • lxml 3.2.1 • matplotlib 1.2.1 <i>LM</i> • mdp 3.3 • mingw 4.7 <i>W</i> • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.4 <i>LM</i> • networkx 1.7 • nltk 2.0.4 	<ul style="list-style-type: none"> • nose 1.3.0 • numba 0.9.0 • numexpr 2.0.1 • numpy 1.7.1 • opencv 2.4.2 <i>L</i> • ordereddict 1.1 • pandas 0.11.0 • pep8 1.4.5 • pip 1.3.1 • ply 3.4 • psutil 0.7.1 • py 1.4.14 • py2cairo 1.10.0 <i>L</i> • pycosat 0.6.0 • pycparser 2.9.1 • pycrypto 2.6 • pycurl 7.19.0 <i>LM</i> • pyflakes 0.7.2 • pygments 1.6 • pyparsing 1.5.6 • pysam 0.6 <i>LM</i> • pytables 2.4.0 <i>LM</i> 	<ul style="list-style-type: none"> • pytest 2.3.5 • python 2.6.8 • pytz 2013b • pyyaml 3.10 • pyzmq 2.2.0.1 • redis-py 2.7.2 <i>LM</i> • requests 1.2.3 • scikit-image 0.8.2 • scikit-learn 0.13.1 • scipy 0.12.0 • six 1.3.0 • sphinx 1.1.3 • sqlalchemy 0.8.1 • statsmodels 0.4.3 • sympy 0.7.2 <i>LM</i> • theano 0.5.0 <i>L</i> • tornado 3.1 • werkzeug 0.9.1 • xlrd 0.9.2 • xlwt 0.7.5 • zlib 1.2.7
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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"> • apptools 4.2.0 • astropy 0.2.4 • atom 0.3.2 • binstar 0.3.1 • biopython 1.61 • bitarray 0.8.1 • bokeh 0.1.1 • boto 2.12.0 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • chaco 4.3.0 • configobj 4.7.2 • cubes 0.10.2 • curl 7.30.0 <i>LM</i> • cython 0.19.1 • dateutil 2.1 • disco 0.4.4 <i>L</i> • distribute 0.6.45 • docutils 0.11 • dynd-python 0.4.2 • enable 4.3.0 • enaml 0.7.19 • envisage 4.3.0 • erlang R15B01 <i>L</i> • flask 0.10.1 • freetype 2.4.10 • gevent 0.13.8 • gevent-websocket 0.3.6 • gevent_zeromq 0.2.5 	<ul style="list-style-type: none"> • greenlet 0.4.1 • grin 1.2.1 • h5py 2.2.0 • hdf5 1.8.9 • imaging 1.1.7 • ipython 1.0.0 • itsdangerous 0.23 • jinja2 2.7.1 • keyring 3.0.1 • launcher 0.1.2 • libevent 2.0.20 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmmath 0.1.1 • llvmpy 0.12.0 • lxml 3.2.3 • markupsafe 0.18 • matplotlib 1.3.0 • mayavi 4.3.0 • mdp 3.3 • menuinst 1.0.1 <i>W</i> • meta 0.4.2.dev • mingw 4.7 <i>W</i> • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> 	<ul style="list-style-type: none"> • netcdf4 1.0.5 <i>LM</i> • networkx 1.8.1 • nltk 2.0.4 • nose 1.3.0 • numba 0.10.2 • numexpr 2.0.1 • numpy 1.7.1 • opencv 2.4.6 <i>L</i> • pandas 0.12.0 • patsy 0.2.1 • pep8 1.4.6 • pip 1.4.1 • ply 3.4 • psutil 1.0.1 • py 1.4.14 • py2cairo 1.10.0 <i>L</i> • pyaudio 0.2.7 <i>M</i> • pycosat 0.6.0 • pycparser 2.9.1 • pycrypto 2.6 • pycurl 7.19.0 <i>LM</i> • pyface 4.3.0 • pyflakes 0.7.3 • pigments 1.6 • pyparsing 1.5.6 • pyreadline 2.0.dev <i>W</i> • pysal 1.6.0 • pysam 0.6 <i>LM</i> • pyside 1.1.2 	<ul style="list-style-type: none"> • pytables 2.4.0 • pytest 2.3.5 • python 2.7.5 • pytz 2013b • pywin32 218.4 <i>W</i> • pyyaml 3.10 • pyzmq 2.2.0.1 • qt 4.7.4 • redis-py 2.7.2 <i>LM</i> • requests 1.2.3 • rope 0.9.4 • scikit-image 0.8.2 • scikit-learn 0.14.1 • scipy 0.12.0 • six 1.4.1 • sphinx 1.1.3 • spyder 2.2.4 • sqlalchemy 0.8.2 • statsmodels 0.5.0 • sympy 0.7.3 • theano 0.5.0 <i>L</i> • tornado 3.1.1 • traits 4.3.0 • traitsui 4.3.0 • vtk 5.10.1 • werkzeug 0.9.4 • xlrd 0.9.2 • xlwt 0.7.5 • zlib 1.2.7
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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"> • astropy 0.2.4 • bitarray 0.8.1 • curl 7.30.0 <i>LM</i> • cython 0.19.1 • dateutil 2.1 • distribute 0.6.45 • docutils 0.11 • dynd-python 0.4.2 • flask 0.10.1 • freetype 2.4.10 • greenlet 0.4.1 • hdf5 1.8.9 • ipython 1.0.0 • itsdangerous 0.23 • jinja2 2.7.1 • libnetcdf 4.2.1.1 <i>LM</i> 	<ul style="list-style-type: none"> • libpng 1.5.13 <i>LM</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmmath 0.1.1 • llvmpy 0.12.0 • lxml 3.2.3 • markupsafe 0.18 • matplotlib 1.3.0 • mdp 3.3 • mingw 4.7 <i>W</i> • netcdf4 1.0.5 <i>LM</i> • networkx 1.8.1 • nose 1.3.0 • numba 0.10.2 	<ul style="list-style-type: none"> • numpy 1.7.1 • pandas 0.12.0 • patsy 0.2.1 • pillow 2.1.0 • pip 1.4.1 • ply 3.4 • psutil 1.0.1 • pycosat 0.6.0 • pycparser 2.9.1 • pycrypto 2.6 • pyflakes 0.7.3 • pygments 1.6 • pyparsing 1.5.6 • pyreadline 2.0.dev <i>W</i> • pyside 1.1.2 <i>W</i> • python 3.3.2 	<ul style="list-style-type: none"> • pytz 2013b • pyyaml 3.10 • pyzmq 2.2.0.1 • requests 1.2.3 • scikit-image 0.8.2 • scipy 0.12.0 • six 1.4.1 • sphinx 1.1.3 • sqlalchemy 0.8.2 • statsmodels 0.5.0 • sympy 0.7.3 • tornado 3.1.1 • werkzeug 0.9.4 • xlrd 0.9.2 • zlib 1.2.7
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Python 2.6 (available through conda):

<ul style="list-style-type: none"> • argparse 1.2.1 • astropy 0.2.4 • atom 0.3.2 • biopython 1.61 • bitarray 0.8.1 • boto 2.12.0 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • configobj 4.7.2 • curl 7.30.0 <i>LM</i> • cython 0.19.1 • dateutil 2.1 • disco 0.4.4 <i>L</i> • distribute 0.6.45 • docutils 0.11 • dynd-python 0.4.2 • erlang R15B01 <i>L</i> • flask 0.10.1 • freetype 2.4.10 • gevent 0.13.8 • gevent-websocket 0.3.6 • gevent_zeromq 0.2.5 • greenlet 0.4.1 • grin 1.2.1 	<ul style="list-style-type: none"> • h5py 2.2.0 • hdf5 1.8.9 • imaging 1.1.7 • ipython 1.0.0 • itsdangerous 0.23 • jinja2 2.7.1 • libevent 2.0.20 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmmath 0.1.1 • llvmpy 0.12.0 • lxml 3.2.3 • markupsafe 0.18 • matplotlib 1.3.0 <i>LM</i> • mdp 3.3 • mingw 4.7 <i>W</i> • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.5 <i>LM</i> • networkx 1.8.1 	<ul style="list-style-type: none"> • nltk 2.0.4 • nose 1.3.0 • numba 0.10.2 • numexpr 2.0.1 • numpy 1.7.1 • opencv 2.4.6 <i>L</i> • ordereddict 1.1 • pandas 0.12.0 • patsy 0.2.1 • pep8 1.4.6 • pip 1.4.1 • ply 3.4 • psutil 1.0.1 • py 1.4.14 • py2cairo 1.10.0 <i>L</i> • pycosat 0.6.0 • pycparser 2.9.1 • pycrypto 2.6 • pycurl 7.19.0 <i>LM</i> • pyflakes 0.7.3 • pygments 1.6 • pyparsing 1.5.6 • pyreadline 2.0.dev <i>W</i> • pysam 0.6 <i>LM</i> 	<ul style="list-style-type: none"> • pytables 2.4.0 <i>LM</i> • pytest 2.3.5 • python 2.6.8 • pytz 2013b • pyyaml 3.10 • pyzmq 2.2.0.1 • redis-py 2.7.2 <i>LM</i> • requests 1.2.3 • scikit-image 0.8.2 • scikit-learn 0.14.1 • scipy 0.12.0 • six 1.4.1 • sphinx 1.1.3 • sqlalchemy 0.8.2 • statsmodels 0.5.0 • sympy 0.7.3 <i>LM</i> • theano 0.5.0 <i>L</i> • tornado 3.1.1 • werkzeug 0.9.4 • xlrd 0.9.2 • xlwt 0.7.5 • zlib 1.2.7
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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"> • apptools 4.2.0 • astropy 0.2.5 • atom 0.3.4 • beautiful-soup 4.3.1 • binstar 0.3.1 • biopython 1.62 • bitarray 0.8.1 • blaze 0.3 • bokeh 0.2 • boto 2.15.0 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • chaco 4.3.0 • colorama 0.2.7 • configobj 4.7.2 • cubes 0.10.2 • curl 7.30.0 <i>LM</i> • cython 0.19.2 • dateutil 2.1 • disco 0.4.4 <i>L</i> • distribute 0.6.45 • docutils 0.11 • dynd-python 0.5.0 • enable 4.3.0 • enaml 0.8.3 • envisage 4.3.0 • erlang R15B01 <i>L</i> • flask 0.10.1 • freetype 2.4.10 • gevent 0.13.8 • gevent-websocket 0.3.6 	<ul style="list-style-type: none"> • gevent_zeromq 0.2.5 • greenlet 0.4.1 • grin 1.2.1 • h5py 2.2.0 • hdf5 1.8.9 • imaging 1.1.7 • ipython 1.1.0 • itsdangerous 0.23 • jinja2 2.7.1 • keyring 3.2 • launcher 0.1.2 • libevent 2.0.20 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmmath 0.1.1 • llvmpy 0.12.0 • lxml 3.2.3 • markupsafe 0.18 • matplotlib 1.3.1 • mayavi 4.3.0 • mdp 3.3 • menuinst 1.0.3 <i>W</i> • meta 0.4.2.dev • mingw 4.7 <i>W</i> • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.6 <i>LM</i> 	<ul style="list-style-type: none"> • networkx 1.8.1 • nltk 2.0.4 • nose 1.3.0 • numba 0.11.0 • numexpr 2.2.2 • numpy 1.7.1 • opencv 2.4.6 <i>L</i> • openpyxl 1.6.2 • pandas 0.12.0 • patsy 0.2.1 • pep8 1.4.6 • pip 1.4.1 • ply 3.4 • psutil 1.1.2 • py 1.4.17 • py2cairo 1.10.0 <i>L</i> • pyaudio 0.2.7 <i>M</i> • pycosat 0.6.0 • pycparser 2.9.1 • pycrypto 2.6.1 • pycurl 7.19.0 <i>LM</i> • pyface 4.3.0 • pyflakes 0.7.3 • pygments 1.6 • pykit 0.1.0 • pyparsing 1.5.6 • pyreadline 2.0.dev <i>W</i> • pysal 1.6.0 • pysam 0.6 <i>LM</i> • pyside 1.2.1 • pytables 3.0.0 	<ul style="list-style-type: none"> • pytest 2.4.2 • python 2.7.5 • pytz 2013b • pywin32 218.4 <i>W</i> • pyyaml 3.10 • pyzmq 2.2.0.1 • qt 4.8.5 • redis 2.6.9 <i>LM</i> • redis-py 2.7.2 <i>LM</i> • requests 1.2.3 • rope 0.9.4 • scikit-image 0.9.3 • scikit-learn 0.14.1 • scipy 0.13.0 • six 1.4.1 • sphinx 1.1.3 • spyder 2.2.5 • sqlalchemy 0.8.3 • statsmodels 0.5.0 • sympy 0.7.3 • theano 0.5.0 <i>L</i> • tornado 3.1.1 • traits 4.3.0 • traitsui 4.3.0 • vtk 5.10.1 • werkzeug 0.9.4 • xlrd 0.9.2 • xlwt 0.7.5 • yaml 0.1.4 <i>LM</i> • zeromq 2.2.0 <i>LM</i> • zlib 1.2.7
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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"> • astropy 0.2.5 • beautiful-soup 4.3.1 • bitarray 0.8.1 • colorama 0.2.7 • curl 7.30.0 <i>LM</i> • cython 0.19.2 • dateutil 2.1 • distribute 0.6.45 • docutils 0.11 • dynd-python 0.5.0 • flask 0.10.1 • freetype 2.4.10 • greenlet 0.4.1 • hdf5 1.8.9 • ipython 1.1.0 • itsdangerous 0.23 • jinja2 2.7.1 • libnetcdf 4.2.1.1 <i>LM</i> 	<ul style="list-style-type: none"> • libpng 1.5.13 <i>LM</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmmath 0.1.1 • llvmpy 0.12.0 • lxml 3.2.3 • markupsafe 0.18 • matplotlib 1.3.1 • mdp 3.3 • mingw 4.7 <i>W</i> • netcdf4 1.0.6 <i>LM</i> • networkx 1.8.1 • nose 1.3.0 • numba 0.11.0 • numexpr 2.2.2 • numpy 1.7.1 	<ul style="list-style-type: none"> • openpyxl 1.6.2 • pandas 0.12.0 • patsy 0.2.1 • pillow 2.1.0 • pip 1.4.1 • ply 3.4 • psutil 1.1.2 • pycosat 0.6.0 • pycparser 2.9.1 • pycrypto 2.6.1 • pyflakes 0.7.3 • pygments 1.6 • pyparsing 1.5.6 • pyreadline 2.0.dev <i>W</i> • pyside 1.2.1 <i>W</i> • pytables 3.0.0 • python 3.3.2 • pytz 2013b 	<ul style="list-style-type: none"> • pyyaml 3.10 • pyzmq 2.2.0.1 • requests 1.2.3 • scikit-image 0.9.3 • scipy 0.13.0 • six 1.4.1 • sphinx 1.1.3 • sqlalchemy 0.8.3 • statsmodels 0.5.0 • sympy 0.7.3 • tornado 3.1.1 • werkzeug 0.9.4 • xlrd 0.9.2 • yaml 0.1.4 <i>LM</i> • zeromq 2.2.0 <i>LM</i> • zlib 1.2.7
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Python 2.6 (available through conda):

<ul style="list-style-type: none"> • argparse 1.2.1 • astropy 0.2.5 • atom 0.3.4 • beautiful-soup 4.3.1 • biopython 1.62 • bitarray 0.8.1 • boto 2.15.0 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • colorama 0.2.7 • configobj 4.7.2 • curl 7.30.0 <i>LM</i> • cython 0.19.2 • dateutil 2.1 • disco 0.4.4 <i>L</i> • distribute 0.6.45 • docutils 0.11 • dynd-python 0.5.0 • erlang R15B01 <i>L</i> • flask 0.10.1 • freetype 2.4.10 • gevent 0.13.8 • gevent-websocket 0.3.6 • gevent_zeromq 0.2.5 • greenlet 0.4.1 	<ul style="list-style-type: none"> • grin 1.2.1 • h5py 2.2.0 • hdf5 1.8.9 • imaging 1.1.7 • ipython 1.1.0 • itsdangerous 0.23 • jinja2 2.7.1 • libevent 2.0.20 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmmath 0.1.1 • llvmpy 0.12.0 • lxml 3.2.3 • markupsafe 0.18 • matplotlib 1.3.1 <i>LM</i> • mdp 3.3 • mingw 4.7 <i>W</i> • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.6 <i>LM</i> • networkx 1.8.1 	<ul style="list-style-type: none"> • nltk 2.0.4 • nose 1.3.0 • numba 0.11.0 • numexpr 2.2.2 • numpy 1.7.1 • opencv 2.4.6 <i>L</i> • ordereddict 1.1 • pandas 0.12.0 • patsy 0.2.1 • pep8 1.4.6 • pip 1.4.1 • ply 3.4 • psutil 1.1.2 • py 1.4.17 • py2cairo 1.10.0 <i>L</i> • pycosat 0.6.0 • pycparser 2.9.1 • pycrypto 2.6.1 • pycurl 7.19.0 <i>LM</i> • pyflakes 0.7.3 • pygments 1.6 • pyparsing 1.5.6 • pyreadline 2.0.dev <i>W</i> • pysam 0.6 <i>LM</i> • pytables 3.0.0 <i>LM</i> 	<ul style="list-style-type: none"> • pytest 2.4.2 • python 2.6.9 • pytz 2013b • pyyaml 3.10 • pyzmq 2.2.0.1 • redis 2.6.9 <i>LM</i> • redis-py 2.7.2 <i>LM</i> • requests 1.2.3 • scikit-image 0.9.3 • scikit-learn 0.14.1 • scipy 0.13.0 • six 1.4.1 • sphinx 1.1.3 • sqlalchemy 0.8.3 • statsmodels 0.5.0 • sympy 0.7.3 <i>LM</i> • theano 0.5.0 <i>L</i> • tornado 3.1.1 • werkzeug 0.9.4 • xlrd 0.9.2 • xlwt 0.7.5 • yaml 0.1.4 <i>LM</i> • zeromq 2.2.0 <i>LM</i> • zlib 1.2.7
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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"> • apptools 4.2.1 • argcomplete 0.6.7 • astropy 0.3.0 • atom 0.3.6 • beautiful-soup 4.3.1 • binstar 0.4.4 • biopython 1.63 • bitarray 0.8.1 • blaze 0.4.1 • blz 0.6.1 • bokeh 0.4 • boto 2.24.0 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • cdecimal 2.3 • chaco 4.4.1 • colorama 0.2.7 • conda 3.0.3 • conda-build 1.1.0 • configobj 4.7.2 • cubes 0.10.2 • curl 7.30.0 <i>LM</i> • cython 0.20 • datashape 0.1.0 • dateutil 2.1 • disco 0.4.4 <i>L</i> • docutils 0.11 • dynd-python 0.6.0 • enable 4.3.0 • enaml 0.9.0 • envisage 4.4.0 • erlang R15B01 <i>L</i> • flask 0.10.1 • freetype 2.4.10 	<ul style="list-style-type: none"> • future 0.11.2 • gevent 1.0 • gevent-websocket 0.9.2 • gevent_zeromq 0.2.5 • greenlet 0.4.2 • grin 1.2.1 • h5py 2.2.1 • hdf5 1.8.9 • ipython 1.1.0 • itsdangerous 0.23 • jinja2 2.7.2 • keyring 3.3 • kiwisolver 0.1.2 • launcher 0.1.2 • libdynd 0.6.0 <i>LM</i> • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libsodium 0.4.5 <i>L</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmpy 0.12.2 • lxml 3.2.3 • markupsafe 0.18 • matplotlib 1.3.1 • mayavi 4.3.1 • mdp 3.3 • menuinst 1.0.3 <i>W</i> • mingw 4.7 <i>W</i> • mock 1.0.1 • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.7 <i>LM</i> 	<ul style="list-style-type: none"> • networkx 1.8.1 • nltk 2.0.4 • nose 1.3.0 • numba 0.12.0 • numexpr 2.3.0 • numpy 1.8.0 • opencv 2.4.6 <i>L</i> • openpyxl 1.8.2 • openssl 1.0.1c <i>LM</i> • pandas 0.13.0 • patsy 0.2.1 • pep8 1.4.6 • pil 1.1.7 • pip 1.5.2 • ply 3.4 • psutil 1.2.1 • py 1.4.20 • py2cairo 1.10.0 <i>L</i> • pyaudio 0.2.7 <i>M</i> • pycosat 0.6.0 • pycparser 2.10 • pycrypto 2.6.1 • pycurl 7.19.0 <i>LM</i> • pyface 4.4.0 • pyflakes 0.7.3 • pygments 1.6 • pykit 0.1.0 • pyparsing 2.0.1 • pyreadline 2.0 <i>W</i> • pysal 1.6.0 • pysam 0.6 <i>LM</i> • pyside 1.2.1 • pytables 3.1.0 • pytest 2.5.2 	<ul style="list-style-type: none"> • python 2.7.6 • pytz 2013b • pywin32 218.4 <i>W</i> • pyyaml 3.10 • pyzmq 2.2.0.1 • qt 4.8.5 • redis 2.6.9 <i>LM</i> • redis-py 2.9.1 <i>LM</i> • requests 2.2.1 • rope 0.9.4 • scikit-image 0.9.3 • scikit-learn 0.14.1 • scipy 0.13.3 • setuptools 2.1 • six 1.5.2 • sphinx 1.2.1 • spyder 2.2.5 • sqlalchemy 0.9.2 • • ssl_match_hostname 3.4.0.2 • statsmodels 0.5.0 • sympy 0.7.4.1 • theano 0.6.0 <i>L</i> • tk 8.5.13 <i>LM</i> • tornado 3.2.0 • traits 4.4.0 • traitsui 4.4.0 • ujson 1.33 • vtk 5.10.1 • werkzeug 0.9.4 • xlrd 0.9.2 • xlwt 0.7.5 • yaml 0.1.4 <i>LM</i> • zeromq 2.2.0 <i>LM</i> • zlib 1.2.7
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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"> • argcomplete 0.6.7 • astropy 0.3.0 • beautiful-soup 4.3.1 • bitarray 0.8.1 • blaze 0.4.1 • blz 0.6.1 • bokeh 0.4 • cdecimal 2.3 • colorama 0.2.7 • curl 7.30.0 <i>LM</i> • cython 0.20 • datashape 0.1.0 • dateutil 2.1 • docutils 0.11 • dynd-python 0.6.0 • flask 0.10.1 • freetype 2.4.10 • future 0.11.2 • greenlet 0.4.2 • hdf5 1.8.9 • ipython 1.1.0 • itsdangerous 0.23 	<ul style="list-style-type: none"> • jinja2 2.7.2 • libdynd 0.6.0 <i>LM</i> • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libsodium 0.4.5 <i>L</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmpy 0.12.2 • lxml 3.2.3 • markupsafe 0.18 • matplotlib 1.3.1 <i>LM</i> • mdp 3.3 • mingw 4.7 <i>W</i> • mock 1.0.1 • netcdf4 1.0.7 <i>LM</i> • networkx 1.8.1 • nose 1.3.0 • numba 0.12.0 • numexpr 2.3.0 • numpy 1.8.0 	<ul style="list-style-type: none"> • openpyxl 1.8.2 • pandas 0.13.0 • patsy 0.2.1 • pillow 2.1.0 • pip 1.5.2 • ply 3.4 • psutil 1.2.1 • py 1.4.20 • pycosat 0.6.0 • pycparser 2.10 • pycrypto 2.6.1 • pyflakes 0.7.3 • pygments 1.6 • pykit 0.1.0 • pyparsing 2.0.1 • pyreadline 2.0 <i>W</i> • pyside 1.1.2 <i>W</i> • pytables 3.1.0 • pytest 2.5.2 • python 3.3.3 • pytz 2013b • pyyaml 3.10 	<ul style="list-style-type: none"> • pyzmq 2.2.0.1 • redis 2.6.9 <i>LM</i> • redis-py 2.9.1 <i>LM</i> • requests 2.2.1 • scikit-image 0.9.3 • scikit-learn 0.14.1 • scipy 0.13.3 • setuptools 2.1 • six 1.5.2 • sphinx 1.2.1 • sqlalchemy 0.9.2 • • ssl_match_hostname 3.4.0.2 • statsmodels 0.5.0 • sympy 0.7.4.1 • tornado 3.2.0 • ujson 1.33 • werkzeug 0.9.4 • xlrd 0.9.2 • yaml 0.1.4 <i>LM</i> • zeromq 2.2.0 <i>LM</i> • zlib 1.2.7
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Python 2.6 (available through conda):

<ul style="list-style-type: none"> • argcomplete 0.6.7 • argparse 1.2.1 • astropy 0.3.0 • atom 0.3.6 • beautiful-soup 4.3.1 • biopython 1.63 • bitarray 0.8.1 • blaze 0.4.1 • blz 0.6.1 • boto 2.24.0 • cairo 1.12.2 <i>L</i> • casuarius 1.1 • cdecimal 2.3 • colorama 0.2.7 • configobj 4.7.2 • curl 7.30.0 <i>LM</i> • cython 0.20 • datashape 0.1.0 • dateutil 2.1 • disco 0.4.4 <i>L</i> • docutils 0.11 • dynd-python 0.6.0 • erlang R15B01 <i>L</i> • flask 0.10.1 • freetype 2.4.10 • future 0.11.2 • gevent 1.0 • gevent-websocket 0.9.2 	<ul style="list-style-type: none"> • gevent_zeromq 0.2.5 • greenlet 0.4.2 • grin 1.2.1 • h5py 2.2.1 • hdf5 1.8.9 • ipython 1.1.0 • itsdangerous 0.23 • jinja2 2.7.2 • kiwisolver 0.1.2 • libdynd 0.6.0 <i>LM</i> • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libsodium 0.4.5 <i>L</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmpy 0.12.2 • lxml 3.2.3 • markupsafe 0.18 • matplotlib 1.3.1 <i>LM</i> • mdp 3.3 • mingw 4.7 <i>W</i> • mock 1.0.1 • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.7 <i>LM</i> • networkx 1.8.1 	<ul style="list-style-type: none"> • nltk 2.0.4 • nose 1.3.0 • numba 0.12.0 • numexpr 2.3.0 • numpy 1.8.0 • opencv 2.4.6 <i>L</i> • ordereddict 1.1 • pandas 0.13.0 • patsy 0.2.1 • pep8 1.4.6 • pil 1.1.7 • pip 1.5.2 • ply 3.4 • psutil 1.2.1 • py 1.4.20 • py2cairo 1.10.0 <i>L</i> • pycosat 0.6.0 • pycparser 2.10 • pycrypto 2.6.1 • pycurl 7.19.0 <i>LM</i> • pyflakes 0.7.3 • pygments 1.6 • pykit 0.1.0 • pyparsing 2.0.1 • pyreadline 2.0 <i>W</i> • pysam 0.6 <i>LM</i> • pytables 3.1.0 <i>LM</i> • pytest 2.5.2 	<ul style="list-style-type: none"> • python 2.6.9 • pytz 2013b • pyyaml 3.10 • pyzmq 2.2.0.1 • redis 2.6.9 <i>LM</i> • redis-py 2.9.1 <i>LM</i> • requests 2.2.1 • scikit-image 0.9.3 • scikit-learn 0.14.1 • scipy 0.13.3 • setuptools 2.1 • six 1.5.2 • sphinx 1.2.1 • sqlalchemy 0.9.2 • • ssl_match_hostname 3.4.0.2 • statsmodels 0.5.0 • sympy 0.7.4.1 • theano 0.6.0 <i>L</i> • tornado 3.2.0 • traits 4.4.0 • ujson 1.33 • unittest2 0.5.1 • werkzeug 0.9.4 • xlrd 0.9.2 • xlwt 0.7.5 • yaml 0.1.4 <i>LM</i> • zeromq 2.2.0 <i>LM</i> • zlib 1.2.7
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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"> • apptools 4.2.1 • argcomplete 0.6.7 • astropy 0.3.0 • atom 0.3.7 • beautiful-soup 4.3.1 • binstar 0.4.4 • biopython 1.63 • bitarray 0.8.1 • blaze 0.4.2 • blz 0.6.1 • bokeh 0.4.1 • boto 2.25.0 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • cdecimal 2.3 • chaco 4.4.1 • colorama 0.2.7 • conda 3.0.6 • conda-build 1.2.0 • configobj 4.7.2 • cubes 0.10.2 • curl 7.30.0 <i>LM</i> • cython 0.20.1 • datashape 0.1.1 • dateutil 2.1 • disco 0.4.4 <i>L</i> • docutils 0.11 • dynd-python 0.6.1 • enable 4.3.0 • enaml 0.9.1 • envisage 4.4.0 • erlang R15B01 <i>L</i> • flask 0.10.1 • freetype 2.4.10 	<ul style="list-style-type: none"> • future 0.11.2 • gevent 1.0 • gevent-websocket 0.9.2 • gevent_zeromq 0.2.5 • greenlet 0.4.2 • grin 1.2.1 • h5py 2.2.1 • hdf5 1.8.9 • ipython 1.1.0 • itsdangerous 0.23 • jinja2 2.7.2 • keyring 3.3 • kiwisolver 0.1.2 • launcher 0.1.2 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libsodium 0.4.5 <i>L</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmpy 0.12.3 • lxml 3.3.1 • markupsafe 0.18 • matplotlib 1.3.1 • mayavi 4.3.1 • mdp 3.3 • menuinst 1.0.3 <i>W</i> • mingw 4.7 <i>W</i> • mock 1.0.1 • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.8 <i>LM</i> • networkx 1.8.1 	<ul style="list-style-type: none"> • nltk 2.0.4 • nose 1.3.0 • numba 0.12.1 • numexpr 2.3.1 • numpy 1.8.0 • opencv 2.4.6 <i>L</i> • openpyxl 1.8.2 • openssl 1.0.1c <i>LM</i> • pandas 0.13.1 • patsy 0.2.1 • pep8 1.4.6 • pil 1.1.7 • pip 1.5.2 • ply 3.4 • psutil 1.2.1 • py 1.4.20 • py2cairo 1.10.0 <i>L</i> • pyaudio 0.2.7 <i>M</i> • pycosat 0.6.0 • pycparser 2.10 • pycrypto 2.6.1 • pycurl 7.19.0 <i>LM</i> • pyface 4.4.0 • pyflakes 0.7.3 • pygments 1.6 • pykit 0.2.0 • pyparsing 2.0.1 • pyreadline 2.0 <i>W</i> • pysal 1.6.0 • pysam 0.6 <i>LM</i> • pyside 1.2.1 • pytables 3.1.0 • pytest 2.5.2 • python 2.7.6 	<ul style="list-style-type: none"> • pytz 2013b • pywin32 218.4 <i>W</i> • pyyaml 3.10 • pyzmq 2.2.0.1 • qt 4.8.5 • redis 2.6.9 <i>LM</i> • redis-py 2.9.1 <i>LM</i> • requests 2.2.1 • rope 0.9.4 • scikit-image 0.9.3 • scikit-learn 0.14.1 • scipy 0.13.3 • setuptools 2.2 • six 1.5.2 • sphinx 1.2.1 • spyder 2.2.5 • sqlalchemy 0.9.2 • • ssl_match_hostname 3.4.0.2 • statsmodels 0.5.0 • sympy 0.7.4.1 • theano 0.6.0 <i>L</i> • tk 8.5.13 <i>LM</i> • tornado 3.2.0 • traits 4.4.0 • traitsui 4.4.0 • ujson 1.33 • vtk 5.10.1 • werkzeug 0.9.4 • xlrd 0.9.2 • xlswriter 0.5.2 • xlwt 0.7.5 • yaml 0.1.4 <i>LM</i> • zeromq 2.2.0 <i>LM</i> • zlib 1.2.7
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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"> • argcomplete 0.6.7 • astropy 0.3.0 • beautiful-soup 4.3.1 • bitarray 0.8.1 • blaze 0.4.2 • blz 0.6.1 • bokeh 0.4.1 • cdecimal 2.3 • colorama 0.2.7 • curl 7.30.0 <i>LM</i> • cython 0.20.1 • datashape 0.1.1 • dateutil 2.1 • docutils 0.11 • dynd-python 0.6.1 • flask 0.10.1 • freetype 2.4.10 • future 0.11.2 • greenlet 0.4.2 • h5py 2.2.1 • hdf5 1.8.9 • ipython 1.1.0 • itsdangerous 0.23 	<ul style="list-style-type: none"> • jinja2 2.7.2 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libsodium 0.4.5 <i>L</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmpy 0.12.3 • lxml 3.3.1 • markupsafe 0.18 • matplotlib 1.3.1 <i>LM</i> • mdp 3.3 • mingw 4.7 <i>W</i> • mock 1.0.1 • netcdf4 1.0.8 <i>LM</i> • networkx 1.8.1 • nose 1.3.0 • numba 0.12.1 • numexpr 2.3.1 • numpy 1.8.0 • openpyxl 1.8.2 • openssl 1.0.1c <i>LM</i> 	<ul style="list-style-type: none"> • pandas 0.13.1 • patsy 0.2.1 • pillow 2.1.0 • pip 1.5.2 • ply 3.4 • psutil 1.2.1 • py 1.4.20 • pycosat 0.6.0 • pycparser 2.10 • pycrypto 2.6.1 • pyflakes 0.7.3 • pygments 1.6 • pykit 0.2.0 • pyparsing 2.0.1 • pyreadline 2.0 <i>W</i> • pyside 1.2.1 <i>W</i> • pytables 3.1.0 • pytest 2.5.2 • python 3.3.4 • pytz 2013b • pyyaml 3.10 • pyzmq 2.2.0.1 • redis 2.6.9 <i>LM</i> 	<ul style="list-style-type: none"> • redis-py 2.9.1 <i>LM</i> • requests 2.2.1 • scikit-image 0.9.3 • scikit-learn 0.14.1 • scipy 0.13.3 • setuptools 2.2 • six 1.5.2 • sphinx 1.2.1 • sqlalchemy 0.9.2 • • ssl_match_hostname 3.4.0.2 • statsmodels 0.5.0 • sympy 0.7.4.1 • tk 8.5.13 <i>LM</i> • tornado 3.2.0 • ujson 1.33 • werkzeug 0.9.4 • xlrd 0.9.2 • xlsxwriter 0.5.2 • yaml 0.1.4 <i>LM</i> • zeromq 2.2.0 <i>LM</i> • zlib 1.2.7
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Python 2.6 (available through conda):

<ul style="list-style-type: none"> • argcomplete 0.6.7 • argparse 1.2.1 • astropy 0.3.0 • atom 0.3.7 • beautiful-soup 4.3.1 • biopython 1.63 • bitarray 0.8.1 • blaze 0.4.2 <i>LM</i> • blz 0.6.1 • boto 2.25.0 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • cdecimal 2.3 • colorama 0.2.7 • configobj 4.7.2 • curl 7.30.0 <i>LM</i> • cython 0.20.1 • datashape 0.1.1 • dateutil 2.1 • disco 0.4.4 <i>L</i> • docutils 0.11 • dynd-python 0.6.1 • erlang R15B01 <i>L</i> • flask 0.10.1 • freetype 2.4.10 • future 0.11.2 • gevent 1.0 • gevent-websocket 0.9.2 • gevent_zeromq 0.2.5 	<ul style="list-style-type: none"> • greenlet 0.4.2 • grin 1.2.1 • h5py 2.2.1 • hdf5 1.8.9 • ipython 1.1.0 • itsdangerous 0.23 • jinja2 2.7.2 • kiwisolver 0.1.2 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libsodium 0.4.5 <i>L</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmpy 0.12.3 • lxml 3.3.1 • markupsafe 0.18 • matplotlib 1.3.1 <i>LM</i> • mdp 3.3 • mingw 4.7 <i>W</i> • mock 1.0.1 • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.8 <i>LM</i> • networkx 1.8.1 • nltk 2.0.4 • nose 1.3.0 • numba 0.12.1 	<ul style="list-style-type: none"> • numexpr 2.3.1 • numpy 1.8.0 • opencv 2.4.6 <i>L</i> • openssl 1.0.1c <i>LM</i> • ordereddict 1.1 • pandas 0.13.1 • patsy 0.2.1 • pep8 1.4.6 • pil 1.1.7 • pip 1.5.2 • ply 3.4 • psutil 1.2.1 • py 1.4.20 • py2cairo 1.10.0 <i>L</i> • pycosat 0.6.0 • pycparser 2.10 • pycrypto 2.6.1 • pycurl 7.19.0 <i>LM</i> • pyflakes 0.7.3 • pygments 1.6 • pykit 0.2.0 • pyparsing 2.0.1 • pyreadline 2.0 <i>W</i> • pysam 0.6 <i>LM</i> • pytables 3.1.0 <i>LM</i> • pytest 2.5.2 • python 2.6.9 • pytz 2013b • pyyaml 3.10 	<ul style="list-style-type: none"> • pyzmq 2.2.0.1 • redis 2.6.9 <i>LM</i> • redis-py 2.9.1 <i>LM</i> • requests 2.2.1 • scikit-image 0.9.3 • scikit-learn 0.14.1 • scipy 0.13.3 • setuptools 2.2 • six 1.5.2 • sphinx 1.2.1 • sqlalchemy 0.9.2 • • ssl_match_hostname 3.4.0.2 • statsmodels 0.5.0 • sympy 0.7.4.1 • theano 0.6.0 <i>L</i> • tk 8.5.13 <i>LM</i> • tornado 3.2.0 • traits 4.4.0 • ujson 1.33 • unittest2 0.5.1 • werkzeug 0.9.4 • xlrd 0.9.2 • xlswriter 0.5.2 • xlwt 0.7.5 • yaml 0.1.4 <i>LM</i> • zeromq 2.2.0 <i>LM</i> • zlib 1.2.7
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

Packages included in Anaconda 1.9.2

Python 2.7 (included in installer):

<ul style="list-style-type: none"> • apptools 4.2.1 • argcomplete 0.6.7 • astropy 0.3.0 • atom 0.3.7 • beautiful-soup 4.3.1 • binstar 0.4.4 • biopython 1.63 • bitarray 0.8.1 • blaze 0.4.2 • blz 0.6.1 • bokeh 0.4.1 • boto 2.25.0 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • cdecimal 2.3 • chaco 4.4.1 • colorama 0.2.7 • conda 3.4.1 • conda-build 1.3.1 • configobj 4.7.2 • cubes 0.10.2 • curl 7.30.0 <i>LM</i> • cython 0.20.1 • datashape 0.1.1 • dateutil 2.1 • disco 0.4.4 <i>L</i> • docutils 0.11 • dynd-python 0.6.1 • enable 4.3.0 • enaml 0.9.1 • envisage 4.4.0 • erlang R15B01 <i>L</i> • flask 0.10.1 • freetype 2.4.10 	<ul style="list-style-type: none"> • future 0.11.2 • gevent 1.0 • gevent-websocket 0.9.2 • gevent_zeromq 0.2.5 • greenlet 0.4.2 • grin 1.2.1 • h5py 2.2.1 • hdf5 1.8.9 • ipython 1.1.0 • itsdangerous 0.23 • jinja2 2.7.2 • keyring 3.3 • kiwisolver 0.1.2 • launcher 0.1.2 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libsodium 0.4.5 <i>L</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmpy 0.12.3 • lxml 3.3.1 • markupsafe 0.18 • matplotlib 1.3.1 • mayavi 4.3.1 • mdp 3.3 • menuinst 1.0.3 <i>W</i> • mingw 4.7 <i>W</i> • mock 1.0.1 • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.8 <i>LM</i> • networkx 1.8.1 	<ul style="list-style-type: none"> • nltk 2.0.4 • nose 1.3.0 • numba 0.12.1 • numexpr 2.3.1 • numpy 1.8.0 • opencv 2.4.6 <i>L</i> • openpyxl 1.8.2 • openssl 1.0.1g <i>LM</i> • pandas 0.13.1 • patsy 0.2.1 • pep8 1.4.6 • pil 1.1.7 • pip 1.5.2 • ply 3.4 • psutil 1.2.1 • py 1.4.20 • py2cairo 1.10.0 <i>L</i> • pyaudio 0.2.7 <i>M</i> • pycosat 0.6.0 • pycparser 2.10 • pycrypto 2.6.1 • pycurl 7.19.0 <i>LM</i> • pyface 4.4.0 • pyflakes 0.7.3 • pygments 1.6 • pykit 0.2.0 • pyparsing 2.0.1 • pyreadline 2.0 <i>W</i> • pysal 1.6.0 • pysam 0.6 <i>LM</i> • pyside 1.2.1 • pytables 3.1.0 • pytest 2.5.2 • python 2.7.6 	<ul style="list-style-type: none"> • pytz 2013b • pywin32 218.4 <i>W</i> • pyyaml 3.10 • pyzmq 2.2.0.1 • qt 4.8.5 • redis 2.6.9 <i>LM</i> • redis-py 2.9.1 <i>LM</i> • requests 2.2.1 • rope 0.9.4 • scikit-image 0.9.3 • scikit-learn 0.14.1 • scipy 0.13.3 • setuptools 2.2 • six 1.5.2 • sphinx 1.2.1 • spyder 2.2.5 • sqlalchemy 0.9.2 • • ssl_match_hostname 3.4.0.2 • statsmodels 0.5.0 • sympy 0.7.4.1 • theano 0.6.0 <i>L</i> • tk 8.5.13 <i>LM</i> • tornado 3.2.0 • traits 4.4.0 • traitsui 4.4.0 • ujson 1.33 • vtk 5.10.1 • werkzeug 0.9.4 • xlrd 0.9.2 • xlswriter 0.5.2 • xlwt 0.7.5 • yaml 0.1.4 <i>LM</i> • zeromq 2.2.0 <i>LM</i> • zlib 1.2.7
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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"> • argcomplete 0.6.7 • astropy 0.3.0 • beautiful-soup 4.3.1 • bitarray 0.8.1 • blaze 0.4.2 • blz 0.6.1 • bokeh 0.4.1 • cdecimal 2.3 • colorama 0.2.7 • curl 7.30.0 <i>LM</i> • cython 0.20.1 • datashape 0.1.1 • dateutil 2.1 • docutils 0.11 • dynd-python 0.6.1 • flask 0.10.1 • freetype 2.4.10 • future 0.11.2 • greenlet 0.4.2 • h5py 2.2.1 • hdf5 1.8.9 • ipython 1.1.0 • itsdangerous 0.23 	<ul style="list-style-type: none"> • jinja2 2.7.2 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libsodium 0.4.5 <i>L</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmpy 0.12.3 • lxml 3.3.1 • markupsafe 0.18 • matplotlib 1.3.1 <i>LM</i> • mdp 3.3 • mingw 4.7 <i>W</i> • mock 1.0.1 • netcdf4 1.0.8 <i>LM</i> • networkx 1.8.1 • nose 1.3.0 • numba 0.12.1 • numexpr 2.3.1 • numpy 1.8.0 • openpyxl 1.8.2 • openssl 1.0.1g <i>LM</i> 	<ul style="list-style-type: none"> • pandas 0.13.1 • patsy 0.2.1 • pillow 2.1.0 • pip 1.5.2 • ply 3.4 • psutil 1.2.1 • py 1.4.20 • pycosat 0.6.0 • pycparser 2.10 • pycrypto 2.6.1 • pyflakes 0.7.3 • pygments 1.6 • pykit 0.2.0 • pyparsing 2.0.1 • pyreadline 2.0 <i>W</i> • pyside 1.2.1 <i>W</i> • pytables 3.1.0 • pytest 2.5.2 • python 3.3.4 • pytz 2013b • pyyaml 3.10 • pyzmq 2.2.0.1 • redis 2.6.9 <i>LM</i> 	<ul style="list-style-type: none"> • redis-py 2.9.1 <i>LM</i> • requests 2.2.1 • scikit-image 0.9.3 • scikit-learn 0.14.1 • scipy 0.13.3 • setuptools 2.2 • six 1.5.2 • sphinx 1.2.1 • sqlalchemy 0.9.2 • • ssl_match_hostname 3.4.0.2 • statsmodels 0.5.0 • sympy 0.7.4.1 • tk 8.5.13 <i>LM</i> • tornado 3.2.0 • ujson 1.33 • werkzeug 0.9.4 • xlrd 0.9.2 • xlsxwriter 0.5.2 • yaml 0.1.4 <i>LM</i> • zeromq 2.2.0 <i>LM</i> • zlib 1.2.7
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Python 2.6 (available through conda):

<ul style="list-style-type: none"> • argcomplete 0.6.7 • argparse 1.2.1 • astropy 0.3.0 • atom 0.3.7 • beautiful-soup 4.3.1 • biopython 1.63 • bitarray 0.8.1 • blaze 0.4.2 <i>LM</i> • blz 0.6.1 • boto 2.25.0 • cairo 1.12.2 <i>L</i> • casuarious 1.1 • cdecimal 2.3 • colorama 0.2.7 • configobj 4.7.2 • curl 7.30.0 <i>LM</i> • cython 0.20.1 • datashape 0.1.1 • dateutil 2.1 • disco 0.4.4 <i>L</i> • docutils 0.11 • dynd-python 0.6.1 • erlang R15B01 <i>L</i> • flask 0.10.1 • freetype 2.4.10 • future 0.11.2 • gevent 1.0 • gevent-websocket 0.9.2 • gevent_zeromq 0.2.5 	<ul style="list-style-type: none"> • greenlet 0.4.2 • grin 1.2.1 • h5py 2.2.1 • hdf5 1.8.9 • ipython 1.1.0 • itsdangerous 0.23 • jinja2 2.7.2 • kiwisolver 0.1.2 • libnetcdf 4.2.1.1 <i>LM</i> • libpng 1.5.13 <i>LM</i> • libsodium 0.4.5 <i>L</i> • libtiff 4.0.2 <i>LM</i> • libxml2 2.9.0 <i>LM</i> • libxslt 1.1.28 <i>LM</i> • llvm 3.3 • llvmpy 0.12.3 • lxml 3.3.1 • markupsafe 0.18 • matplotlib 1.3.1 <i>LM</i> • mdp 3.3 • mingw 4.7 <i>W</i> • mock 1.0.1 • mpi4py 1.3 <i>L</i> • mpich2 1.4.1p1 <i>L</i> • netcdf4 1.0.8 <i>LM</i> • networkx 1.8.1 • nltk 2.0.4 • nose 1.3.0 • numba 0.12.1 	<ul style="list-style-type: none"> • numexpr 2.3.1 • numpy 1.8.0 • opencv 2.4.6 <i>L</i> • openssl 1.0.1g <i>LM</i> • ordereddict 1.1 • pandas 0.13.1 • patsy 0.2.1 • pep8 1.4.6 • pil 1.1.7 • pip 1.5.2 • ply 3.4 • psutil 1.2.1 • py 1.4.20 • py2cairo 1.10.0 <i>L</i> • pycosat 0.6.0 • pycparser 2.10 • pycrypto 2.6.1 • pycurl 7.19.0 <i>LM</i> • pyflakes 0.7.3 • pygments 1.6 • pykit 0.2.0 • pyparsing 2.0.1 • pyreadline 2.0 <i>W</i> • pysam 0.6 <i>LM</i> • pytables 3.1.0 <i>LM</i> • pytest 2.5.2 • python 2.6.9 • pytz 2013b • pyyaml 3.10 	<ul style="list-style-type: none"> • pyzmq 2.2.0.1 • redis 2.6.9 <i>LM</i> • redis-py 2.9.1 <i>LM</i> • requests 2.2.1 • scikit-image 0.9.3 • scikit-learn 0.14.1 • scipy 0.13.3 • setuptools 2.2 • six 1.5.2 • sphinx 1.2.1 • sqlalchemy 0.9.2 • • ssl_match_hostname 3.4.0.2 • statsmodels 0.5.0 • sympy 0.7.4.1 • theano 0.6.0 <i>L</i> • tk 8.5.13 <i>LM</i> • tornado 3.2.0 • traits 4.4.0 • ujson 1.33 • unittest2 0.5.1 • werkzeug 0.9.4 • xlrd 0.9.2 • xlswriter 0.5.2 • xlwt 0.7.5 • yaml 0.1.4 <i>LM</i> • zeromq 2.2.0 <i>LM</i> • zlib 1.2.7
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Only available on: *L* (Linux) - *M* (macOS) - *W* (Windows)

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
astroid	1.1.1	LGPL	False
astropy	0.3.2	BSD	False
atom	0.3.7	BSD	False
basemap ^{Linux Mac}	1.0.7	PSF	False

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Table 3 – continued from previous page

beautiful-soup	4.3.1	PSF/MIT	False
biopython	1.63	BSD-like	False
bitarray	0.8.1	PSF	False
blaze ^{Linux Mac}	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 ^{Linux}	1.12.2	LGPL 2.1 and MPL 1.1	False
casuarius	1.1	LGPL	False
cdecimal	2.3	BSD	False
cffi ^{Linux Mac}	0.8.2	MIT	False
cheetah	2.4.4	MIT	False
chrpath ^{Linux}	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 ^{Linux Mac}	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 ^{Linux}	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 ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux Mac}	18.0	MIT	False
h5py	2.3.0	New BSD	False
hdf5 ^{Linux Mac}	1.8.9	BSD-style	False
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

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Table 3 – continued from previous page

jinja2	2.7.2	BSD	False
jpeg ^{Linux Mac}	8d	Custom free software license	False
kiwisolver	0.1.2	BSD	False
lcms ^{Linux Mac}	1.19	MIT	False
libdynd ^{Linux Mac}	0.6.2	BSD	False
libffi ^{Linux}	3.0.13	MIT	False
libnetcdf ^{Linux Mac}	4.2.1.1	MIT	False
libpng ^{Linux Mac}	1.5.13	Open Source	False
libsodium ^{Linux Mac}	0.4.5	MIT	False
libtiff ^{Linux Mac}	4.0.2	as-is	False
libxml2 ^{Linux Mac}	2.9.0	MIT	False
libxslt ^{Linux Mac}	1.1.28	MIT	False
llvm ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Windows}	4.7	GPL	False
mock	1.0.1	BSD	False
mpi4py ^{Linux}	1.3	BSD	False
mpich2 ^{Linux}	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 ^{Linux Mac}	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 ^{Linux Mac}	1.5.2	MIT	False
patchelf ^{Linux}	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
pillow ^{Linux Mac}	2.4.0	Standard PIL license	False
pip	1.5.6	MIT	False
pixmap ^{Linux}	0.26.2	MIT	False
ply	3.4	BSD	False

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Table 3 – continued from previous page

psutil	2.1.1	BSD	False
py	1.4.20	MIT	False
py2cairo ^{Linux}	1.10.0	LGPL 2.1 and MPL 1.1	False
pyasn1 ^{Linux}	0.1.6	BSD	False
pycosat	0.6.1	MIT	False
pycparser	2.10	BSD	False
pycrypto	2.6.1	Public Domain	False
pycurl ^{Linux Mac}	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 ^{Linux}	2.3.2	Academic Free License	False
pyodbc	3.0.7	MIT	False
pyparsing	2.0.1	MIT	False
pyqt	4.10.4	GPL	False
pyreadline ^{Windows}	2.0	BSD	False
pysam ^{Linux Mac}	0.6	MIT	False
pytables ^{Linux Mac}	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 ^{Linux Mac}	4.8.5	LGPL	False
readline ^{Linux Mac}	6.2	GPL 3	False
redis ^{Linux Mac}	2.6.9	3-clause BSD	False
redis-py ^{Linux Mac}	2.9.1	MIT	False
requests	2.3.0	ISC	False
rope	0.9.4	GPL	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 ^{Linux Mac}	1.3.2	BSD	False
sip ^{Linux Mac}	4.15.5	GPL	False
six	1.6.1	MIT	False
sphinx	1.2.2	BSD	False
sqlalchemy	0.9.4	MIT	False
sqlite ^{Linux Mac}	3.8.4.1	Public Domain	False
sqlparse	0.1.11	BSD	False
ssh	1.8.0	LGPL	False
ssl_match_hostname	3.4.0.2	PSF	False
starcluster ^{Linux}	0.93.3	LGPL	False
statsmodels	0.5.0	3-clause Modified BSD	False
sympy	0.7.5	New BSD	False
theano ^{Linux}	0.6.0	BSD	False
tk ^{Linux Mac}	8.5.15	BSD-style	False
tornado	3.2.1	Apache	False
traits	4.4.0	BSD	False
twisted	14.0.0	MIT	False

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Table 3 – continued from previous page

ujson	1.33	BSD	False
unittest2	0.5.1	BSD	False
unixodbc ^{Linux}	2.3.1	???	False
util-linux ^{Linux}	2.21	GPL	False
w3lib	1.5	BSD	False
werkzeug	0.9.6	BSD	False
whoosh	2.5.7	BSD	False
workerpool ^{Linux}	0.9.2	MIT	False
xlrd	0.9.3	BSD	False
xlswriter	0.5.5	BSD	False
xlwt	0.7.5	BSD	False
yaml ^{Linux Mac}	0.1.4	MIT	False
zeromq ^{Linux Mac}	4.0.4	LGPL	False
zlib ^{Linux Mac}	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
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 ^{Linux}	1.12.2	LGPL 2.1 and MPL 1.1	True
casuarious	1.1	LGPL	True
cdecimal	2.3	BSD	True
cffil ^{Linux Mac}	0.8.2	MIT	False
chaco	4.4.1	BSD	True
cheetah	2.4.4	MIT	False
chrpath ^{Linux}	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

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Table 4 – continued from previous page

configobj	5.0.5	BSD	True
coverage	3.7.1	BSD	False
cubes	0.10.2	MIT	True
curl ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux Mac}	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
grin	1.2.1	BSD	True
gunicorn ^{Linux Mac}	18.0	MIT	False
h5py	2.3.0	New BSD	True
hdf5 ^{Linux Mac}	1.8.9	BSD-style	True
html5lib	0.999	MIT	False
hyde ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux Mac}	1.19	MIT	True
libdynd ^{Linux Mac}	0.6.2	BSD	True
libffi ^{Linux}	3.0.13	MIT	False
libnetcdf ^{Linux Mac}	4.2.1.1	MIT	False

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Table 4 – continued from previous page

libpng ^{Linux Mac}	1.5.13	Open Source	True
libsodium ^{Linux Mac}	0.4.5	MIT	True
libtiff ^{Linux Mac}	4.0.2	as-is	True
libxml2 ^{Linux Mac}	2.9.0	MIT	True
libxslt ^{Linux Mac}	1.1.28	MIT	True
llvm ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Windows}	1.0.3	BDF	True
mercurial	3.0	GPLv2	False
mingw ^{Windows}	4.7	GPL	True
mock	1.0.1	BSD	True
mpi4py ^{Linux}	1.3	BSD	True
mpich2 ^{Linux}	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
openpyxl	1.8.5	MIT/Expat	True
openssl ^{Linux Mac}	1.0.1h	Apache-style	True
pandas	0.14.0	BSD	True
pandasql	0.4.2	BSD	False
paramiko	1.14.0	LGPL	False
pastedeploy ^{Linux Mac}	1.5.2	MIT	False
patchelf ^{Linux}	0.6	GPL3	False
patsy	0.2.1	BSD License	True
pep8	1.5.6	MIT License	True
pil	1.1.7	PIL license	True
pillow ^{Linux Mac}	2.4.0	Standard PIL license	False
pip	1.5.6	MIT	True
pixman ^{Linux}	0.26.2	MIT	True
ply	3.4	BSD	True
psutil	2.1.1	BSD	True
py	1.4.20	MIT	True
py2cairo ^{Linux}	1.10.0	LGPL 2.1 and MPL 1.1	True
pyasn1 ^{Linux}	0.1.6	BSD	False
pyaudio ^{Mac}	0.2.7	MIT	True

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Table 4 – continued from previous page

pycosat	0.6.1	MIT	True
pycparser	2.10	BSD	True
pycrypto	2.6.1	Public Domain	True
pycurl ^{Linux Mac}	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 ^{Linux}	2.3.2	Academic Free License	False
pyodbc	3.0.7	MIT	False
yparsing	2.0.1	MIT	True
pyqt	4.10.4	GPL	True
pyreadline ^{Windows}	2.0	BSD	True
pysal	1.6.0	New BSD License	False
pysam ^{Linux Mac}	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 ^{Windows}	218.4	PSF	True
pyyaml	3.11	MIT	True
pyzmq	14.3.0	LGPL and BSD	True
qt ^{Linux Mac}	4.8.5	LGPL	True
readline ^{Linux Mac}	6.2	GPL 3	True
redis ^{Linux Mac}	2.6.9	3-clause BSD	True
redis-py ^{Linux Mac}	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
scikit-learn	0.14.1	3-clause BSD	True
scipy	0.14.0	BSD	True
setuptools	3.6	PSF or ZPL	True
shapely ^{Linux Mac}	1.3.2	BSD	False
sip ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux}	0.93.3	LGPL	False
statsmodels	0.5.0	3-clause Modified BSD	True
sympy	0.7.5	New BSD	True
theano ^{Linux}	0.6.0	BSD	True
tk ^{Linux Mac}	8.5.15	BSD-style	True
tornado	3.2.1	Apache	True

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Table 4 – continued from previous page

traits	4.4.0	BSD	True
traitsui	4.4.0	BSD	True
twisted	14.0.0	MIT	False
ujson	1.33	BSD	True
unixodbc ^{Linux}	2.3.1	???	False
util-linux ^{Linux}	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 ^{Linux}	0.9.2	MIT	False
xlrd	0.9.3	BSD	True
xlsxwriter	0.5.5	BSD	True
xlwings ^{Windows}	0.1.0	BSD 3-clause	True
xlwt	0.7.5	BSD	True
yaml ^{Linux Mac}	0.1.4	MIT	True
yt ^{Linux Mac}	2.6.2	BSD	False
zeromq ^{Linux Mac}	4.0.4	LGPL	True
zlib ^{Linux Mac}	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 ^{Linux Mac}	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
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 ^{Linux}	0.8.2	MIT	False
chrpath ^{Linux}	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

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Table 5 – continued from previous page

curl ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux Mac}	3.3.3	LGPL	False
greenlet	0.4.2	MIT	False
unicorn ^{Linux Mac}	18.0	MIT	False
h5py	2.3.0	New BSD	False
hdf5 ^{Linux Mac}	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 ^{Linux Mac}	8d	Custom free software license	False
libdynd ^{Linux Mac}	0.6.2	BSD	False
libffi ^{Linux}	3.0.13	MIT	False
libnetcdf ^{Linux Mac}	4.2.1.1	MIT	False
libpng ^{Linux Mac}	1.5.13	Open Source	False
libsodium ^{Linux Mac}	0.4.5	MIT	False
libtiff ^{Linux Mac}	4.0.2	as-is	False
libxml2 ^{Linux Mac}	2.9.0	MIT	False
libxslt ^{Linux Mac}	1.1.28	MIT	False
llvm ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Windows}	4.7	GPL	False
mock	1.0.1	BSD	False
multiplatform	0.4.3	BSD	False
netcdf4	1.0.8	MIT	False
networkx	1.8.1	BSD	False
nose	1.3.3	LGPL	False

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Table 5 – continued from previous page

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 ^{Linux Mac}	1.0.1h	Apache-style	False
pandas	0.14.0	BSD	False
pandasql	0.4.2	BSD	False
paramiko ^{Linux Mac}	1.14.0	LGPL	False
pastedeploy ^{Linux Mac}	1.5.2	MIT	False
patchelf ^{Linux}	0.6	GPL3	False
patsy	0.2.1	BSD License	False
pep8	1.5.6	MIT License	False
pillow ^{Linux Mac}	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 ^{Linux}	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 ^{Windows}	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 ^{Linux Mac}	4.8.5	LGPL	False
readline ^{Linux Mac}	6.2	GPL 3	False
redis ^{Linux Mac}	2.6.9	3-clause BSD	False
redis-py ^{Linux Mac}	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 ^{Linux Mac}	1.3.2	BSD	False
sip ^{Linux Mac}	4.15.5	GPL	False
six	1.6.1	MIT	False
sphinx	1.2.2	BSD	False

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Table 5 – continued from previous page

sqlalchemy	0.9.4	MIT	False
sqlite ^{Linux Mac}	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 ^{Linux Mac}	8.5.15	BSD-style	False
tornado	3.2.1	Apache	False
ujson	1.33	BSD	False
unixodbc ^{Linux}	2.3.1	???	False
util-linux ^{Linux}	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 ^{Linux Mac}	0.1.4	MIT	False
zeromq ^{Linux Mac}	4.0.4	LGPL	False
zlib ^{Linux Mac}	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 ^{Linux Mac}	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
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 ^{Linux}	0.8.2	MIT	False
chrpath ^{Linux}	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 ^{Linux Mac}	7.30.0	MIT/X derivate	True

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Table 6 – continued from previous page

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 <small>Linux Mac</small>	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 <small>Linux Mac</small>	3.3.3	LGPL	False
greenlet	0.4.2	MIT	True
gunicorn <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
ipython	2.1.0	BSD	True
itsdangerous	0.24	BSD License	True
jdcalf	1.0	BSD	True
jinja2	2.7.2	BSD	True
jpeg <small>Linux Mac</small>	8d	Custom free software license	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
mccabe	0.2.1	Expat	False
mdp	3.3	BSD	False
menuinst <small>Windows</small>	1.0.3	BDF	True
mingw <small>Windows</small>	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

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Table 6 – continued from previous page

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 ^{Linux Mac}	1.0.1h	Apache-style	True
pandas	0.14.0	BSD	True
pandasql	0.4.2	BSD	False
paramiko ^{Linux Mac}	1.14.0	LGPL	False
pastedeploy ^{Linux Mac}	1.5.2	MIT	False
patchelf ^{Linux}	0.6	GPL3	False
patsy	0.2.1	BSD License	True
pep8	1.5.6	MIT License	False
pillow ^{Linux Mac}	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 ^{Linux}	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 ^{Windows}	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 ^{Linux Mac}	4.8.5	LGPL	True
readline ^{Linux Mac}	6.2	GPL 3	True
redis ^{Linux Mac}	2.6.9	3-clause BSD	True
redis-py ^{Linux Mac}	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 ^{Linux Mac}	1.3.2	BSD	False
sip ^{Linux Mac}	4.15.5	GPL	True
six	1.6.1	MIT	True
sphinx	1.2.2	BSD	True
spyder	2.3.0rc1	MIT	True

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Table 6 – continued from previous page

sqlalchemy	0.9.4	MIT	True
sqlite ^{Linux Mac}	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 ^{Linux Mac}	8.5.15	BSD-style	True
tornado	3.2.1	Apache	True
ujson	1.33	BSD	True
unixodbc ^{Linux}	2.3.1	???	False
util-linux ^{Linux}	2.21	GPL	True
werkzeug	0.9.6	BSD	True
whoosh	2.5.7	BSD	False
xlrd	0.9.3	BSD	True
xlswriter	0.5.5	BSD	True
yaml ^{Linux Mac}	0.1.4	MIT	True
zeromq ^{Linux Mac}	4.0.4	LGPL	True
zlib ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux Mac}	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
blaze ^{Linux Mac}	0.6.3	BSD	False
blist	1.3.6	BSD	False
blz	0.6.2	BSD	False
boto	2.32.1	MIT	False
bsddb ^{Linux Mac}	1.0	PSF	False
bsdiff4	1.1.4	BSD	False
cairo ^{Linux}	1.12.2	LGPL 2.1 and MPL 1.1	False
casuarious	1.1	LGPL	False
cdecimal	2.3	BSD	False
cffi	0.8.6	MIT	False
chameleon	2.16	BSD-like	False
cheetah	2.4.4	MIT	False
chrpath ^{Linux}	0.13	GPL	False

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Table 7 – continued from previous page

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 ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux Mac}	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
gunicorn ^{Linux Mac}	19.1.0	MIT	False
h5py	2.3.1	New BSD	False
hdf5 ^{Linux Mac}	1.8.13	BSD-style	False
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 ^{Linux Mac}	8d	Custom free software license	False
kiwisolver	0.1.3	BSD	False
lcms ^{Linux Mac}	1.19	MIT	False
libdynd ^{Linux Mac}	0.6.5	BSD	False
libffi ^{Linux}	3.0.13	MIT	False
libnetcdf ^{Linux Mac}	4.3.2	MIT	False
libpng ^{Linux Mac}	1.5.13	Open Source	False
libsodium ^{Linux Mac}	0.4.5	MIT	False

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Table 7 – continued from previous page

libtiff <small>Linux Mac</small>	4.0.2	as-is	False
libxml2 <small>Linux Mac</small>	2.9.0	MIT	False
libxslt <small>Linux Mac</small>	1.1.28	MIT	False
llvm <small>Linux Mac</small>	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 <small>Windows</small>	4.7	GPL	False
mock	1.0.1	BSD	False
mpi4py <small>Linux</small>	1.3	BSD	False
mpich2 <small>Linux</small>	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 <small>Linux Mac</small>	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 <small>Linux Mac</small>	1.5.2	MIT	False
patchelf <small>Linux</small>	0.6	GPL3	False
patsy	0.3.0	BSD License	False
pep381client	1.5	Academic Free License, version 3	False
pep8	1.5.7	MIT License	False
pil	1.1.7	PIL license	False
pillow <small>Linux Mac</small>	2.5.1	Standard PIL license	False
pip	1.5.6	MIT	False
pixman <small>Linux</small>	0.26.2	MIT	False
ply	3.4	BSD	False
psutil	2.1.1	BSD	False
py	1.4.25	MIT	False
py2cairo <small>Linux</small>	1.10.0	LGPL 2.1 and MPL 1.1	False
pyasn1 <small>Linux</small>	0.1.6	BSD	False
pycosat	0.6.1	MIT	False
pyparser	2.10	BSD	False

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Table 7 – continued from previous page

pycrypto	2.6.1	Public Domain	False
pycurl ^{Linux Mac}	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 ^{Linux}	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	False
pyparsing	2.0.1	MIT	False
pyqt	4.10.4	GPL	False
pyreadline ^{Windows}	2.0	BSD	False
pysam ^{Linux Mac}	0.6	MIT	False
pyserial	2.7	PSF	False
pytables ^{Linux Mac}	3.1.1	BSD	False
pytest	2.6.3	MIT	False
python	2.6.9	PSF	False
pytz	2014.7	MIT	False
pywin32 ^{Windows}	219	PSF	False
pyyaml	3.11	MIT	False
pyzmq	14.3.1	LGPL and BSD	False
qt ^{Linux Mac}	4.8.5	LGPL	False
queuelib	1.2.2	BSD	False
readline ^{Linux Mac}	6.2	GPL 3	False
redis ^{Linux Mac}	2.6.9	3-clause BSD	False
redis-py ^{Linux Mac}	2.9.1	MIT	False
repoze.lru	0.6	BSD	False
requests	2.4.1	ISC	False
rope	0.9.4	GPL	False
scikit-image	0.10.1	Modified BSD	False
scikit-learn	0.15.2	3-clause BSD	False
scipy	0.14.0	BSD	False
setuptools	5.8	PSF or ZPL	False
shapely ^{Linux Mac}	1.4.1	BSD	False
sip ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux}	0.93.3	LGPL	False
statsmodels	0.5.0	3-clause Modified BSD	False
sympy	0.7.5	New BSD	False
theano ^{Linux}	0.6.0	BSD	False
tk ^{Linux Mac}	8.5.15	BSD-style	False
toolz	0.7.0	BSD	False
tornado	4.0.2	Apache	False

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Table 7 – continued from previous page

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 ^{Linux}	2.3.1	???	False
util-linux ^{Linux}	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 ^{Linux}	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 ^{Linux Mac}	0.1.4	MIT	False
zeromq ^{Linux Mac}	4.0.4	LGPL	False
zlib ^{Linux Mac}	1.2.7	zlib	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 ^{Linux Mac}	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 ^{Linux Mac}	1.0	PSF	False
bsdiff4	1.1.4	BSD	False
cairo ^{Linux}	1.12.2	LGPL 2.1 and MPL 1.1	True
casuarious	1.1	LGPL	True
cdecimal	2.3	BSD	True

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Table 8 – continued from previous page

cffi	0.8.6	MIT	True
chaco	4.4.1	BSD	True
chameleon	2.16	BSD-like	False
cheetah	2.4.4	MIT	False
chrpath ^{Linux}	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 ^{Linux Mac}	7.38.0	MIT/X <i>derivate</i>	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 ^{Linux Mac}	5.3.28	AGPLv3	False
decorator	3.4.0	BSD	True
django	1.7	BSD	False
dnspython	1.10.0	<i>as-is</i>	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 ^{Linux Mac}	2.4.10	<i>FreeType License</i>	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 ^{Linux Mac}	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
unicorn ^{Linux Mac}	19.1.0	MIT	False
h5py	2.3.1	<i>New BSD</i>	True
hdf5 ^{Linux Mac}	1.8.13	<i>BSD-style</i>	True

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Table 8 – continued from previous page

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
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
mayavi	4.3.1	BSD	False
mccabe	0.2.1	Expat	False
mdp	3.3	BSD	False
menuinst <small>Windows</small>	1.0.4	BDF	True
mercurial	3.1	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
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
numpydoc	0.4	BSD	False
openpyxl	1.8.5	MIT/Expat	True
openssl <small>Linux Mac</small>	1.0.1h	Apache-style	True

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Table 8 – continued from previous page

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 ^{Linux Mac}	1.5.2	MIT	False
patchelf ^{Linux}	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 ^{Linux Mac}	2.5.1	Standard PIL license	False
pip	1.5.6	MIT	True
pixman ^{Linux}	0.26.2	MIT	True
ply	3.4	BSD	True
psutil	2.1.1	BSD	True
py	1.4.25	MIT	True
py2cairo ^{Linux}	1.10.0	LGPL 2.1 and MPL 1.1	True
pyasn1 ^{Linux}	0.1.6	BSD	False
pyaudio ^{Mac}	0.2.7	MIT	True
pycosat	0.6.1	MIT	True
pycparser	2.10	BSD	True
pycrypto	2.6.1	Public Domain	True
pycurl ^{Linux Mac}	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 ^{Linux}	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 ^{Windows}	2.0	BSD	True
pysal	1.6.0	New BSD License	False
pysam ^{Linux Mac}	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 ^{Windows}	219	PSF	True
pyyaml	3.11	MIT	True
pyzmq	14.3.1	LGPL and BSD	True
qt ^{Linux Mac}	4.8.5	LGPL	True
queuelib	1.2.2	BSD	False
readline ^{Linux Mac}	6.2	GPL 3	True
redis ^{Linux Mac}	2.6.9	3-clause BSD	True
redis-py ^{Linux Mac}	2.9.1	MIT	True
reportlab	3.1.8	BSD	False

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Table 8 – continued from previous page

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 ^{Linux Mac}	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
scrappy	0.24.4	BSD	False
setuptools	5.8	PSF or ZPL	True
shapely ^{Linux Mac}	1.4.1	BSD	False
sip ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux}	0.93.3	LGPL	False
statsmodels	0.5.0	3-clause Modified BSD	True
sympy	0.7.5	New BSD	True
theano ^{Linux}	0.6.0	BSD	True
tk ^{Linux Mac}	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
unicodedsv	0.9.4	BSD	True
unixodbc ^{Linux}	2.3.1	???	False
util-linux ^{Linux}	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 ^{Linux}	0.9.2	MIT	False
xlrd	0.9.3	BSD	True
xlsxwriter	0.5.7	BSD	True
xlutils	1.7.1	MIT	False
xlwings ^{Windows}	0.2.2	BSD 3-clause	True
xlwt	0.7.5	BSD	True
yaml ^{Linux Mac}	0.1.4	MIT	True
yt ^{Linux Mac}	3.0.1	BSD	False
zeromq ^{Linux Mac}	4.0.4	LGPL	True

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Table 8 – continued from previous page

zlib ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux Mac}	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
cffi	0.8.6	MIT	False
chameleon	2.16	BSD-like	False
chrpath ^{Linux}	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 ^{Linux Mac}	0.9.1	BSD	False
curl ^{Linux Mac}	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
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

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Table 9 – continued from previous page

flake8	2.2.3	MIT	False
flask	0.10.1	BSD	False
freetype <small>Linux Mac</small>	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 <small>Linux Mac</small>	3.3.3	LGPL	False
greenlet	0.4.4	MIT	False
gunicorn <small>Linux Mac</small>	19.1.0	MIT	False
h5py	2.3.1	New BSD	False
hdf5 <small>Linux Mac</small>	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 <small>Linux Mac</small>	8d	Custom free software license	False
libdynd <small>Linux Mac</small>	0.6.5	BSD	False
libffi <small>Linux</small>	3.0.13	MIT	False
libnetcdf <small>Linux Mac</small>	4.3.2	MIT	False
libpng <small>Linux Mac</small>	1.5.13	Open Source	False
libsodium <small>Linux Mac</small>	0.4.5	MIT	False
libtiff <small>Linux Mac</small>	4.0.2	as-is	False
libxml2 <small>Linux Mac</small>	2.9.0	MIT	False
libxslt <small>Linux Mac</small>	1.1.28	MIT	False
llvm <small>Linux Mac</small>	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 <small>Linux Mac</small>	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 <small>Windows</small>	4.7	GPL	False
mock	1.0.1	BSD	False
multimethods	1.0.0	MIT	False
multiplatform	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 <small>Linux Mac</small>	1.0.1h	Apache-style	False

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Table 9 – continued from previous page

pandas	0.14.1	BSD	False
paramiko	1.14.1	LGPL	False
passlib	1.6.2	BSD	False
pastedeploy ^{Linux Mac}	1.5.2	MIT	False
patchelf ^{Linux}	0.6	GPL3	False
patsy	0.3.0	BSD License	False
pep8	1.5.7	MIT License	False
pillow ^{Linux Mac}	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 ^{Linux}	0.1.6	BSD	False
pycosat	0.6.1	MIT	False
pycparser	2.10	BSD	False
pycrypto	2.6.1	Public Domain	False
pycurl ^{Linux Mac}	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
yparsing	2.0.1	MIT	False
pyqt	4.10.4	GPL	False
pyreadline ^{Windows}	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 ^{Windows}	219	PSF	False
pyyaml	3.11	MIT	False
pyzmq	14.3.1	LGPL and BSD	False
qt ^{Linux Mac}	4.8.5	LGPL	False
queuelib	1.2.2	BSD	False
readline ^{Linux Mac}	6.2	GPL 3	False
redis ^{Linux Mac}	2.6.9	3-clause BSD	False
redis-py ^{Linux Mac}	2.9.1	MIT	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 ^{Linux Mac}	0.2.0	BSD	False
scikit-image	0.10.1	Modified BSD	False
scikit-learn	0.15.2	3-clause BSD	False
scipy	0.14.0	BSD	False
setuptools	5.8	PSF or ZPL	False
shapely ^{Linux Mac}	1.4.1	BSD	False

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Table 9 – continued from previous page

sip ^{Linux Mac}	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 ^{Linux Mac}	3.8.4.1	Public Domain	False
sqlparse	0.1.12	BSD	False
statsmodels	0.5.0	3-clause Modified BSD	False
sympy	0.7.5	New BSD	False
tk ^{Linux Mac}	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 ^{Linux}	2.3.1	???	False
util-linux ^{Linux}	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
xlswriter	0.5.7	BSD	False
xz ^{Linux Mac}	5.0.5	Public Domain and GPL	False
yaml ^{Linux Mac}	0.1.4	MIT	False
zeromq ^{Linux Mac}	4.0.4	LGPL	False
zlib ^{Linux Mac}	1.2.7	zlib	False
zope.interface	4.1.1	Zope Public License	False

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 ^{Linux Mac}	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 ^{Linux Mac}	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

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Table 10 – continued from previous page

bsdiff4	1.1.4	BSD	False
cffi	0.8.6	MIT	True
chameleon	2.16	BSD-like	False
chrpath ^{Linux}	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 ^{Linux Mac}	0.9.1	BSD	False
curl ^{Linux Mac}	7.38.0	MIT/X derivate	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 ^{Linux Mac}	2.4.10	FreeType License	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 ^{Linux Mac}	3.3.3	LGPL	False
greenlet	0.4.4	MIT	True
gunicorn ^{Linux Mac}	19.1.0	MIT	False
h5py	2.3.1	New BSD	True
hdf5 ^{Linux Mac}	1.8.13	BSD-style	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
jpeg ^{Linux Mac}	8d	Custom free software license	True
launcher ^{Mac Windows}	1.0.0	proprietary - Continuum Analytics, Inc.	True
libdynd ^{Linux Mac}	0.6.5	BSD	True
libffi ^{Linux}	3.0.13	MIT	True
libnetcdf ^{Linux Mac}	4.3.2	MIT	False
libpng ^{Linux Mac}	1.5.13	Open Source	True
libsodium ^{Linux Mac}	0.4.5	MIT	True
libtiff ^{Linux Mac}	4.0.2	as-is	True

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Table 10 – continued from previous page

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
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 <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
pycparser	2.10	BSD	True
pycrypto	2.6.1	Public Domain	True
pycurl <small>Linux Mac</small>	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

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Table 10 – continued from previous page

pyopenssl	0.14	APL2	True
yparsing	2.0.1	MIT	True
pyqt	4.10.4	GPL	True
pyreadline ^{Windows}	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 ^{Windows}	219	PSF	True
pyyaml	3.11	MIT	True
pyzmq	14.3.1	LGPL and BSD	True
qt ^{Linux Mac}	4.8.5	LGPL	True
queuelib	1.2.2	BSD	False
readline ^{Linux Mac}	6.2	GPL 3	True
redis ^{Linux Mac}	2.6.9	3-clause BSD	True
redis-py ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux Mac}	1.4.1	BSD	False
sip ^{Linux Mac}	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 ^{Linux Mac}	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 ^{Linux Mac}	8.5.15	BSD-style	True
toolz	0.7.0	BSD	True
tornado	4.0.2	Apache	True
twisted	14.0.2	MIT	False
ujson	1.33	BSD	True
unixodbc ^{Linux}	2.3.1	???	False
util-linux ^{Linux}	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

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Table 10 – continued from previous page

xlsxwriter	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 2.2.0 for Python version 2.6

Packages included in Anaconda 2.2.0 for Python version 2.7

Packages included in Anaconda 2.2.0 for Python version 3.3

Packages included in Anaconda 2.2.0 for Python version 3.4

Packages included in Anaconda 2.3.0 for Python version 2.6

Packages included in Anaconda 2.3.0 for Python version 2.7

Packages included in Anaconda 2.3.0 for Python version 3.3

Packages included in Anaconda 2.3.0 for Python version 3.4

Packages included in Anaconda 2.4.0 for Python version 2.7

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Packages included in Anaconda 2.4.0 for Python version 3.4

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Packages included in Anaconda 2.4.0 for Python version 3.5

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Packages included in Anaconda 2.4.1 for Python version 2.7

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Packages included in Anaconda 2.4.1 for Python version 3.4

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Packages included in Anaconda 2.4.1 for Python version 3.5

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Packages included in Anaconda 2.5.0 for Python version 2.7

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Packages included in Anaconda 2.5.0 for Python version 3.4

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Packages included in Anaconda 2.5.0 for Python version 3.5

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Packages included in Anaconda 4.0.0 for Python version 2.7

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Packages included in Anaconda 4.1.0 for Python version 2.7

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Packages included in Anaconda 4.1.0 for Python version 3.5

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Packages included in Anaconda 4.2.0 for Python version 2.7

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Packages included in Anaconda 4.3.0 for Python version 3.6

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Packages included in Anaconda 4.3.1 for Python version 2.7

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Packages included in Anaconda 4.3.1 for Python version 3.5

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Packages included in Anaconda 4.4.0 for Python version 2.7

Packages included in Anaconda 4.4.0 for Python version 3.5

Packages included in Anaconda 4.4.0 for Python version 3.6

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

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Packages included in Anaconda 5.0.0 for 64-bit Windows with Python 2.7

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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 5.0.1 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

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Packages included in Anaconda 5.0.1 for 64-bit Windows with Python 2.7

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Packages included in Anaconda 5.0.1 for 64-bit Linux with Python 3.5

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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 3.6

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Packages included in Anaconda 5.0.1 for macOS with Python 3.6

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Packages included in Anaconda 5.0.1 for 64-bit Windows with Python 3.6

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

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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

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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 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 5.2.0 for 32-bit Linux with Python 2.7

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Packages included in Anaconda 5.2.0 for 64-bit Linux on IBM Power CPUs with Python 2.7

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Packages included in Anaconda 5.2.0 for 64-bit Linux with Python 3.6

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Packages included in Anaconda 5.2.0 for 64-bit Windows with Python 3.6

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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

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Packages included in Anaconda 5.3.0 for 64-bit Windows with Python 2.7

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 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 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 2018.12 for 32-bit Linux with Python 3.6

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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

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Packages included in Anaconda 2018.12 for 32-bit Linux with Python 3.7

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Packages included in Anaconda 2018.12 for macOS with Python 3.7

Packages included in Anaconda 2018.12 for 32-bit Windows with Python 3.7

Packages included in Anaconda 2018.12 for 64-bit Windows with Python 3.7

Packages included in Anaconda 2019.03 for 64-bit Linux with Python 2.7

Packages included in Anaconda 2019.03 for 64-bit Linux on IBM Power CPUs with Python 2.7

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Packages included in Anaconda 2019.03 for 32-bit Windows with Python 2.7

Packages included in Anaconda 2019.03 for 64-bit Windows with Python 2.7

Packages included in Anaconda 2019.03 for 64-bit Linux with Python 3.6

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Packages included in Anaconda 2019.03 for macOS with Python 3.6

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Packages included in Anaconda 2019.03 for 64-bit Windows with Python 3.6

Packages included in Anaconda 2019.03 for 64-bit Linux with Python 3.7

Packages included in Anaconda 2019.03 for 64-bit Linux on IBM Power CPUs with Python 3.7

Packages included in Anaconda 2019.03 for macOS with Python 3.7

Packages included in Anaconda 2019.03 for 32-bit Windows with Python 3.7

Packages included in Anaconda 2019.03 for 64-bit Windows with Python 3.7

Packages included in Anaconda 2019.07 for 64-bit Linux with Python 2.7

Packages included in Anaconda 2019.07 for 64-bit Linux on IBM Power CPUs with Python 2.7

Packages included in Anaconda 2019.07 for macOS with Python 2.7

Packages included in Anaconda 2019.07 for 32-bit Windows with Python 2.7

Packages included in Anaconda 2019.07 for 64-bit Windows with Python 2.7

Packages included in Anaconda 2019.07 for 64-bit Linux with Python 3.6

Packages included in Anaconda 2019.07 for 64-bit Linux on IBM Power CPUs with Python 3.6

Packages included in Anaconda 2019.07 for macOS with Python 3.6

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Packages included in Anaconda 2020.02 for macOS with Python 3.6

Packages included in Anaconda 2020.02 for 32-bit Windows with Python 3.6

Packages included in Anaconda 2020.02 for 64-bit Windows with Python 3.6

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Packages included in Anaconda 2020.02 for macOS with Python 3.8

Packages included in Anaconda 2020.02 for 32-bit Windows with Python 3.8

Packages included in Anaconda 2020.02 for 64-bit Windows with Python 3.8

Packages included in Anaconda 2020.07 for 64-bit Linux with Python 3.6

Packages included in Anaconda 2020.07 for 64-bit Linux on IBM Power CPUs with Python 3.6

Packages included in Anaconda 2020.07 for macOS with Python 3.6

Packages included in Anaconda 2020.07 for 32-bit Windows with Python 3.6

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Packages included in Anaconda 2020.11 for 64-bit Windows with Python 3.8

Packages included in Anaconda 2021.04 for 64-bit Linux on x86_64 CPUs with Python 3.7

Packages included in Anaconda 2021.04 for 64-bit Linux on ARMv8 CPUs with Python 3.7

Packages included in Anaconda 2021.04 for 64-bit Linux on IBM Power CPUs with Python 3.7

Packages included in Anaconda 2021.04 for 64-bit Linux on IBM Z CPUs with Python 3.7

Packages included in Anaconda 2021.04 for macOS on x86_64 with Python 3.7

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Packages included in Anaconda 2021.04 for 64-bit Windows with Python 3.9

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Packages included in Anaconda 2021.05 for 64-bit Linux on ARMv8 CPUs with Python 3.7

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Packages included in Anaconda 2021.05 for 64-bit Linux on IBM Z CPUs with Python 3.7

Packages included in Anaconda 2021.05 for macOS on x86_64 with Python 3.7

Packages included in Anaconda 2021.05 for 32-bit Windows with Python 3.7

Packages included in Anaconda 2021.05 for 64-bit Windows with Python 3.7

Packages included in Anaconda 2021.05 for 64-bit Linux on x86_64 CPUs with Python 3.8

Packages included in Anaconda 2021.05 for 64-bit Linux on ARMv8 CPUs with Python 3.8

Packages included in Anaconda 2021.05 for 64-bit Linux on IBM Power CPUs with Python 3.8

Packages included in Anaconda 2021.05 for 64-bit Linux on IBM Z CPUs with Python 3.8

Packages included in Anaconda 2021.05 for macOS on x86_64 with Python 3.8

Packages included in Anaconda 2021.05 for 32-bit Windows with Python 3.8

Packages included in Anaconda 2021.05 for 64-bit Windows with Python 3.8

Packages included in Anaconda 2021.05 for 64-bit Linux on x86_64 CPUs with Python 3.9

Packages included in Anaconda 2021.05 for 64-bit Linux on ARMv8 CPUs with Python 3.9

Packages included in Anaconda 2021.05 for 64-bit Linux on IBM Power CPUs with Python 3.9

Packages included in Anaconda 2021.05 for 64-bit Linux on IBM Z CPUs with Python 3.9

Packages included in Anaconda 2021.05 for macOS on x86_64 with Python 3.9

Packages included in Anaconda 2021.05 for 32-bit Windows with Python 3.9

Packages included in Anaconda 2021.05 for 64-bit Windows with Python 3.9

Packages included in Anaconda 2021.11 for 64-bit Linux on x86_64 CPUs with Python 3.7

Packages included in Anaconda 2021.11 for 64-bit Linux on ARMv8 Graviton2 CPUs with Python 3.7

Packages included in Anaconda 2021.11 for 64-bit Linux on IBM Power CPUs with Python 3.7

Packages included in Anaconda 2021.11 for 64-bit Linux on IBM Z CPUs with Python 3.7

Packages included in Anaconda 2021.11 for macOS on x86_64 with Python 3.7

Packages included in Anaconda 2021.11 for 32-bit Windows with Python 3.7

Packages included in Anaconda 2021.11 for 64-bit Windows with Python 3.7

Packages included in Anaconda 2021.11 for 64-bit Linux on x86_64 CPUs with Python 3.8

Packages included in Anaconda 2021.11 for 64-bit Linux on ARMv8 Graviton2 CPUs with Python 3.8

Packages included in Anaconda 2021.11 for 64-bit Linux on IBM Power CPUs with Python 3.8

Packages included in Anaconda 2021.11 for 64-bit Linux on IBM Z CPUs with Python 3.8

Packages included in Anaconda 2021.11 for macOS on x86_64 with Python 3.8

Packages included in Anaconda 2021.11 for 32-bit Windows with Python 3.8

Packages included in Anaconda 2021.11 for 64-bit Windows with Python 3.8

Packages included in Anaconda 2021.11 for 64-bit Linux on x86_64 CPUs with Python 3.9

Packages included in Anaconda 2021.11 for 64-bit Linux on ARMv8 Graviton2 CPUs with Python 3.9

Packages included in Anaconda 2021.11 for 64-bit Linux on IBM Power CPUs with Python 3.9

Packages included in Anaconda 2021.11 for 64-bit Linux on IBM Z CPUs with Python 3.9

Packages included in Anaconda 2021.11 for macOS on x86_64 with Python 3.9

Packages included in Anaconda 2021.11 for 32-bit Windows with Python 3.9

Packages included in Anaconda 2021.11 for 64-bit Windows with Python 3.9

7.2 Anaconda Professional

Formerly known as Commercial Edition

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

7.2.1 Quickstart guide for Anaconda Professional

To set up Anaconda Professional, you will need to make updates to the Anaconda or conda configuration file called `.condarc`. The changes will update the source repository configuration to access the Anaconda Professional repository located at `repo.anaconda.cloud`. The Anaconda Professional repository also requires a token for access.

Completely new to Anaconda Professional? Start by *creating an account*.

Already have an account, a profile, and Anaconda Professional subscription? Skip ahead to learn how to *authenticate to Anaconda Professional*.

This topic provides guidance on the following actions:

- *What channels are available for sourcing packages*
- *Creating an account*
- *Creating a profile*
- *Purchasing Anaconda Professional*
- *Installing Anaconda*
- *Installing conda token*
- *Authenticate to Anaconda Professional*
- *Verify your token configuration*
- *Installing conda-forge (Optional)*
- *Using Anaconda behind a firewall or proxy (Optional)*
- *Finding, editing, and reviewing .condarc (Optional)*
- *Remove token and reset Conda configuration*

What channels are available for sourcing packages

The following *active* channels are available for sourcing packages:

- `main`
- `msys2`
- `r`
- `mro`
- `free`
- `pro`

The following *archived* channels are available for sourcing packages:

- `archive`
- `mro-archive`

Creating an account

Go to <https://anaconda.cloud/register>, where you will be prompted to create an account.

Anaconda's professional package repository, optimized for commercial use and compliance with our [Terms of Service](#).

More than 25 million users worldwide count on Anaconda's commitment to the open-source ecosystem — a portion of each Anaconda Professional purchase directly funds open-source projects and education through the Anaconda Dividend Program.


[Need an enterprise license or want to mirror our repository? Talk to sales.](#)

Get started with Anaconda Professional

Email Address

Password Confirm Password

☐ I have read and agree to Anaconda's [Privacy Policy](#) and [Terms of Service](#)

☐ I'm not a robot 

[Create My Account](#)

Already have an account? [Sign In](#)

Complete the following steps:

1. Enter your email address and a secure password.
2. Check the box next to **Agree** to agree to our [Terms of Service](#).
3. Check the Captcha box.
4. Click **Create My Account**.

You will then be directed to the *Create a profile* page.

Creating a profile

Fill out the Personal Information form, select whether you would like to opt in or opt out of marketing promotions or newsletters, then click **Save and Continue**.

The screenshot shows the 'Anaconda Nucleus' header in a dark blue bar. Below it, a light blue banner contains the text 'LET'S GET STARTED' in green, followed by 'Tell us a little about yourself.' in black. A welcome message states: 'Welcome! We're so glad you're here. We need a bit of information in order to get your profile set up.' The main form is titled 'Personal Information' with a '*required fields' note. It includes input fields for 'First Name*' and 'Last Name*', a 'Company*' dropdown, and a 'Role / Position*' dropdown. The 'Email Address' field is pre-filled with 'idanenglander@gmail.com'. There are also dropdowns for 'Country*', 'State', 'Industry', and 'Company Size'. A section titled 'Let's keep in touch' contains a checkbox for receiving marketing information. At the bottom is a 'Save and Continue' button.

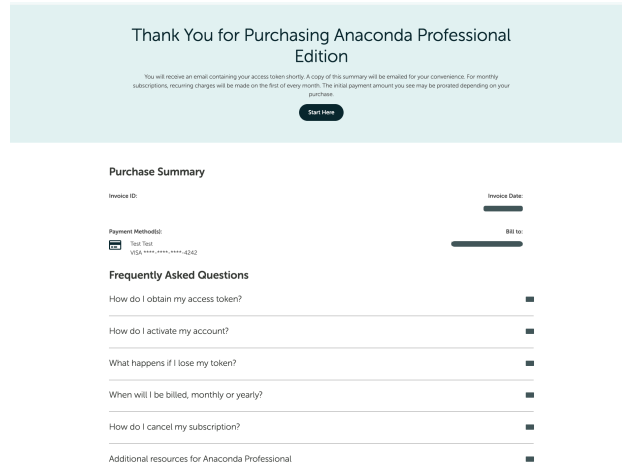
You will receive a verification email once you have created your profile.

Purchasing Anaconda Professional

1. Select either a monthly or annual subscription.
2. Enter your billing information.
3. Check the box stating that you agree to the [Anaconda End-User License Agreement](#).
4. Click **Purchase Now**.

You will then be directed to the *Purchase Summary* page, which includes details on accessing Anaconda Professional.

You will receive two emails: one confirming your purchase and another **containing your token**.



Tip: The email containing your private access token also contains the `.condarc` configuration with your token already embedded, allowing you to see (and copy!) your personal `.condarc` configuration.

Installing Anaconda

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](#) or [Miniconda](#) and install it on your system before proceeding with authentication.

Not sure whether you need Anaconda Distribution or miniconda? Refer to the [Downloading conda](#) topic for guidance.

Installing conda token

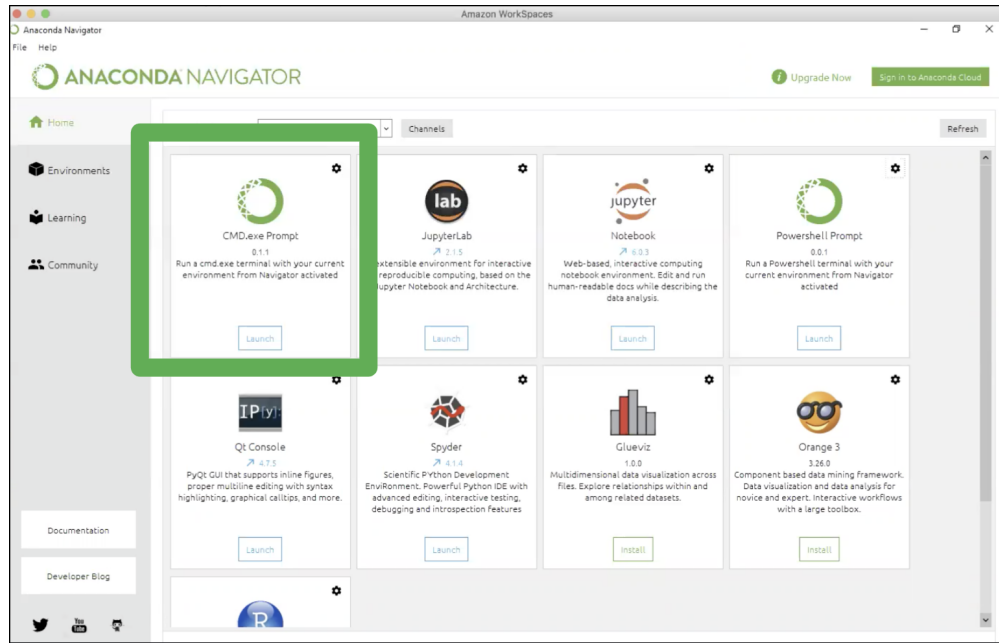
After installing Anaconda Distribution or miniconda, you can install the conda token package. The conda token package is used to edit the `.condarc` file and secure your token.

Choose the installation method based on your operating system:

Windows

1. Launch [Anaconda Navigator](#) from your Windows application library. Anaconda Navigator is a graphical interface for Anaconda Distribution.
2. From Anaconda Navigator, launch CMD.exe Prompt. This prompt will be associated with the Anaconda Distribution package libraries.

1. From your prompt, run the following to install the conda token package:

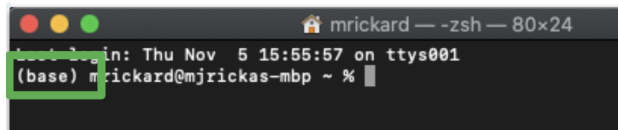


```
conda install conda-token -n base
```

2. Conda will solve the environment. You must enter “y” for yes to proceed with the installation.

OSX and Linux

1. Launch Terminal. You should see (base) preceding the command line. This means you are in the base environment of conda.



1. From the terminal, run the following to install the conda token package:

```
conda install conda-token -n base
```

2. Conda will solve the environment. You must enter “y” for yes to proceed with the installation.

Authenticate to Anaconda Professional

A private token will be sent to the email address you provided when you created your account. You will need this token to activate your account and gain access to repo.anaconda.cloud.

Warning: You must keep your token **private**.

You will need to use the terminal to authenticate to Anaconda Professional and configure access. In your terminal, run the following command:

```
# Replace <TOKEN> with the token value you received in your email after purchasing a
↳ subscription.
conda token set <TOKEN>
```

Note: `conda token` will validate that your token works by checking that it can be used to connect to the Anaconda Professional repository.

Once you have run `conda token set <TOKEN>`, you will be able to install packages from Anaconda Professional.

Run `conda token set --help` for more information and optional configuration parameters. The output will look like the following:

```
$ conda token set --help
usage: conda token set [-h]
                        [--include-archive-channels CHANNEL_NAME [CHANNEL_NAME ...]]
                        [--system | --env | --file FILE]
                        token

positional arguments:
  token                Your token.

optional arguments:
  -h, --help            show this help message and exit
  --include-archive-channels CHANNEL_NAME [CHANNEL_NAME ...]
                        Add archived channels to default_channels. Available
                        channels are mro, mro-archive, free, and pro.

Config File Location Selection:
  Without one of these flags, the user config file at
  '/Users/me/.condarc' is used.

  --system              Write to the system .condarc file at
                        '/Users/me/Applications/miniconda3/.condarc'.
  --env                Write to the active conda environment .condarc file
                        (/Users/me/Applications/miniconda3). If no
                        environment is active, write to the user config file
                        (/Users/me/.condarc).
  --file FILE          Write to the given file.
```

Verify your token configuration

To verify that your token was successfully installed, run the following in your terminal:

```
conda info
```

Your `channel` URLs should all point to `repo.anaconda.cloud`:

```

active environment : base
active env location : /Users/<USERNAME>/Applications/miniconda3
    shell level : 1
    user config file : /Users/<USERNAME>/~/.condarc
populated config files : /Users/<USERNAME>/~/.condarc
    conda version : 4.9.2
    conda-build version : 3.18.11
    python version : 3.7.7.final.0
    virtual packages : __osx=10.14.6=0
                      __unix=0=0
                      __archspec=1=x86_64
base environment : /Users/<USERNAME>/Applications/miniconda3 (writable)
    channel URLs : https://repo.anaconda.cloud/repo/main/osx-64
                  https://repo.anaconda.cloud/repo/main/noarch
                  https://repo.anaconda.cloud/repo/r/osx-64
                  https://repo.anaconda.cloud/repo/r/noarch
                  https://repo.anaconda.cloud/repo/msys2/osx-64
                  https://repo.anaconda.cloud/repo/msys2/noarch
    package cache : /Users/<USERNAME>/Applications/miniconda3/pkgs
                  /Users/<USERNAME>/~/.conda/pkgs
    envs directories : /Users/<USERNAME>/Applications/miniconda3/envs
                  /Users/<USERNAME>/~/.conda/envs
    platform : osx-64
    user-agent : conda/4.9.2 requests/2.24.0 CPython/3.7.7 Darwin/18.7.0 OSX/
↪10.14.6
    UID:GID : 502:20
    netrc file : None
    offline mode : False

```

Installing conda-forge (Optional)

You may wish to install packages from the conda-forge repository. To do so, run the following command:

```
conda config --add channels conda-forge
```

As before, run `conda info` to verify the change.

Using Anaconda behind a firewall or proxy (Optional)

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>, <https://repo.anaconda.com> and <https://repo.anaconda.cloud> 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.

MacOS/Linux

```
export HTTP_PROXY=http://username:password@proxyurl.com:8080
export HTTPS_PROXY=https://username:password@proxyurl.com:8443
```

Windows

```
set HTTP_PROXY=http://username:password@proxyurl.com:8080
set 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 the repositories **repo.anaconda.com** or **repo.anaconda.cloud**.

Finding, editing, and reviewing .condarc (Optional)

In some cases, you may need to edit the .condarc file directly in order to authenticate to Anaconda Professional.

Warning: Putting your token in the .condarc file is not secure. Therefore, the *Installing conda token* instructions above are the preferred workflow.

You can configure .condarc by editing the file in one of the paths listed in the next section or by running conda config.

Searching for .condarc

The .condarc file can be configured in a number of locations. The file can be edited with a text editor or through the use of conda config commands.

```
Windows system paths:
'C:\ProgramData\conda\.condarc',
'C:\ProgramData\conda\condarc',
'C:\ProgramData\conda\condarc.d',

Linux and macOS system paths:
'/etc/conda/.condarc',
'/etc/conda/condarc',
'/etc/conda/condarc.d/',
'/var/lib/conda/.condarc',
'/var/lib/conda/condarc',
'/var/lib/conda/condarc.d/',

# Replace CONDA_ROOT with the path for your base conda or Anaconda install.
# Replace CONDA_PREFIX with the path to the current active environment.
# The tilde (~) means home directory on Linux, Mac, and Windows.
```

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```
Local paths on all platforms:
'$CONDA_ROOT/.condarc',
'$CONDA_ROOT/condarc',
'$CONDA_ROOT/condarc.d/',
'~/.conda/.condarc',
'~/.conda/condarc',
'~/.conda/condarc.d/',
'~/.condarc',
'$CONDA_PREFIX/.condarc',
'$CONDA_PREFIX/condarc',
'$CONDA_PREFIX/condarc.d/',
'$CONDARC',
)
```

If you run conda config commands, they will write to `~/.condarc` by default, but the location can be changed with the following arguments.

Setting up .condarc for Anaconda Professional

Here are the recommended contents of the `.condarc` file:

```
restore_free_channel: false
default_channels:
# Replace <TOKEN> with your personal token.
- https://repo.anaconda.cloud/t/<TOKEN>/repo/main
- https://repo.anaconda.cloud/t/<TOKEN>/repo/msys2
- https://repo.anaconda.cloud/t/<TOKEN>/repo/r

# Uncomment these only if you need them
# - https://repo.anaconda.cloud/t/<TOKEN>/repo/free
# - https://repo.anaconda.cloud/t/<TOKEN>/repo/pro
# - https://repo.anaconda.cloud/t/<TOKEN>/repo/mro-archive
# - https://repo.anaconda.cloud/t/<TOKEN>/repo/mro

channels:
- defaults
```

`Default_channels` is used here to ensure that conda will not pull any packages from `repo.anaconda.com`.

If you need to use the free channel, you must uncomment the line with your token but keep `restore_free_channel` set to `false`.

Adding conda channels

Caution: Do not use the `anaconda` channel. This will pull packages from `anaconda.org` rather than the Anaconda Professional repository (`defaults`).

After you've configured the default channels, you can continue to use channels from anaconda.org by listing the name of the channel under `channels:`. For example, you can add `conda-forge` after `defaults` in the channels list to access packages from [conda-forge](https://anaconda.org/conda-forge) as well.

Some examples of additional channels to use:

- [conda-forge](https://anaconda.org/conda-forge)
- [bioconda](https://anaconda.org/bioconda)
- [nvidia](https://anaconda.org/nvidia)
- [rapids](https://anaconda.org/rapids)
- [intel](https://anaconda.org/intel)

Note: Conda will search for packages in the first channel listed when installing packages, *then* it will search in the second channel listed, and so on.

Learn more about [using default repositories](#) and [managing channels](#) in our Anaconda Distribution documentation.

Configure `.condarc` using `conda config` commands

The following commands can be used to configure the `.condarc` file from any state to correctly authenticate to Anaconda Professional:

```
# Replace <TOKEN> with your personal token.
> conda config --set restore_free_channel false
> conda config --prepend default_channels https://repo.anaconda.cloud/t/<TOKEN>/repo/
↪main
> conda config --append default_channels https://repo.anaconda.cloud/t/<TOKEN>/repo/
↪msys2
> conda config --append default_channels https://repo.anaconda.cloud/t/<TOKEN>/repo/r
> conda config --prepend channels defaults
```

By default, the `conda config` commands above will edit the `.condarc` file in the home directory. Using the `conda config` file location flags below, you can change the path to the `.condarc` file you wish to edit.

```
Config File Location Selection:
Without one of these flags, the user config file at '/Users/<USERNAME>/<condarc>' is_
↪used.

--system          Write to the system .condarc file at
                  '/Users/<USERNAME>/Applications/miniconda3/<condarc>'.
--env             Write to the active conda environment .condarc file (/
                  Users/<USERNAME>/Applications/miniconda3).
                  If no environment is active, write to the user config
                  file (/Users/<USERNAME>/<condarc>).
--file FILE       Write to the given file.
```

Where `<USERNAME>` is your Anaconda username.

The following commands can be run if you need these channels as well:

```
# Replace <TOKEN> with your personal token.
> conda config --append default_channels https://repo.anaconda.cloud/t/<TOKEN>/repo/
↪ free
> conda config --append default_channels https://repo.anaconda.cloud/t/<TOKEN>/repo/
↪ pro
```

Ensuring .condarc is configured correctly

In order to ensure that your `.condarc` file is configured correctly, either by running `conda config` or editing the file directly, run the command `conda info` in the terminal. As you can see in the example output below, the channel URLs specify `repo.anaconda.cloud`, *not* `repo.anaconda.com`.

```
>conda info
  active environment : base
  active env location : /Users/<USERNAME>/Applications/miniconda3
    shell level      : 1
    user config file : /Users/<USERNAME>/<condarc>
  populated config files : /Users/<USERNAME>/<condarc>
    conda version    : 4.8.4
  conda-build version : 3.18.11
    python version   : 3.7.7.final.0
  virtual packages    : __osx=10.14.6
  base environment    : /Users/<USERNAME>/Applications/miniconda3 (writable)
    channel URLs     : https://repo.anaconda.cloud/t/<TOKEN>/repo/main/osx-64
                      https://repo.anaconda.cloud/t/<TOKEN>/repo/main/noarch
                      https://repo.anaconda.cloud/t/<TOKEN>/repo/msys2/osx-64
                      https://repo.anaconda.cloud/t/<TOKEN>/repo/msys2/noarch
    package cache    : /Users/<USERNAME>/Applications/miniconda3/pkgs
                      /Users/<USERNAME>/<conda>/pkgs
  envs directories    : /Users/<USERNAME>/Applications/miniconda3/envs
                      /Users/<USERNAME>/<conda>/envs
    platform        : osx-64
  user-agent          : conda/4.8.4 requests/2.24.0 CPython/3.7.7 Darwin/18.7.0 OSX/
↪10.14.6
    UID:GID         : 502:20
    netrc file      : None
  offline mode       : False
```

Remove token and reset Conda configuration

You can remove your token and reset your Conda configuration to its default state by running the following:

```
conda token remove
```

7.2.2 Frequently asked questions

- *Questions regarding installers & packages, conda, or Navigator*
- *Getting started with Anaconda Professional*
- *Setting up and managing your Anaconda Professional account*

- *Setting up and managing your Anaconda Professional profile*
- *Authenticating Anaconda Professional*
- *Setting up my access*
- *Setting up and managing payments and billing*
- *Anaconda Professional community*

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 Professional

What is Anaconda Professional?

Anaconda's open-source package distribution and management optimized for commercial use and in compliance with our [Terms of Service](#).

What changes from Anaconda Distribution to Anaconda Professional?

Users will download packages from a new commercial repository. This repository will have a new URL and a token for access.

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 we recommend using your corporate email so your admin can track all tokens in use.

Setting up and managing your Anaconda Professional 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, navigate to your **Profile Settings**, and then click **Account Settings**. Once you have reset your password, click **Save**.

If you are unable to access your account, click on **Forget your Password?** on the sign in page. Enter the associated email address to receive a link to reset your password.

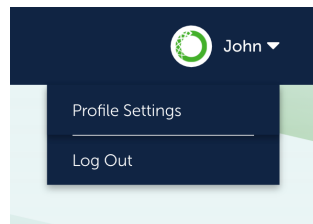
Does my password expire?

Never!

Setting up and managing your Anaconda Professional profile

How do I access my profile?

Your profile is located in the top-right corner of your dashboard, indicated by a person icon.



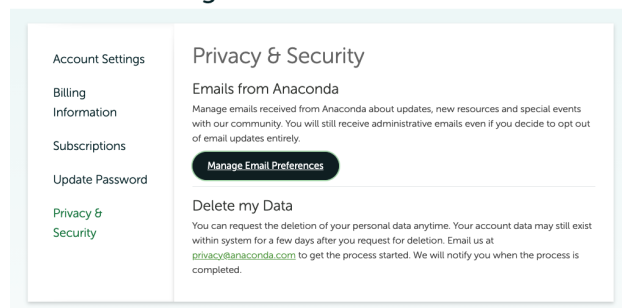
How do I add a profile picture to my profile?

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** under your **Profile Settings**. Once there, click **Manage Email Preferences**.

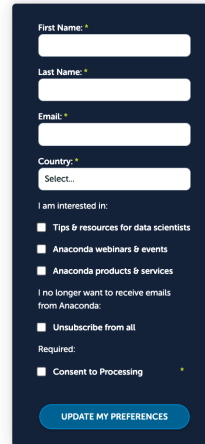
Profile Settings



The **Manage Email Preferences** page will open in a new tab. Make any changes you'd like, and then click **Update My Preferences** to save.

Manage Email Preferences

We're excited to share updates, new resources and special events with our community, but we understand if you're not as interested in some topics. Use the form to choose only the topics you want to receive or opt out of email updates entirely.



First Name: *

Last Name: *

Email: *

Country: *

Select...

I am interested in:

- ☐ Tips & resources for data scientists
- ☐ Anaconda webinars & events
- ☐ Anaconda products & services

I no longer want to receive emails from Anaconda:

- ☐ Unsubscribe from all

Required:

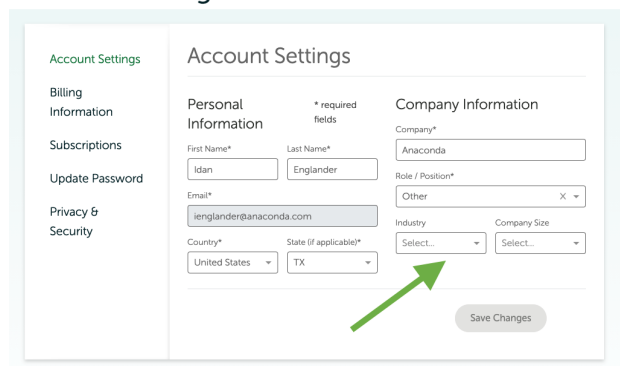
- ☐ Consent to Processing *

UPDATE MY PREFERENCES

How do I change my industry and company size?

You can change your industry and company size by navigating to **Account Settings** under your **Profile Settings**. Once there, update your details under the **Industry** and **Company Size** cells, and then click **Save Changes**.

Profile Settings



Account Settings

Billing Information

Subscriptions

Update Password

Privacy & Security

Account Settings

Personal Information * required fields

First Name* Last Name*

Idan Englander

Email*

englander@anaconda.com

Country* State (if applicable)*

United States TX

Company Information

Company*

Anaconda

Role / Position*

Other X

Industry Company Size

Select... Select...

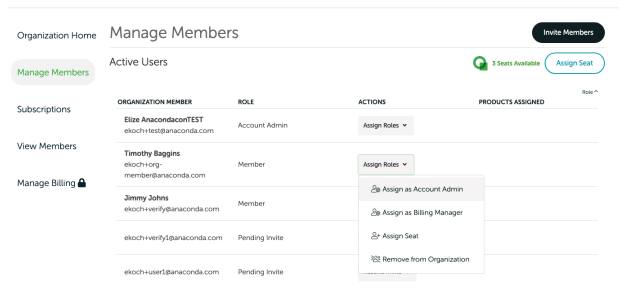
Save Changes

How do I assign a new account admin?

Complete the following steps as an admin:

From the Subscriptions page, click on the **Organizations** tab and select your organization. From the **Manage Members** tab, you can assign a new account admin by clicking the **Assign Roles** button in the Actions column and selecting **Assign as Account Admin**.

The person you've assigned to account admin will receive an email notifying them that their role has been changed.



Authenticating Anaconda Professional

What happens if I lose my token?

You can request a new token by navigating to **Subscriptions** under your **Profile Settings**. 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.

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 **Subscriptions** under your **Profile Settings**. 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.

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.

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.

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 Professional, please refer to the [Authenticating Anaconda Professional](#) 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 Professional](#) section in the Quickstart guide.

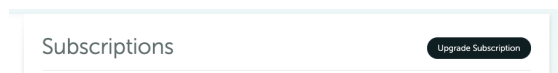
Setting up and managing payments and billing

How do I view my subscription information?

From your profile in the top-right corner, navigate to your **Profile Settings**, and then click **Subscriptions**.

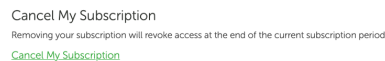
How do I upgrade my subscription?

From your profile in the top-right corner, navigate to your **Profile Settings**, and then click **Subscriptions**. At the top of the page, click **Upgrade Subscription**. You will be taken to the purchase page.

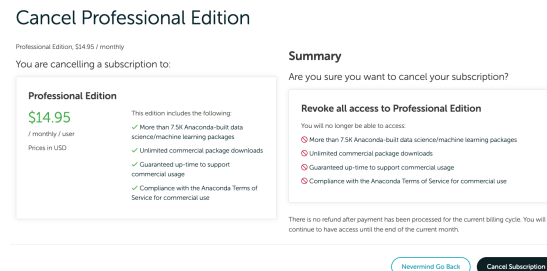


How do I cancel my subscription?

From your profile in the top-right corner, navigate to your **Profile Settings**, and then click **Subscriptions**. At the bottom of the page, click **Cancel My 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 unsubscription.

What happens to my current account when I cancel my subscription?

You will have access to Anaconda Professional until the end of the paid period, that being the end of the month if you purchased a month's subscription.

How can I access my payment information?

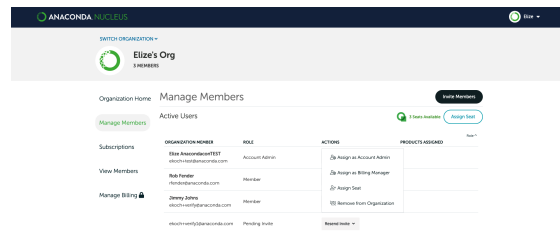
From your profile in the top-right corner, navigate to your **Profile Settings**, and then click **Billing Information**.

Can I change the credit card information?

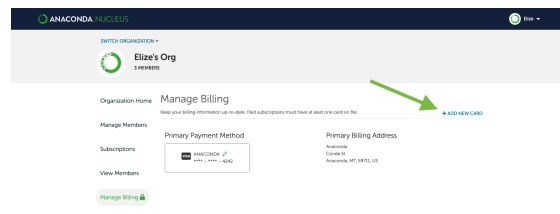
You have the option to add more than one card saved to your account.

How do I change billing managers and my payment method?

From the Subscriptions page, click on the **Organizations** tab and select your organization. From the **Manage Members** tab, you can assign a different member the role of billing manager by clicking **Assign Roles** in the Actions column.



From the Manage billing tab, you can update your payment method.



How can I get my payment history?

Please check the inbox of the email address associated with your Anaconda Professional account, as well as the spam folder.

If you have paid for Anaconda Professional 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 Settings**, and then click **Billing Information**.

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?

Change your subscription duration by [submitting a ticket](#).

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 **Privacy & Security** under your **Profile Settings**. Once there, click **Delete Data**.

Delete my Data

To delete your data permanently, click the "Delete Data" button and confirm.

Delete Data

Anaconda Professional 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](#).

7.2.3 Organizations

An organization is a group of Nucleus accounts with a managed set of rights and permissions. Creating an organization for your team in Nucleus allows you to:

- Provide a common collaboration space
- Ensure consistent tooling
- Manage access and costs

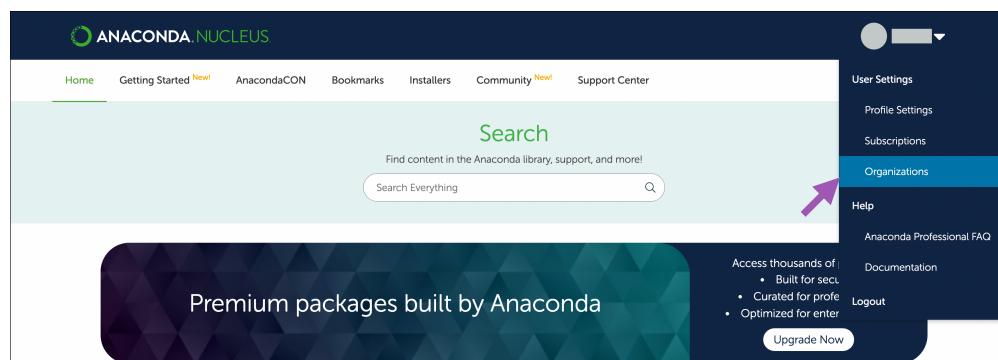
Note: Nucleus users can create and belong to multiple organizations.

This topic provides guidance on the following actions:

- *Creating an organization*
- *Subscribing your organization*
- *Inviting members to your organization*
- *Assigning and managing seats*
- *Leaving an organization*

Creating an organization

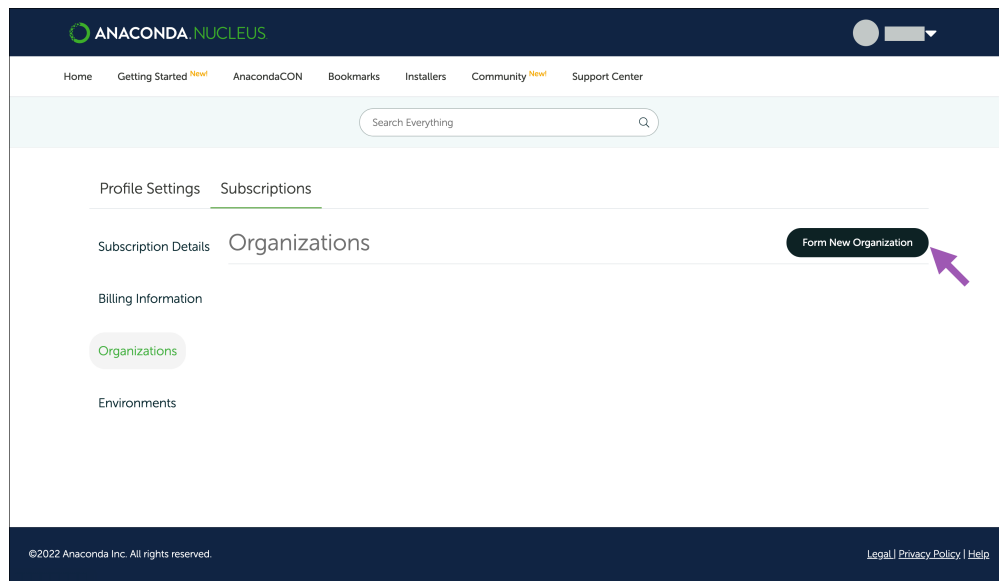
From your profile in the top-right corner, select **Organizations**.



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:

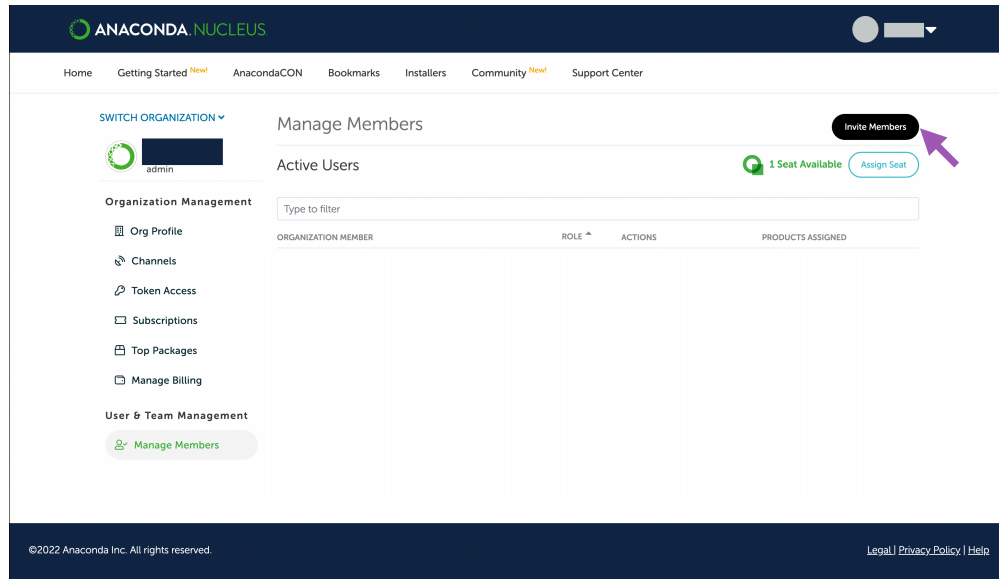
From your profile in the top-right corner, select **Subscriptions**, then click **Purchase Subscriptions** or **Upgrade Subscriptions** to go to the purchase page. If your team grows, you can purchase additional seats (licenses) for your organization at any time!

Inviting members to your organization

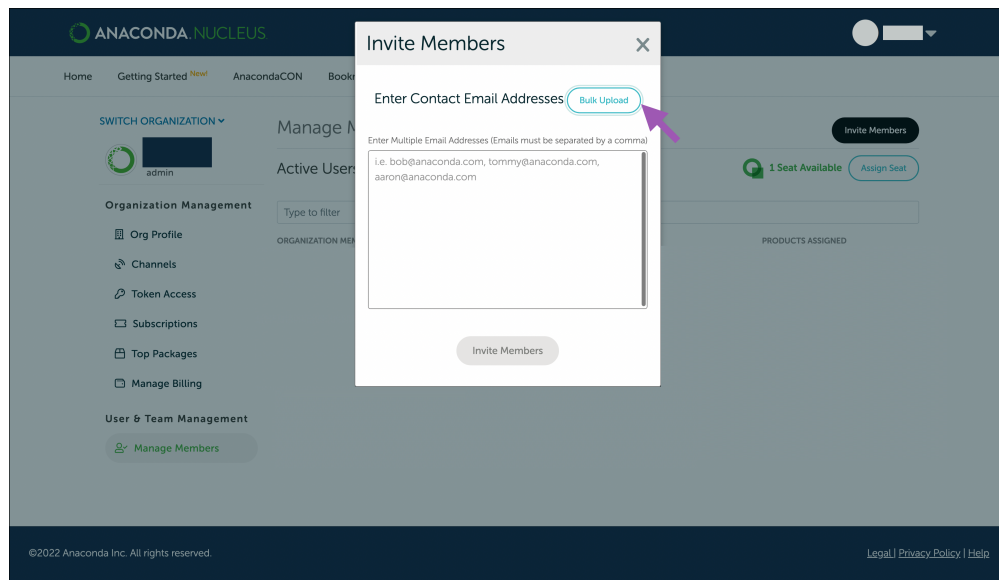
With an organization created and multi-license subscription purchased, you are ready to invite users to your organization and assign them seats (licenses):

1. Go to your [Organizations](#) page.
2. Select your organization.

3. Go to the **Manage Members** page within your organization.
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 Nucleus login page. Once logged in, they can accept the invitation and join the organization.

Note: If the invited team member does not have a Nucleus account, they can create one using the email that the invite was sent to, then join the organization.

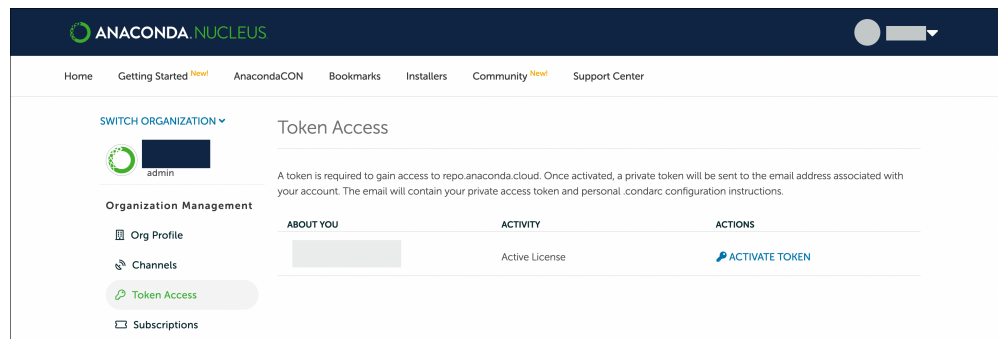
Assigning and managing seats

Once a member has accepted their invitation, assign them a seat (license) from the **Manage Members** 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

Once you assign a member a seat in your organization, they will receive an email with a link to the organization in their Nucleus account. Instruct them to open the link and go to the **Token Access** page to activate their token.

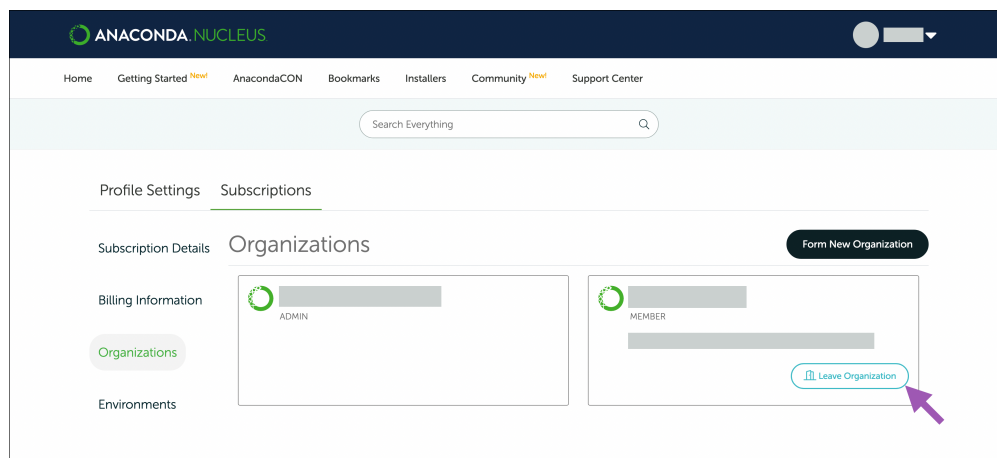
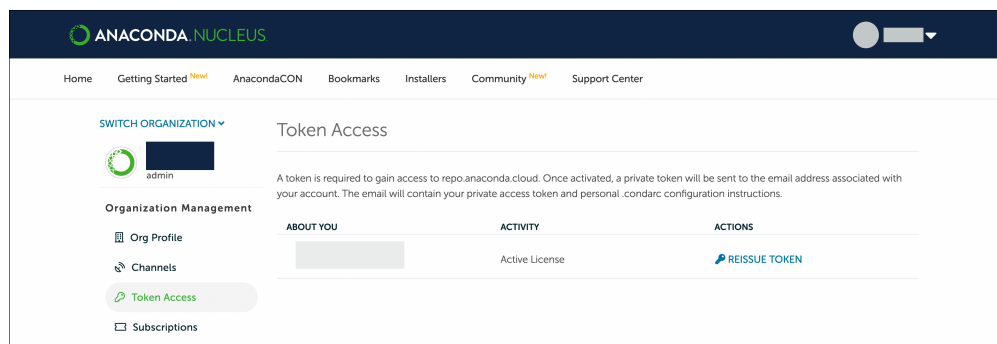


Once the member activates their token, they will receive an email containing their token and instructions on installing Anaconda and setting their token to get access to Anaconda Professional.

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.

Leaving an organization

To leave an organization at any time, go to the [Organizations](#) page and click **Leave Organization**.



Please let us know if you have further questions or need additional assistance. More information can be found at our [support center](#).

7.2.4 Security practices

This topic provides guidance on the following actions:

- *Token privacy*
- *Anaconda Content Trust: conda package signature verification*

Token privacy

Anaconda Professional requires a private token to access the channel 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 for Anaconda Professional users 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](#).

Note: 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 your CE access, turn on signature verification, and empty the index cache:

```
conda token set --enable-signature-verification <YOUR_COMMERCIAL_EDITION_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
psycopg2-2.8.6	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)

```

(continues on next page)

(continued from previous page)

```

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)
psycopg2           repo/main/linux-64::psycopg2-2.8.6-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.

7.2.5 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*
- *403 error*
- *HTTP 000 CONNECTION FAILED*

Conda: Channel is unavailable/missing or package itself is missing

Cause

After you have configured your `.condarc` for either Anaconda Professional or Anaconda Server, 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 of Anaconda Professional:

```
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, we recommend 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,
```

7.2.6 Help and support

The following resources are available to help you:

- Anaconda offers [support and training](#).
- Free community support is available from the [Nucleus Community forums](#).

7.2.7 Glossary

Anaconda.org

A cloud package repository hosting service at <https://www.anaconda.org>. With a free account, you can publish packages you create to be used publicly.

Anaconda Distribution

Open-source repository of hundreds of popular data science packages, along with the conda package and virtual environment manager for Windows, macOS, and Linux. Conda makes it quick and easy to install, run, and upgrade complex data science and machine learning environments like scikit-learn, TensorFlow, and SciPy.

Anaconda Enterprise

A software platform for developing, governing, and automating data science and AI pipelines from laptop to production. Enterprise enables collaboration between teams of thousands of data scientists running large-scale model deployments on high-performance production clusters.

Anaconda metapackage

A collection of packages at specific versions that are associated with 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.

Read more about the [Anaconda metapackage](#). Read more about the distinctions between [Anaconda Distribution](#) and the [Anaconda metapackage](#).

Anaconda Navigator

A desktop Graphical User Interface (GUI) included in Anaconda Distribution that allows you to easily use and manage IDEs, conda packages, environments, channels, and notebooks without the need to use the Command Line Interface (CLI).

channel

A location in a repository where conda looks for packages. Channels may point to a Cloud repository or a private location on a remote or local repository that you or your organization created. The `conda channel` command has a default set of channels to search beginning with <https://repo.anaconda.com/pkg/>. You may override the default channels to, for example, maintain a private or internal channel. In conda commands and in the `.condarc` file, these default channels are referred to by the channel name `defaults`.

conda

An open-source package and environment manager bundled with Anaconda Distribution that finds, installs, and updates conda packages and their dependencies. Conda also lets you easily switch between conda environments on your local computer.

conda-build

A tool used to build conda packages from recipes.

conda environment

A superset of Python virtual environments, conda environments make it easy to create projects with different versions of Python and avoid issues related to dependencies and version requirements. 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. 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 3.5 and Python 3.5 packages.

conda package

A binary tarball file containing system-level libraries, Python and R modules, executable programs, or 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 recipe

Instructions used to tell conda-build how to build a package.

Miniconda

A minimal installer for conda. Like Anaconda Distribution, Miniconda is a free software package that includes the Anaconda Distribution and conda. Miniconda does not include any packages other than those dependencies needed to install it. After installing Miniconda, you can install additional conda packages directly from the command line using `conda install`.

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.

repository

Any storage location from which software or software assets may be retrieved and installed on a local computer.

7.3 Anaconda Business

Secure your open source pipeline without slowing down your data science team.

- **Secure:** Secure your open source pipeline with customized security filters and Anaconda-curated CVE metadata.
- **Manage:** Manage user access across multiple channels to ensure compliance as early as the build phase.
- **Build:** Empower your data science teams with the tools they know and love, optimized for commercial use.

Use our Quickstart guide for Anaconda Business to get started!

7.3.1 Quickstart guide for Anaconda Business

To set up Anaconda Business, you will need to make updates to the Anaconda or conda configuration file called `.condarc`. The changes will update the source repository configuration to access the Anaconda Professional repository located at `repo.anaconda.cloud`. The Anaconda Professional repository also requires a token for access.

Completely new to Anaconda Business? Start by [creating an account](#).

Already have an account, a profile, and Anaconda Business subscription? Skip ahead to learn how to [authenticate to Anaconda Business](#).

This topic provides guidance on the following actions:

- [What channels are available for sourcing packages](#)
- [Creating an account](#)
- [Creating a profile](#)
- [Creating a custom channel \(optional\)](#)
- [Viewing channel details](#)
- [Installing a channel](#)
- [Creating a security policy](#)
- [Applying a security policy](#)

- *Viewing removed artifacts*
- *Installing Anaconda*
- *Installing conda token*
- *Authenticate to Anaconda Business*
- *Installing conda-forge (Optional)*
- *Using Anaconda behind a firewall or proxy (Optional)*
- *Verify your token configuration*
- *Finding, editing, and reviewing .condarc (Optional)*
- *Remove token and reset Conda configuration*

What channels are available for sourcing packages

The following *active* channels are available for sourcing packages:

- main
- msys2
- r
- mro
- free
- pro

The following *archived* channels are available for sourcing packages:

- archive
- mro-archive

Creating an account

Go to <https://anaconda.cloud/register>, where you will be prompted to create an account.

Complete the following steps:

1. Enter your email address and a secure password.
2. Check the box next to **Agree** to agree to our [Terms of Service](#).
3. Check the Captcha box.
4. Click **Create My Account**.

You will then be directed to the *Create a profile* page.

Anaconda's professional package repository, optimized for commercial use and compliance with our [Terms of Service](#).

More than 25 million users worldwide count on Anaconda's commitment to the open-source ecosystem — a portion of each Anaconda Professional purchase directly funds open-source projects and education through the Anaconda Dividend Program.

Need an enterprise license or want to mirror our repository? [Talk to sales](#).


Get started with **Anaconda Professional**

Email Address

Password

Confirm Password

☐ I have read and agree to Anaconda's [Privacy Policy](#) and [Terms of Service](#)


☐ I'm not a robot 

[Create My Account](#)

Already have an account? [Sign In](#)

Creating a profile

Fill out the Personal Information form, select whether you would like to opt in or opt out of marketing promotions or newsletters, then click **Save and Continue**.



LET'S GET STARTED

Tell us a little about **yourself**.

Welcome! We're so glad you're here. We need a bit of information in order to get your profile set up.

Personal Information *required fields

First Name*

Last Name*

Company*

Role / Position*

Email Address

Country*

State

Industry

Company Size

Let's keep in touch

☐ I would like to receive information from Anaconda about any future marketing promotions or newsletters

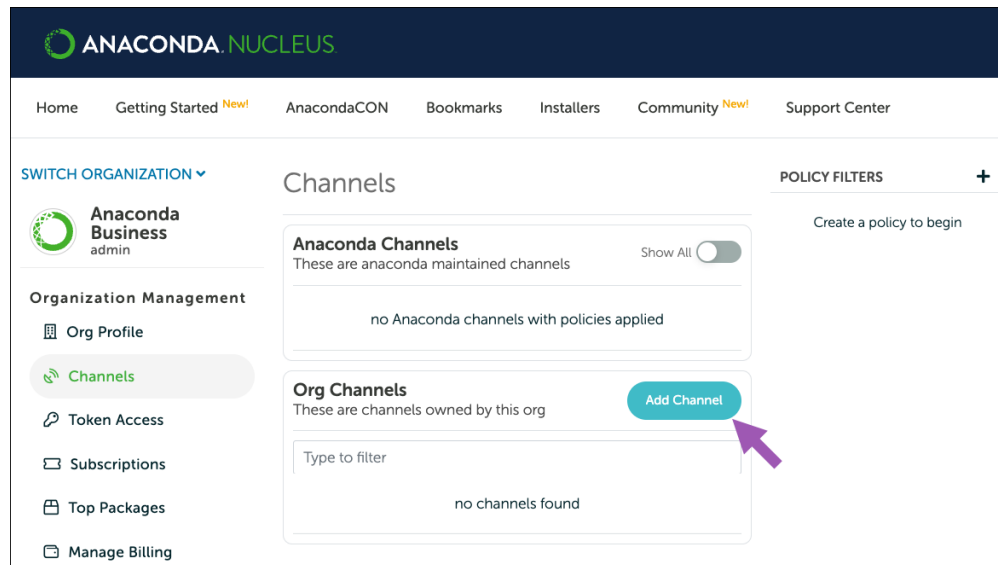
[Save and Continue](#)

You will receive a verification email once you have created your profile.

Creating a custom channel (optional)

Create a channel with a specific package source and policy filters.

Note: You can apply policy filters directly to Anaconda channels, such as `main`; therefore, custom channels are not required.



1. From the **Channels** page, click **Add Channel**.
2. In the **Create Channel** dialog, provide a unique channel name and select a source channel from the **Source** dropdown.
3. Click **Save**.

Your new channel appears in the **Channels** page.

Viewing channel details

View details for each of your channels from your Organization's **Channels** page.

Select a channel to view the packages within that channel.

Select one of those packages to view the files within that package.

Channels

These are channels owned by this org

Org Channels

Type to filter

CHANNEL	ACTIVE POLICY	ARTIFACTS REMOVED	LAST UPDATE	ACTIONS
business-2/asdfasdf virtual main	apply policy	---		
business-2/main virtual main	apply policy	---		
business-2/main-2 virtual main	Only Apache Scheduled	225178	May 24, 2022 1:28 PM	
business-2/main-new virtual main	numpy < 1.21.2 Scheduled	3056	May 24, 2022 12:17 PM	

POLICY FILTERS

business-2 / main-2

Filter

Package Name	Family	Files	CVE
7za Open-source file archiver primarily used to compress files	conda	2	0
7zip 7-Zip is a file archiver with a high compression ratio.	conda	2	0
abseil-cpp Abseil Common Libraries (C++)	conda	42	0
absl-py Abseil Python Common Libraries, see https://github.com/abseil/abseil-py .	conda	724	0
access classical and novel measures of spatial accessibility to services	conda	6	0
acl-amzn2-aarch64 (CDT) Access control list utilities	conda	1	0
adal The ADAL for Python library makes it easy for python application to authenticate to Azure Active Directory (AAD) in order to access AAD protected web resources.	conda	8	0

Items per page: 100 1 - 100 of 2667

INSTALL

```
conda install -c business-2/main-2
```

CHANNEL INFO

Created: 5/4/22, 8:30 AM Privacy: private

Type: virtual Source: main

ACTIVE POLICY

Name: Only Apache State: scheduled

Last ran: 5/24/22, 1:28 PM Next run: 5/24/22, 5:28 PM

You can then view the version number, CVE status, and upload date of each file within the package, along with details of the package itself.

business-2 / main-2 / absl-py

Filter

100 Files 0 Dependents

File Name	Version	CVE	Uploaded
absl-py-0.12.0-py310ha847dfd_0.tar.bz2 linux-s390x	0.12.0	N/A	02/01/22
absl-py-0.12.0-py310h9f7ea03_0.tar.bz2 win-32	0.12.0	N/A	01/30/22
absl-py-0.12.0-py310haa95532_0.tar.bz2 win-64	0.12.0	N/A	01/30/22
absl-py-0.12.0-py310hecd8cb5_0.tar.bz2 osx-64	0.12.0	N/A	01/20/22
absl-py-0.12.0-py310h06a4308_0.tar.bz2 linux-64	0.12.0	N/A	01/20/22
absl-py-0.15.0-pyhd3eb1b0_0.tar.bz2 noarch	0.15.0	N/A	12/31/21
absl-py-0.13.0-pyhd3eb1b0_0.tar.bz2 noarch	0.13.0	N/A	09/23/21
absl-py-0.11.0-pyhd3eb1b0_1.tar.bz2 noarch	0.11.0	N/A	09/23/21

Items per page: 100 1 - 100 of 724

INSTALL

```
conda install -c business-2/main-2/absl-py
```

PACKAGE INFO

license	Updated
Apache 2.0	2/1/22, 11:28 PM


Version	Downloads
0.15.0	1

Homepage
<https://abseil.io/>

Docs
<https://abseil.io/docs/>

Installing a channel

1. From your Organization's **Channels** page, select the channel you wish to install locally.

2. Under **Install**, click the copy  icon to copy the install command to your clipboard.

business-2 / main-2

Filter

Package Name	Family	Files	CVE
7za Open-source file archiver primarily used to compress files	conda	2	0
7zip 7-Zip is a file archiver with a high compression ratio.	conda	2	0
abseil-cpp Abseil Common Libraries (C++)	conda	42	0
absl-py Abseil Python Common Libraries, see https://github.com/abseil/abseil-py .	conda	724	0
access classical and novel measures of spatial accessibility to services	conda	6	0

INSTALL

```
conda install -c business-2/main-2
```

CHANNEL INFO

Created	Privacy
5/4/22, 8:30 AM	private

Type	Source
virtual	main

ACTIVE POLICY

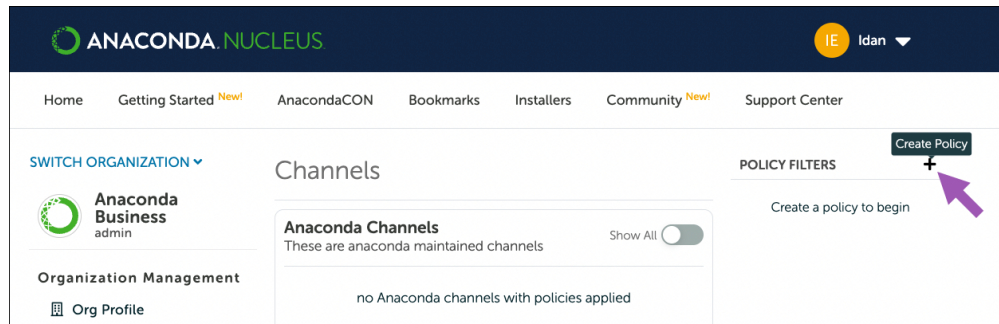
Name	State
Only Apache	scheduled


Last ran	Next run
5/24/22, 1:28 PM	5/24/22, 5:28 PM

3. Paste and run the command in the command line to install the channel.

Creating a security policy

Create a security policy to filter out incoming packages by license family, CVE score, CVE status, conda spec, and package age.



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** dialog 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.

Policy example

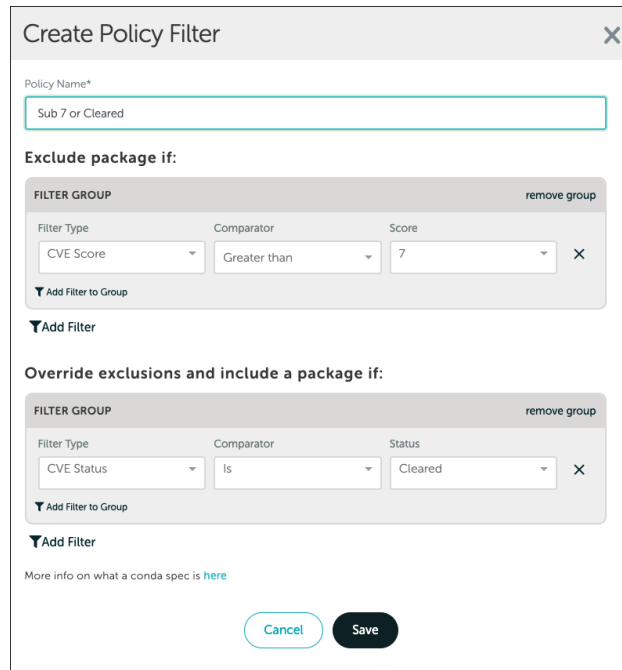
Let's say you want to filter out packages with a CVE score greater than 7 but include those packages with a score greater than 7 *if and only if their CVE status is cleared by NIST*. Your policy filter would look like the following:

Applying a security policy

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



The 'Create Policy Filter' dialog box contains the following elements:

- Policy Name***: A text input field with the value 'Sub 7 or Cleared'.
- Exclude package if:** A section header.
- FILTER GROUP**: A container for the first filter group.
 - Filter Type**: A dropdown menu with 'CVE Score' selected.
 - Comparator**: A dropdown menu with 'Greater than' selected.
 - Score**: A text input field with the value '7'.
 - remove group**: A button with an 'X' icon.
 - Add Filter to Group**: A button with a downward arrow.
- Add Filter**: A button with a downward arrow.
- Override exclusions and include a package if:** A section header.
- FILTER GROUP**: A container for the second filter group.
 - Filter Type**: A dropdown menu with 'CVE Status' selected.
 - Comparator**: A dropdown menu with 'Is' selected.
 - Status**: A dropdown menu with 'Cleared' selected.
 - remove group**: A button with an 'X' icon.
 - Add Filter to Group**: A button with a downward arrow.
- Add Filter**: A button with a downward arrow.
- More info on what a conda spec is**: A link to a help page.
- Cancel** and **Save**: Two buttons at the bottom right.

- Scheduled

The *Scheduled* status indicates the channel has been auto-updated and will continue updating every four hours.

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.

Installing Anaconda

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](#) or [Miniconda](#) and install it on your system before proceeding with authentication.

Not sure whether you need Anaconda Distribution or miniconda? Refer to the [Downloading conda](#) topic for guidance.

Installing conda token

After installing Anaconda Distribution or miniconda, you can install the conda token package. The conda token package is used to edit the `.condarc` file and secure your token.

Choose the installation method based on your operating system:

Policy Report ✕			
Number of artifacts remaining in the selected channel with the applied policy			
Platform	Artifacts	Removed	Remaining
All Platforms	265626	81071	184555
linux-64	50721	16827	33894
linux-32	21787	4608	17179
linux-ppc64le	28393	7046	21347
linux-s390x	5282	1478	3804
linux-armv6l	8	0	8
linux-armv7l	8	0	8
linux-aarch64	8129	2060	6069
win-64	45283	14984	30299
win-32	42588	14115	28473
osx-64	48592	16149	32443
osx-arm64	6148	1540	4608
noarch	8687	2264	6423

Close

Windows

1. Launch [Anaconda Navigator](#) from your Windows application library. Anaconda Navigator is a graphical interface for Anaconda Distribution.
2. From Anaconda Navigator, launch CMD.exe Prompt. This prompt will be associated with the Anaconda Distribution package libraries.

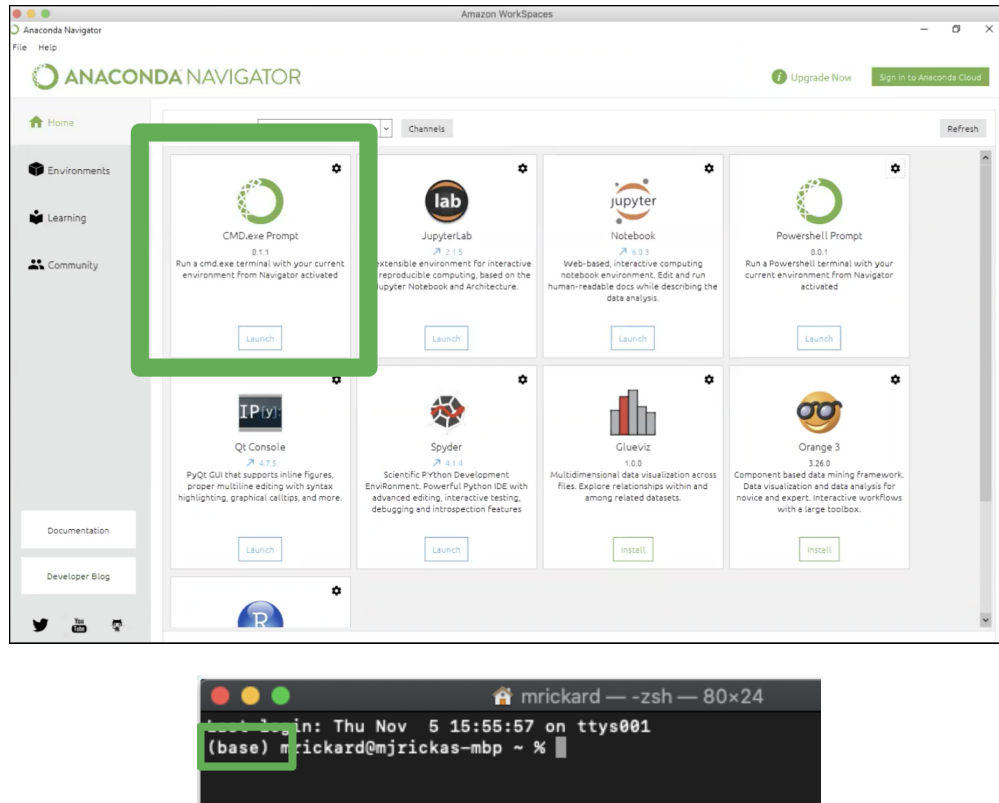
1. From your prompt, run the following to install the conda token package:

```
conda install conda-token -n base
```

2. Conda will solve the environment. You must enter “y” for yes to proceed with the installation.

OSX and Linux

1. Launch Terminal. You should see (base) preceding the command line. This means you are in the base environment of conda.



1. From the terminal, run the following to install the conda token package:

```
conda install conda-token -n base
```

2. Conda will solve the environment. You must enter “y” for yes to proceed with the installation.

Authenticate to Anaconda Business

A private token will be sent to the email address you provided when you created your account. You will need this token to activate your account and gain access to repo.anaconda.cloud.

Warning: You must keep your token **private**.

You will need to use the terminal to authenticate to Anaconda Business and configure access. In your terminal, run the following command:

```
# Replace <TOKEN> with the token value you received in your email after purchasing a
↳ subscription.
conda token set <TOKEN>
```

Note: conda token will validate that your token works by checking that it can be used to connect to the Anaconda

Professional repository.

Once you have run `conda token set <TOKEN>`, you will be able to install packages from Anaconda Business.

Run `conda token set --help` for more information and optional configuration parameters. The output will look like the following:

```
$ conda token set --help
usage: conda token set [-h]
                        [--include-archive-channels CHANNEL_NAME [CHANNEL_NAME ...]]
                        [--system | --env | --file FILE]
                        token

positional arguments:
  token                Your token.

optional arguments:
  -h, --help            show this help message and exit
  --include-archive-channels CHANNEL_NAME [CHANNEL_NAME ...]
                        Add archived channels to default_channels. Available
                        channels are mro, mro-archive, free, and pro.

Config File Location Selection:
  Without one of these flags, the user config file at
  '/Users/me/.condarc' is used.

  --system              Write to the system .condarc file at
                        '/Users/me/Applications/miniconda3/.condarc'.
  --env                Write to the active conda environment .condarc file
                        (/Users/me/Applications/miniconda3). If no
                        environment is active, write to the user config file
                        (/Users/me/.condarc).
  --file FILE          Write to the given file.
```

Installing conda-forge (Optional)

You may wish to install packages from the conda-forge repository. To do so, run the following command:

```
conda config --add channels conda-forge
```

As before, run `conda info` to verify the change.

Using Anaconda behind a firewall or proxy (Optional)

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>, <https://repo.anaconda.com> and <https://repo.anaconda.cloud> 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.

MacOS/Linux

```
export HTTP_PROXY=http://username:password@proxyurl.com:8080  
export HTTPS_PROXY=https://username:password@proxyurl.com:8443
```

Windows

```
set HTTP_PROXY=http://username:password@proxyurl.com:8080  
set 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 the repositories **repo.anaconda.com** or **repo.anaconda.cloud**.

Verify your token configuration

To verify that your token was successfully installed, run the following in your terminal:

```
conda info
```

Your channel URLs should all point to **repo.anaconda.cloud**:

```
active environment : base  
active env location : /Users/<USERNAME>/Applications/miniconda3  
  shell level : 1  
  user config file : /Users/<USERNAME>/.populated config files : /Users/<USERNAME>/.  conda version : 4.9.2  
  conda-build version : 3.18.11  
  python version : 3.7.7.final.0  
  virtual packages : __osx=10.14.6=0  
                   __unix=0=0  
                   __archspec=1=x86_64  
base environment : /Users/<USERNAME>/Applications/miniconda3 (writable)  
  channel URLs : https://repo.anaconda.cloud/repo/main/osx-64  
                https://repo.anaconda.cloud/repo/main/noarch  
                https://repo.anaconda.cloud/repo/r/osx-64  
                https://repo.anaconda.cloud/repo/r/noarch  
                https://repo.anaconda.cloud/repo/msys2/osx-64  
                https://repo.anaconda.cloud/repo/msys2/noarch  
  package cache : /Users/<USERNAME>/Applications/miniconda3/pkg  
                  /Users/<USERNAME>/.  envs directories : /Users/<USERNAME>/Applications/miniconda3/envs  
                    /Users/<USERNAME>/.    platform : osx-64  
  user-agent : conda/4.9.2 requests/2.24.0 CPython/3.7.7 Darwin/18.7.0 OSX/  
→10.14.6
```

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```

    UID:GID : 502:20
    netrc file : None
    offline mode : False

```

Finding, editing, and reviewing .condarc (Optional)

In some cases, you may need to edit the `.condarc` file directly in order to authenticate to Anaconda Business.

Warning: Putting your token in the `.condarc` file is not secure. Therefore, the [Installing conda token](#) instructions above are the preferred workflow.

You can configure `.condarc` by editing the file in one of the paths listed in the next section or by running `conda config`.

Searching for .condarc

The `.condarc` file can be configured in a number of locations. The file can be edited with a text editor or through the use of `conda config` commands.

```

Windows system paths:
    'C:\ProgramData\conda\.condarc',
    'C:\ProgramData\conda\condarc',
    'C:\ProgramData\conda\condarc.d',

Linux and macOS system paths:
    '/etc/conda/.condarc',
    '/etc/conda/condarc',
    '/etc/conda/condarc.d/',
    '/var/lib/conda/.condarc',
    '/var/lib/conda/condarc',
    '/var/lib/conda/condarc.d/',

# Replace CONDA_ROOT with the path for your base conda or Anaconda install.
# Replace CONDA_PREFIX with the path to the current active environment.
# The tilde (~) means home directory on Linux, Mac, and Windows.
Local paths on all platforms:
    '$CONDA_ROOT/.condarc',
    '$CONDA_ROOT/condarc',
    '$CONDA_ROOT/condarc.d/',
    '~/.conda/.condarc',
    '~/.conda/condarc',
    '~/.conda/condarc.d/',
    '~/.condarc',
    '$CONDA_PREFIX/.condarc',
    '$CONDA_PREFIX/condarc',
    '$CONDA_PREFIX/condarc.d/',
    '$CONDARC',
)

```

If you run `conda config` commands, they will write to `~/ .condarc` by default, but the location can be changed with the following arguments.

Setting up `.condarc` for Anaconda Business

Here are the recommended contents of the `.condarc` file:

```
restore_free_channel: false
default_channels:
# Replace <TOKEN> with your personal token.
- https://repo.anaconda.cloud/t/<TOKEN>/repo/main
- https://repo.anaconda.cloud/t/<TOKEN>/repo/msys2
- https://repo.anaconda.cloud/t/<TOKEN>/repo/r

# Uncomment these only if you need them
# - https://repo.anaconda.cloud/t/<TOKEN>/repo/free
# - https://repo.anaconda.cloud/t/<TOKEN>/repo/pro
# - https://repo.anaconda.cloud/t/<TOKEN>/repo/mro-archive
# - https://repo.anaconda.cloud/t/<TOKEN>/repo/mro

channels:
- defaults
```

`Default_channels` is used here to ensure that conda will not pull any packages from `repo.anaconda.com`.

If you need to use the free channel, you must uncomment the line with your token but keep `restore_free_channel` set to `false`.

Adding conda channels

Caution: Do not use the `anaconda` channel. This will pull packages from `anaconda.org` rather than the Anaconda Professional repository (`defaults`).

After you've configured the default channels, you can continue to use channels from `anaconda.org` by listing the name of the channel under `channels:`. For example, you can add `conda-forge` after `defaults` in the channels list to access packages from `conda-forge` as well.

Some examples of additional channels to use:

- `conda-forge`
- `bioconda`
- `nvidia`
- `rapids`
- `intel`

Note: Conda will search for packages in the first channel listed when installing packages, *then* it will search in the second channel listed, and so on.

Learn more about [using default repositories](#) and [managing channels](#) in our Anaconda Distribution documentation.

Configure .condarc using conda config commands

The following commands can be used to configure the .condarc file from any state to correctly authenticate to Anaconda Business:

```
# Replace <TOKEN> with your personal token.
> conda config --set restore_free_channel false
> conda config --prepend default_channels https://repo.anaconda.cloud/t/<TOKEN>/repo/
↪main
> conda config --append default_channels https://repo.anaconda.cloud/t/<TOKEN>/repo/
↪msys2
> conda config --append default_channels https://repo.anaconda.cloud/t/<TOKEN>/repo/r
> conda config --prepend channels defaults
```

By default, the conda config commands above will edit the .condarc file in the home directory. Using the conda config file location flags below, you can change the path to the .condarc file you wish to edit.

```
Config File Location Selection:
Without one of these flags, the user config file at '/Users/<USERNAME>/condarc' is
↪used.

--system          Write to the system .condarc file at
                  '/Users/<USERNAME>/Applications/miniconda3/condarc'.
--env             Write to the active conda environment .condarc file (/
                  Users/<USERNAME>/Applications/miniconda3).
                  If no environment is active, write to the user config
                  file (/Users/<USERNAME>/condarc).
--file FILE       Write to the given file.
```

Where <USERNAME> is your Anaconda username.

The following commands can be run if you need these channels as well:

```
# Replace <TOKEN> with your personal token.
> conda config --append default_channels https://repo.anaconda.cloud/t/<TOKEN>/repo/
↪free
> conda config --append default_channels https://repo.anaconda.cloud/t/<TOKEN>/repo/
↪pro
```

Ensuring .condarc is configured correctly

In order to ensure that your .condarc file is configured correctly, either by running conda config or editing the file directly, run the command conda info in the terminal. As you can see in the example output below, the channel URLs specify repo.anaconda.cloud, not repo.anaconda.com.

```
>conda info
  active environment : base
  active env location : /Users/<USERNAME>/Applications/miniconda3
    shell level      : 1
   user config file   : /Users/<USERNAME>/condarc
populated config files : /Users/<USERNAME>/condarc
```

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```
conda version : 4.8.4
conda-build version : 3.18.11
python version : 3.7.7.final.0
virtual packages : __osx=10.14.6
base environment : /Users/<USERNAME>/Applications/miniconda3 (writable)
channel URLs : https://repo.anaconda.cloud/t/<TOKEN>/repo/main/osx-64
               https://repo.anaconda.cloud/t/<TOKEN>/repo/main/noarch
               https://repo.anaconda.cloud/t/<TOKEN>/repo/msys2/osx-64
               https://repo.anaconda.cloud/t/<TOKEN>/repo/msys2/noarch
package cache : /Users/<USERNAME>/Applications/miniconda3/pkgs
               /Users/<USERNAME>/~/.conda/pkgs
envs directories : /Users/<USERNAME>/Applications/miniconda3/envs
                  /Users/<USERNAME>/~/.conda/envs
platform : osx-64
user-agent : conda/4.8.4 requests/2.24.0 CPython/3.7.7 Darwin/18.7.0 OSX/
→10.14.6
UID:GID : 502:20
netrc file : None
offline mode : False
```

Remove token and reset Conda configuration

You can remove your token and reset your Conda configuration to its default state by running the following:

```
conda token remove
```

7.3.2 Frequently asked questions

- *Questions regarding installers & packages, conda, or Navigator*
- *Getting started with Anaconda Business*
- *Setting up and managing your Anaconda Business account*
- *Setting up and managing your Anaconda Business profile*
- *Authenticating Anaconda Business*
- *Setting up my access*
- *Setting up and managing payments and billing*
- *Anaconda Business community*

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 Business

What is Anaconda Business?

Anaconda's open-source package distribution and management optimized for commercial use and in compliance with our [Terms of Service](#).

What changes from Anaconda Distribution to Anaconda Business?

Users will download packages from a new commercial repository. This repository will have a new URL and a token for access.

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 we recommend using your corporate email so your admin can track all tokens in use.

Setting up and managing your Anaconda Business 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, navigate to your **Profile Settings**, and then click **Account Settings**. Once you have reset your password, click **Save**.

If you are unable to access your account, click on **Forget your Password?** on the sign in page. Enter the associated email address to receive a link to reset your password.

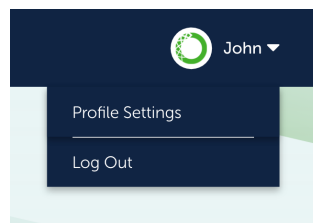
Does my password expire?

Never!

Setting up and managing your Anaconda Business profile

How do I access my profile?

Your profile is located in the top-right corner of your dashboard, indicated by a person icon.



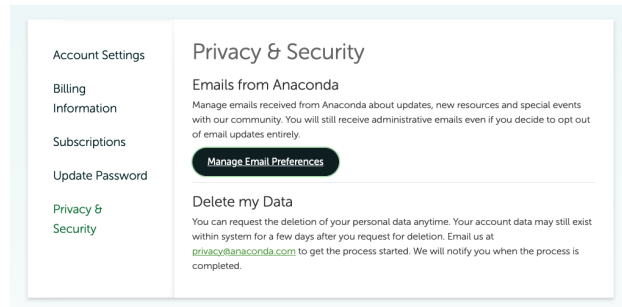
How do I add a profile picture to my profile?

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** under your **Profile Settings**. Once there, click **Manage Email Preferences**.

Profile Settings



The **Manage Email Preferences** page will open in a new tab. Make any changes you'd like, and then click **Update My Preferences** to save.

Manage Email Preferences

We're excited to share updates, new resources and special events with our community, but we understand if you're not as interested in some topics. Use the form to choose only the topics you want to receive or opt out of email updates entirely.

A screenshot of the 'Manage Email Preferences' form. It has a dark blue background. The form includes input fields for 'First Name', 'Last Name', 'Email', and 'Country' (with a 'Select...' dropdown). Below these is a section 'I am interested in:' with three checkboxes: 'Tips & resources for data scientists', 'Anaconda webinars & events', and 'Anaconda products & services'. There is also a checkbox for 'I no longer want to receive emails from Anaconda.' and a 'Required:' section with a 'Consent to Processing' checkbox. At the bottom is a light blue button labeled 'UPDATE MY PREFERENCES'.

How do I change my industry and company size?

You can change your industry and company size by navigating to **Account Settings** under your **Profile Settings**. Once there, update your details under the **Industry** and **Company Size** cells, and then click **Save Changes**.

Profile Settings

Account Settings

Personal Information * required fields

First Name* Last Name*
 Idan Englander

Email*
 ienglander@anaconda.com

Country* State (if applicable)*
 United States TX

Company Information

Company*
 Anaconda

Role / Position*
 Other X

Industry Company Size
 Select... Select...

Save Changes

How do I assign a new account admin?

Complete the following steps as an admin:

From the Subscriptions page, click on the **Organizations** tab and select your organization. From the **Manage Members** tab, you can assign a new account admin by clicking the **Assign Roles** button in the Actions column and selecting **Assign as Account Admin**.

Organization Home Manage Members Invite Members

Active Users 3 Seats Available Assign Seat

ORGANIZATION MEMBER	ROLE	ACTIONS	PRODUCTS ASSIGNED
Elize AnacondaTEST eloch+test@anaconda.com	Account Admin	Assign Roles	
Timothy Baggins eloch+org-member@anaconda.com	Member	Assign Roles	
Jimmy Johns eloch+verify@anaconda.com	Member	Assign Roles	
eloch+verify@anaconda.com	Pending Invite		
eloch+user1@anaconda.com	Pending Invite		

Assign Roles dropdown options:
 Assign as Account Admin
 Assign as Billing Manager
 Assign Seat
 Remove from Organization

The person you've assigned to account admin will receive an email notifying them that their role has been changed.

Authenticating Anaconda Business

What happens if I lose my token?

You can request a new token by navigating to **Subscriptions** under your **Profile Settings**. 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.

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 **Subscriptions** under your **Profile Settings**. 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.

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.

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.

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 Business, please refer to the *Authenticating Anaconda Business* 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 Business* section in the Quickstart guide.

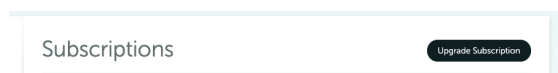
Setting up and managing payments and billing

How do I view my subscription information?

From your profile in the top-right corner, navigate to your **Profile Settings**, and then click **Subscriptions**.

How do I upgrade my subscription?

From your profile in the top-right corner, navigate to your **Profile Settings**, and then click **Subscriptions**. At the top of the page, click **Upgrade Subscription**. You will be taken to the purchase page.



How do I cancel my subscription?

From your profile in the top-right corner, navigate to your **Profile Settings**, and then click **Subscriptions**. At the bottom of the page, click **Cancel My Subscription**.

Cancel My Subscription
 Removing your subscription will revoke access at the end of the current subscription period.
[Cancel My Subscription](#)

On the following screen, click **Cancel Subscription**. Requesting cancellation will initiate revoking any subscription-based access on your account.

Cancel Professional Edition

Professional Edition, \$14.95 / month

You are cancelling a subscription to:

Professional Edition

\$14.95
/ month / user

Prices in USD

This edition includes the following:

- ✓ More than 75k Anaconda-built data science/machine learning packages
- ✓ Unlimited commercial package downloads
- ✓ Guaranteed up-time to support commercial usage
- ✓ Compliance with the Anaconda Terms of Service for commercial use

Summary

Are you sure you want to cancel your subscription?

Revoke all access to Professional Edition

You will no longer be able to access:

- ⊗ More than 75k Anaconda-built data science/machine learning packages
- ⊗ Unlimited commercial package downloads
- ⊗ Guaranteed up-time to support commercial usage
- ⊗ Compliance with the Anaconda Terms of Service for commercial use

There is no refund after payment has been processed for the current billing cycle. You will continue to have access until the end of the current month.

[Nevertheless Go Back](#) [Cancel Subscription](#)

Will I get a notification of my cancellation?

You will receive a confirmation email of your unsubscription.

What happens to my current account when I cancel my subscription?

You will have access to Anaconda Business until the end of the paid period, that being the end of the month if you purchased a month's subscription.

How can I access my payment information?

From your profile in the top-right corner, navigate to your **Profile Settings**, and then click **Billing Information**.

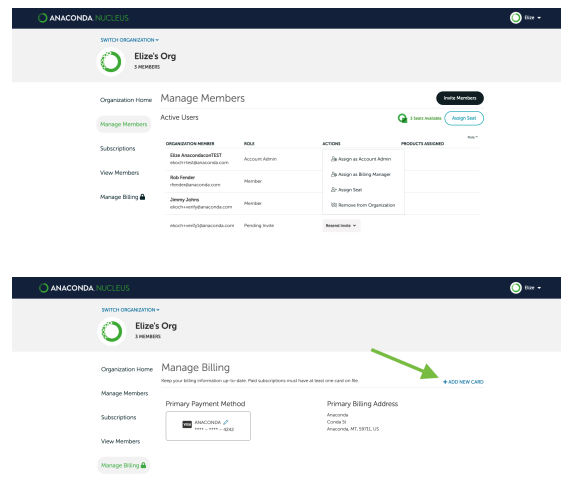
Can I change the credit card information?

You have the option to add more than one card saved to your account.

How do I change billing managers and my payment method?

From the Subscriptions page, click on the **Organizations** tab and select your organization. From the **Manage Members** tab, you can assign a different member the role of billing manager by clicking **Assign Roles** in the Actions column.

From the Manage billing tab, you can update your payment method.



How can I get my payment history?

Please check the inbox of the email address associated with your Anaconda Business account, as well as the spam folder.

If you have paid for Anaconda Business 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 Settings**, and then click **Billing Information**.

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?

Change your subscription duration by [submitting a ticket](#).

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 **Privacy & Security** under your **Profile Settings**. Once there, click **Delete Data**.

**Anaconda Business 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](#).

7.3.3 Organizations

An organization is a group of Nucleus accounts with a managed set of rights and permissions. Creating an organization for your team in Nucleus allows you to:

- Provide a common collaboration space
- Ensure consistent tooling
- Manage access and costs

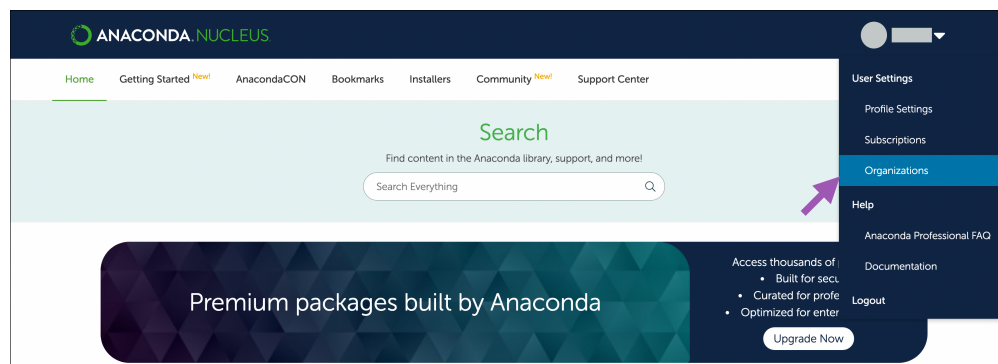
Note: Nucleus users can create and belong to multiple organizations.

This topic provides guidance on the following actions:

- *Creating an organization*
- *Subscribing your organization*
- *Inviting members to your organization*
- *Assigning and managing seats*
- *Leaving an organization*

Creating an organization

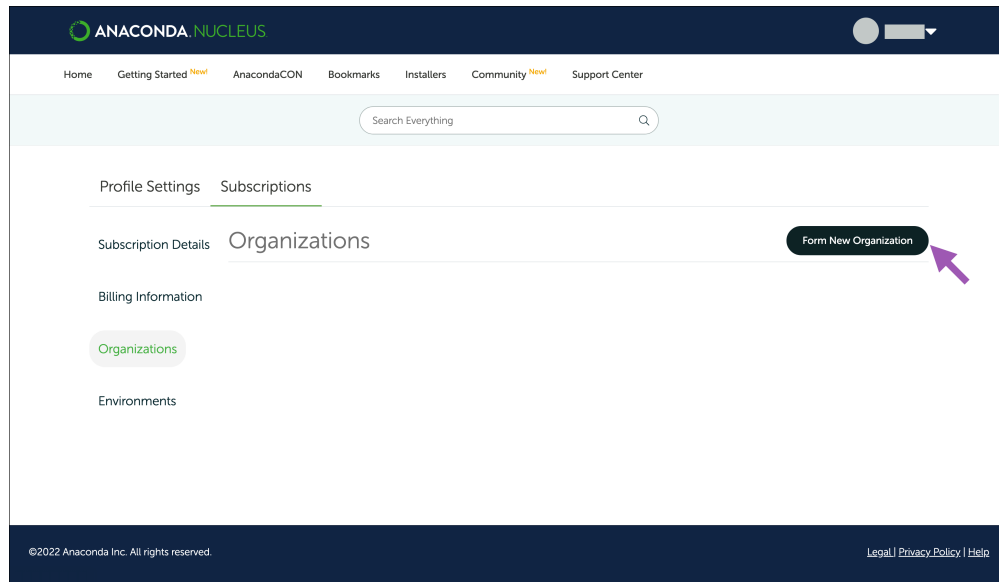
From your profile in the top-right corner, select **Organizations**.



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:

From your profile in the top-right corner, select **Subscriptions**, then click **Purchase Subscriptions** or **Upgrade Subscriptions** to go to the purchase page. If your team grows, you can purchase additional seats (licenses) for your organization at any time!

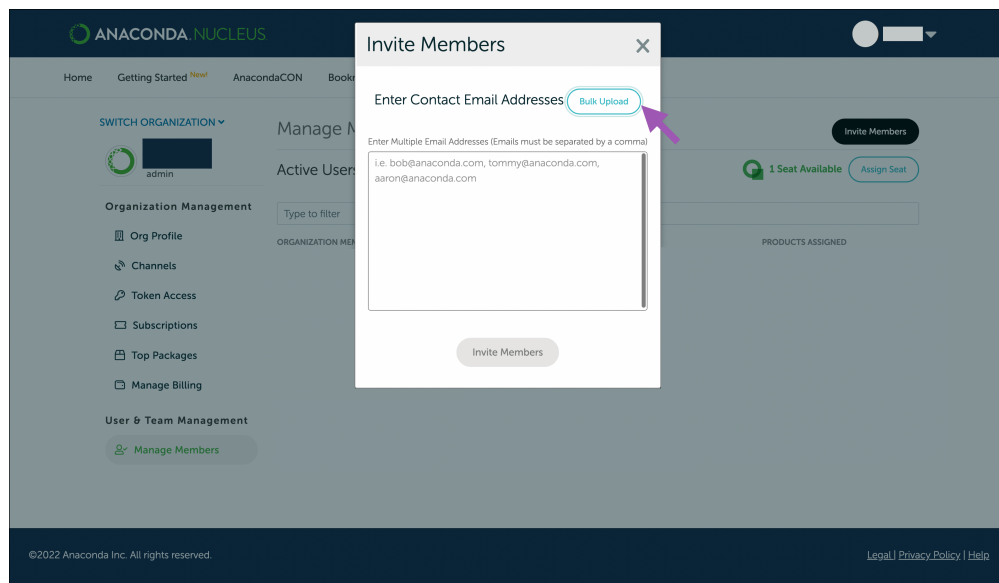
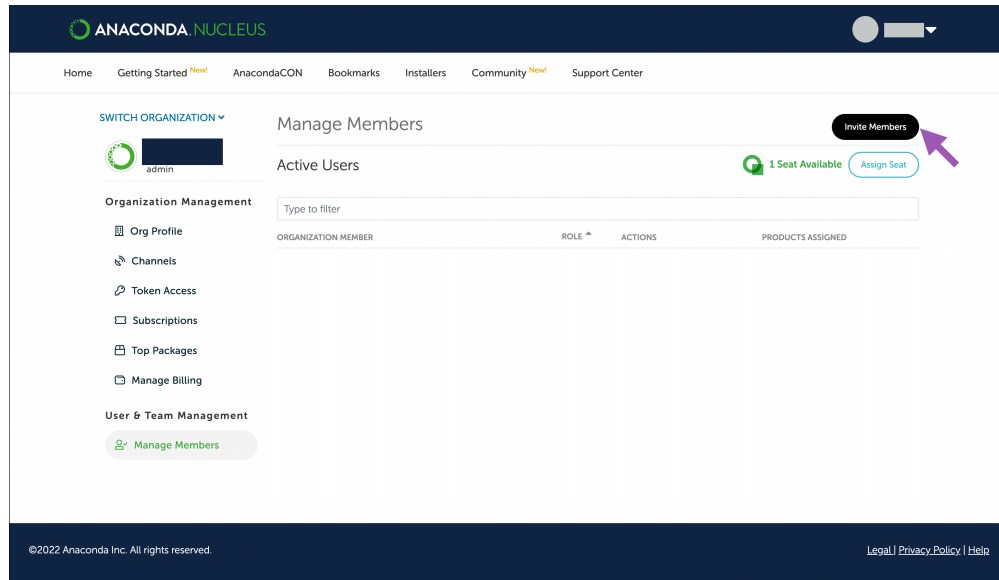
Inviting members to your organization

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 the **Manage Members** page within your organization.
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 Nucleus login page. Once logged in, they can accept the invitation and join the organization.



Note: If the invited team member does not have a Nucleus account, they can create one using the email that the invite was sent to, then join the organization.

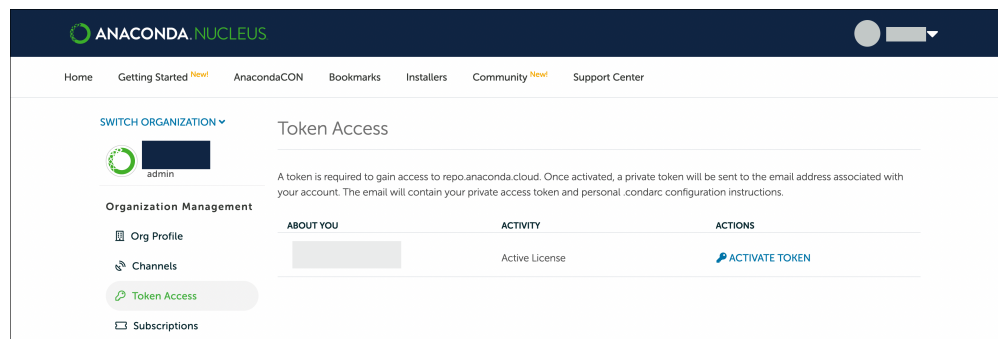
Assigning and managing seats

Once a member has accepted their invitation, assign them a seat (license) from the **Manage Members** 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

Once you assign a member a seat in your organization, they will receive an email with a link to the organization in their Nucleus account. Instruct them to open the link and go to the **Token Access** page to activate their token.

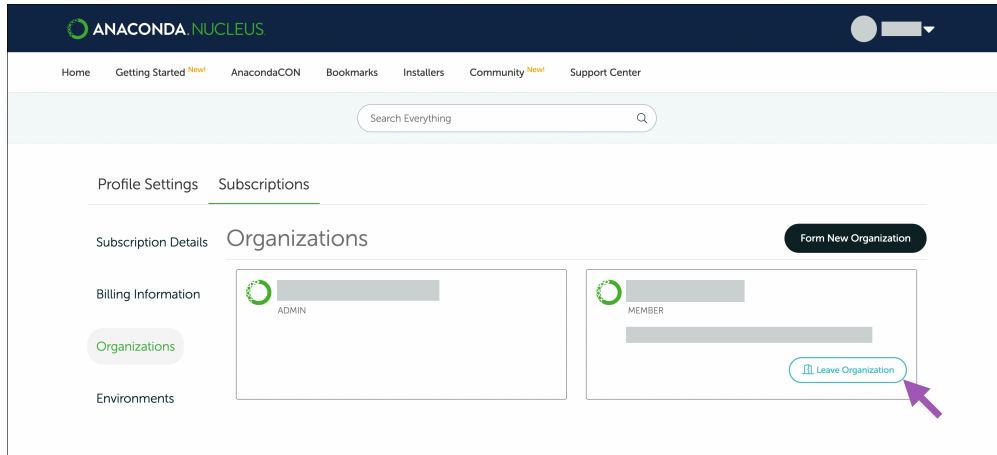
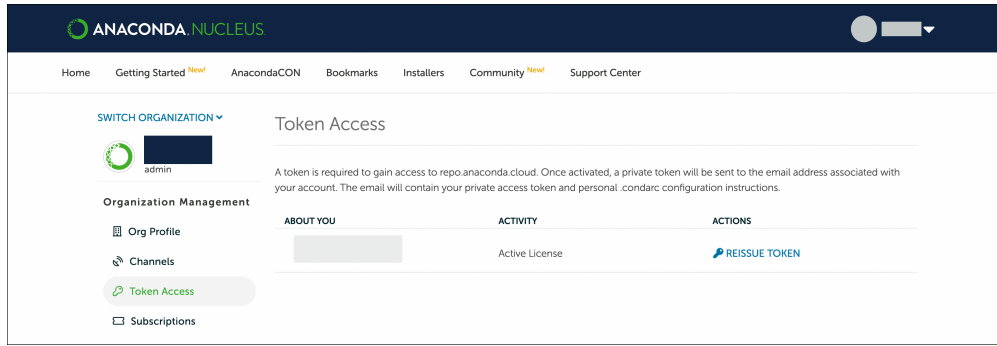


Once the member activates their token, they will receive an email containing their token and instructions on installing Anaconda and setting their token to get access to Anaconda Business.

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.

Leaving an organization

To leave an organization at any time, go to the [Organizations](#) page and click **Leave Organization**.



Please let us know if you have further questions or need additional assistance. More information can be found at our [support center](#).

7.3.4 Common Vulnerabilities and Exposures (CVEs)

This topic provides guidance on the following actions:

- *What are CVEs?*
- *Why trust Anaconda?*
- *Understanding CVEs*
 - *Common Vulnerability Scoring System (CVSS)*
 - *CVE scores*
 - *CVE statuses*
- *Viewing CVEs in your channel*

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 Business provides you with everything you need to keep your pipeline secure.

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:

SCORE	CVSS 3	RATING
0		None
0.1-3.9		Low
4.0-6.9		Medium
7.0-8.9		High
9-10		Critical

CVE statuses

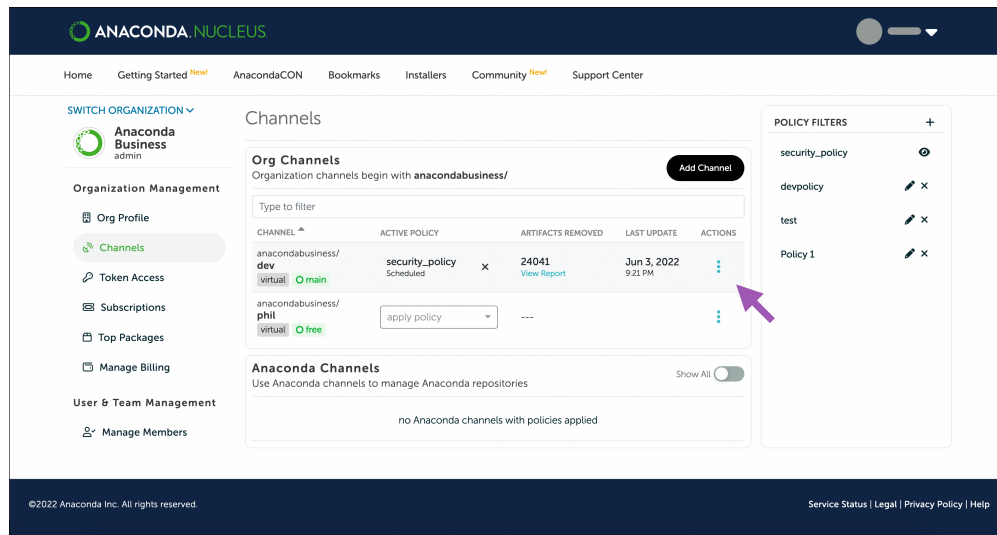
CVEs are assigned a status category as a result of the Anaconda curation process. CVE status categories include:

- **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 CVEs in your channel

Applying a security policy to a channel controls which packages the channel can access. Packages associated with CVEs that do not meet your security requirements will not populate your channel.

1. From the **Channels** page, select a channel to view the packages within that channel.



2. You can see the number of CVEs a package contains under the **CVE** column.
3. Select a channel with CVEs, then navigate to the **CVEs** tab. This tab shows which CVEs are found in the package, including the CVE name, description, and number of packages containing that CVE.
4. Use the search bar to filter CVEs.

7.3.5 Security practices

This topic provides guidance on the following actions:

The screenshot shows the Anaconda Nucleus interface for the 'anacondabusiness / dev' channel. The left sidebar contains navigation links for Organization Management (Org Profile, Channels, Token Access, Subscriptions, Top Packages, Manage Billing) and User & Team Management (Manage Members). The main content area displays a table of packages:

Package Name	Family	Files	CVE
airflow	conda	52	14
airflow-with-async	conda	14	0
airflow-with-azure_blob_storage	conda	14	0
airflow-with-azure_cosmos	conda	14	0
airflow-with-azure-mgmt-containerinstance	conda	14	0

Below the table, it indicates 'Items per page: 50' and '1 - 50 of 2778'. On the right, the 'INSTALL' section shows the command: `conda install -c anacondabusiness/dev`. The 'CHANNEL INFO' section lists: Created Apr 29, 2022, Privacy private, Type virtual, Source main. The 'ACTIVE POLICY' section shows: Name security_policy, State scheduled, Last ran 6/3/22, 9:21 PM, Next run 6/4/22, 12:1 AM.

The screenshot shows the details for the 'airflow' package. The left sidebar is the same as the previous screenshot. The main content area displays the package's statistics: 52 Files, 39 Dependents, 47 Dependencies, and 14 CVEs. A table lists the CVEs:

Score	Name	packages
6.5	CVE-2020-17511 In Airflow versions prior to 1.10.13, when creating a user using airflow CLI, the password gets logged in plain text in the Log table in Airflow Metadatabase. Same happened when creating a Connection with a password field.	38
6.1	CVE-2021-28359 The "origin" parameter passed to some of the endpoints like "/trigger/" was vulnerable to XSS exploit. This issue affects Apache Airflow versions <1.10.15 in 1.x series and affects 2.0.0 and 2.0.1 and 2.x series. This is the same as CVE-2020-13944 & CVE-2020-17515 but the implemented fix did not fix the issue completely. Update to Airflow 1.10.15 or 2.0.2. Please also update your Python version to the latest available PATCH releases of the installed MINOR versions, example update to Python 3.6.13 if you are on Python 3.6. (Those contain the fix for CVE-2021-23336 https://nvd.nist.gov/vuln/detail/CVE-2021-23336).	38
	CVE-2020-17526 Incorrect Format Validation in Apache Airflow Metadatabase causes errors in 1.10.14 with	

On the right, the 'INSTALL' section shows the command: `conda install -c anacondabusiness/dev airflow`. The 'PACKAGE INFO' section lists: License Apache 2.0, Last Published Mar 4, 2022, Version 1.10.12, Downloads 280, Homepage <http://airflow.apache.org>, Docs <http://pythonhosted.org/airflow/profiling.html>.

The screenshot shows the details for the 'airflow' package with a search filter '17511' applied. The left sidebar is the same as the previous screenshots. The main content area displays the package's statistics: 52 Files, 39 Dependents, 47 Dependencies, and 14 CVEs. A table lists the CVEs:

Score	Name	packages
6.5	CVE-2020-17511 In Airflow versions prior to 1.10.13, when creating a user using airflow CLI, the password gets logged in plain text in the Log table in Airflow Metadatabase. Same happened when creating a Connection with a password field.	38

On the right, the 'INSTALL' section shows the command: `conda install -c anacondabusiness/dev airflow`. The 'PACKAGE INFO' section lists: License Apache 2.0, Last Published Mar 4, 2022, Version 1.10.12, Downloads 280, Homepage <http://airflow.apache.org>, Docs <http://pythonhosted.org/airflow/profiling.html>.

- *Token privacy*
- *Anaconda Content Trust: conda package signature verification*

Token privacy

Anaconda Business requires a private token to access the channel 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 for Anaconda Business users 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*.

Note: 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 your CE access, turn on signature verification, and empty the index cache:

```
conda token set --enable-signature-verification <YOUR_COMMERCIAL_EDITION_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
-----|-----
```

(continues on next page)

(continued from previous page)

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.

7.3.6 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*
- *403 error*

- *HTTP 000 CONNECTION FAILED*

Conda: Channel is unavailable/missing or package itself is missing

Cause

After you have configured your `.condarc` for either Anaconda Business or Anaconda Server, 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 of Anaconda Business:

```
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, we recommend 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,
```

7.3.7 Help and support

The following resources are available to help you:

- Anaconda offers [support and training](#).
- Free community support is available from the [Nucleus Community forums](#).

7.4 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.

7.4.1 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.

User guide

Getting started

- *Finding, downloading and installing packages*
- *Building and uploading new packages*
- *Sharing notebooks*
- *Viewing notebooks*
- *Sharing environments*

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.



Filters

Type: All ▾
Access: All ▾
Platform: All ▾

⬆ 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.

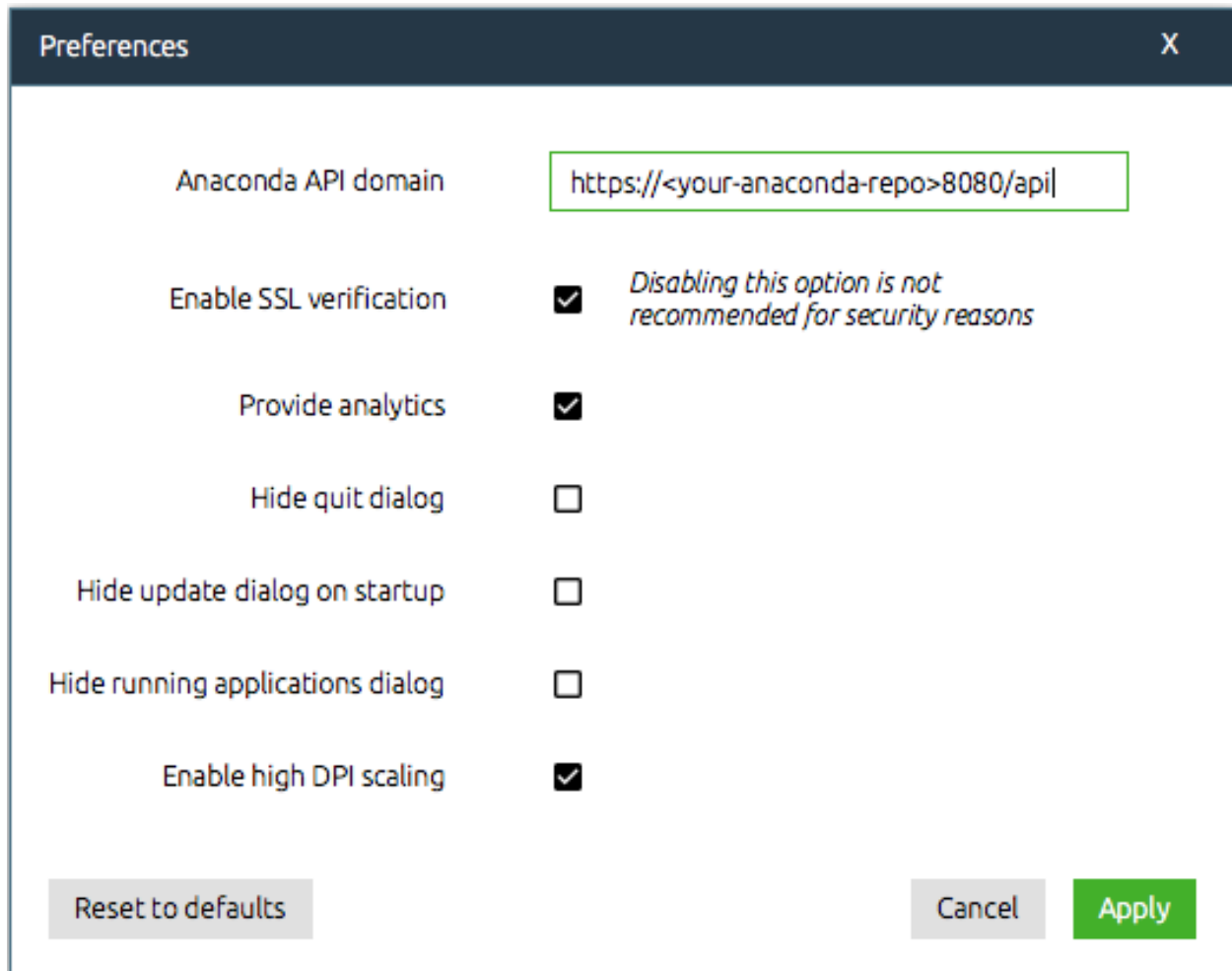
Using Navigator

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:

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 into 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 into 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*
- *Use the Anaconda Client CLI*
- *Build packages*

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 into 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*
- *Working with other file types*

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 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 username 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.

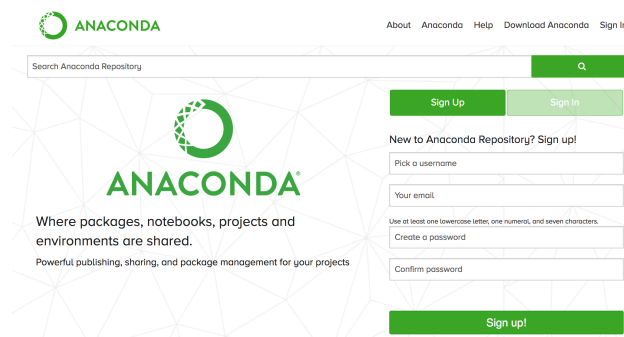
However, you do need a Repository account to:

- 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.



1. Make sure the **Sign Up** tab is active.
NOTE: There is also a **Sign In** tab for existing users.
2. Select a username.
3. Enter your email address.
4. Create a password that is at least 7 characters long.
5. Enter the password again to confirm it.
6. Read and accept the Terms and Conditions.
7. 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 is the Anaconda logo, a search bar labeled 'Search Anaconda Repository', and navigation links for 'View', 'Help', and the user 'testuser1'. The main content area is titled 'My Anaconda Landscape' and contains five cards: 'Packages', 'Notebooks', 'Environments', 'Installers', and 'Favorites'. Each card has a 'View all' link and a green box with instructions on how to upload or create items. At the bottom, there is an 'Activity Feed' section with a 'View more' link. The activity feed shows a welcome message and links to 'Installing your first package' and 'Distributing your first package'.

In the top navigation bar, the currently active user or organization is shown at the far right.

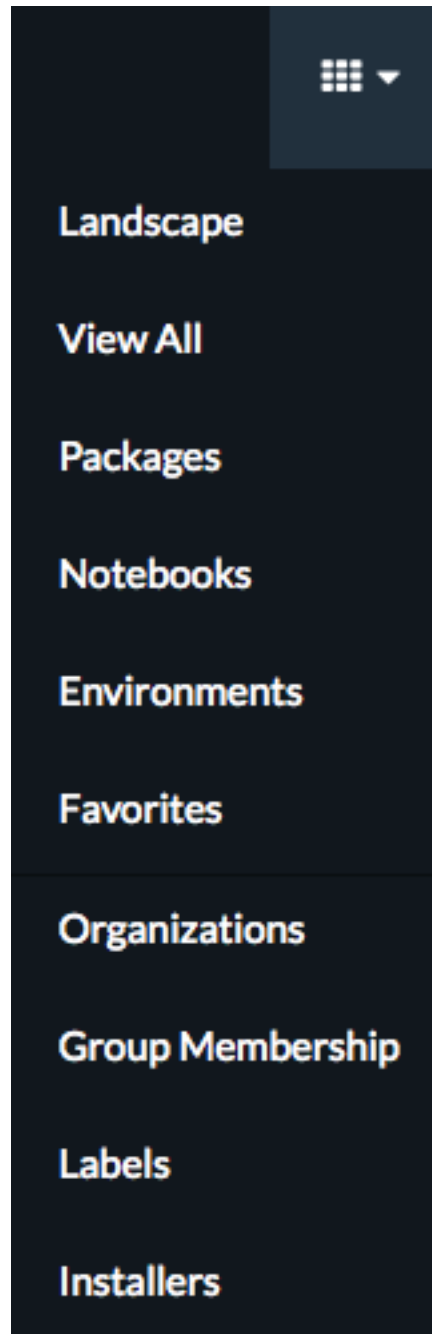
TIP: If the email address on your account is associated with a Gravatar account, Repository displays your profile photo. To associate your email address with Gravatar or to change your Gravatar profile photo, see gravatar.com.

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*
- *Uploading packages to an organization*
- *Transferring packages to an organization*
- *Customizing users and groups*
- *Creating groups for differing access levels*
- *Deleting an organization*

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

- *Working with conda packages*
- *Working with PyPI packages*

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 user-name 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 user-name 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 ?





noarch

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

- [Making a package private](#)
- [Using groups to allow access to private packages](#)
- [Creating a token to allow access to a private package or channel](#)
- [Using a token](#)
- [Revoking a token](#)

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:

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.

[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

- `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**.

Package Repository for superuser

The screenshot displays the Anaconda Package Repository web interface for a superuser. At the top, there is a navigation bar with four tabs: 'Packages' (light green), 'Files' (dark green), 'Install Instructions' (light green), and 'History' (light green). Below the navigation bar is a 'Filters' section with three dropdown menus: 'Type: all', 'Access: all', and 'Label: main'. Below the filters is a row of buttons: 'Delete' (red with a trash icon), 'Add label' (blue), 'Set label' (blue), 'Remove label' (blue), and 'Manage labels' (blue). The main content area is titled 'Packages' and displays a list of four packages: 'stat', 'nodejs', 'dqw', and 'matrix'. Each package entry includes a checkbox, a circular icon, and a 'main' label.

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

4. Select the checkbox next to the packages you want to delete.
5. Click the Delete button.
6. Enter the account name in the confirmation window.
7. 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 user-name 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.

1. 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.

2. 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.

Creating parcels, management packs and installers

You can create custom Cloudera Manager parcels with the packages you want, including your own packages.

NOTE: Creating custom parcels requires a local mirror of the Anaconda packages.

When creating a parcel, Repository generates a 64-bit Linux installer including the specified packages and a file named `construct.yaml`, which can be used with [conda constructor](#).

To create a custom parcel, management pack or installer:

1. From the view button, select Installers.
2. Click the Create new installer button.

NOTE: Use only letters, numbers, dashes and underscores in the installer name.

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
<div> <div>Filters</div> <div> <div>Type: All</div> <div>Version: All</div> </div> <div>Remove (0)</div> </div>			
Type	Filename	Size	Version
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

The screenshot shows the 'Create from Packages' tab selected. At the top, there are input fields for 'Name' (containing 'InstallerFromPackage') and 'Version' (containing '1'). Below these are two main sections: 'Add Channels' and 'Add Packages'. The 'Add Channels' section has a search box with a green '+' button. Below it, 'anaconda' is listed with a green circle icon. The 'Add Packages' section has a search box with a green '+' button. Below it, two packages are listed: 'python' with a version requirement of '>= 2.7.13' and 'zlib' with a version requirement of '>= 1.2.8'. At the bottom, there are three green buttons: 'Create management pack', 'Create parcel', and '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

The screenshot shows the 'Create from Environment' tab selected. At the top, there are input fields for 'Name' (containing 'InstallerFromEnvironment') and 'Version' (containing '1'). Below these are two main sections: 'Create from Packages' (which is collapsed) and 'Create from Environment' (which is expanded). The 'Create from Environment' section has a search box with a green checkmark button. Below it, 'snowflakes' is listed with a version requirement of '2017.05.10.1314'. At the bottom, there are three green buttons: 'Create management pack', 'Create parcel', and '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](#).

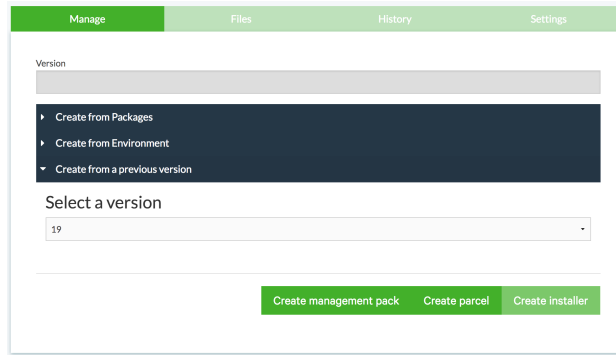
NOTE: If you have configured conda via `~/ .condarc` on your server for use of a proxy—for example, to mirror behind a proxy—you must disable proxying for Repository. For more information, see the [conda documentation](#).

EXAMPLE:

```
proxy_servers:
  https: http://proxy.corp.example.com
  http: http://proxy.corp.example.com
  'http://<repository ip>': false
```

Creating from a previous version

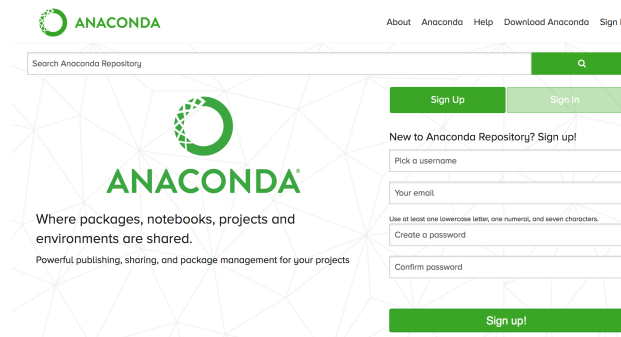
Once you have an installer created, you can return to this page and create a management pack or a parcel from a specific version. Use the **Create from a previous version** option to choose which version you want to use. The **Create Installer** button will be disabled since you have already created 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.

Resetting your password

Open the Anaconda Repository login page:



The **Sign In** tab provides two links to help regain access to your account:

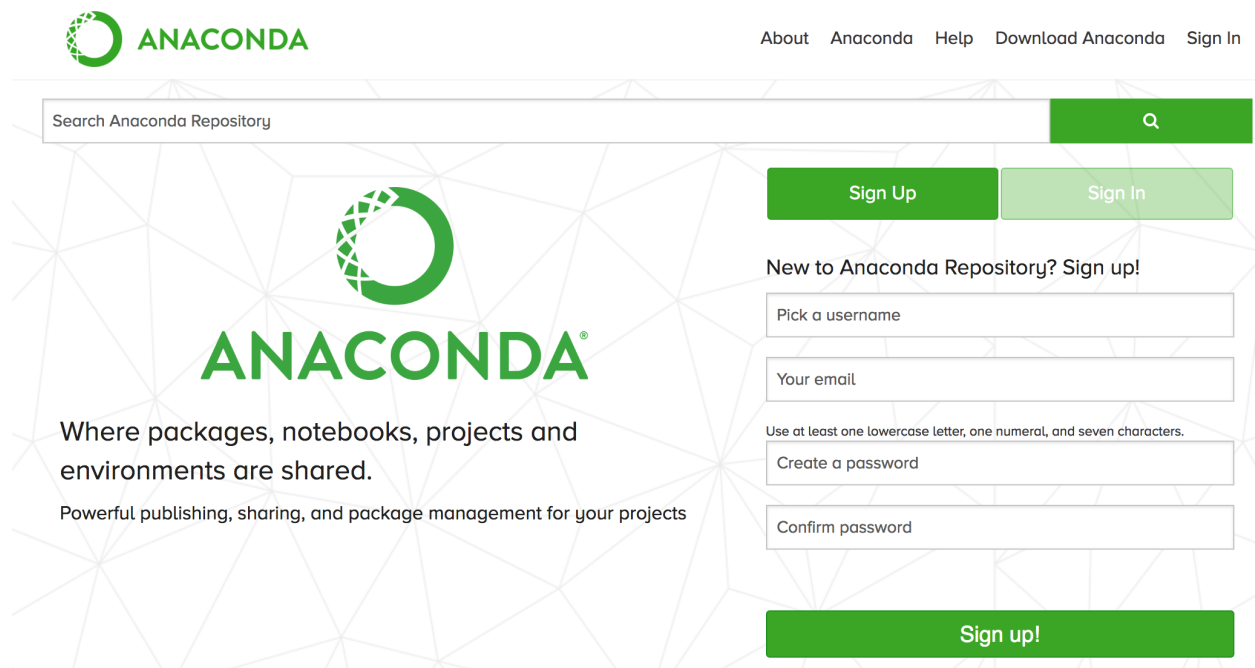
- I forgot my username. Click this link to have the username emailed to the email address of record.
- I forgot my password. Click this link to have a reset password link sent to the email address of record.

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.



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](#)
- [Software requirements](#)
- [Security requirements](#)
- [Network requirements](#)
- [Hardware verification](#)
- [Software verification](#)

- [Security verification](#)

See also the system requirements for all of Anaconda Enterprise.

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](#)—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*
- *1. Install MongoDB 2.6*
- *2. Create the Repository administrator account*
- *3. Install Repository*
- *4. Configure Repository*
- *5. Set up automatic restart on reboot, fail or error*
- *6. Start and log in to Repository*
- *7. Client configuration*
- *8. Install the Repository license*
- *9. OPTIONAL: Mirror installers for Anaconda and Miniconda*
- *10. Mirror Anaconda.org*

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-distro.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 into 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
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 http://www.msys2.org/

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*
- *1. Install MongoDB 2.6*
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- 7. *Client configuration*
- 8. *Install the Repository license*
- 9. *OPTIONAL: Mirror installers for Anaconda and Miniconda*
- 10. *Mirror Anaconda.org*

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
repo-mirrors- <i>date</i> +%Y-%m-%d.tar	All AE-channels for all platforms	160 GB
x64-repo-mirrors- +%Y-%m-%d.tar	x64 conda packages for all AE-channels	100 GB
linux-64-pkgs.tar	conda packages for linux-64 for all AE-channels	45 GB
win-64-pkgs.tar	conda packages for win-64	30 GB
osx-64-pkgs.tar	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-distro.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

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 into 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 http://www.msys2.org/

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 `yml` 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.yml
echo "  - file://$MIRRORS_ARCHIVE/anaconda-suite/pkg" >> \
  ~/repo/etc/anaconda-server/mirror/conda.yml
```

4. Mirror the default Anaconda packages:

```
anaconda-server-sync-conda --mirror-config ~/repo/etc/anaconda-server/mirror/
  ↳ conda.yml
```

Mirroring an Anaconda repository with Anaconda Enterprise 4 Repository contains documentation and advanced `yml` 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
```

3. Restart your server for the changes to take effect:

```
supervisorctl restart all
```

4. 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 # */
ACCEPT      tcp  --  0.0.0.0/0             0.0.0.0/0
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-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          tcp dpt:80 /* # Anaconda Repo # */
REDIRECT    tcp  --  0.0.0.0/0             0.0.0.0/0            tcp dpt:80 /* # Anaconda Repo # */
# Anaconda Repo # */ redir ports 8080
```

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```
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. We recommend 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
```

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```
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 usercontent.server
```

NOTE: Replace `your.anaconda.repository` and `usercontent.your.anaconda.repository` with the respective server IP address or domain name.

1. 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
  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
    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 KERBEROS to enable Kerberos authentication. Default: NATIVE.
KRB5_KTNAME	string	The file path of the keytab containing the service principal for Repository. Default: /etc/krb5.keytab.
KRB5_SERVICE_NAME	string	The service type used to identify the service principal for Repository. HTTP in HTTP/your.anaconda.repository@YOUR.REALM. Default: HTTP.
KRB5_HOSTNAME	string	The hostname used to identify the service principal for Repository. your.anaconda.repository in HTTP/your.anaconda.repository@YOUR.REALM. Default: the host-name 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

[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}
```

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```
[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 Repostiory

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

- *Client configuration*
- *Conda configuration*

- *Pip configuration*
- *Kerberos configuration*

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*
- *Mirroring all packages*
- *Mirroring some packages*
- *Offline mirroring*
- *Mirroring with the deprecated `anaconda-mirror` command*
- *Mirroring additional channels*
- *Configuring `conda`*

NOTE: This documentation is for versions of Anaconda Enterprise 4 Repository 2.26 and newer. For versions from 2.23 through 2.25, see [2.23 documentation](#). For versions before 2.23, see [2.20 documentation](#).

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   Show running configuration and exit
  --version                 Print version and exit
  -l LOG_LEVEL, --log-level LOG_LEVEL
                           Set the log level (CRITICAL, ERROR, WARNING, INFO,
                           DEBUG)Default: INFO.
  -v, --verbose             Shorthand for --log-level DEBUG
```


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
- anaconda.org/msys2
- 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
repodata_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/
  - 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
  - libedit
  - libffi
  - libgcc-ng
  - libstdc++-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

# 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/pkgs

# 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*
- *Running the PyPI mirror command*

- *Customizing the mirror*
- *Configuring pip*

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
user	The local user under which the PyPI packages are imported. Default: <code>pypi</code> .
pkg_list	A list of packages to mirror. Only packages listed are mirrored. If this is set, blacklist and whitelist settings are ignored. Default: <code>[]</code> .
whitelist	A list of packages to mirror. Only packages listed are mirrored. If the list is empty, all packages are checked. Default: <code>[]</code> .
blacklist	A list of packages to skip. The packages listed are ignored. Default: <code>[]</code> .
latest_only	Only download the latest versions of the packages. Default: <code>false</code> .
remote_url	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> .
xml_rpc_url	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> .
simple_index_url	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> .
use_xml_rpc	Whether to use the XML RPC API as specified by PEP381 . 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> .
use_serial	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> .
create_org	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> .
private	Save the mirrored packages as private. Default: <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

- *Before you start*
- *Customizing your mirror*
- *Mirroring a platform-specific list*

- *Mirroring a package-specific list*
- *Mirroring Python version-specific packages*
- *Mirroring with a license blacklist*
- *Mirroring with a blacklist*
- *Mirroring with a whitelist*
- *Combining multiple mirror configurations*

This section explains how you can customize your PyPI or Anaconda repository mirror.

NOTE: This documentation applies to versions of Repository 2.26 and newer. For versions between 2.23 and 2.26, see [2.23 documentation](#). For older versions, see [2.20 documentation](#).

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
```

NOTE: Older versions of Anaconda mirror support only license blacklisting for GPL. If you are using an older version of Anaconda Enterprise 4 Repository, see the documentation for [customizing your PyPI or Anaconda repository mirror](#).

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 \
  Anaconda2-$version-Windows-x86_64.exe \
  Anaconda3-$version-Windows-x86_64.exe"
```

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```
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*
- *Logging*
- *Username*
 - *USER_REGEX*
- *Database*
 - *MONGO_URL*
 - *MONGO_DBNAME*
 - *MQ_DBNAME*
 - *MONGO_REPLICA_SET*
- *File storage*
 - *Storage_type*
 - *keyname_full_path*

- *Fs_storage_root*
 - *PACKAGE_BUCKET_ID*
 - *S3_REGION_NAME*
 - *S3_SERVER_SIDE_ENCRYPTION*
- *Notebooks*
 - *MAX_IPYNB_SIZE*
- *Web server*
 - *SERVER_NAME*
 - *port*
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 - *SESSION_COOKIE_DOMAIN*
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 - *ssl_options*
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 - * *ssl_version*
 - *PREFERRED_URL_SCHEME*
 - *gunicorn*
 - * *timeout*
 - * *workers*
- *Authentication*
 - *AUTH_TYPE*
 - *KRB5_HOSTNAME*
 - *KRB5_SERVICE_NAME*
 - *KRB5_KTNAME*
 - *LDAP*
 - *LOCK_DOWN*
- *Email*
 - *SMTP_HOST*
 - *SMTP_PORT*
 - *SMTP_TLS*
 - *SMTP_USERNAME*
 - *SMTP_PASSWORD*
 - *USE_SES*
 - *RETURN_ADDRESS*

- *ALLOW_DUPLICATED_EMAILS*
- *require_email_validation*
- *Advanced*
 - *AVATAR_METHOD*
 - *AVATAR_GRAVATAR_URL*
 - *AVATAR_STATIC_URL*
 - *CONSTRUCTOR_TIMEOUT*
 - *CONSTRUCTOR_TOKEN_TIMEOUT*
 - *CONSTRUCTOR_ALLOWED_OPTIONS*
 - *PARCELS_ROOT*
 - *PARCEL_DISTRO_SUFFIXES*
 - *DEFAULT_CHANNELS*
 - *CONSTRUCTOR_TMPDIR*
 - *STANDARD_LABELS*
 - *CONDA_CACHE_SIZE*
 - *CACHE_METHOD*
- *REMEMBER_COOKIE_ENABLED*
- *PERMANENT_SESSION_LIFETIME*
- *REMEMBER_COOKIE_DURATION*
- *SUPERUSER_ORG_ADMIN*
- *NEXT_URL_WHITELIST*
- *NEXT_URL_WHITELIST_REGEX*

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

```

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```
# 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*
- *Searching for users*
- *Promoting an existing user*
- *Resetting user passwords*
- *Resending welcome emails to new users*
- *Changing a user's storage size or changing their plan to free unlimited*
- *Removing a user*

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:

3. Click the Set Staff button to give the user staff privileges or click the Set Superuser button to give the user superuser privileges.

Report

Security Feed

Accounts

Password Reset

Downloads

Package Search

Deployment

Package Storage 56%

View License Downloads

View License

Read Only

Users / testuser

Actions:

Set access

Set Staff Set Superuser

Account

View profile Delete user

History

Action	Timestamp	Actor(s)
user.create	Thu Mar 22 16:38:19 2018	testuser details

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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 into 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 into 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 into 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  
$ shalsum anaconda-server-package-storage-$VERSION-$TIMESTAMP.tar > anaconda-server-  
↪package-storage-$VERSION-$TIMESTAMP.tar.shal
```

Database

Generate a dump of Anaconda Enterprise 4 Repository's MongoDB database. We recommend 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  
$ shalsum anaconda-server-mongodb-$VERSION-$TIMESTAMP.archive > anaconda-server-  
↪mongodb-$VERSION-$TIMESTAMP.archive.shal
```

.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  
$ shalsum anaconda-server-bashrc-$VERSION-$TIMESTAMP.sh > anaconda-server-bashrc-  
↪$VERSION-$TIMESTAMP.sh.shal
```

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:

```
$ shasum --check *.sh
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

# 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
```

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```
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

- *Cannot connect to the server on port x*
- *Error: “No environment named ‘search’ exists in...” on Windows*
- *Anaconda upload fails while behind a reverse proxy*
- *Start Repository application as a foreground process*

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?*
- *What kind of packages does Anaconda Enterprise 4 Repository support?*

- *What is Anaconda?*
- *How do I get started with Anaconda Enterprise 4 Repository?*
- *What is an organization account, and how is it different from an individual account?*
- *Who can upload packages to an organization?*

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.

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 Nucleus Community

You are also welcome to join the [Nucleus 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.

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.

Changelog

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

- Re-use 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 `reodata` 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 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
- 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 supervisord 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*
- *Authentication*
 - *auth*
 - *login*
 - *logout*
 - *whoami*
- *Informational*
 - *show*
 - *search*
 - *config*
- *Package management*
 - *package*
 - *upload*
 - *download*
 - *remove*
 - *groups*
 - *label*
 - *copy*
 - *move*

anaconda

```
usage: anaconda [-h] [--disable-ssl-warnings] [--show-traceback] [-v] [-q]
               [-V] [-t TOKEN] [-s SITE]
               ...
```

Anaconda Repository command line manager

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```

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 ot 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
  worker                Anaconda build client for continuous integration,
                        testing and 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]

```

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```

(-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

```

See also [token](#).

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

```

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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]]]

optional arguments:

-h, --help show this help message **and** exit

Show 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
  --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.
```

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* 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
```

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]
```

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```

                                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

```

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```

-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
--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

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
```

Glossary

- *Anaconda*
- *Anaconda Client CLI*
- *Anaconda Enterprise 4 Repository*
- *conda*
- *conda build*
- *conda package*

- *label*
- *Miniconda*
- *namespace*
- *noarch package*
- *on-site repository*
- *organization account*
- *package*
- *package manager*
- *project*
- *repository*
- *source package*
- *token*

Anaconda

An easy-to-install, free collection of open source packages, including Python and the conda package manager. Over 250 packages are installed with the Anaconda distribution. After installing Anaconda, you can install or update over 7,500+ additional open-source packages contained in repo.anaconda.com using the `conda install PACKAGE` command.

NOTE: Replace `PACKAGE` with the name of the desired package.

Anaconda Client CLI

The Anaconda Client command line interface (CLI) allows you to log into Anaconda Enterprise 4 Repository directly from your Terminal window or Anaconda Prompt and manage your account. It is not necessary for downloading or installing packages from Repository.

Anaconda Enterprise 4 Repository

Repository hosts hundreds of useful Python packages, notebooks and environments for a wide variety of applications. You do not need to be logged in, or even need a Repository account, to search for packages, download and install them.

conda

The conda package manager and environment manager program that installs and updates packages and their dependencies, and lets you easily switch between environments on your local computer.

conda build

The command line interface that lets you build packages for your local operating system.

conda package

A compressed file containing system-level libraries, Python modules, executable programs or other components. The file uses the tarball format.

label

Part of the URLs for Repository 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.

EXAMPLE: The following repositories are equivalent:

```
https://<your-anaconda-repo>/sean/label/main
https://<your-anaconda-repo>/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
```

Using Anaconda Client, *package* developers can create labels such as development labels/dev, test labels/test or other labels that are searched only if the user specifies the label.

EXAMPLE: The following search examples use a *namespace* of “travis”:

- `https://<your-anaconda-repo>/travis/labels/main`—the label searched by default.
- `https://<your-anaconda-repo>/travis`—same as default label with main implicit.
- `https://<your-anaconda-repo>/travis/labels/dev`—contains the packages in development.
- `https://<your-anaconda-repo>/travis/labels/test`—contains packages ready to test.
- `https://<your-anaconda-repo>/travis/labels/any-custom-label`—any label you want to use.

Miniconda

A minimal installer for *conda*. Like *Anaconda*, Miniconda is a software package that includes the conda package manager and Python and its dependencies, but does not include any other packages. Once conda is installed by installing either Anaconda or Miniconda, you can install other software packages directly from the command line using `conda install`.

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://<your-anaconda-repo>/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—such as `linux-64`—and the `noarch` directory.

on-site repository

Repository is powered by Anaconda Server. You can run your own server behind firewalls or in air gapped environments. For more information, contact sales@anaconda.com.

organization account

An organization account is a type of account on Repository that allows multiple individual users to administer packages and control package access to different user groups. It also includes a large amount of storage space.

Use organization accounts to:

- Share packages, environments or notebooks under an organization’s account rather than your personal account.
- Assign multiple account administrators.
- Assign different access permissions to groups of users and customize per-package access by group.

package

All files uploaded to 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.

EXAMPLE: If a user “travis” uploads a test package named “testpkg,” it is visible at:

```
https://<your-anaconda-repo>/travis/testpkg
```

Repository packages may contain multiple files, and these files may be data files such as comma separated value (CSV), tab separated value (TSV), or text (TXT), or package files such as conda packages, PyPI packages or R packages.

package manager

A tool that facilitates the process of installing, upgrading, configuring and removing packages on Repository. Repository supports two package managers, *conda* and *PyPI*.

For more information, see *Using package managers*.

project

Anaconda Project is an open source tool created by Anaconda that delivers light-weight, efficient encapsulation and portability of data science projects.

repository

A storage location from which software packages may be retrieved and installed on a computer.

source package

“Source” packages are source code only, not yet built for any specific platform, and might be compatible with all, some or only one of the platforms.

token

An access control token is a random alphanumeric string that is inserted into a URL that you give to another Repository user. The token allows them to download a package or add a channel that you have marked private. Only those users with the correct access token can access the private file. You can use Client to generate tokens to give other users specifically scoped access to packages and collections.

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This documentation is provided for the use of our customers who have not yet upgraded to the current version. Your version number is located in the footer.*

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Adding a PyPI or Anaconda mirror to your Anaconda repository installation

You can create a local copy of the PyPI or Anaconda repositories. Included here you will find an explanation of how to use Anaconda repository's convenient syncing tools to create and configure local mirrors:

- *Mirroring an Anaconda repository*
- *Mirroring a PyPI repository*
- *Configuring your mirror*
- *Customizing your PyPI or Anaconda repository mirror - v 2.2.0 or earlier*

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Mirroring a PyPI repository

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* Anaconda Enterprise 4 Repository Versions 2.21.0 and earlier do not contain the version number in the footer. Please contact your Enterprise Support representative to get your version number.

7.4.2 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*
- *Team collaboration*
- *Access control*
- *Sharing projects*
- *Project tags*

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.

In this getting started guide, you will:

- 1. *Download the AEN cheat sheet*
- 2. *Access your user home page*
- 3. *Create a new project*
- 4. *Add collaborators*
- 5a. *Open an example notebook, OR*
- 5b. *Create a new environment and notebook*
- 6. *Create checkpoints for version control*
- 7. *Share your notebook and environment with others*

- 8. See what to do next

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.

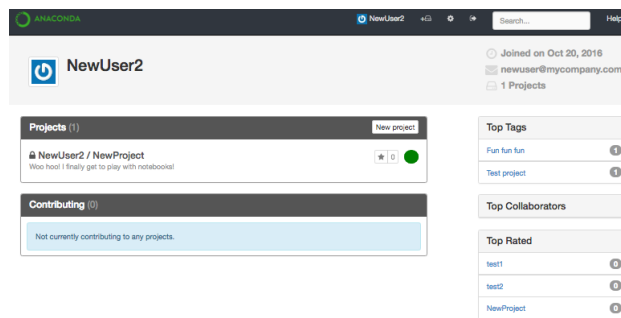
NOTE: Use the domain name and not the IP address when you connect to AEN. Using the IP address can cause TLS and security certificate errors.

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:



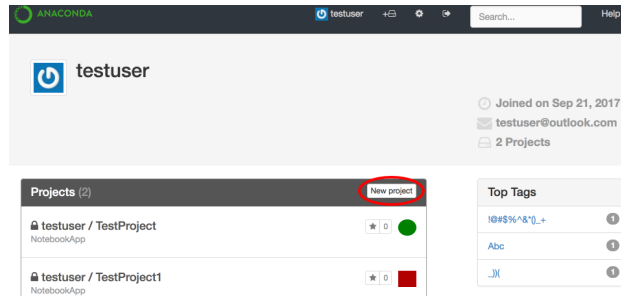
3. Create a new project

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 in the Anaconda web interface. The form has a title 'New Project' and a subtitle 'Create your project here!'. It contains two input fields: 'Project Name' and 'Summary'. Below the 'Project Name' field, there is a note: 'Project names must start with a letter and contain only alphanumeric characters.' Below the 'Summary' field, there are two radio buttons for project visibility: 'Public' (with the text 'Anyone can see this project. Collaborators have write access') and 'Private' (with the text 'No one can see this project except collaborators.'). The 'Private' option is selected. 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.

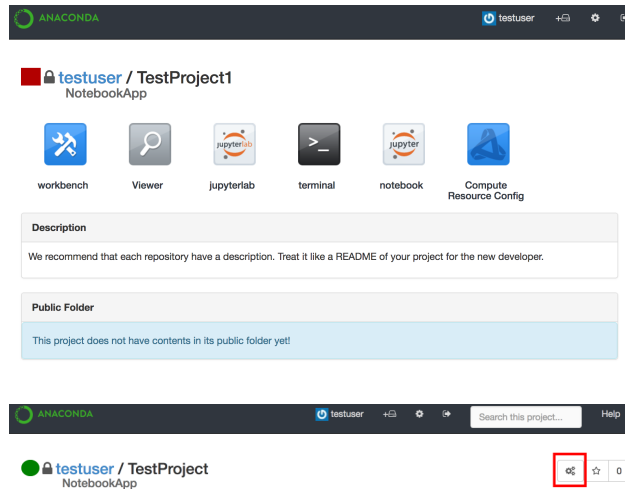
TIP: You can update the project summary and description at any time from the **Project** menu in the Project Settings. To return to your project at any time, click the project name.

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.

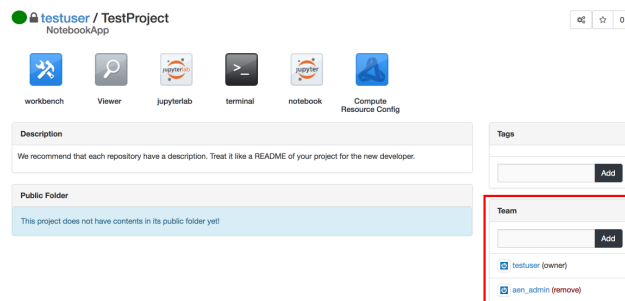
4. Add collaborators

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.

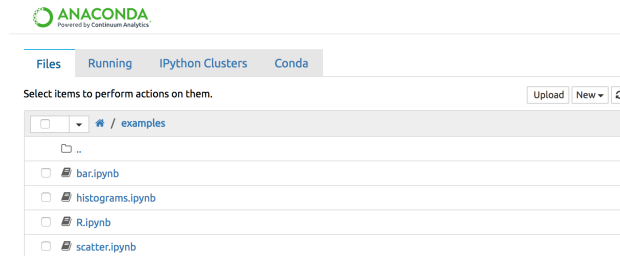


1. Repeat these steps for each team member you want to add as a collaborator.

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.



1. Select any of the example notebooks.
2. To see the default results of the formulas used in the displayed notebook, in the **Cell** menu, select Run All.
3. To experiment with changing the notebook, edit any of the formulas in the notebook.
4. 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.

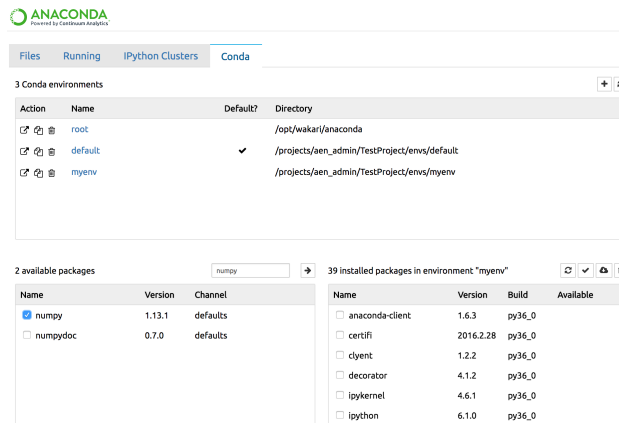
To create a new environment:

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.



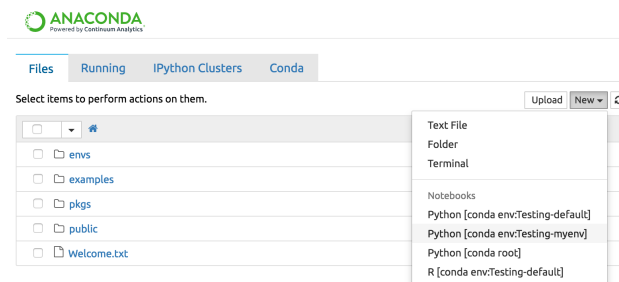
1. Click the Install icon.
2. To confirm your installation, click the Install button.

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*.



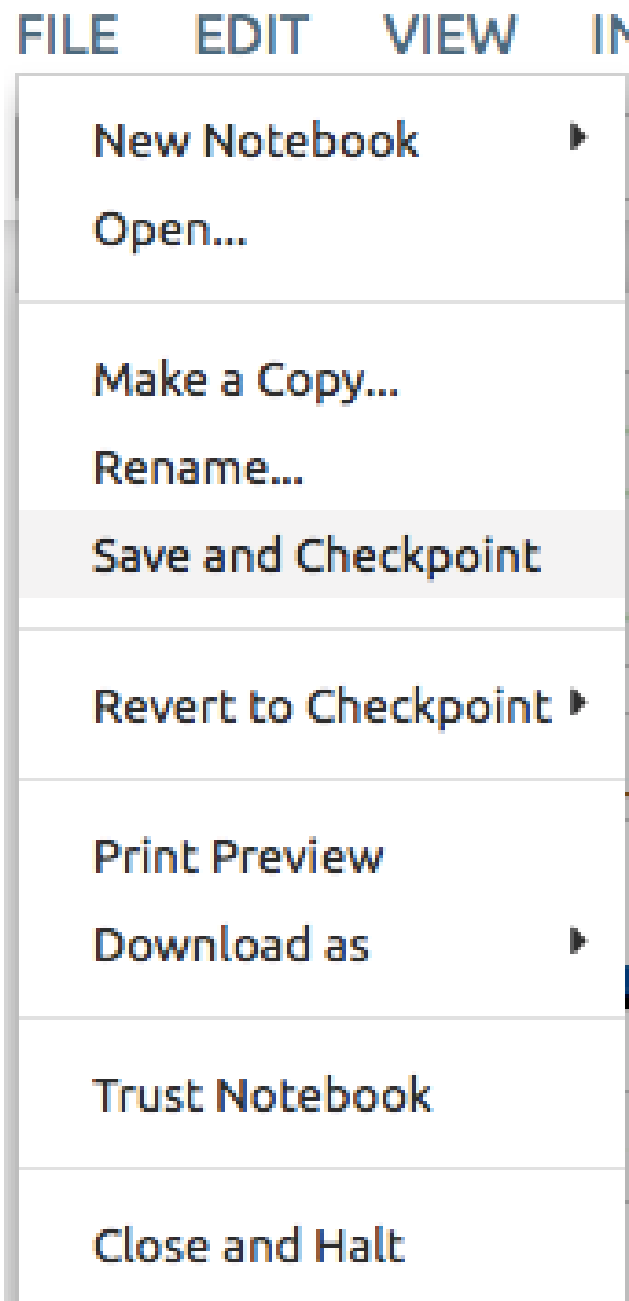
NOTE: If you do not see your new environment listed under Notebooks, next to the New button, click the Refresh button.

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

- *Types of files searched*
- *Search indexing*
- *Using search constructs*
- *Searching metadata fields*
- *Searching a project*
- *Saving a search*
- *Removing a saved search*

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.

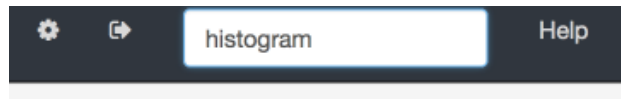
Searching metadata fields

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

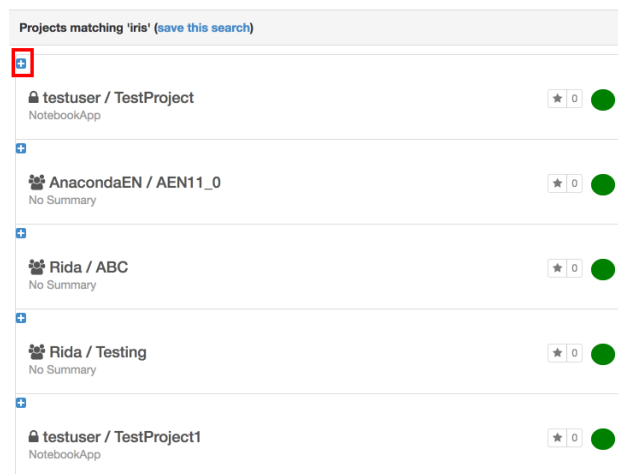
1. In the Search box, type a string of text:



TIP: Search by glob patterns, which are similar to file matching in the command line.

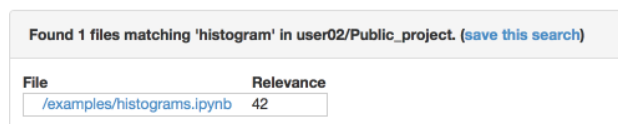
EXAMPLE: To find projects in the test family that are numbered from 00 to 99, search for `Test-??`. To find all projects whose name ends with “Stats,” search for `*Stats`.

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:



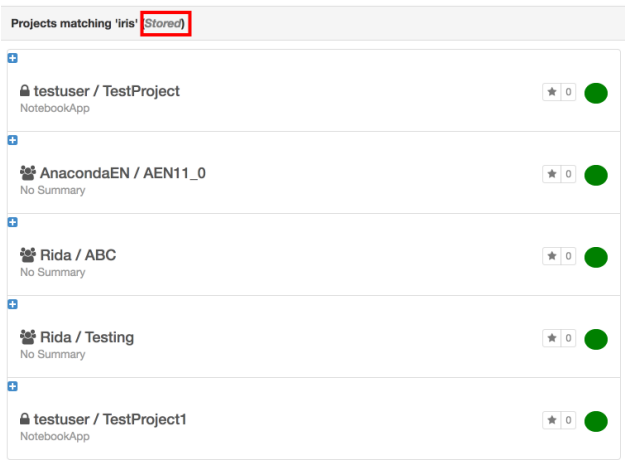
TIP: Click the project name to open the project’s home page.

4. To view a file, click its file name in the matching files list:



Saving a search

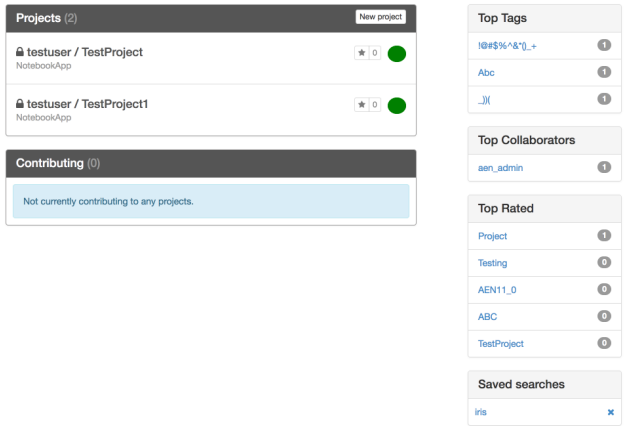
- 1. At the top of the search results, click Save this search:



The “save this search” text changes to “stored” and your search is saved. Your saved searches are listed on your home page.

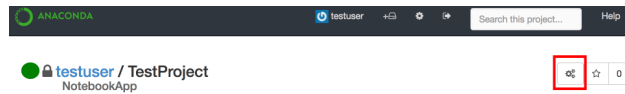
Removing a saved search

- On your home page, in the Saved searches section, click X next the saved search that you want to remove:

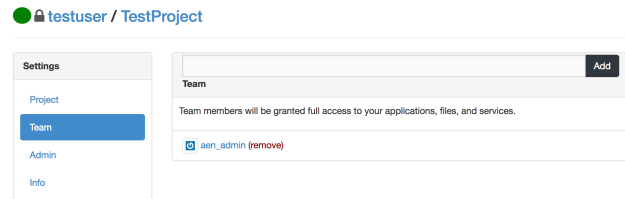


Adding and removing team members on a project

- 1. On the project home page, click the Project Settings icon to open the Project Settings page.



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*
- *Controlling non-team member access*

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.

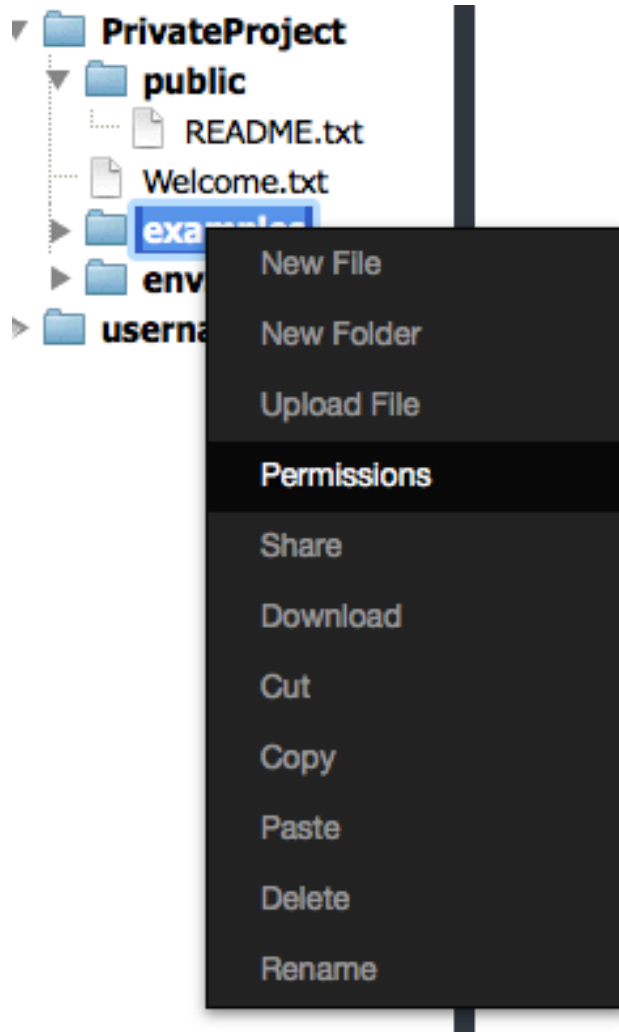
To change a project's permissions:

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:
6. Next to the team member's name, select or deselect the permissions for that user.

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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username"/>	Group	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	User	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	Group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	User	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	Group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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.

7. 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:

1. *Copy or move the file or folder to your home directory.*
2. *Give the user read and execute access to your home directory.*
3. *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.

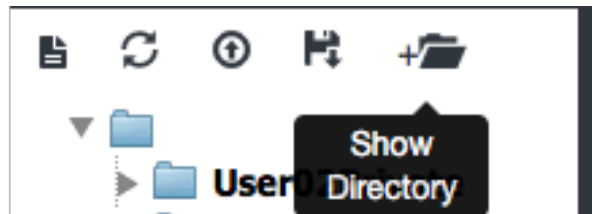
NOTE: If you change permissions for a folder instead of a file, the user will be able to see and access any files within that folder.

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:

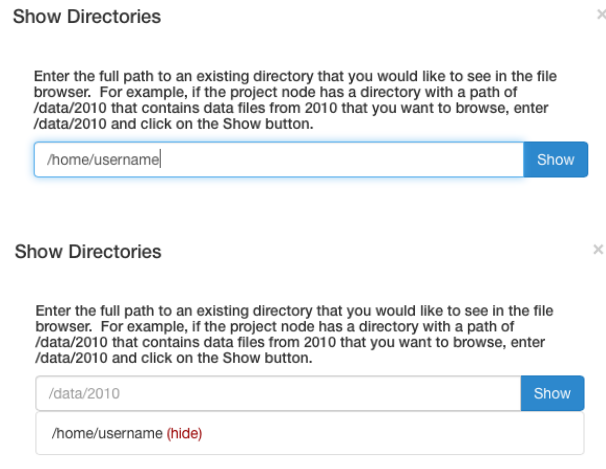


The Show Directories dialog box displays.

2. In the text box, type `/home/[yourusername]`.

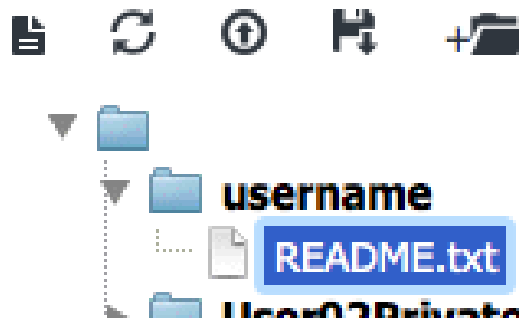
NOTE: Replace `[yourusername]` with your AEN username.

3. Click the Show button.
4. Verify that the folder is now displayed below the text box:



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.

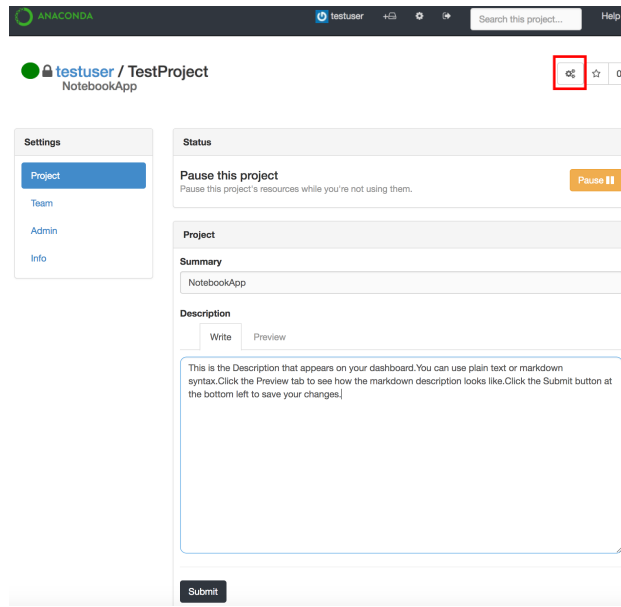
The shared file is displayed in the File Manager:



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.

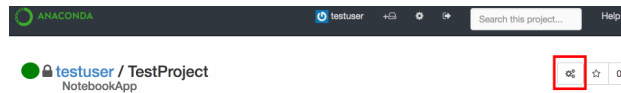
1. On the project home page, click the Project Settings icon to open the Project Settings page.
2. In the **Settings** menu, select Project.



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.



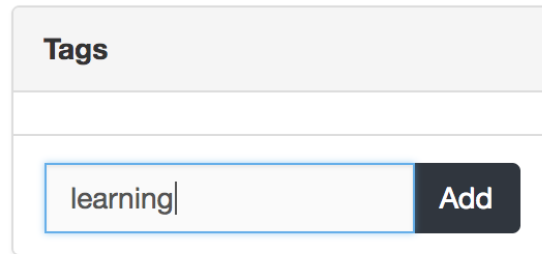
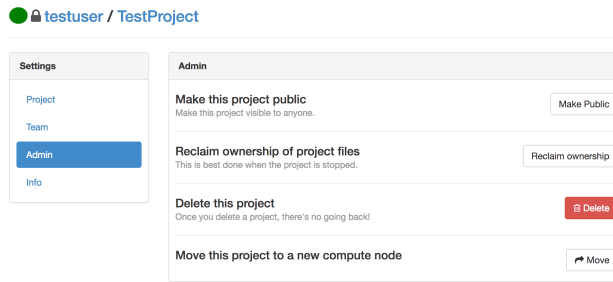
2. In the **Settings** menu, select Admin.
3. Click the Make Public button.
4. If the project is already public and you want to make it private, click the Make Private button.

Tagging a project

Existing tags assigned to a project are listed in the Tags section on the project's home page.

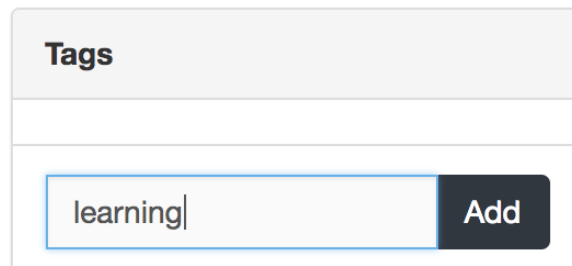
Adding a tag

1. In the Tags box, type the name of the tag you want to add:

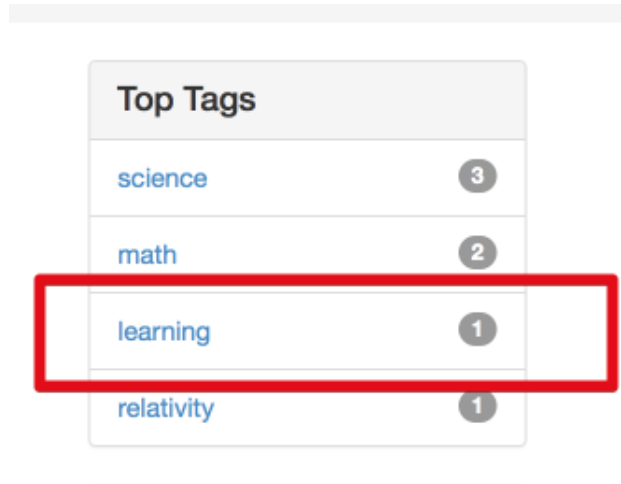


2. Click the Add button.

The new tag is added to the Tags list:

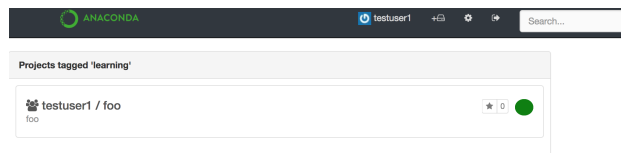


If the tag was not already in the Top Tags list on your user home page, it is added. If the tag was already listed because another project used it, the number next to the tag is incremented:



Removing a tag

1. On your user home page, in the Top Tags list, click the tag name.



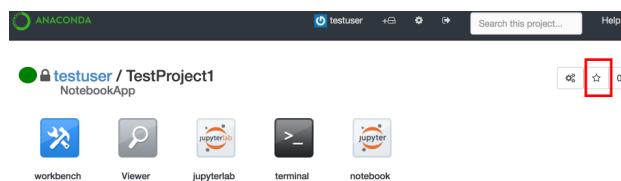
1. In the Tags list, click the X button next to tag name.

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:

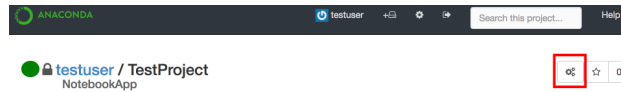


3. To unstar a project, click the Star icon again.

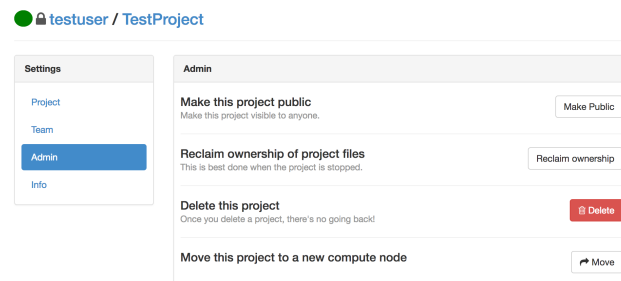
Claim ownership of a project

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.



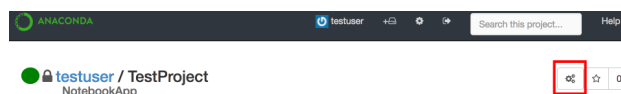
3. In the **Settings** menu, select Admin.



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.

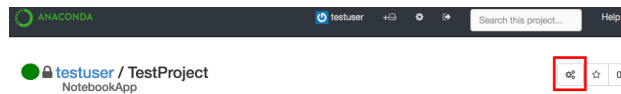


2. In the **Settings** menu, select Project.

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.

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:

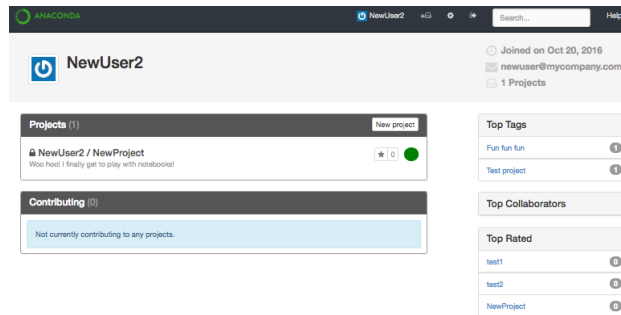
Top Rated	
einstein	2
euler	1
laplace	1
plank	1
Public_project	1

The number next to a project represents the number of stars that have been given to that project.

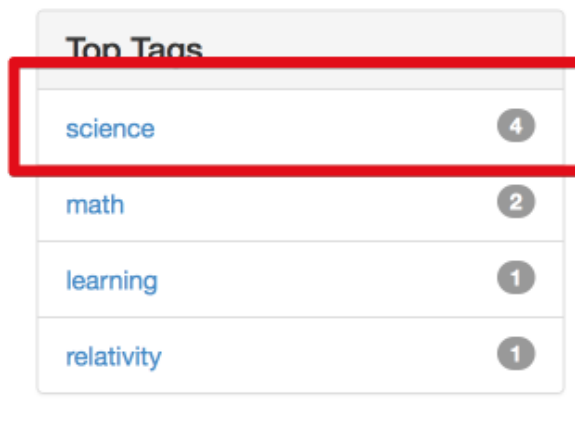
Click a project name to view the project's home page.

Using tags to find a project

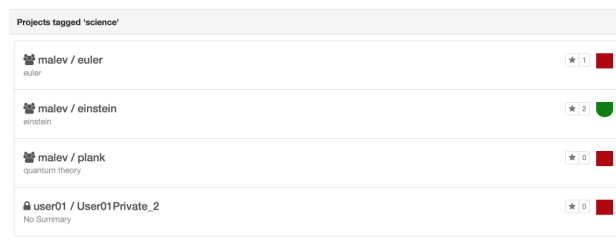
The top tags used on your projects are listed on your home page:



To list all projects that share a specific tag, click the tag name:



A list of projects with the selected tag is displayed:



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

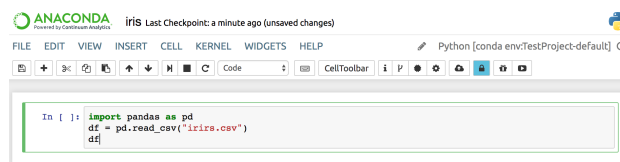
For information on sharing projects via the project settings and access control, see [Sharing projects](#).

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.

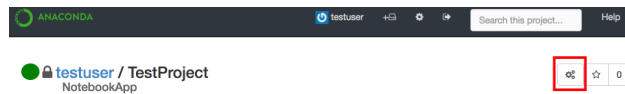
Other ways to share a notebook

- 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*.

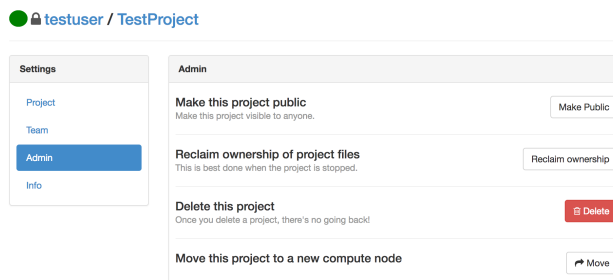
Deleting a project

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.



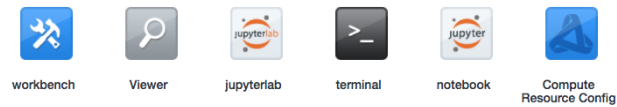
4. Click the Delete button.

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 into 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

- *Opening Workbench*
- *Using File Manager*
- *Opening the Workbench terminal*

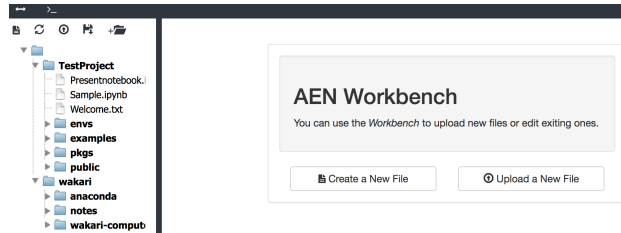
Workbench is a file viewer and manager that includes a file editor and file permissions manager.

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.

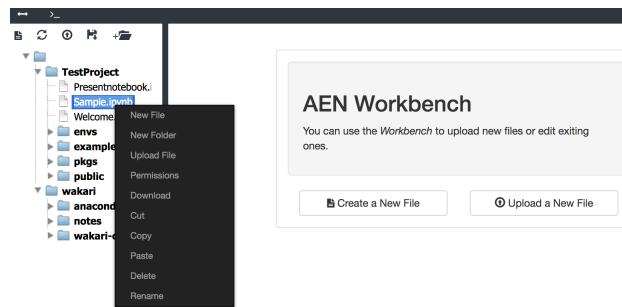
Using File Manager

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:

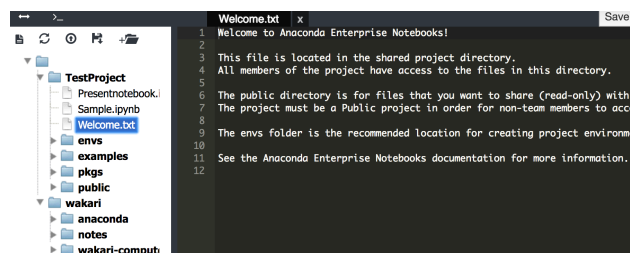
1. Right-click on any folder to display the options drop-down menu.
2. Select one of the following options:
 - New File—Create and edit a new file.
 - New Folder—Create a new folder.
 - Upload File—Upload a file to the selected folder. You can also drag a file to the folder.
 - Permissions—*Control access 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:

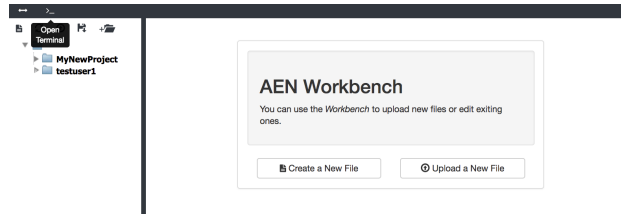


2. When you finish editing the file, click the Save button.

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.

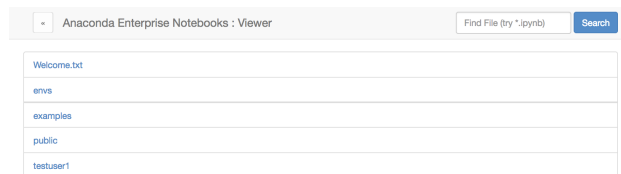
To move between terminal windows, click the **Terminal** tab in the navigation bar, then select the number of the terminal window you want to work in.

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*.

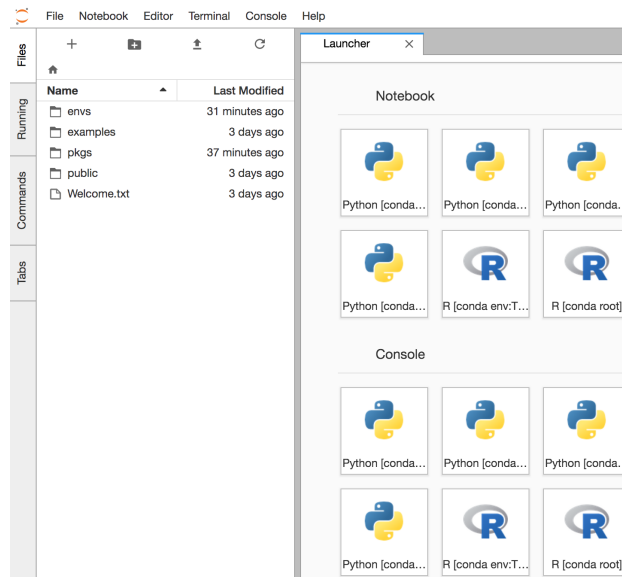
For more information about JupyterLab, see the [documentation](#).

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:

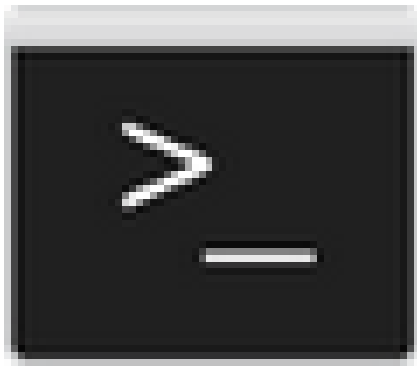
```

+ 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

- *Opening the Jupyter Notebook application*
- *Using example notebooks*
- *Creating a new 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.

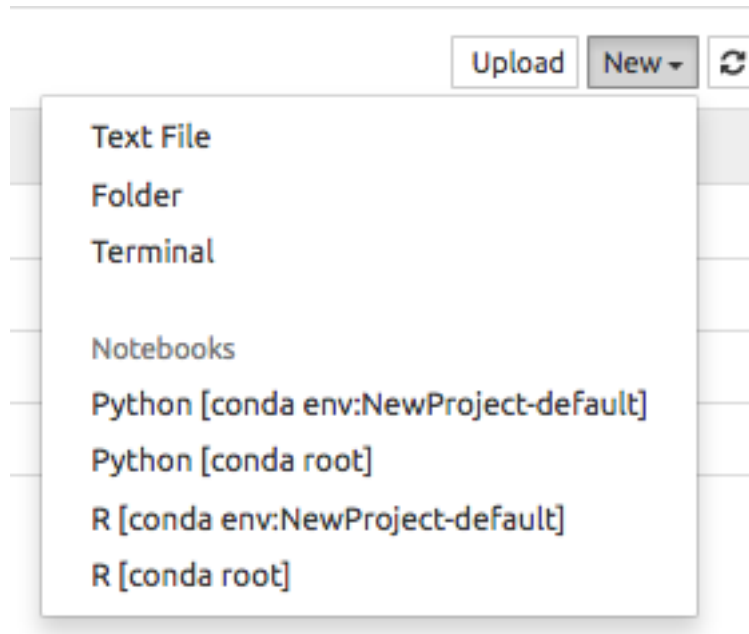
Open any example notebook to experiment and see how it works.

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:

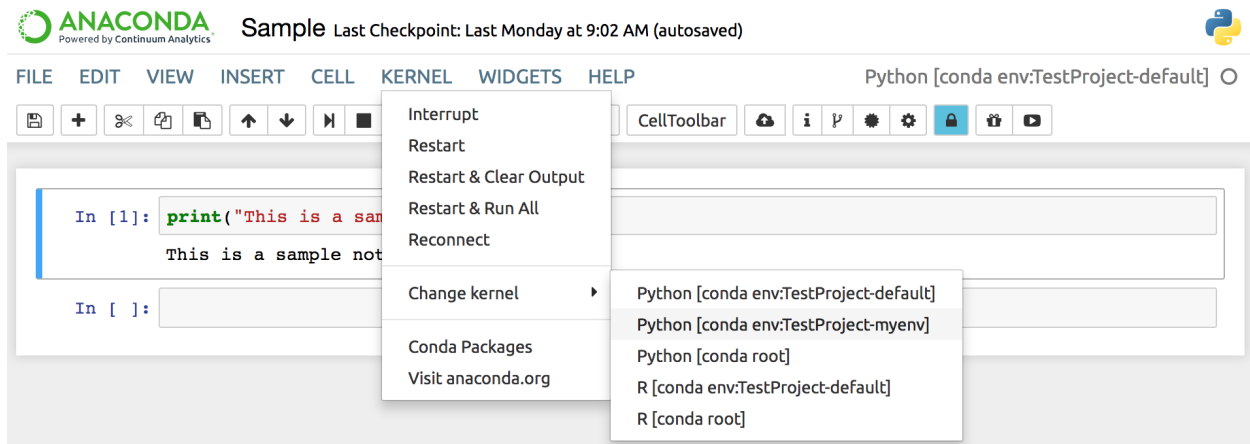
- *Synchronize Environments* with Jupyter from the **Kernel** menu.
- *Locking* adds multi-user capability from the Lock button.
- *Revision Control Mechanism (RCM)* adds Status, Checkout and Commit buttons.
- *Conda environment and package management* tab.
- *Conda notebook* adds conda management inside 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:

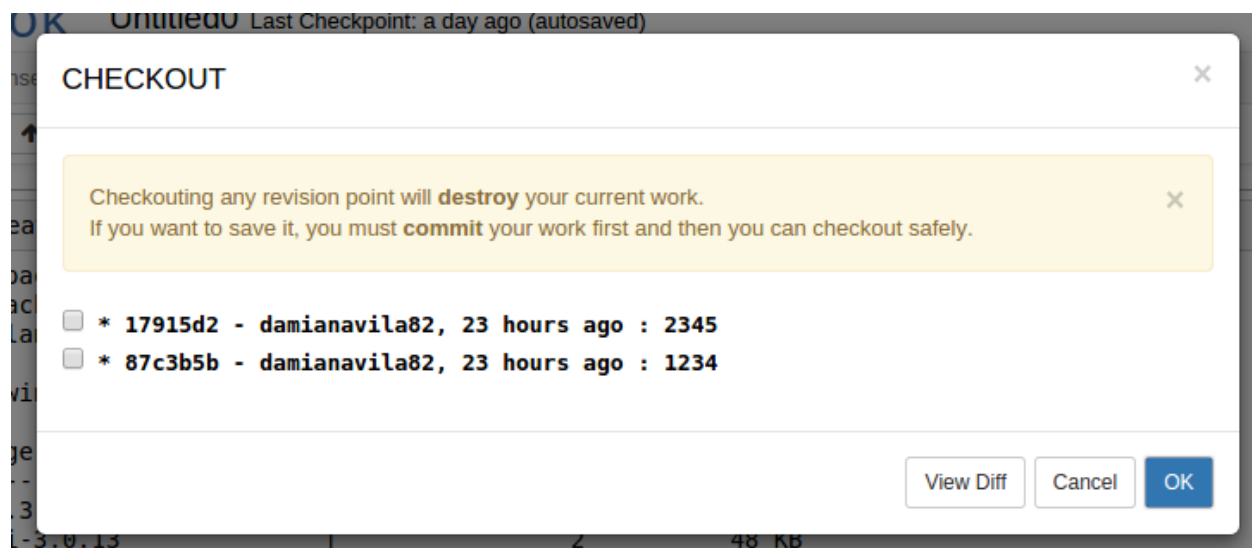
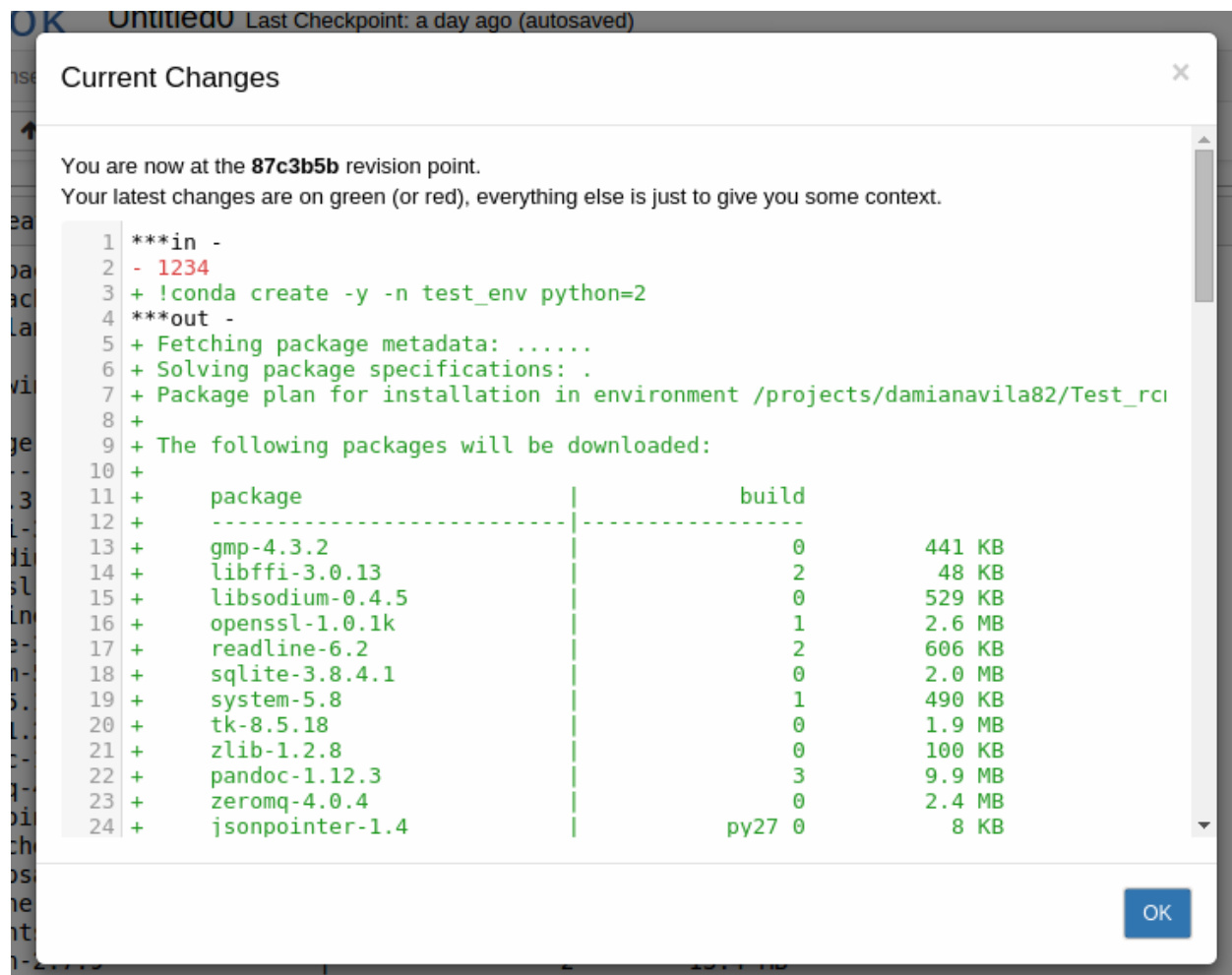
Checking out a previous revision

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.

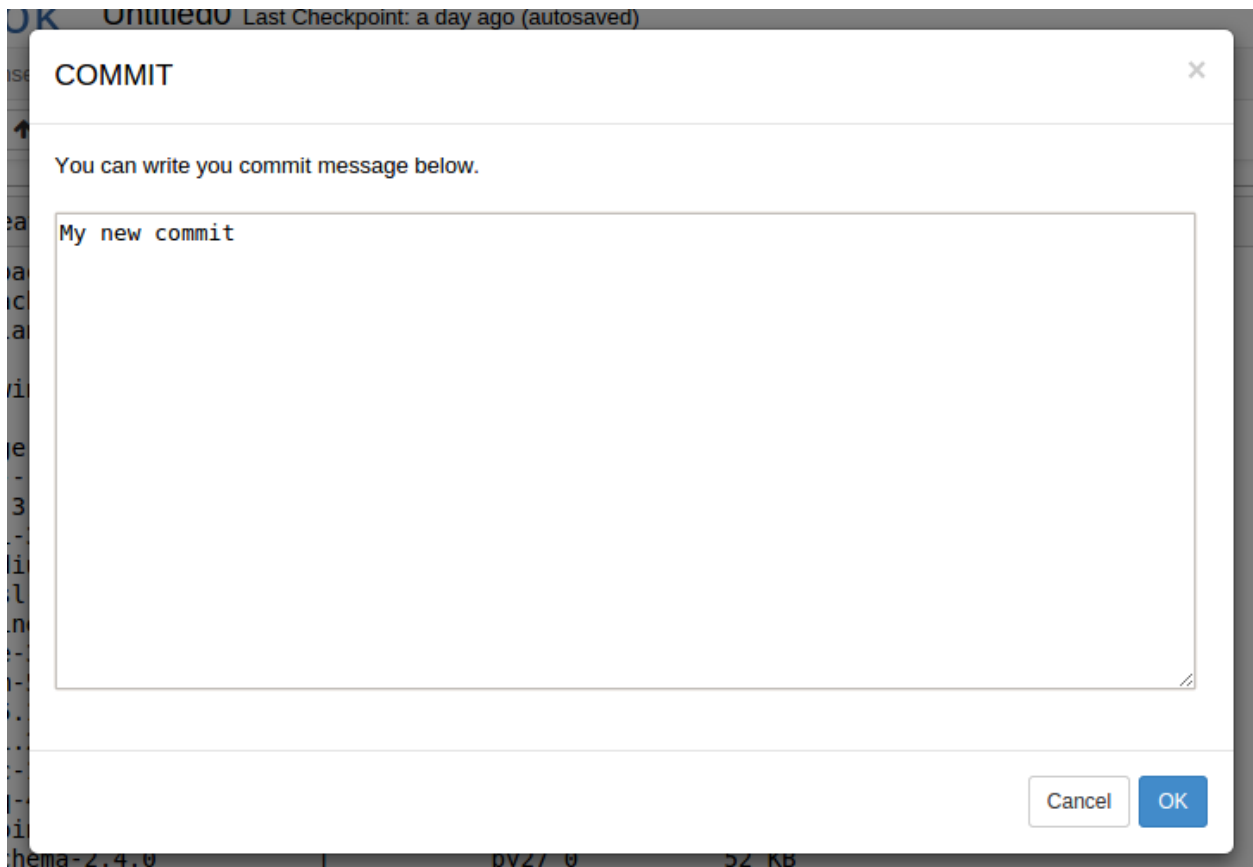
A side-by-side comparison is displayed.

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.

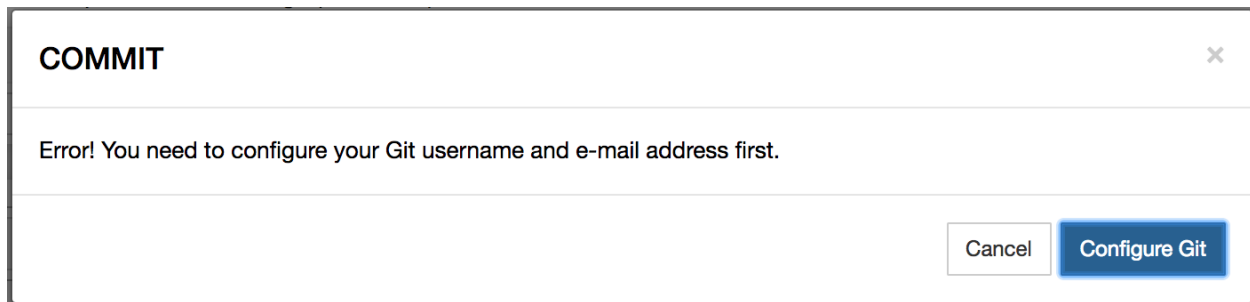
Clicking the Commit button displays:



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:



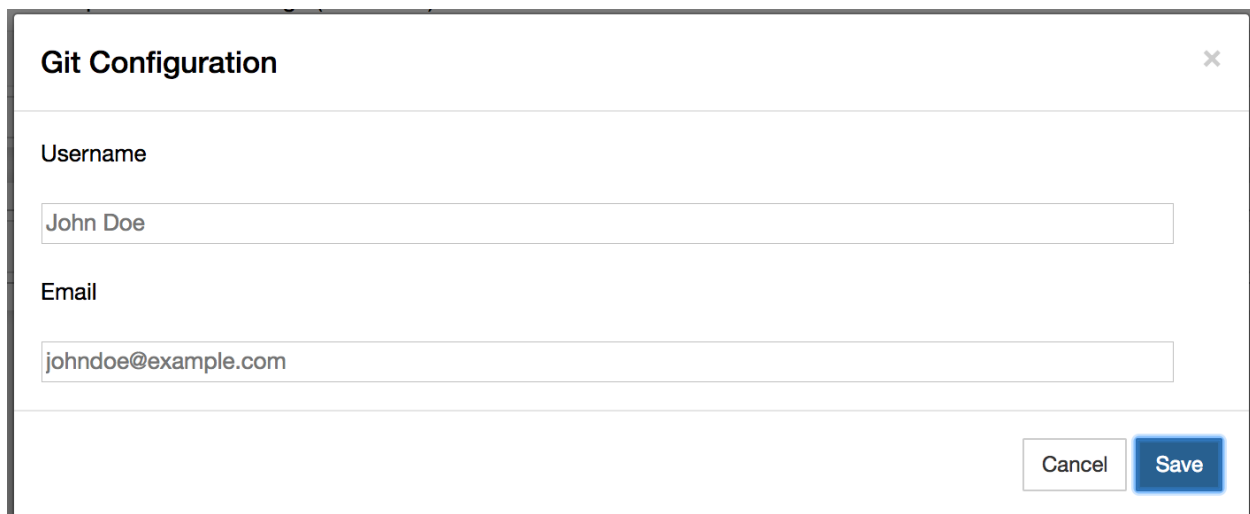
Configure Git and then try to commit again.

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:



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

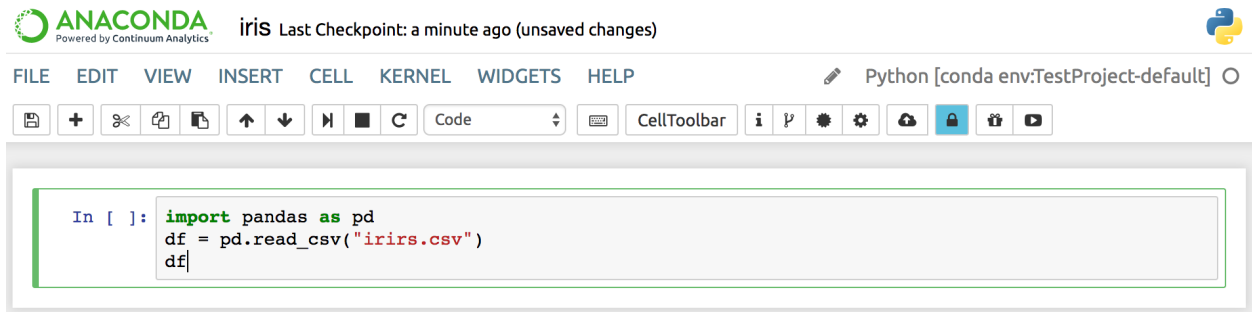
Name	Version	Build	Available
<input type="checkbox"/> _license	1.1	py27_1	
<input type="checkbox"/> alabaster	0.7.10	py27_0	
<input type="checkbox"/> anaconda	custom	py27_0	
<input type="checkbox"/> anaconda-client	1.5.1	py27_0	
<input type="checkbox"/> anaconda-project	0.6.0	py27_0	
<input type="checkbox"/> 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:



Using the Conda Notebook extension

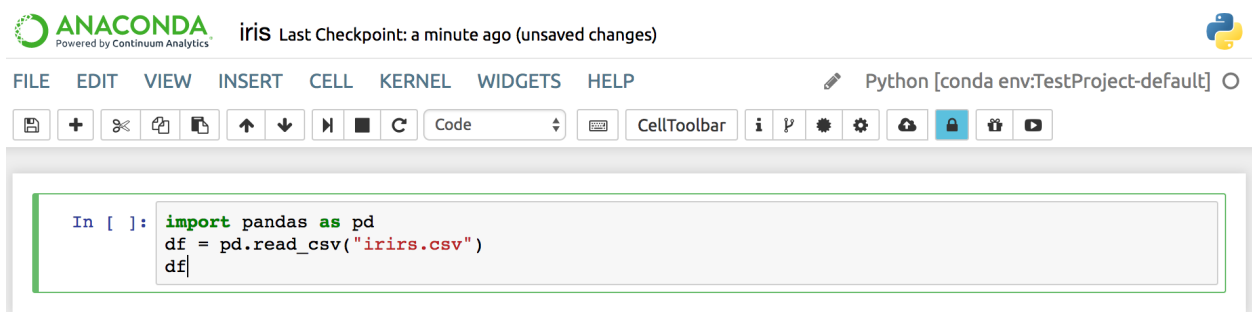
The Conda Notebook extension adds the Conda Packages option to the **Kernel** menu.

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

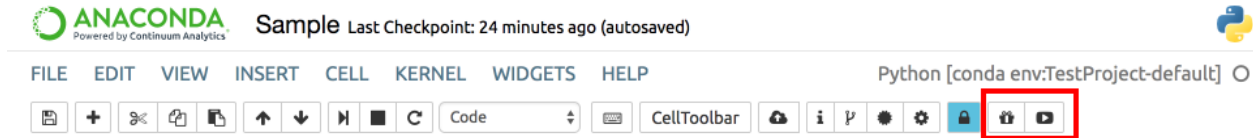
The Anaconda Cloud extension adds the Cloud button to your notebook, allowing you to easily upload your notebook to Cloud:



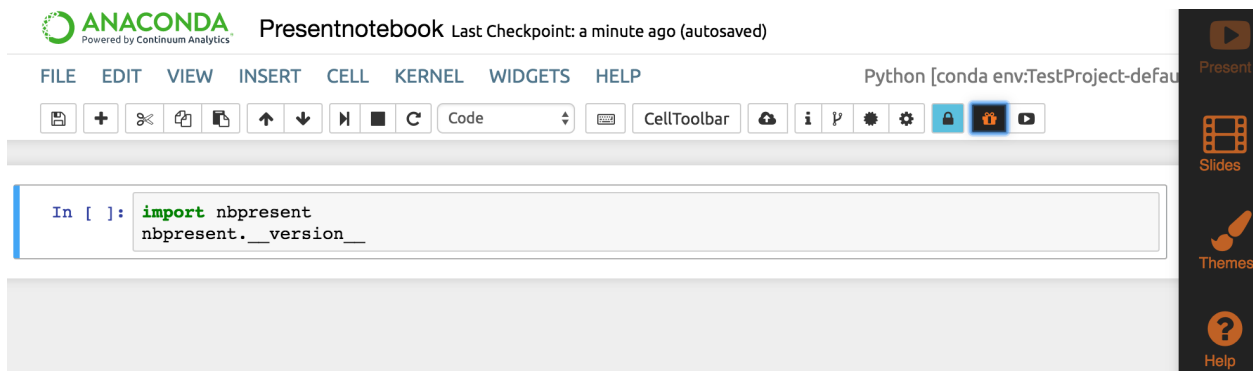
Using the Notebook Present extension

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.



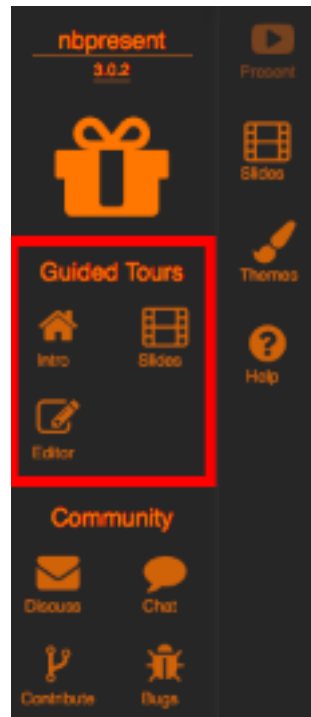
The Notebook Present sidebar is displayed on the right side of your browser:

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:
- 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.

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

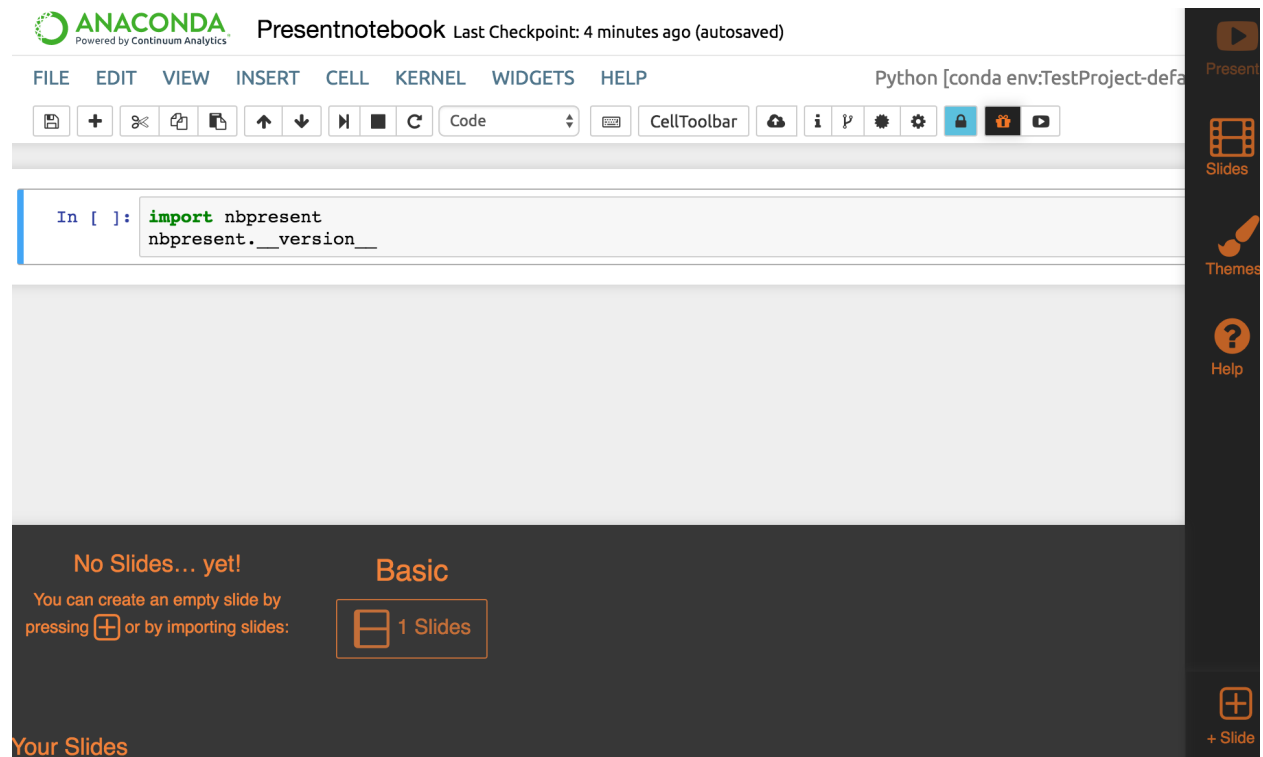
: copy selected cells

: paste cells above

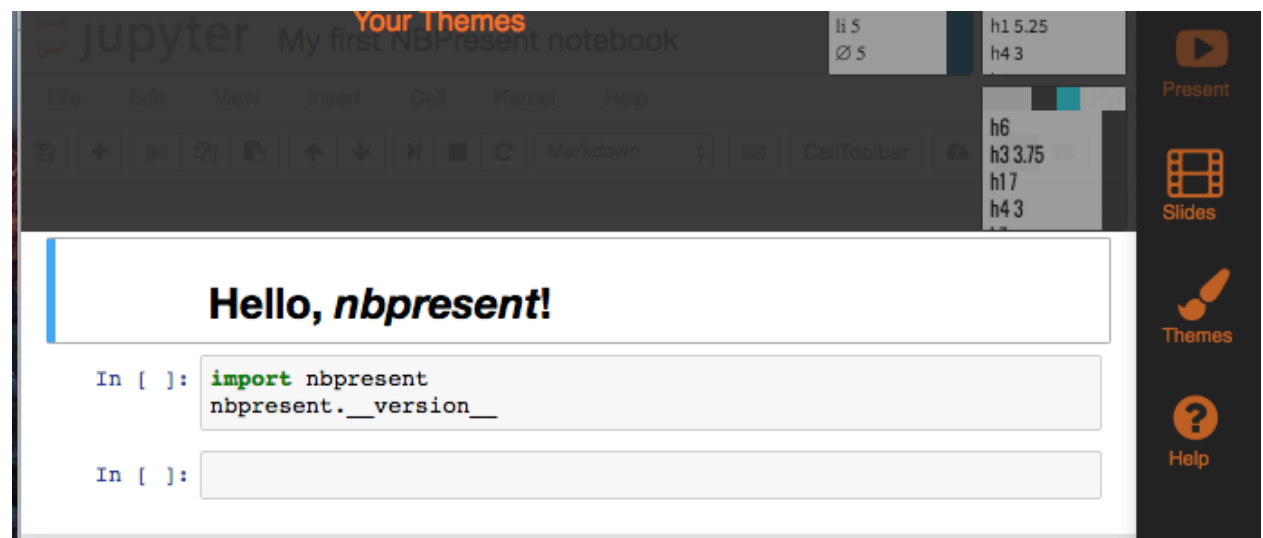
: paste cells below

: undo cell deletion

Close



- 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.

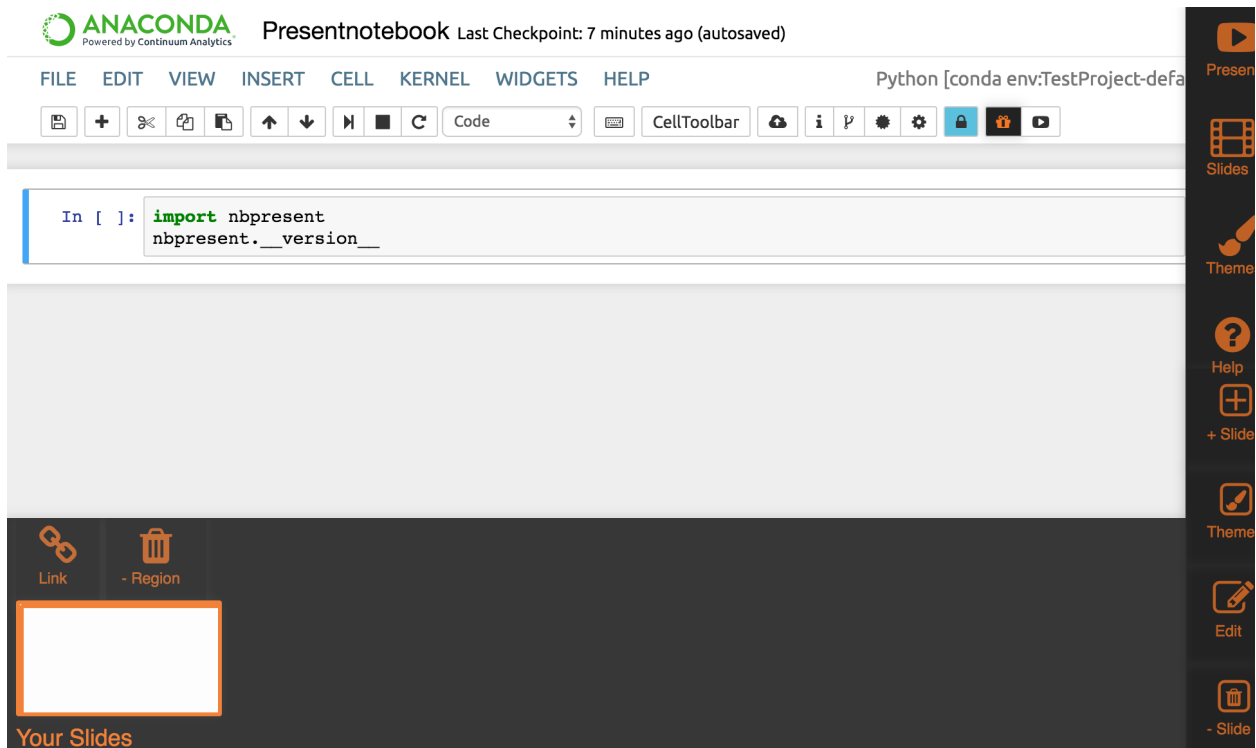


- Saving—Whenever you save your Notebook, all your presentation data will be stored right in the Notebook .ipynb file.

- **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.

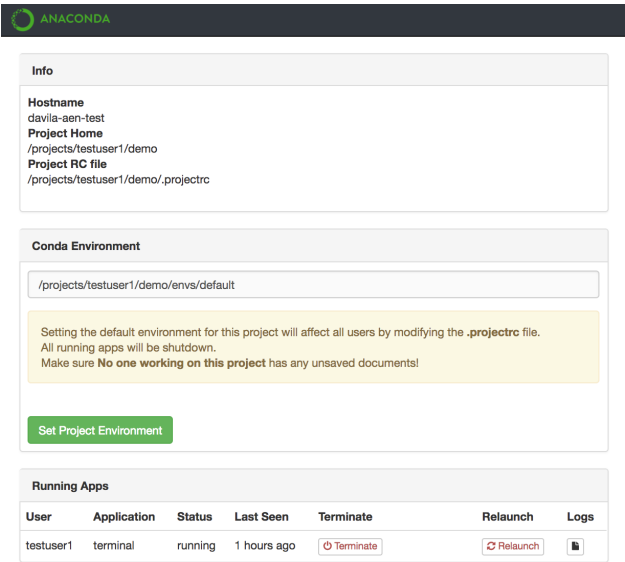
Using Compute Resource Configuration

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

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.

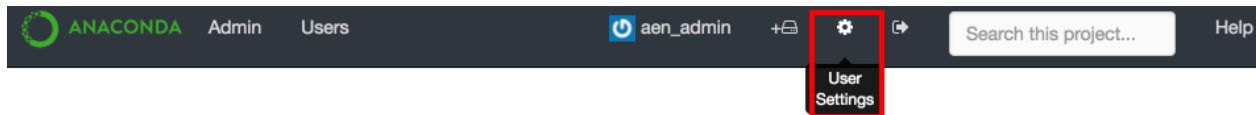
To stop and re-launch any individual application, click the Relaunch button.

To review the run logs of any active application, which may be useful for troubleshooting, click the Logs button.

Managing your account

- *Updating your public profile*
- *Changing your password*
- *Deleting your AEN account*
- *Viewing account operations*
- *Registering an application*

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

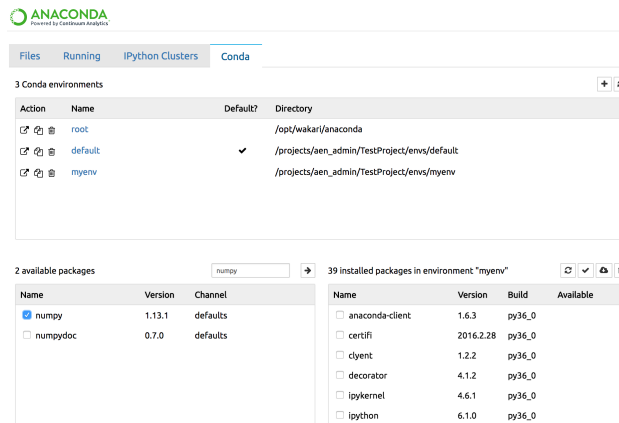
You can create, activate, and install packages and deactivate environments from within the Notebook menu bar.

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.

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
```

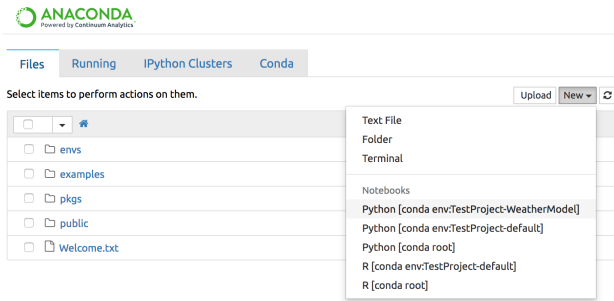
TIP: Python, pip and Jupyter Notebooks are automatically installed in each new environment. You only need to specify NumPy in this command.

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 its output cells.

EXAMPLE: The following screenshot is of a cumulative density function (CDF) plot using values taken from a normal distribution:

For more information, including a [gallery](#), [examples](#), [documentation](#) and a [list of plotting commands](#), see the [Matplotlib website](#).

Bokeh

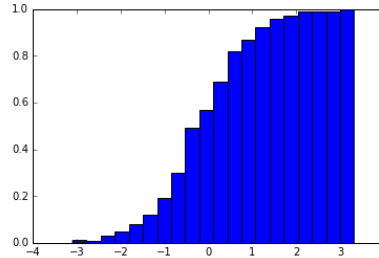
Bokeh is an interactive visualization library that targets modern web browsers to provide elegant, concise construction of novel graphics.

To display Bokeh figures in the output cells of a notebook running the default environment, run:

```
In [1]: import matplotlib.pyplot as plt
        %matplotlib inline

In [2]: import numpy as np
        x = np.random.normal(size=100)

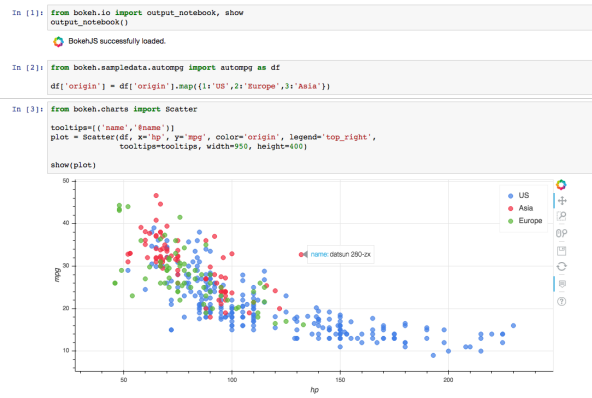
In [3]: plt.hist(x, normed=True, cumulative=True, bins=20);
```



```
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.

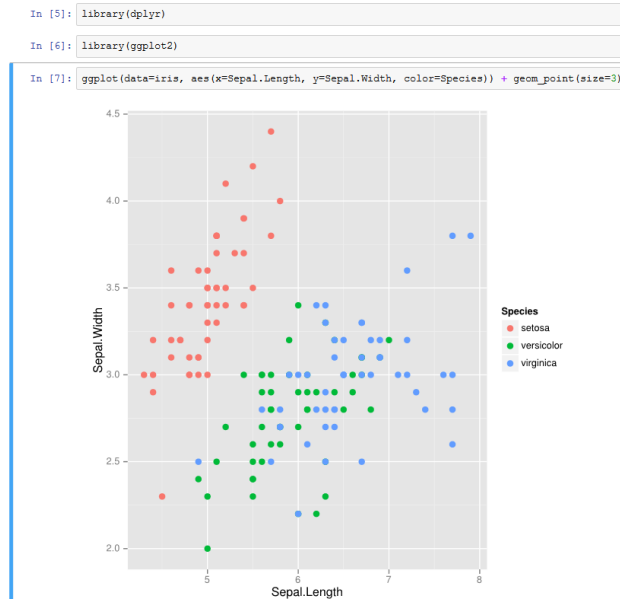
To use ggplot2 with AEN:

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:



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.

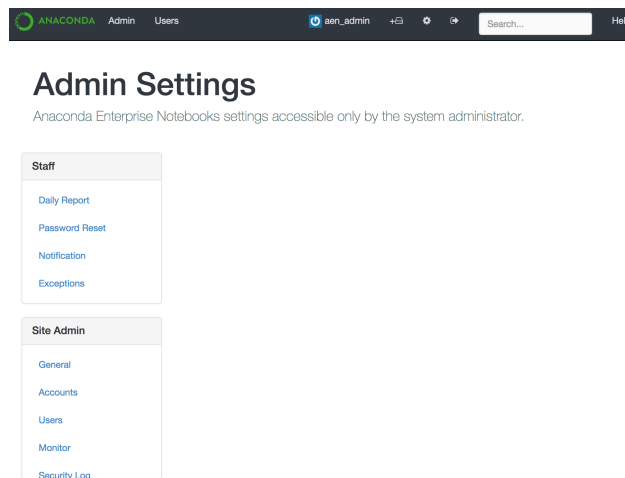
Admin guide

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:



All of the other navigation bar items are the same as for a user account.

Concepts

- *System overview*
- *Server node*
- *Gateway node*
- *Compute node(s)*
- *Supervisor and supervisord*
- *Service Account*
- *Anaconda environments*
- *Projects and permissions*

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.

These services can be run on a single machine or distributed across multiple servers.

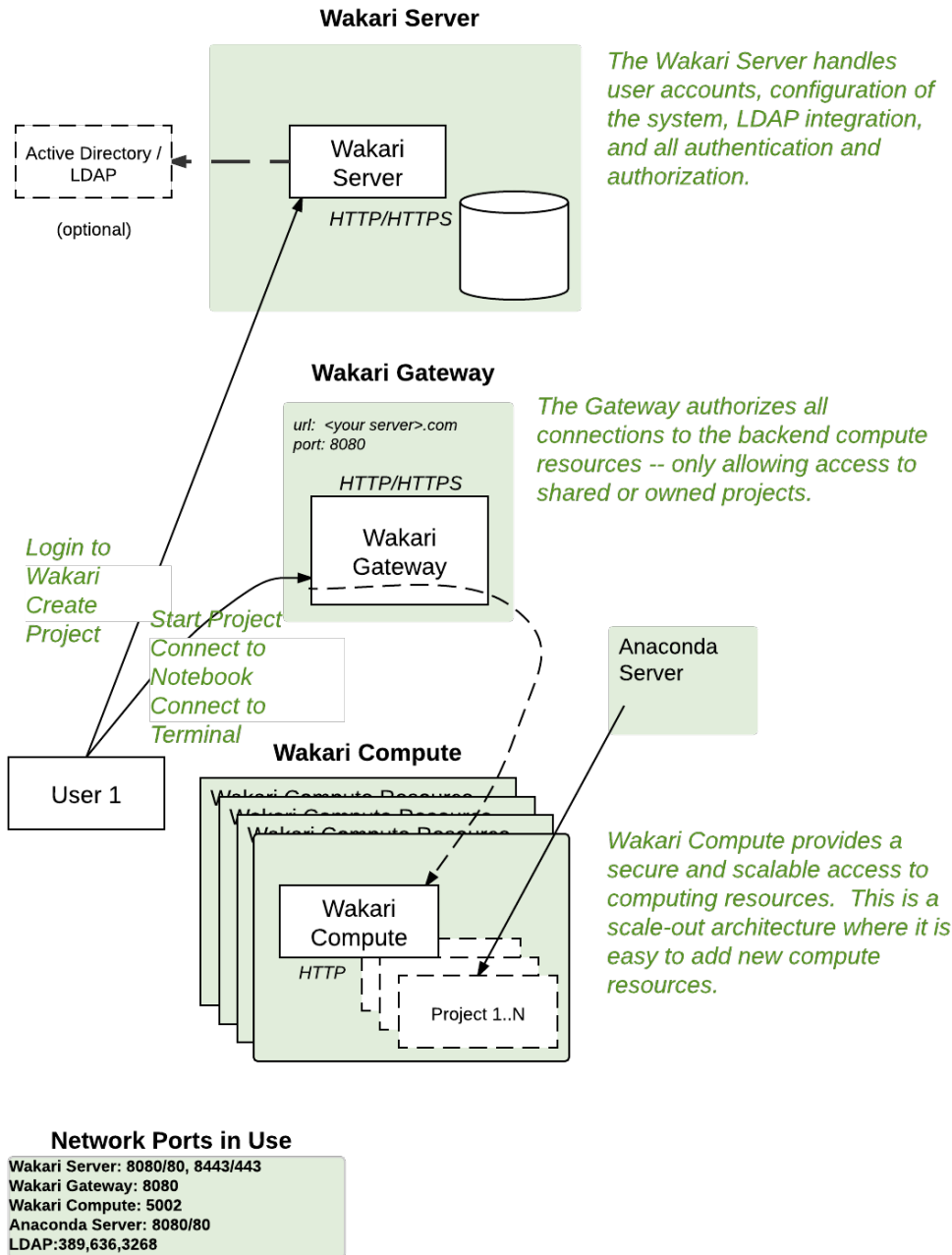
Organizationally, each AEN installation has exactly 1 server instance and 1 or more gateway instances. Each compute node can only be connected to a single gateway. The collection of compute nodes served by a single gateway is called a **data center**. You can add data centers to the AEN installation at any time.

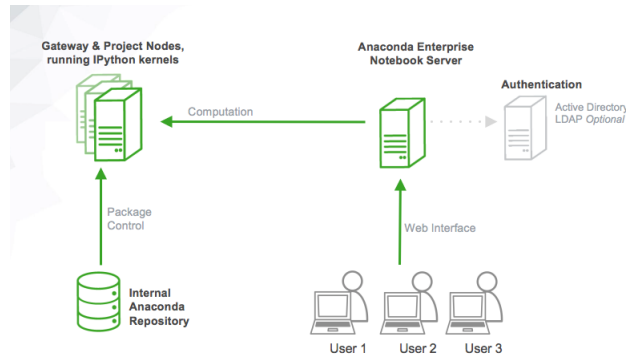
EXAMPLE: An AEN deployment with 2 data centers, where 1 gateway has a cluster of 20 physical computers, and the second gateway has 30 virtual machines, must have the following services installed and running:

- 1 AEN server instance
- 2 AEN gateway instances
- 50 AEN compute instances (20 + 30)

Nodes must be configured and maintained separately.

Anaconda Enterprise Notebooks





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 <code>wk-server</code> .
user	wakari
logs	<code>/opt/wakari/wakari-server/var/log/wakari/worker.log</code>
control	<code>service wakari-server</code>

nginx	details
description	Serves static files and acts as proxy for all other requests passed to <code>wk-server</code> process. *
user	nginx
configuration	<code>/etc/nginx/nginx.conf</code> <code>/opt/wakari/wakari-server/etc/conf.d/www.enterprise.conf</code>
logs	<code>/var/log/nginx/woc.log</code> <code>/var/log/nginx/woc-error.log</code>
control	<code>service nginx status</code>
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 <code>wk-gateway</code> process.
user	wakari
configuration	<code>/opt/wakari/wakari-gateway/etc/supervisord.conf</code>
log	<code>/opt/wakari/wakari-gateway/var/log/supervisord.log</code>
control	<code>service wakari-gateway</code>
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
con-figura-tion	/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)
con-trol	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*
- *Software requirements*
- *Security requirements*
- *Network requirements*
- *Other requirements*
- *What's next*

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 mongodb (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 libXdmc6 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*
- *Gathering IP addresses or FQDNs*
- *Set up variables*
- *What's next*

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

- *Installing the bzip2 package*
- *Downloading prerequisite RPMs*
- *Installing prerequisite RPMs*
- *Setting variables and changing permissions*
- *Running the AEN server installer*
- *Starting NGINX and Elasticsearch*
- *Testing AEN server installation*
- *Updating your license*
- *What's next*

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'
```

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```
=====

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.

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:

No license found!
[Acquire a license](#)

Thank you for using Anaconda Enterprise Notebooks.
 After 45 days, or the end of your paid license agreement, you must renew your license.

Software updates and technical support

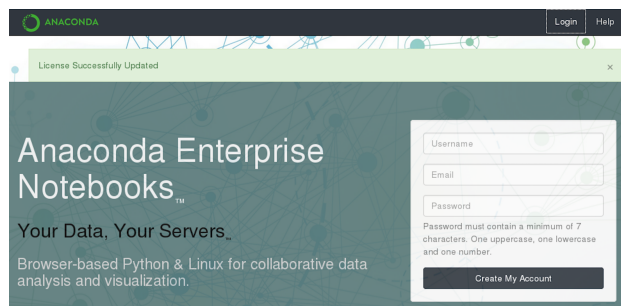
Software updates are free of charge during the initial 1-year period after the license purchase. Each subsequent update automatically terminates your rights to use the previous versions of the software. A commercial license qualifies you for unlimited access to technical support.

[Contact support for more information.](#)

Upload License File

License File

No file selected.



What's next

Install the AEN gateway.

Installing the AEN gateway

- *Setting variables and changing permissions*
- *Running the AEN gateway installer*
- *Registering your gateway*
- *What's next*

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
```

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```
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
```

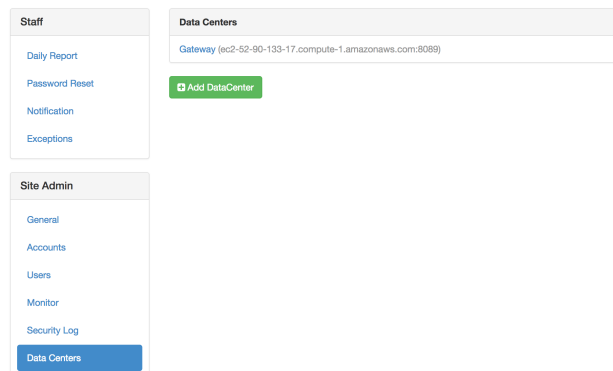

Starting the gateway

Run:

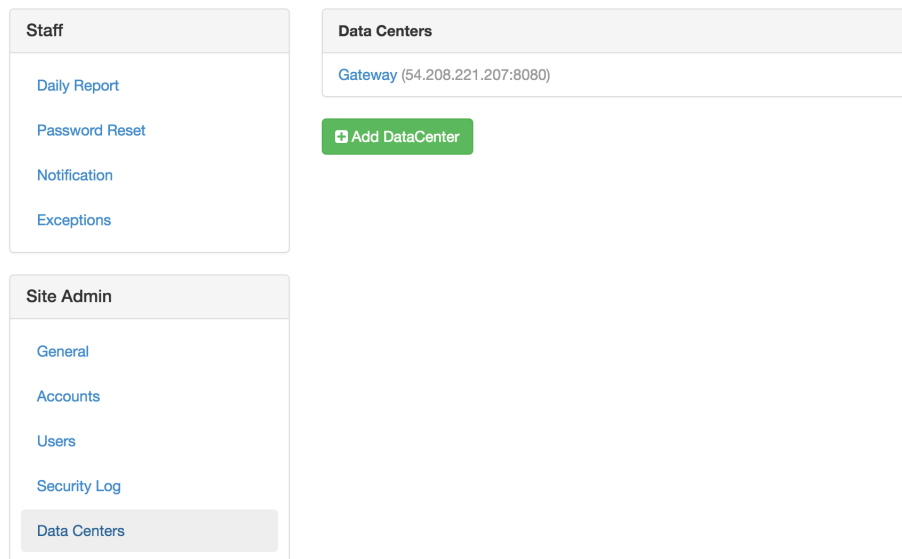
```
sudo service wakari-gateway start
```

Verifying your gateway registration

1. Log into 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:



4. Click your data center:



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](#)

Datcenter 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)

- *Setting variables and changing permissions*
- *Running the AEN compute installer*
- *Restart the AEN Server*
- *Configuring your compute node(s)*
- *What's next*

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:
5. Click the Add Resource button to open the new resource form.
6. Select the data center to associate this compute node with.

Staff

- Daily Report
- Password Reset
- Notification
- Exceptions

Resources [Add Resource](#)

Gateway

ec2-54-210-232-251.compute-1.amazonaws.com [remove](#)

Site Admin

- General
- Accounts
- Users
- Monitor
- Security Log
- Data Centers
- Task Queue
- License

Providers
[Enterprise Resources](#)

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

- *AEN configuration keys*
- *Checking configuration file syntax*

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://<username>:<password>@<host>:<port>/</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.
SESSION_COOKIE_SECURE	<code>false</code>	This key is automatically set to <code>true</code> when SSL is enabled. It will default to <code>false</code> when SSL is not enabled. Manually changing this value may cause the system to malfunction if it's not configured properly.
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 note below about updating the database when setting <code>uniqueEmail</code> .
has_internet	<code>true</code>	Boolean for retrieving the avatar from the gravatar URL. If <code>false</code> 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.

Continued on next page

Table 11 – continued from previous page

Key	Default	Description
- AUTH_TYPE		LDAP subkey—LDAP Authentication types. simple—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 public or anonymous— assigned users who are not logged in to access projects. To disable public access use the special value disabled. For more information, see Configuring sudo customizations .
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 (≥ 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 Configuring SSL .
- 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	To make the AEN compute service create groups with the same uid. Set to true /projects folder resides on an NFSv3 volume. For more information, see Group and user permissions for NFS .
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	13600000 (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 Configuring sudo customizations .
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	60000	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
```

For more information and examples about creating a default project environment with Microsoft R Open (MRO), see *Using MRO in AEN*.

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.

Using MRO in AEN

In AEN 4.2.2 and higher, you can choose to create environments with the Microsoft R Open (MRO) interpreter by installing the `mro-base` package, or create environments with the R interpreter by installing the `r-base` package. Unless you request a change, conda will continue to use the existing interpreter in each environment. In AEN `r-base` is the default.

EXAMPLE: To create a custom environment called `mro_env` with MRO and R Essentials:

```
.. code-block:: bash

sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
  create -c https://repo.anaconda.com/pkgs/main \
  -n mro_env r-essentials
```

NOTE: Conda 4.4 and higher include the `main` channel by default. Earlier versions of conda do not.

Making a default project environment with MRO

You can also create an environment with MRO and make this the default AEN project environment.

The first time a new project is started, the default project environment is cloned into the new project's workspace.

1. Create a new conda environment in the `/opt/wakari/anaconda/envs/default` directory.

The command is similar to the one used in the previous example to create a custom environment.

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
  create -c https://repo.anaconda.com/pkgs/main \
  -p /opt/wakari/anaconda/envs/default r-essentials
```

2. Use conda to install any additional packages into the environment.
3. After the environment is created, clone it to check that it works correctly, and then clean up the clone.

```
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
```

NOTE: To convert existing projects, see *Converting an existing project*.

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)))"
                   },
    "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.

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 from the Admin Settings interface. 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 the value 'Gateway 1'. Below this, there 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",
```

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```
        "/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=100000 | 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

- *Before you upgrade*
- *Upgrading the AEN server node*
- *Upgrading the AEN gateway node*
- *Upgrading AEN compute nodes*
- *After upgrading*

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*
- *AEN 4.1.1 upgrade instructions.*
- *AEN 4.1.0 upgrade instructions.*
- *AEN 4.0.0 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 \
```

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(continued from previous page)

```

    -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_SRV_C_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/wakari-compute \
    --file aen-compute-update-4.3.3

sudo -E -u $AEN_SRV_C_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_SRV_C_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenv \
    --clone root

```

7. Test the offline cloning step:

```

sudo -E -u $AEN_SRV_C_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-4.3.3

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

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.

- *Uninstalling a server node*
- *Uninstalling a gateway node*
- *Uninstalling a compute node*
- *OPTIONAL: Removing projects from compute nodes*

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 are two sidebars. The top sidebar is titled 'Staff' and contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom sidebar is titled 'Site Admin' and 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. 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 a web interface for managing staff. On the left, a sidebar titled 'Staff' contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The 'Password Reset' link is selected. The main content area, titled 'Password Reset', features a text input field containing the username 'guest' and 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 into 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 into 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](#)

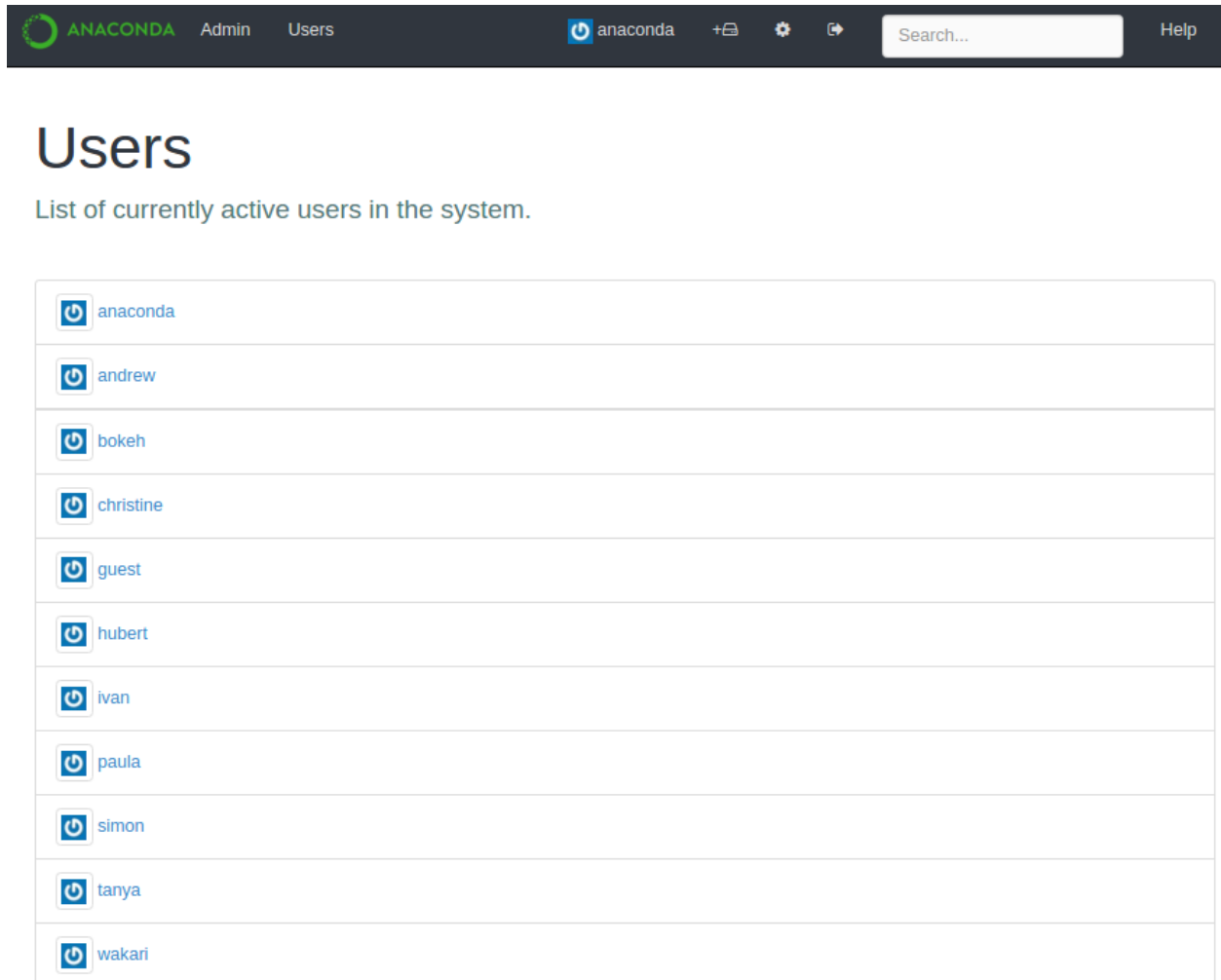
Users

Username	Projects	Last Seen
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.



The screenshot shows the Anaconda web interface. At the top is a dark navigation bar with the Anaconda logo, 'Admin' and 'Users' links, a search bar, and a 'Help' link. Below the navigation bar, the page title 'Users' is displayed in a large font. Underneath the title is a subtitle: 'List of currently active users in the system.' The main content area contains a table with 11 rows, each representing a user. Each row starts with a small blue square icon containing a white power symbol, followed by the user's username in a blue, monospace-style font. The usernames listed are: anaconda, andrew, bokeh, christine, guest, hubert, ivan, paula, simon, tanya, and wakari.

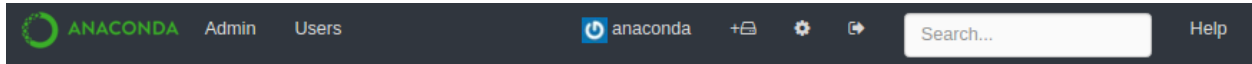
 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

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.

3. 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.

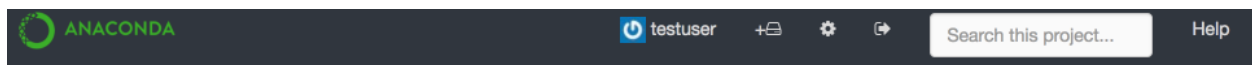
4. If you select SMTP Email Server, complete the SMTP Settings.

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.

1. 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`.
2. On the project home page, click the Project Settings icon to open the Project Settings page.

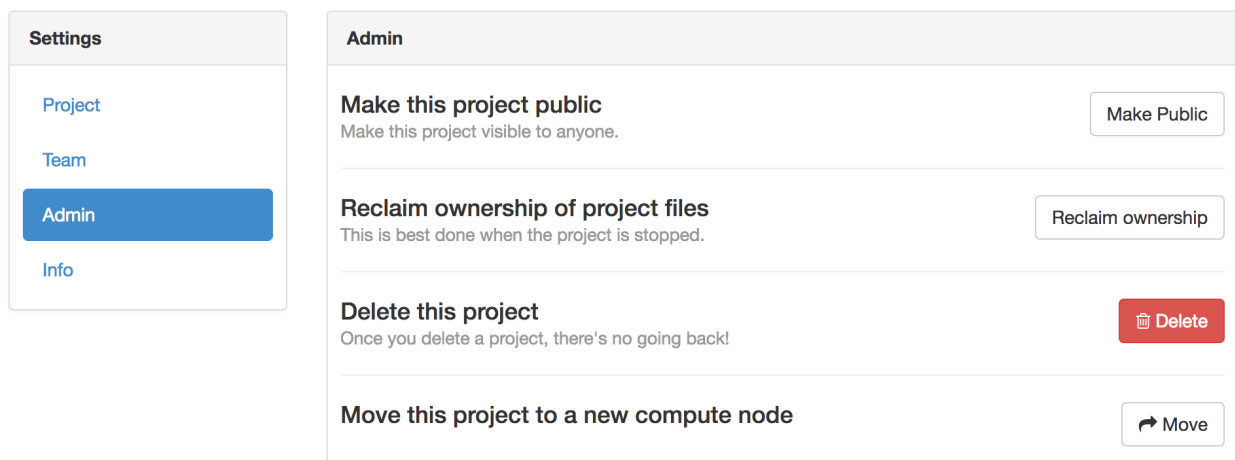


testuser / TestProject
NotebookApp

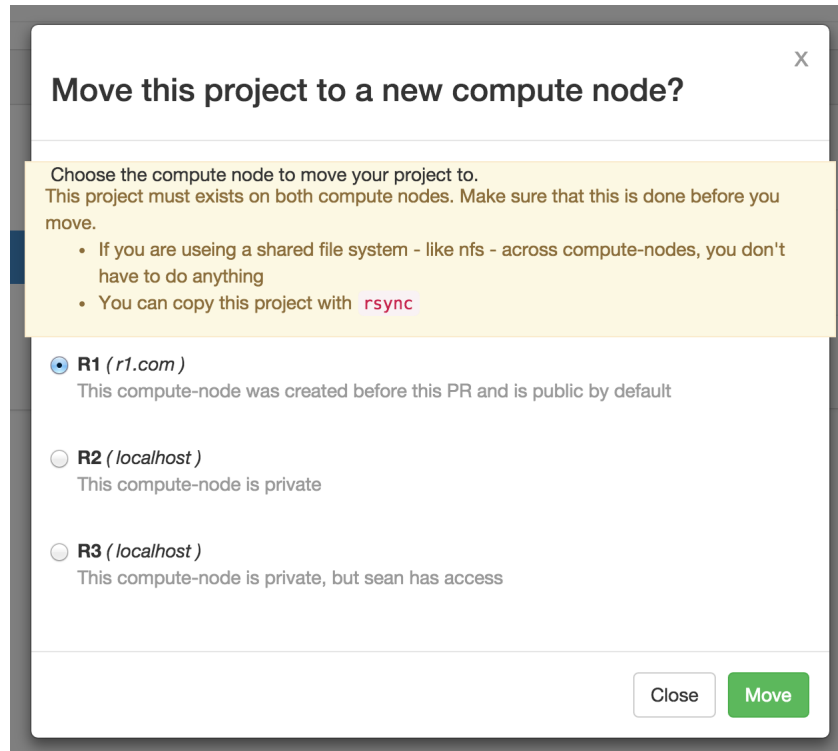


3. In the **Settings** menu, select Admin.

testuser / TestProject



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>
```

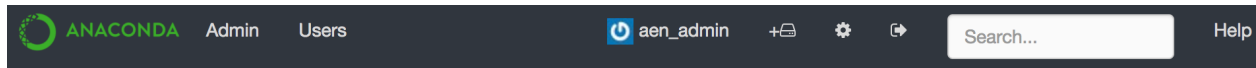
NOTE: Replace <username> with the actual username and <projectname> with the actual project name you are removing.

System management

Opening the Admin dashboard

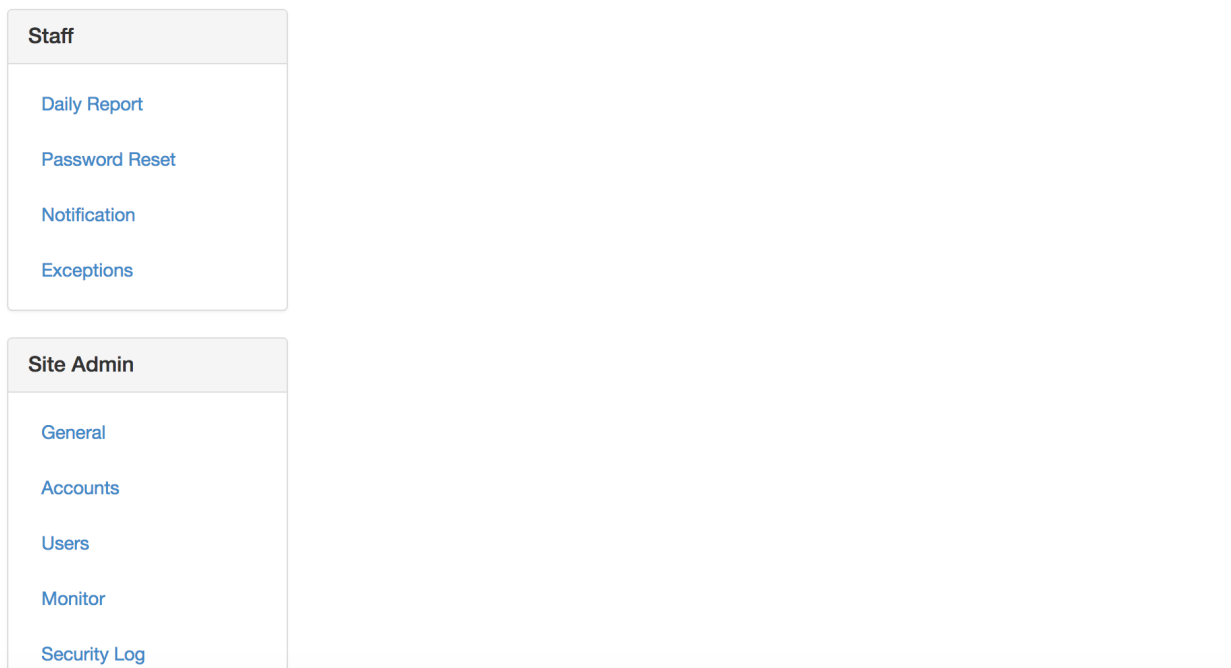
If you have administrator privileges, you see two additional links in the AEN navigation bar—Admin and Users:

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*
- *Important notes*
- *Server component steps*
 - *Backup*

- * *Mongo database*
- * *AEN Server config files (including License file)*
- * *Nginx config (if needed)*
- * *SSL certificates (if needed)*
- *Restore*
 - * *Reinstall AEN-Server*
 - * *Restore Mongo database*
 - * *AEN Server config files (including License file)*
 - * *Nginx config (if needed)*
 - * *SSL certificates (if needed)*
 - * *Restart server*
- *Gateway component steps*
 - *Backup*
 - * *Config files*
 - * *Custom .condarc file (if needed)*
 - * *SSL certificates (if needed)*
 - *Restore*
 - * *Reinstall AEN-Gateway*
 - * *Config files*
 - * *Custom .condarc file (if needed)*
 - * *SSL certificates (if needed)*
 - * *Restart gateway*
- *Compute component steps*
 - *Backup*
 - * *Config files*
 - * *Custom Changes (rare)*
 - * *Create user list*
 - * *Project files*
 - * *Full Anaconda (option 1)*
 - * *Partial Anaconda (option 2)*
 - *Restore*
 - * *Reinstall AEN-Compute*
 - * *Config files*
 - * *Custom changes (rare)*
 - * *Create users*

- * *Project files*
- * *Full Anaconda (option 1)*
- * *Partial Anaconda (option 2)*
- * *Custom environments (if needed)*
- * *Restart compute node*

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_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-4.3.3-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
Users	0	1
Projects	0	6

New User Emails

Username	Email
----------	-------

Actions

Count	Action
82	oauth.authenticate

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, the 'Staff' menu is expanded, showing options like Daily Report, Password Reset, Notification, and Exceptions. Below it, the 'Site Admin' menu is visible with options like General, Accounts, Users, Security Log, Data Centers, Task Queue, and License. At the bottom, the 'Providers' menu shows Enterprise Resources. The main content area is titled 'Exceptions' and contains a table of system errors. A red dot is visible next to the 'Exceptions' link in the Staff menu. A red box highlights the first exception entry in the table, which is a Jinja2 UndefinedError. 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"/>	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.

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:

5. To close the error details, click the Back link.

Public Profile

Account Settings

Security Log

Applications

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

[← Back](#)

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:

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](#)

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:

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": []}
```

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*
- *Checking the status of gateway node processes*
- *Checking the status of compute node processes*
- *Starting AEN services*
- *Verifying that AEN services are set to start with the system*
- *Stopping AEN services*
- *Restarting AEN services*
- *Identifying extraneous processes*
- *Removing extraneous processes*

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
```

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```
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
```

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```
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 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](#)

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	Terminate	Relaunch	Logs
aen_admin	Test	notebook	running	localhost	Jul 25, 2017 11:54:05 CDT	Terminate	Relaunch	Logs

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.

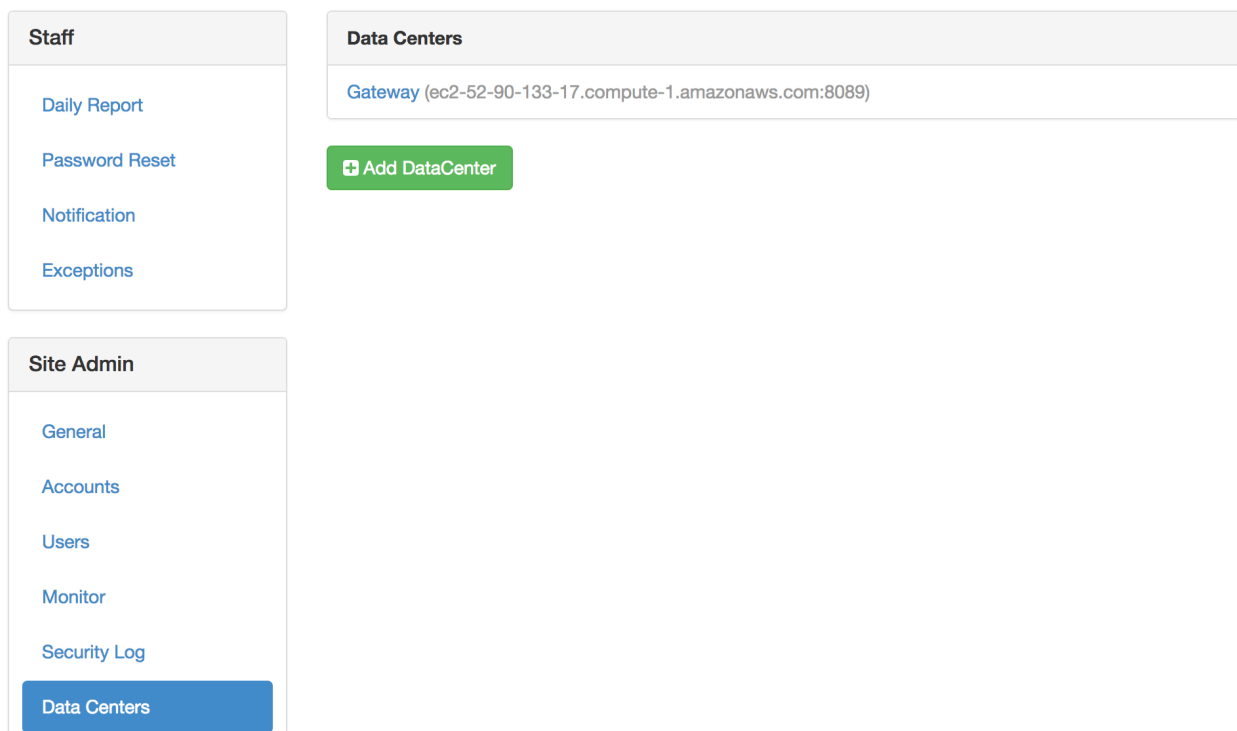
Checking node connections

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*
- *Verifying gateway to compute node connectivity*
- *Verifying gateway to server connectivity*

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 shows the AEN Admin Settings page. On the left, there are three main navigation menus: **Staff**, **Site Admin**, and **Providers**. 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 License. The **Providers** menu includes a button for Enterprise Resources. On the right, the **Resources** section is visible, showing a Gateway list with one entry: `ec2-54-210-232-251.compute-1.amazonaws.com`, with a **remove** button. There is also an **Add Resource** button in the top right of the Resources section.

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:
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:
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:

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <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	

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <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	

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <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 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> Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> Default Project Access 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> Account Type <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>Config Files</div>
<div>Providers</div>	

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**.
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 **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.

Staff

[Daily Report](#)

[Password Reset](#)

[Notification](#)

[Exceptions](#)

Site Admin

General

[Accounts](#)

[Users](#)

[Monitor](#)

[Security Log](#)

[Data Centers](#)

[Task Queue](#)

[License](#)

Providers

General Admin Settings

Wakari Server
Set the main URL where this site will be accessed

Static URL
Set static URL where the js can be accessed

Default Project Access
This will be the default when a user creates a project

☐ Public
Anyone can see this project. Collaborators have write access

☒ Private
No one can see this project except collaborators.

Account Type

Update

Config Files

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)
[Task Queue](#)
[License](#)

Current License

You have **166 days** remaining on your current license.

Renew your license

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
email	dev@continuum.io

Upload New License

License File

Choose File

No file chosen

Update

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*
- *Browser error: too many redirects*
- *Browser error: too many redirects when starting project apps*
- *Exception: exceptions.TypeError: 'NoneType' object has no attribute '__getitem__'*
- *Error: unix:///opt/wakari/wakari-server/etc/supervisor.sock no such file*
- *Error: “Data Center Not Found” when deleting a project*
- *Forgotten administrator password*
- *Log files being deleted*
- *Error: This socket is closed*
- *Service error 502: Cannot connect to the application manager*
- *502 communication error on Amazon web services (AWS)*
- *Invalid username*
- *Notebook Error: Cannot download notebook as PDF via LaTeX*
- *Unresponsive wk-server thread without error messages*
- *Unresponsive wk-gateway thread without error messages*

- *Error starting projects*
- *Changes in .condarc file are ignored*

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 into 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 into AEN as the administrator user with the new password.

Alternatively you may add an administrator user:

1. Use ssh to log into 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 into 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 into `/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?*
- *Can notebooks be shared with anyone?*
- *Can I disable the option, “publish your notebook to anaconda.org”?*
- *How can I check the version number of my AEN server?*
- *Can I use AEN to access CSV or Amazon S3 data?*
- *Can I install other Python packages?*
- *Can I create a Python environment from the command line?*
- *Can I connect to GitHub with AEN?*
- *Can I print or print preview my Jupyter Notebooks?*
- *Is there a set amount of storage on AEN?*
- *How do I get help, give feedback, suggest features or report a bug?*

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

- 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

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](#)
- [Team collaboration](#)
- [Access control](#)
- [Sharing projects](#)
- [Project tags](#)

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.

In this getting started guide, you will:

- 1. *Download the AEN cheat sheet*
- 2. *Access your user home page*
- 3. *Create a new project*
- 4. *Add collaborators*
- 5a. *Open an example notebook, OR*
- 5b. *Create a new environment and notebook*
- 6. *Create checkpoints for version control*
- 7. *Share your notebook and environment with others*
- 8. *See what to do next*

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.

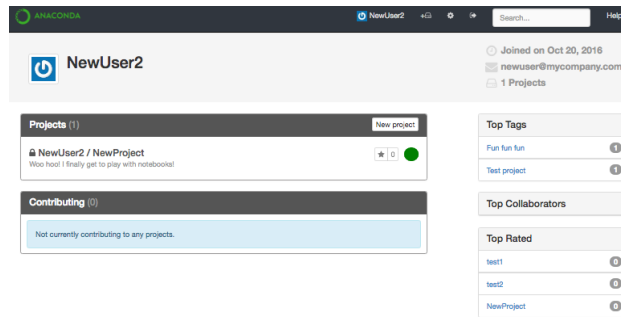
NOTE: Some administrators allow you to create your own account. If your administrator has allowed this, in the create a new account section, create your own username and password.

3. Click the Login button.

Your user home page, where all good things happen, is displayed:

3. Create a new project

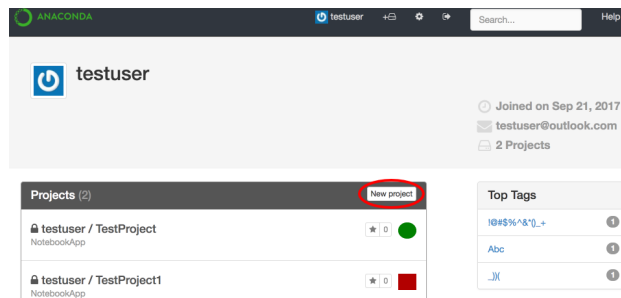
1. There are 2 ways to create a new project in AEN:



- On the right side of the AEN task bar, click on the New Project icon:



- On your home page, click the New project button:



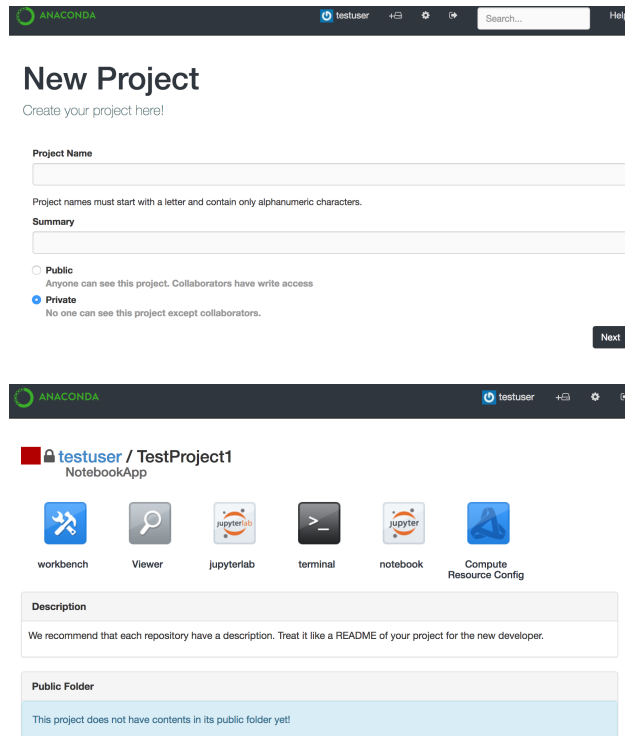
2. On the Project page that is displayed, type a name for your project, such as “Testing.”

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.

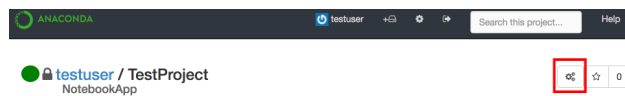
TIP: You can update the project summary and description at any time from the **Project** menu in the Project Settings. To return to your project at any time, click the project name.

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.

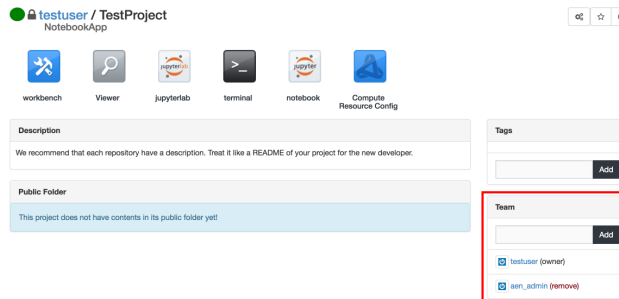
4. Add collaborators

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.

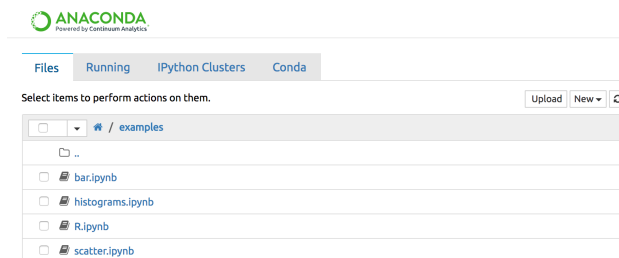


1. Repeat these steps for each team member you want to add as a collaborator.

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.



1. Select any of the example notebooks.
2. To see the default results of the formulas used in the displayed notebook, in the **Cell** menu, select Run All.
3. To experiment with changing the notebook, edit any of the formulas in the notebook.
4. 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:

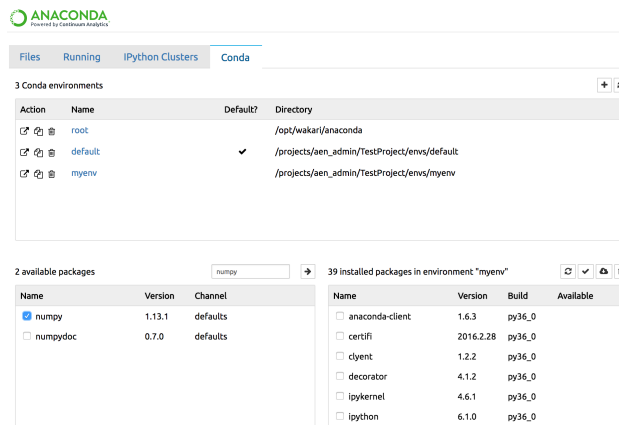
1. From your project home page, click the Jupyter Notebooks icon.

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.



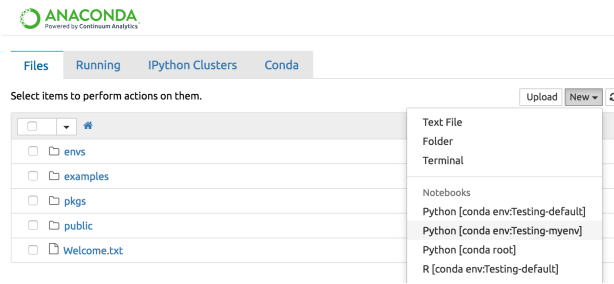
1. Click the Install icon.
2. To confirm your installation, click the Install button.

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](#).

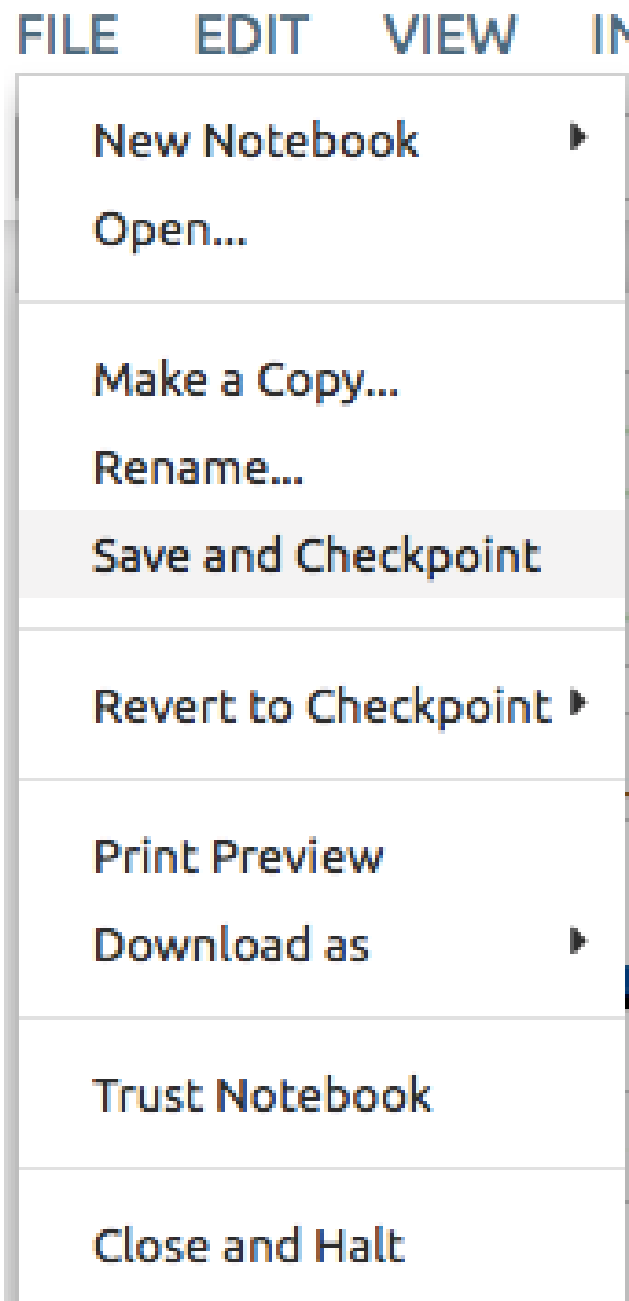
Basic tasks

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

- *Types of files searched*
- *Search indexing*
- *Using search constructs*
- *Searching metadata fields*
- *Searching a project*
- *Saving a search*
- *Removing a saved search*

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.

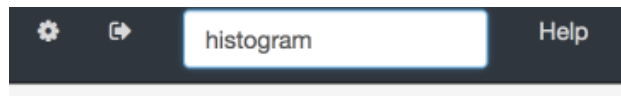
Searching metadata fields

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:

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:

Projects matching 'iris' ([save this search](#))

 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 ●


Found 1 files matching 'histogram' in user02/Public_project. ([save this search](#))






File	Relevance
/examples/histograms.ipynb	42

Saving a search

1. At the top of the search results, click Save this search:

Projects matching 'iris' **Stored**

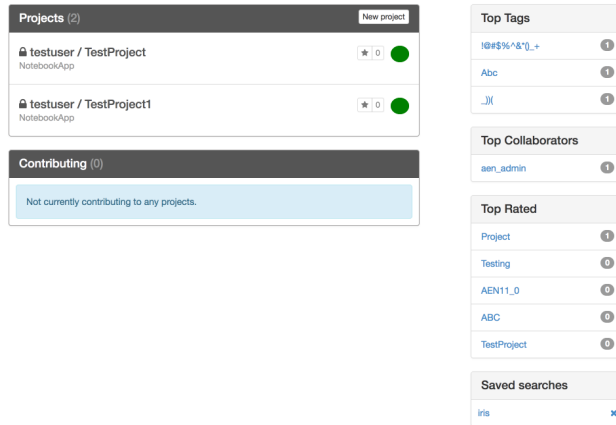
 Projects matching 'iris' **Stored**

 testuser / TestProject NotebookApp	★ 0 ●
 AnacondaEN / AEN11_0 No Summary	★ 0 ●
 Rida / ABC No Summary	★ 0 ●
 Rida / Testing No Summary	★ 0 ●
 testuser / TestProject1 NotebookApp	★ 0 ●

The “save this search” text changes to “stored” and your search is saved. Your saved searches are listed on your home page.

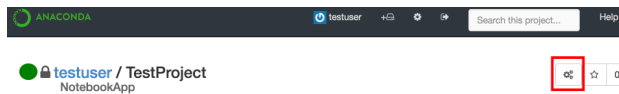
Removing a saved search

On your home page, in the Saved searches section, click X next the saved search that you want to remove:

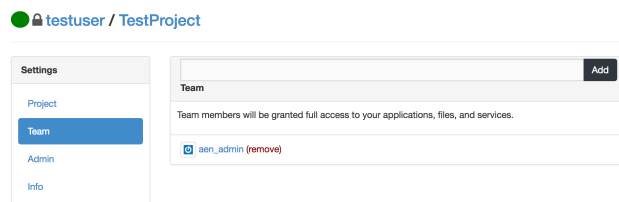


Adding and removing team members on a project

1. On the project home page, click the Project Settings icon to open the Project Settings page.



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*
- *Controlling non-team member access*

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:

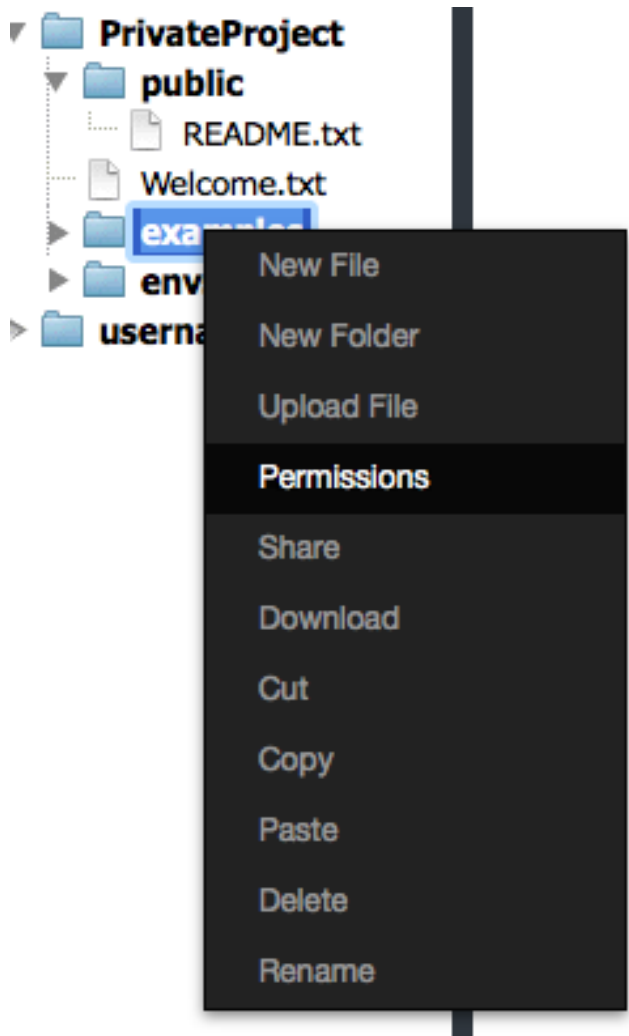
6. Next to the team member's name, select or deselect the permissions for that user.

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.

7. 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.



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"/>

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:

1. *Copy or move the file or folder to your home directory.*
2. *Give the user read and execute access to your home directory.*
3. *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.

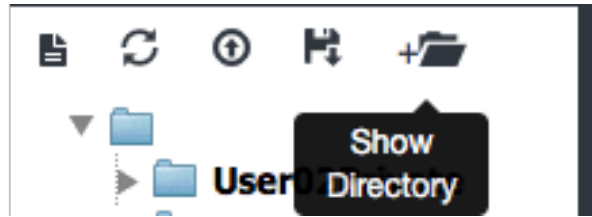
NOTE: If you change permissions for a folder instead of a file, the user will be able to see and access any files within that folder.

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:

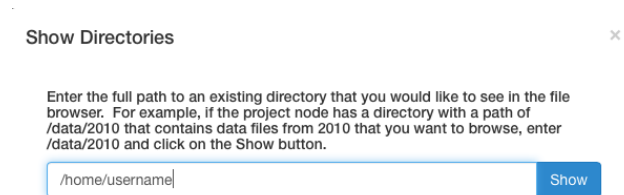
1. Click the Show Directory button at the top of the Workbench File Manager:



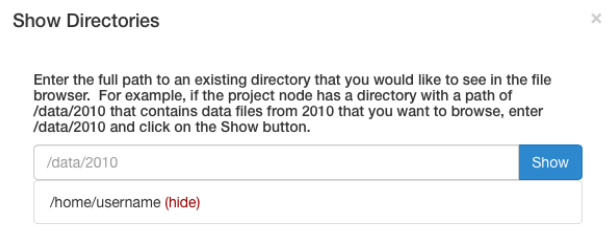
The Show Directories dialog box displays.

2. In the text box, type `/home/[yourusername]`.

NOTE: Replace `[yourusername]` with your AEN username.



3. Click the Show button.
4. Verify that the folder is now displayed below the text box:



5. 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.

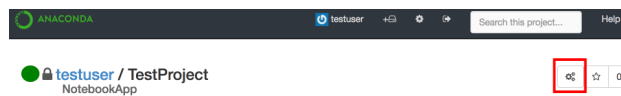
The shared file is displayed in the File Manager:



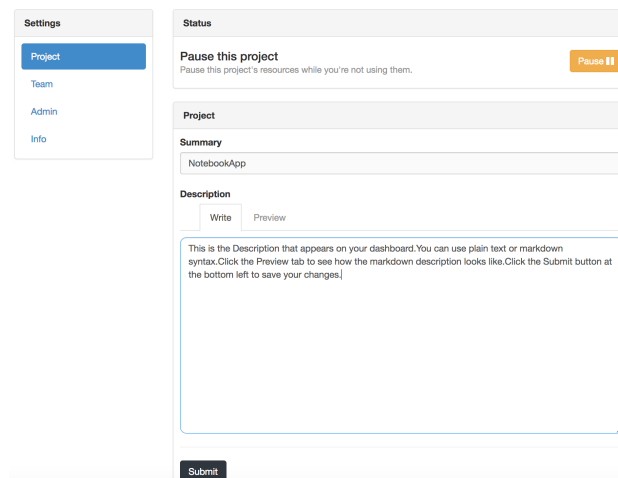
Starting and stopping a project

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.

- On the project home page, click the Project Settings icon to open the Project Settings page.



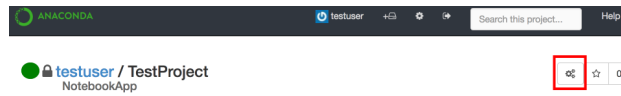
- In the **Settings** menu, select Project.



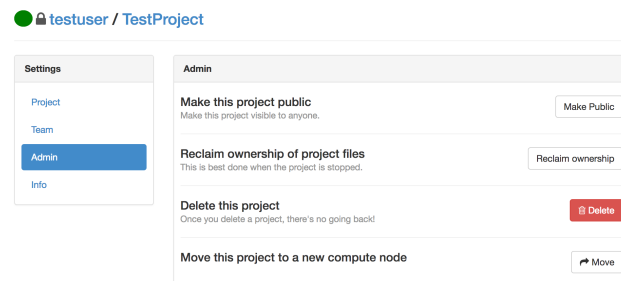
- In the Status section, click the Start or Stop button to toggle between manually starting and stopping your project.

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.



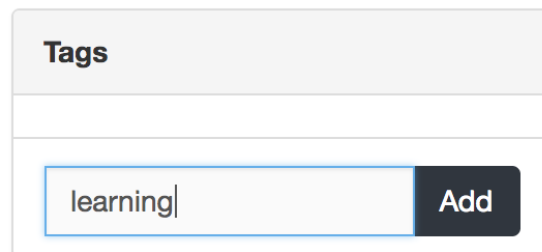
3. Click the Make Public button.
4. If the project is already public and you want to make it private, click the Make Private button.

Tagging a project

Existing tags assigned to a project are listed in the Tags section on the project's home page.

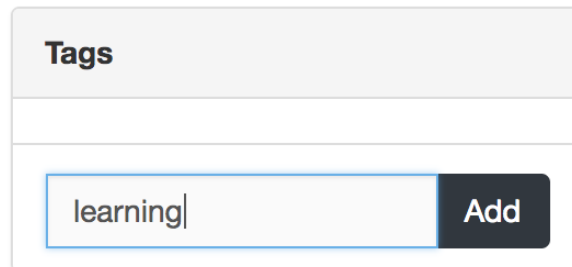
Adding a tag

1. In the Tags box, type the name of the tag you want to add:



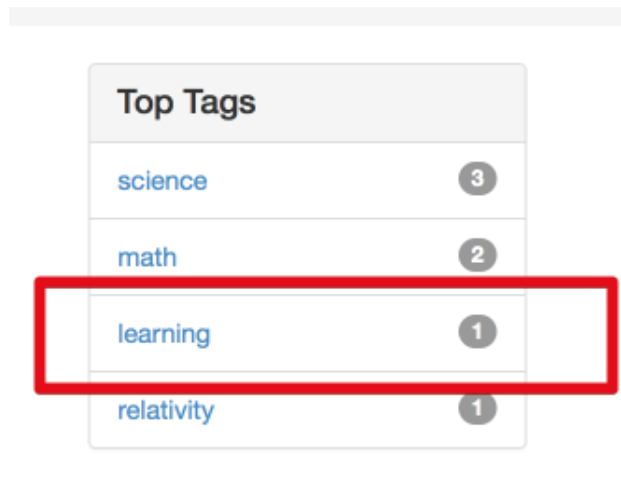
2. Click the Add button.

The new tag is added to the Tags list:



A screenshot of a web form titled "Tags". It features a text input field containing the word "learning" and a dark grey "Add" button to its right.

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:

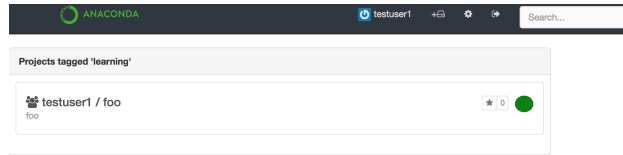


A screenshot of a "Top Tags" list. The list contains four items: "science" with a count of 3, "math" with a count of 2, "learning" with a count of 1, and "relativity" with a count of 1. The "learning" row is highlighted with a red rectangular border.

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.

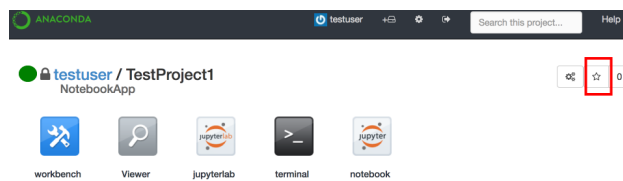


Starring a project (rating)

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:

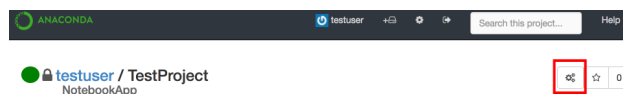


3. To unstar a project, click the Star icon again.

Claim ownership of a project

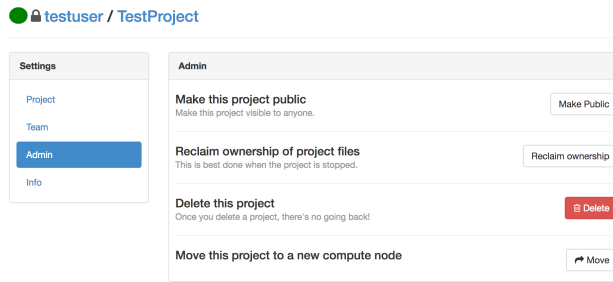
When you claim ownership of a project, ownership of all files and folders created by the team members on the project is transferred to you. Project files and folders are copied and renamed.

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.



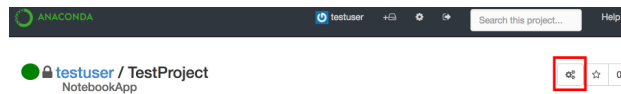
3. In the **Settings** menu, select Admin.

4. Click the Reclaim ownership button.

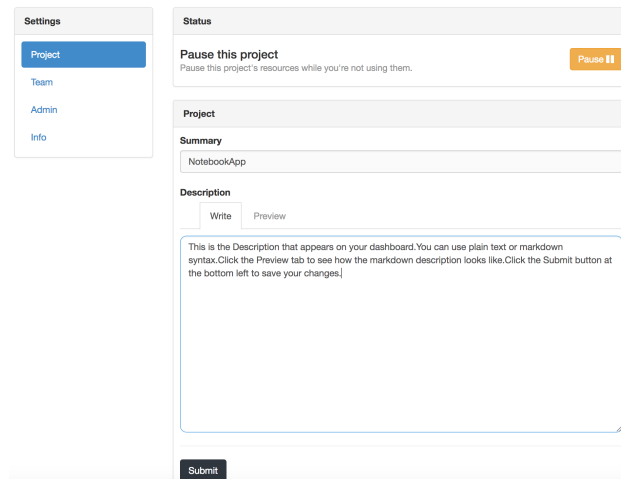


Changing a project's summary or description

1. On the project home page, click the Project Settings icon to open the Project Settings page.



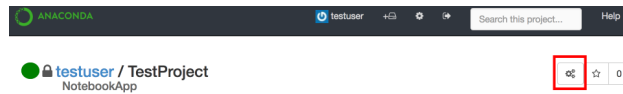
2. In the **Settings** menu, select Project.



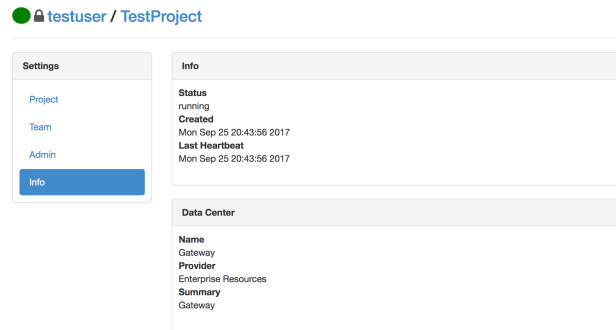
3. Update your project's summary using plain text or its description using Markdown syntax.
4. Click the **Preview** tab to see a preview of the Markdown description.
5. Click the Submit button.

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.



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.

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.

Team

Add

user02 (owner)

user01 (remove)

Related Projects

user01 / TestProject2

No Summary

user02 / User02Private

No Summary

user01 / TestProject

No Summary

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

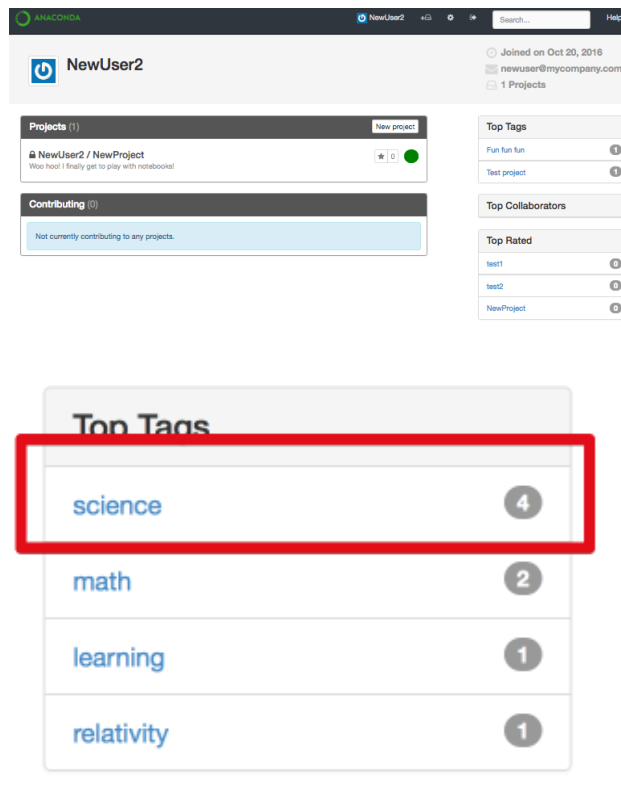
The number next to a project represents the number of stars that have been given to that project.

Click a project name to view the project’s home page.

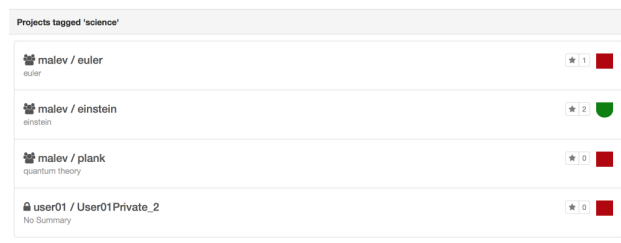
Using tags to find a project

The top tags used on your projects are listed on your home page:

To list all projects that share a specific tag, click the tag name:



A list of projects with the selected tag is displayed:



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

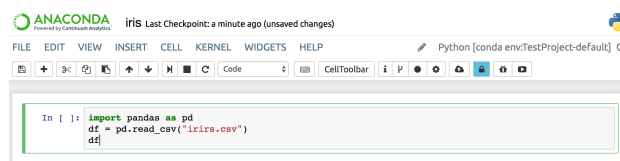
For information on sharing projects via the project settings and access control, see [Sharing projects](#).

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

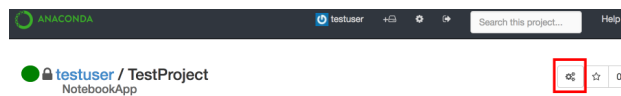
- Print—In the **File** menu, select Print.
- Download and share—In the **File** menu, select one of the following options:
 - Download as Notebook.
 - Download as Python.

- 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](#).

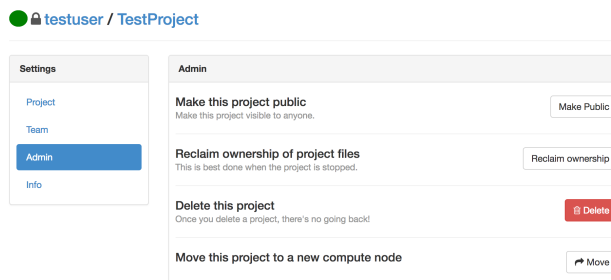
Deleting a project

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.



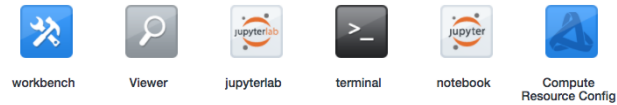
4. Click the Delete button.

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 into 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

- *Opening Workbench*
- *Using File Manager*
- *Opening the Workbench terminal*

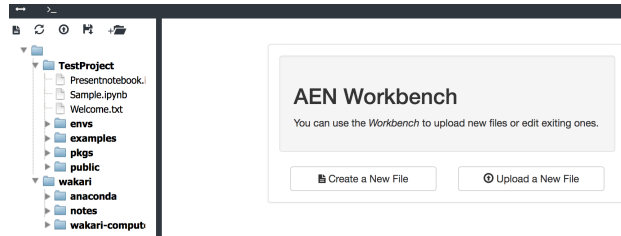
Workbench is a file viewer and manager that includes a file editor and file permissions manager.

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

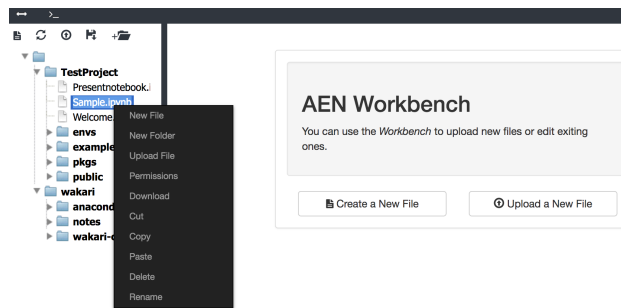
The File Manager is an intuitive way to interact with your files and folders.

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.

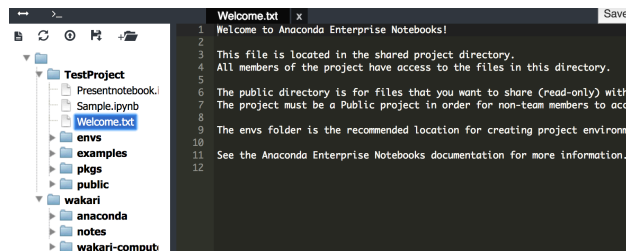
- New Folder—Create a new folder.
- Upload File—Upload a file to the selected folder. You can also drag a file to the folder.
- Permissions—*Control access to files and folders.*
- Cut—Cut the selected file or folder.
- Copy—Copy the selected file or folder.
- Paste—Paste a previously cut or copied file 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:

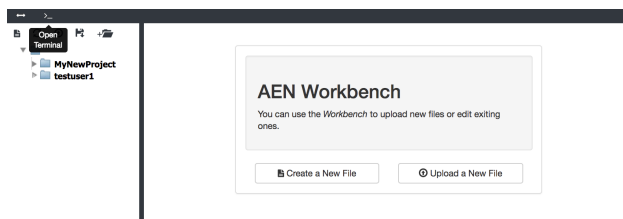


2. When you finish editing the file, click the Save button.

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.

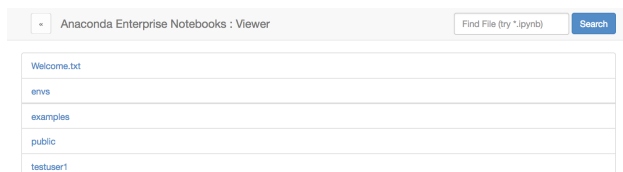
To move between terminal windows, click the **Terminal** tab in the navigation bar, then select the number of the terminal window you want to work in.

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*.

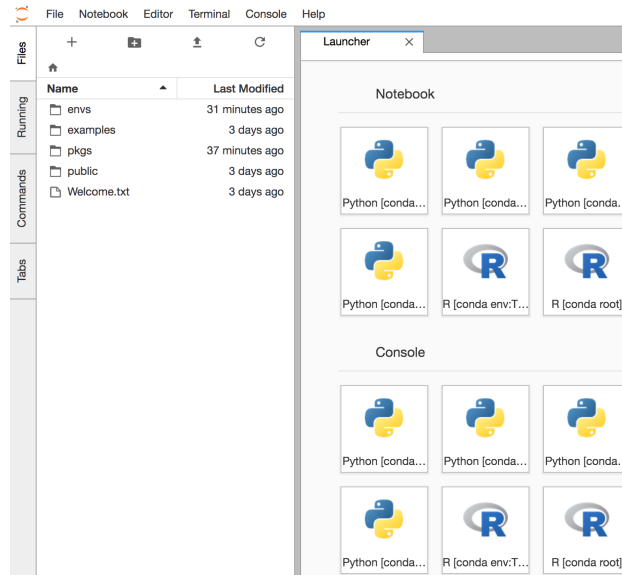
For more information about JupyterLab, see the [documentation](#).

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

- *Opening the Jupyter Notebook application*
- *Using example notebooks*
- *Creating a new 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.

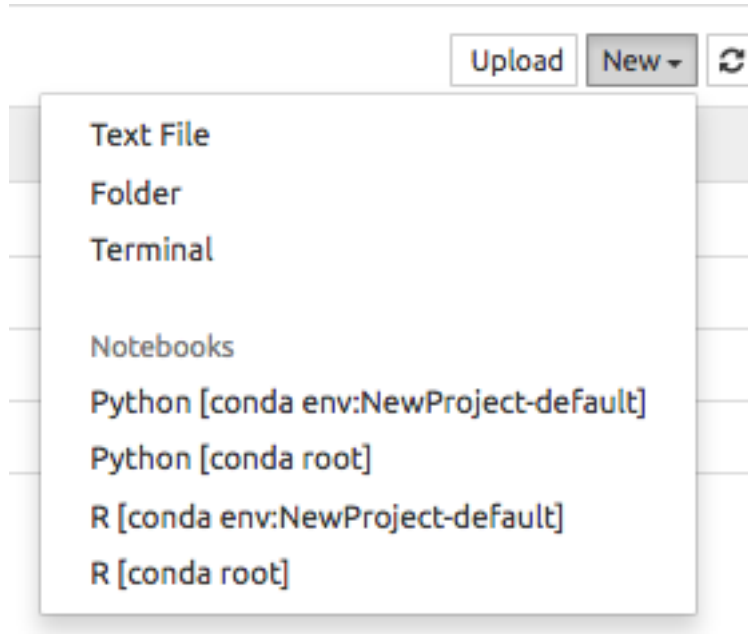
Creating a new Jupyter Notebook

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:

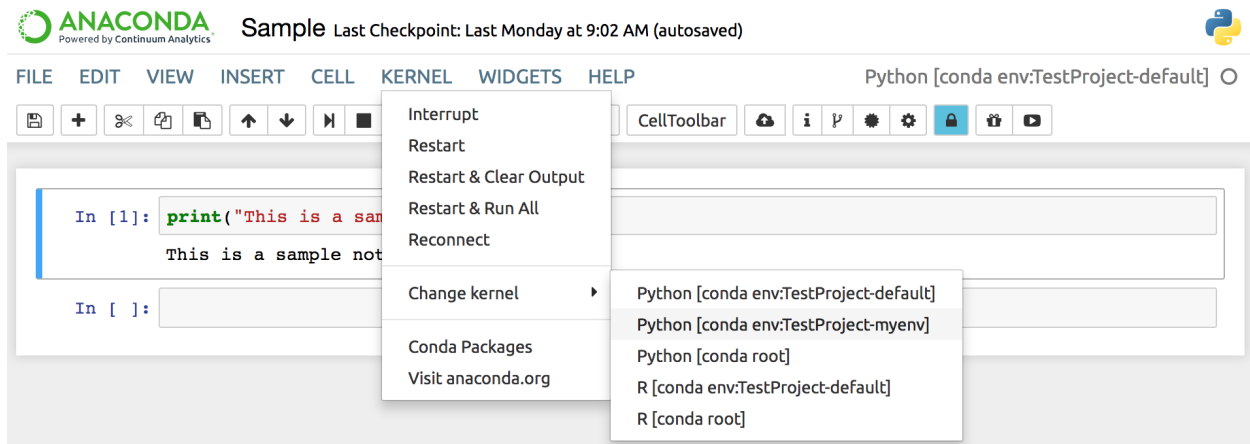
- [Synchronize Environments](#) with Jupyter from the **Kernel** menu.
- [Locking](#) adds multi-user capability from the Lock button.
- [Revision Control Mechanism \(RCM\)](#) adds Status, Checkout and Commit buttons.
- [Conda environment and package management](#) tab.
- [Conda notebook](#) adds conda 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:

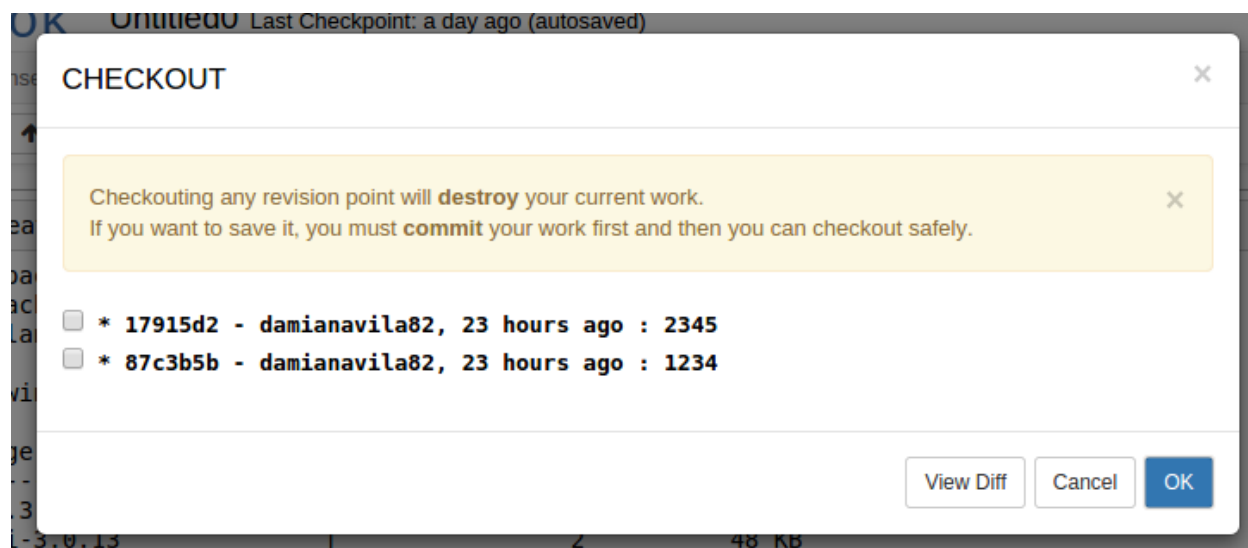
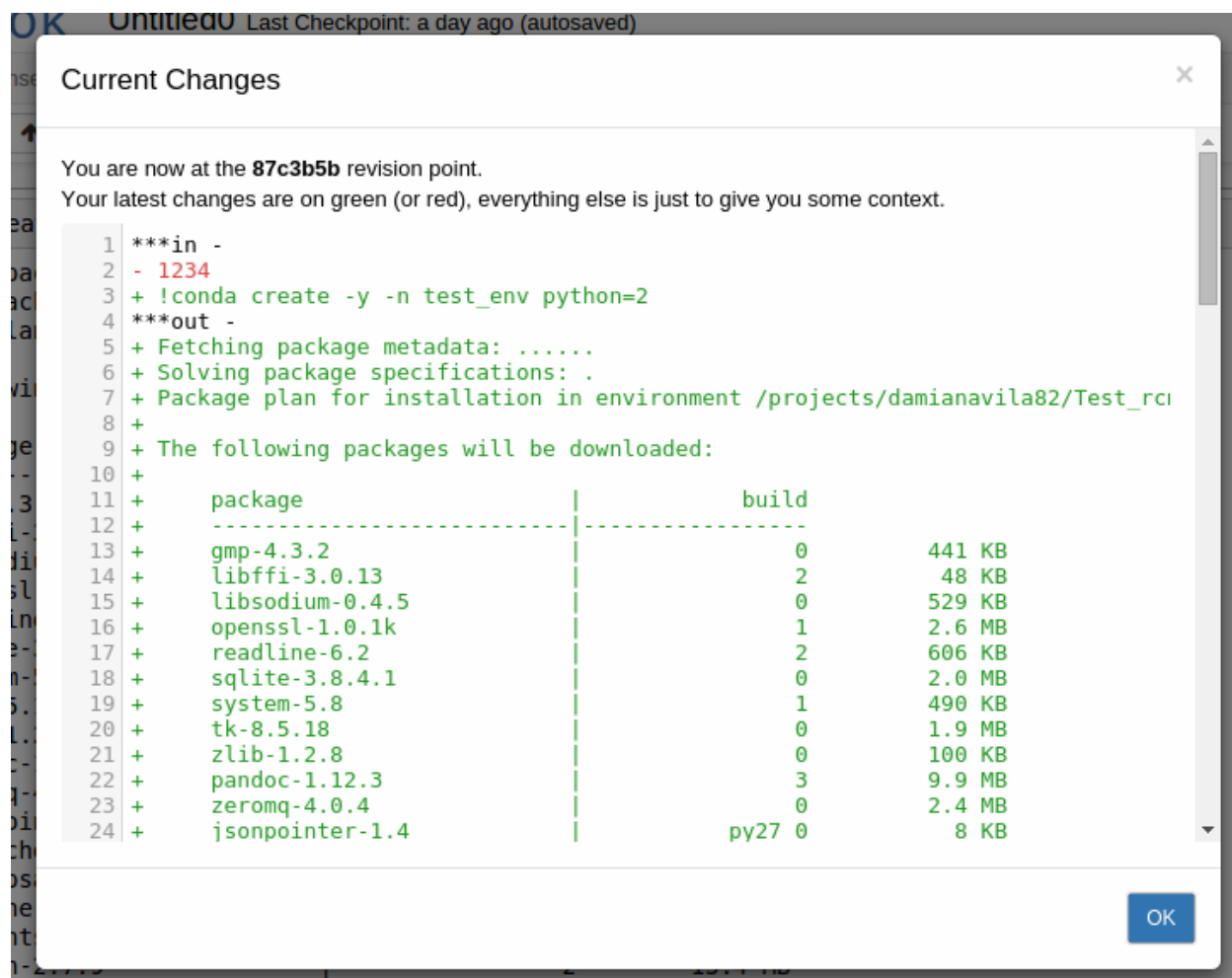
Checking out a previous revision

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.

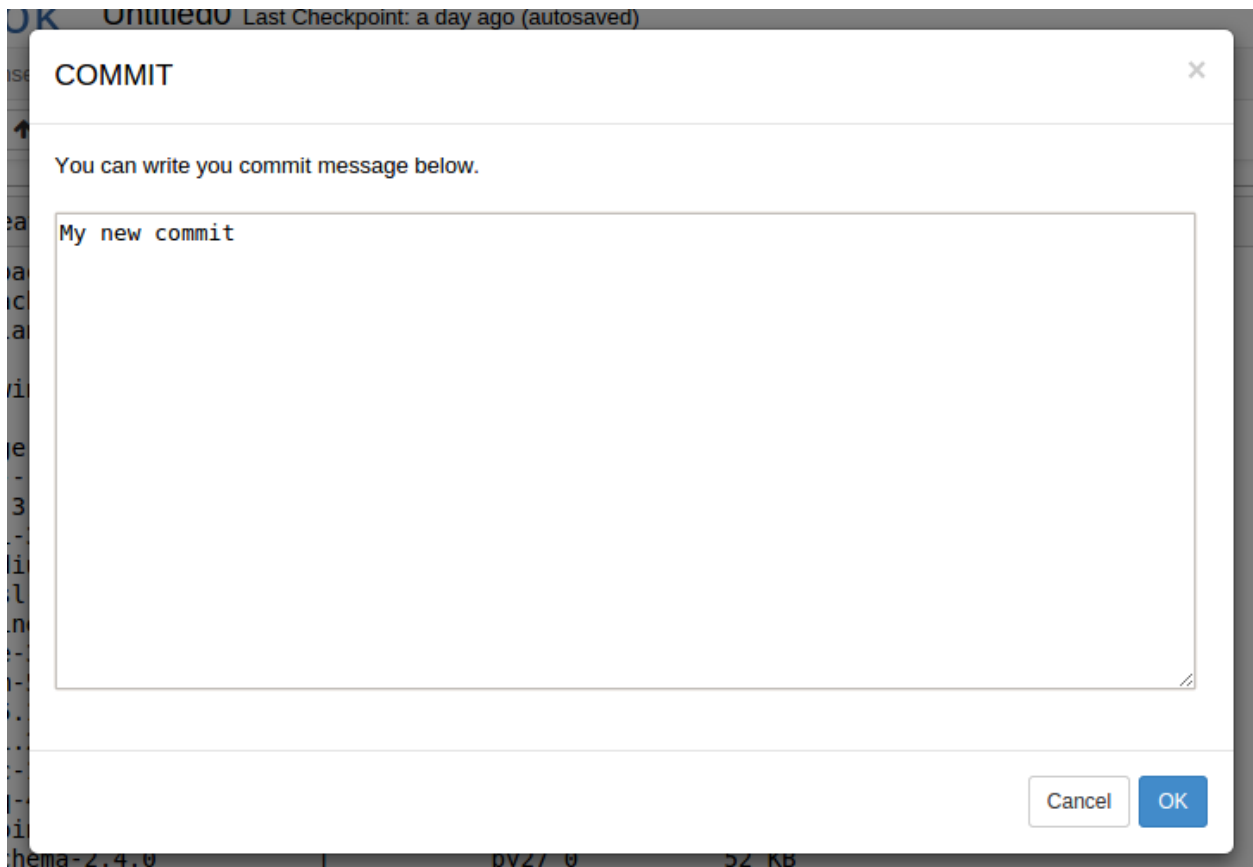
A side-by-side comparison is displayed.

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.

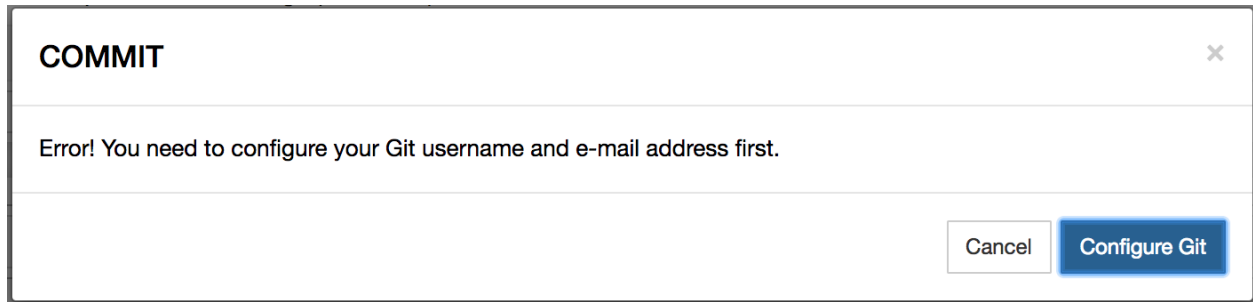
Clicking the Commit button displays:



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:



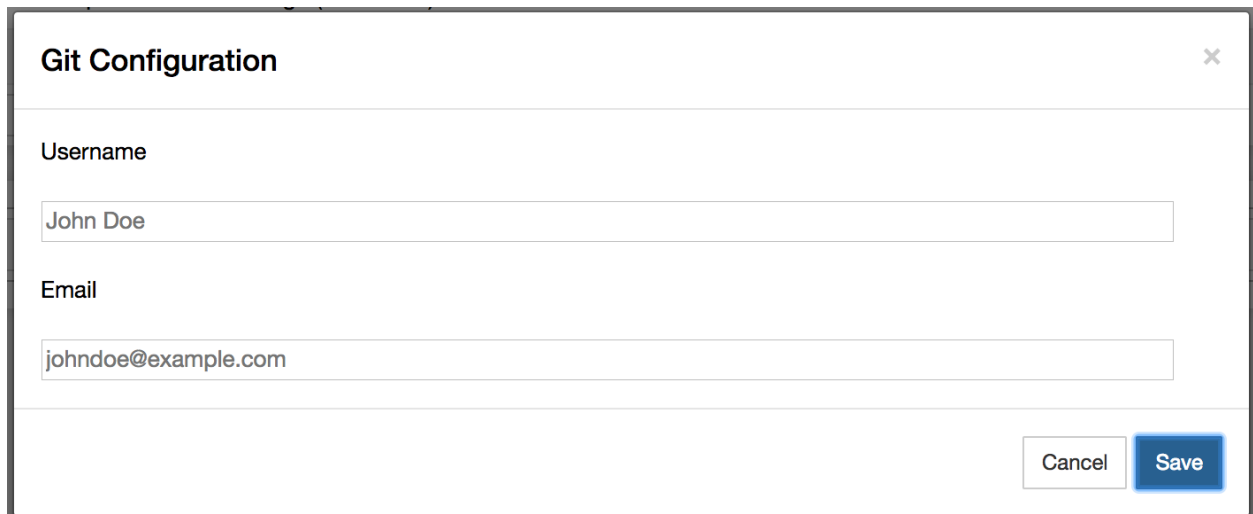
Configure Git and then try to commit again.

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:



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

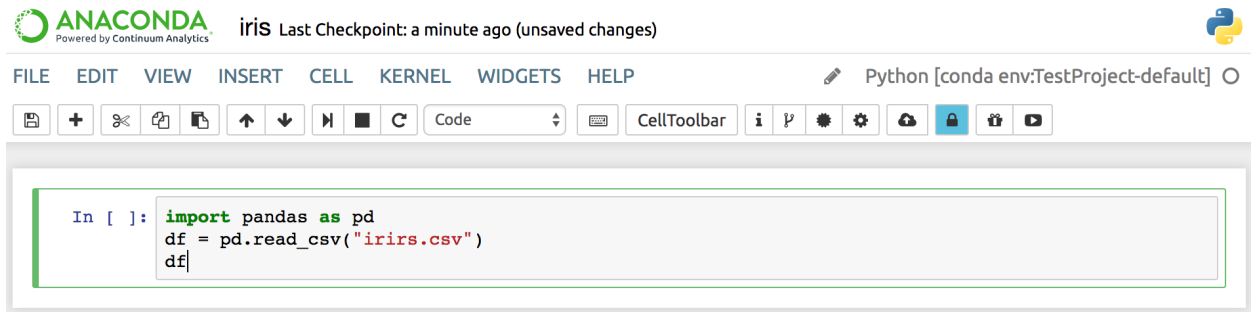
Name	Version	Build	Available
<input type="checkbox"/> _license	1.1	py27_1	
<input type="checkbox"/> alabaster	0.7.10	py27_0	
<input type="checkbox"/> anaconda	custom	py27_0	
<input type="checkbox"/> anaconda-client	1.5.1	py27_0	
<input type="checkbox"/> anaconda-project	0.6.0	py27_0	
<input type="checkbox"/> 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:



Using the Conda Notebook extension

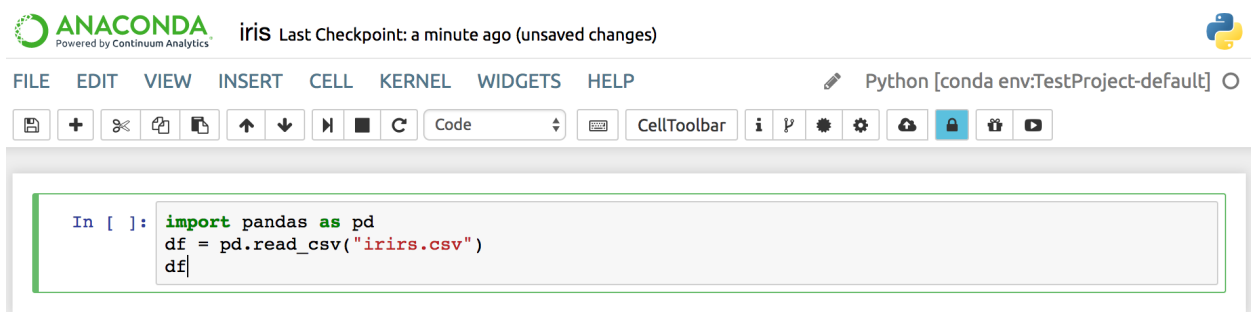
The Conda Notebook extension adds the Conda Packages option to the **Kernel** menu.

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

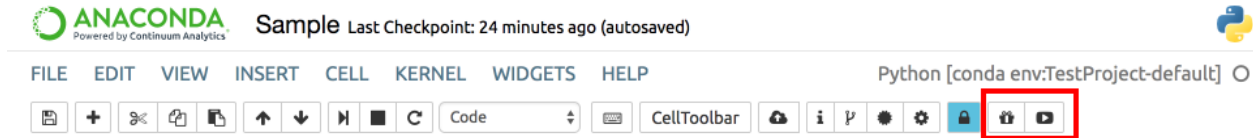
The Anaconda Cloud extension adds the Cloud button to your notebook, allowing you to easily upload your notebook to Cloud:



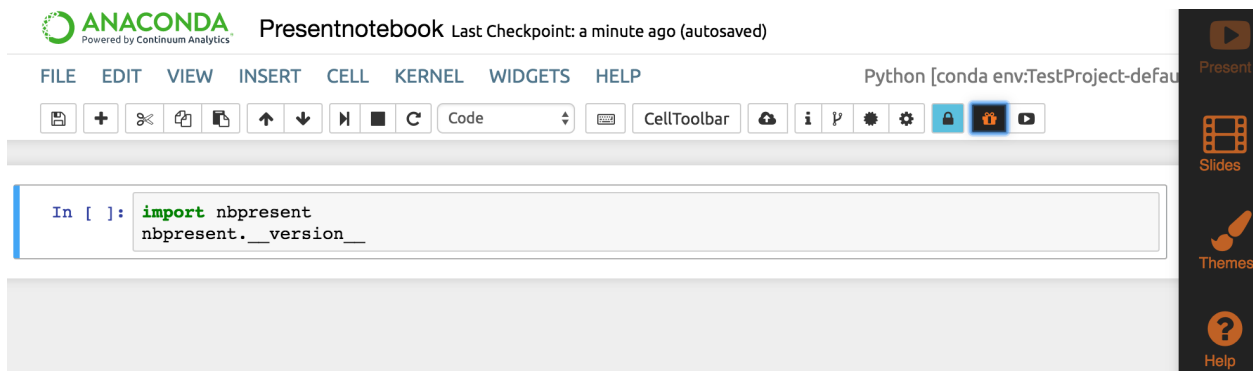
Using the Notebook Present extension

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.



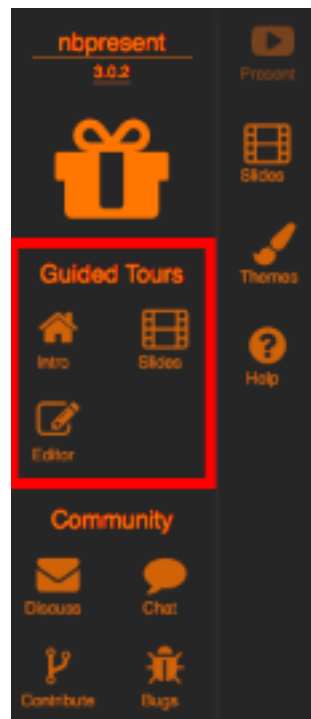
The Notebook Present sidebar is displayed on the right side of your browser:

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:
- 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.

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

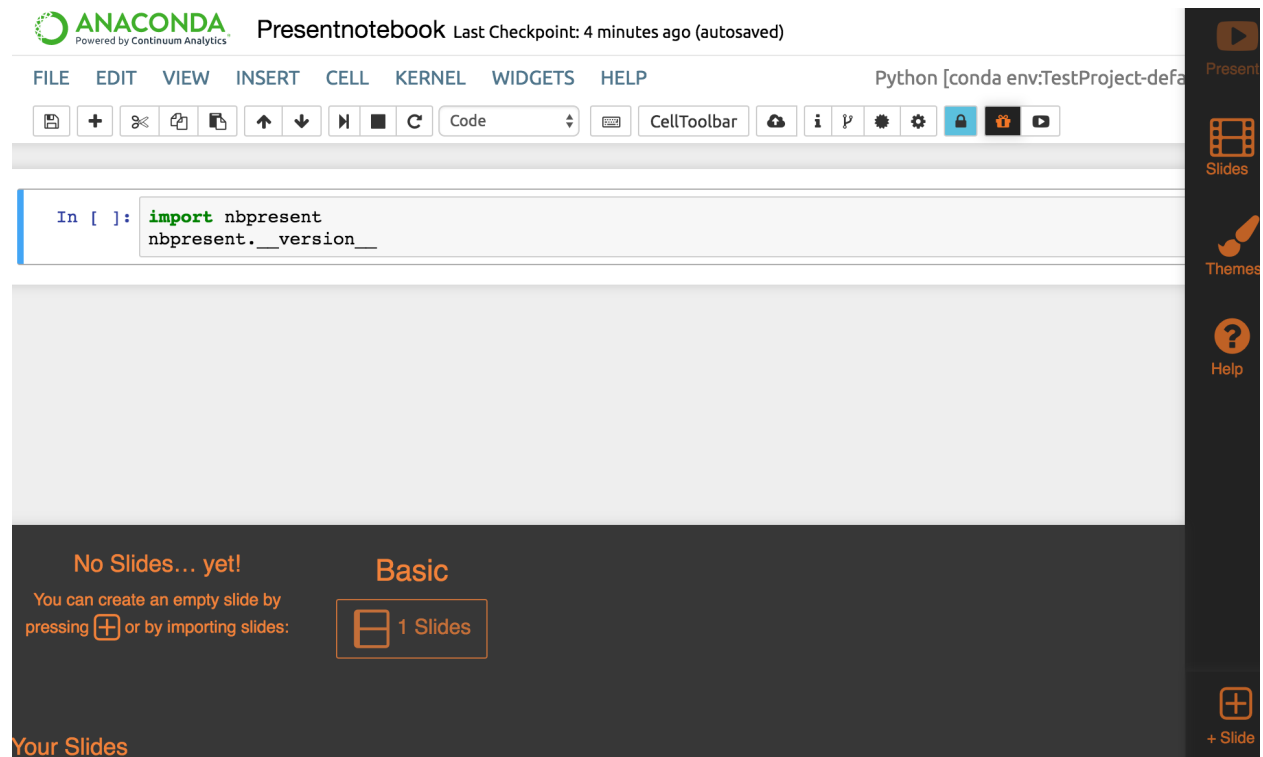
: copy selected cells

: paste cells above

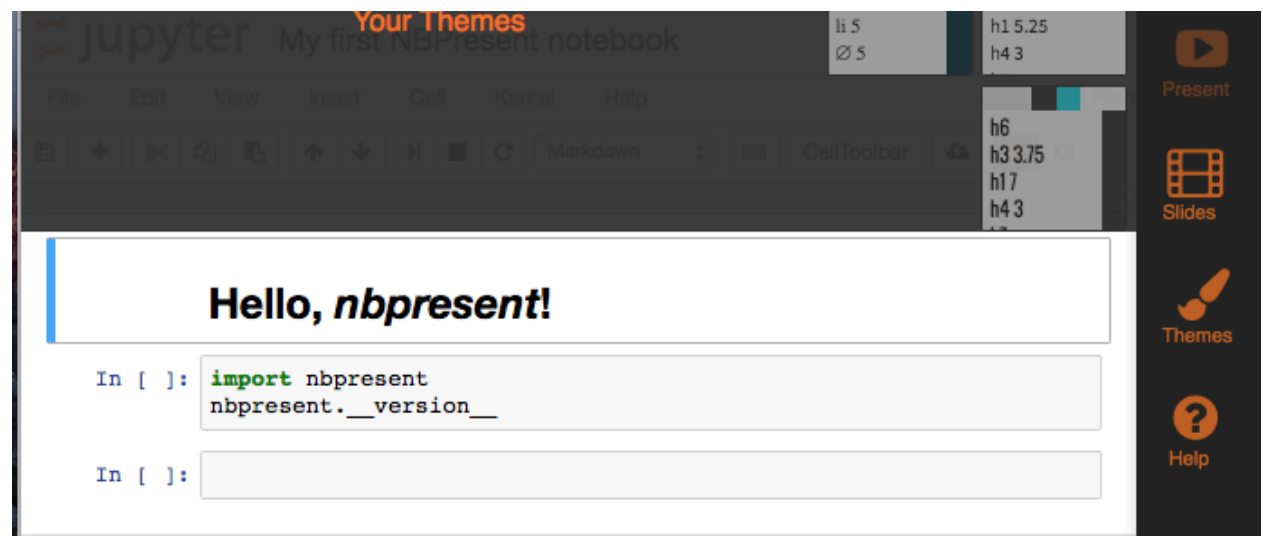
: paste cells below

: undo cell deletion

Close



- 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.

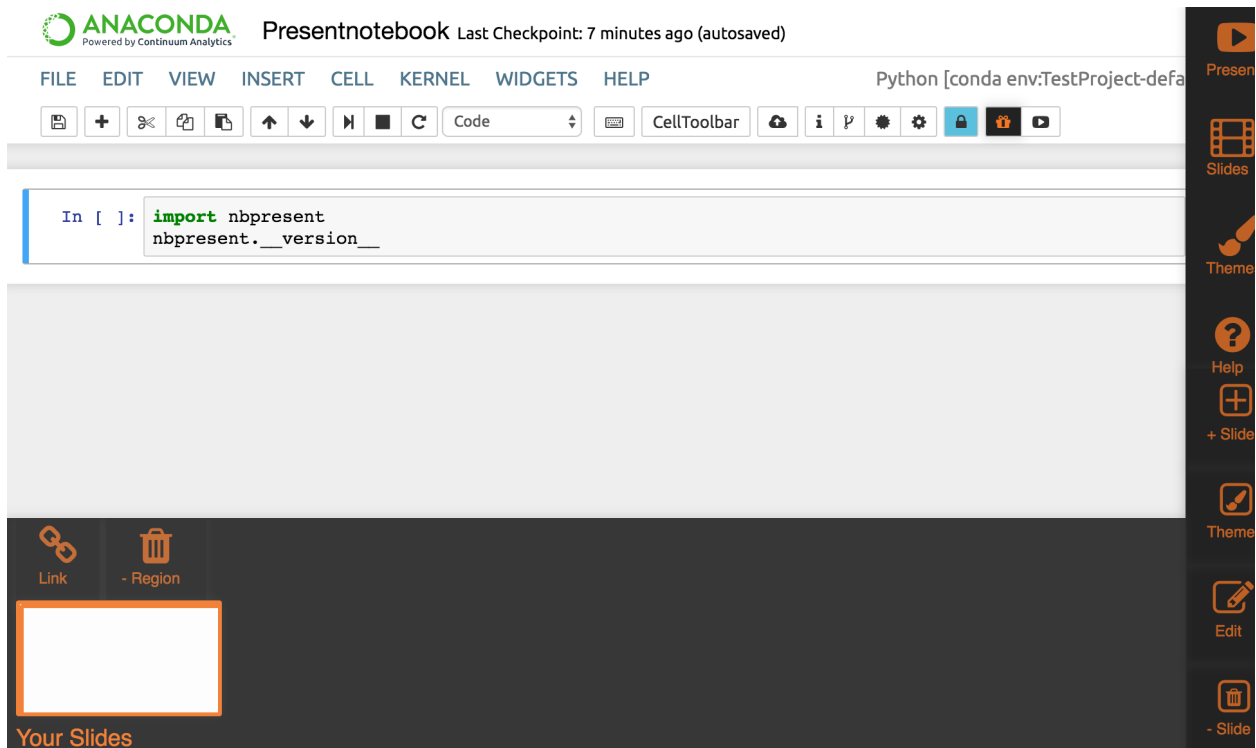


- Saving—Whenever you save your Notebook, all your presentation data will be stored right in the Notebook .ipynb file.

- **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.

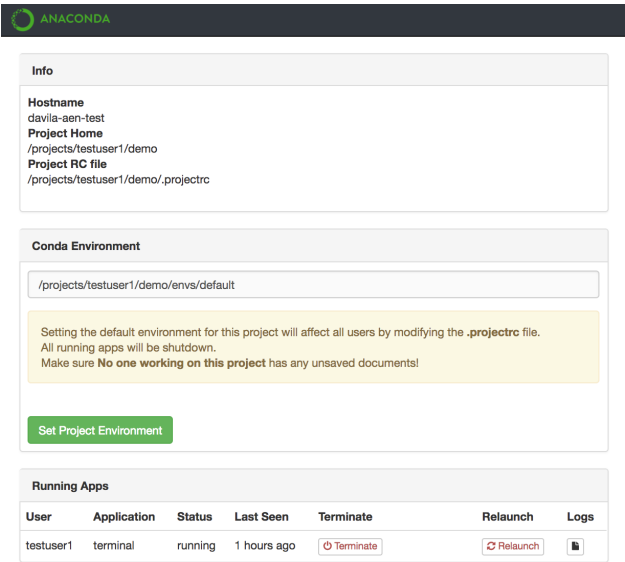
Using Compute Resource Configuration

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

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.

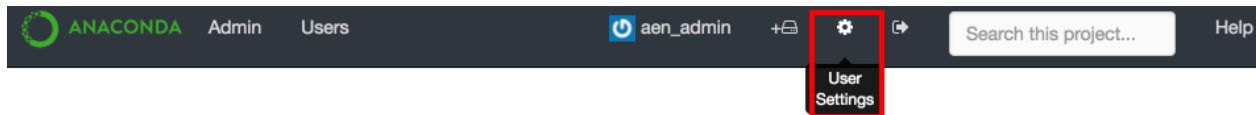
To stop and re-launch any individual application, click the Relaunch button.

To review the run logs of any active application, which may be useful for troubleshooting, click the Logs button.

Managing your account

- *Updating your public profile*
- *Changing your password*
- *Deleting your AEN account*
- *Viewing account operations*
- *Registering an application*

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

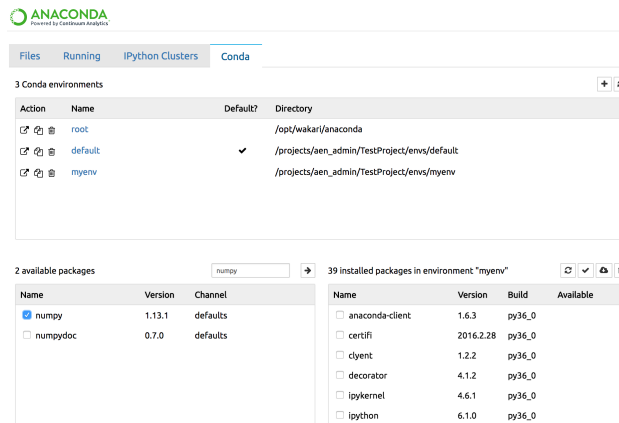
You can create, activate, and install packages and deactivate environments from within the Notebook menu bar.

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.

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
```

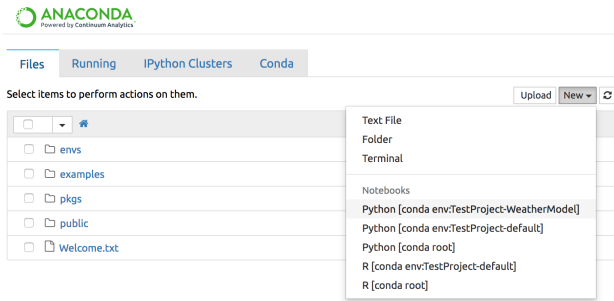
TIP: Python, pip and Jupyter Notebooks are automatically installed in each new environment. You only need to specify NumPy in this command.

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 its output cells.

EXAMPLE: The following screenshot is of a cumulative density function (CDF) plot using values taken from a normal distribution:

For more information, including a [gallery](#), [examples](#), [documentation](#) and a [list of plotting commands](#), see the [Matplotlib website](#).

Bokeh

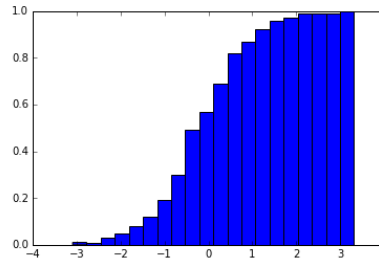
Bokeh is an interactive visualization library that targets modern web browsers to provide elegant, concise construction of novel graphics.

To display Bokeh figures in the output cells of a notebook running the default environment, run:

```
In [1]: import matplotlib.pyplot as plt
        %matplotlib inline

In [2]: import numpy as np
        x = np.random.normal(size=100)

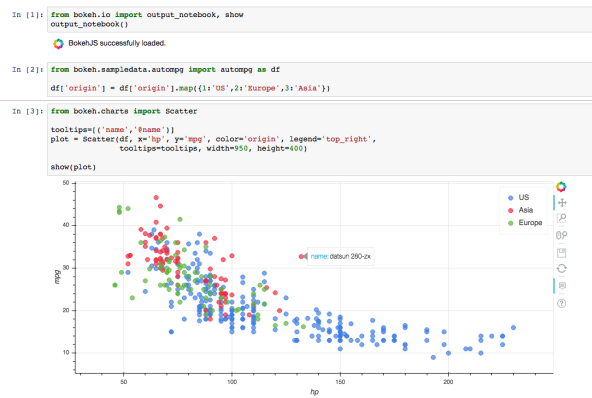
In [3]: plt.hist(x, normed=True, cumulative=True, bins=20);
```



```
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.

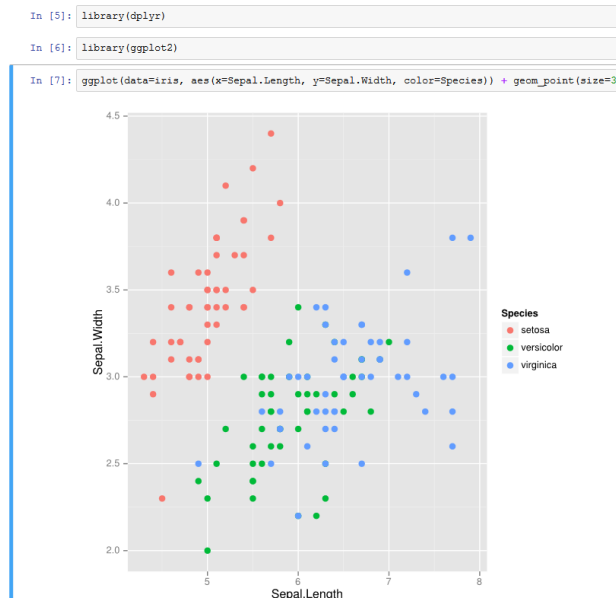
To use ggplot2 with AEN:

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:



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.

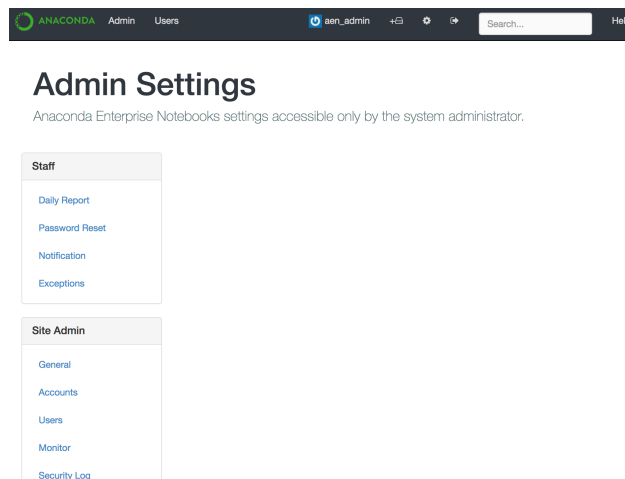
Admin guide

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:



All of the other navigation bar items are the same as for a user account.

Concepts

- *System overview*
- *Server node*
- *Gateway node*
- *Compute node(s)*
- *Supervisor and supervisor*
- *Service Account*
- *Anaconda environments*
- *Projects and permissions*

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.

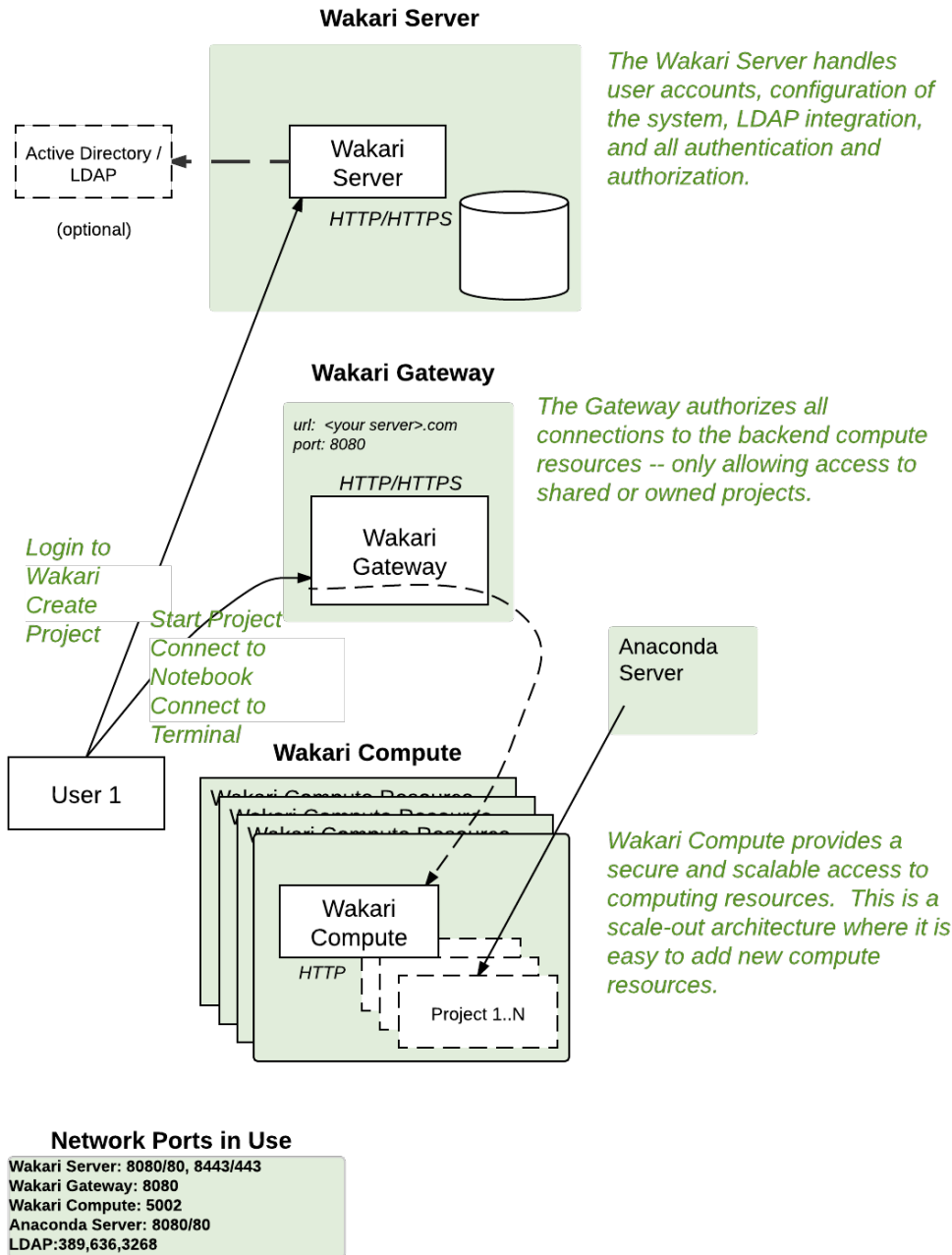
These services can be run on a single machine or distributed across multiple servers.

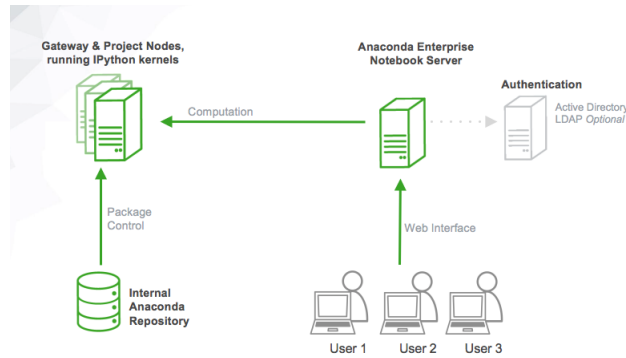
Organizationally, each AEN installation has exactly 1 server instance and 1 or more gateway instances. Each compute node can only be connected to a single gateway. The collection of compute nodes served by a single gateway is called a **data center**. You can add data centers to the AEN installation 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

Anaconda Enterprise Notebooks





- 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
con-figura-tion	/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)
con-trol	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*
- *Software requirements*
- *Security requirements*
- *Network requirements*
- *Other requirements*
- *What's next*

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 mongodb (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 libXdmc6 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*
- *Gathering IP addresses or FQDNs*
- *Set up variables*
- *What's next*

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

- *Installing the bzip2 package*
- *Downloading prerequisite RPMs*
- *Installing prerequisite RPMs*
- *Setting variables and changing permissions*
- *Running the AEN server installer*
- *Starting NGINX and Elasticsearch*
- *Testing AEN server installation*
- *Updating your license*
- *What's next*

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'
```

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```
=====

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\T1\textdollarAEN_SERVER.

The License expired page is displayed.

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:

What's next

Install the AEN gateway.

Installing the AEN gateway

- *Setting variables and changing permissions*
- *Running the AEN gateway installer*
- *Registering your gateway*
- *What's next*

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
```

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```
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
```

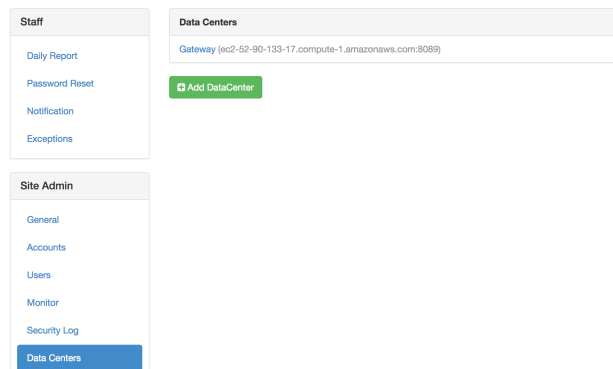

Starting the gateway

Run:

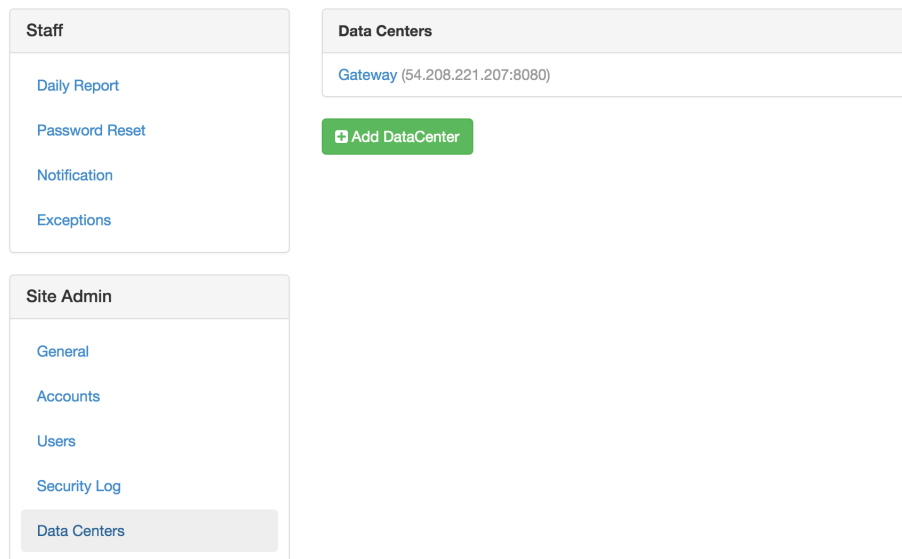
```
sudo service wakari-gateway start
```

Verifying your gateway registration

1. Log into 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:



4. Click your data center:



5. Verify that your data center is registered and the status is {"status": "ok", "messages": []}:

Staff

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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)

- *Setting variables and changing permissions*
- *Running the AEN compute installer*
- *Restart the AEN Server*
- *Configuring your compute node(s)*
- *What's next*

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:
5. Click the Add Resource button to open the new resource form.
6. Select the data center to associate this compute node with.

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Resources

Add Resource

Gateway

ec2-54-210-232-251.compute-1.amazonaws.com

remove

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

- *AEN configuration keys*
- *Checking configuration file syntax*

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://<username>:<password>@<host>:<port>/</code>
WAKARI_SERVER		The URL of this AEN server.
DEFAULT_PRIVACY	<code>public</code>	The default project privacy setting—can be either public or private.
SESSION_COOKIE_NAME	<code>wakari.enterprise.session</code>	The Cookie name used to maintain Anaconda Enterprise Notebooks Enterprise login sessions.
SESSION_COOKIE_SECURE	<code>false</code>	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	<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 SESSION_LIFETIME 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 note below about updating the database when setting uniqueEmail.
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.

Continued on next page

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Key	Default	Description
- AUTH_TYPE		LDAP subkey—LDAP Authentication types. simple—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 public or anonymous—assigned users who are not logged in to access projects. To disable public access use the special value disabled. For more information, see Configuring sudo customizations .
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 (≥ 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 Configuring SSL .
- 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	To make the AEN compute service create groups with the same uid. Set to true /projects folder resides on an NFSv3 volume. 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	13600000 (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 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	60000	Idle time in milliseconds before the Gateway session expires.

Table 22: 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
```

For more information and examples about creating a default project environment with Microsoft R Open (MRO), see *Using MRO in AEN*.

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.

Using MRO in AEN

In AEN 4.2.2 and higher, you can choose to create environments with the Microsoft R Open (MRO) interpreter by installing the `mro-base` package, or create environments with the R interpreter by installing the `r-base` package. Unless you request a change, conda will continue to use the existing interpreter in each environment. In AEN `r-base` is the default.

EXAMPLE: To create a custom environment called `mro_env` with MRO and R Essentials:

```
.. code-block:: bash

sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
  create -c https://repo.anaconda.com/pkgs/main \
  -n mro_env r-essentials
```

NOTE: Conda 4.4 and higher include the `main` channel by default. Earlier versions of conda do not.

Making a default project environment with MRO

You can also create an environment with MRO and make this the default AEN project environment.

The first time a new project is started, the default project environment is cloned into the new project's workspace.

1. Create a new conda environment in the `/opt/wakari/anaconda/envs/default` directory.

The command is similar to the one used in the previous example to create a custom environment.

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
  create -c https://repo.anaconda.com/pkgs/main \
  -p /opt/wakari/anaconda/envs/default r-essentials
```

2. Use conda to install any additional packages into the environment.
3. After the environment is created, clone it to check that it works correctly, and then clean up the clone.

```
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
```

NOTE: To convert existing projects, see *Converting an existing project*.

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)))"
                   },
    "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.

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 from the Admin Settings interface. 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 the value 'Gateway 1'. Below this, there 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",
```

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```

        "/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=100000 | 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

- *Before you upgrade*
- *Upgrading the AEN server node*
- *Upgrading the AEN gateway node*
- *Upgrading AEN compute nodes*
- *After upgrading*

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*
- *AEN 4.1.1 upgrade instructions.*
- *AEN 4.1.0 upgrade instructions.*
- *AEN 4.0.0 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 \
```

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```

    -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_SRV_C_ACCT /opt/wakari/anaconda/bin/conda install \
    -p /opt/wakari/wakari-compute \
    --file aen-compute-update-4.3.3

sudo -E -u $AEN_SRV_C_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_SRV_C_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenv \
    --clone root

```

7. Test the offline cloning step:

```

sudo -E -u $AEN_SRV_C_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-4.3.3

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

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.

- *Uninstalling a server node*
- *Uninstalling a gateway node*
- *Uninstalling a compute node*
- *OPTIONAL: Removing projects from compute nodes*

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 are two sidebars. The top sidebar is titled 'Staff' and contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom sidebar is titled 'Site Admin' and 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. 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 a web interface for managing staff. On the left is a sidebar with a 'Staff' header and four links: 'Daily Report', 'Password Reset' (which is highlighted), 'Notification', and 'Exceptions'. The main content area is titled 'Password Reset' and contains a text input field with the value 'guest' and 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 into 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 into 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](#)

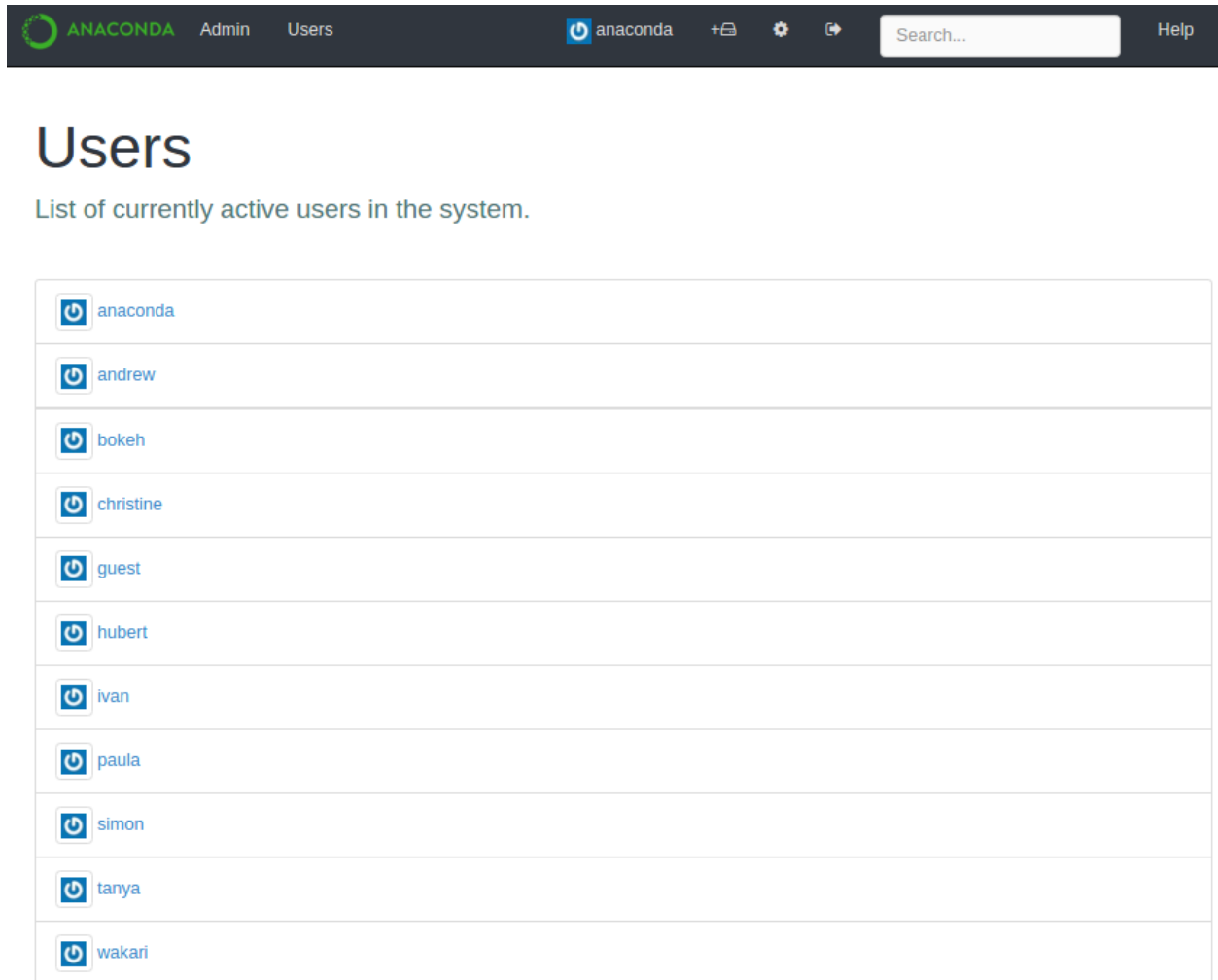
Users

Username	Projects	Last Seen
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.



The screenshot shows the Anaconda web interface. At the top is a dark navigation bar with the Anaconda logo, 'Admin' and 'Users' links, a search bar, and a 'Help' link. Below the navigation bar, the page title 'Users' is displayed in a large font. Underneath the title is a subtitle: 'List of currently active users in the system.' The main content area contains a table with 11 rows, each representing a user. Each row starts with a small blue square icon containing a white power symbol, followed by the user's username in a blue, monospace-style font. The usernames listed are: anaconda, andrew, bokeh, christine, guest, hubert, ivan, paula, simon, tanya, and wakari.

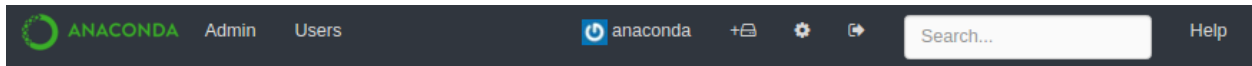
 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

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.

3. 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.

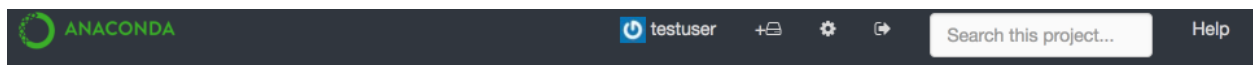
4. If you select SMTP Email Server, complete the SMTP Settings.

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

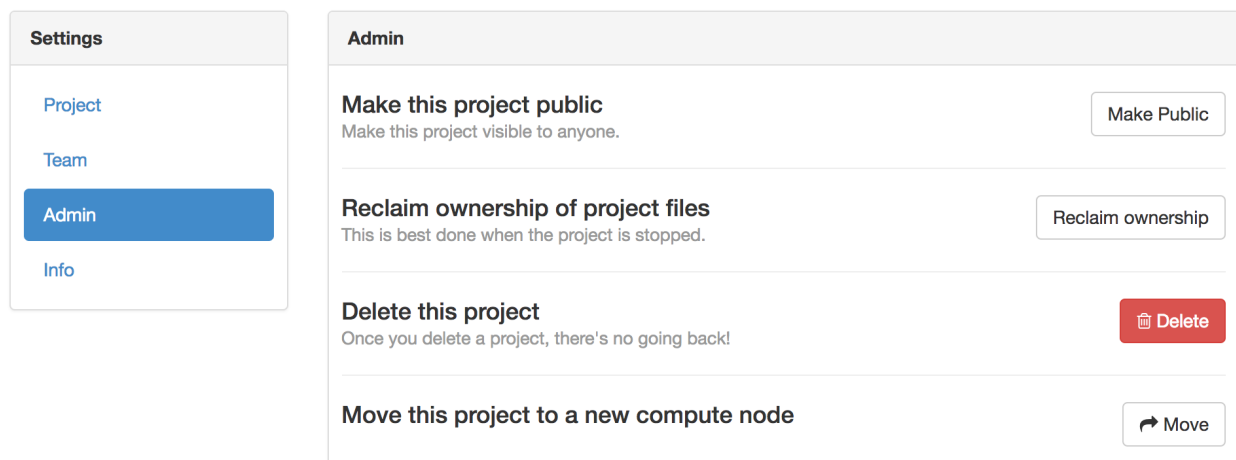
If you have multiple compute nodes available and want to move a project from one to another, the project must exist on both nodes.

1. 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`.
2. On the project home page, click the Project Settings icon to open the Project Settings page.

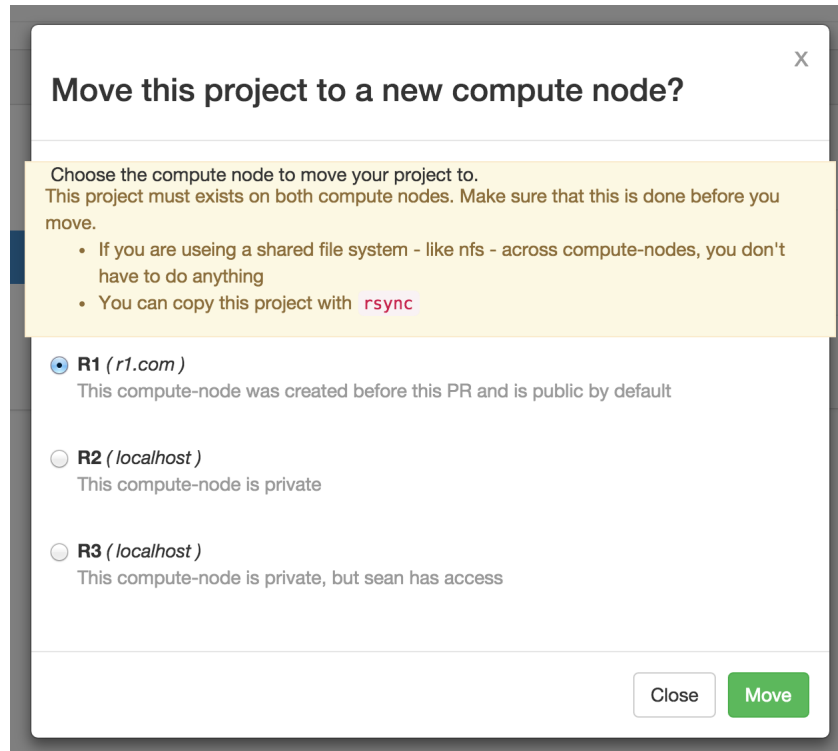


3. In the **Settings** menu, select Admin.

testuser / TestProject



4. Click the 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>
```

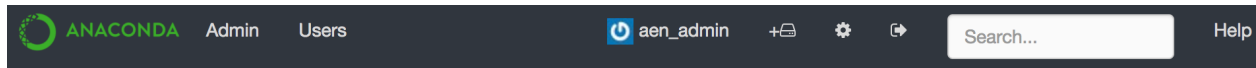
NOTE: Replace <username> with the actual username and <projectname> with the actual project name you are removing.

System management

Opening the Admin dashboard

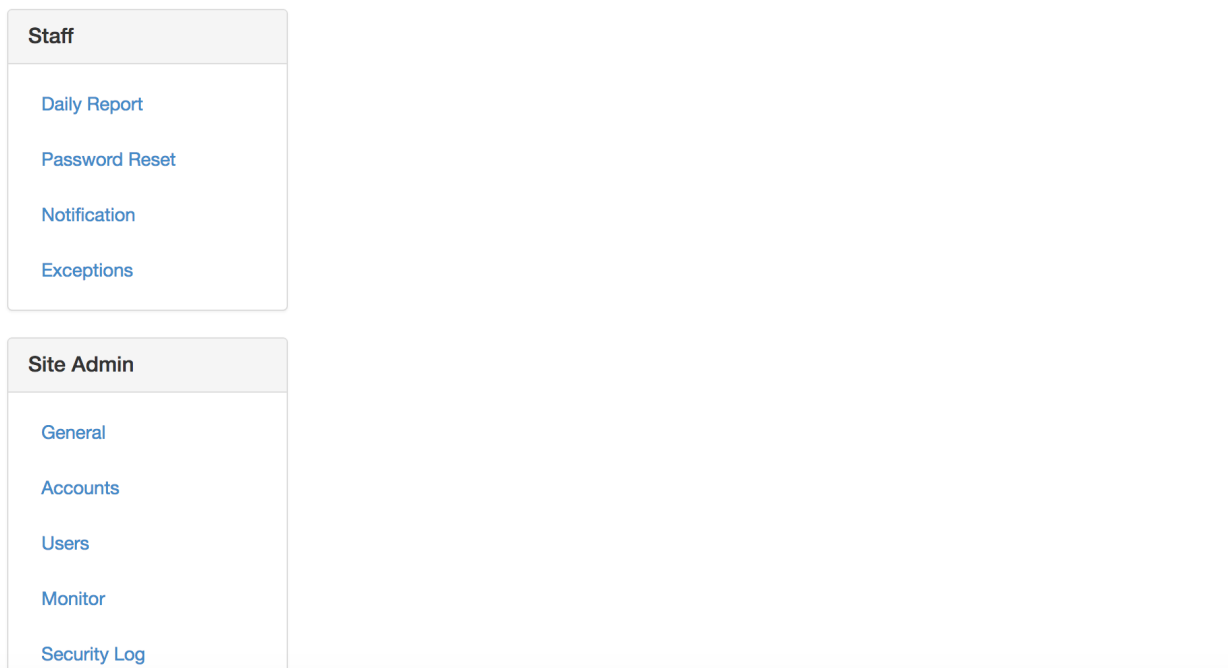
If you have administrator privileges, you see two additional links in the AEN navigation bar—Admin and Users:

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*
- *Important notes*
- *Server component steps*
 - *Backup*

- * *Mongo database*
- * *AEN Server config files (including License file)*
- * *Nginx config (if needed)*
- * *SSL certificates (if needed)*
- *Restore*
 - * *Reinstall AEN-Server*
 - * *Restore Mongo database*
 - * *AEN Server config files (including License file)*
 - * *Nginx config (if needed)*
 - * *SSL certificates (if needed)*
 - * *Restart server*
- *Gateway component steps*
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 - * *Config files*
 - * *Custom .condarc file (if needed)*
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 - *Backup*
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 - * *Create user list*
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 - * *Full Anaconda (option 1)*
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 - *Restore*
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 - * *Custom changes (rare)*
 - * *Create users*

- * *Project files*
- * *Full Anaconda (option 1)*
- * *Partial Anaconda (option 2)*
- * *Custom environments (if needed)*
- * *Restart compute node*

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_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-4.3.3-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
Users	0	1
Projects	0	6

New User Emails

Username	Email
----------	-------

Actions

Count	Action
82	oauth.authenticate

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**. The **Staff** section is currently selected, showing a list of links: Daily Report, Password Reset, Notification, and Exceptions. The **Exceptions** link is highlighted with a red box. The **Site Admin** section includes links for General, Accounts, Users, Security Log, Data Centers, Task Queue, and License. The **Providers** section includes Enterprise Resources. On the right, the **Exceptions** table is displayed. The table has a header row with the title 'Exceptions' and a 'Mark all as read' button. The table contains a list of exceptions, each with a radio button icon to its left. The first exception is selected, and its radio button is also highlighted with a red box. The exceptions listed are:

Exceptions	
<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.

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:

5. To close the error details, click the Back link.

Public Profile

Account Settings

Security Log

Applications

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

[← Back](#)

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:

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](#)

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:

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": []}
```

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": []}
```

- 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*
- *Checking the status of gateway node processes*
- *Checking the status of compute node processes*
- *Starting AEN services*
- *Verifying that AEN services are set to start with the system*
- *Stopping AEN services*
- *Restarting AEN services*
- *Identifying extraneous processes*
- *Removing extraneous processes*

Checking the status of server node processes

- 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
```

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```
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
```

(continues on next page)

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```
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 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](#)

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	Terminate	Relaunch	Logs
aen_admin	Test	notebook	running	localhost	Jul 25, 2017 11:54:05 CDT	Terminate	Relaunch	Logs

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.

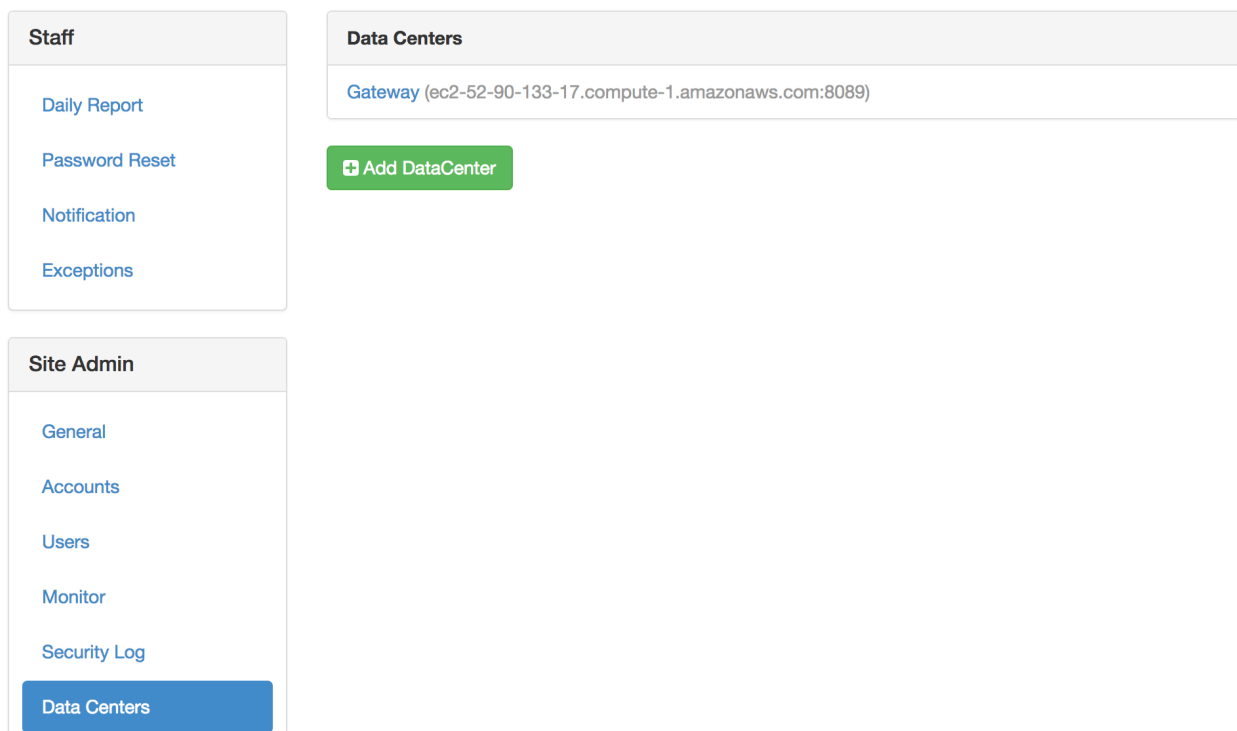
Checking node connections

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*
- *Verifying gateway to compute node connectivity*
- *Verifying gateway to server connectivity*

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	Resources
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

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:
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:
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:

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed
Password Reset	<input type="text" value="http://anaconda-enterprise.trl"/>
Notification	
Exceptions	Static URL Set static URL where the js can be accessed
	<input type="text" value="http://anaconda-enterprise.trl/static/"/>
Site Admin	Default Project Access This will be the default when a user creates a project
General	<input type="radio"/> Public Anyone can see this project. Collaborators have write access
Accounts	<input checked="" type="radio"/> Private No one can see this project except collaborators.
Users	
Monitor	Account Type
Security Log	<input type="text" value="wk_server.plugins.accounts.cloud"/>
Data Centers	
Task Queue	<input type="button" value="Update"/>
License	
Providers	Config Files

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

General

[Accounts](#)
[Users](#)
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[License](#)

Providers

General Admin Settings

Wakari Server
Set the main URL where this site will be accessed

Static URL
Set static URL where the js can be accessed

Default Project Access
This will be the default when a user creates a project

☐ Public
Anyone can see this project. Collaborators have write access

☒ Private
No one can see this project except collaborators.

Account Type

Update

Config Files

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <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 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:

Staff Daily Report Password Reset Notification Exceptions	General Admin Settings Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/> Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/> Default Project Access 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. Account Type <input type="text" value="wk_server.plugins.accounts.cloud"/> <input type="button" value="Update"/>
Site Admin General Accounts Users Monitor Security Log Data Centers Task Queue License	Config Files

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**.
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 **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.

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed
Password Reset	<input type="text" value="http://anaconda-enterprise.trl"/>
Notification	Static URL Set static URL where the js can be accessed
Exceptions	<input type="text" value="http://anaconda-enterprise.trl/static/"/>
Site Admin	Default Project Access This will be the default when a user creates a project
General	<input type="radio"/> Public Anyone can see this project. Collaborators have write access
Accounts	<input checked="" type="radio"/> Private No one can see this project except collaborators.
Users	Account Type
Monitor	<input type="text" value="wk_server.plugins.accounts.cloud"/>
Security Log	<input type="button" value="Update"/>
Data Centers	
Task Queue	
License	
Providers	Config Files

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)
[Task Queue](#)
[License](#)

Current License

You have **166 days** remaining on your current license.
[Renew your license](#)

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
email	dev@continuum.io

Upload New License

License File

[Choose File](#) No file chosen

[Update](#)

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*
- *Browser error: too many redirects*
- *Browser error: too many redirects when starting project apps*
- *Exception: exceptions.TypeError: 'NoneType' object has no attribute '__getitem__'*
- *Error: unix:///opt/wakari/wakari-server/etc/supervisor.sock no such file*
- *Error: “Data Center Not Found” when deleting a project*
- *Forgotten administrator password*
- *Log files being deleted*
- *Error: This socket is closed*
- *Service error 502: Cannot connect to the application manager*
- *502 communication error on Amazon web services (AWS)*
- *Invalid username*
- *Notebook Error: Cannot download notebook as PDF via LaTeX*
- *Unresponsive wk-server thread without error messages*
- *Unresponsive wk-gateway thread without error messages*

- *Error starting projects*
- *Changes in .condarc file are ignored*

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 into 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 into AEN as the administrator user with the new password.

Alternatively you may add an administrator user:

1. Use ssh to log into 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 into 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 into `/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?*
- *Can notebooks be shared with anyone?*
- *Can I disable the option, “publish your notebook to anaconda.org”?*
- *How can I check the version number of my AEN server?*
- *Can I use AEN to access CSV or Amazon S3 data?*
- *Can I install other Python packages?*
- *Can I create a Python environment from the command line?*
- *Can I connect to GitHub with AEN?*
- *Can I print or print preview my Jupyter Notebooks?*
- *Is there a set amount of storage on AEN?*
- *How do I get help, give feedback, suggest features or report a bug?*

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

- 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

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 4.3.1, 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](#)
- [Team collaboration](#)
- [Access control](#)
- [Sharing projects](#)
- [Project tags](#)

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.

In this getting started guide, you will:

- 1. *Download the AEN cheat sheet*
- 2. *Access your user home page*
- 3. *Create a new project*
- 4. *Add collaborators*
- 5a. *Open an example notebook, OR*
- 5b. *Create a new environment and notebook*
- 6. *Create checkpoints for version control*
- 7. *Share your notebook and environment with others*
- 8. *See what to do next*

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.

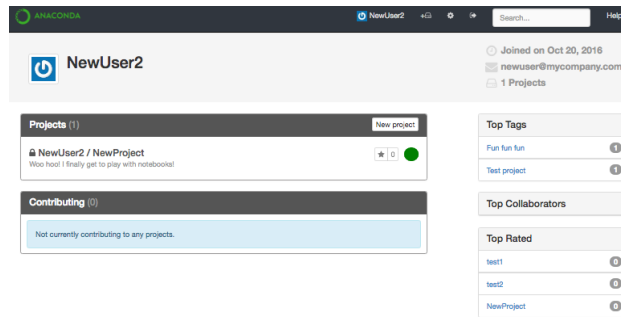
NOTE: Some administrators allow you to create your own account. If your administrator has allowed this, in the create a new account section, create your own username and password.

3. Click the Login button.

Your user home page, where all good things happen, is displayed:

3. Create a new project

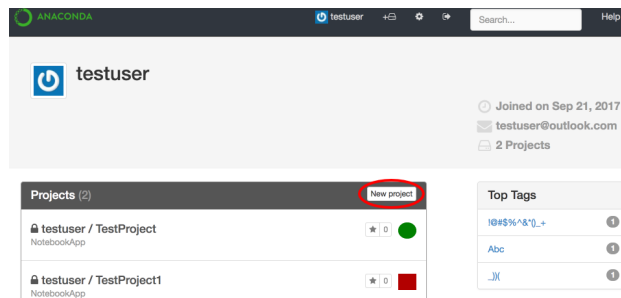
1. There are 2 ways to create a new project in AEN:



- 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.”

3. Type a summary of the project so you can recognize it later.

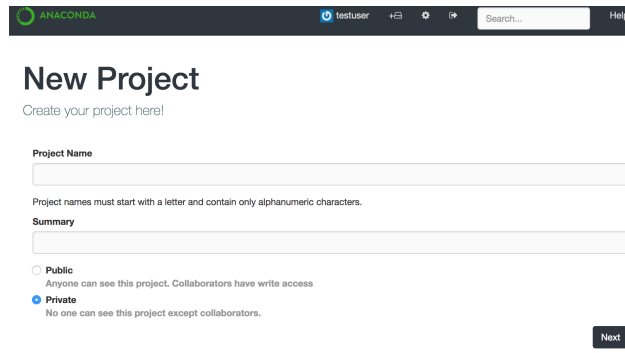
4. Select whether your project will be public or private.

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:



New Project
Create your project here!

Project Name

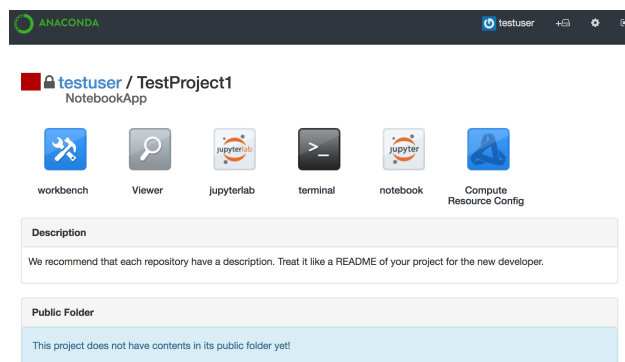
Project names must start with a letter and contain only alphanumeric characters.

Summary

☐ Public
Anyone can see this project. Collaborators have write access

☒ Private
No one can see this project except collaborators.

Next



testuser / TestProject1
NotebookApp

workbench Viewer jupyterlab terminal notebook Compute Resource Config

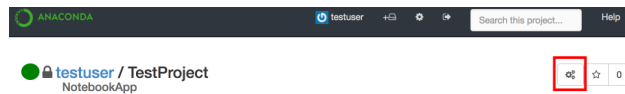
Description

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.

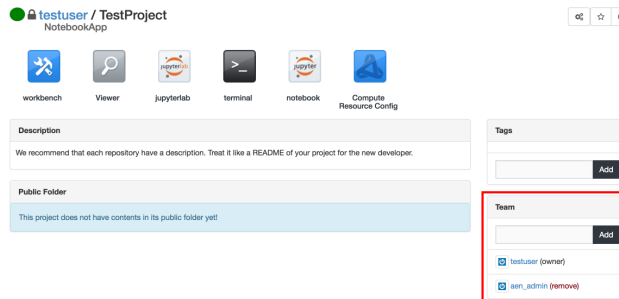
4. Add collaborators

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:

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.

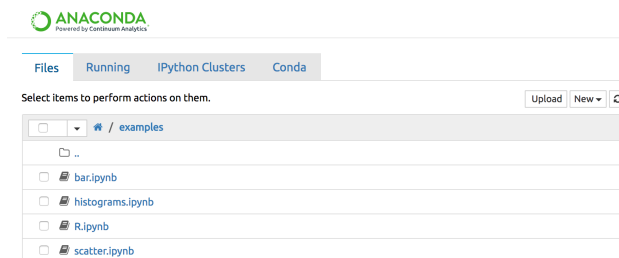


1. Repeat these steps for each team member you want to add as a collaborator.

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.



1. Select any of the example notebooks.
2. To see the default results of the formulas used in the displayed notebook, in the **Cell** menu, select Run All.
3. To experiment with changing the notebook, edit any of the formulas in the notebook.
4. 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:

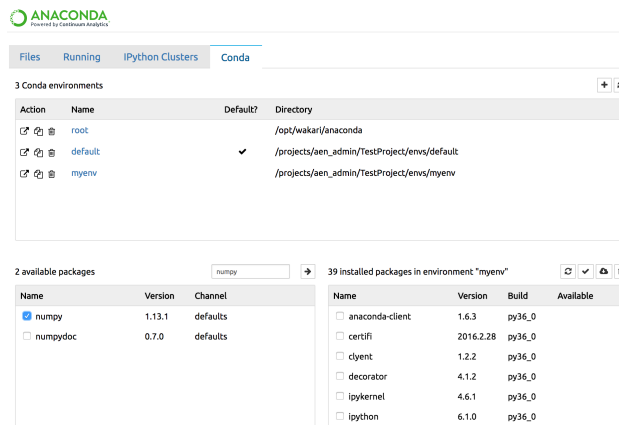
1. From your project home page, click the Jupyter Notebooks icon.

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.



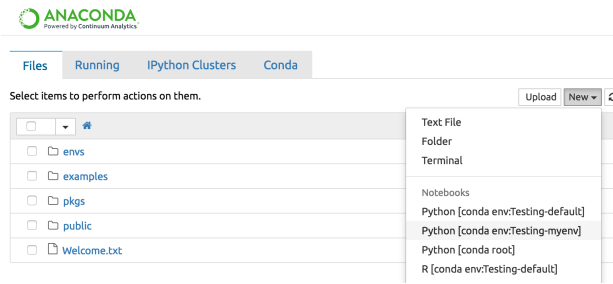
1. Click the Install icon.
2. To confirm your installation, click the Install button.

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](#).

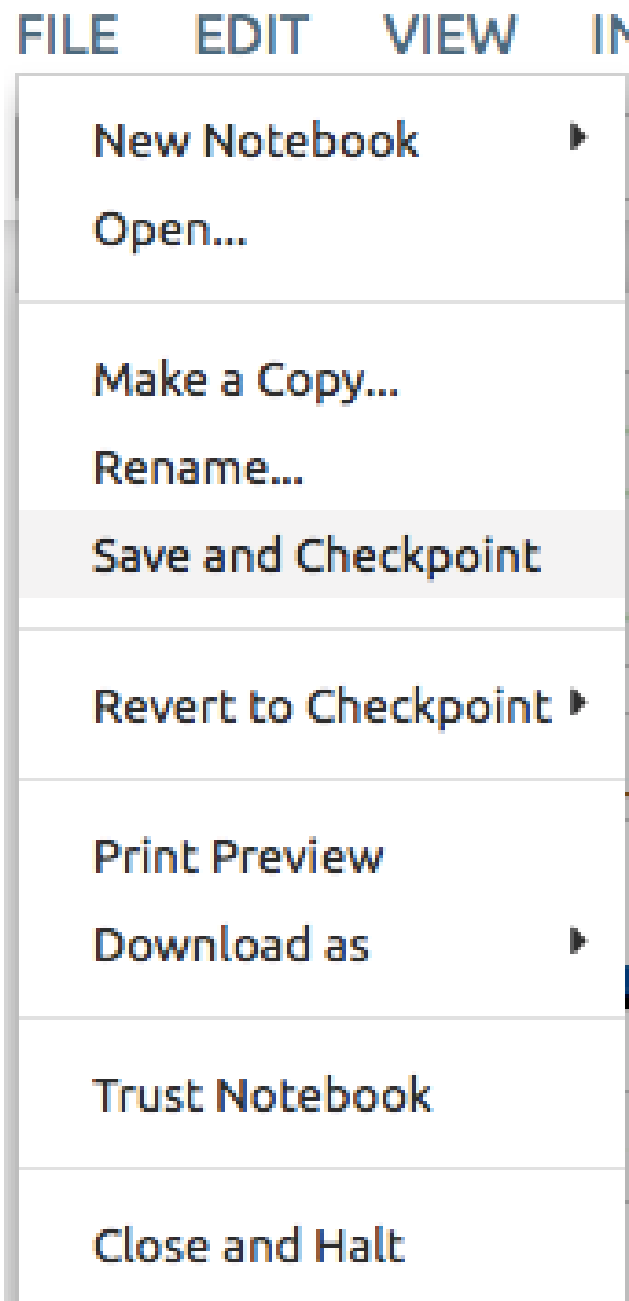
Basic tasks

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

- *Types of files searched*
- *Search indexing*
- *Using search constructs*
- *Searching metadata fields*
- *Searching a project*
- *Saving a search*
- *Removing a saved search*

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.

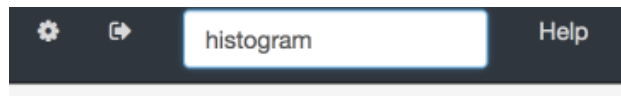
Searching metadata fields

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:

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:

Projects matching 'iris' ([save this search](#))

 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 ●


Found 1 files matching 'histogram' in user02/Public_project. ([save this search](#))






File	Relevance
/examples/histograms.ipynb	42

Saving a search

1. At the top of the search results, click Save this search:

Projects matching 'iris' **Stored**

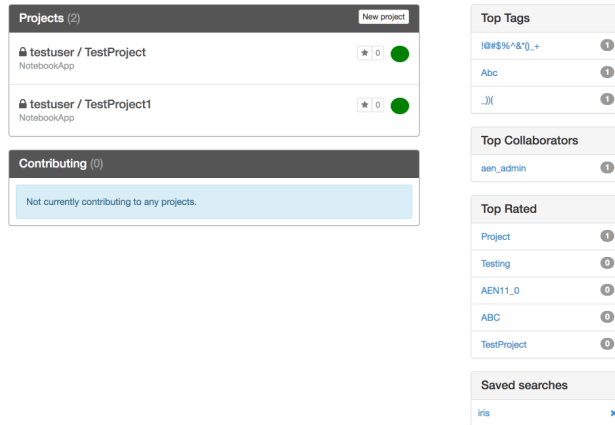
 Projects matching 'iris' **Stored**

 testuser / TestProject NotebookApp	★ 0 ●
 AnacondaEN / AEN11_0 No Summary	★ 0 ●
 Rida / ABC No Summary	★ 0 ●
 Rida / Testing No Summary	★ 0 ●
 testuser / TestProject1 NotebookApp	★ 0 ●

The “save this search” text changes to “stored” and your search is saved. Your saved searches are listed on your home page.

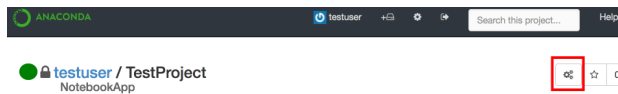
Removing a saved search

On your home page, in the Saved searches section, click X next the saved search that you want to remove:

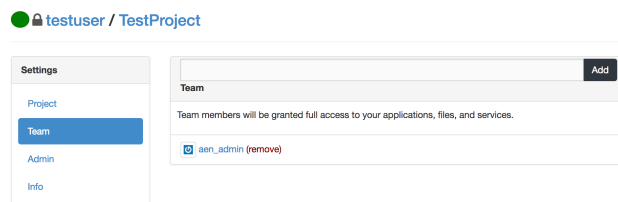


Adding and removing team members on a project

1. On the project home page, click the Project Settings icon to open the Project Settings page.



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*
- *Controlling non-team member access*

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:

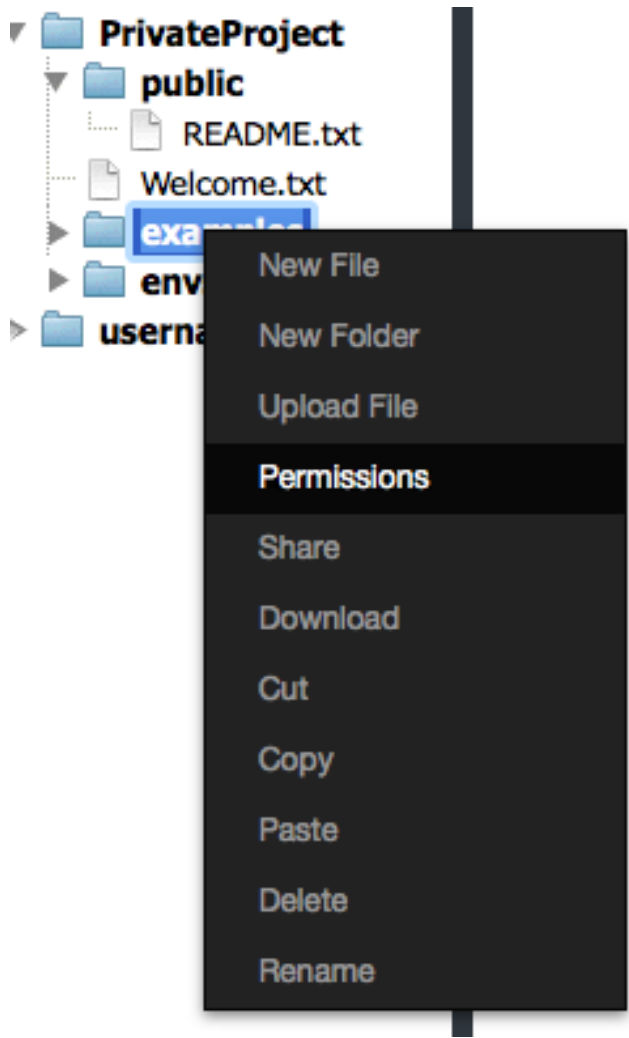
6. Next to the team member's name, select or deselect the permissions for that user.

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.

7. 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.



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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username"/>	Group	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	User	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	Group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	User	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	Group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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:

1. *Copy or move the file or folder to your home directory.*
2. *Give the user read and execute access to your home directory.*
3. *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.

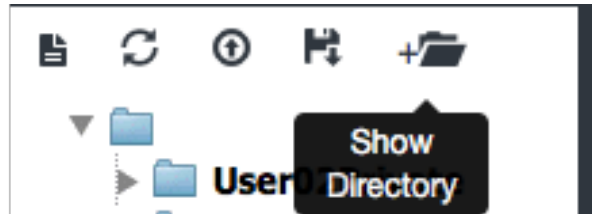
NOTE: If you change permissions for a folder instead of a file, the user will be able to see and access any files within that folder.

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:

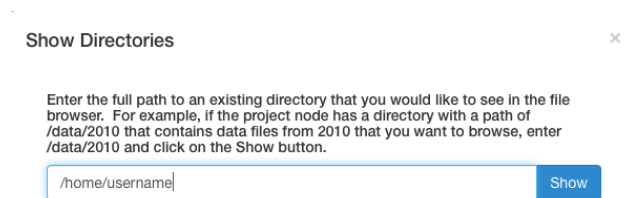
1. Click the Show Directory button at the top of the Workbench File Manager:



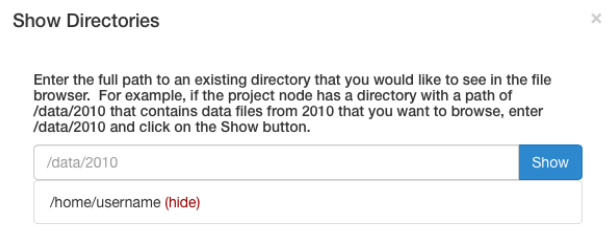
The Show Directories dialog box displays.

2. In the text box, type `/home/[yourusername]`.

NOTE: Replace `[yourusername]` with your AEN username.



3. Click the Show button.
4. Verify that the folder is now displayed below the text box:



5. 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.

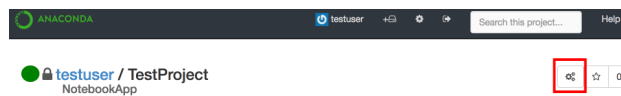
The shared file is displayed in the File Manager:



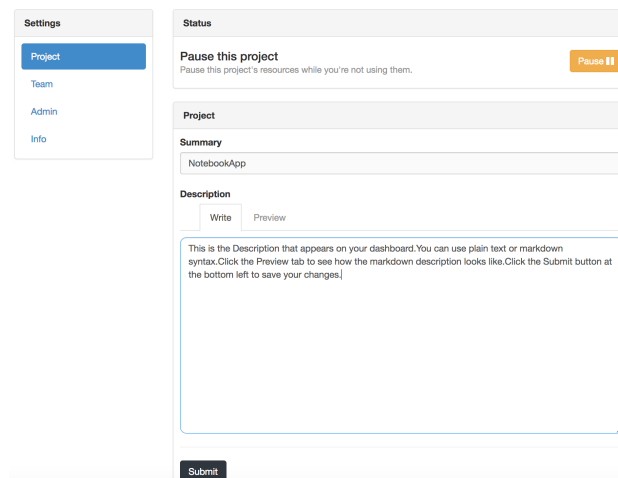
Starting and stopping a project

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.

- On the project home page, click the Project Settings icon to open the Project Settings page.



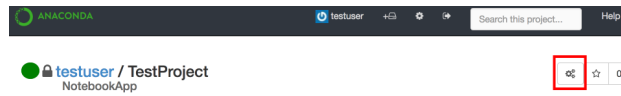
- In the **Settings** menu, select Project.



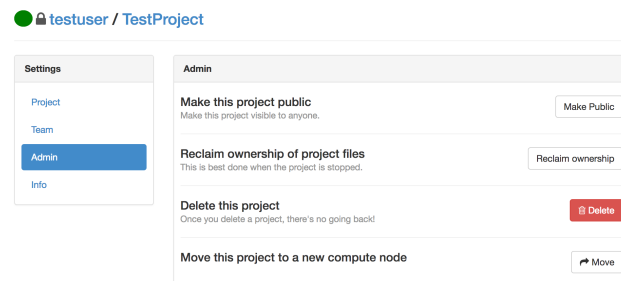
- In the Status section, click the Start or Stop button to toggle between manually starting and stopping your project.

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.



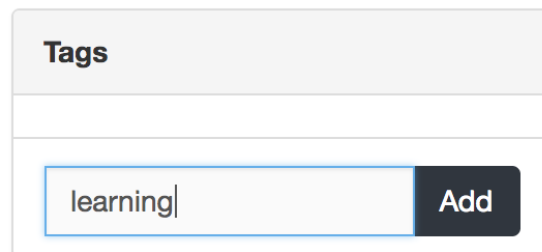
3. Click the Make Public button.
4. If the project is already public and you want to make it private, click the Make Private button.

Tagging a project

Existing tags assigned to a project are listed in the Tags section on the project's home page.

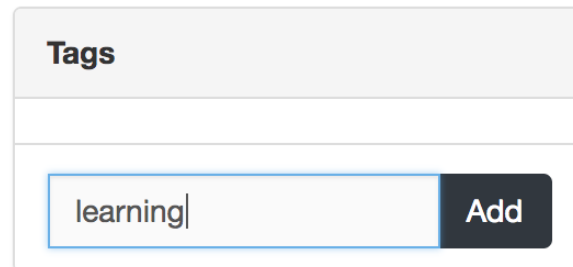
Adding a tag

1. In the Tags box, type the name of the tag you want to add:



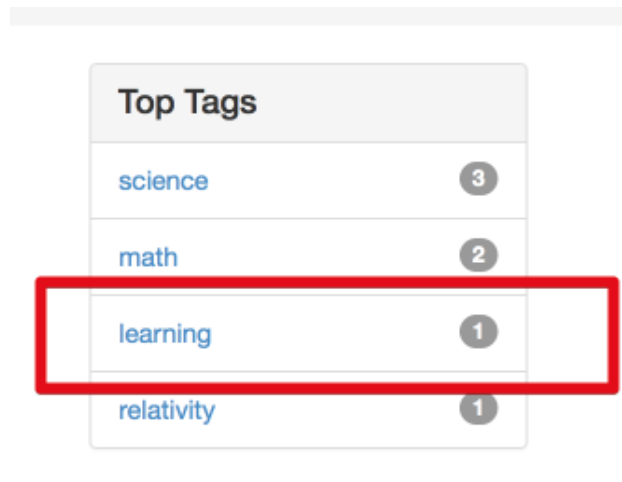
2. Click the Add button.

The new tag is added to the Tags list:



A screenshot of a web form titled "Tags". It features a text input field containing the word "learning" and a dark grey "Add" button to its right.

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:

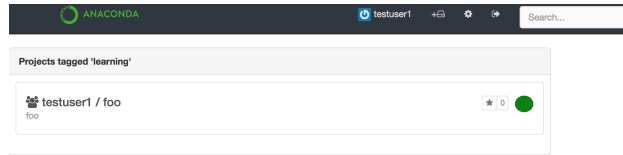


A screenshot of a "Top Tags" list. The list contains four items: "science" with a count of 3, "math" with a count of 2, "learning" with a count of 1, and "relativity" with a count of 1. The "learning" row is highlighted with a red rectangular border.

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.

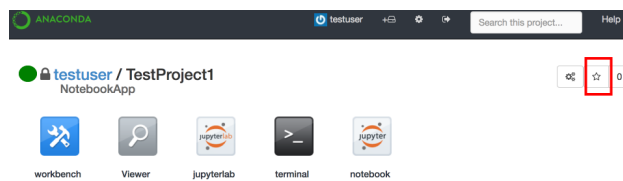


Starring a project (rating)

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:

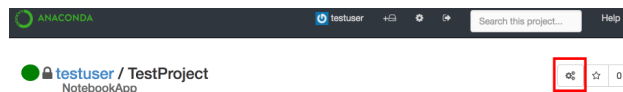


3. To unstar a project, click the Star icon again.

Claim ownership of a project

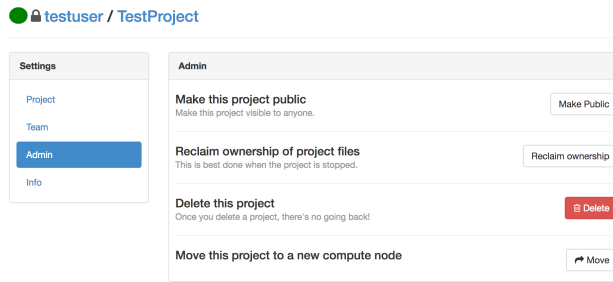
When you claim ownership of a project, ownership of all files and folders created by the team members on the project is transferred to you. Project files and folders are copied and renamed.

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.



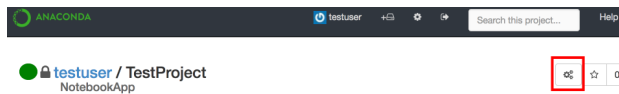
3. In the **Settings** menu, select Admin.

4. Click the Reclaim ownership button.

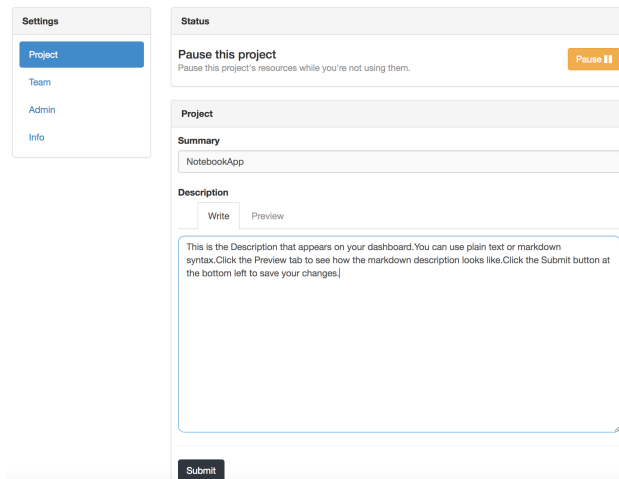


Changing a project's summary or description

1. On the project home page, click the Project Settings icon to open the Project Settings page.



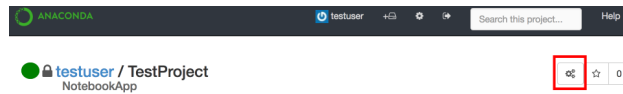
2. In the **Settings** menu, select **Project**.



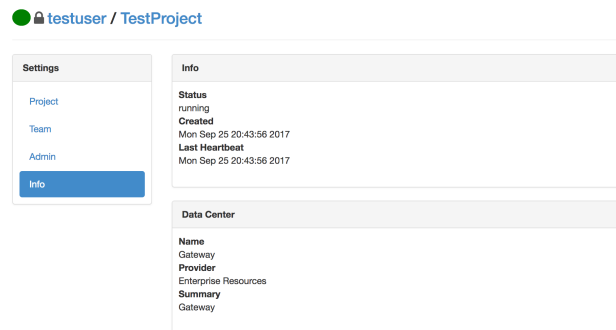
3. Update your project's summary using plain text or its description using Markdown syntax.
4. Click the **Preview** tab to see a preview of the Markdown description.
5. Click the Submit button.

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.



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.

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.

Team

Add

user02 (owner)

user01 (remove)

Related Projects

user01 / TestProject2

No Summary

user02 / User02Private

No Summary

user01 / TestProject

No Summary

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

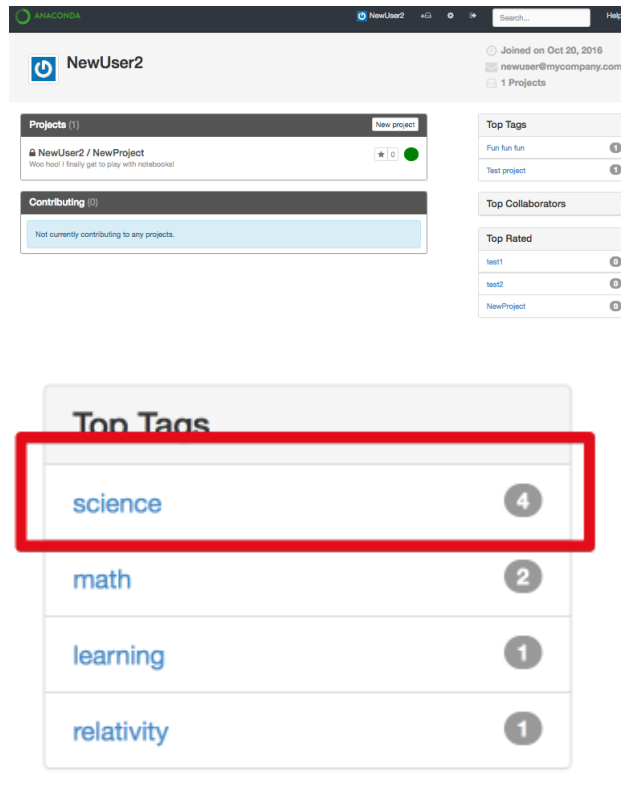
The number next to a project represents the number of stars that have been given to that project.

Click a project name to view the project’s home page.

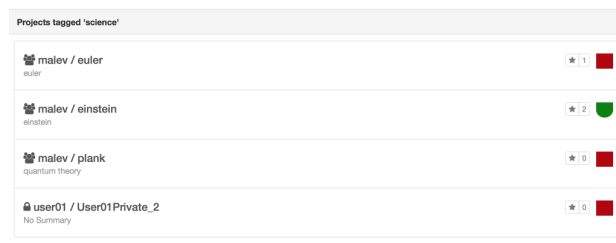
Using tags to find a project

The top tags used on your projects are listed on your home page:

To list all projects that share a specific tag, click the tag name:



A list of projects with the selected tag is displayed:



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

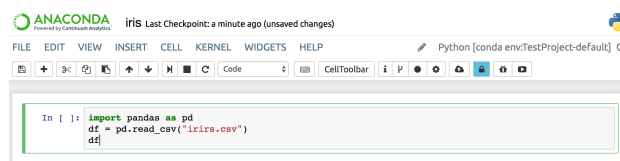
For information on sharing projects via the project settings and access control, see *Sharing projects*.

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](https://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

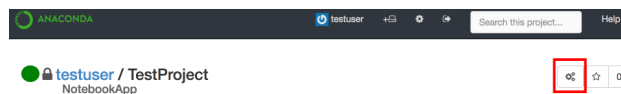
- **Print**—In the **File** menu, select Print.
- **Download and share**—In the **File** menu, select one of the following options:
 - Download as Notebook.
 - Download as Python.

- 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](#).

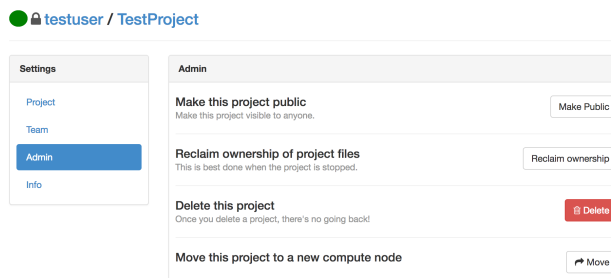
Deleting a project

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.



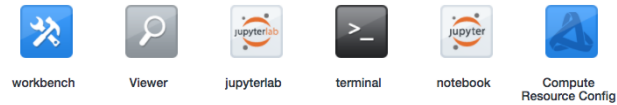
4. Click the Delete button.

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 into 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

- *Opening Workbench*
- *Using File Manager*
- *Opening the Workbench terminal*

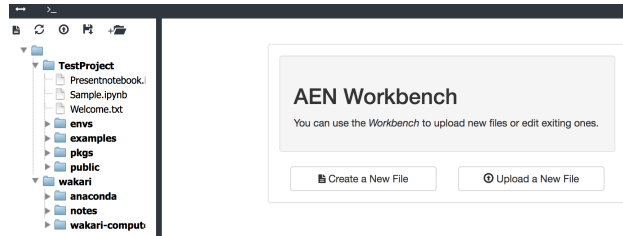
Workbench is a file viewer and manager that includes a file editor and file permissions manager.

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

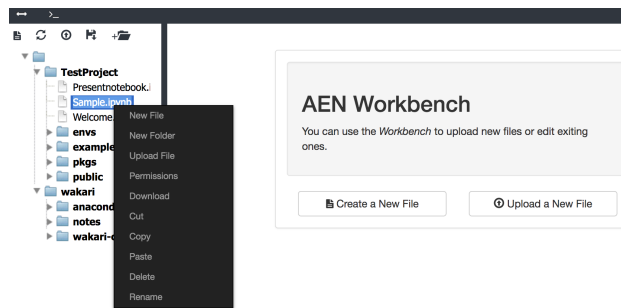
The File Manager is an intuitive way to interact with your files and folders.

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.

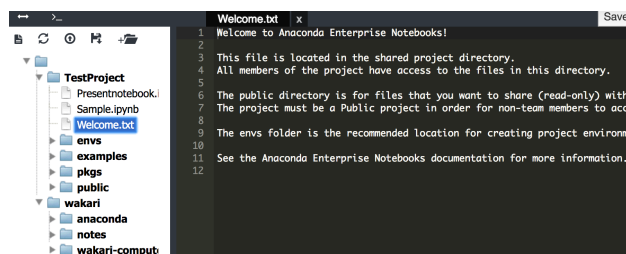
- New Folder—Create a new folder.
- Upload File—Upload a file to the selected folder. You can also drag a file to the folder.
- Permissions—*Control access to files and folders.*
- Cut—Cut the selected file or folder.
- Copy—Copy the selected file or folder.
- Paste—Paste a previously cut or copied file 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:

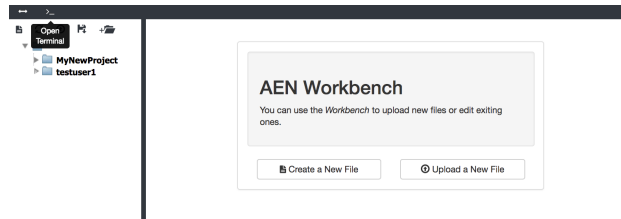


2. When you finish editing the file, click the Save button.

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.

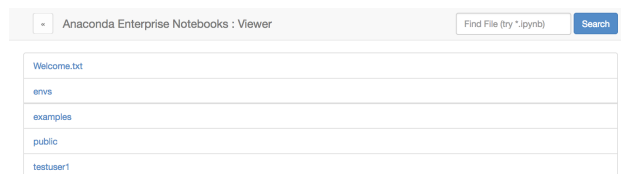
To move between terminal windows, click the **Terminal** tab in the navigation bar, then select the number of the terminal window you want to work in.

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*.

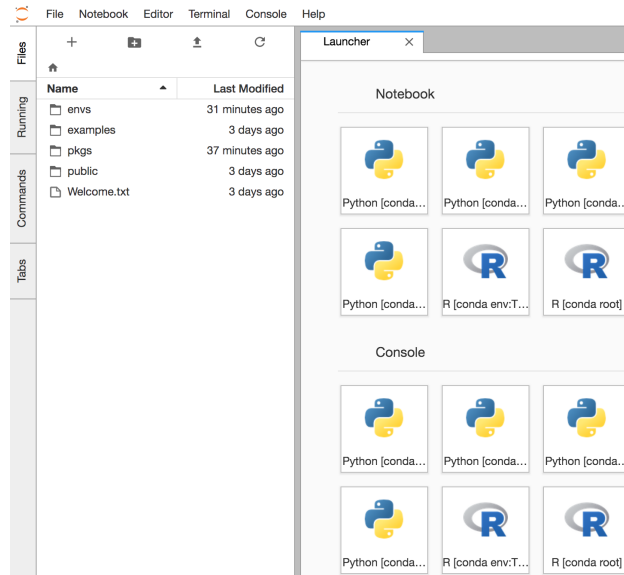
For more information about JupyterLab, see the [documentation](#).

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

- *Opening the Jupyter Notebook application*
- *Using example notebooks*
- *Creating a new 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.

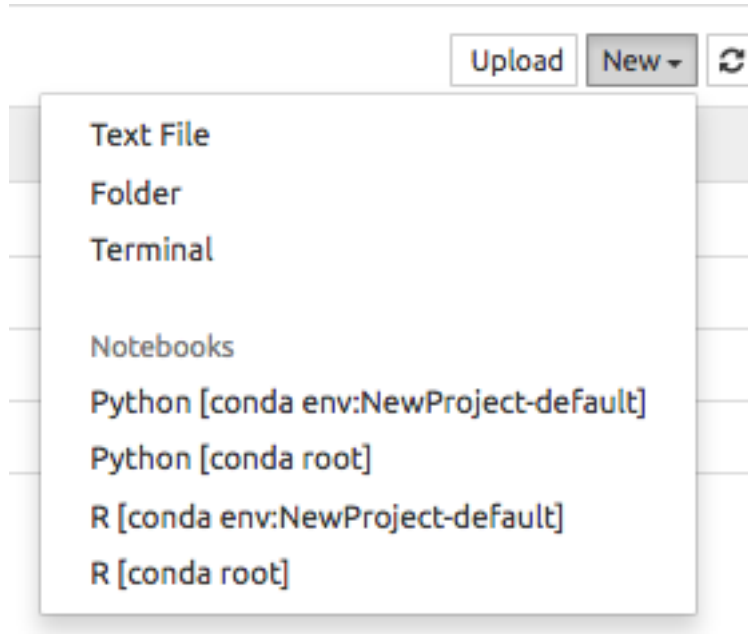
Creating a new Jupyter Notebook

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:

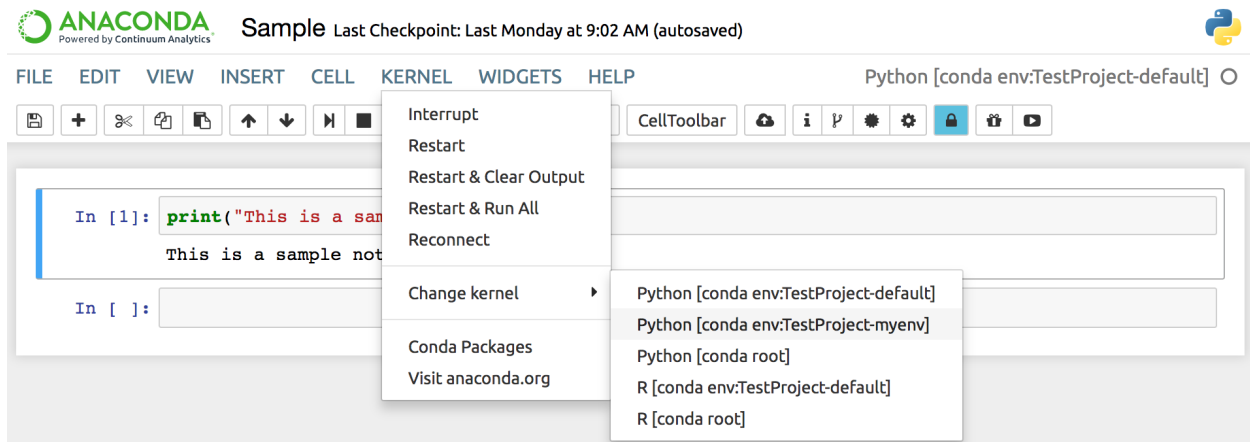
- [Synchronize Environments](#) with Jupyter from the **Kernel** menu.
- [Locking](#) adds multi-user capability from the Lock button.
- [Revision Control Mechanism \(RCM\)](#) adds Status, Checkout and Commit buttons.
- [Conda environment and package management](#) tab.
- [Conda notebook](#) adds conda 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:

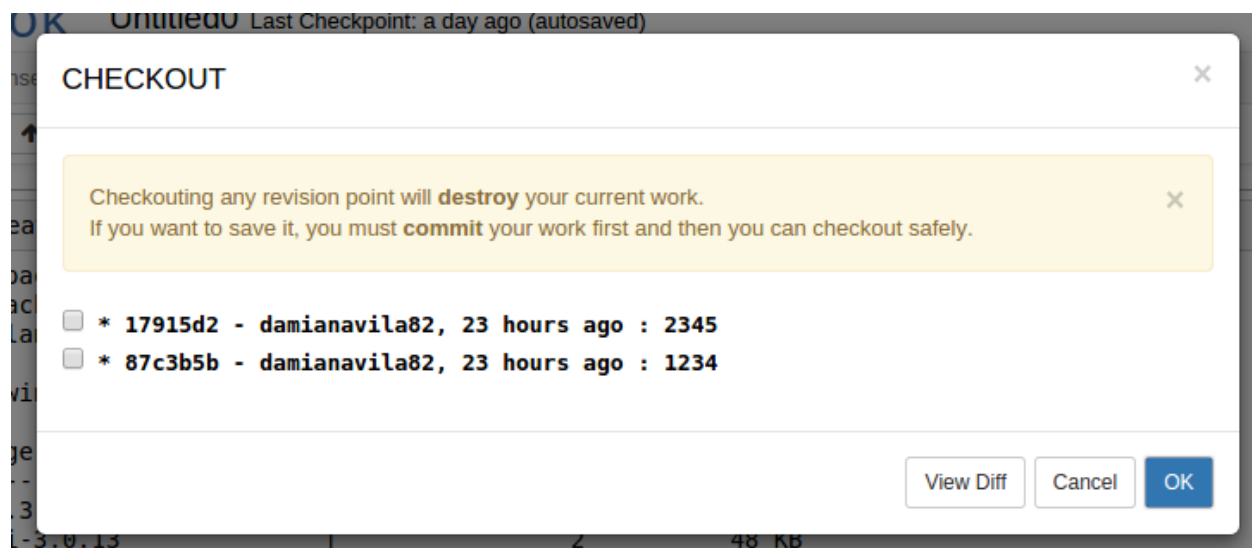
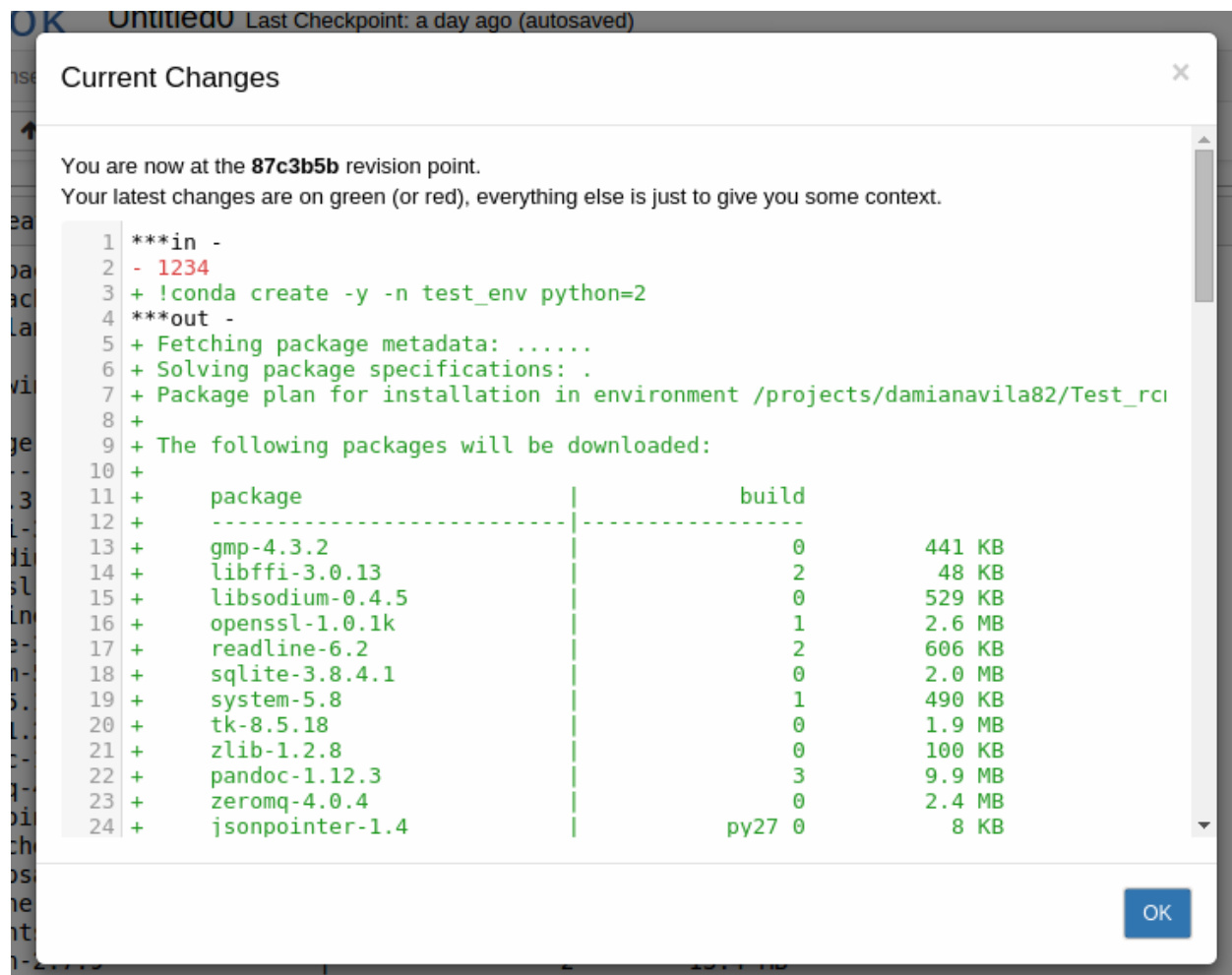
Checking out a previous revision

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.

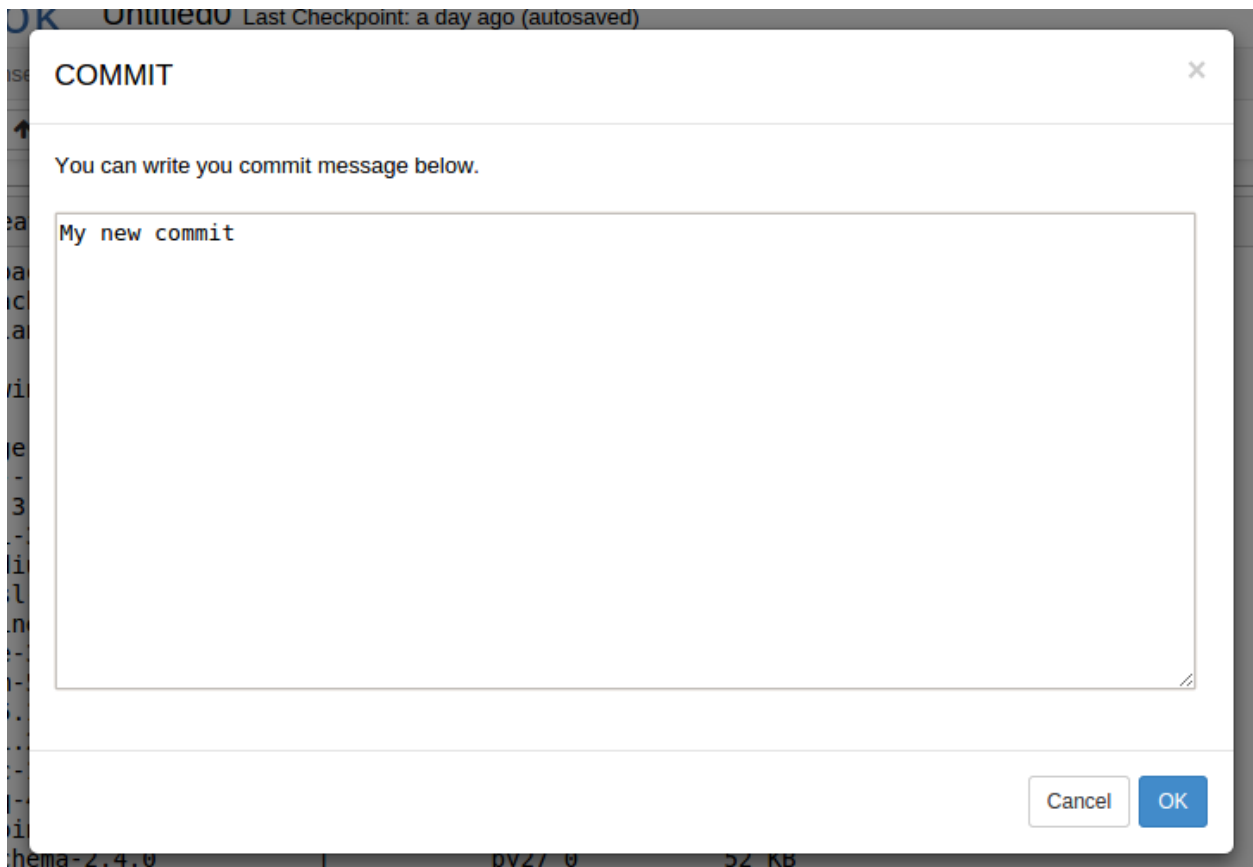
A side-by-side comparison is displayed.

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:



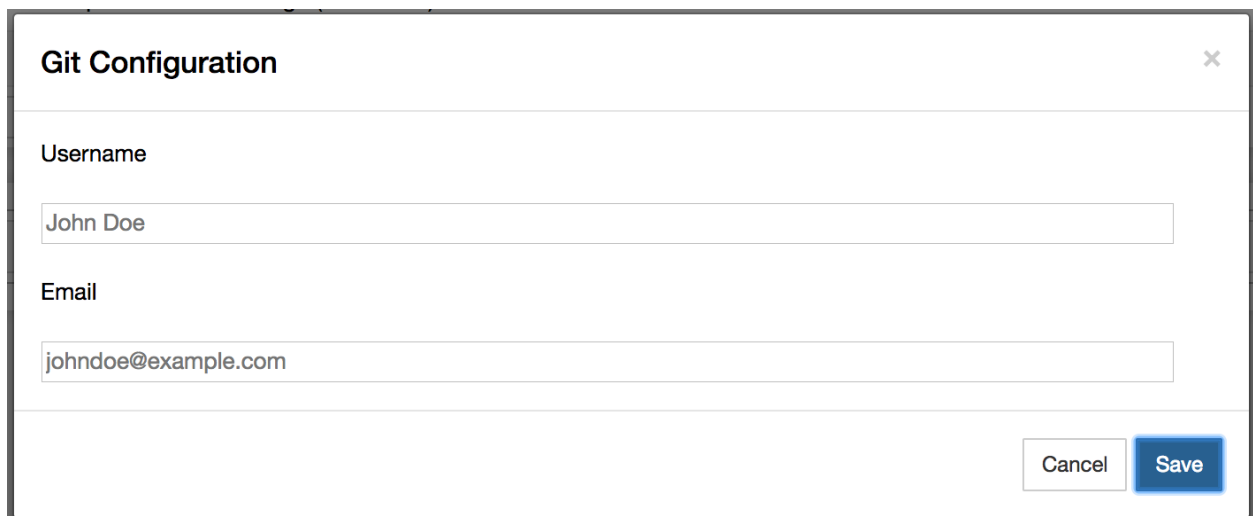
Configure Git and then try to commit again.

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:



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

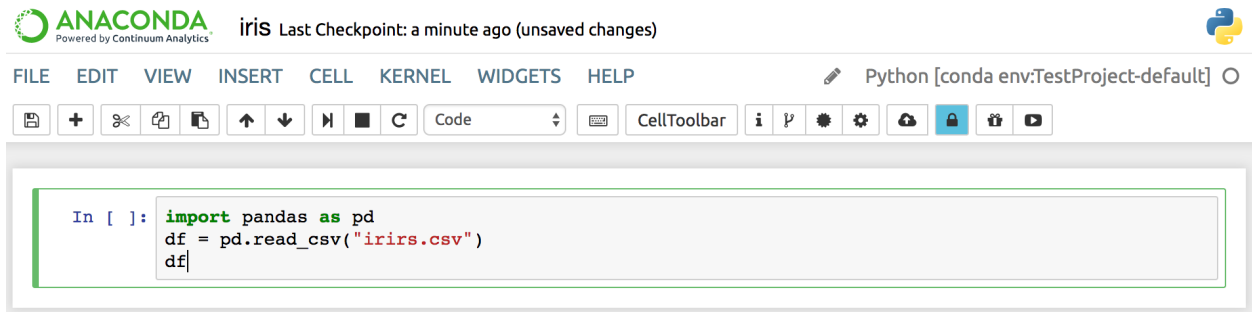
Name	Version	Build	Available
<input type="checkbox"/> _license	1.1	py27_1	
<input type="checkbox"/> alabaster	0.7.10	py27_0	
<input type="checkbox"/> anaconda	custom	py27_0	
<input type="checkbox"/> anaconda-client	1.5.1	py27_0	
<input type="checkbox"/> anaconda-project	0.6.0	py27_0	
<input type="checkbox"/> 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:



Using the Conda Notebook extension

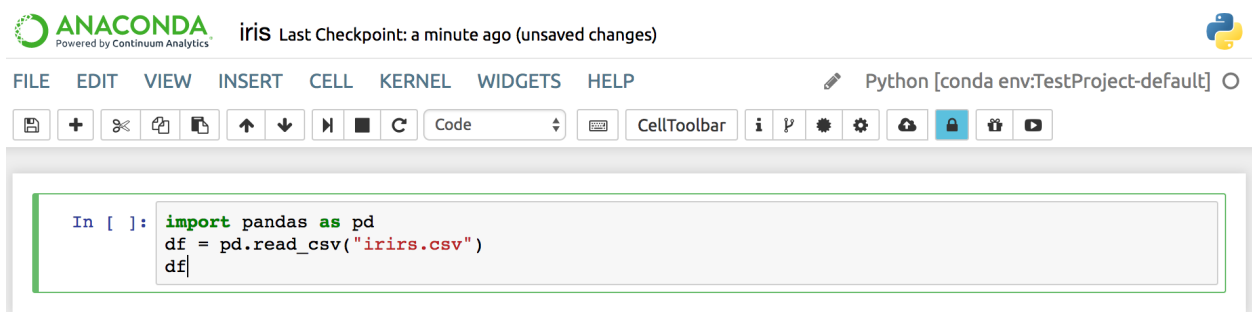
The Conda Notebook extension adds the Conda Packages option to the **Kernel** menu.

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

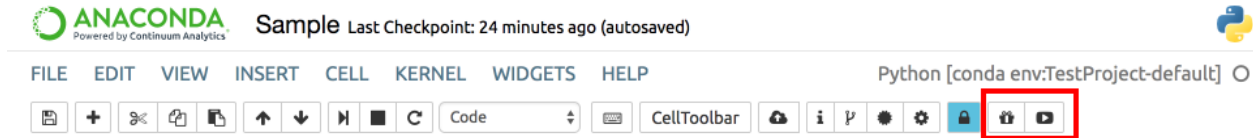
The Anaconda Cloud extension adds the Cloud button to your notebook, allowing you to easily upload your notebook to Cloud:



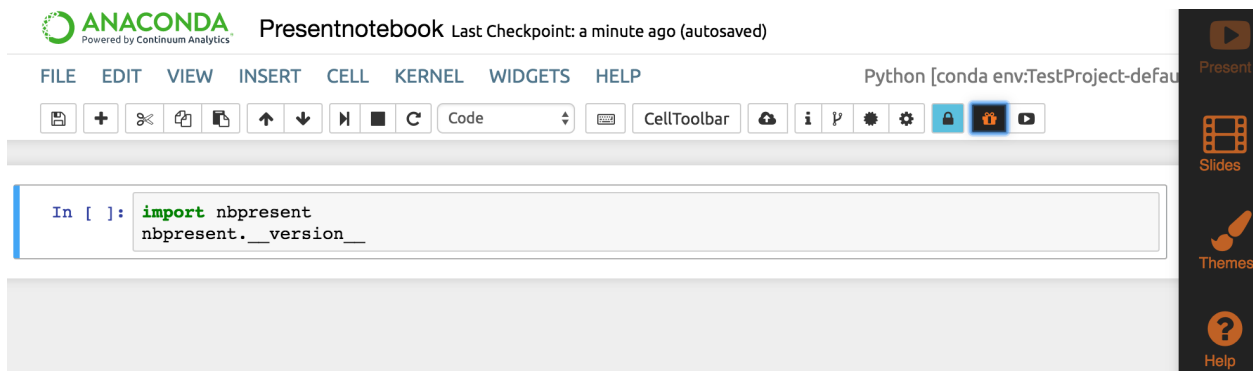
Using the Notebook Present extension

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.



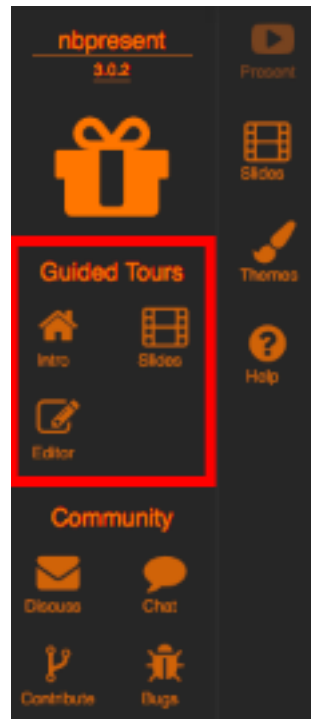
The Notebook Present sidebar is displayed on the right side of your browser:

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:
- 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.

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

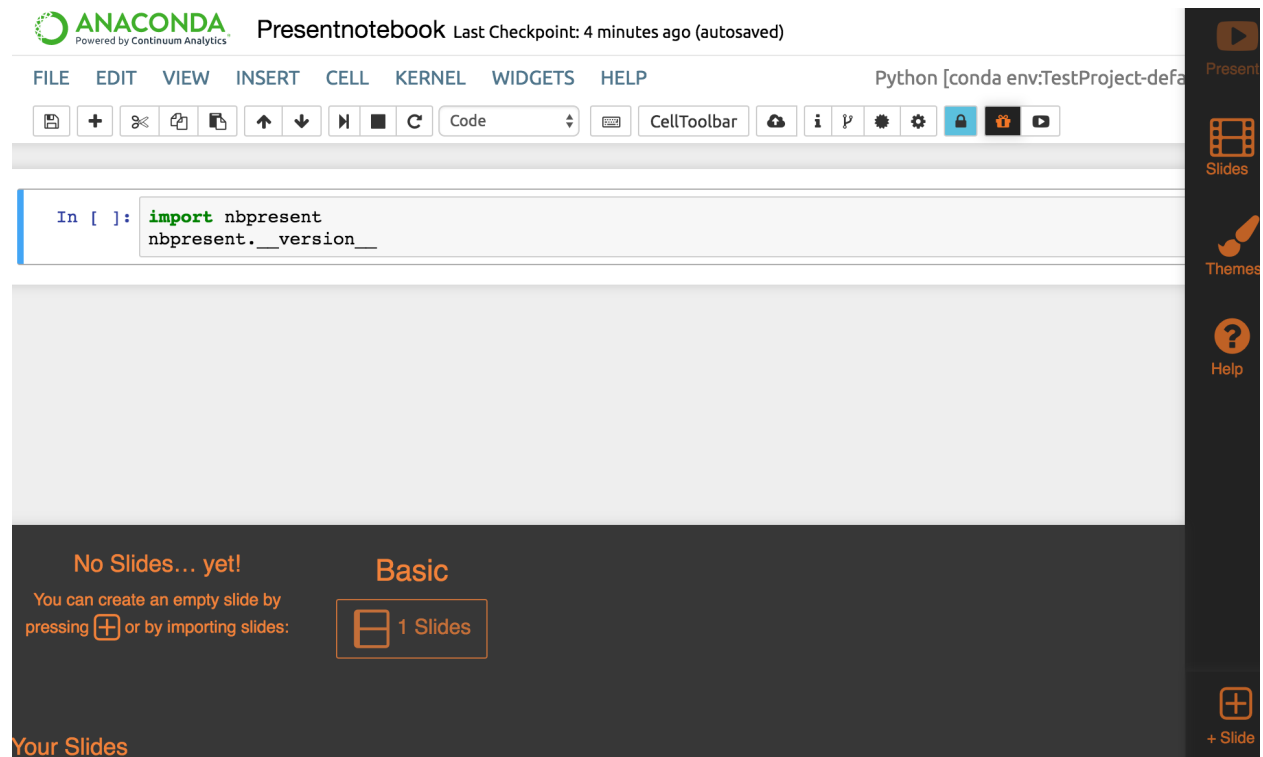
: copy selected cells

: paste cells above

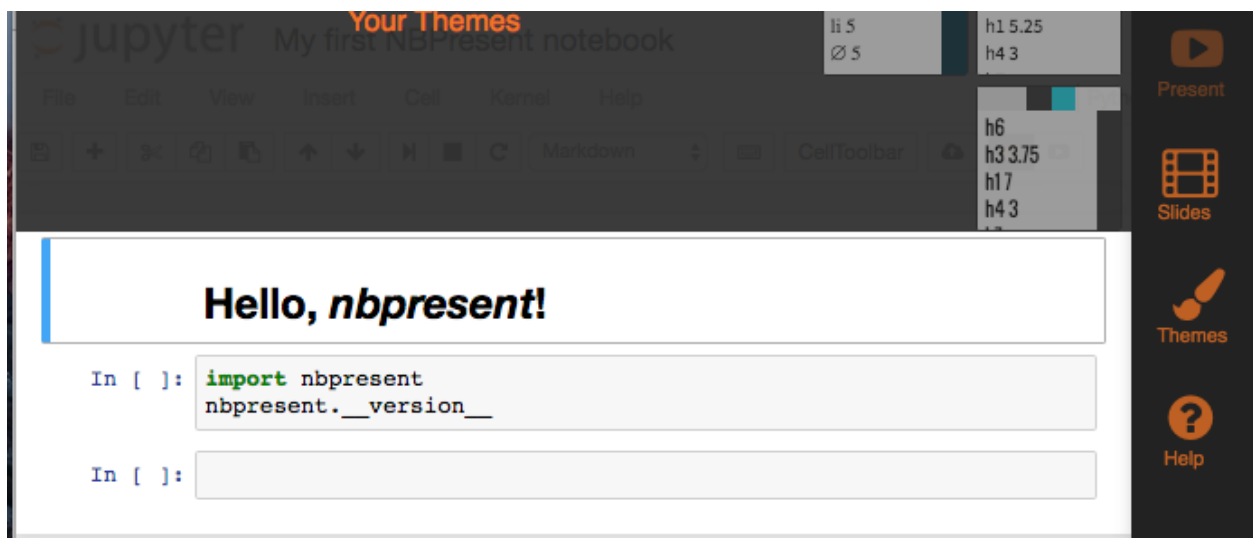
: paste cells below

: undo cell deletion

Close



- 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.

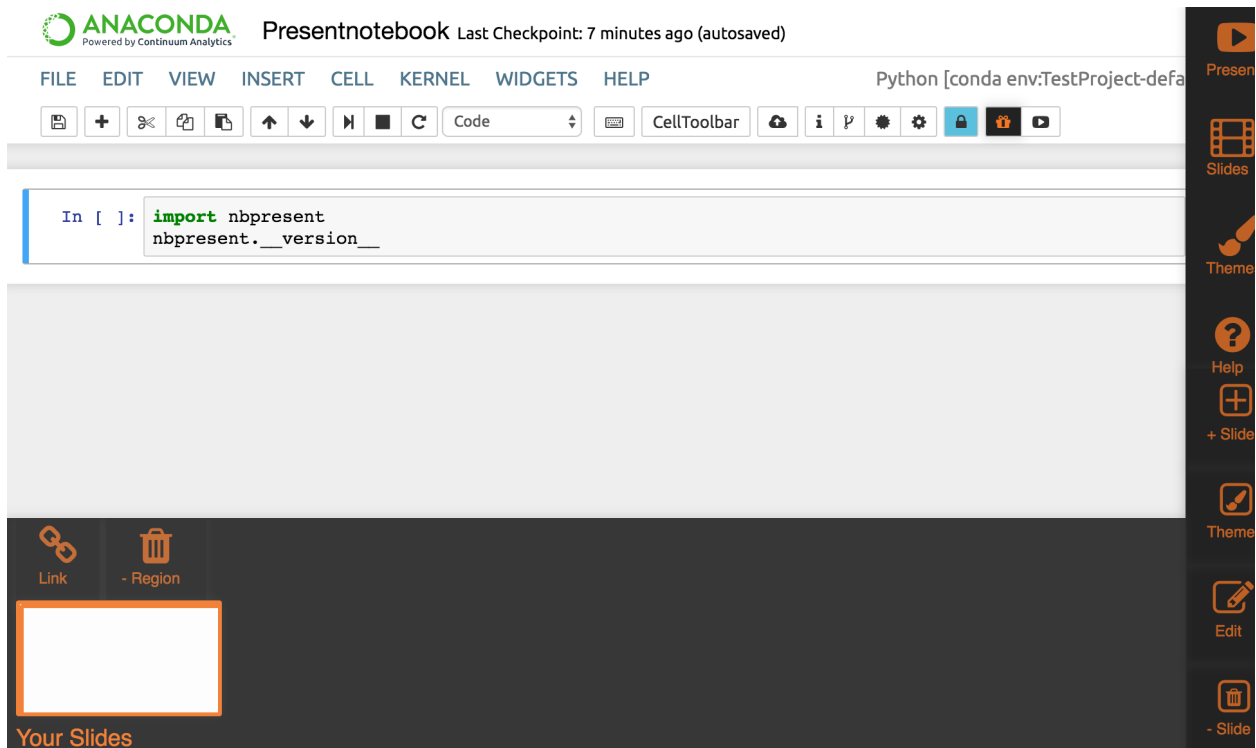


- Saving—Whenever you save your Notebook, all your presentation data will be stored right in the Notebook .ipynb file.

- **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.

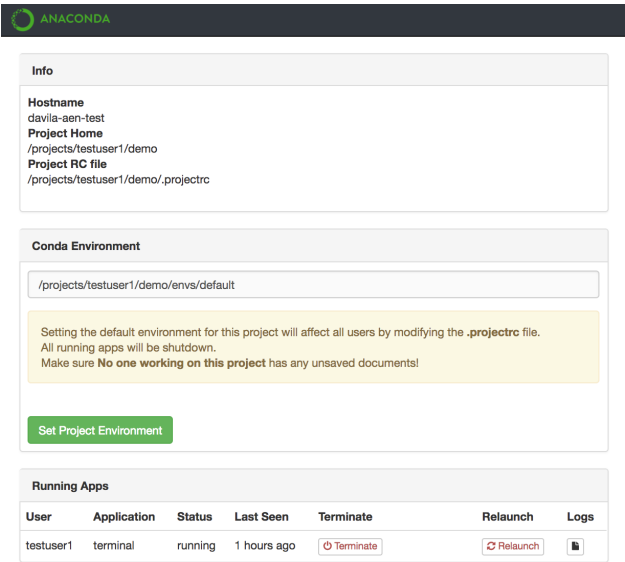
Using Compute Resource Configuration

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

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.

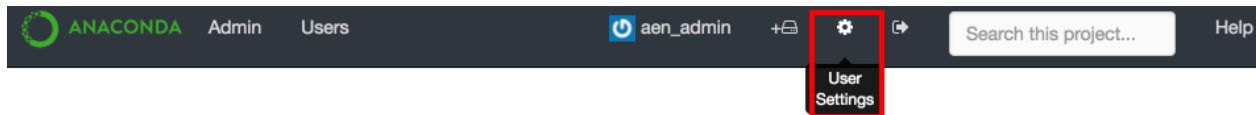
To stop and re-launch any individual application, click the Relaunch button.

To review the run logs of any active application, which may be useful for troubleshooting, click the Logs button.

Managing your account

- *Updating your public profile*
- *Changing your password*
- *Deleting your AEN account*
- *Viewing account operations*
- *Registering an application*

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

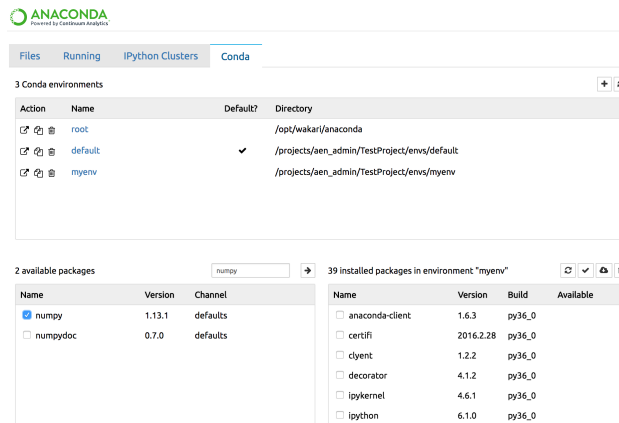
You can create, activate, and install packages and deactivate environments from within the Notebook menu bar.

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.

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
```

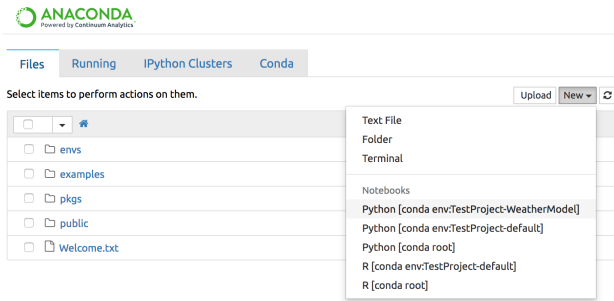
TIP: Python, pip and Jupyter Notebooks are automatically installed in each new environment. You only need to specify NumPy in this command.

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 its output cells.

EXAMPLE: The following screenshot is of a cumulative density function (CDF) plot using values taken from a normal distribution:

For more information, including a [gallery](#), [examples](#), [documentation](#) and a [list of plotting commands](#), see the [Matplotlib website](#).

Bokeh

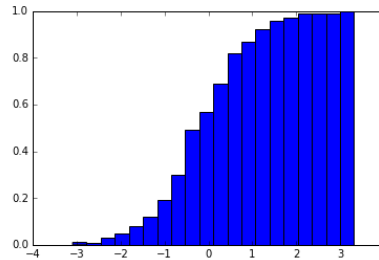
Bokeh is an interactive visualization library that targets modern web browsers to provide elegant, concise construction of novel graphics.

To display Bokeh figures in the output cells of a notebook running the default environment, run:

```
In [1]: import matplotlib.pyplot as plt
        %matplotlib inline

In [2]: import numpy as np
        x = np.random.normal(size=100)

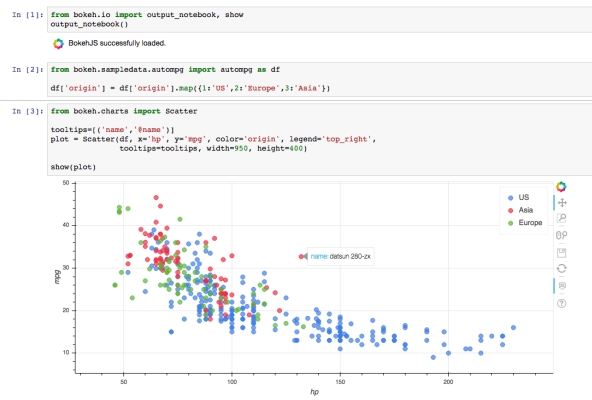
In [3]: plt.hist(x, normed=True, cumulative=True, bins=20);
```



```
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.

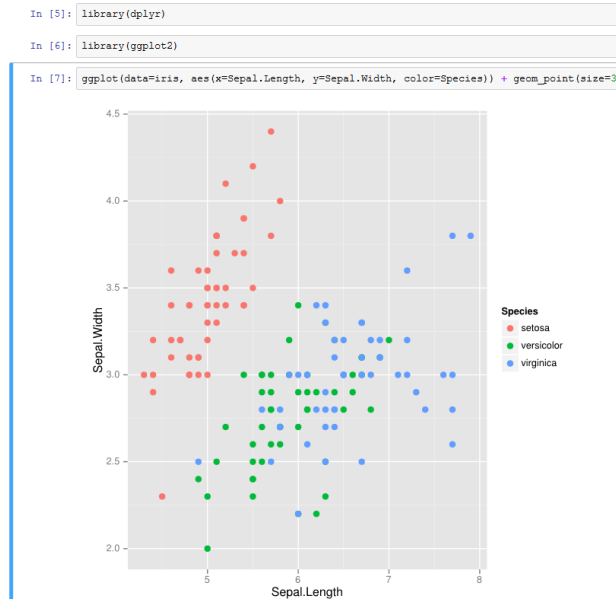
To use ggplot2 with AEN:

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:



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.

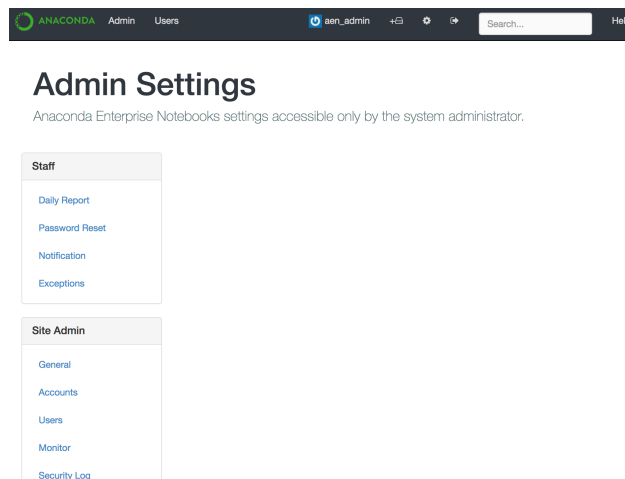
Admin guide

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:



All of the other navigation bar items are the same as for a user account.

Concepts

- *System overview*
- *Server node*
- *Gateway node*
- *Compute node(s)*
- *Supervisor and supervisord*
- *Service Account*
- *Anaconda environments*
- *Projects and permissions*

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.

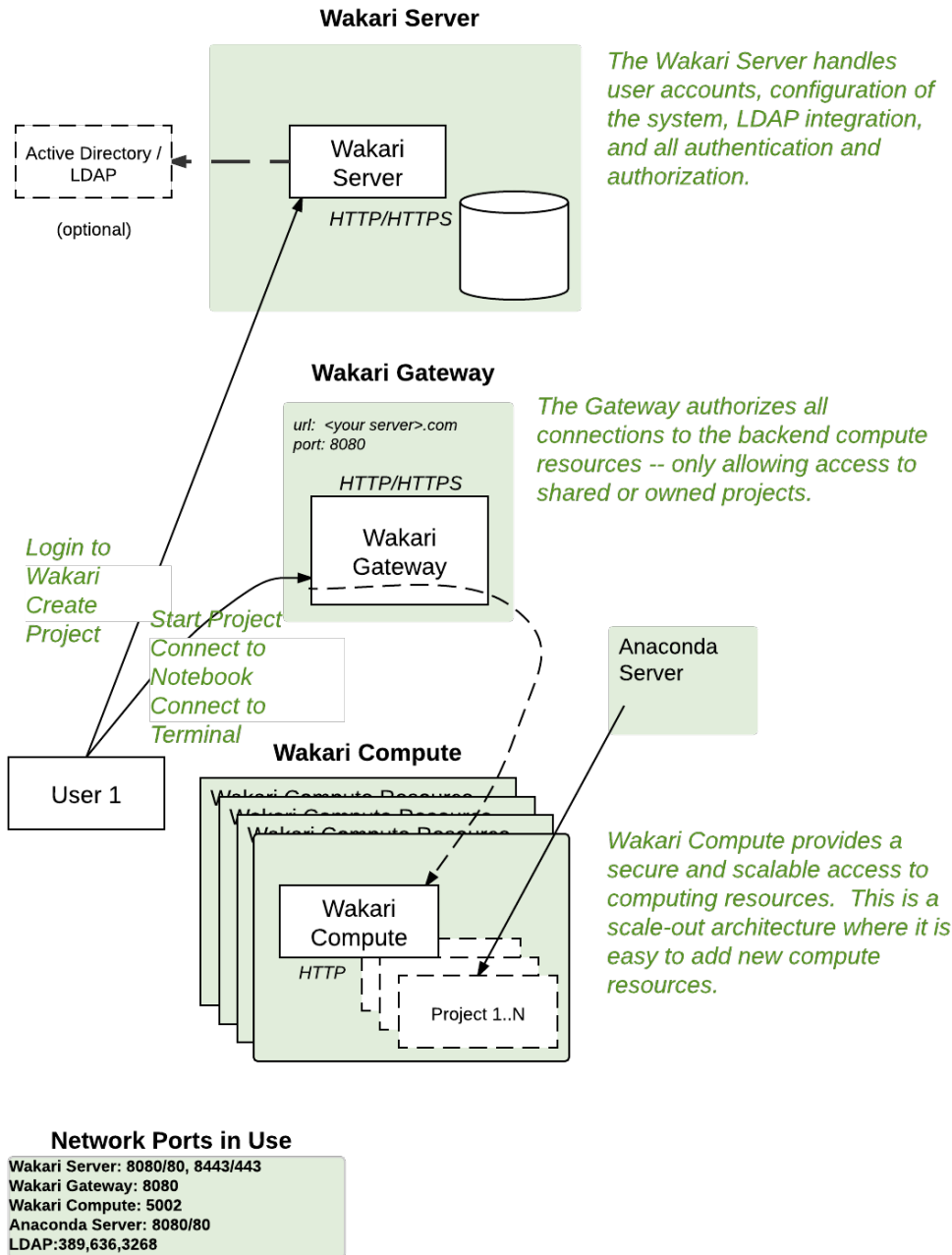
These services can be run on a single machine or distributed across multiple servers.

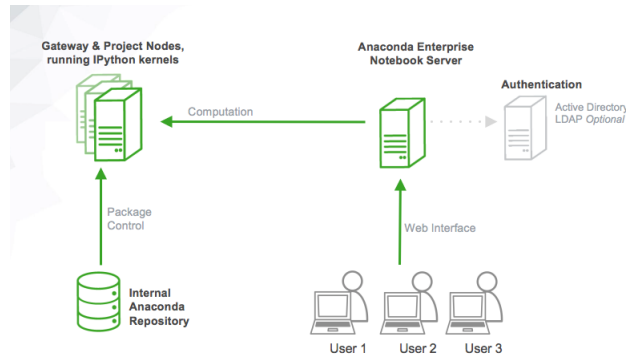
Each AEN installation has exactly 1 server instance and 1 or more gateway instances. Each compute node can only be connected to a single gateway. The collection of compute nodes served by a single gateway is called a **data center**. You can add data centers to the AEN installation at any time.

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

Anaconda Enterprise Notebooks





- 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
con-figura-tion	/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)
con-trol	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*
- *Software requirements*
- *Security requirements*
- *Network requirements*
- *Other requirements*
- *What's next*

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 mongodb (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 libXdmp 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*
- *Gathering IP addresses or FQDNs*
- *Set up variables*
- *What's next*

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-4.3.2-Linux-x86_64.sh
curl -O $RPM_CDN/aen-gateway-4.3.2-Linux-x86_64.sh
curl -O $RPM_CDN/aen-compute-4.3.2-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

- *Installing the bzip2 package*
- *Downloading prerequisite RPMs*
- *Installing prerequisite RPMs*
- *Setting variables and changing permissions*
- *Running the AEN server installer*
- *Starting NGINX and Elasticsearch*
- *Testing AEN server installation*
- *Updating your license*
- *What's next*

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'
```

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```
=====

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

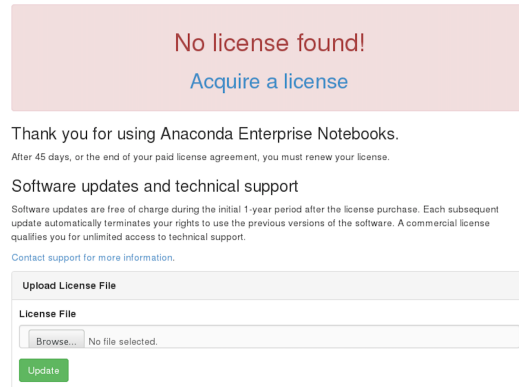
Visit http://\protect\TI\textdollarAEN_SERVER.

The License expired page is displayed.

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:



No license found!
[Acquire a license](#)

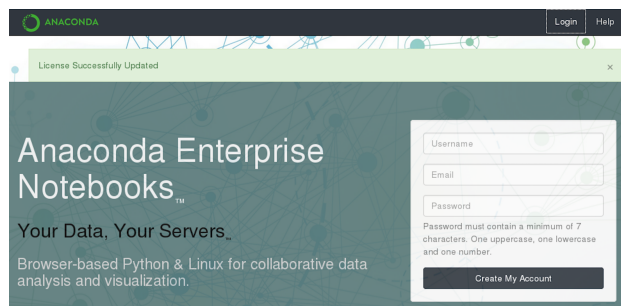
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Upload License File

License File
Browse... No file selected.

Update



What's next

Install the AEN gateway.

Installing the AEN gateway

- *Setting variables and changing permissions*
- *Running the AEN gateway installer*
- *Registering your gateway*
- *What's next*

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
```

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```
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
```

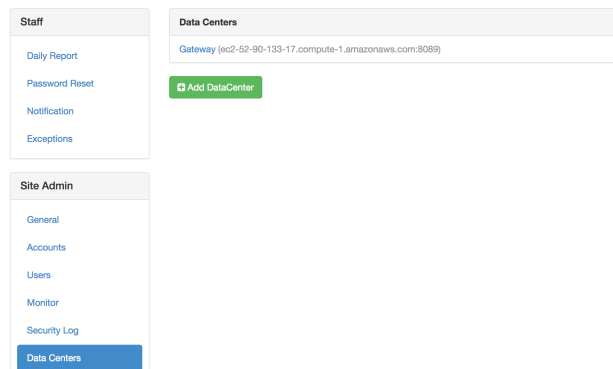

Starting the gateway

Run:

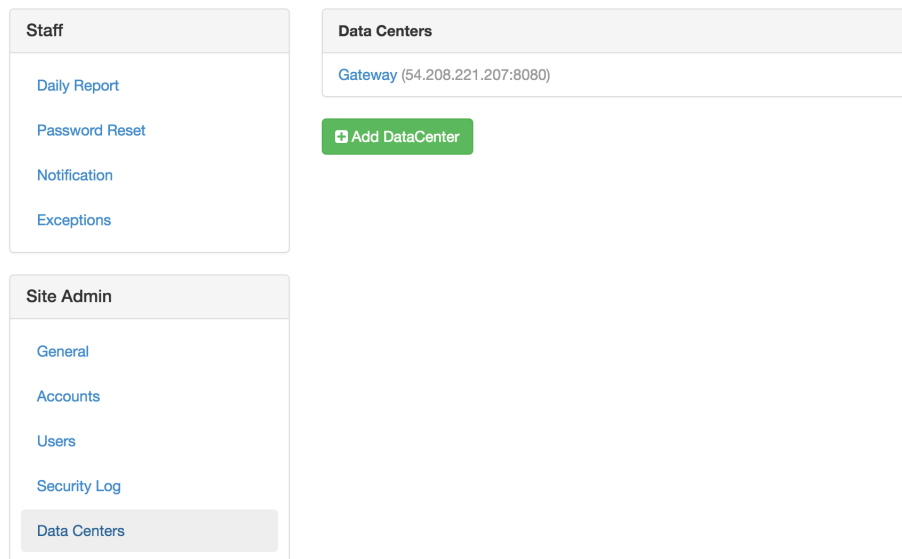
```
sudo service wakari-gateway start
```

Verifying your gateway registration

1. Log into 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:



4. Click your data center:



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)

- *Setting variables and changing permissions*
- *Running the AEN compute installer*
- *Restart the AEN Server*
- *Configuring your compute node(s)*
- *What's next*

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:
5. Click the Add Resource button to open the new resource form.
6. Select the data center to associate this compute node with.

Staff

- Daily Report
- Password Reset
- Notification
- Exceptions

Resources [Add Resource](#)

Gateway

ec2-54-210-232-251.compute-1.amazonaws.com [remove](#)

Site Admin

- General
- Accounts
- Users
- Monitor
- Security Log
- Data Centers
- Task Queue
- License

Providers
[Enterprise Resources](#)

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 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

- *AEN configuration keys*
- *Checking configuration file syntax*

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	\$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: mongodb://<username>:<password>@<host>:<port>/
WAKARI_SERVER		The URL of this AEN server.
DEFAULT_PRIVACY	public	The default project privacy setting—can be either public or private.
SESSION_COOKIE_NAME	wk. 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 wk_server.plugins.accounts.ldap_accounts.
uniqueEmail	true	A boolean setting that indicates whether unique user email addresses are required. See note below 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. simple—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 public or anonymous—assigned users who are not logged in to access projects. To disable public access use the special value disabled. For more information see Chapter 7: Anaconda Embedded Configuring sudo customizations .
1328		
SEARCH_ENABLED	true	Boolean indicating whether ElasticSearch is enabled
SEARCH_SERVER	'localhost:9200'	IP address or domain name and port of ElasticSearch server

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
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 (≥ 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 Configuring SSL .
- 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 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	To make the AEN compute service create groups with the same uid. Set to true /projects folder resides on an NFSv3 volume. 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	13600000 (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.

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	60000	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_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
```

For more information and examples about creating a default project environment with Microsoft R Open (MRO), see *Using MRO in AEN*.

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.

Using MRO in AEN

In AEN 4.2.2 and higher, you can choose to create environments with the Microsoft R Open (MRO) interpreter by installing the `mro-base` package, or create environments with the R interpreter by installing the `r-base` package. Unless you request a change, conda will continue to use the existing interpreter in each environment. In AEN `r-base` is the default.

EXAMPLE: To create a custom environment called `mro_env` with MRO and R Essentials:

```
.. code-block:: bash

sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
  create -c https://repo.anaconda.com/pkgs/main \
  -n mro_env r-essentials
```

NOTE: Conda 4.4 and higher include the `main` channel by default. Earlier versions of conda do not.

Making a default project environment with MRO

You can also create an environment with MRO and make this the default AEN project environment.

The first time a new project is started, the default project environment is cloned into the new project's workspace.

1. Create a new conda environment in the `/opt/wakari/anaconda/envs/default` directory.

The command is similar to the one used in the previous example to create a custom environment.

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
  create -c https://repo.anaconda.com/pkgs/main \
  -p /opt/wakari/anaconda/envs/default r-essentials
```

2. Use `conda` to install any additional packages into the environment.
3. After the environment is created, clone it to check that it works correctly, and then clean up the clone.

```
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
```

NOTE: To convert existing projects, see *Converting an existing project*.

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 `polycoreutils-python`. To install `polycoreutils-python`, if needed, run:

```
sudo yum -y install polycoreutils-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)))"
                   },
    "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.
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', contains a 'Name' field with the value 'Gateway 1', a checkbox for 'Subdomain Routing' which is unchecked, and a checkbox for 'Https' which is 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": {
```

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```

    "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=100000 | 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"
```

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```
# 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 PYSARK_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.

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

- *Before you upgrade*
- *Upgrading the AEN server node*
- *Upgrading the AEN gateway node*
- *Upgrading AEN compute nodes*
- *After upgrading*

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*
- *AEN 4.1.1 upgrade instructions.*
- *AEN 4.1.0 upgrade instructions.*
- *AEN 4.0.0 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`.

5. 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
```

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-4.3.2

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
```

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
```

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```
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.

- *Uninstalling a server node*
- *Uninstalling a gateway node*
- *Uninstalling a compute node*
- *OPTIONAL: Removing projects from compute nodes*

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.
3. To open user registration, select the Open Registration checkbox. To close registration, clear the checkbox.
4. Click the Update button.

Staff

- Daily Report
- Password Reset
- Notification
- Exceptions

Cloud Registration

☒ Open Registration
Allow new user signups

Update

Site Admin

- General
- Accounts

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.

Staff

- Daily Report
- Password Reset
- Notification
- Exceptions

Password Reset

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 into 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 into 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 interface. 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). To the right of these sidebars is a table titled 'Users'. The table has three columns: 'Username', 'Projects', and 'Last Seen'. It 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

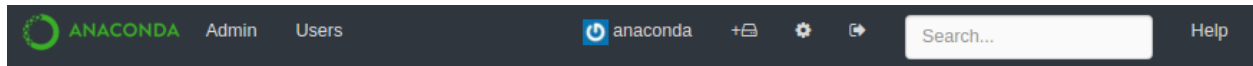
In the AEN navigation bar, click Users.

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

 ANACONDA

[Admin](#) [Users](#)

 anaconda

[Help](#)

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:

The screenshot shows the Admin Settings page with a sidebar on the left and a main content area on the right. The sidebar has three sections: 'Staff' with links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'; 'Site Admin' with links for 'General', 'Accounts', 'Users', 'Security Log', 'Data Centers', 'Task Queue', and 'License'; and 'Providers' with a link for 'Enterprise Resources'. The main content area is titled 'Notification Settings' and contains three radio buttons: 'Off' (selected), 'SES - Amazon Simple Email Service', and 'SMTP Email Server'. Below the 'SMTP Email Server' option is a section titled 'SMTP Settings' with input fields for 'SMTP Hostname', 'SMTP Username (optional)', 'SMTP Password (optional)', and 'SMTP From Address (optional)'. At the bottom of the main content area is a green 'Update' button.

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.

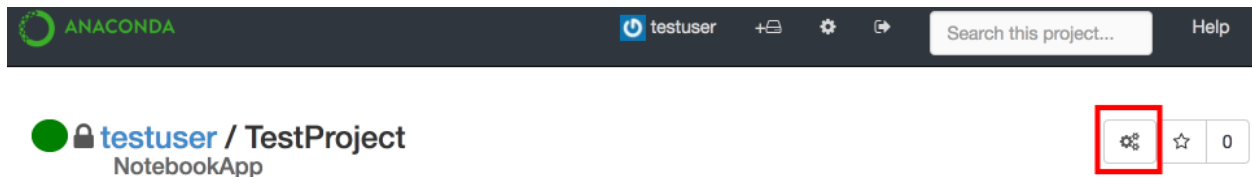
3. To turn on email notifications, select the radio button for the type of email service to use:
 - SES to use Amazon Simple Email Service (SES).
 - SMTP Email Server.
4. If you select SMTP Email Server, complete the SMTP Settings.

NOTE: If you get an error message after changing the SMTP settings, you may need to restart the server.

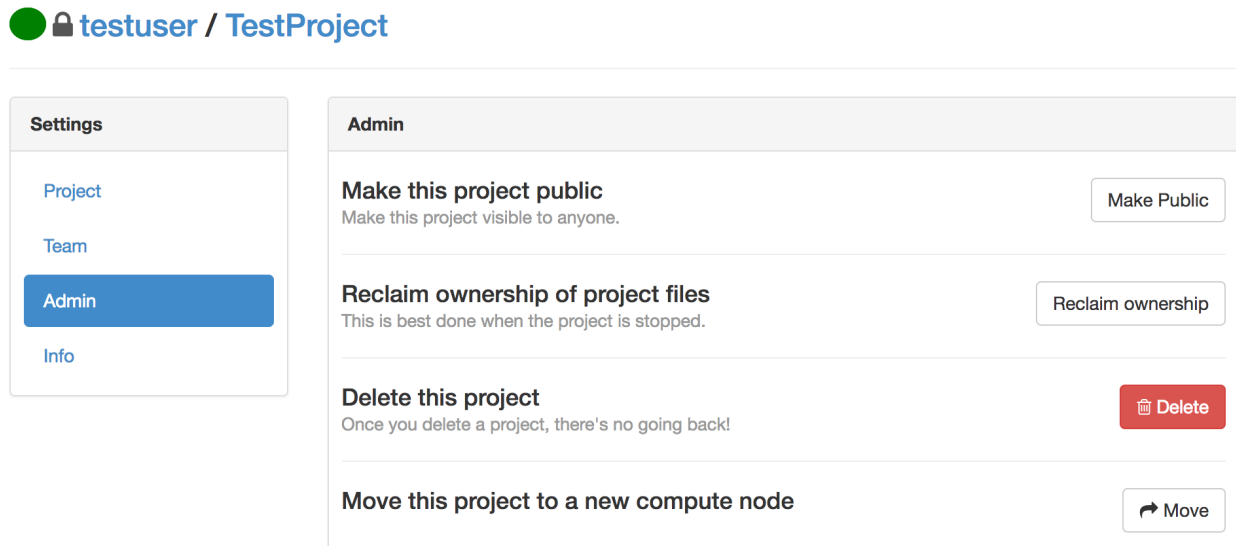
Moving a project to another compute node

If you have multiple compute nodes available and want to move a project from one to another, the project must exist on both nodes.

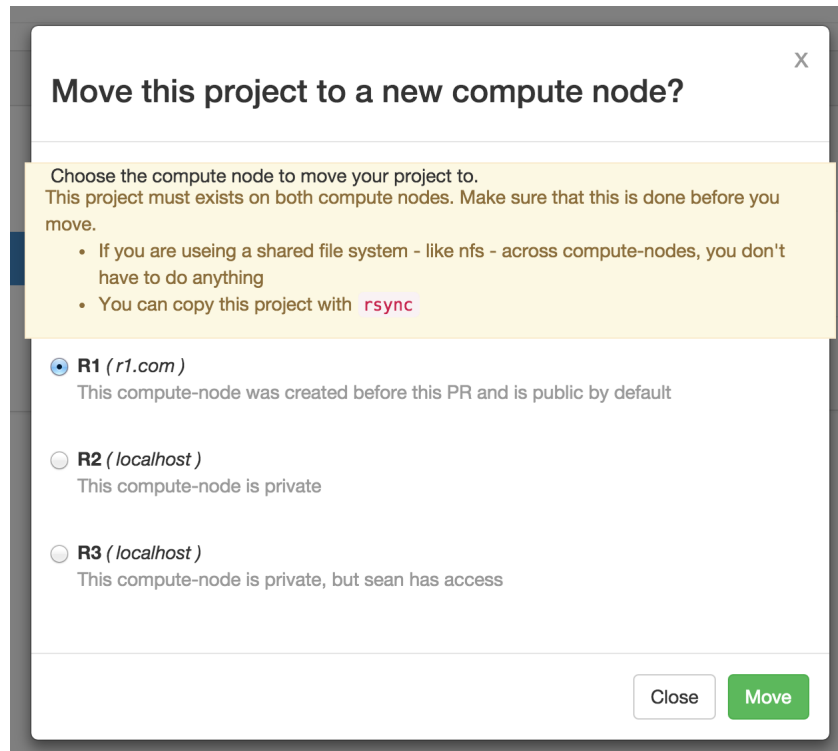
1. Verify that the project has been created on both compute nodes. You can use `rsync` for this job unless you have a shared file system like `nfs`.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



4. Click the 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>
```

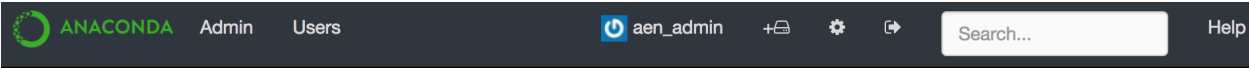
NOTE: Replace <username> with the actual username and <projectname> with the actual project name you are removing.

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
Daily Report
Password Reset
Notification
Exceptions

Site Admin
General
Accounts
Users
Monitor
Security Log

Backing up and restoring AEN

- *Document purpose*
- *Important notes*
- *Server component steps*
 - *Backup*
 - * *Mongo database*
 - * *AEN Server config files (including License file)*
 - * *Nginx config (if needed)*
 - * *SSL certificates (if needed)*
 - *Restore*
 - * *Reinstall AEN-Server*
 - * *Restore Mongo database*
 - * *AEN Server config files (including License file)*
 - * *Nginx config (if needed)*
 - * *SSL certificates (if needed)*
 - * *Restart server*
- *Gateway component steps*
 - *Backup*
 - * *Config files*
 - * *Custom .condarc file (if needed)*
 - * *SSL certificates (if needed)*
 - *Restore*
 - * *Reinstall AEN-Gateway*
 - * *Config files*
 - * *Custom .condarc file (if needed)*
 - * *SSL certificates (if needed)*
 - * *Restart gateway*
- *Compute component steps*
 - *Backup*
 - * *Config files*
 - * *Custom Changes (rare)*
 - * *Create user list*

- * *Project files*
- * *Full Anaconda (option 1)*
- * *Partial Anaconda (option 2)*
- *Restore*
 - * *Reinstall AEN-Compute*
 - * *Config files*
 - * *Custom changes (rare)*
 - * *Create users*
 - * *Project files*
 - * *Full Anaconda (option 1)*
 - * *Partial Anaconda (option 2)*
 - * *Custom environments (if needed)*
 - * *Restart compute node*

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_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-4.3.2-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:

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

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
Users	0	1
Projects	0	6

New User Emails

Username	Email
----------	-------

Actions

Count	Action
82	oauth.authenticate

Staff

Daily Report

Password Reset

Notification

Exceptions

Site Admin

General

Accounts

Users

Security Log

Data Centers

Task Queue

License

Providers

Enterprise Resources

Exceptions

Mark all as read

☒ `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:`

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.

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:

5. To close the error details, click the Back link.

Public Profile

Account Settings

Security Log

Applications

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

[← Back](#)

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:

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

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:

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": []}
```

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*
- *Checking the status of gateway node processes*
- *Checking the status of compute node processes*
- *Starting AEN services*
- *Verifying that AEN services are set to start with the system*
- *Stopping AEN services*
- *Restarting AEN services*
- *Identifying extraneous processes*
- *Removing extraneous processes*

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
```

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```
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
```

(continues on next page)

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```
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 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](#)

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	Terminate	Relaunch	Logs
aen_admin	Test	notebook	running	localhost	Jul 25, 2017 11:54:05 CDT	Terminate	Relaunch	Logs

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Task Queue

Workers

ip-172-31-10-196.4053 | [high](#) [default](#) [low](#)

Queues

[high](#)
Backlog: 0
Failed: 1

[default](#)
Backlog: 0
Failed: 3

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)
[Task Queue](#)

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.

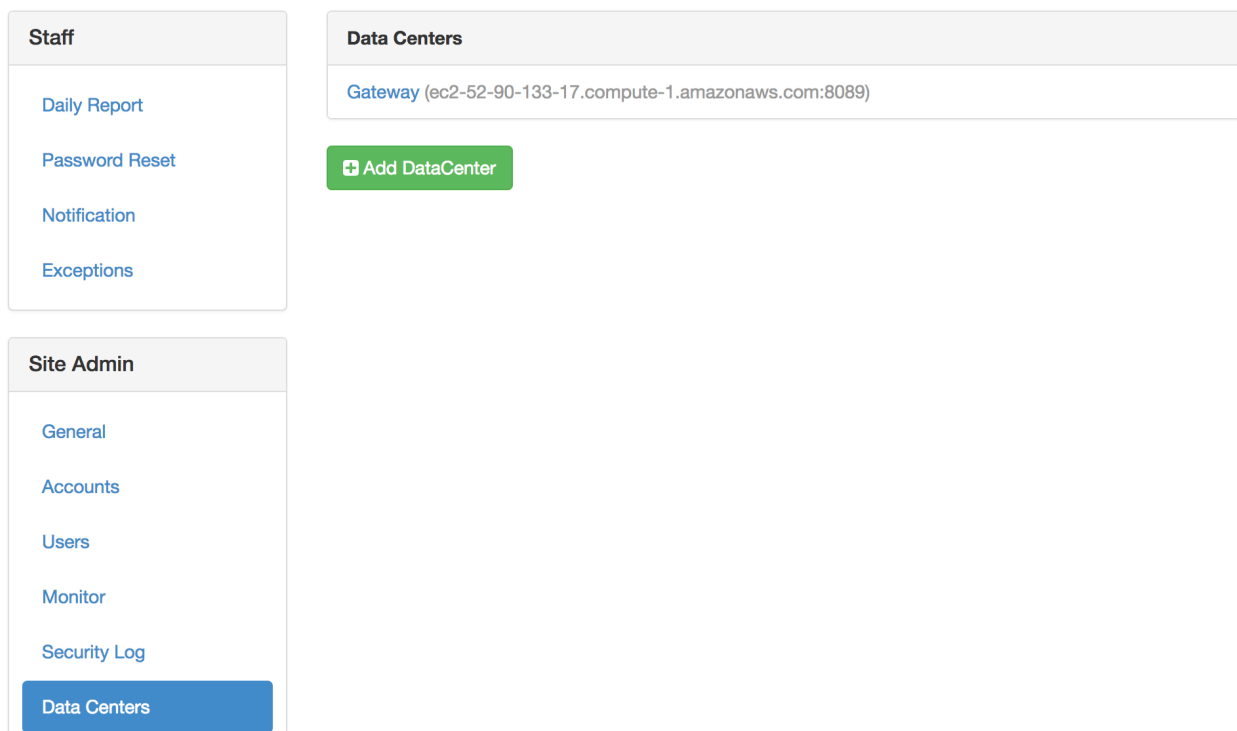
Checking node connections

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*
- *Verifying gateway to compute node connectivity*
- *Verifying gateway to server connectivity*

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 shows the AEN Admin Settings interface. On the left, there are three vertical navigation menus. The top menu, labeled 'Staff', includes 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The middle menu, labeled 'Site Admin', includes 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and 'License'. The bottom menu, labeled 'Providers', contains a single button 'Enterprise Resources'. The main content area on the right is titled 'Resources' and features a green '+ Add Resource' button. Below this, a 'Gateway' section displays a list of resources. Currently, there is one resource listed: 'ec2-54-210-232-251.compute-1.amazonaws.com', with a red 'remove' button to its right.

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:
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:
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:

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <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	

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <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	

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <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 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> Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> Default Project Access 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> Account Type <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>Config Files</div>
<div>Providers</div>	

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**.
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 **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.

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <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	
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Staff

[Daily Report](#)
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Site Admin

[General](#)
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[Users](#)
[Monitor](#)
[Security Log](#)
[Data Centers](#)
[Task Queue](#)
[License](#)

Current License

You have **166 days** remaining on your current license.
[Renew your license](#)

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
email	dev@continuum.io

Upload New License

License File

[Choose File](#) No file chosen

[Update](#)

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*
- *Browser error: too many redirects*
- *Browser error: too many redirects when starting project apps*
- *Exception: exceptions.TypeError: 'NoneType' object has no attribute '__getitem__'*
- *Error: unix:///opt/wakari/wakari-server/etc/supervisor.sock no such file*
- *Error: “Data Center Not Found” when deleting a project*
- *Forgotten administrator password*
- *Log files being deleted*
- *Error: This socket is closed*
- *Service error 502: Cannot connect to the application manager*
- *502 communication error on Amazon web services (AWS)*
- *Invalid username*
- *Notebook Error: Cannot download notebook as PDF via LaTeX*
- *Unresponsive wk-server thread without error messages*
- *Unresponsive wk-gateway thread without error messages*

- *Error starting projects*
- *Changes in .condarc file are ignored*

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 into 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 into AEN as the administrator user with the new password.

Alternatively you may add an administrator user:

1. Use ssh to log into 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 into 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 into `/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?*
- *Can notebooks be shared with anyone?*
- *Can I disable the option, “publish your notebook to anaconda.org”?*
- *How can I check the version number of my AEN server?*
- *Can I use AEN to access CSV or Amazon S3 data?*
- *Can I install other Python packages?*
- *Can I create a Python environment from the command line?*
- *Can I connect to GitHub with AEN?*
- *Can I print or print preview my Jupyter Notebooks?*
- *Is there a set amount of storage on AEN?*
- *How do I get help, give feedback, suggest features or report a bug?*

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
- 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 4.3.0, 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](#)
- [Team collaboration](#)
- [Access control](#)
- [Sharing projects](#)
- [Project tags](#)

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.

In this getting started guide, you will:

- *1. Download the AEN cheat sheet*
- *2. Access your user home page*
- *3. Create a new project*
- *4. Add collaborators*
- *5a. Open an example notebook, OR*
- *5b. Create a new environment and notebook*
- *6. Create checkpoints for version control*
- *7. Share your notebook and environment with others*
- *8. See what to do next*

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.

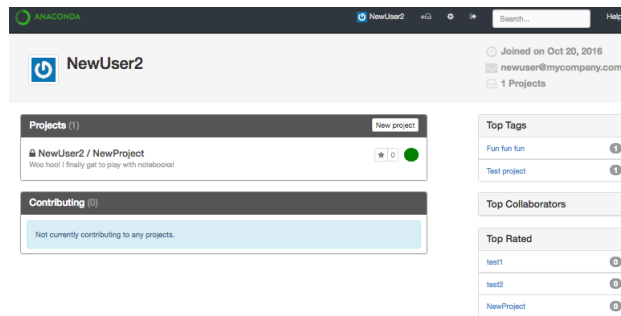
NOTE: Use the domain name and not the IP address when you connect to AEN. Using the IP address can cause TLS and security certificate errors.

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.

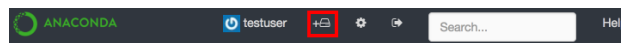
3. Click the Login button.

Your user home page, where all good things happen, is displayed:

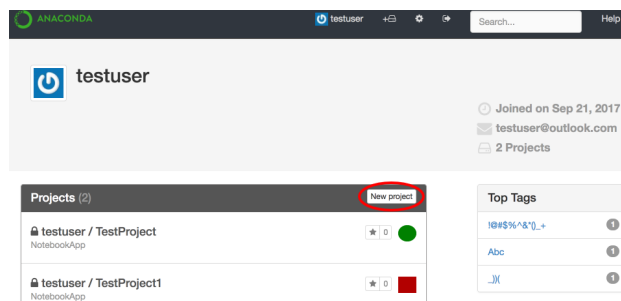


3. Create a new project

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.”

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.

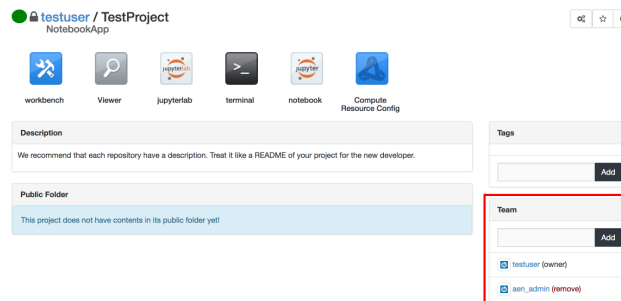
4. Add collaborators

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.

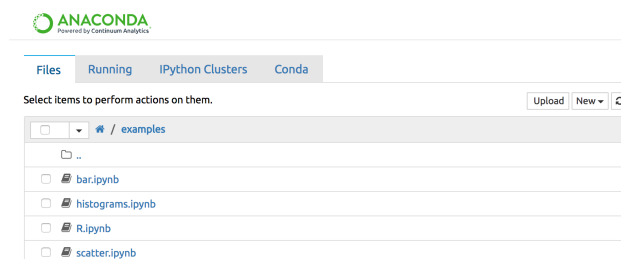


1. Repeat these steps for each team member you want to add as a collaborator.

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.



1. Select any of the example notebooks.

2. To see the default results of the formulas used in the displayed notebook, in the **Cell** menu, select Run All.
3. To experiment with changing the notebook, edit any of the formulas in the notebook.
4. 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 with the 'Conda' tab selected. It displays three conda environments: 'root', 'default' (selected), and 'myenv'. Below this, there are two sections for package management. The left section, titled '2 available packages', shows a search for 'numpy' with results for 'numpy' (version 1.13.1) and 'numpydoc' (version 0.7.0). The right section, titled '39 installed packages in environment "myenv"', lists various installed packages including 'anaconda-client', 'certifi', 'clyent', 'decorator', 'ipykernel', and 'ipython'.

Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default
	myenv		/projects/aen_admin/TestProject/envs/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.

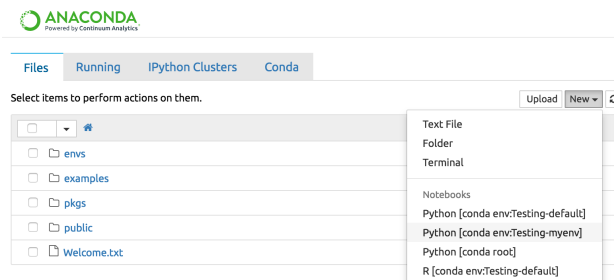
2. To confirm your installation, click the Install button.

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.

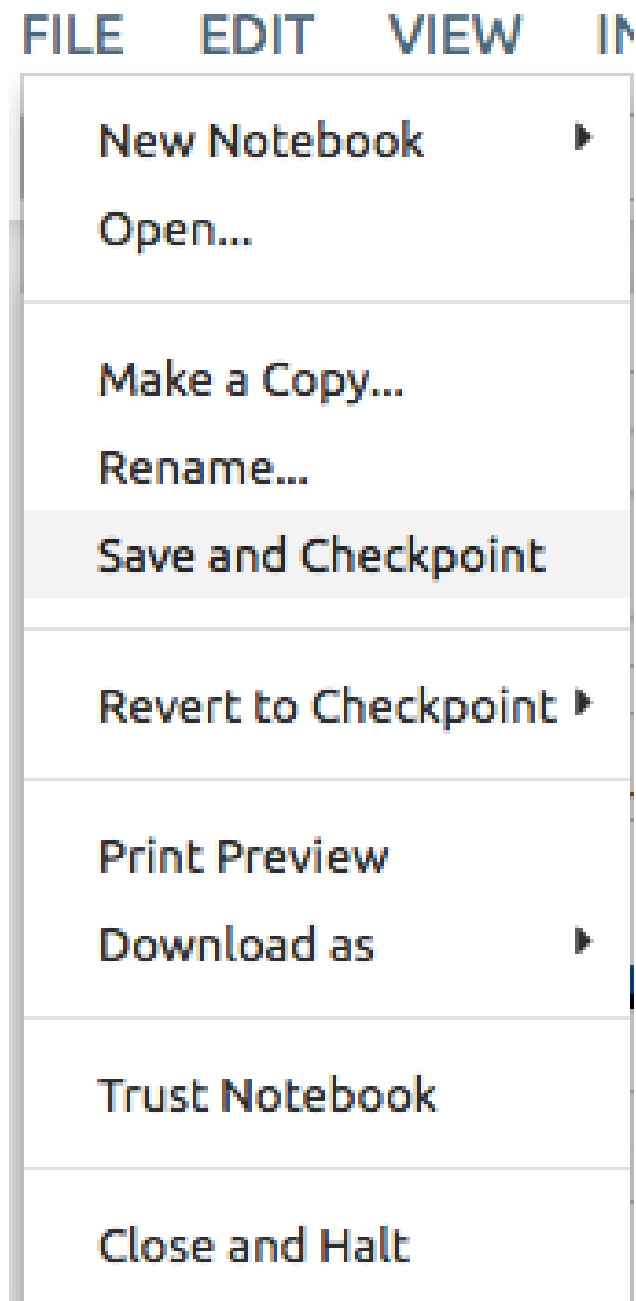
NOTE: For more information about revision control features, including creating commits and comparing differences, see *Using the Revision Control Mechanism extension*.

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

- *Types of files searched*
- *Search indexing*
- *Using search constructs*
- *Searching metadata fields*
- *Searching a project*
- *Saving a search*
- *Removing a saved search*

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.

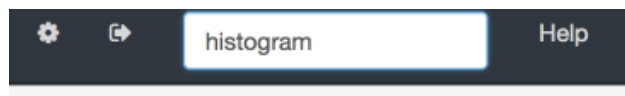
Searching metadata fields

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:

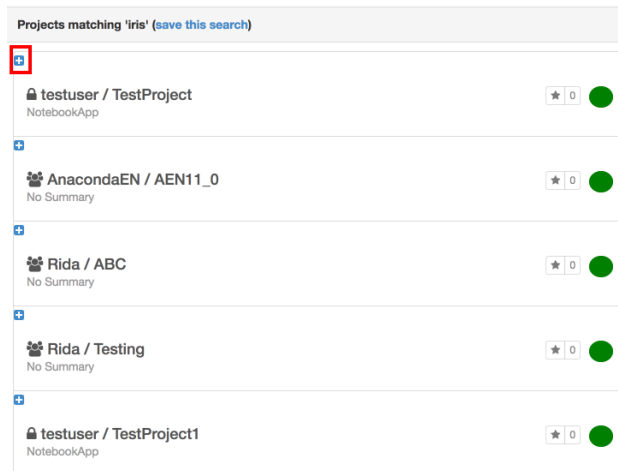


TIP: Search by glob patterns, which are similar to file matching in the command line.

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:



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
/examples/histograms.ipynb	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 matching 'iris' **Stored**

+

testuser / TestProject

NotebookApp

★ 0

+

AnacondaEN / AEN11_0

No Summary

★ 0

+

Rida / ABC

No Summary

★ 0

+

Rida / Testing

No Summary

★ 0

+

testuser / TestProject1

NotebookApp

★ 0

Projects (2) New project

testuser / TestProject

NotebookApp

★ 0

testuser / TestProject1

NotebookApp

★ 0

Contributing (0)

Not currently contributing to any projects.

Top Tags

l@#%\$%^&*0_+ 1

Abc 1

_)({ 1

Top Collaborators

aen_admin 1

Top Rated

Project 1

Testing 0

AEN11_0 0

ABC 0

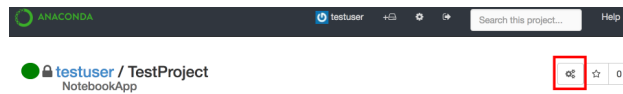
TestProject 0

Saved searches

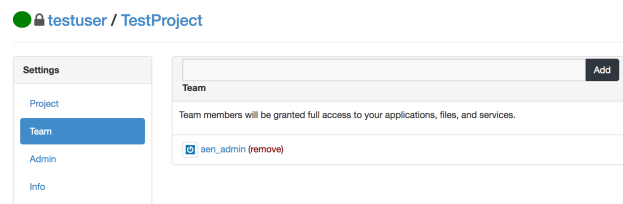
iris x

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.



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*
- *Controlling non-team member access*

Controlling team member access

By default, all of the team members on a project have read and write access permissions for all project assets.

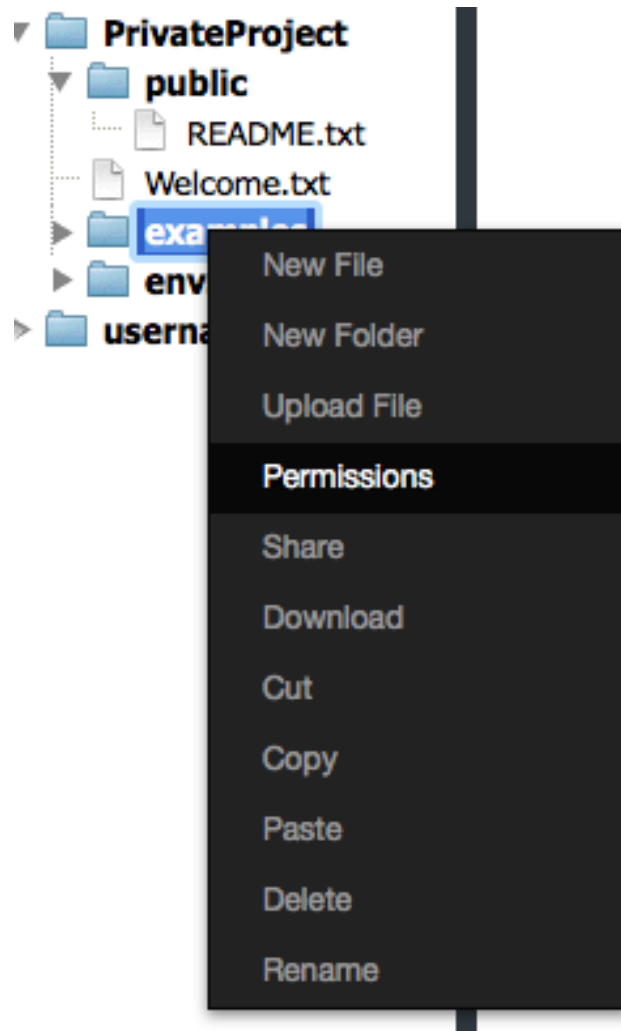
The available permissions are read, write and execute. If you remove all individual or group permissions for a project asset, team members will not be able to access that asset.

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.

- 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 checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username"/>	Group	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	User	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	Group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	User	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	Group	<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.*
- 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.

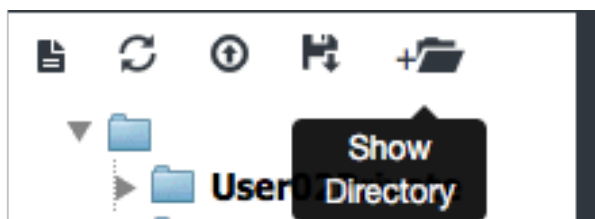
NOTE: If you change permissions for a folder instead of a file, the user will be able to see and access any files within that folder.

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:

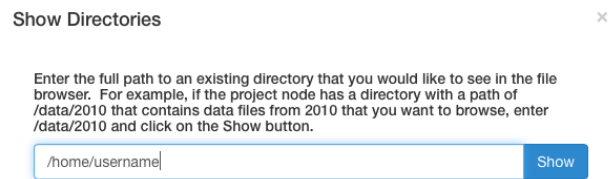
1. Click the Show Directory button at the top of the Workbench File Manager:



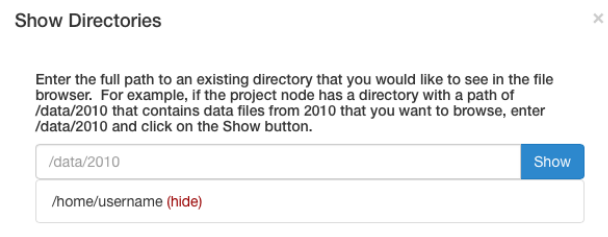
The Show Directories dialog box displays.

2. In the text box, type `/home/[yourusername]`.

NOTE: Replace `[yourusername]` with your AEN username.



3. Click the Show button.
4. Verify that the folder is now displayed below the text box:



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.

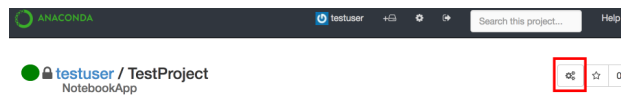
The shared file is displayed in the File Manager:



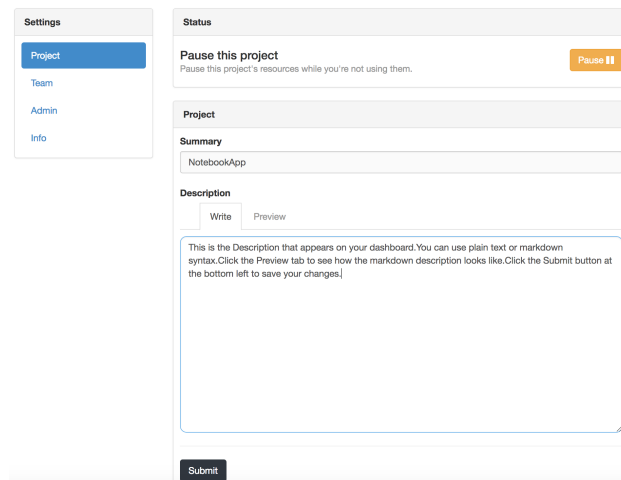
Starting and stopping a project

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.



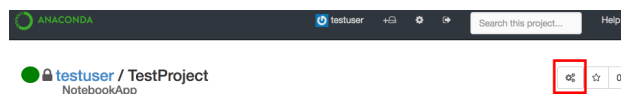
2. In the **Settings** menu, select Project.



3. In the Status section, click the Start or Stop button to toggle between manually starting and stopping your project.

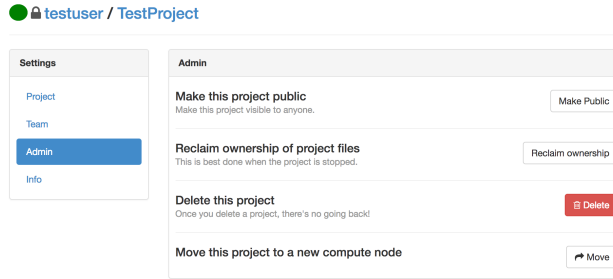
Making a project public or private

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:

Tags

learning Add

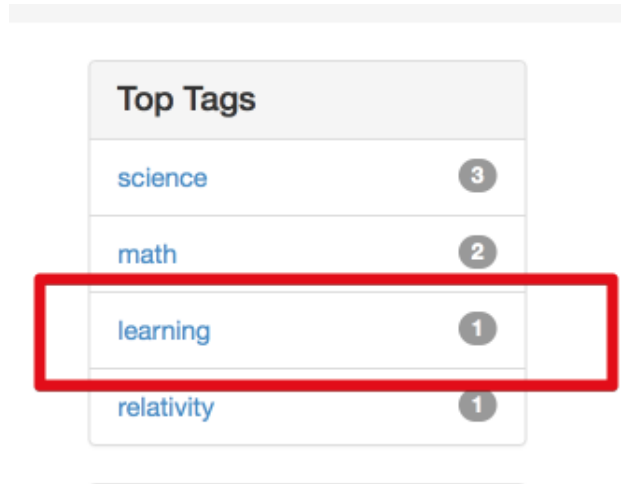
2. Click the Add button.

The new tag is added to the Tags list:

Tags

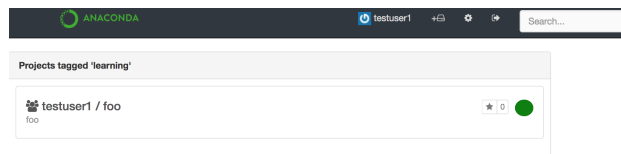
learning Add

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:



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.

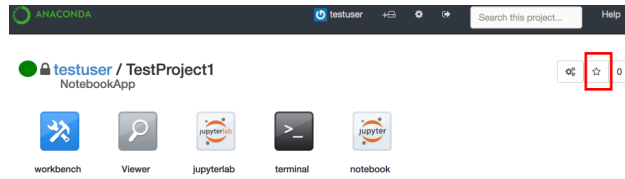
Starring a project (rating)

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:

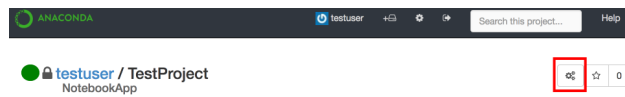
3. To unstar a project, click the Star icon again.



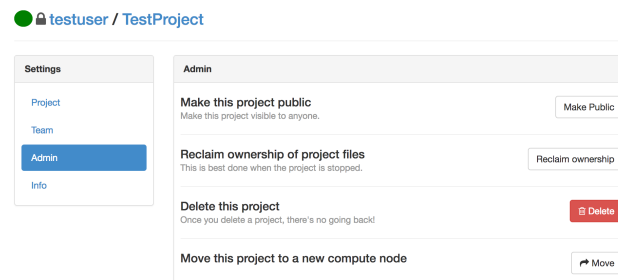
Claim ownership of a project

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.



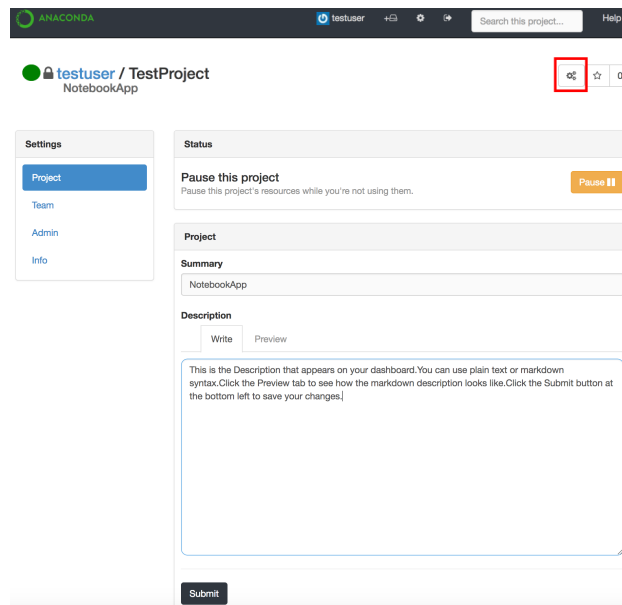
3. In the **Settings** menu, select Admin.



4. Click the Reclaim ownership button.

Changing a project's summary or description

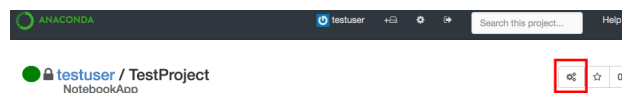
1. On the project home page, click the Project Settings icon to open the Project Settings page.
2. In the **Settings** menu, select Project.



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

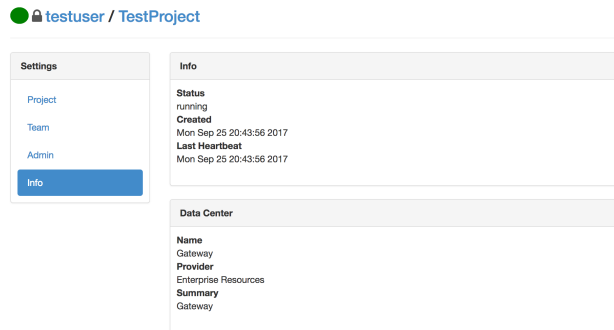
1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Info.

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.

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:

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.

Team

Add

user02 (owner)

user01 (remove)

Related Projects

user01 / TestProject2

No Summary

user02 / User02Private

No Summary

user01 / TestProject

No Summary

Top Rated	
einstein	2
euler	1
laplace	1
plank	1
Public_project	1

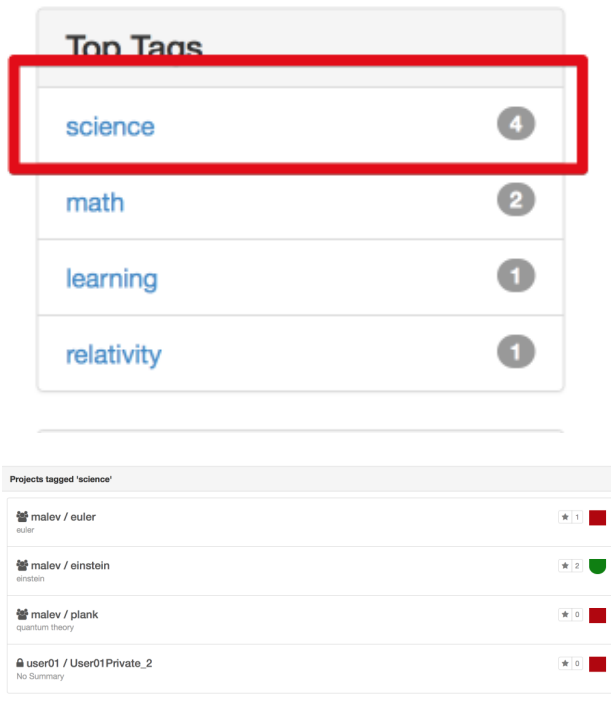
Using tags to find a project

The top tags used on your projects are listed on your home page:

The screenshot shows the Anaconda user interface for a user named NewUser2. The interface includes a sidebar with 'Projects (1)' and 'Contributing (0)'. The main content area displays a project titled 'NewUser2 / NewProject' with a description 'Woo hoo! I finally get to play with notebooks!'. On the right, there are sections for 'Top Tags' (Fun fun fun, Test project), 'Top Collaborators', and 'Top Rated' (test1, test2, NewProject).

To list all projects that share a specific tag, click the tag name:

A list of projects with the selected tag is displayed:



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:



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

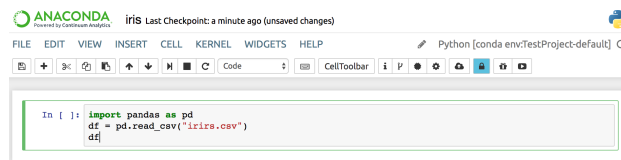
For information on sharing projects via the project settings and access control, see [Sharing projects](#).

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.

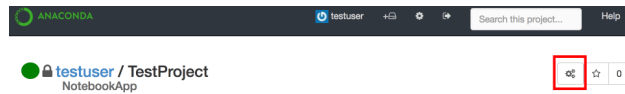
Other ways to share a notebook

- 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](#).

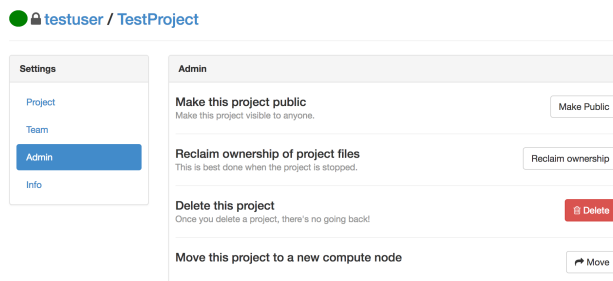
Deleting a project

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.



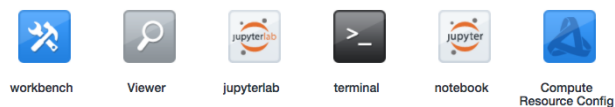
4. Click the Delete button.

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 into 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

- *Opening Workbench*
- *Using File Manager*
- *Opening the Workbench terminal*

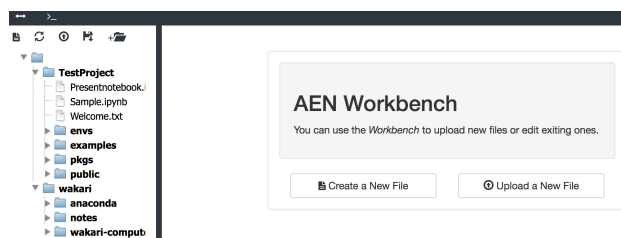
Workbench is a file viewer and manager that includes a file editor and file permissions manager.

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.

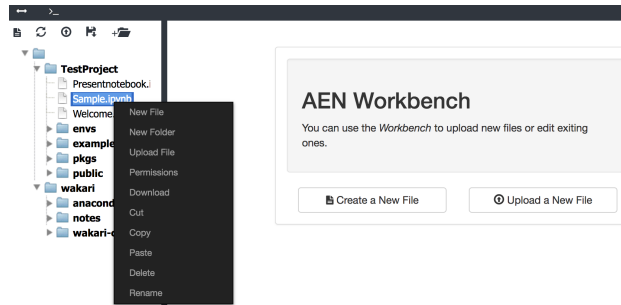
Using File Manager

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:

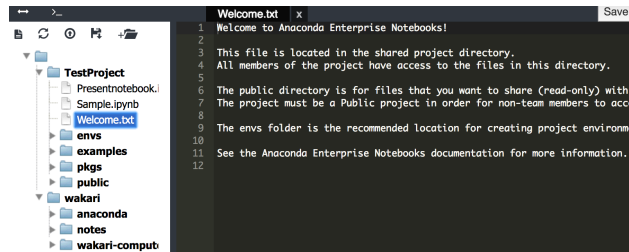
1. Right-click on any folder to display the options drop-down menu.
2. Select one of the following options:
 - New File—Create and edit a new file.
 - New Folder—Create a new folder.
 - Upload File—Upload a file to the selected folder. You can also drag a file to the folder.
 - Permissions—*Control access 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:

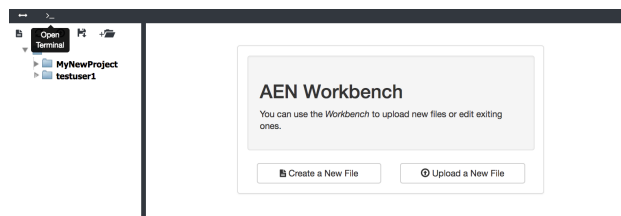


2. When you finish editing the file, click the Save button.

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.

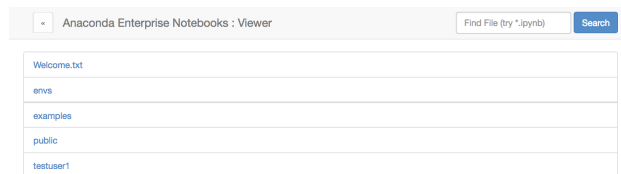
To move between terminal windows, click the **Terminal** tab in the navigation bar, then select the number of the terminal window you want to work in.

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*.

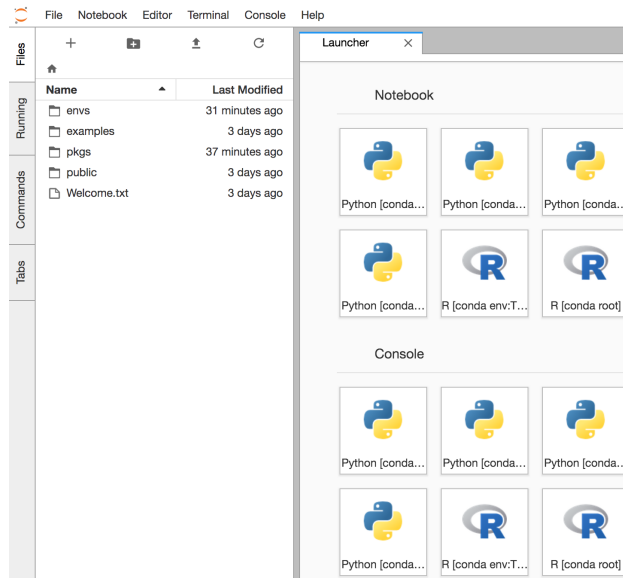
For more information about JupyterLab, see the [documentation](#).

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:

```

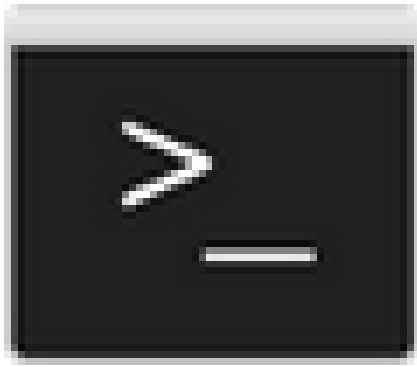
+ 1 bash
(/projects/aen_admin/TestProject/envs/default) ls
envs examples pkgs Presentnotebook.ipynb public Sample.ipynb Welcome
(/projects/aen_admin/TestProject/envs/default)

```

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

- *Opening the Jupyter Notebook application*
- *Using example notebooks*
- *Creating a new 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.

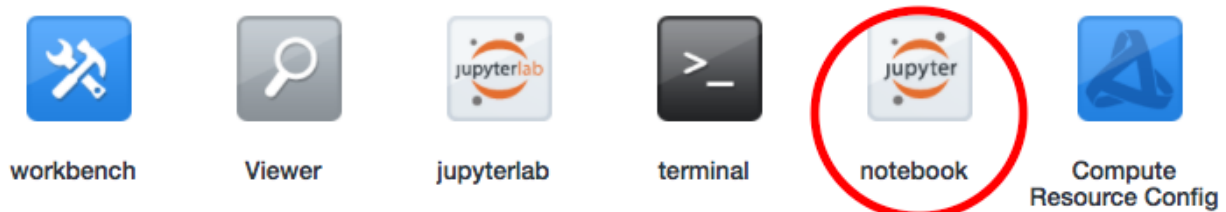
This page provides a brief introduction to Jupyter Notebooks for AEN users.

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.



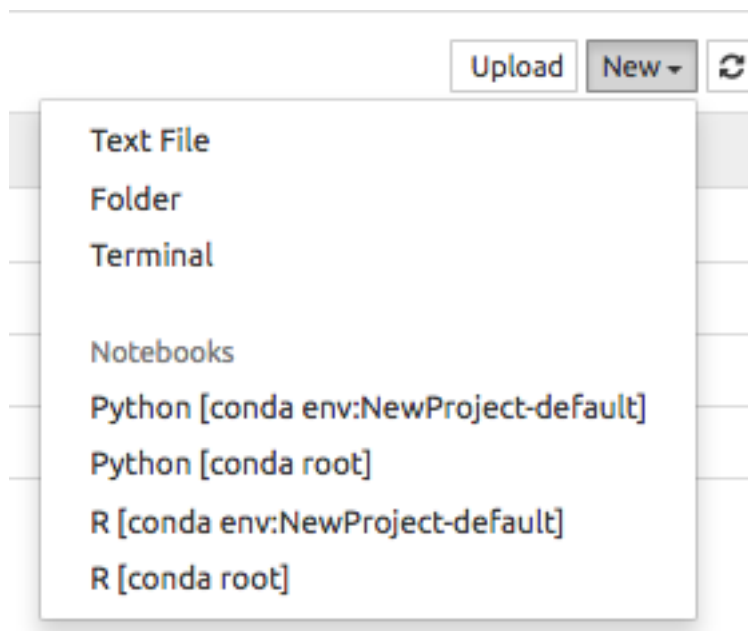
Using example notebooks

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:

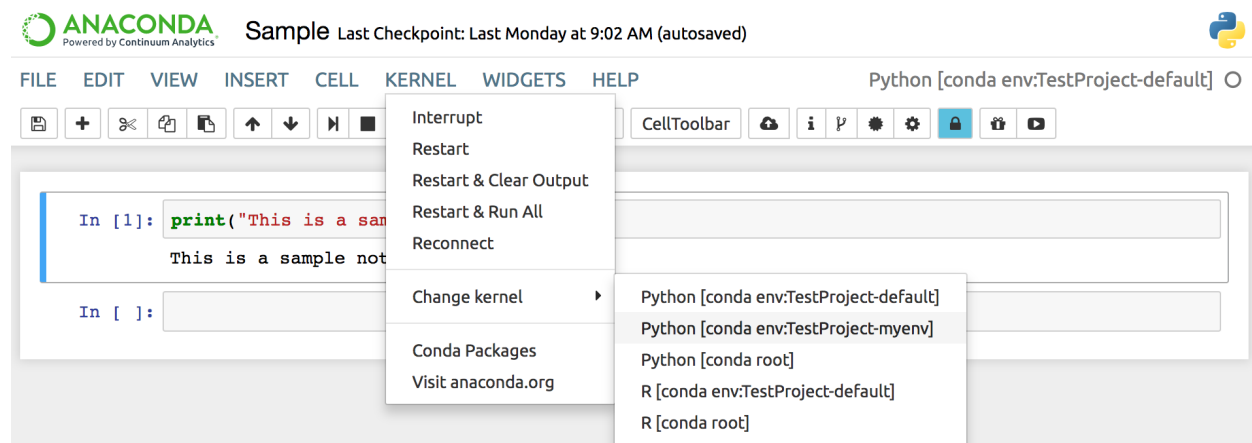
- [Synchronize Environments](#) with Jupyter from the **Kernel** menu.
- [Locking](#) adds multi-user capability from the Lock button.
- [Revision Control Mechanism \(RCM\)](#) adds Status, Checkout and Commit buttons.
- [Conda environment and package management](#) tab.
- [Conda notebook](#) adds conda 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:



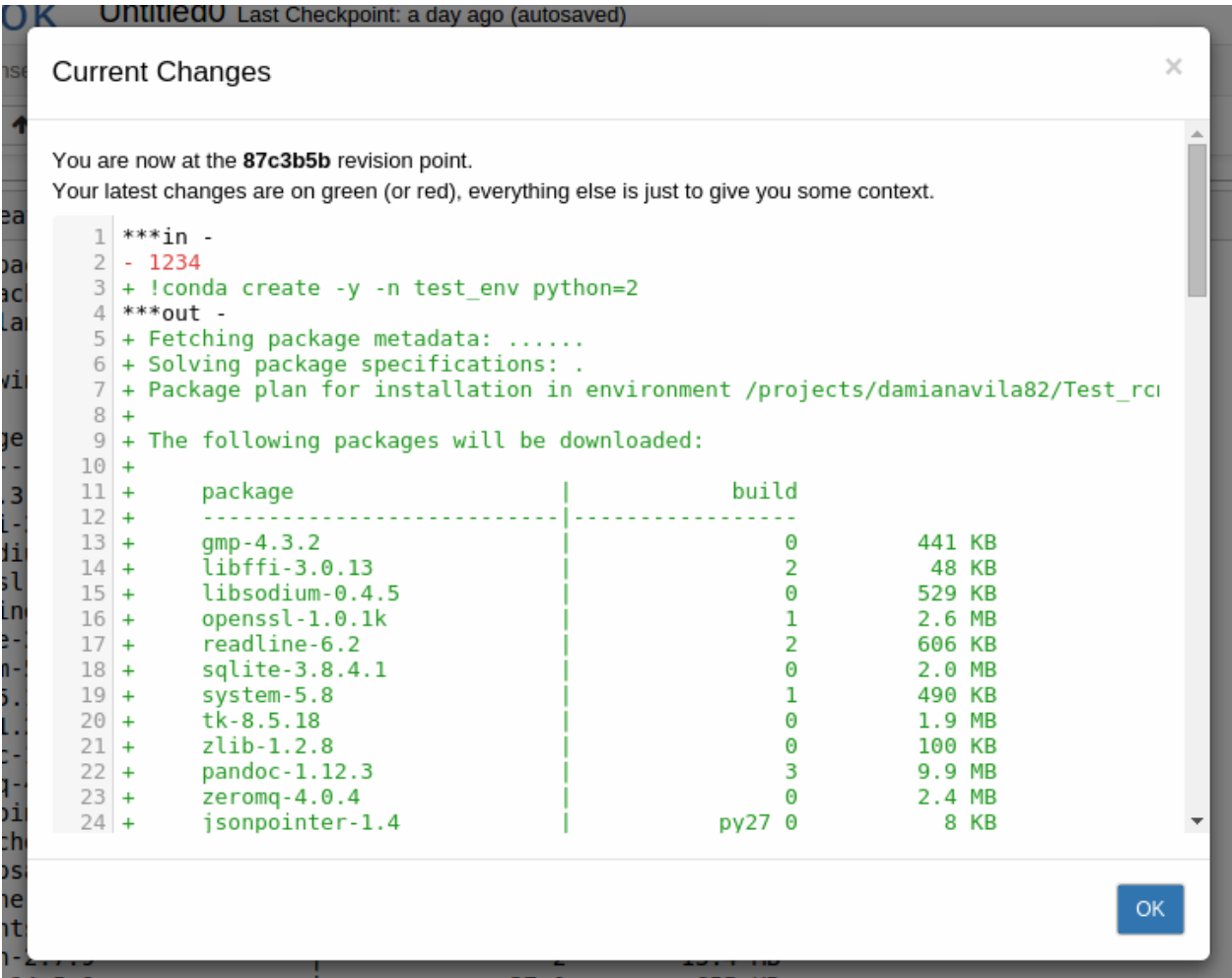
- *Status.*
- *Checkout.*
- *Commit.*
- *Configure git.*

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.

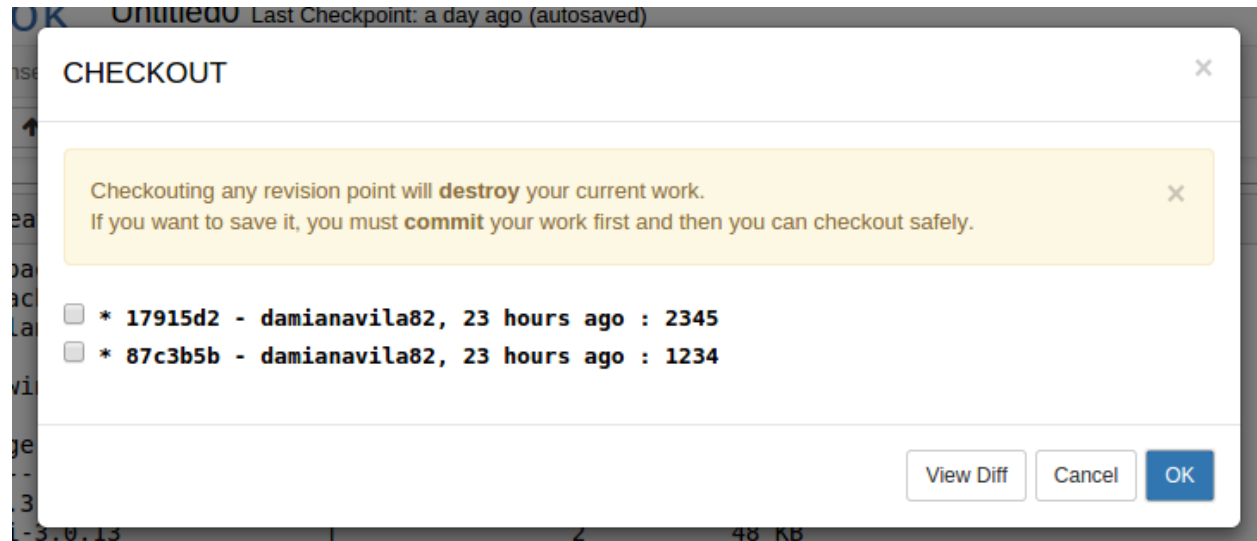
Clicking the Status button displays:



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.

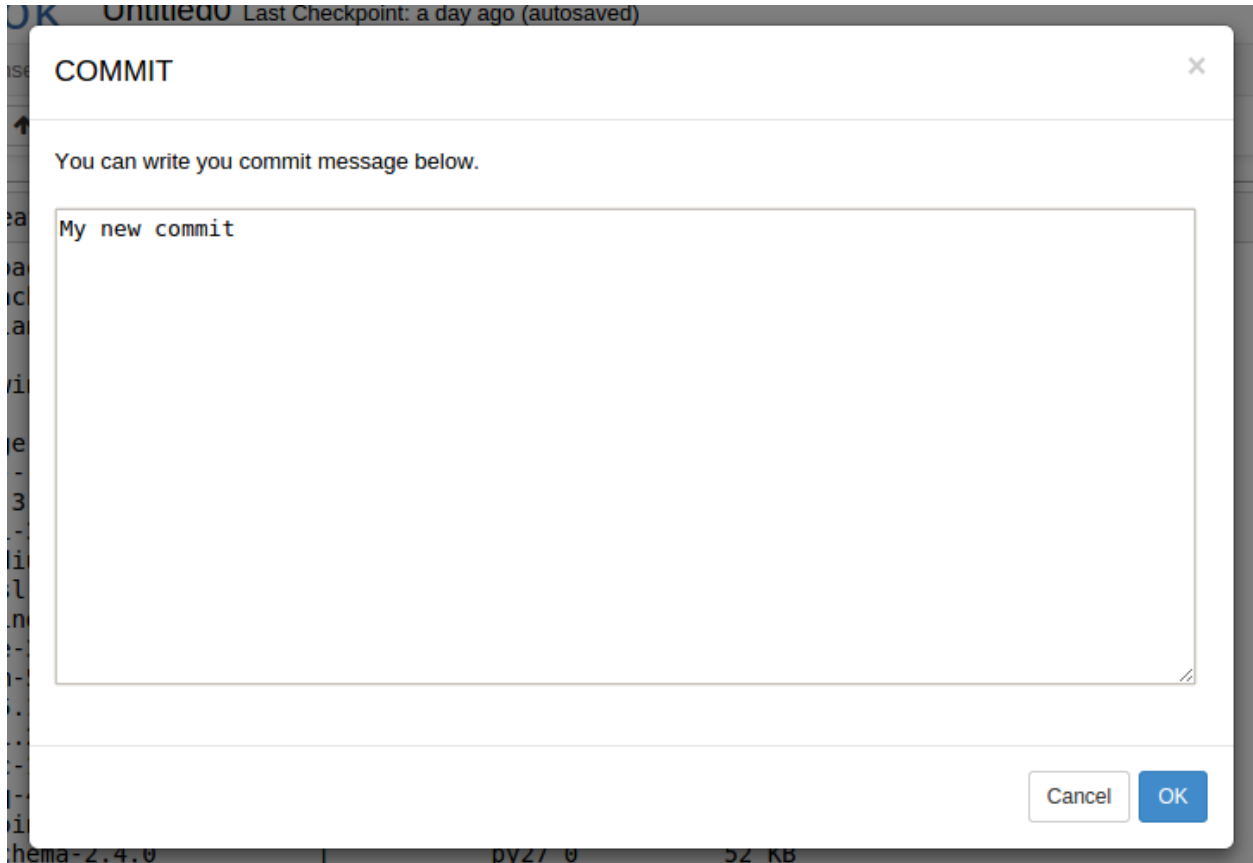
A side-by-side comparison is displayed.

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:



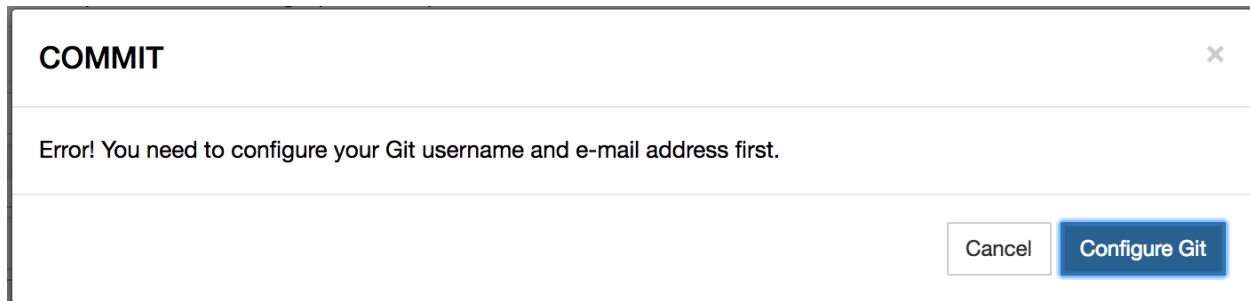
1. Enter a description of the changes in the commit as a reminder in case you need to revert back to it later.
2. Click the OK button.

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.

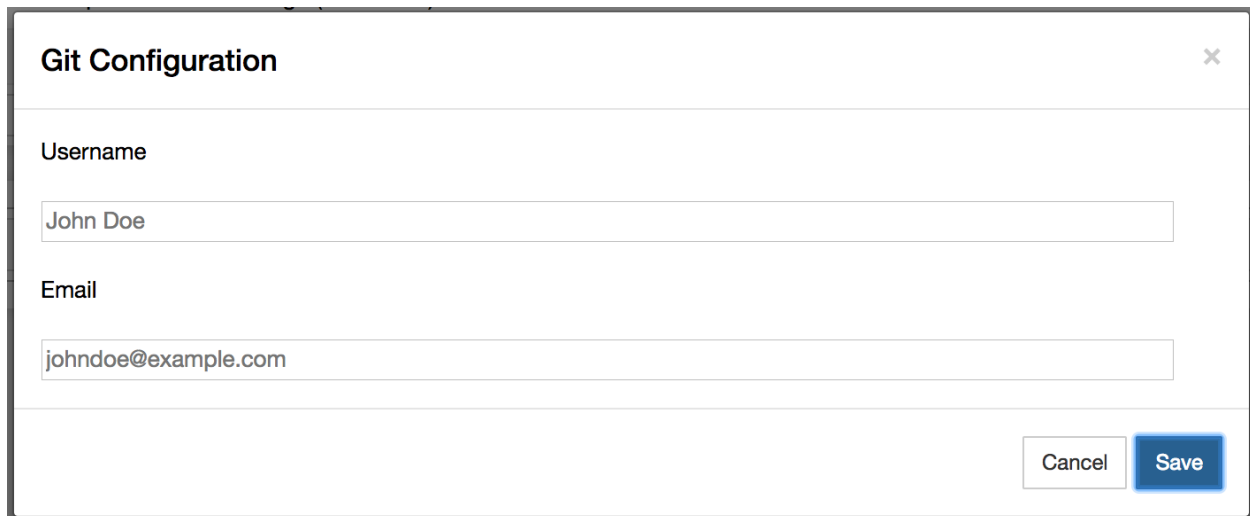
TIP: You can roll back committed changes by *checking out a previous version*.



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:



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.



FilesRunningIPython ClustersConda

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"

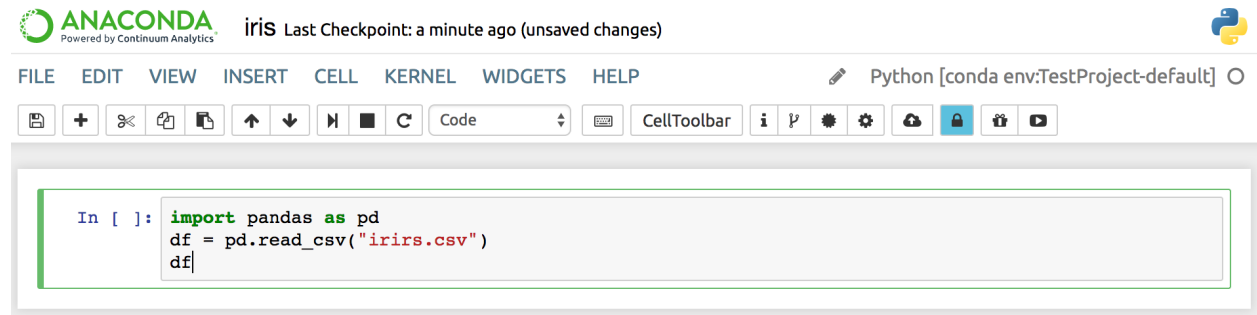
Name	Version	Channel
<input type="checkbox"/> _license	1.1	defaults
<input type="checkbox"/> _nb_ext_conf	0.4.0	defaults
<input type="checkbox"/> abstract-rendering	0.5.1	defaults
<input type="checkbox"/> accelerate	2.3.1	defaults
<input type="checkbox"/> accelerate_cudalib	2.0	defaults
<input type="checkbox"/> 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:



Using the Conda Notebook extension

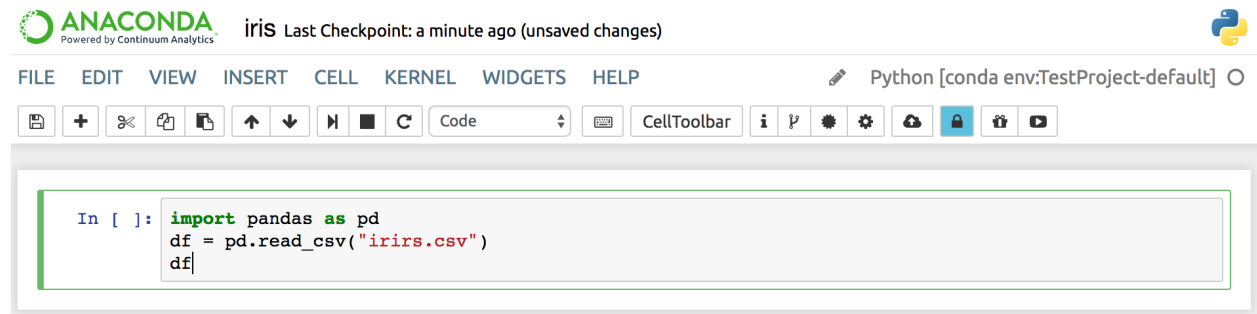
The Conda Notebook extension adds the Conda Packages option to the **Kernel** menu.

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

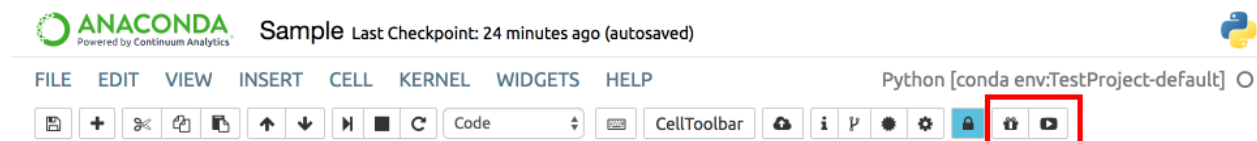
The Anaconda Cloud extension adds the Cloud button to your notebook, allowing you to easily upload your notebook to Cloud:



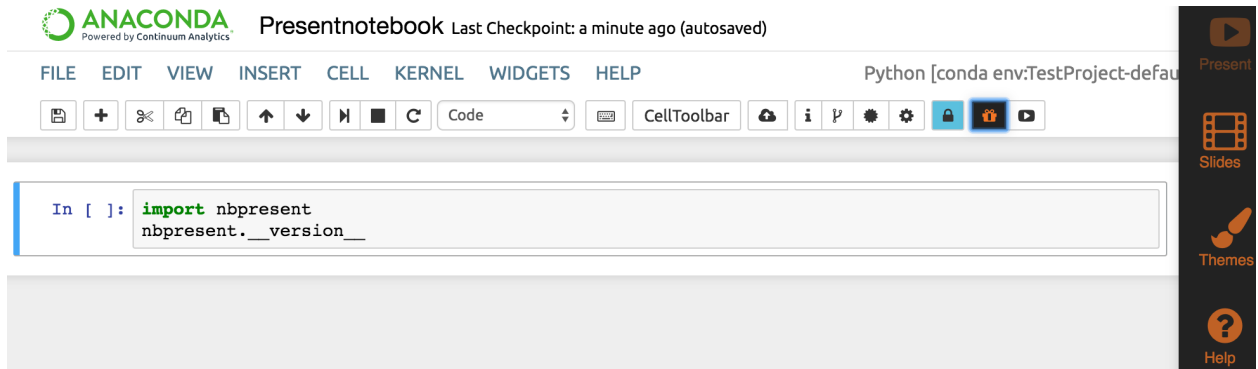
Using the Notebook Present extension

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.

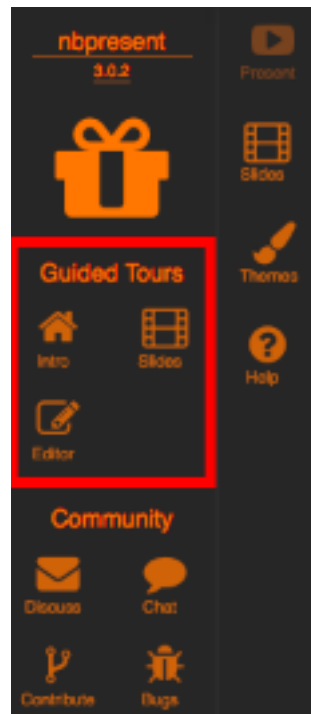


The Notebook Present sidebar is displayed on the right side of your browser:

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:
- **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.

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

The screenshot shows the Anaconda Presentnotebook interface. At the top, the Anaconda logo is on the left, and the title "Presentnotebook" is followed by "Last Checkpoint: 4 minutes ago (autosaved)". Below the title is a menu bar with "FILE", "EDIT", "VIEW", "INSERT", "CELL", "KERNEL", "WIDGETS", and "HELP". To the right of the menu bar, it says "Python [conda env:TestProject-defa". Below the menu bar is a toolbar with various icons for file operations, navigation, and execution. The main area is a code editor with a single cell containing the following code:

```
In [ ]: import nbpresent
        nbpresent.__version__
```

Below the code editor, there is a message that says "No Slides... yet!" and "You can create an empty slide by pressing **+** or by importing slides:". To the right of this message is a button labeled "Basic" with a slide icon and "1 Slides". At the bottom left, it says "Your Slides". On the right side, there is a vertical sidebar with icons for "Present", "Slides", "Themes", "Help", and a "+ Slide" button at the bottom.

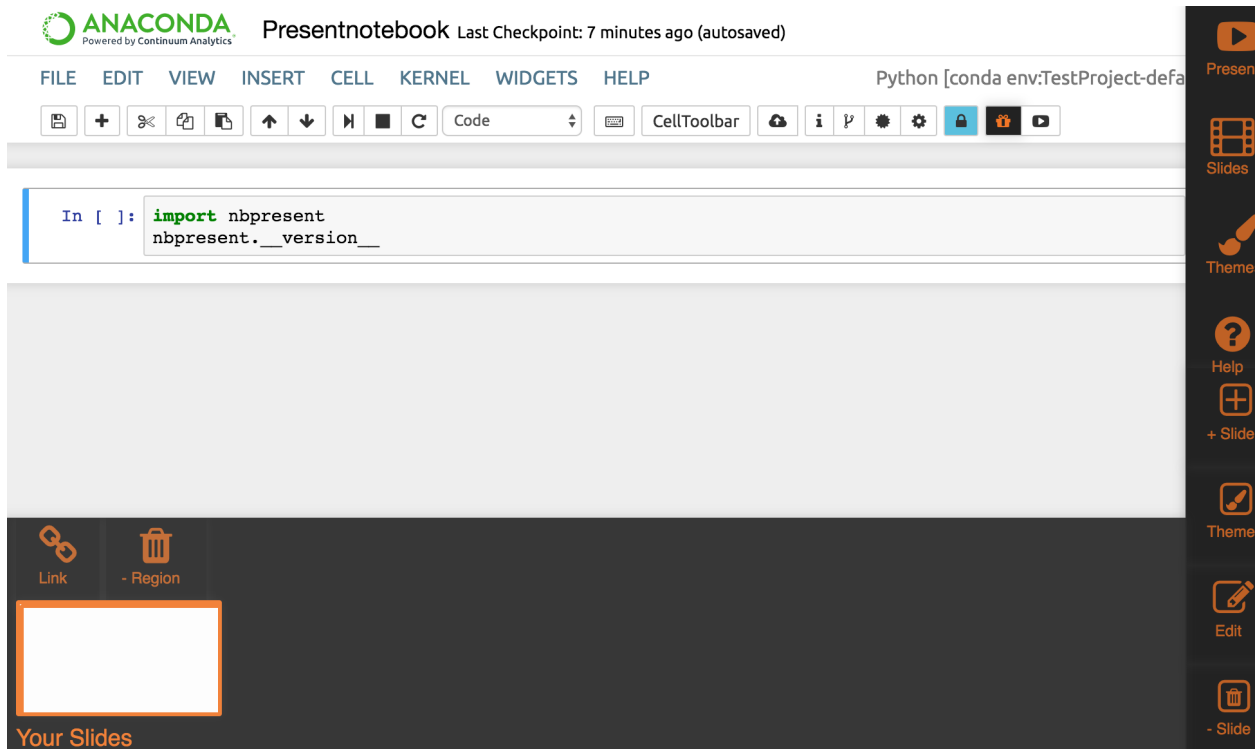
The screenshot shows the Anaconda Presentnotebook interface with a slide displayed. The slide title is "Hello, *nbpresent!*". Below the title, there are two code cells. The first cell contains the following code:

```
In [ ]: import nbpresent
        nbpresent.__version__
```

The second cell is empty and contains the prompt "In []:". On the right side, there is a vertical sidebar with icons for "Present", "Slides", "Themes", "Help", and a "+ Slide" button at the bottom. The sidebar also shows a list of slides with their titles and slide numbers: "li 5", "h1 5.25", "h4 3", "h6", "h3 3.75", "h1 7", and "h4 3".

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:

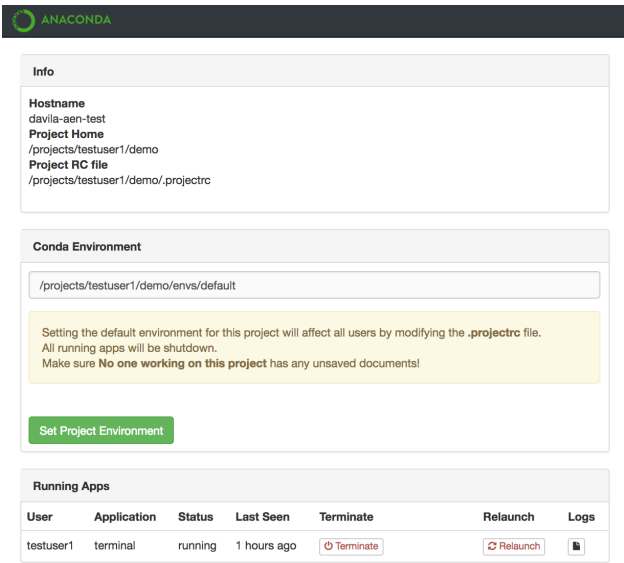
- Editing Slides—Activate the Slide Editor by double-clicking it, or by clicking Edit Slide.
- Region Editor—Click to drag Regions around and resize them.
- Region Tree—Reorder Regions and see the details of how Regions will show their linked Parts.
- Add Region—Add new regions.
- Attribute Editor—Edit 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

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.

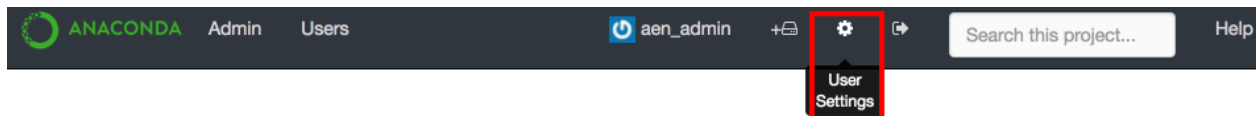
To stop and re-launch any individual application, click the Relaunch button.

To review the run logs of any active application, which may be useful for troubleshooting, click the Logs button.

Managing your account

- *Updating your public profile*
- *Changing your password*
- *Deleting your AEN account*
- *Viewing account operations*
- *Registering an application*

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.

The screenshot shows the Anaconda Jupyter Notebook interface with the 'Conda' tab selected. It displays three conda environments: 'root', 'default' (which is the default), and 'myenv'. Below this, it shows search results for 'numpy' with two available packages: 'numpy' (version 1.13.1) and 'numpydoc' (version 0.7.0). To the right, it lists 39 installed packages in the 'myenv' environment, including 'anaconda-client', 'certifi', 'cycler', 'decorator', 'ipykernel', and 'ipython'.

Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default
	myenv		/projects/aen_admin/TestProject/envs/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"/> cycler	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
```

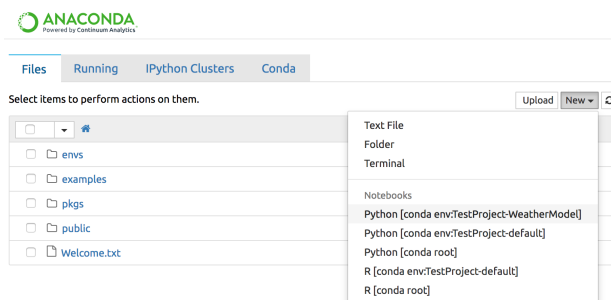
TIP: Python, pip and Jupyter Notebooks are automatically installed in each new environment. You only need to specify NumPy in this command.

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 mpy3 python=3 numpy scipy
```

A conda environment named `mpy3`, 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
```

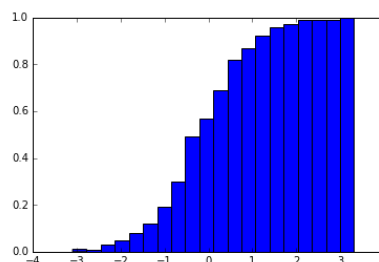
Any Matplotlib figures in the notebook are displayed in it's output cells.

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

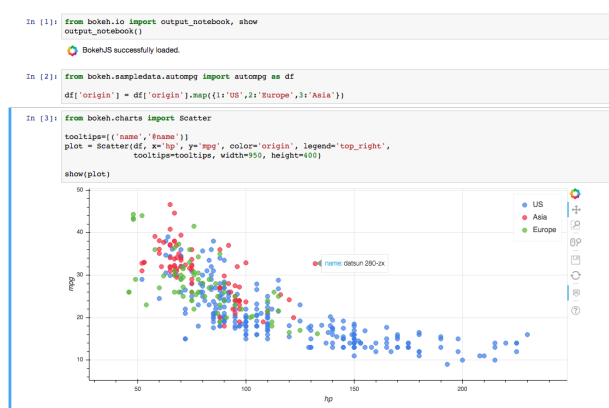
Bokeh is an interactive visualization library that targets modern web browsers to provide elegant, concise construction of novel graphics.

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.

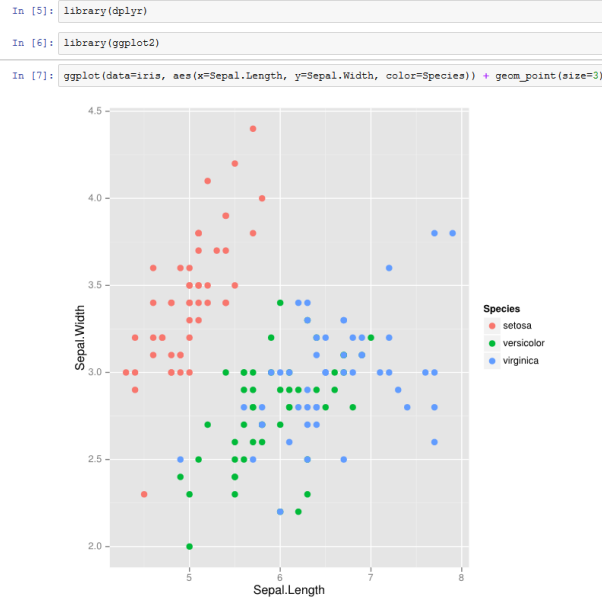
To use ggplot2 with AEN:

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:



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.

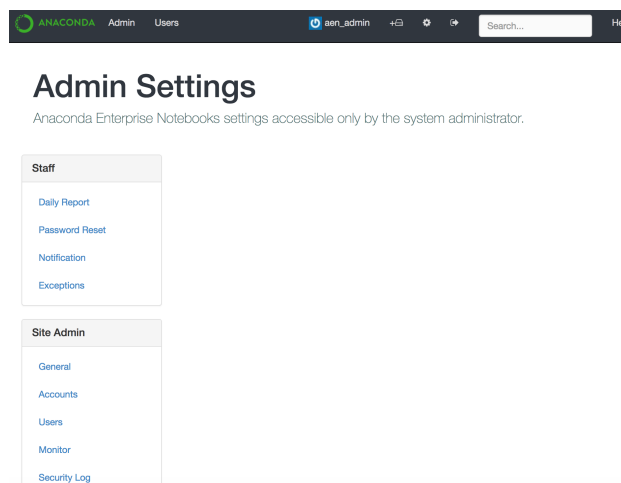
Admin guide

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:



All of the other navigation bar items are the same as for a user account.

Concepts

- *System overview*
- *Server node*
- *Gateway node*
- *Compute node(s)*
- *Supervisor and supervisord*
- *Service Account*
- *Anaconda environments*
- *Projects and permissions*

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.

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:

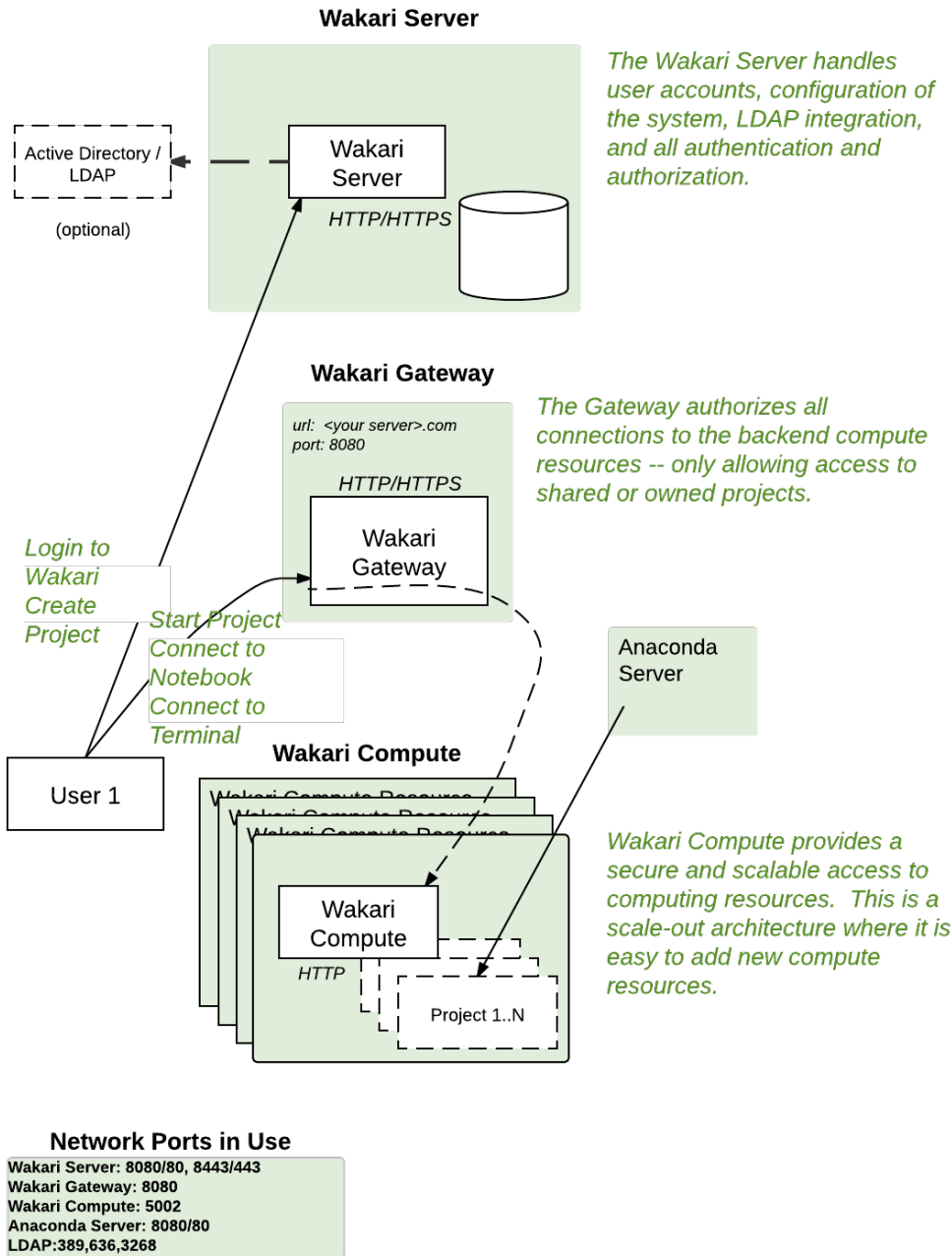
- 1 AEN server instance
- 2 AEN gateway instances
- 50 AEN compute instances (20 + 30)

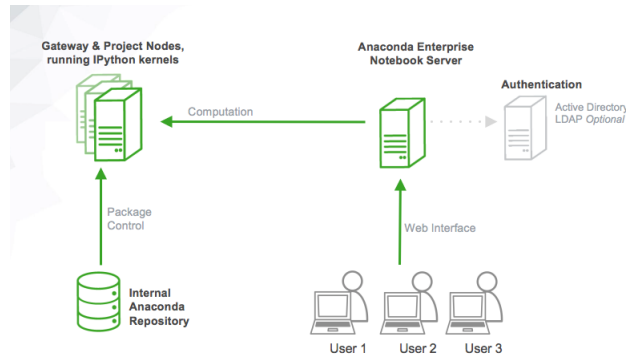
Nodes must be configured and maintained separately.

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

Anaconda Enterprise Notebooks





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 <code>wk-server</code> .
user	wakari
logs	<code>/opt/wakari/wakari-server/var/log/wakari/worker.log</code>
control	<code>service wakari-server</code>

nginx	details
description	Serves static files and acts as proxy for all other requests passed to <code>wk-server</code> process. *
user	nginx
configuration	<code>/etc/nginx/nginx.conf</code> <code>/opt/wakari/wakari-server/etc/conf.d/www.enterprise.conf</code>
logs	<code>/var/log/nginx/woc.log</code> <code>/var/log/nginx/woc-error.log</code>
control	<code>service nginx status</code>
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 <code>wk-gateway</code> process.
user	wakari
configuration	<code>/opt/wakari/wakari-gateway/etc/supervisord.conf</code>
log	<code>/opt/wakari/wakari-gateway/var/log/supervisord.log</code>
control	<code>service wakari-gateway</code>
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
con-figura-tion	/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)
con-trol	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*
- *Software requirements*
- *Security requirements*
- *Network requirements*
- *Other requirements*
- *What's next*

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 mongodb (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 libXdmc6 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*
- *Gathering IP addresses or FQDNs*
- *Set up variables*
- *What's next*

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

- *Installing the bzip2 package*
- *Downloading prerequisite RPMs*
- *Installing prerequisite RPMs*
- *Setting variables and changing permissions*
- *Running the AEN server installer*
- *Starting NGINX and Elasticsearch*
- *Testing AEN server installation*
- *Updating your license*
- *What's next*

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

=====
```

(continues on next page)

(continued from previous page)

```
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\T1\textdollarAEN_SERVER`.

The License expired page is displayed.

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:

No license found!
[Acquire a license](#)

Thank you for using Anaconda Enterprise Notebooks.
 After 45 days, or the end of your paid license agreement, you must renew your license.

Software updates and technical support

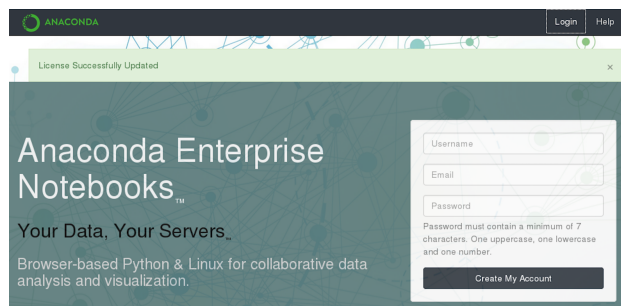
Software updates are free of charge during the initial 1-year period after the license purchase. Each subsequent update automatically terminates your rights to use the previous versions of the software. A commercial license qualifies you for unlimited access to technical support.

[Contact support for more information.](#)

Upload License File

License File

No file selected.



What's next

Install the AEN gateway.

Installing the AEN gateway

- *Setting variables and changing permissions*
- *Running the AEN gateway installer*
- *Registering your gateway*
- *What's next*

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
```

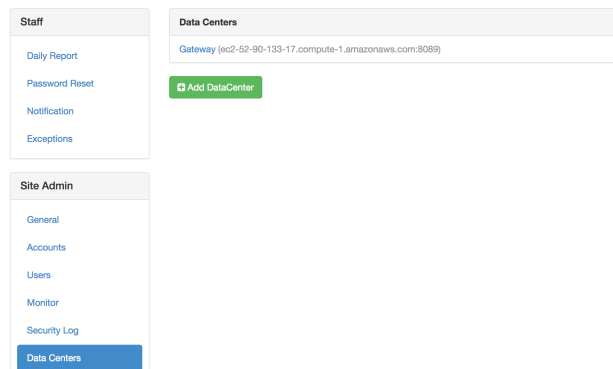

Starting the gateway

Run:

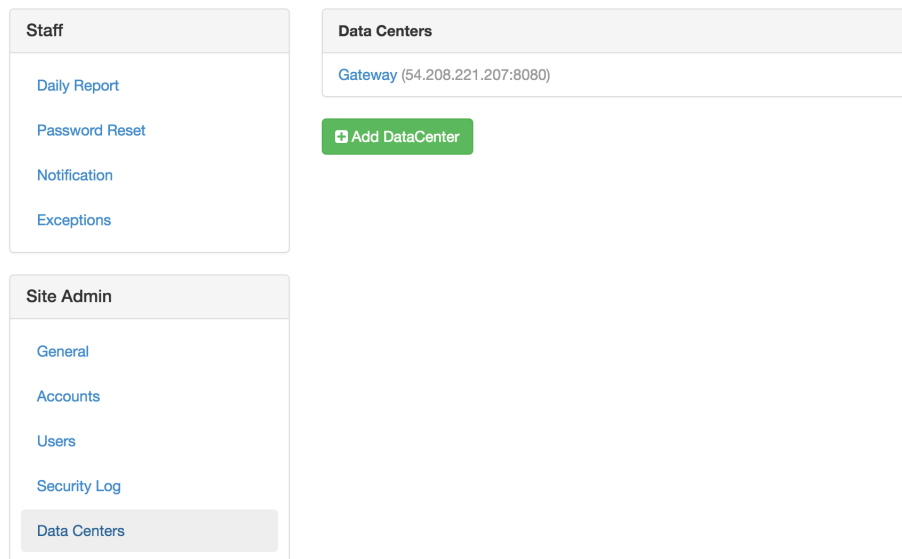
```
sudo service wakari-gateway start
```

Verifying your gateway registration

1. Log into 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:



4. Click your data center:



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

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)

- *Setting variables and changing permissions*
- *Running the AEN compute installer*
- *Restart the AEN Server*
- *Configuring your compute node(s)*
- *What's next*

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:
5. Click the Add Resource button to open the new resource form.
6. Select the data center to associate this compute node with.

Staff

- Daily Report
- Password Reset
- Notification
- Exceptions

Resources [Add Resource](#)

Gateway

ec2-54-210-232-251.compute-1.amazonaws.com [remove](#)

Site Admin

- General
- Accounts
- Users
- Monitor
- Security Log
- Data Centers
- Task Queue
- License

Providers
[Enterprise Resources](#)

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 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

- *AEN configuration keys*
- *Checking configuration file syntax*

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 mon- godb instance. Format: mongodb:// <username>:<password>@<host>:<port>/
WAKARI_SERVER		The URL of this AEN server.
DEFAULT_PRIVACY	public	The default project privacy setting—can be either public or private.
SESSION_COOKIE_NAME	wk. enterprise. session	The cookie name used to maintain Anaconda Enterprise Note- books 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 af- ter 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 ad- resses are required. See note below 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 pri- mary.
- PORT	389	LDAP subkey—The LDAP port on the LDAP server.
- AUTH_TYPE		LDAP subkey—LDAP Authentication types. simple—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 cer- tificate 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 public or anonymous— assigned users who are not logged in to access projects. To disable public access use the special value disabled. For more information see Chapter 7: Anaconda Embedded Configuring sudo customizations .
1512		
SEARCH_ENABLED	true	Boolean indicating whether ElasticSearch is enabled
SEARCH_SERVER	'localhost:9200'	IP address or domain name and port of ElasticSearch server

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
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 (≥ 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 Configuring SSL .
- 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 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	To make the AEN compute service create groups with the same uid. Set to true /projects folder resides on an NFSv3 volume. 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	13600000 (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.

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	\$WAKARI_SERVER/ static/	The location of static assets.
SUBDOMAIN_ROUTING	false	A boolean that indicates whether subdomains are being used.
refreshTokenExpiration	60000	Idle time in milliseconds before the Gateway session expires.

Table 34: 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 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_SRV_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
```

For more information and examples about creating a default project environment with Microsoft R Open (MRO), see *Using MRO in AEN*.

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.

Using MRO in AEN

In AEN 4.2.2 and higher, you can choose to create environments with the Microsoft R Open (MRO) interpreter by installing the `mro-base` package, or create environments with the R interpreter by installing the `r-base` package. Unless you request a change, conda will continue to use the existing interpreter in each environment. In AEN `r-base` is the default.

EXAMPLE: To create a custom environment called `mro_env` with MRO and R Essentials:

```
.. code-block:: bash

sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
  create -c https://repo.anaconda.com/pkgs/main \
  -n mro_env r-essentials
```

NOTE: Conda 4.4 and higher include the `main` channel by default. Earlier versions of conda do not.

Making a default project environment with MRO

You can also create an environment with MRO and make this the default AEN project environment.

The first time a new project is started, the default project environment is cloned into the new project's workspace.

1. Create a new conda environment in the `/opt/wakari/anaconda/envs/default` directory.

The command is similar to the one used in the previous example to create a custom environment.

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
  create -c https://repo.anaconda.com/pkgs/main \
  -p /opt/wakari/anaconda/envs/default r-essentials
```

2. Use `conda` to install any additional packages into the environment.
3. After the environment is created, clone it to check that it works correctly, and then clean up the clone.

```
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
```

NOTE: To convert existing projects, see *Converting an existing project*.

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 `polycoreutils-python`. To install `polycoreutils-python`, if needed, run:

```
sudo yum -y install polycoreutils-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)))"
                   },
    "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.
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', contains a 'Name' field with the value 'Gateway 1', a checkbox for 'Subdomain Routing' which is unchecked, and a checkbox for 'Https' which is 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": {
```

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```

    "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=100000 | 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.json", "--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"
```

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```
# 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 PYSARK_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

- *Before you upgrade*
- *Upgrading the AEN server node*
- *Upgrading the AEN gateway node*
- *Upgrading AEN compute nodes*
- *After upgrading*

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*
- *AEN 4.1.1 upgrade instructions.*
- *AEN 4.1.0 upgrade instructions.*
- *AEN 4.0.0 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
```

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```

sudo -E -u $AEN_SRV_CCT /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_SRV_CCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenv \
    --clone root

```

7. Test the offline cloning step:

```

sudo -E -u $AEN_SRV_CCT /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_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.

- *Uninstalling a server node*
- *Uninstalling a gateway node*
- *Uninstalling a compute node*
- *OPTIONAL: Removing projects from compute nodes*

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 are two sidebars. The top sidebar is titled 'Staff' and contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom sidebar is titled 'Site Admin' and 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 located 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:

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:

Anaconda Enterprise Notebooks settings accessible only by the system administrator.

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Password Reset

Generate URL

1. Use ssh to log into 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 into 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](#)

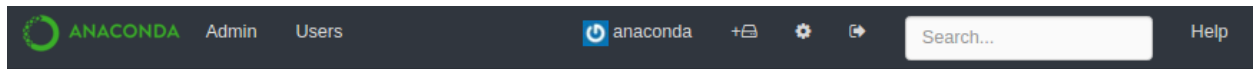
Users

Username	Projects	Last Seen
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.

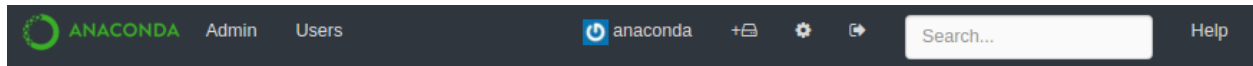
 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

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:

The screenshot shows the Admin Settings page with three main sections in the left sidebar: Staff, Site Admin, and Providers. The Staff section is active, showing options like Daily Report, Password Reset, Notification, and Exceptions. The main content area is titled 'Notification Settings' and contains three radio buttons: 'Off' (selected), 'SES - Amazon Simple Email Service', and 'SMTP Email Server'. Below the SMTP Email Server option is a section for 'SMTP Settings' with input fields for SMTP Hostname, SMTP Username (optional), SMTP Password (optional), and SMTP From Address (optional). An 'Update' button is at the bottom left of the main content area.

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.

3. 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.

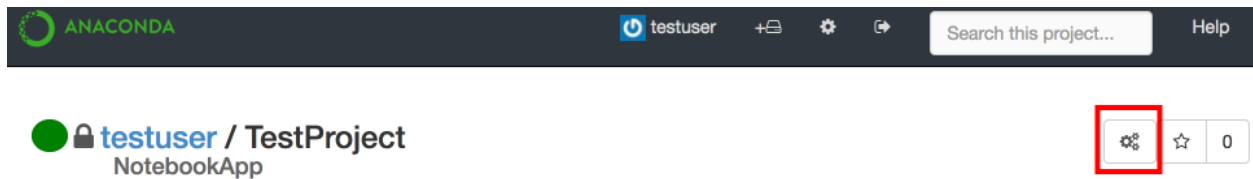
4. If you select SMTP Email Server, complete the SMTP Settings.

NOTE: If you get an error message after changing the SMTP settings, you may need to restart the server.

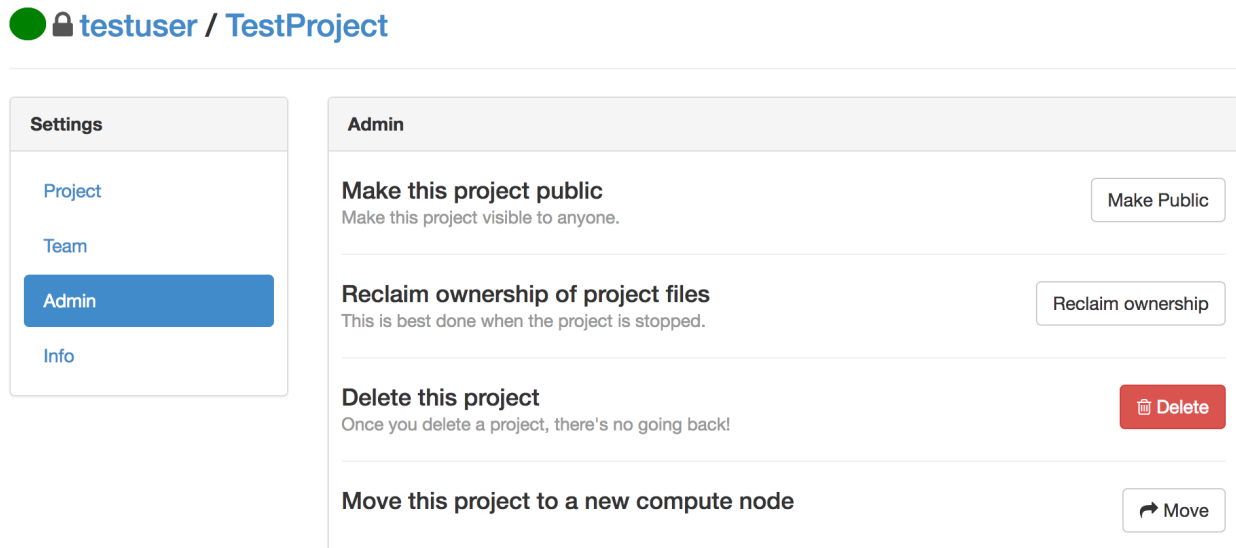
Moving a project to another compute node

If you have multiple compute nodes available and want to move a project from one to another, the project must exist on both nodes.

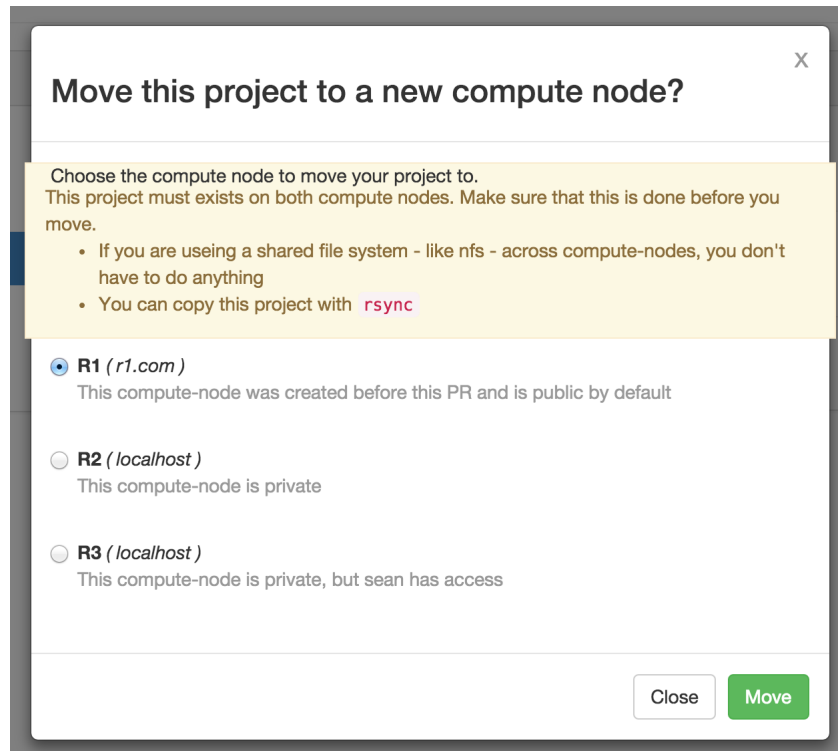
1. Verify that the project has been created on both compute nodes. You can use `rsync` for this job unless you have a shared file system like `nfs`.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



4. Click the 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>
```

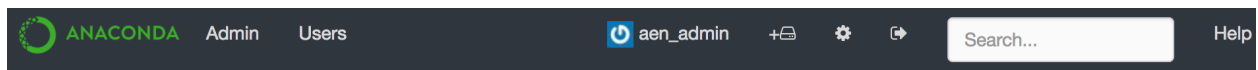
NOTE: Replace <username> with the actual username and <projectname> with the actual project name you are removing.

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

[Daily Report](#)[Password Reset](#)[Notification](#)[Exceptions](#)

Site Admin

[General](#)[Accounts](#)[Users](#)[Monitor](#)[Security Log](#)

Backing up and restoring AEN

- *Document purpose*
- *Important notes*
- *Server component steps*
 - *Backup*
 - * *Mongo database*
 - * *AEN Server config files (including License file)*
 - * *Nginx config (if needed)*
 - * *SSL certificates (if needed)*
 - *Restore*
 - * *Reinstall AEN-Server*
 - * *Restore Mongo database*
 - * *AEN Server config files (including License file)*
 - * *Nginx config (if needed)*
 - * *SSL certificates (if needed)*
 - * *Restart server*
- *Gateway component steps*
 - *Backup*
 - * *Config files*
 - * *Custom .condarc file (if needed)*
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 - *Restore*
 - * *Reinstall AEN-Gateway*
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 - * *Restart gateway*
- *Compute component steps*
 - *Backup*
 - * *Config files*
 - * *Custom Changes (rare)*
 - * *Create user list*

- * *Project files*
- * *Full Anaconda (option 1)*
- * *Partial Anaconda (option 2)*
- *Restore*
 - * *Reinstall AEN-Compute*
 - * *Config files*
 - * *Custom changes (rare)*
 - * *Create users*
 - * *Project files*
 - * *Full Anaconda (option 1)*
 - * *Partial Anaconda (option 2)*
 - * *Custom environments (if needed)*
 - * *Restart compute node*

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_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-4.3.0-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:

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

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)
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[Data Centers](#)
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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
Users	0	1
Projects	0	6

New User Emails

Username	Email
----------	-------

Actions

Count	Action
82	oauth.authenticate

Staff

Daily Report

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Exceptions

Mark all as read

☒ `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:`

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 Password Reset Notification Exceptions	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.

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:

5. To close the error details, click the Back link.

Public Profile

Account Settings

Security Log

Applications

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

[← Back](#)

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:

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

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:

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": []}
```

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*
- *Checking the status of gateway node processes*
- *Checking the status of compute node processes*
- *Starting AEN services*
- *Verifying that AEN services are set to start with the system*
- *Stopping AEN services*
- *Restarting AEN services*
- *Identifying extraneous processes*
- *Removing extraneous processes*

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
```

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```
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
```

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```
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 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](#)

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	Terminate	Relaunch	Logs
aen_admin	Test	notebook	running	localhost	Jul 25, 2017 11:54:05 CDT	Terminate	Relaunch	Logs

Site Admin

[General](#)
[Accounts](#)
[Users](#)
[Monitor](#)

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Task Queue

Workers

ip-172-31-10-196.4053 | [high](#) [default](#) [low](#)

Queues

[high](#)
Backlog: 0
Failed: 1

[default](#)
Backlog: 0
Failed: 3

Site Admin

[General](#)
[Accounts](#)
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[Task Queue](#)

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.

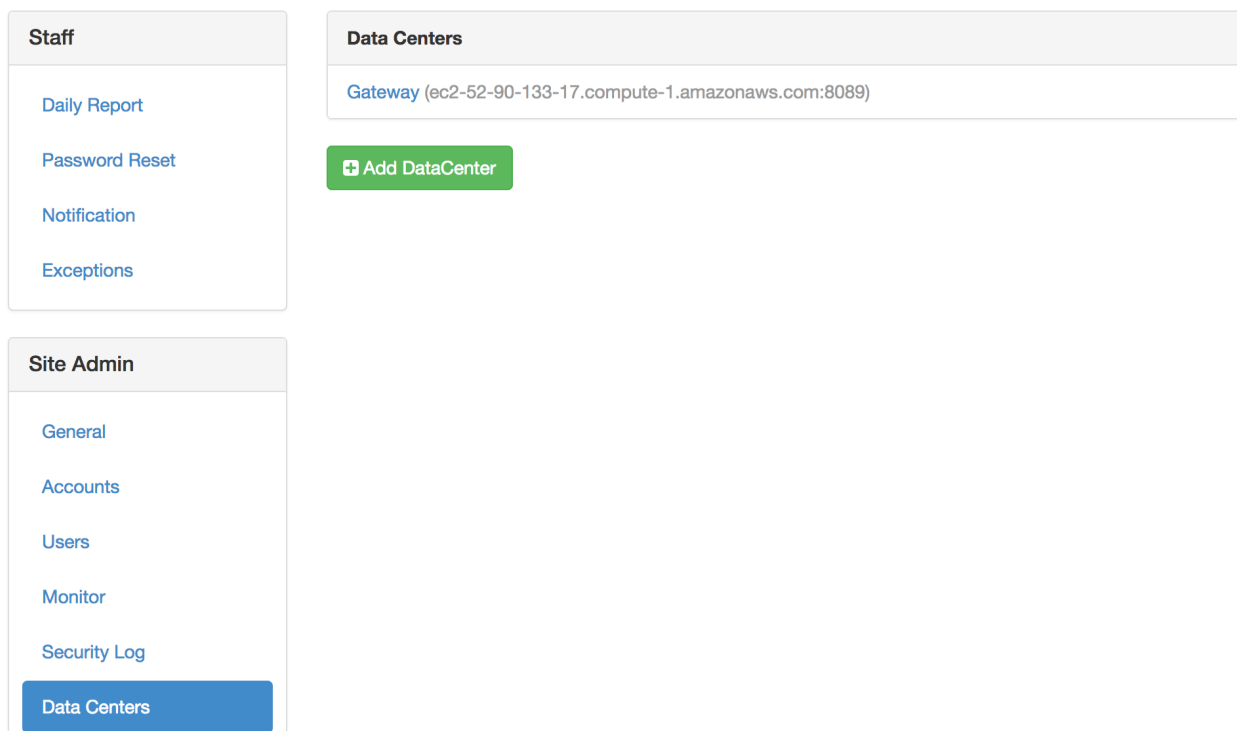
Checking node connections

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*
- *Verifying gateway to compute node connectivity*
- *Verifying gateway to server connectivity*

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:



- 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

- On the server, in the AEN navigation bar, click Admin to open the Admin Settings page.
- In the **Providers** menu, select Enterprise Resources:

The screenshot displays the Anaconda Enterprise Admin Settings interface. On the left, there is a navigation menu 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. On the right, the **Resources** section is active, showing a table with one entry: a Gateway with the URL `ec2-54-210-232-251.compute-1.amazonaws.com`. Above the table is a green button labeled '+ Add Resource', and next to the table entry is a red button labeled 'remove'.

- Open each compute node in the Resources section.
- 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:
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:
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:

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <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	

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <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	

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

General

[Accounts](#)
[Users](#)
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Providers

General Admin Settings

Wakari Server
Set the main URL where this site will be accessed

Static URL
Set static URL where the js can be accessed

Default Project Access
This will be the default when a user creates a project

☐ Public
Anyone can see this project. Collaborators have write access

☒ Private
No one can see this project except collaborators.

Account Type

Update

Config Files

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:

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <input type="text" value="wk_server.plugins.accounts.cloud"/>
	<input type="button" value="Update"/>
Site Admin	
General	
Accounts	
Users	
Monitor	
Security Log	
Data Centers	
Task Queue	
License	
Providers	Config Files

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**.
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 **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.

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <input type="text" value="wk_server.plugins.accounts.cloud"/>
	<input type="button" value="Update"/>
Site Admin	
General	
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Staff

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Site Admin

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[Task Queue](#)
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Current License

You have **166 days** remaining on your current license.

Renew your license

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
email	dev@continuum.io

Upload New License

License File

Choose File

No file chosen

Update

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*
- *Browser error: too many redirects*
- *Browser error: too many redirects when starting project apps*
- *Exception: exceptions.TypeError: 'NoneType' object has no attribute '__getitem__'*
- *Error: unix:///opt/wakari/wakari-server/etc/supervisor.sock no such file*
- *Error: “Data Center Not Found” when deleting a project*
- *Forgotten administrator password*
- *Log files being deleted*
- *Error: This socket is closed*
- *Service error 502: Cannot connect to the application manager*
- *502 communication error on Amazon web services (AWS)*
- *Invalid username*
- *Notebook Error: Cannot download notebook as PDF via LaTeX*
- *Unresponsive wk-server thread without error messages*
- *Unresponsive wk-gateway thread without error messages*

- *Error starting projects*
- *Changes in .condarc file are ignored*

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 into 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 into AEN as the administrator user with the new password.

Alternatively you may add an administrator user:

1. Use ssh to log into 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 into 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 into `/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?*
- *Can notebooks be shared with anyone?*
- *Can I disable the option, “publish your notebook to anaconda.org”?*
- *How can I check the version number of my AEN server?*
- *Can I use AEN to access CSV or Amazon S3 data?*
- *Can I install other Python packages?*
- *Can I create a Python environment from the command line?*
- *Can I connect to GitHub with AEN?*
- *Can I print or print preview my Jupyter Notebooks?*
- *Is there a set amount of storage on AEN?*
- *How do I get help, give feedback, suggest features or report a bug?*

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
- 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

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](#)
- [Team collaboration](#)

- [Access control](#)
- [Sharing projects](#)
- [Project tags](#)

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.

In this getting started guide, you will:

- *1. Download the AEN cheat sheet*
- *2. Access your user home page*
- *3. Create a new project*
- *4. Add collaborators*
- *5a. Open an example notebook, OR*
- *5b. Create a new environment and notebook*
- *6. Create checkpoints for version control*
- *7. Share your notebook and environment with others*
- *8. See what to do next*

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.

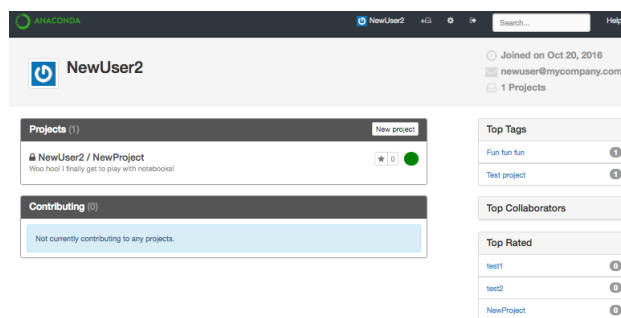
NOTE: Use the domain name and not the IP address when you connect to AEN. Using the IP address can cause TLS and security certificate errors.

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:



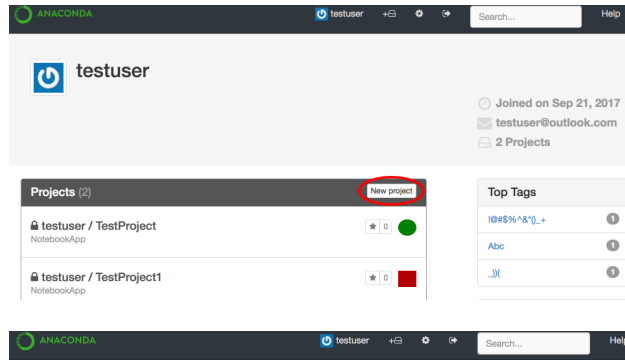
3. Create a new project

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.”



New Project

Create your project here!

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.

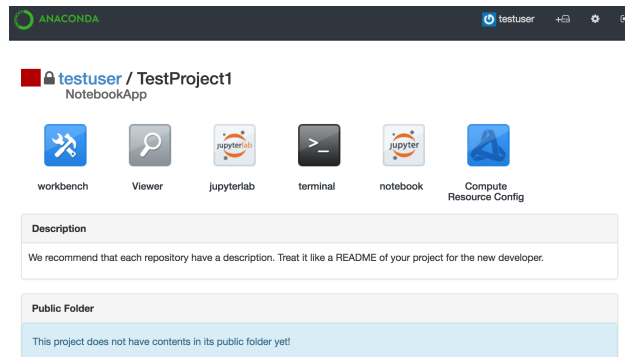
Next

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.

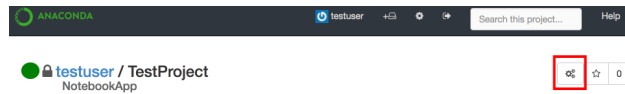
TIP: You can update the project summary and description at any time from the **Project** menu in the Project Settings. To return to your project at any time, click the project name.

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 Mark-down).

To see how Markdown will be displayed, in the description area, click the **Preview** tab.

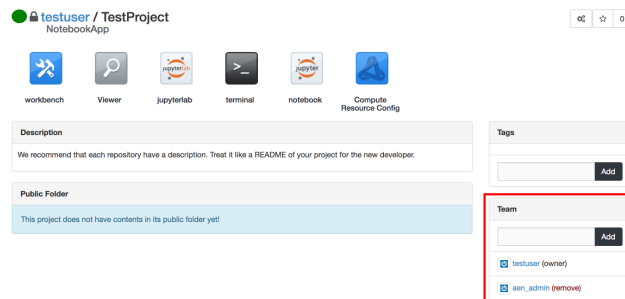
4. Add collaborators

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.

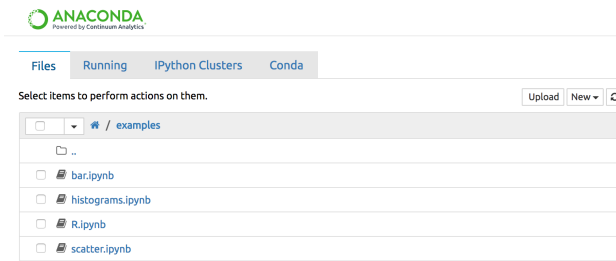


1. Repeat these steps for each team member you want to add as a collaborator.

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.
1. Select any of the example notebooks.
2. To see the default results of the formulas used in the displayed notebook, in the **Cell** menu, select Run All.
3. To experiment with changing the notebook, edit any of the formulas in the notebook.
4. 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.

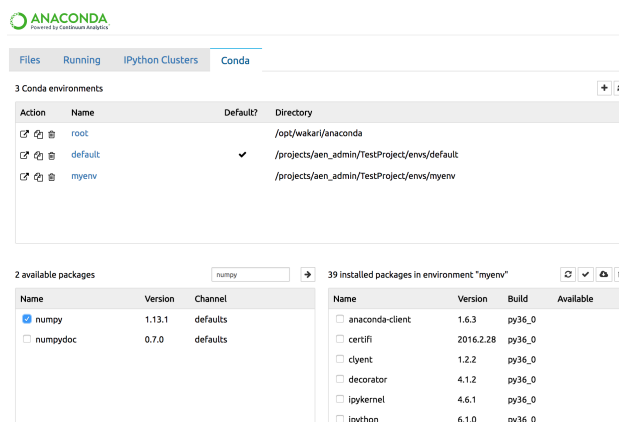
To create a new environment:

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.



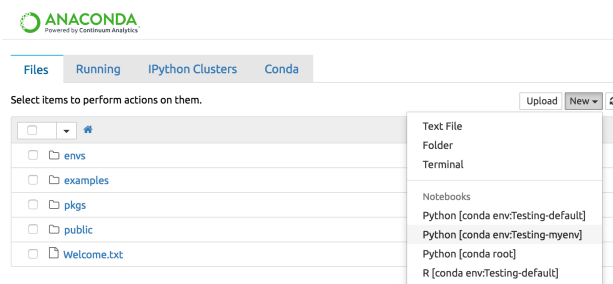
1. Click the Install icon.
2. To confirm your installation, click the Install button.

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.

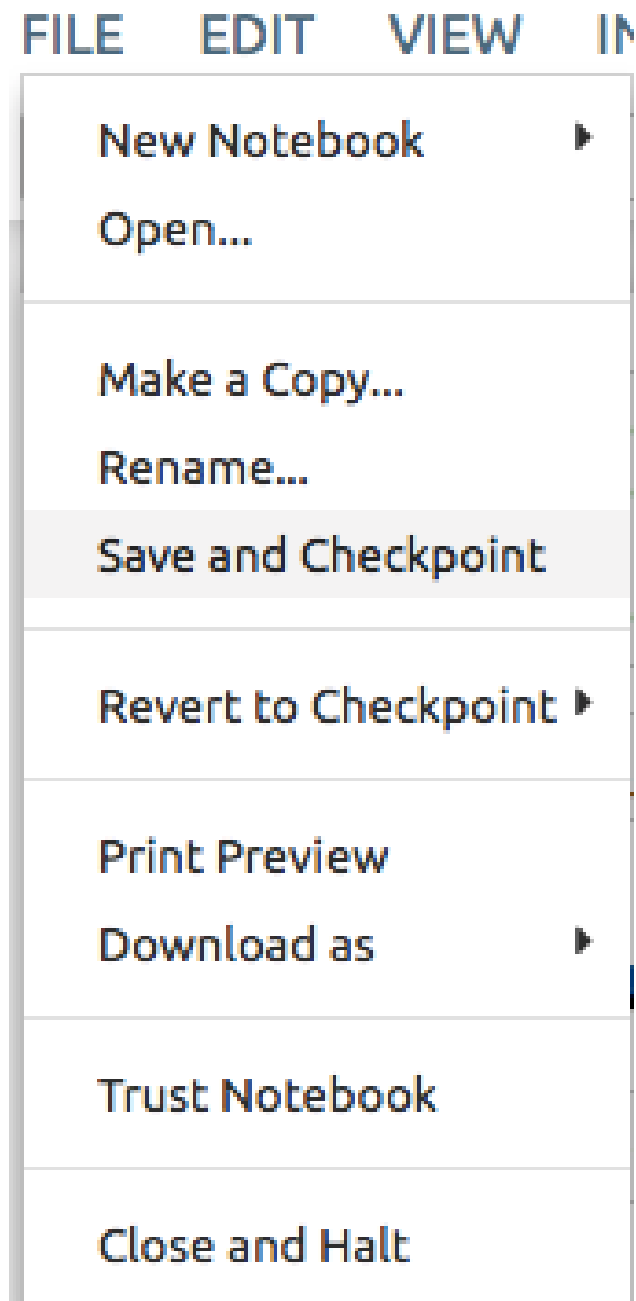
To create a checkpoint, in the **File** menu, select Save and Checkpoint:

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

- *Types of files searched*
- *Search indexing*
- *Using search constructs*
- *Searching metadata fields*
- *Searching a project*
- *Saving a search*
- *Removing a saved search*

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.

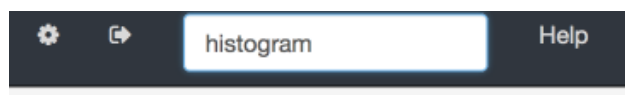
Searching metadata fields

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

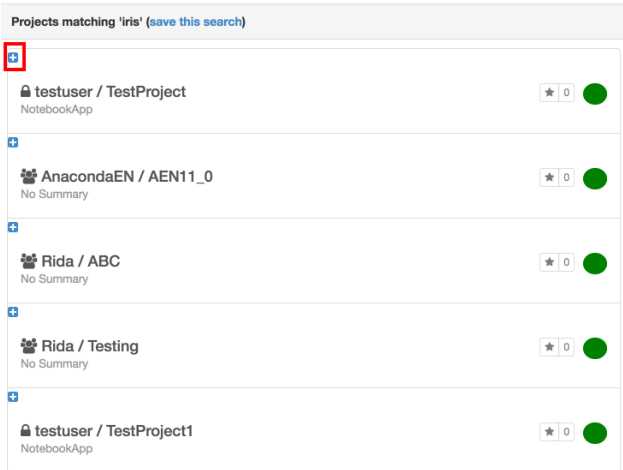
1. In the Search box, type a string of text:



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:



TIP: Click the project name to open the project’s home page.

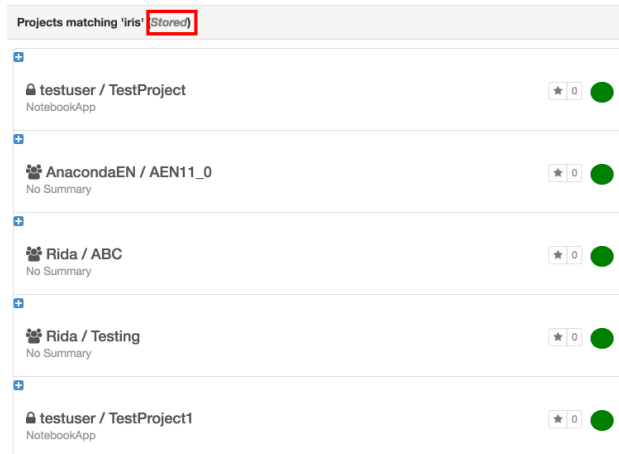
4. To view a file, click its file name in the matching files list:



Saving a search

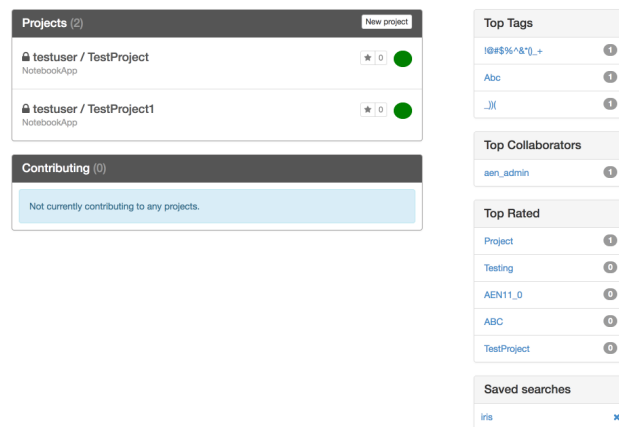
1. At the top of the search results, click Save this search:

The “save this search” text changes to “stored” and your search is saved. Your saved searches are listed on your home page.



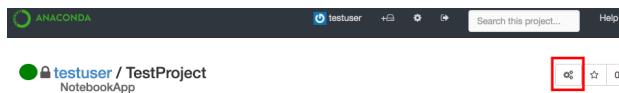
Removing a saved search

On your home page, in the Saved searches section, click X next the saved search that you want to remove:

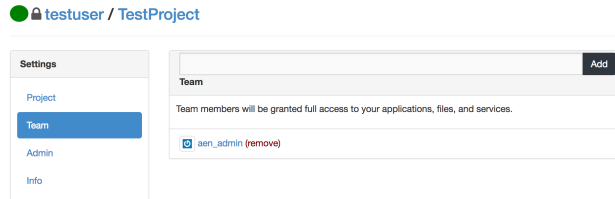


Adding and removing team members on a project

1. On the project home page, click the Project Settings icon to open the Project Settings page.



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*
- *Controlling non-team member access*

Controlling team member access

By default, all of the team members on a project have read and write access permissions for all project assets.

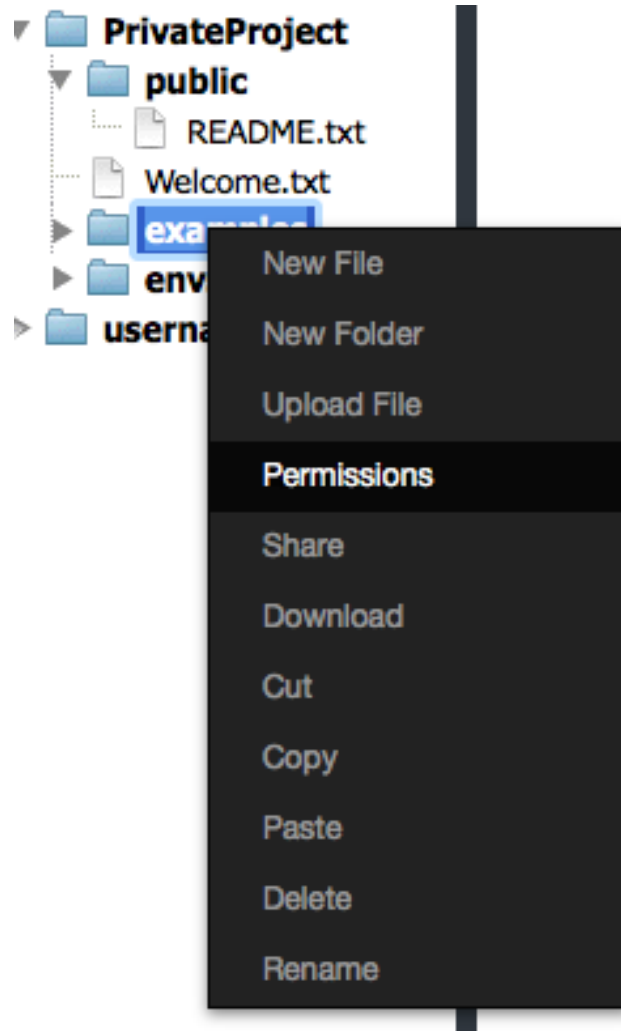
The available permissions are read, write and execute. If you remove all individual or group permissions for a project asset, team members will not be able to access that asset.

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.

- 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.*
- 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.

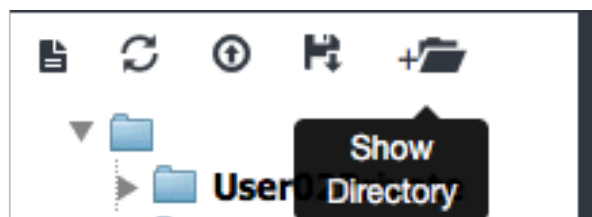
NOTE: If you change permissions for a folder instead of a file, the user will be able to see and access any files within that folder.

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:

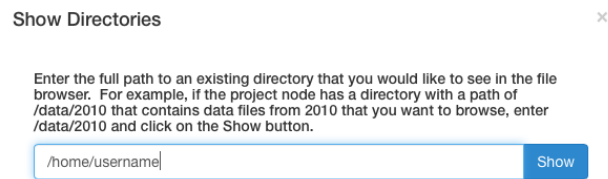
1. Click the Show Directory button at the top of the Workbench File Manager:



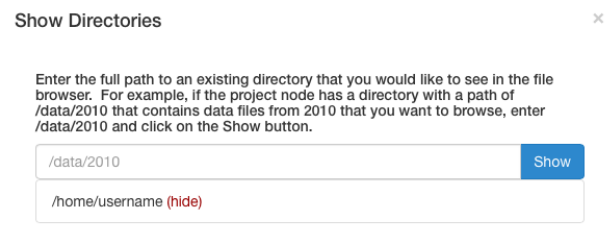
The Show Directories dialog box displays.

2. In the text box, type `/home/[yourusername]`.

NOTE: Replace `[yourusername]` with your AEN username.

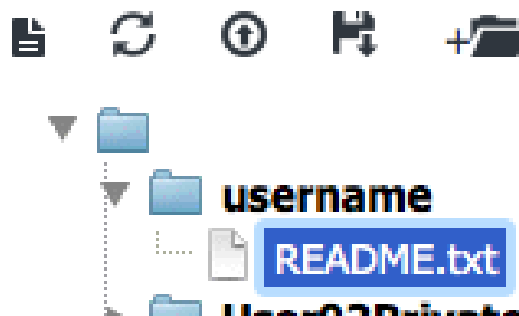


3. Click the Show button.
4. Verify that the folder is now displayed below the text box:



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.

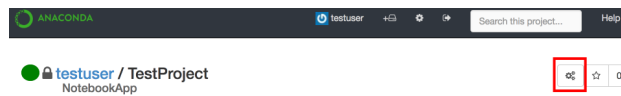
The shared file is displayed in the File Manager:



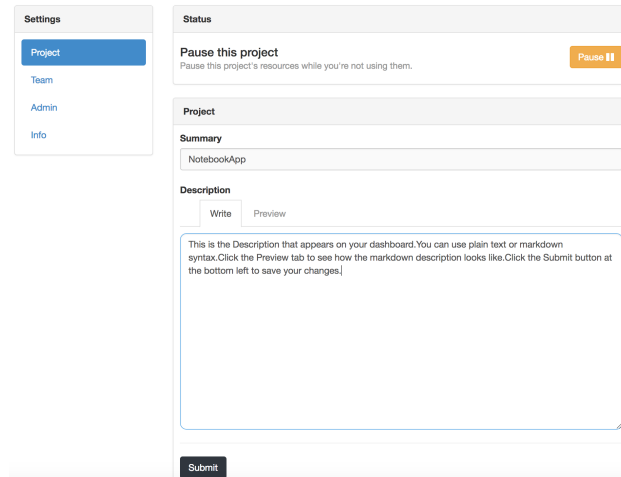
Starting and stopping a project

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.



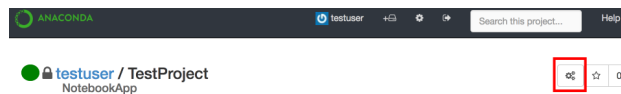
2. In the **Settings** menu, select Project.



3. In the Status section, click the Start or Stop button to toggle between manually starting and stopping your project.

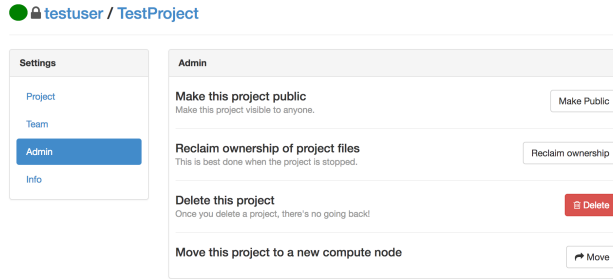
Making a project public or private

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.

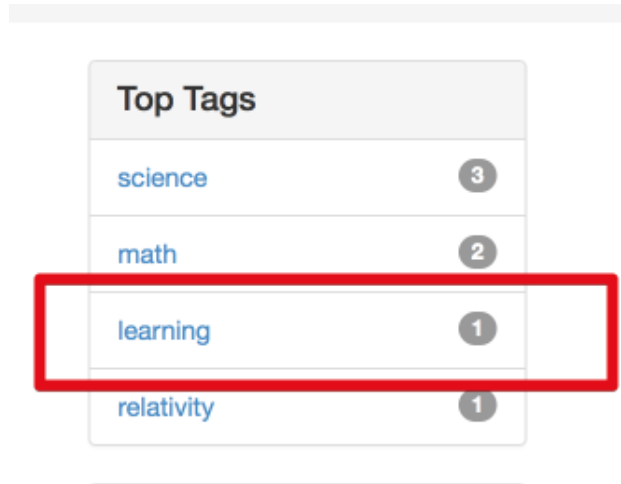
Adding a tag

1. In the Tags box, type the name of the tag you want to add:

2. Click the Add button.

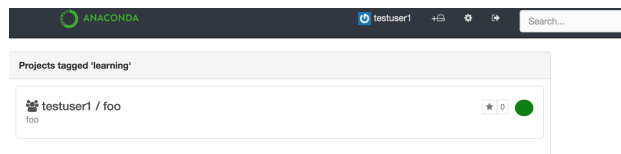
The new tag is added to the Tags list:

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:



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.

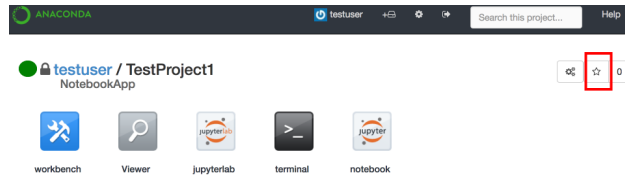
Starring a project (rating)

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:

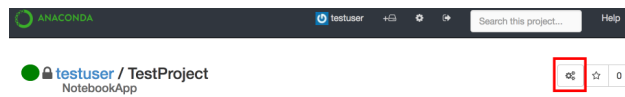
3. To unstar a project, click the Star icon again.



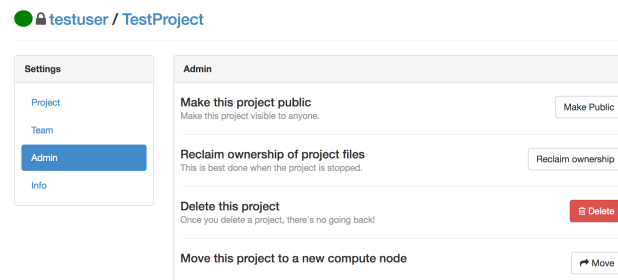
Claim ownership of a project

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.



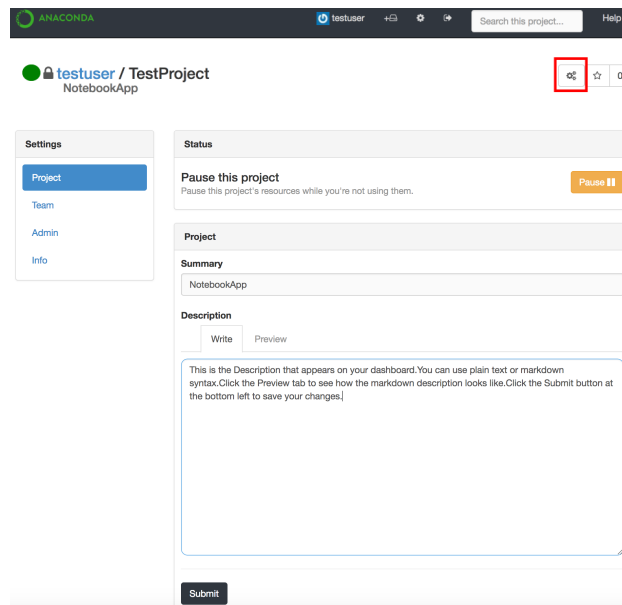
3. In the **Settings** menu, select Admin.



4. Click the Reclaim ownership button.

Changing a project's summary or description

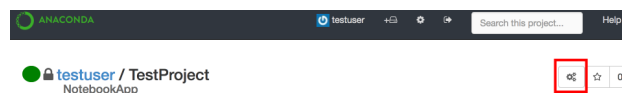
1. On the project home page, click the Project Settings icon to open the Project Settings page.
2. In the **Settings** menu, select Project.



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

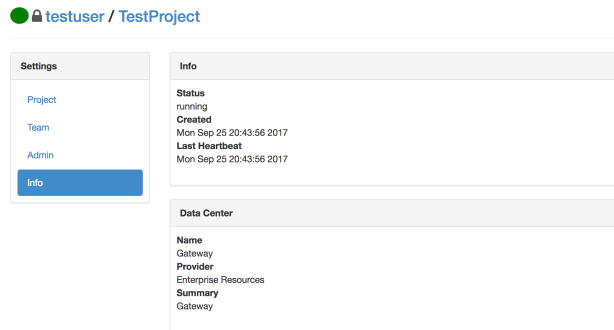
1. On the project home page, click the Project Settings icon to open the Project Settings page.



2. In the **Settings** menu, select Info.

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.

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:

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.

Team

Add

user02 (owner)

user01 (remove)

Related Projects

user01 / TestProject2

No Summary

user02 / User02Private

No Summary

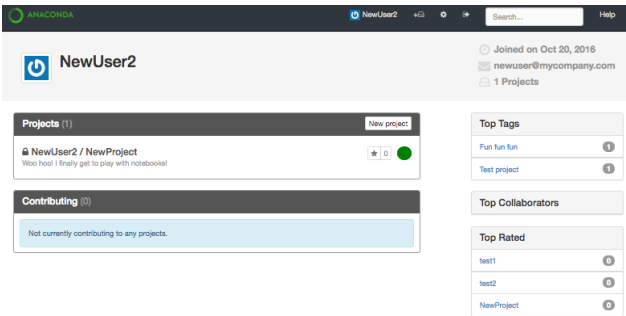
user01 / TestProject

No Summary

Top Rated	
einstein	2
euler	1
laplace	1
plank	1
Public_project	1

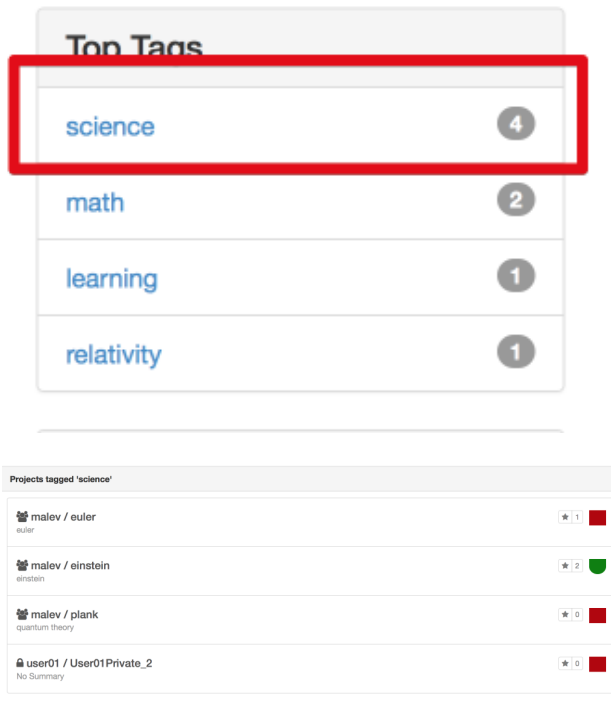
Using tags to find a project

The top tags used on your projects are listed on your home page:



To list all projects that share a specific tag, click the tag name:

A list of projects with the selected tag is displayed:

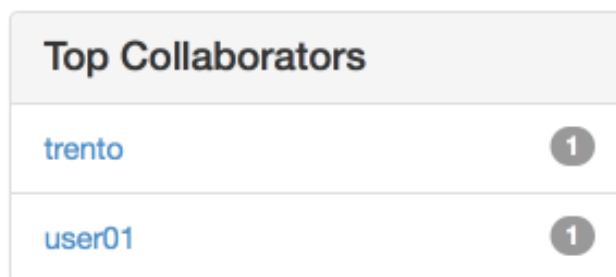


TIP: The list includes only projects that you have access to: public projects, and private projects on which you are a team member.

Click a project name to open the project's home page.

Viewing your top collaborators

Your top collaborators are listed on your home page:



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

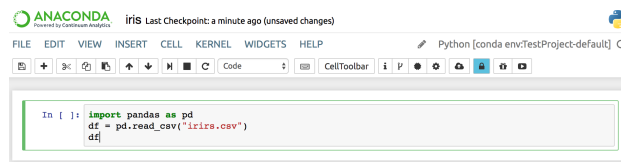
For information on sharing projects via the project settings and access control, see [Sharing projects](#).

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.

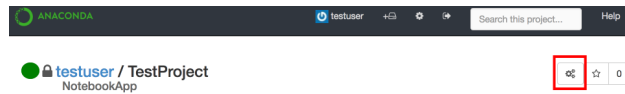
Other ways to share a notebook

- 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](#).

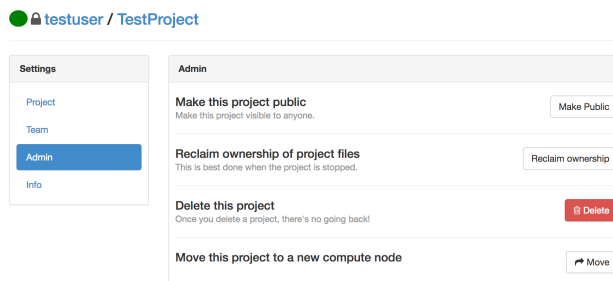
Deleting a project

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.



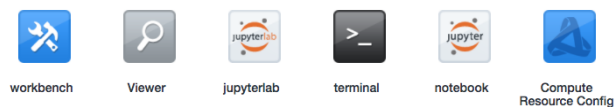
4. Click the Delete button.

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 into 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

- *Opening Workbench*
- *Using File Manager*
- *Opening the Workbench terminal*

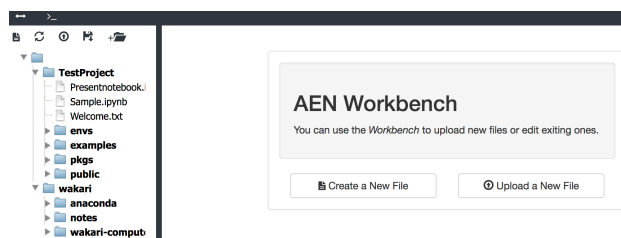
Workbench is a file viewer and manager that includes a file editor and file permissions manager.

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.

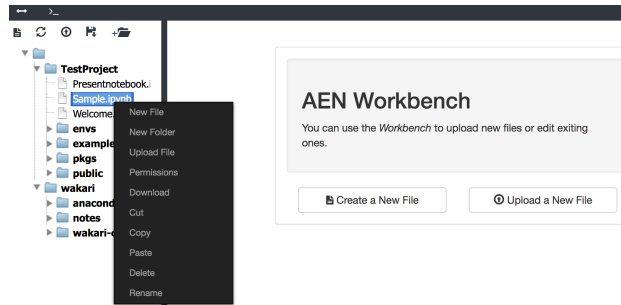
Using File Manager

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:

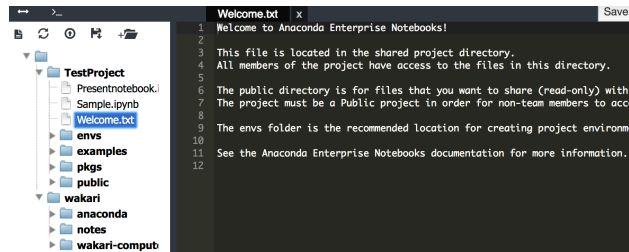
1. Right-click on any folder to display the options drop-down menu.
2. Select one of the following options:
 - New File—Create and edit a new file.
 - New Folder—Create a new folder.
 - Upload File—Upload a file to the selected folder. You can also drag a file to the folder.
 - Permissions—*Control access 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:

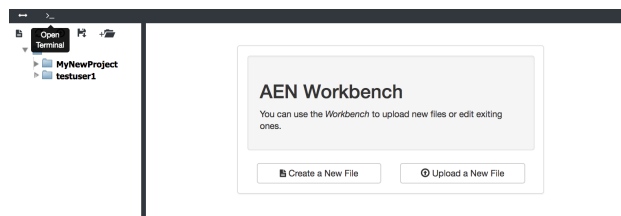


2. When you finish editing the file, click the Save button.

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.

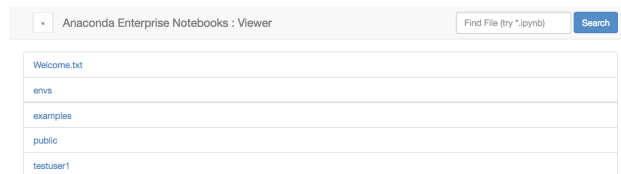
To move between terminal windows, click the **Terminal** tab in the navigation bar, then select the number of the terminal window you want to work in.

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*.

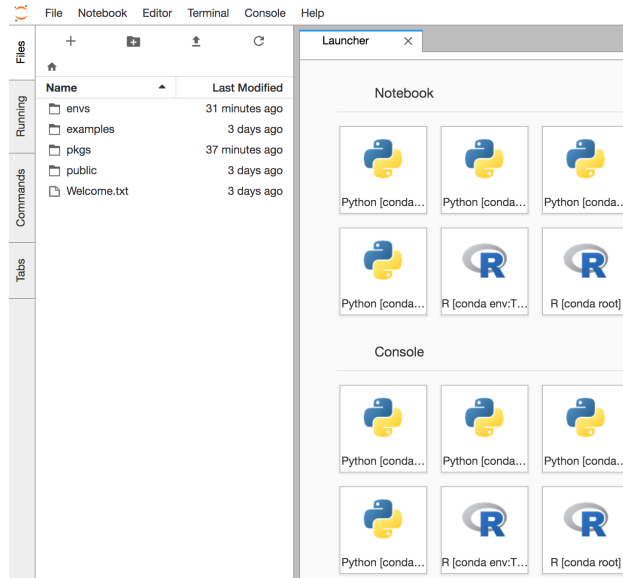
For more information about JupyterLab, see the [documentation](#).

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:

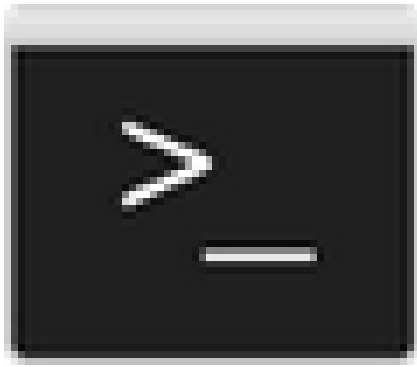
```

+ 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

- *Opening the Jupyter Notebook application*
- *Using example notebooks*
- *Creating a new 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.

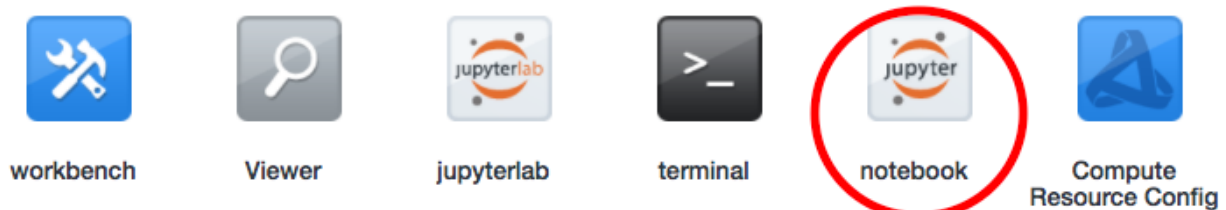
This page provides a brief introduction to Jupyter Notebooks for AEN users.

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.



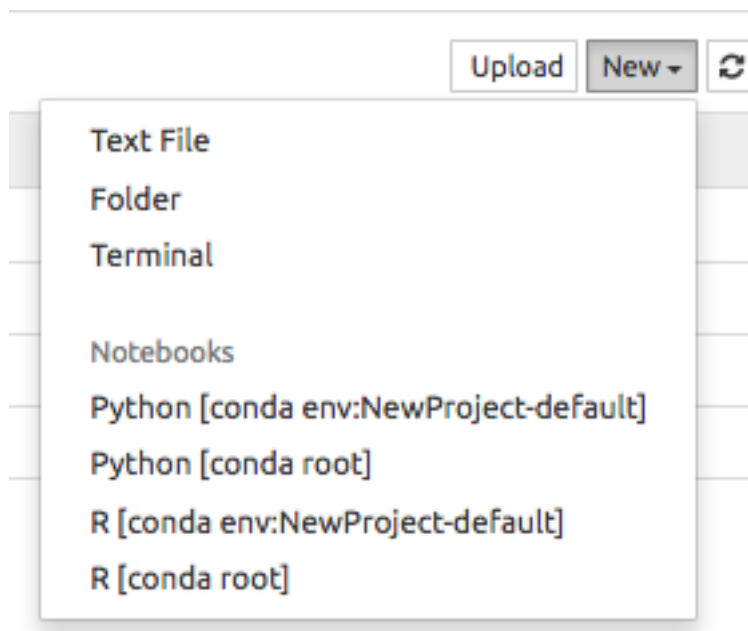
Using example notebooks

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:

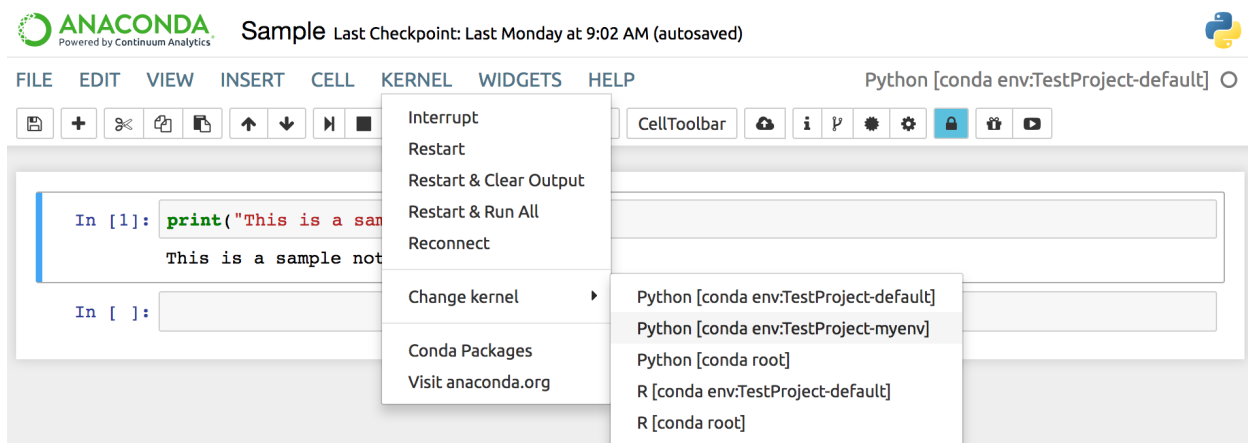
- [Synchronize Environments](#) with Jupyter from the **Kernel** menu.
- [Locking](#) adds multi-user capability from the Lock button.
- [Revision Control Mechanism \(RCM\)](#) adds Status, Checkout and Commit buttons.
- [Conda environment and package management](#) tab.
- [Conda notebook](#) adds conda 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:



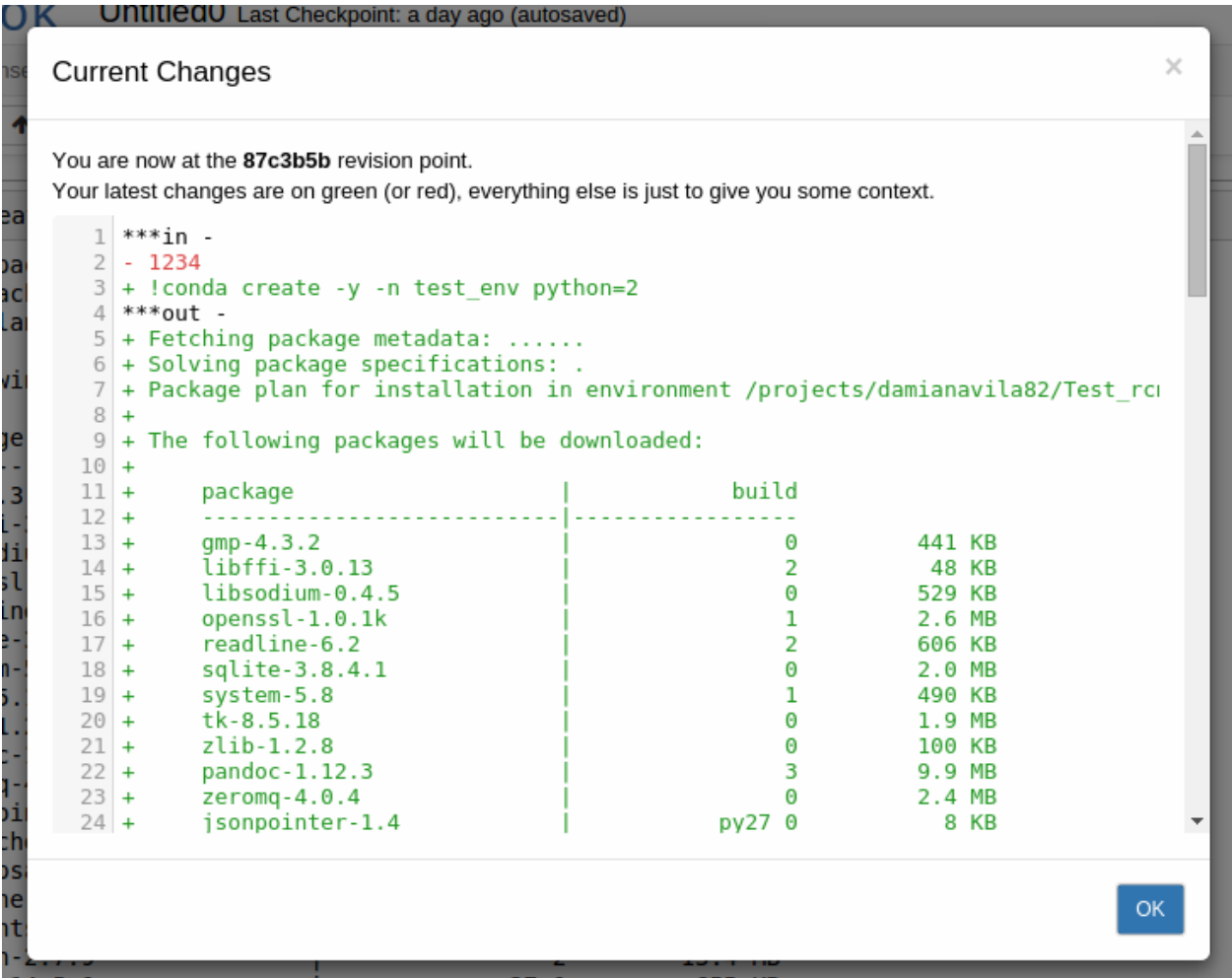
- *Status.*
- *Checkout.*
- *Commit.*
- *Configure git.*

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.

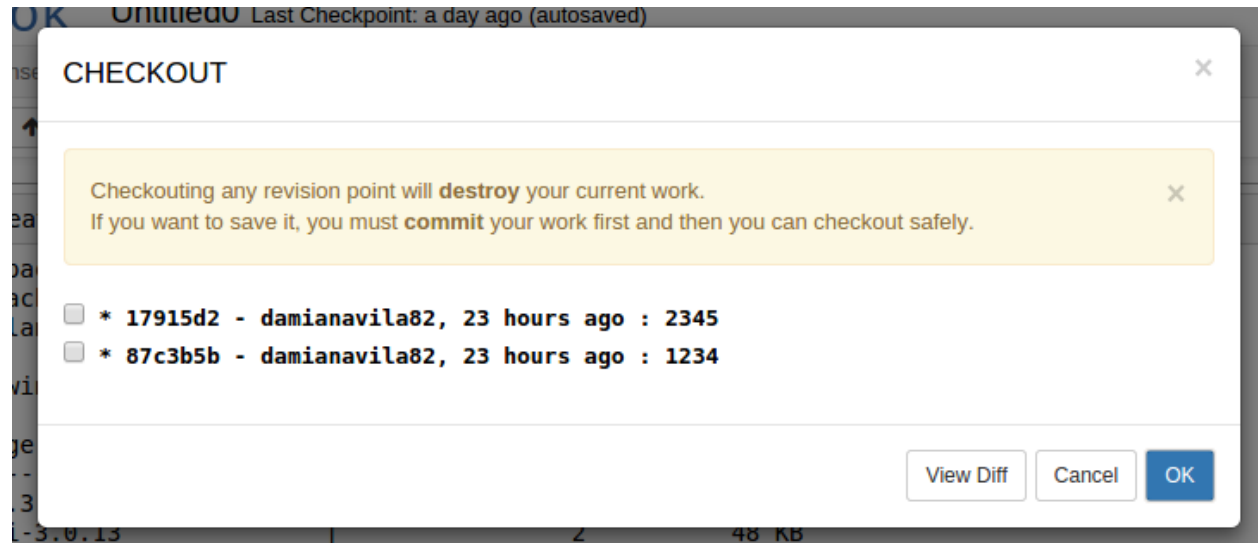
Clicking the Status button displays:



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.

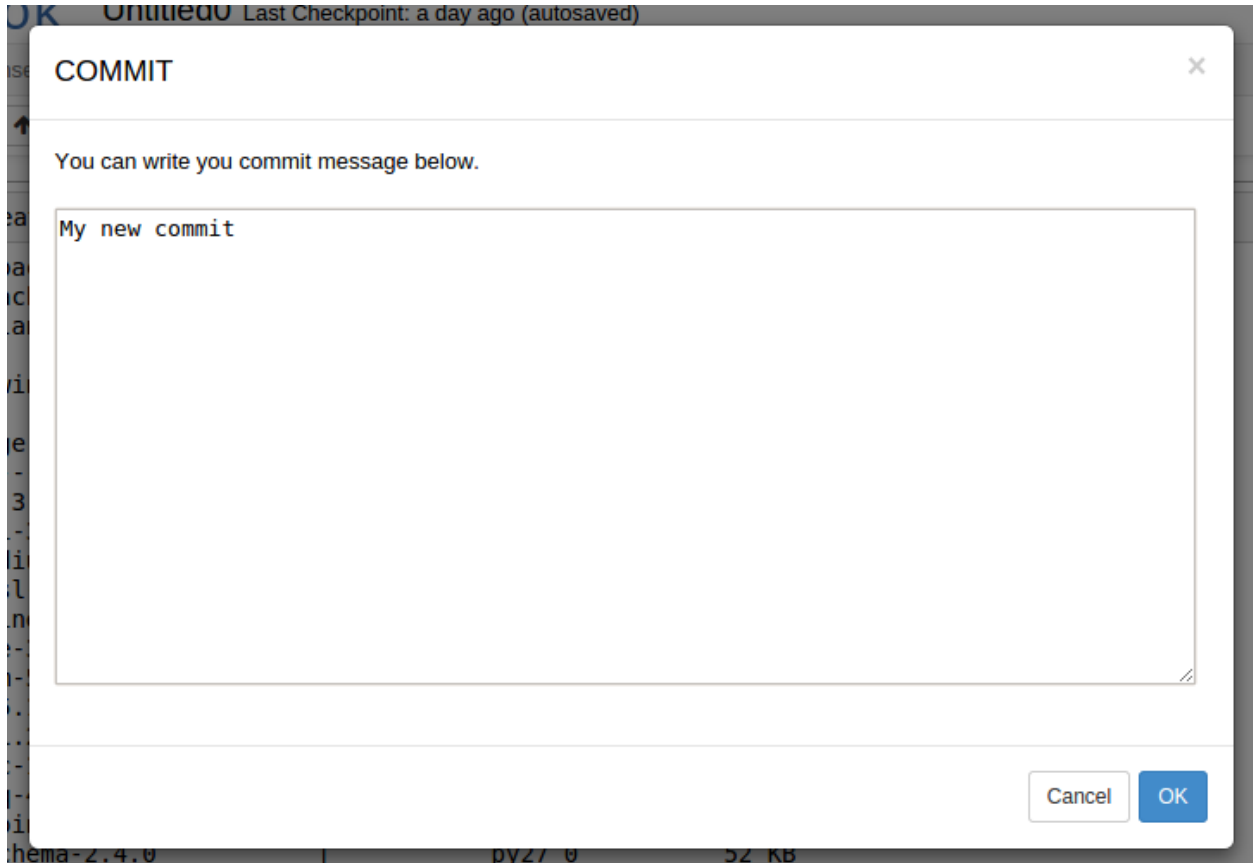
A side-by-side comparison is displayed.

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:



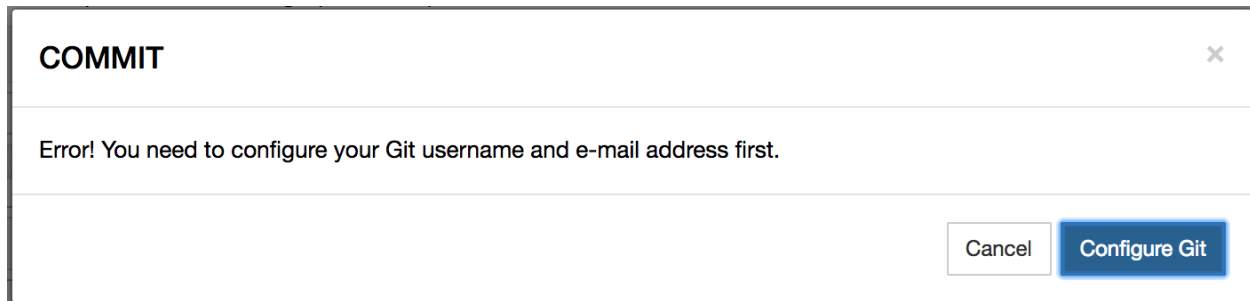
1. Enter a description of the changes in the commit as a reminder in case you need to revert back to it later.
2. Click the OK button.

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.

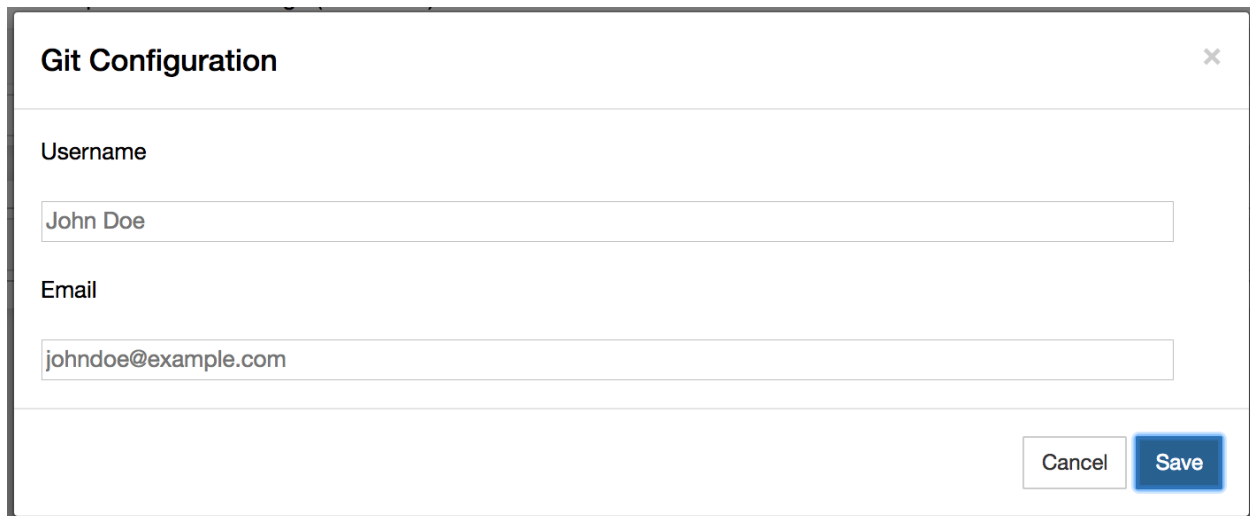
TIP: You can roll back committed changes by *checking out a previous version*.



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:



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.



FilesRunningIPython ClustersConda

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"

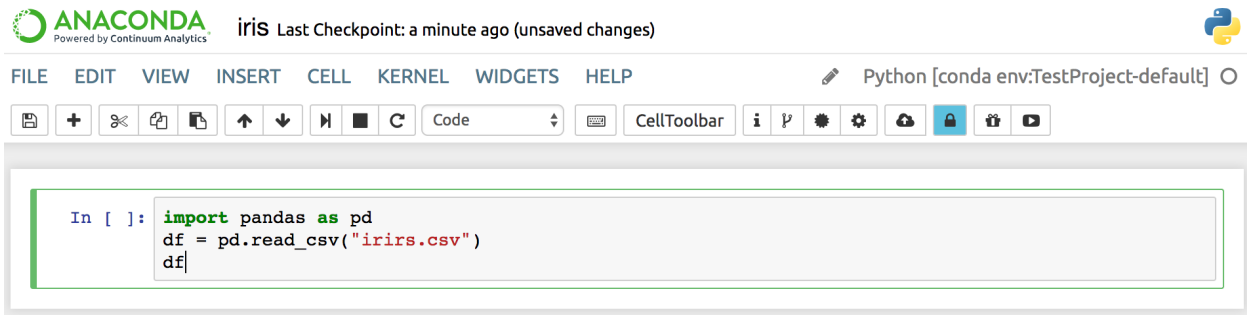
Name	Version	Channel
<input type="checkbox"/> _license	1.1	defaults
<input type="checkbox"/> _nb_ext_conf	0.4.0	defaults
<input type="checkbox"/> abstract-rendering	0.5.1	defaults
<input type="checkbox"/> accelerate	2.3.1	defaults
<input type="checkbox"/> accelerate_cudalib	2.0	defaults
<input type="checkbox"/> 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:



Using the Conda Notebook extension

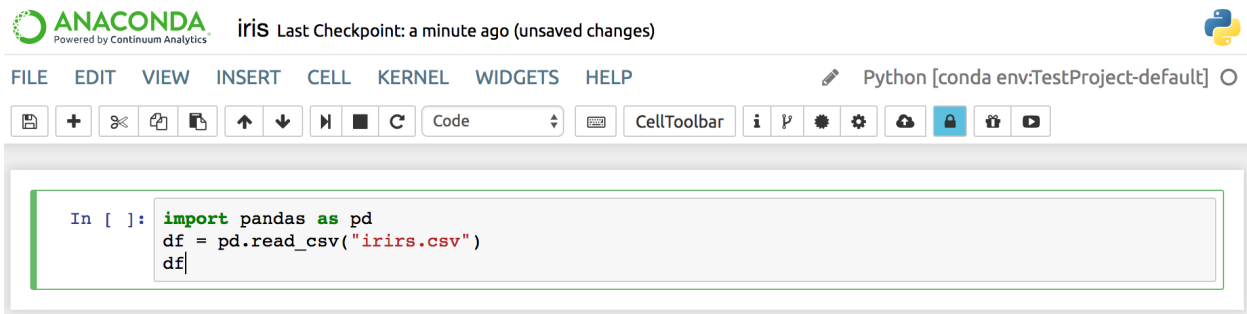
The Conda Notebook extension adds the Conda Packages option to the **Kernel** menu.

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

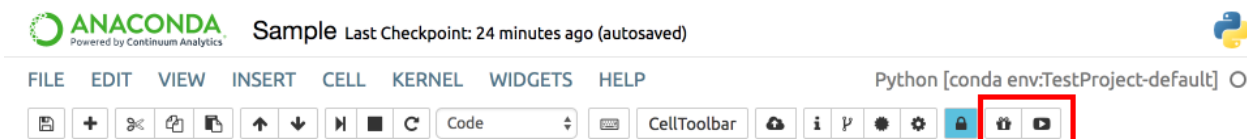
The Anaconda Cloud extension adds the Cloud button to your notebook, allowing you to easily upload your notebook to Cloud:



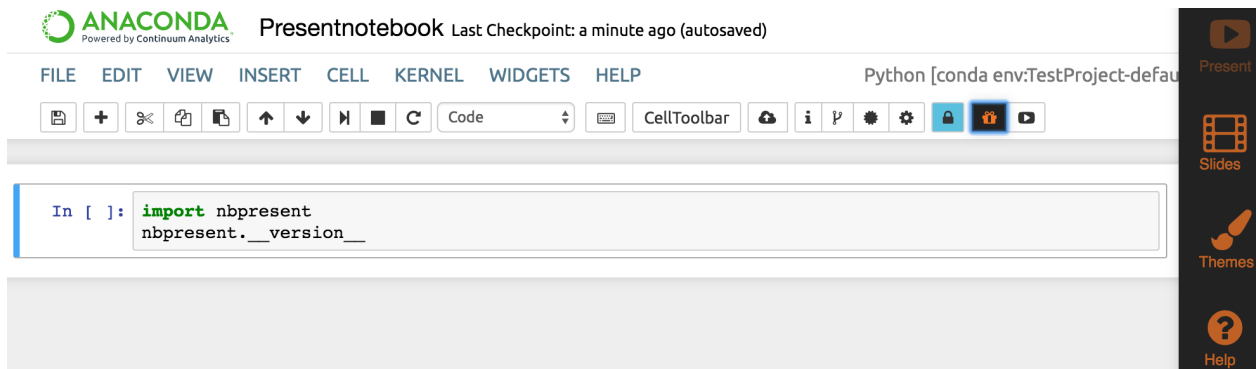
Using the Notebook Present extension

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.

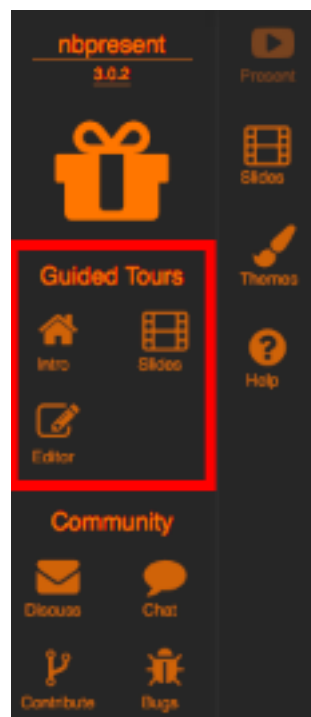


The Notebook Present sidebar is displayed on the right side of your browser:

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:
- 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.

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

The screenshot shows the Anaconda Presentnotebook interface. At the top, the Anaconda logo is on the left, and the title "Presentnotebook" is followed by "Last Checkpoint: 4 minutes ago (autosaved)". Below this is a menu bar with "FILE", "EDIT", "VIEW", "INSERT", "CELL", "KERNEL", "WIDGETS", and "HELP". To the right of the menu bar, it says "Python [conda env:TestProject-defa". Below the menu bar is a toolbar with various icons for file operations, navigation, and execution. The main area is a code editor with a single cell containing the code:

```
In [ ]: import nbpresent
nbpresent.__version__
```

. Below the code editor is a large gray area. At the bottom, there is a dark gray banner with the text "No Slides... yet!" and "You can create an empty slide by pressing or by importing slides:". To the right of this text is a button labeled "Basic" with a slide icon and "1 Slides". On the right side of the interface is a vertical sidebar with icons for "Present", "Slides", "Themes", "Help", and a "+ Slide" button at the bottom.

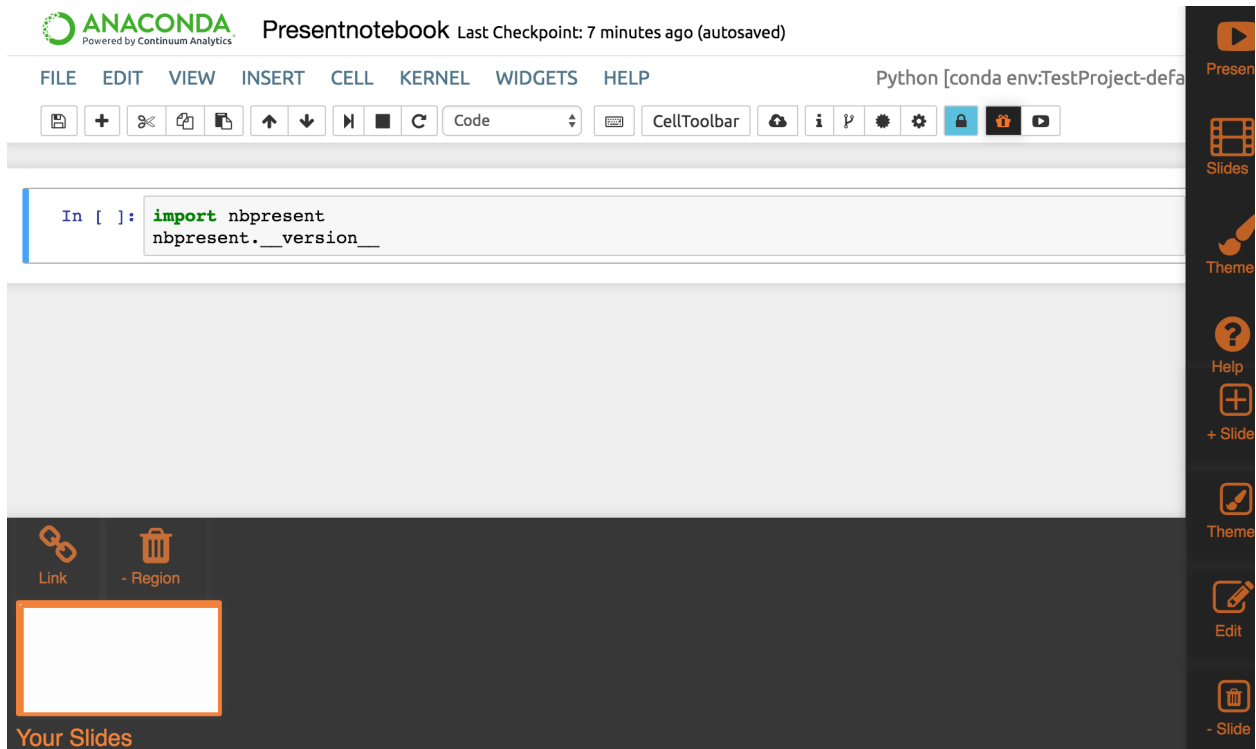
The screenshot shows the Anaconda Presentnotebook interface with a slide displayed. The slide title is "Hello, *nbpresent!*". Below the title is a code cell with the code:

```
In [ ]: import nbpresent
nbpresent.__version__
```

. Below the code cell is another empty code cell with the prompt "In []:". The interface is similar to the previous screenshot, but the slide content is visible. The sidebar on the right has the same icons as before.

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:

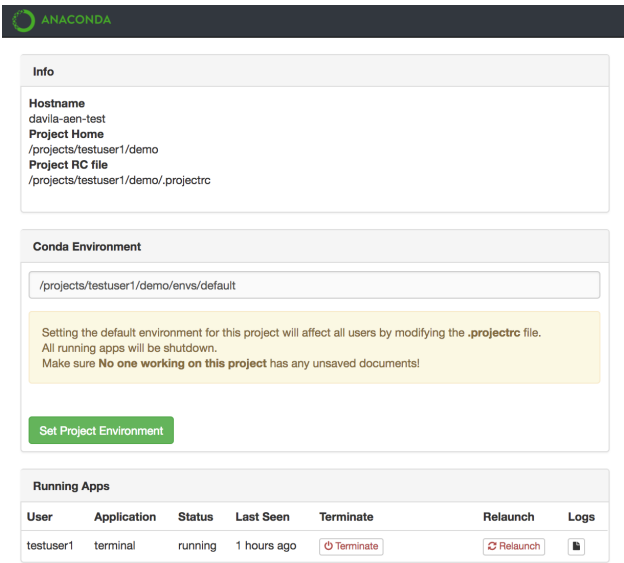
- Editing Slides—Activate the Slide Editor by double-clicking it, or by clicking Edit Slide.
- Region Editor—Click to drag Regions around and resize them.
- Region Tree—Reorder Regions and see the details of how Regions will show their linked Parts.
- Add Region—Add new regions.
- Attribute Editor—Edit 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

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.

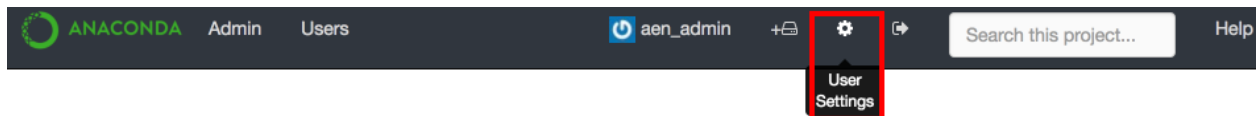
To stop and re-launch any individual application, click the Relaunch button.

To review the run logs of any active application, which may be useful for troubleshooting, click the Logs button.

Managing your account

- *Updating your public profile*
- *Changing your password*
- *Deleting your AEN account*
- *Viewing account operations*
- *Registering an application*

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.

The screenshot shows the Anaconda Jupyter Notebook interface with the 'Conda' tab selected. It displays three conda environments: 'root', 'default' (which is the default), and 'myenv'. Below this, it shows search results for 'numpy', with 'numpy' (version 1.13.1) and 'numpydoc' (version 0.7.0) listed as available packages. On the right, a list of 39 installed packages in the 'myenv' environment is shown, including 'anaconda-client', 'certifi', 'cycler', 'decorator', 'ipykernel', and 'ipython'.

Action	Name	Default?	Directory
	root		/opt/wakari/anaconda
	default	✓	/projects/aen_admin/TestProject/envs/default
	myenv		/projects/aen_admin/TestProject/envs/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"/> cycler	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
```

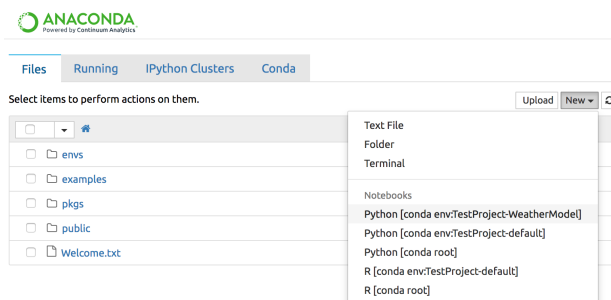
TIP: Python, pip and Jupyter Notebooks are automatically installed in each new environment. You only need to specify NumPy in this command.

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 mpy3 python=3 numpy scipy
```

A conda environment named `mpy3`, 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

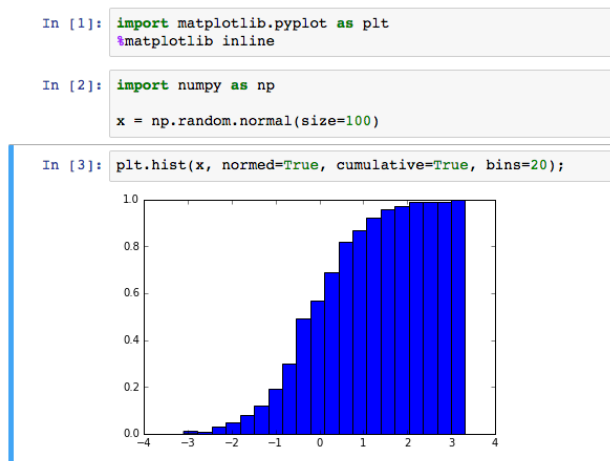
Matplotlib is a Python 2D and 3D plotting and visualization library that produces publication-quality figures in a variety of hardcopy formats and interactive environments across platforms.

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 its output cells.

EXAMPLE: The following screenshot is of a cumulative density function (CDF) plot using values taken from a normal distribution:



For more information, including a [gallery](#), [examples](#), [documentation](#) and a [list of plotting commands](#), see the [Matplotlib website](#).

Bokeh

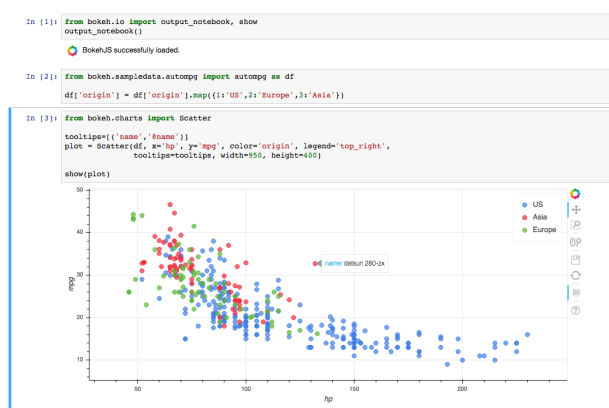
Bokeh is an interactive visualization library that targets modern web browsers to provide elegant, concise construction of novel graphics.

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.

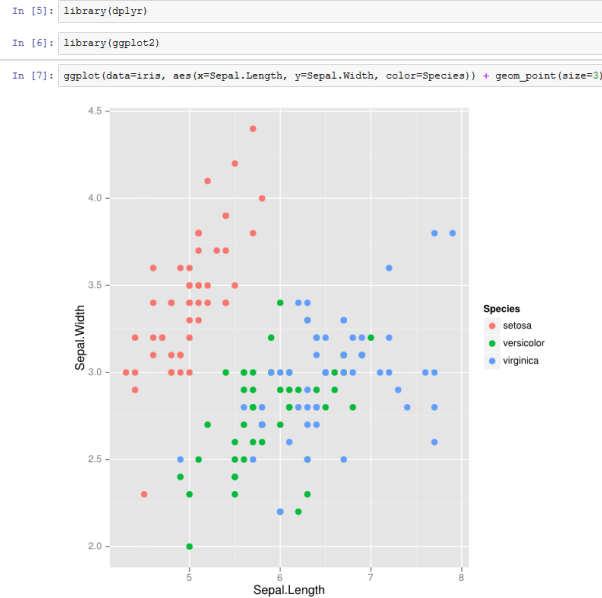
To use ggplot2 with AEN:

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:



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.

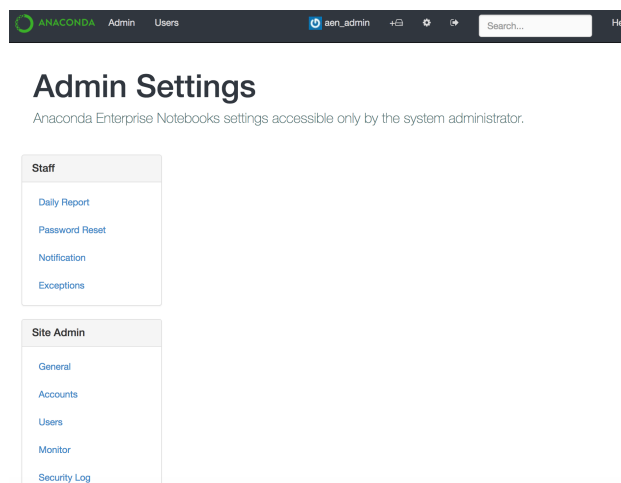
Admin guide

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:



All of the other navigation bar items are the same as for a user account.

Concepts

- *System overview*
- *Server node*
- *Gateway node*
- *Compute node(s)*
- *Supervisor and supervisor d*
- *Service Account*
- *Anaconda environments*
- *Projects and permissions*

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.

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:

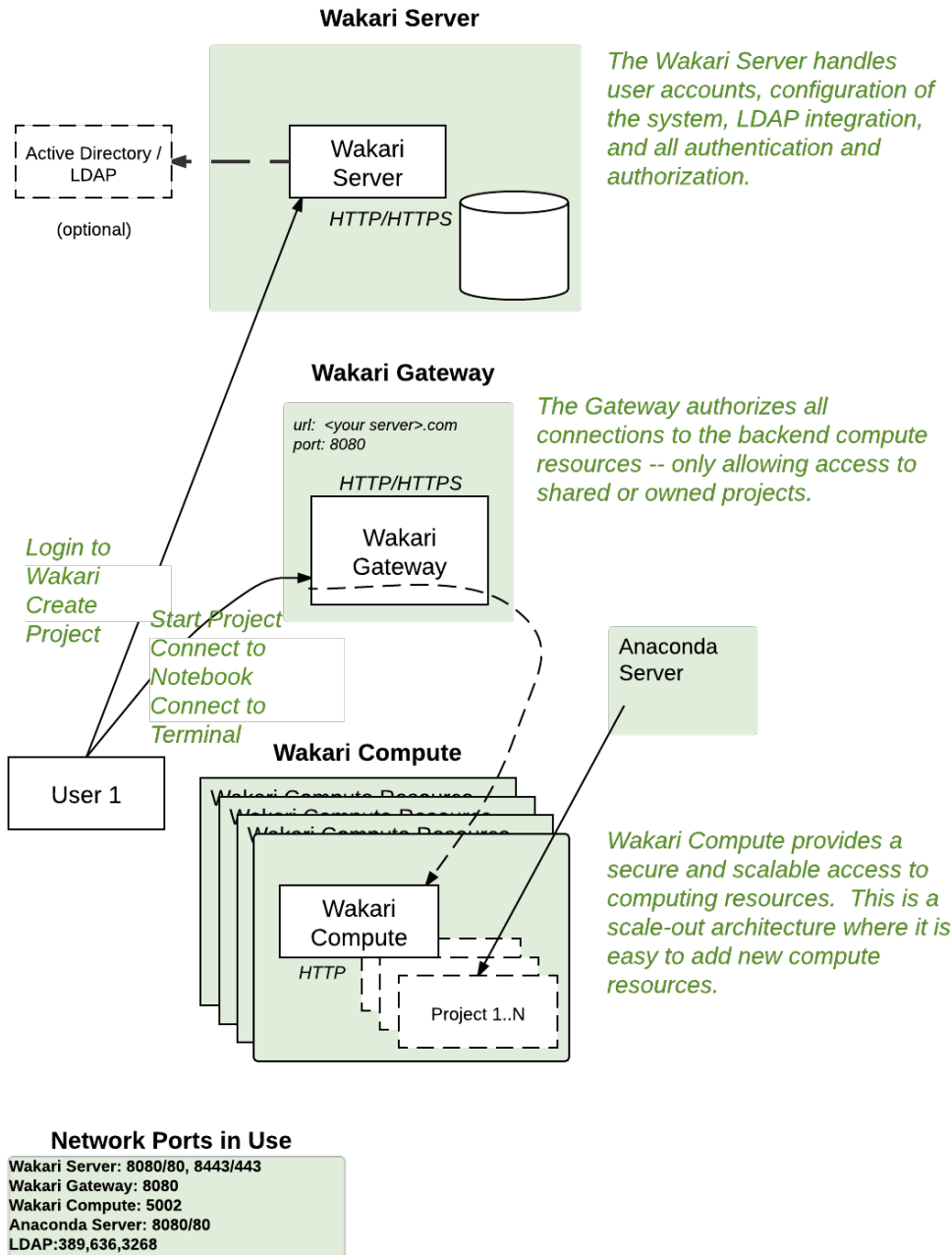
- 1 AEN server instance
- 2 AEN gateway instances
- 50 AEN compute instances (20 + 30)

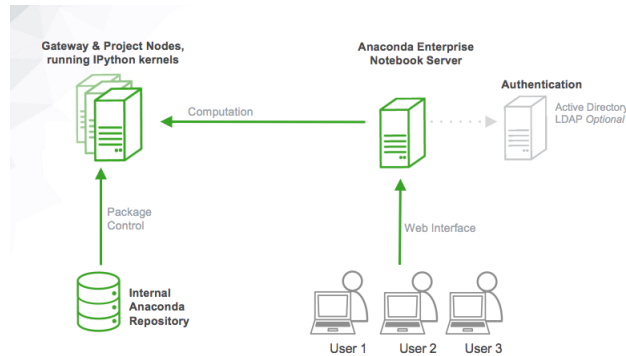
Nodes must be configured and maintained separately.

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

Anaconda Enterprise Notebooks





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	<code>/opt/wakari/wakari-server/etc/supervisord.conf</code>
log	<code>/opt/wakari/wakari-server/var/log/supervisord.log</code>
control	<code>service wakari-server</code>
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	<code>/opt/wakari/wakari-server/bin/wk-server</code>
configuration	<code>/opt/wakari/wakari-server/etc/wakari/</code>
control	<code>service wakari-server</code>
logs	<code>/opt/wakari/wakari-server/var/log/wakari/server.log</code>
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 <code>wk-server</code> .
user	wakari
logs	<code>/opt/wakari/wakari-server/var/log/wakari/worker.log</code>
control	<code>service wakari-server</code>

nginx	details
description	Serves static files and acts as proxy for all other requests passed to <code>wk-server</code> process. *
user	nginx
configuration	<code>/etc/nginx/nginx.conf</code> <code>/opt/wakari/wakari-server/etc/conf.d/www.enterprise.conf</code>
logs	<code>/var/log/nginx/woc.log</code> <code>/var/log/nginx/woc-error.log</code>
control	<code>service nginx status</code>
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 <code>wk-gateway</code> process.
user	wakari
configuration	<code>/opt/wakari/wakari-gateway/etc/supervisord.conf</code>
log	<code>/opt/wakari/wakari-gateway/var/log/supervisord.log</code>
control	<code>service wakari-gateway</code>
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
con-figura-tion	/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)
con-trol	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*
- *Software requirements*
- *Security requirements*
- *Network requirements*
- *Other requirements*
- *What's next*

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 libXdmc6 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*
- *Gathering IP addresses or FQDNs*
- *Set up variables*
- *What's next*

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-4.2.2-Linux-x86_64.sh
curl -O $RPM_CDN/aen-gateway-4.2.2-Linux-x86_64.sh
curl -O $RPM_CDN/aen-compute-4.2.2-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

- *Installing the bzip2 package*
- *Downloading prerequisite RPMs*
- *Installing prerequisite RPMs*
- *Setting variables and changing permissions*
- *Running the AEN server installer*
- *Starting NGINX and Elasticsearch*
- *Testing AEN server installation*
- *Updating your license*
- *What's next*

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'
```

(continues on next page)

(continued from previous page)

```
=====

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

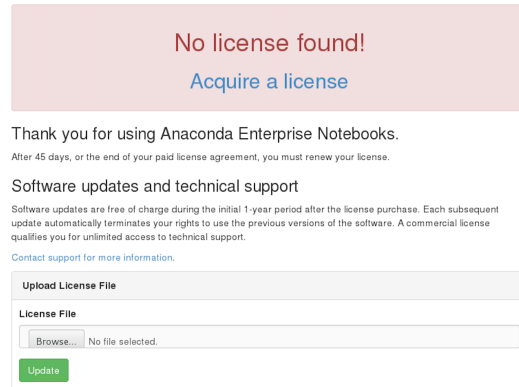
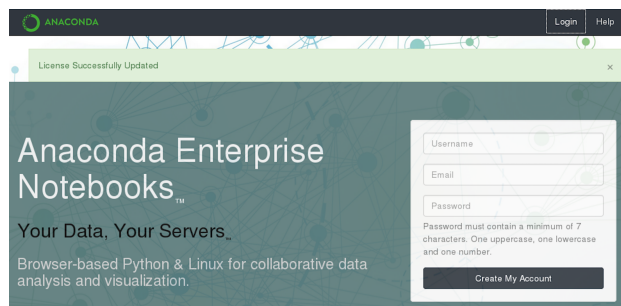
Visit http://\protect\TI\textdollarAEN_SERVER.

The License expired page is displayed.

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:

What's next

Install the AEN gateway.

Installing the AEN gateway

- *Setting variables and changing permissions*
- *Running the AEN gateway installer*
- *Registering your gateway*
- *What's next*

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
```

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```
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
```

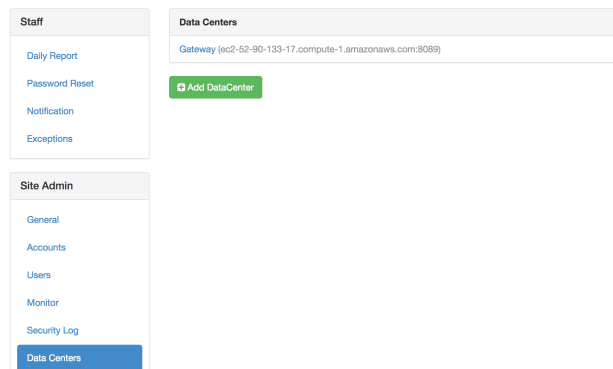
Starting the gateway

Run:

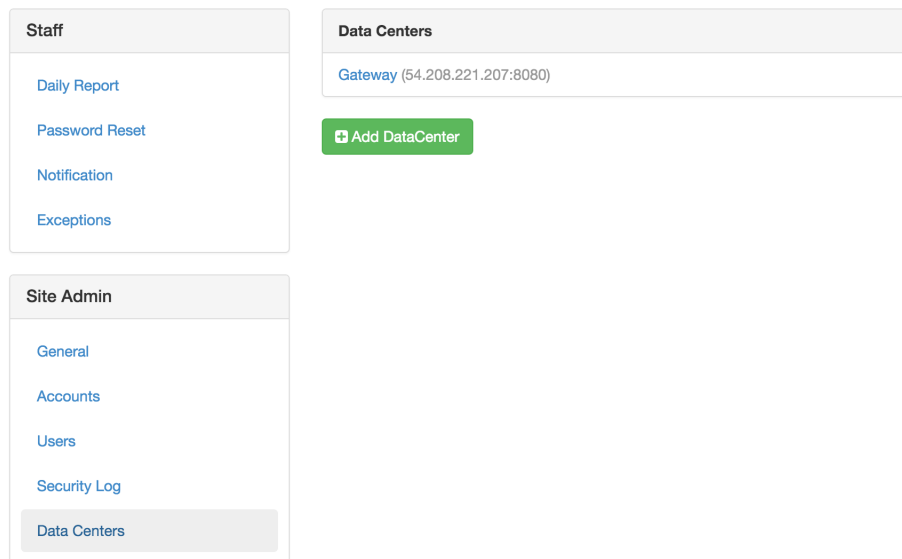
```
sudo service wakari-gateway start
```

Verifying your gateway registration

1. Log into 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:



4. Click your data center:



5. Verify that your data center is registered and the status is {"status": "ok", "messages": []}:

Staff

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Datacenter Gateway

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)

- *Setting variables and changing permissions*
- *Running the AEN compute installer*
- *Restart the AEN Server*
- *Configuring your compute node(s)*
- *What's next*

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:
5. Click the Add Resource button to open the new resource form.
6. Select the data center to associate this compute node with.

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Providers

[Enterprise Resources](#)

Resources

Add Resource

Gateway

ec2-54-210-232-251.compute-1.amazonaws.com

remove

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.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

- *AEN configuration keys*
- *Checking configuration file syntax*

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	\$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 mon- godb instance. Format: mongodb:// <username>:<password>@<host>:<port>/
WAKARI_SERVER		The URL of this AEN server.
DEFAULT_PRIVACY	public	The default project privacy setting—can be either public or private.
SESSION_COOKIE_NAME	wk. enterprise. session	The Cookie name used to maintain Anaconda Enterprise Note- books 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 af- ter 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 ad- dresses are required. See note below 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 pri- mary.
- PORT	389	LDAP subkey—The LDAP port on the LDAP server.
- AUTH_TYPE		LDAP subkey—LDAP Authentication types. simple—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 cer- tificate 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 public or anonymous—assigned users who are not logged in to access projects. To disable public access use the special value disabled. For more information see Chapter 7: Anaconda Embedded Configuring sudo customizations .
1694		
SEARCH_ENABLED	true	Boolean indicating whether ElasticSearch is enabled
SEARCH_SERVER	'localhost:9200'	IP address or domain name and port of ElasticSearch server

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
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 (≥ 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 Configuring SSL .
- 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 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	To make the AEN compute service create groups with the same uid. Set to true /projects folder resides on an NFSv3 volume. 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	13600000 (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.

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	\$WAKARI_SERVER/ static/	The location of static assets.
SUBDOMAIN_ROUTING	false	A boolean that indicates whether subdomains are being used.
refreshTokenExpiration	60000	Idle time in milliseconds before the Gateway session expires.

Table 40: 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
```

For more information and examples about creating a default project environment with Microsoft R Open (MRO), see *Using MRO in AEN*.

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.

Using MRO in AEN

In AEN 4.2.2 and higher, you can choose to create environments with the Microsoft R Open (MRO) interpreter by installing the `mro-base` package, or create environments with the R interpreter by installing the `r-base` package. Unless you request a change, conda will continue to use the existing interpreter in each environment. In AEN `r-base` is the default.

EXAMPLE: To create a custom environment called `mro_env` with MRO and R Essentials:

```
.. code-block:: bash

sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
  create -c https://repo.continuum.io/pkgs/main \
  -n mro_env r-essentials
```

NOTE: Conda 4.4 and higher include the `main` channel by default. Earlier versions of conda do not.

Making a default project environment with MRO

You can also create an environment with MRO and make this the default AEN project environment.

The first time a new project is started, the default project environment is cloned into the new project's workspace.

1. Create a new conda environment in the `/opt/wakari/anaconda/envs/default` directory.

The command is similar to the one used in the previous example to create a custom environment.

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \
  create -c https://repo.continuum.io/pkgs/main \
  -p /opt/wakari/anaconda/envs/default r-essentials
```

2. Use `conda` to install any additional packages into the environment.
3. After the environment is created, clone it to check that it works correctly, and then clean up the clone.

```
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
```

NOTE: To convert existing projects, see *Converting an existing project*.

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 `polycoreutils-python`. To install `polycoreutils-python`, if needed, run:

```
sudo yum -y install polycoreutils-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)))"
                   },
    "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",
                 "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', contains a 'Name' field with the value 'Gateway 1', a checkbox for 'Subdomain Routing' which is unchecked, and a checkbox for 'Https' which is 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": {
```

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```

    "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=100000 | 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"
```

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```
# 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 PYSARK_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

- *Before you upgrade*
- *Upgrading the AEN server node*
- *Upgrading the AEN gateway node*
- *Upgrading AEN compute nodes*
- *After upgrading*

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*
- *AEN 4.1.1 upgrade instructions.*
- *AEN 4.1.0 upgrade instructions.*
- *AEN 4.0.0 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 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_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.

- *Uninstalling a server node*
- *Uninstalling a gateway node*
- *Uninstalling a compute node*
- *OPTIONAL: Removing projects from compute nodes*

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 Anaconda Admin Settings page. On the left, there are two sidebars. The top sidebar is titled 'Staff' and contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom sidebar is titled 'Site Admin' and 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 located 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 Anaconda Admin Settings page. On the left, there are two sidebars. The top sidebar is titled 'Staff' and contains links for 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The bottom sidebar is titled 'Site Admin' and contains links for 'General' and 'Accounts'. 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 into 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 into 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
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.

Click a username to open the user's profile page.

 ANACONDA

[Admin](#) [Users](#)

 anaconda

[Help](#)

Users

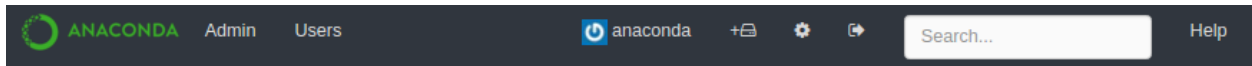
List of currently active users in the system.

 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

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.

3. 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.

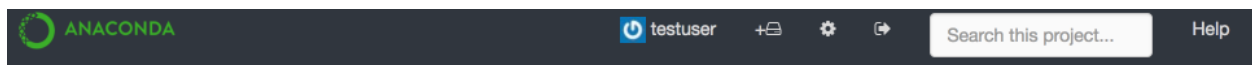
4. If you select SMTP Email Server, complete the SMTP Settings.

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

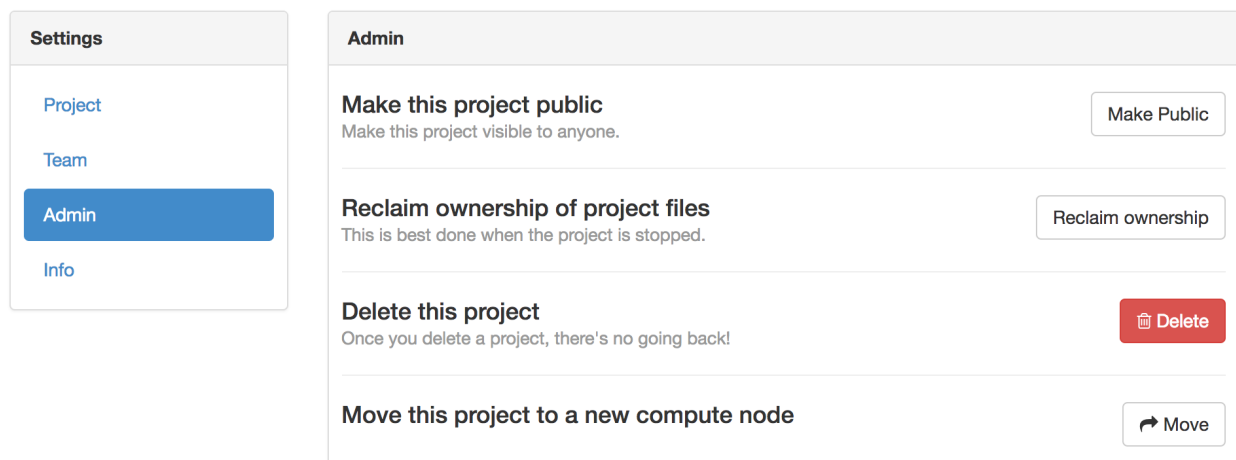
If you have multiple compute nodes available and want to move a project from one to another, the project must exist on both nodes.

1. 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`.
2. On the project home page, click the Project Settings icon to open the Project Settings page.

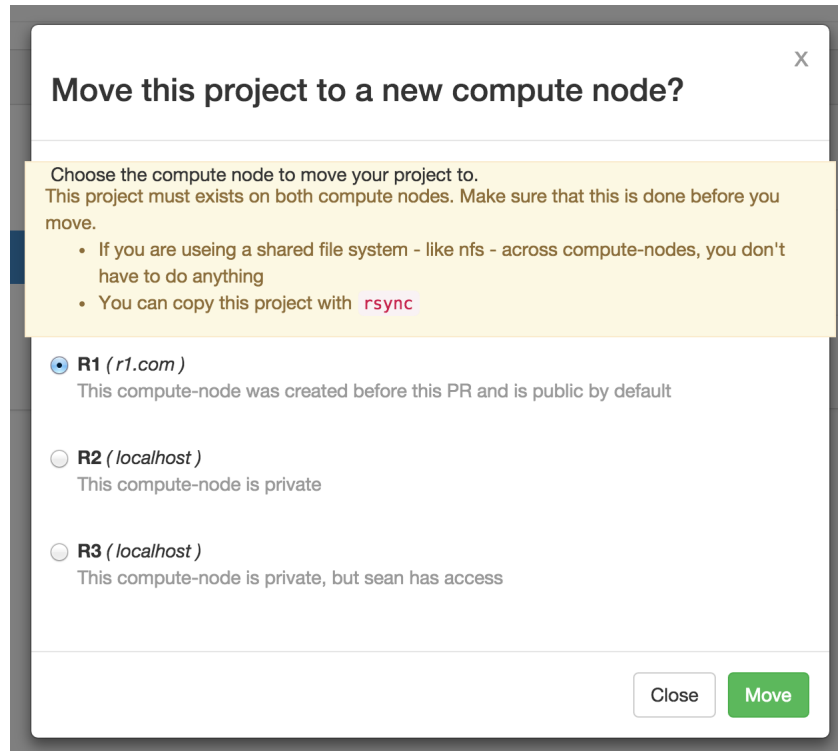


3. In the **Settings** menu, select Admin.

testuser / TestProject



4. Click the 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>
```

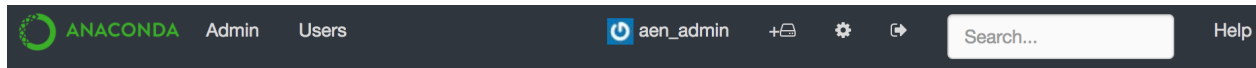
NOTE: Replace <username> with the actual username and <projectname> with the actual project name you are removing.

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

[Daily Report](#)

[Password Reset](#)

[Notification](#)

[Exceptions](#)

Site Admin

[General](#)

[Accounts](#)

[Users](#)

[Monitor](#)

[Security Log](#)

Backing up and restoring AEN

- *Document purpose*
- *Important notes*
- *Server component steps*
 - *Backup*

- * *Mongo database*
- * *AEN Server config files (including License file)*
- * *Nginx config (if needed)*
- * *SSL certificates (if needed)*
- *Restore*
 - * *Reinstall AEN-Server*
 - * *Restore Mongo database*
 - * *AEN Server config files (including License file)*
 - * *Nginx config (if needed)*
 - * *SSL certificates (if needed)*
 - * *Restart server*
- *Gateway component steps*
 - *Backup*
 - * *Config files*
 - * *Custom .condarc file (if needed)*
 - * *SSL certificates (if needed)*
 - *Restore*
 - * *Reinstall AEN-Gateway*
 - * *Config files*
 - * *Custom .condarc file (if needed)*
 - * *SSL certificates (if needed)*
 - * *Restart gateway*
- *Compute component steps*
 - *Backup*
 - * *Config files*
 - * *Custom Changes (rare)*
 - * *Create user list*
 - * *Project files*
 - * *Full Anaconda (option 1)*
 - * *Partial Anaconda (option 2)*
 - *Restore*
 - * *Reinstall AEN-Compute*
 - * *Config files*
 - * *Custom changes (rare)*
 - * *Create users*

- * *Project files*
- * *Full Anaconda (option 1)*
- * *Partial Anaconda (option 2)*
- * *Custom environments (if needed)*
- * *Restart compute node*

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
Users	0	1
Projects	0	6

New User Emails

Username	Email
----------	-------

Actions

Count	Action
82	oauth.authenticate

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**. The **Staff** section is currently selected, showing a list of links: Daily Report, Password Reset, Notification, and Exceptions. The **Exceptions** link is highlighted with a red box. The **Site Admin** section includes links for General, Accounts, Users, Security Log, Data Centers, Task Queue, and License. The **Providers** section includes Enterprise Resources. The main content area on the right is titled **Exceptions** and contains a table of error logs. A red box highlights the first row of the table, which shows a Jinja2 exception. A 'Mark all as read' button is visible 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"/>	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.

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:

5. To close the error details, click the Back link.

Public Profile

Account Settings

Security Log

Applications

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

[← Back](#)

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:

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](#)

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:

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
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[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": []}
```

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*
- *Checking the status of gateway node processes*
- *Checking the status of compute node processes*
- *Starting AEN services*
- *Verifying that AEN services are set to start with the system*
- *Stopping AEN services*
- *Restarting AEN services*
- *Identifying extraneous processes*
- *Removing extraneous processes*

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
```

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```
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
```

(continues on next page)

(continued from previous page)

```
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 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](#)

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	Terminate	Relaunch	Logs
aen_admin	Test	notebook	running	localhost	Jul 25, 2017 11:54:05 CDT	Terminate	Relaunch	Logs

Staff

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Site Admin

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[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.

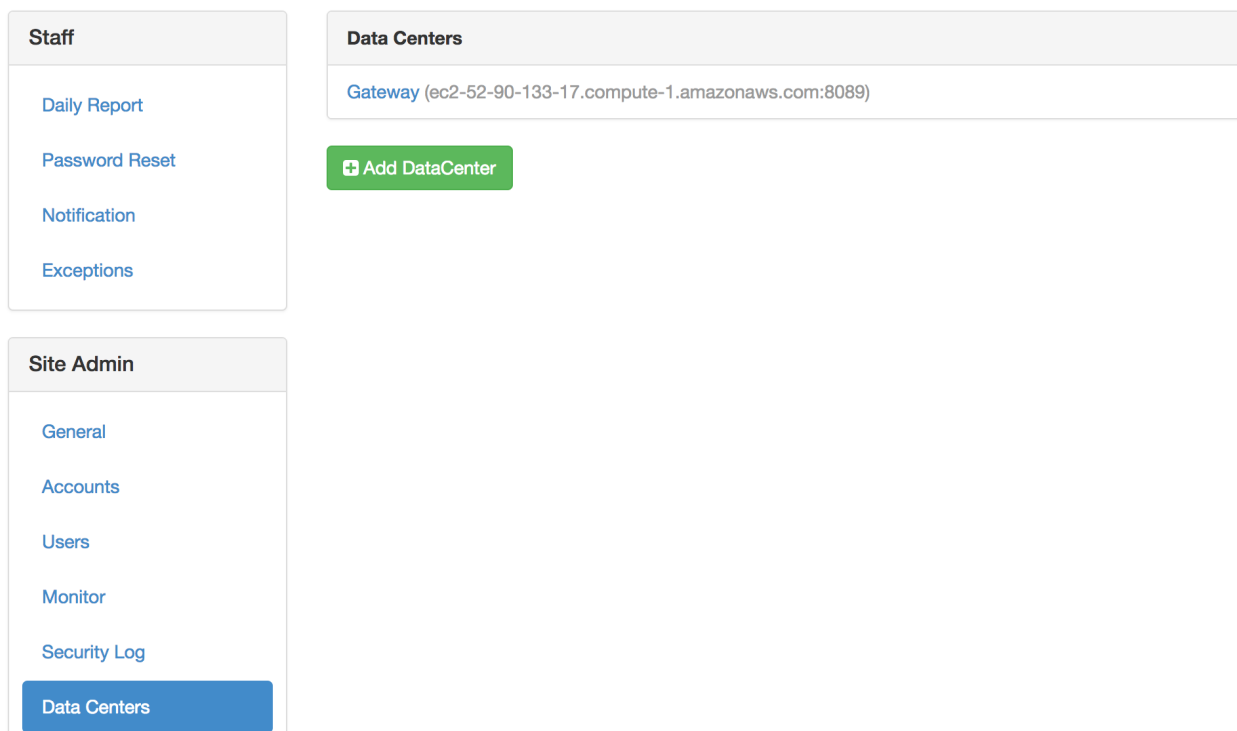
Checking node connections

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*
- *Verifying gateway to compute node connectivity*
- *Verifying gateway to server connectivity*

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 shows the AEN Admin Settings interface. On the left, there are three vertical navigation menus. The top menu, labeled 'Staff', includes 'Daily Report', 'Password Reset', 'Notification', and 'Exceptions'. The middle menu, labeled 'Site Admin', includes 'General', 'Accounts', 'Users', 'Monitor', 'Security Log', 'Data Centers', 'Task Queue', and 'License'. The bottom menu, labeled 'Providers', contains a blue button for 'Enterprise Resources'. The main content area on the right is titled 'Resources' and features a green '+ Add Resource' button. Below this, a 'Gateway' section displays a list of resources. Currently, there is one resource listed: 'ec2-54-210-232-251.compute-1.amazonaws.com', with a red 'remove' button to its right.

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:
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:
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:

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <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	

Staff

[Daily Report](#)
[Password Reset](#)
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Providers

General Admin Settings

Wakari Server
Set the main URL where this site will be accessed

http://anaconda-enterprise.trl

Static URL
Set static URL where the js can be accessed

http://anaconda-enterprise.trl/static/

Default Project Access
This will be the default when a user creates a project

☐ Public
Anyone can see this project. Collaborators have write access

☒ Private
No one can see this project except collaborators.

Account Type

wk_server.plugins.accounts.cloud

Update

Config Files

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed
Password Reset	<input type="text" value="http://anaconda-enterprise.trl"/>
Notification	
Exceptions	Static URL Set static URL where the js can be accessed
	<input type="text" value="http://anaconda-enterprise.trl/static/"/>
Site Admin	Default Project Access This will be the default when a user creates a project
General	<input type="radio"/> Public Anyone can see this project. Collaborators have write access
Accounts	<input checked="" type="radio"/> Private No one can see this project except collaborators.
Users	
Monitor	Account Type
Security Log	<input type="text" value="wk_server.plugins.accounts.cloud"/>
Data Centers	
Task Queue	<input type="button" value="Update"/>
License	
Providers	Config Files

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> Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> Default Project Access 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> Account Type <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>Config Files</div>
<div>Providers</div>	

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**.
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 **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.

Staff

[Daily Report](#)
[Password Reset](#)
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Site Admin

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Providers

General Admin Settings

Wakari Server
Set the main URL where this site will be accessed

Static URL
Set static URL where the js can be accessed

Default Project Access
This will be the default when a user creates a project

☐ Public
Anyone can see this project. Collaborators have write access

☒ Private
No one can see this project except collaborators.

Account Type

Update

Config Files

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Current License

You have **166 days** remaining on your current license.
[Renew your license](#)

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
email	dev@continuum.io

Upload New License

License File

[Choose File](#) No file chosen

[Update](#)

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*
- *Browser error: too many redirects*
- *Browser error: too many redirects when starting project apps*
- *Exception: exceptions.TypeError: 'NoneType' object has no attribute '__getitem__'*
- *Error: unix:///opt/wakari/wakari-server/etc/supervisor.sock no such file*
- *Error: “Data Center Not Found” when deleting a project*
- *Forgotten administrator password*
- *Log files being deleted*
- *Error: This socket is closed*
- *Service error 502: Cannot connect to the application manager*
- *502 communication error on Amazon web services (AWS)*
- *Invalid username*
- *Notebook Error: Cannot download notebook as PDF via LaTeX*
- *Unresponsive wk-server thread without error messages*
- *Unresponsive wk-gateway thread without error messages*

- *Error starting projects*
- *Changes in .condarc file are ignored*

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 into 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 into AEN as the administrator user with the new password.

Alternatively you may add an administrator user:

1. Use ssh to log into 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 into 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 into `/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?*
- *Can notebooks be shared with anyone?*
- *Can I disable the option, “publish your notebook to anaconda.org”?*
- *How can I check the version number of my AEN server?*
- *Can I use AEN to access CSV or Amazon S3 data?*
- *Can I install other Python packages?*
- *Can I create a Python environment from the command line?*
- *Can I connect to GitHub with AEN?*
- *Can I print or print preview my Jupyter Notebooks?*
- *Is there a set amount of storage on AEN?*
- *How do I get help, give feedback, suggest features or report a bug?*

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*
- *AEN 4.1.1*
- *AEN 4.1.0*
- *AEN 4.0*

Anaconda Enterprise Notebooks (AEN 4.2.1)

User guide (AEN 4.2.1)

Concepts (AEN 4.2.1)

Getting started (AEN 4.2.1)

Basic tasks (AEN 4.2.1)

Working with projects (AEN 4.2.1)

Searching for a project or file (AEN 4.2.1)

Adding and removing team members on a project (AEN 4.2.1)

Controlling access to your project (AEN 4.2.1)

Starting and stopping a project (AEN 4.2.1)

Making a project public or private (AEN 4.2.1)

Tagging a project (AEN 4.2.1)

Starring a project (rating) (AEN 4.2.1)

Claim ownership of a project (AEN 4.2.1)

Changing a project's summary or description (AEN 4.2.1)

Viewing a project's status (AEN 4.2.1)

Viewing related projects (AEN 4.2.1)

Viewing top-rated projects (AEN 4.2.1)

Using tags to find a project (AEN 4.2.1)

Viewing your top collaborators (AEN 4.2.1)

Sharing projects and notebooks (AEN 4.2.1)

Deleting a project (AEN 4.2.1)

Using AEN applications (AEN 4.2.1)

Using Workbench (AEN 4.2.1)

Using Viewer (AEN 4.2.1)

Using JupyterLab (AEN 4.2.1)

Using Terminal (AEN 4.2.1)

Using Jupyter Notebook (AEN 4.2.1)

Using Jupyter Notebook extensions (AEN 4.2.1)

Using the Synchronize Environments extension (AEN 4.2.1)

Using the Locking extension (AEN 4.2.1)

Using the Revision Control Mechanism extension (AEN 4.2.1)

Using the NBConda extension (AEN 4.2.1)

Using the Conda Notebook extension (AEN 4.2.1)

Using the Anaconda Cloud extension (AEN 4.2.1)

Using the Notebook Present extension (AEN 4.2.1)

Using Compute Resource Configuration (AEN 4.2.1)

Managing your account (AEN 4.2.1)

Advanced tasks (AEN 4.2.1)

[Working with environments \(AEN 4.2.1\)](#)

[Using visualization packages \(AEN 4.2.1\)](#)

[Using environment variables \(AEN 4.2.1\)](#)

[Cheat sheet \(AEN 4.2.1\)](#)

[Troubleshooting \(AEN 4.2.1\)](#)

[Admin guide \(AEN 4.2.1\)](#)

[Concepts \(AEN 4.2.1\)](#)

[Installation \(AEN 4.2.1\)](#)

[Installation requirements \(AEN 4.2.1\)](#)

[Preparing for installation \(AEN 4.2.1\)](#)

[Installing the AEN server \(AEN 4.2.1\)](#)

[Installing the AEN gateway \(AEN 4.2.1\)](#)

[Installing the AEN compute node\(s\) \(AEN 4.2.1\)](#)

[Configuring conda to use your local on-site AEN repository \(AEN 4.2.1\)](#)

[Optional configuration \(AEN 4.2.1\)](#)

[Using configuration files \(AEN 4.2.1\)](#)

[Increasing HTTP timeout between gateway and compute nodes \(AEN 4.2.1\)](#)

[Changing where projects are stored \(AEN 4.2.1\)](#)

[Creating groups with the same uid \(AEN 4.2.1\)](#)

[Using numeric usernames \(AEN 4.2.1\)](#)

[Using project directories as home directories \(AEN 4.2.1\)](#)

[Setting up a default project environment \(AEN 4.2.1\)](#)

[Install AEN connected to a remote Mongo DB instance \(AEN 4.2.1\)](#)

[Running SELinux in enforcing mode \(AEN 4.2.1\)](#)

[Changing server hostnames \(AEN 4.2.1\)](#)

[Authenticating with LDAP \(AEN 4.2.1\)](#)

[Configuring sudo customizations \(AEN 4.2.1\)](#)

[Configuring SSL \(AEN 4.2.1\)](#)

[Configuring single sign-on \(AEN 4.2.1\)](#)

[Adding a third-party extension \(AEN 4.2.1\)](#)

[Configure search indexing \(AEN 4.2.1\)](#)

[Create custom Jupyter kernel for Pyspark \(AEN 4.2.1\)](#)

[Upgrading AEN \(AEN 4.2.1\)](#)

[Uninstalling AEN \(AEN 4.2.1\)](#)

[User management \(AEN 4.2.1\)](#)

[Adding or removing an administrative user \(AEN 4.2.1\)](#)

[Allowing and restricting new user registration \(AEN 4.2.1\)](#)

[Resetting a user password \(AEN 4.2.1\)](#)

[Managing permissions \(AEN 4.2.1\)](#)

[Viewing a list of users \(AEN 4.2.1\)](#)

[Viewing a list of currently active users \(AEN 4.2.1\)](#)

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After you've run through the *Getting started guide*, you're ready to learn the details of using Anaconda Enterprise Notebooks.

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These topics all use the web browser to manage your projects. They are suited for a beginning user.

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Carry out the procedures linked from the table below to perform a complete install of all Anaconda Enterprise Notebooks components.

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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](#)
- [Team collaboration](#)
- [Access control](#)
- [Sharing projects](#)
- [Project tags](#)

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.

In this getting started guide, you will:

- 1. [Download the AEN cheat sheet](#)
- 2. [Access your user home page](#)
- 3. [Create a new project](#)

- 4. *Add collaborators*
- 5a. *Open an example notebook, OR*
- 5b. *Create a new environment and notebook*
- 6. *Create checkpoints for version control*
- 7. *Share your notebook and environment with others*
- 8. *See what to do next*

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.

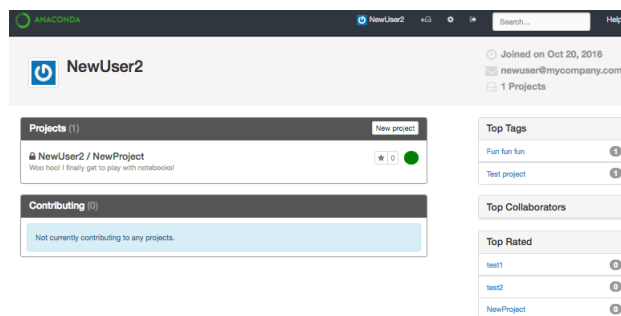
NOTE: Use the domain name and not the IP address when you connect to AEN. Using the IP address can cause TLS and security certificate errors.

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:

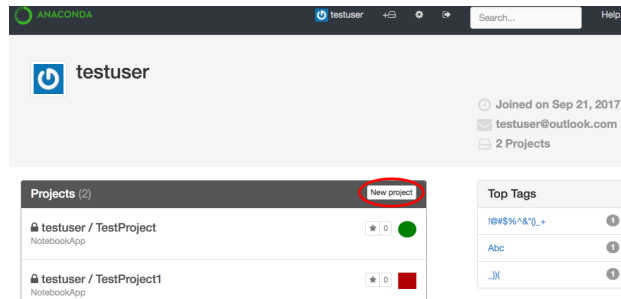


3. Create a new project

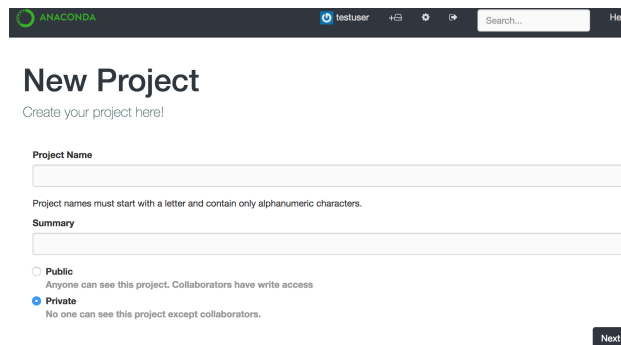
1. There are 2 ways to create a new project in AEN:
 - On the right side of the AEN task bar, click on the New Project icon:



- 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.”



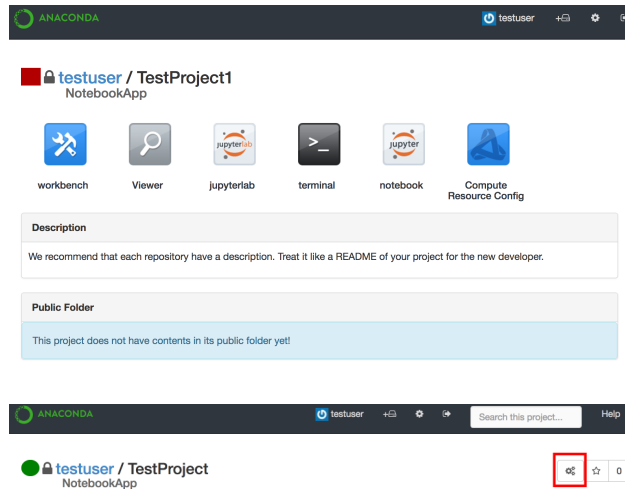
3. Type a summary of the project so you can recognize it later.
4. Select whether your project will be public or private.
5. Verify that the default data center is selected.

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.

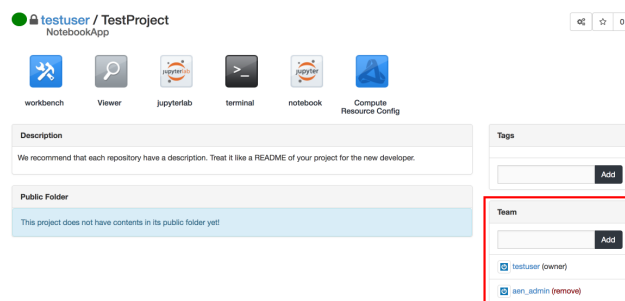
4. Add collaborators

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.

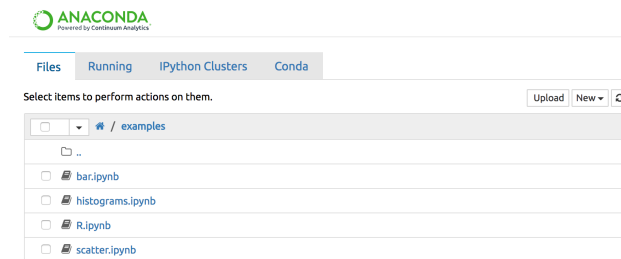


1. Repeat these steps for each team member you want to add as a collaborator.

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.



1. Select any of the example notebooks.
2. To see the default results of the formulas used in the displayed notebook, in the **Cell** menu, select Run All.
3. To experiment with changing the notebook, edit any of the formulas in the notebook.
4. 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.

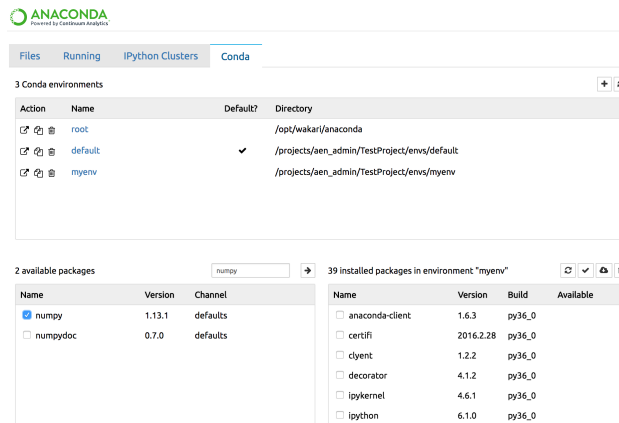
To create a new environment:

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.



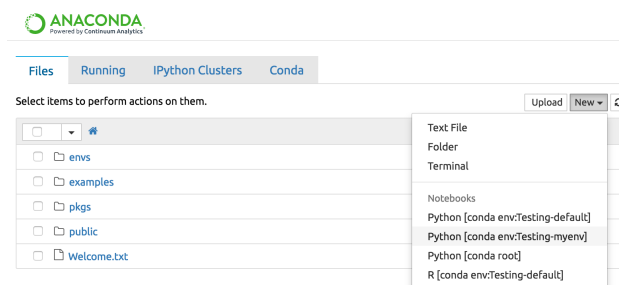
1. Click the Install icon.
2. To confirm your installation, click the Install button.

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*.



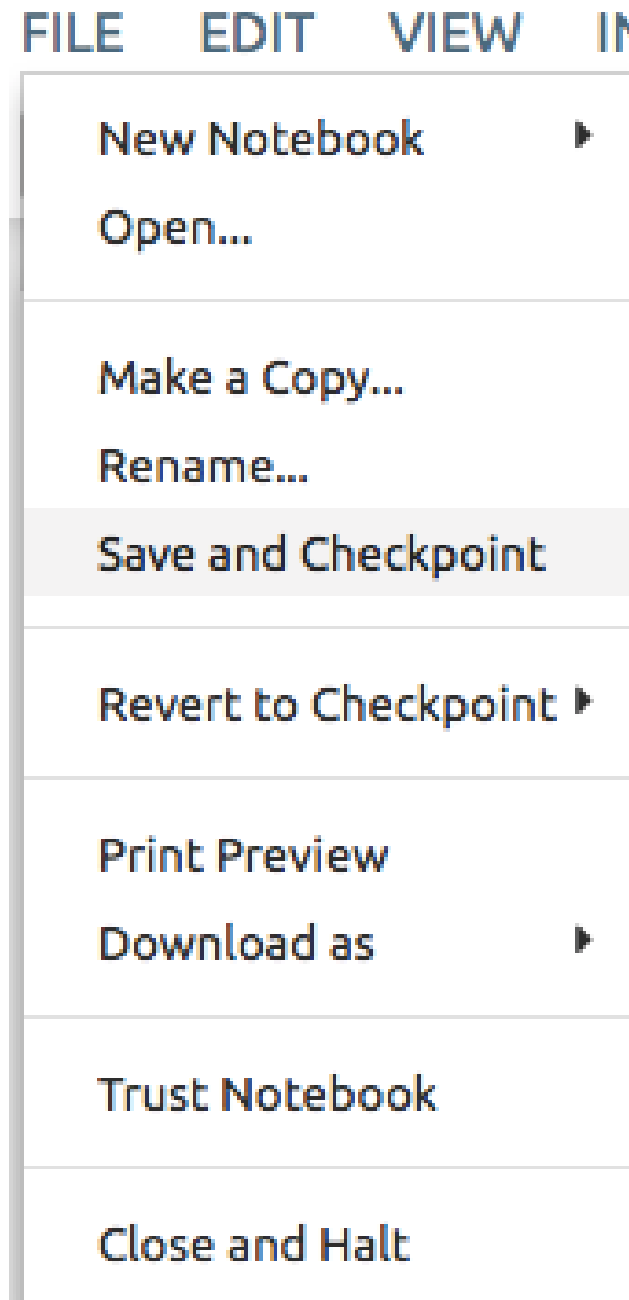
NOTE: If you do not see your new environment listed under Notebooks, next to the New button, click the Refresh button.

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

- *Types of files searched*
- *Search indexing*
- *Using search constructs*
- *Searching metadata fields*
- *Searching a project*
- *Saving a search*
- *Removing a saved search*

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.

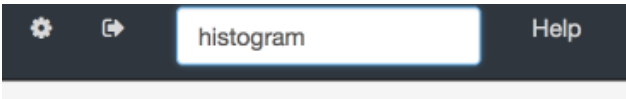
Searching metadata fields

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

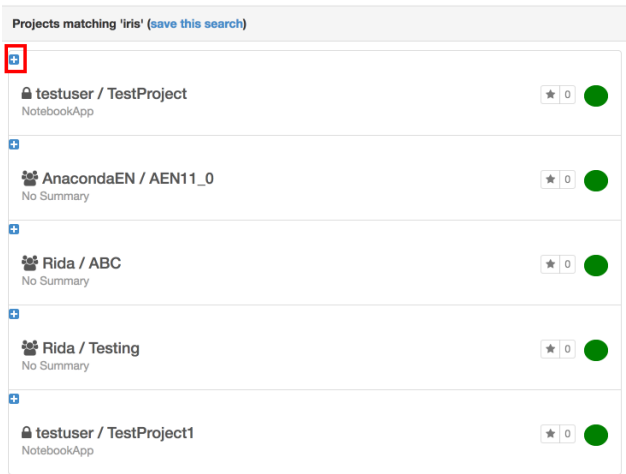
- 1. In the Search box, type a string of text:



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:



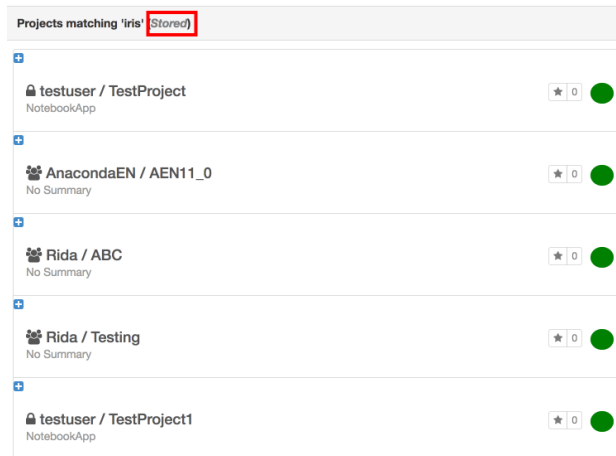
TIP: Click the project name to open the project’s home page.

- 4. To view a file, click its file name in the matching files list:



Saving a search

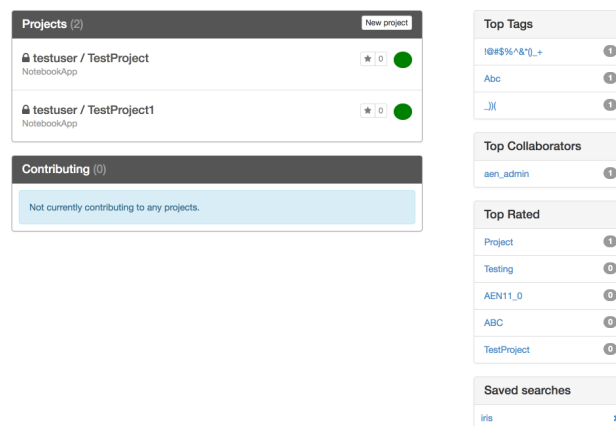
1. At the top of the search results, click Save this search:



The “save this search” text changes to “stored” and your search is saved. Your saved searches are listed on your home page.

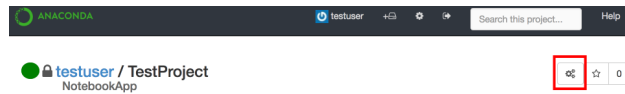
Removing a saved search

On your home page, in the Saved searches section, click X next the saved search that you want to remove:

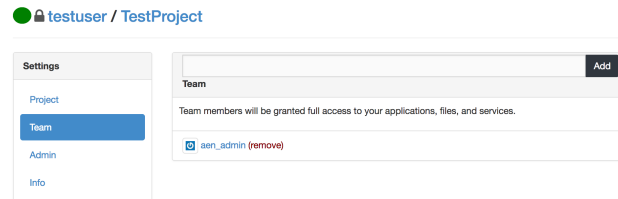


Adding and removing team members on a project

1. On the project home page, click the Project Settings icon to open the Project Settings page.



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*
- *Controlling non-team member access*

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.

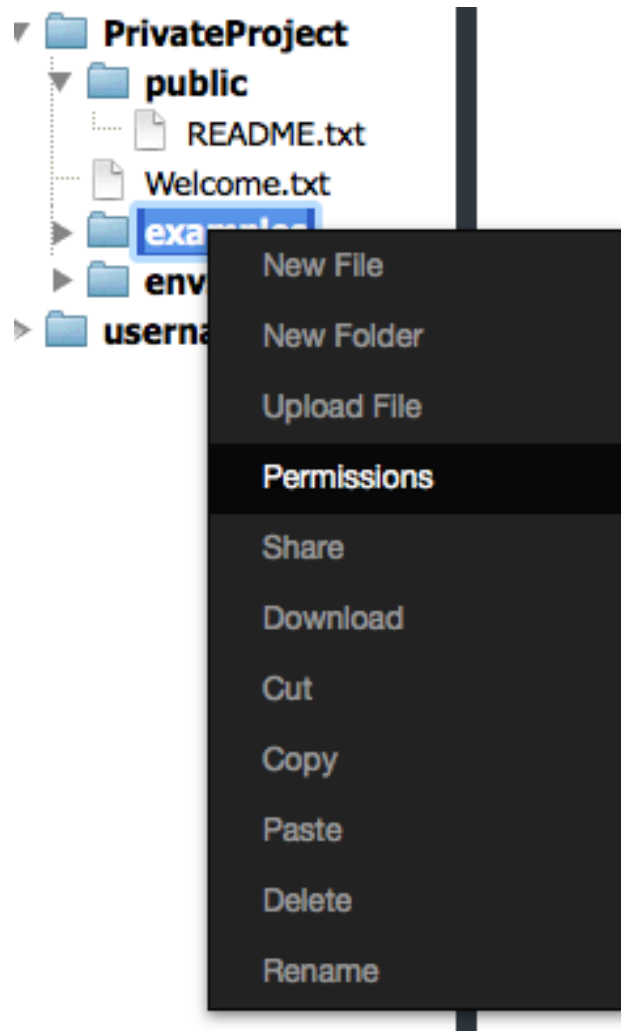
To change a project's permissions:

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:
6. Next to the team member's name, select or deselect the permissions for that user.

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		Read	Write	Execute
<input type="text" value="username"/>	User	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username"/>	Group	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	User	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="text" value="username2"/>	Group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	User	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="text" value="username3"/>	Group	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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.

7. 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:

1. *Copy or move the file or folder to your home directory.*
2. *Give the user read and execute access to your home directory.*
3. *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.

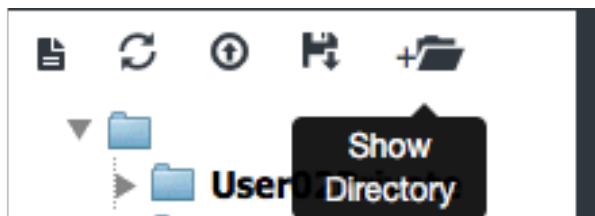
NOTE: If you change permissions for a folder instead of a file, the user will be able to see and access any files within that folder.

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:

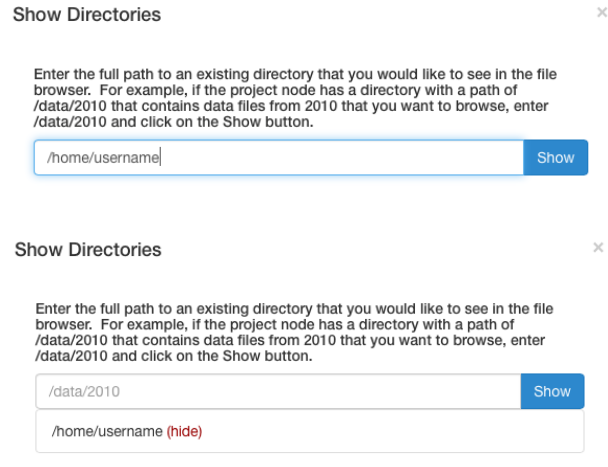


The Show Directories dialog box displays.

2. In the text box, type `/home/[yourusername]`.

NOTE: Replace `[yourusername]` with your AEN username.

3. Click the Show button.
4. Verify that the folder is now displayed below the text box:



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.

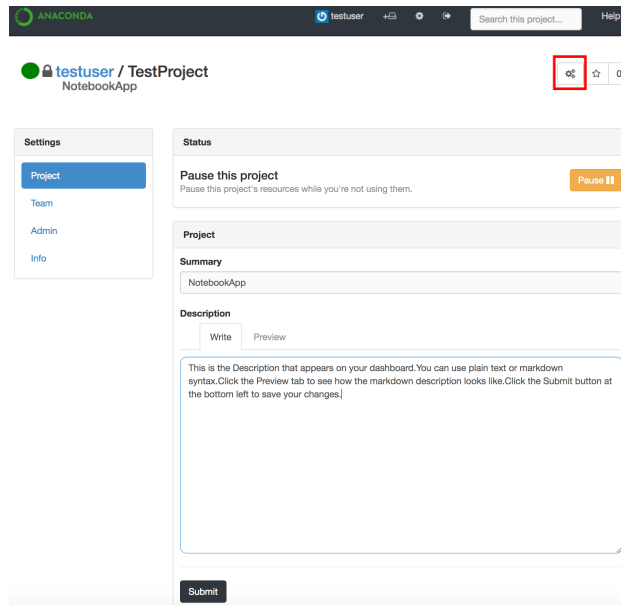
The shared file is displayed in the File Manager:



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.

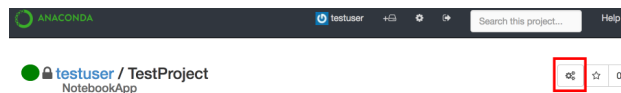
1. On the project home page, click the Project Settings icon to open the Project Settings page.
2. In the **Settings** menu, select Project.



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.



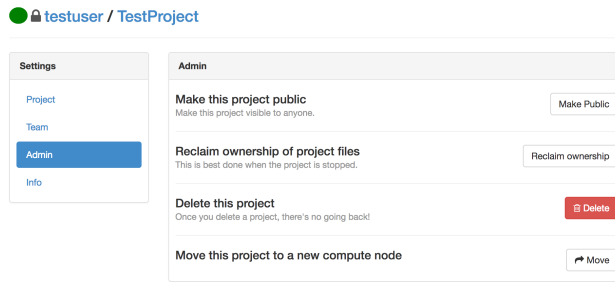
2. In the **Settings** menu, select Admin.
3. Click the Make Public button.
4. If the project is already public and you want to make it private, click the Make Private button.

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:



Tags

Add

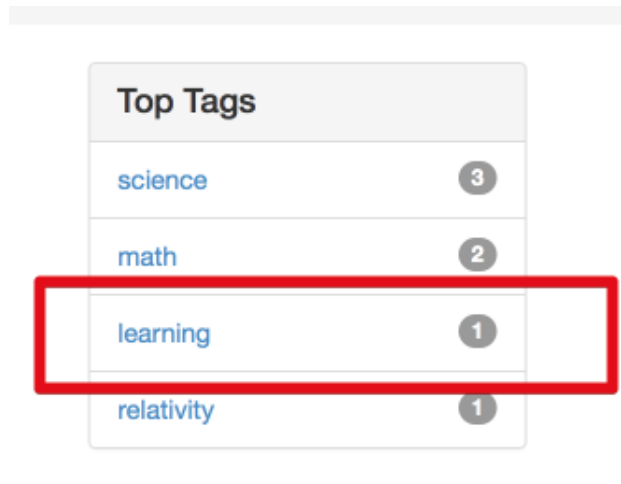
2. Click the Add button.

The new tag is added to the Tags list:

Tags

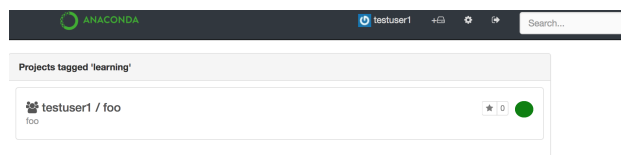
Add

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:



Removing a tag

1. On your user home page, in the Top Tags list, click the tag name.



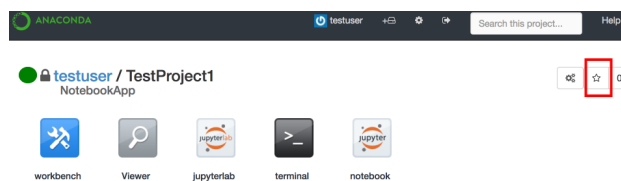
1. In the Tags list, click the X button next to tag name.

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:

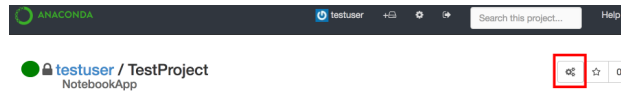


3. To unstar a project, click the Star icon again.

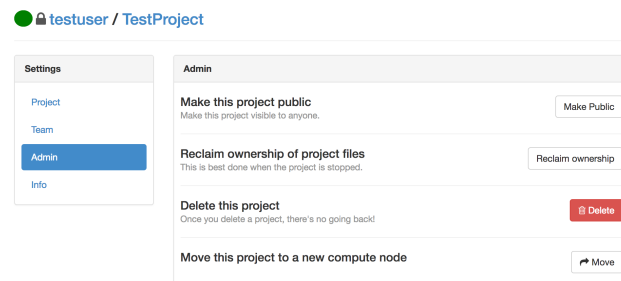
Claim ownership of a project

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.



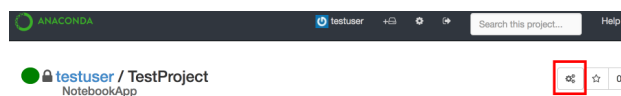
3. In the **Settings** menu, select Admin.



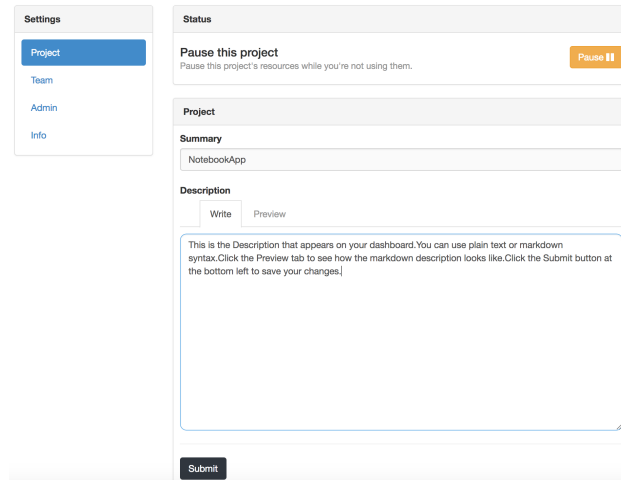
4. Click the Reclaim ownership button.

Changing a project's summary or description

1. On the project home page, click the Project Settings icon to open the Project Settings page.



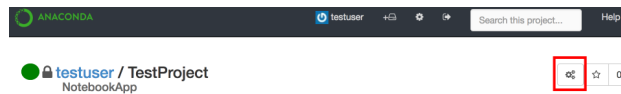
2. In the **Settings** menu, select Project.



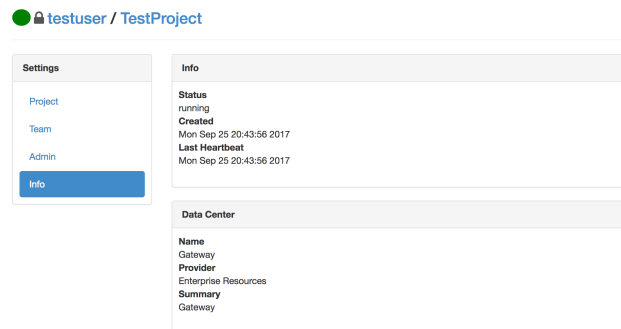
3. Update your project's summary using plain text or its description using Markdown syntax.
4. Click the **Preview** tab to see a preview of the Markdown description.
5. Click the Submit button.

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.



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:

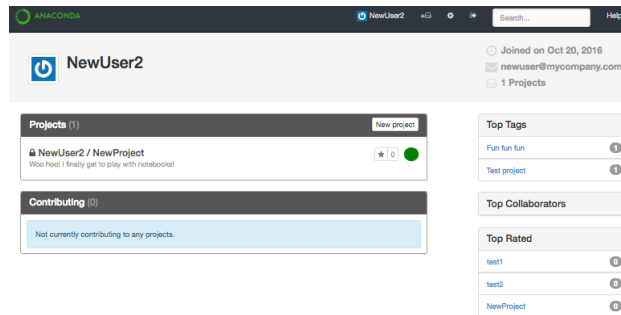
Top Rated	
einstein	2
euler	1
laplace	1
plank	1
Public_project	1

The number next to a project represents the number of stars that have been given to that project.

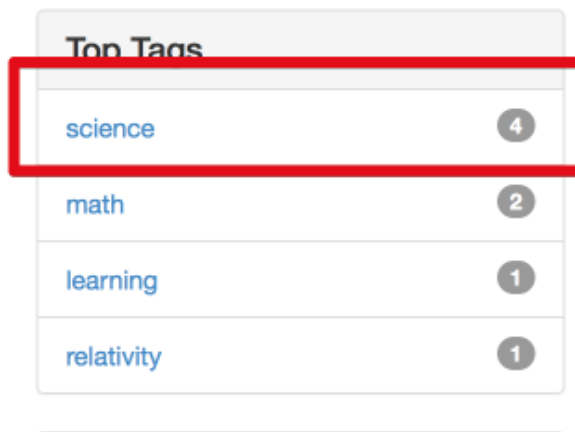
Click a project name to view the project's home page.

Using tags to find a project

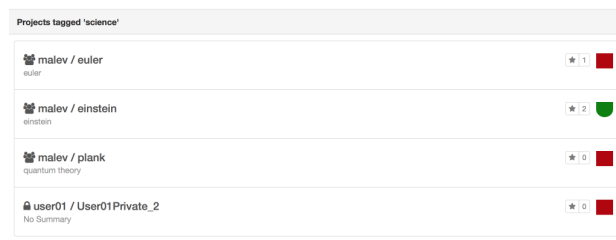
The top tags used on your projects are listed on your home page:



To list all projects that share a specific tag, click the tag name:



A list of projects with the selected tag is displayed:



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

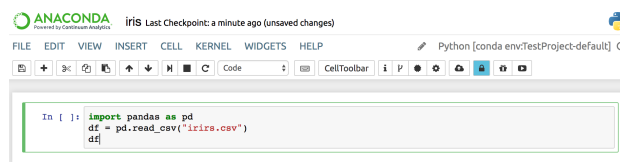
For information on sharing projects via the project settings and access control, see [Sharing projects](#).

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.

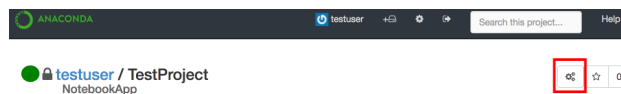
Other ways to share a notebook

- 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*.

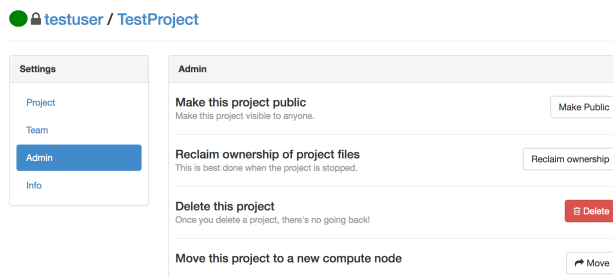
Deleting a project

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.



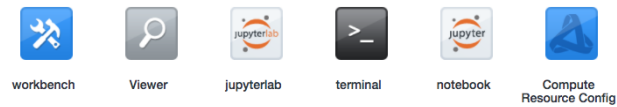
4. Click the Delete button.

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 into 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

- *Opening Workbench*
 - *Using File Manager*
 - *Opening the Workbench terminal*

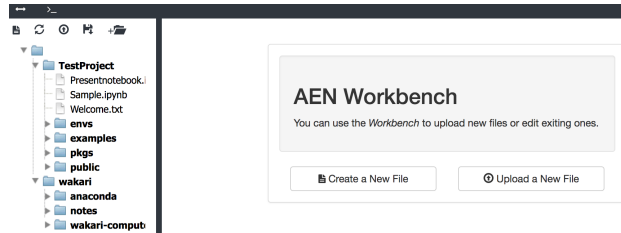
Workbench is a file viewer and manager that includes a file editor and file permissions manager.

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.

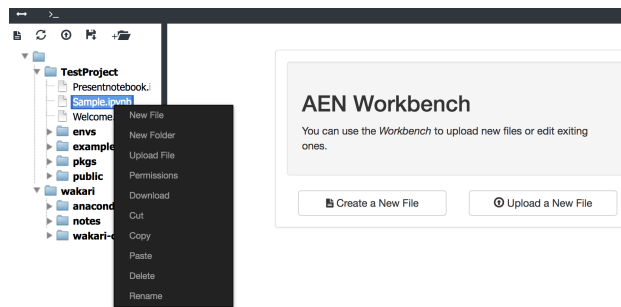
Using File Manager

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:

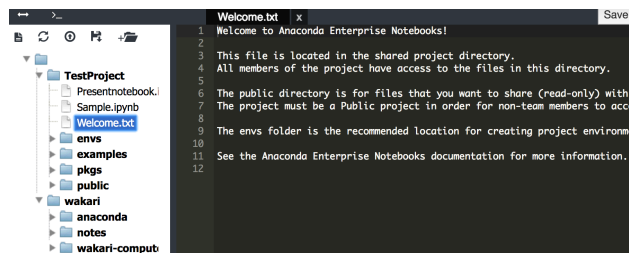
1. Right-click on any folder to display the options drop-down menu.
2. Select one of the following options:
 - New File—Create and edit a new file.
 - New Folder—Create a new folder.
 - Upload File—Upload a file to the selected folder. You can also drag a file to the folder.
 - Permissions—*Control access 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:

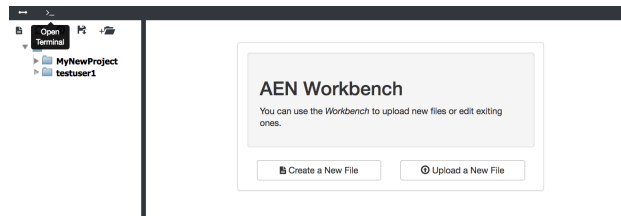


2. When you finish editing the file, click the Save button.

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.

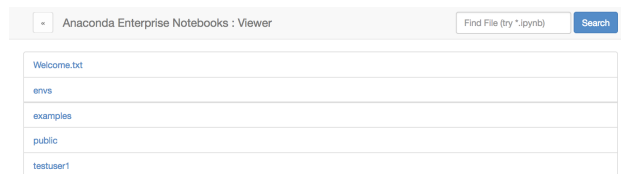
To move between terminal windows, click the **Terminal** tab in the navigation bar, then select the number of the terminal window you want to work in.

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*.

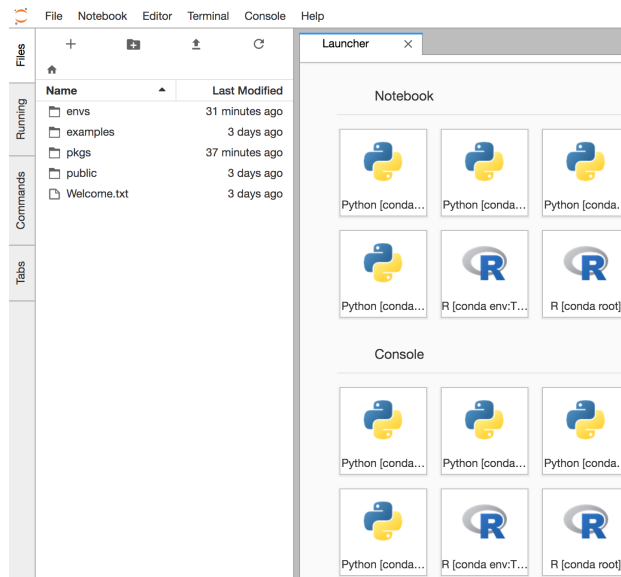
For more information about JupyterLab, see the [documentation](#).

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:

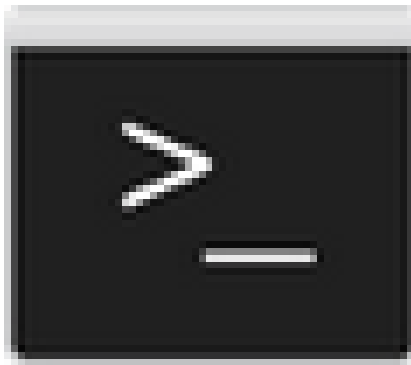
```

+ 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

- *Opening the Jupyter Notebook application*
- *Using example notebooks*
- *Creating a new 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.

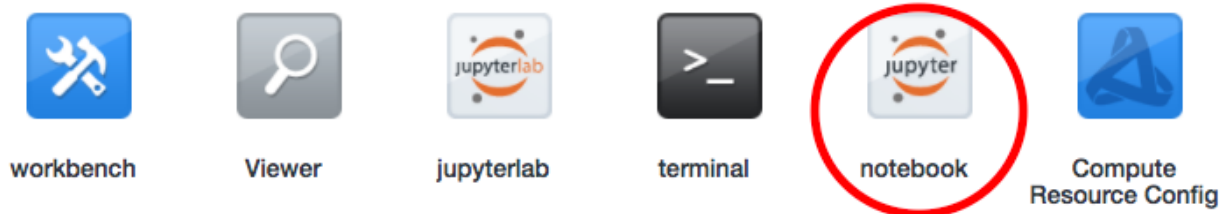
This page provides a brief introduction to Jupyter Notebooks for AEN users.

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.

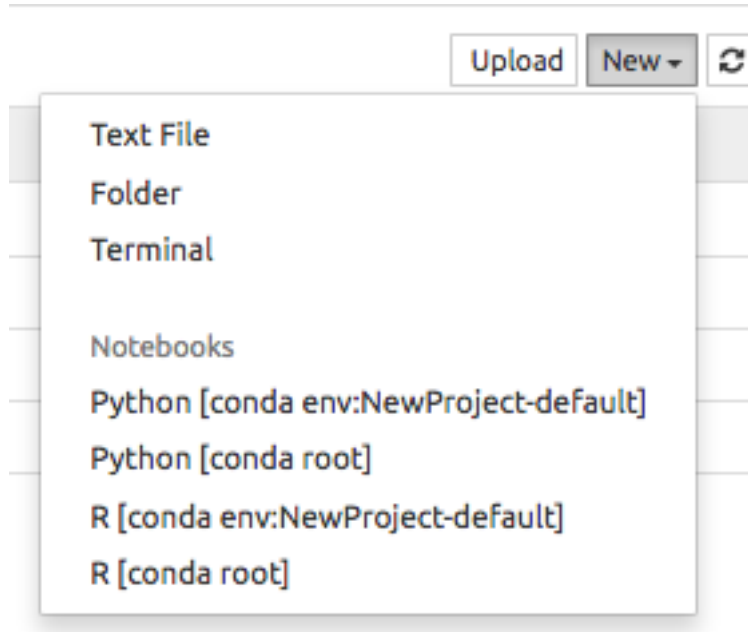
Open any example notebook to experiment and see how it works.

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:

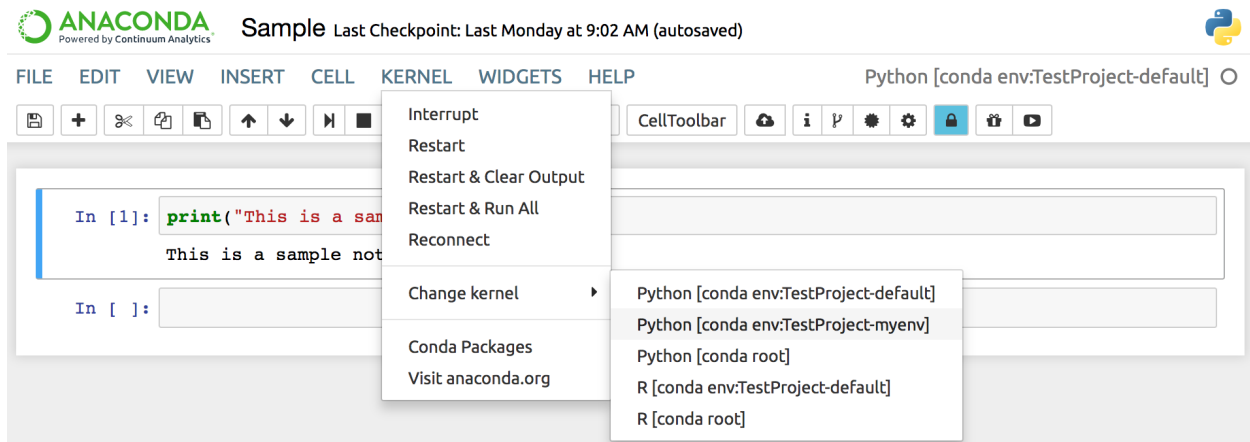
- *Synchronize Environments* with Jupyter from the **Kernel** menu.
- *Locking* adds multi-user capability from the Lock button.
- *Revision Control Mechanism (RCM)* adds Status, Checkout and Commit buttons.
- *Conda environment and package management* tab.
- *Conda notebook* adds conda management inside 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:



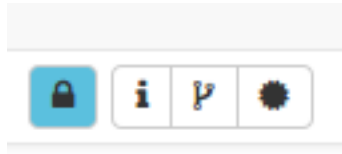
NOTE: This is a soft locking model. Team members can choose to override your lock to save their work. If you give team members write access to your files, confirm that they understand that they should never unlock your file unless they are making meaningful, non-destructive team contributions.

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:

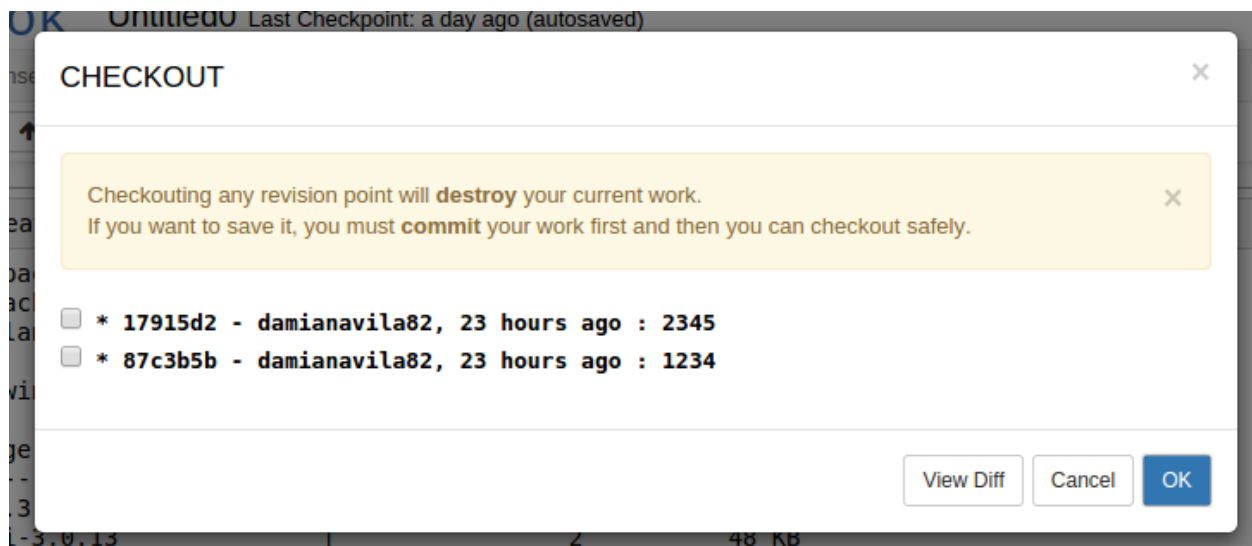
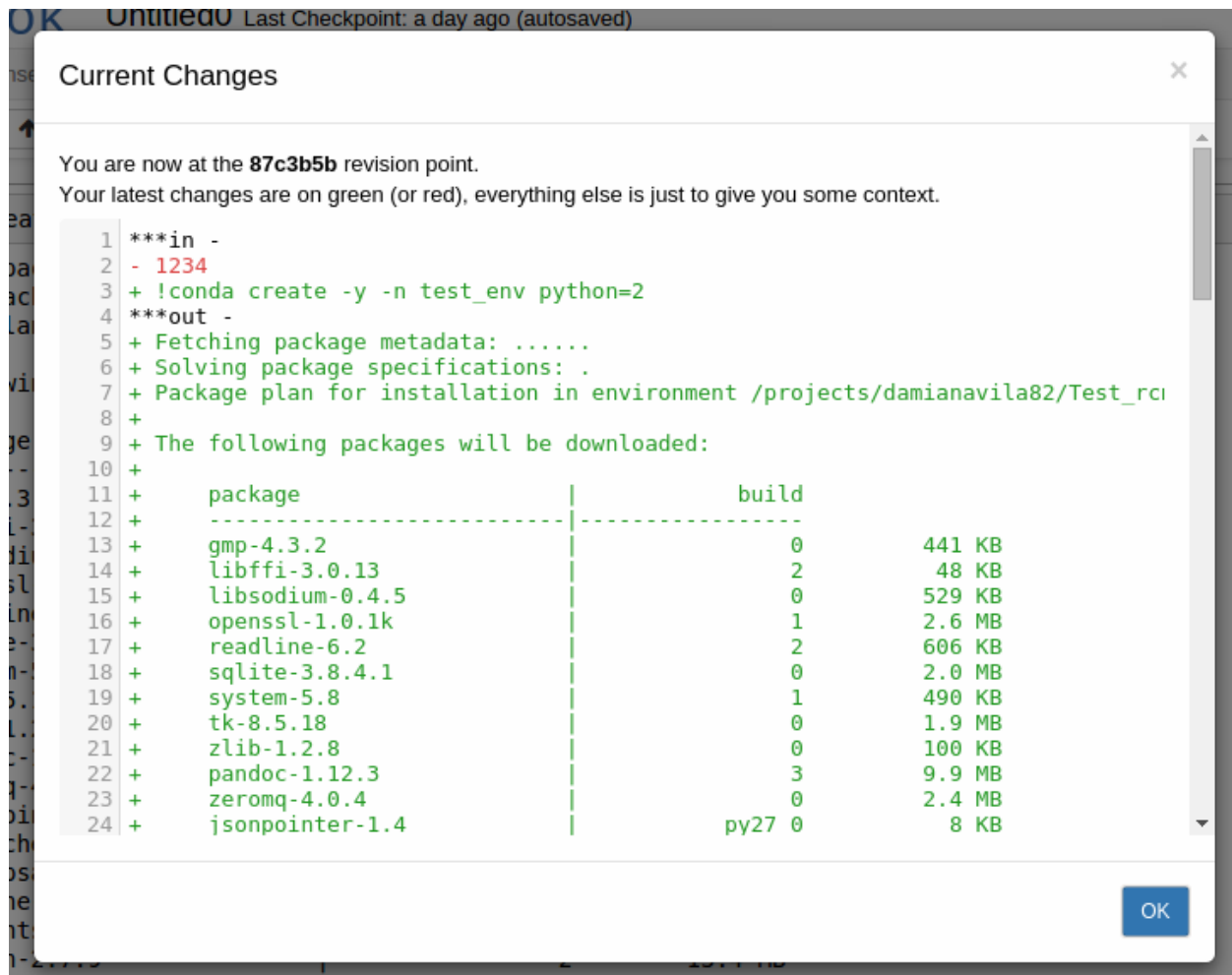
Checking out a previous revision

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.

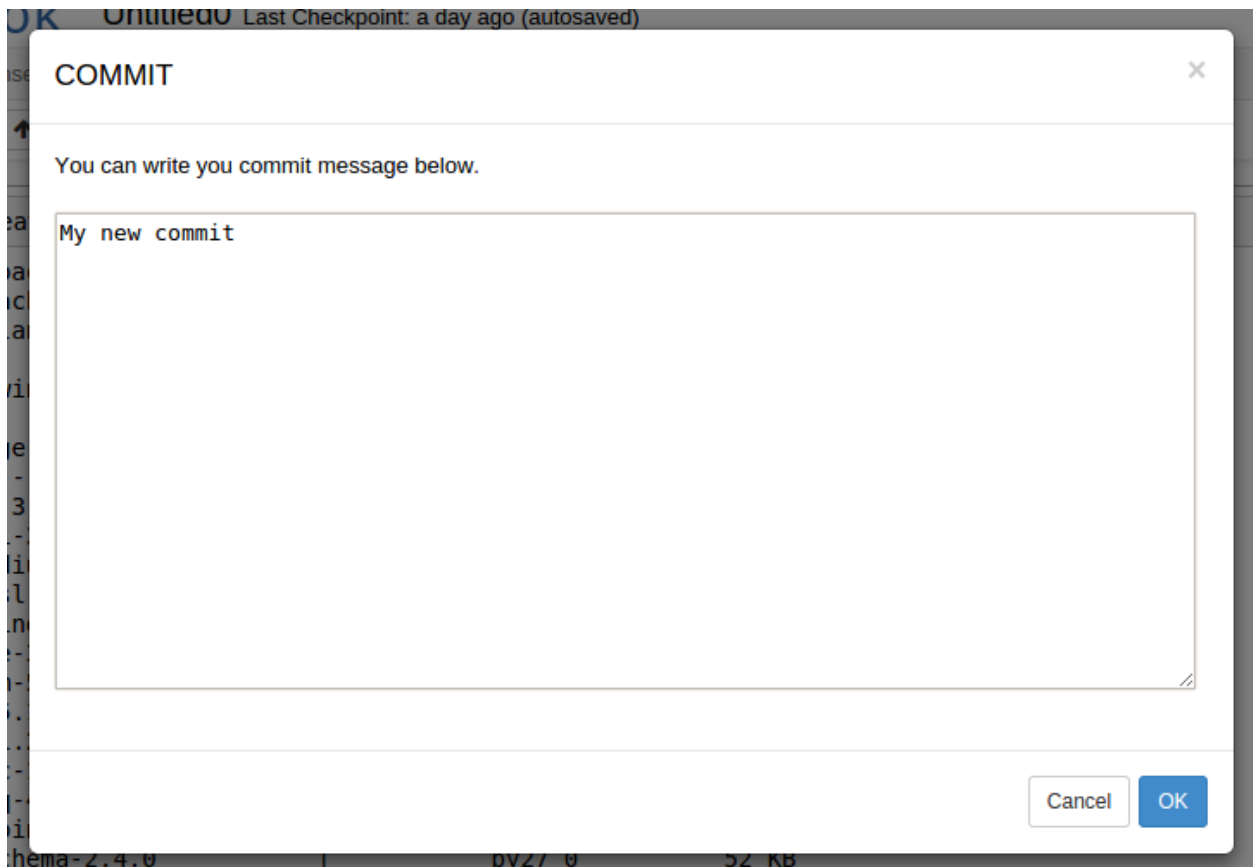
A side-by-side comparison is displayed.

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:



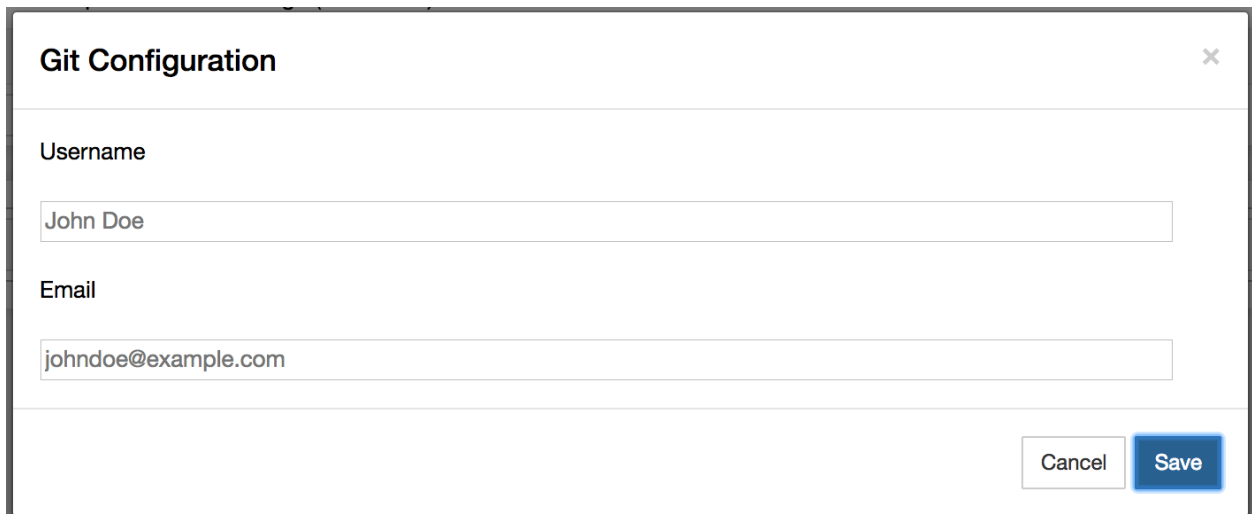
Configure Git and then try to commit again.

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:



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

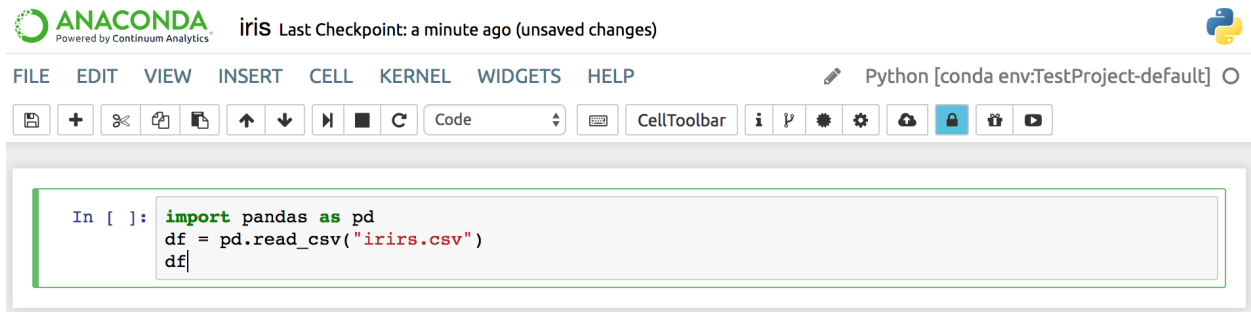
Name	Version	Build	Available
<input type="checkbox"/> _license	1.1	py27_1	
<input type="checkbox"/> alabaster	0.7.10	py27_0	
<input type="checkbox"/> anaconda	custom	py27_0	
<input type="checkbox"/> anaconda-client	1.5.1	py27_0	
<input type="checkbox"/> anaconda-project	0.6.0	py27_0	
<input type="checkbox"/> 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:



Using the Conda Notebook extension

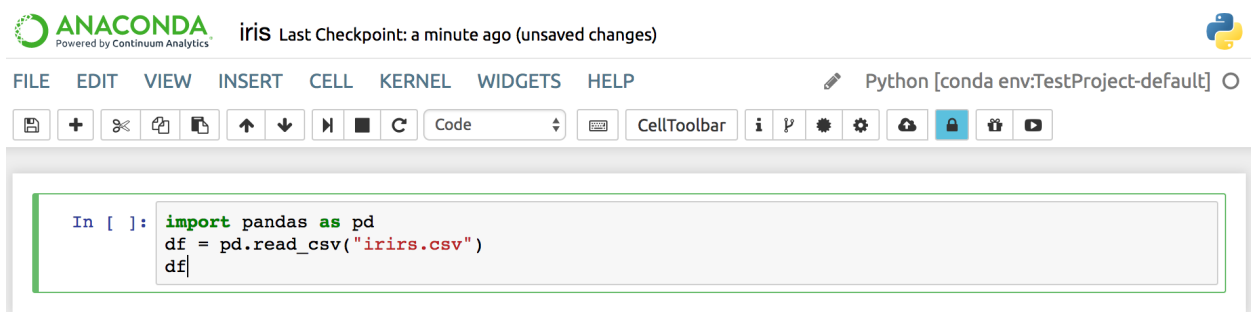
The Conda Notebook extension adds the Conda Packages option to the **Kernel** menu.

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

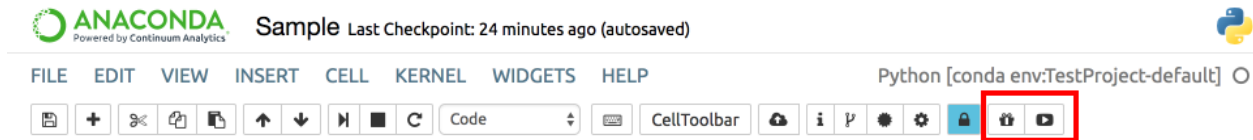
The Anaconda Cloud extension adds the Cloud button to your notebook, allowing you to easily upload your notebook to Cloud:



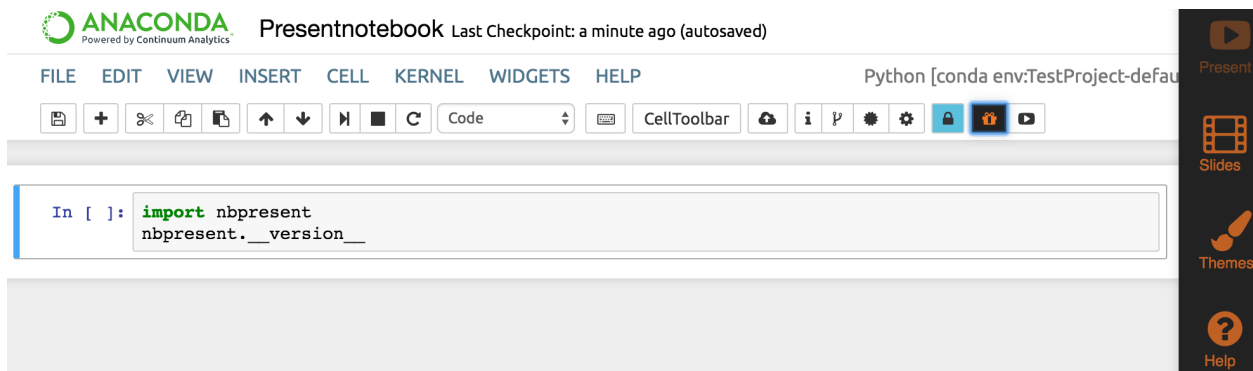
Using the Notebook Present extension

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.



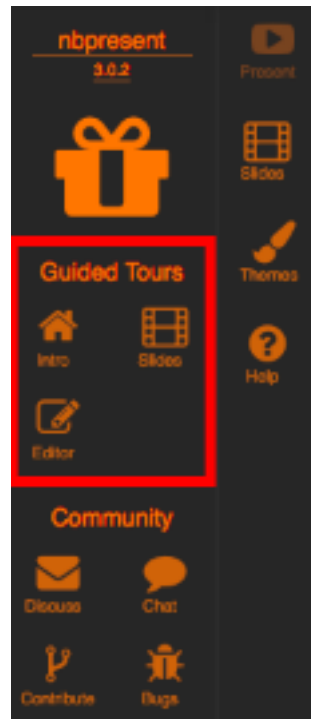
The Notebook Present sidebar is displayed on the right side of your browser:

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:
- 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.

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

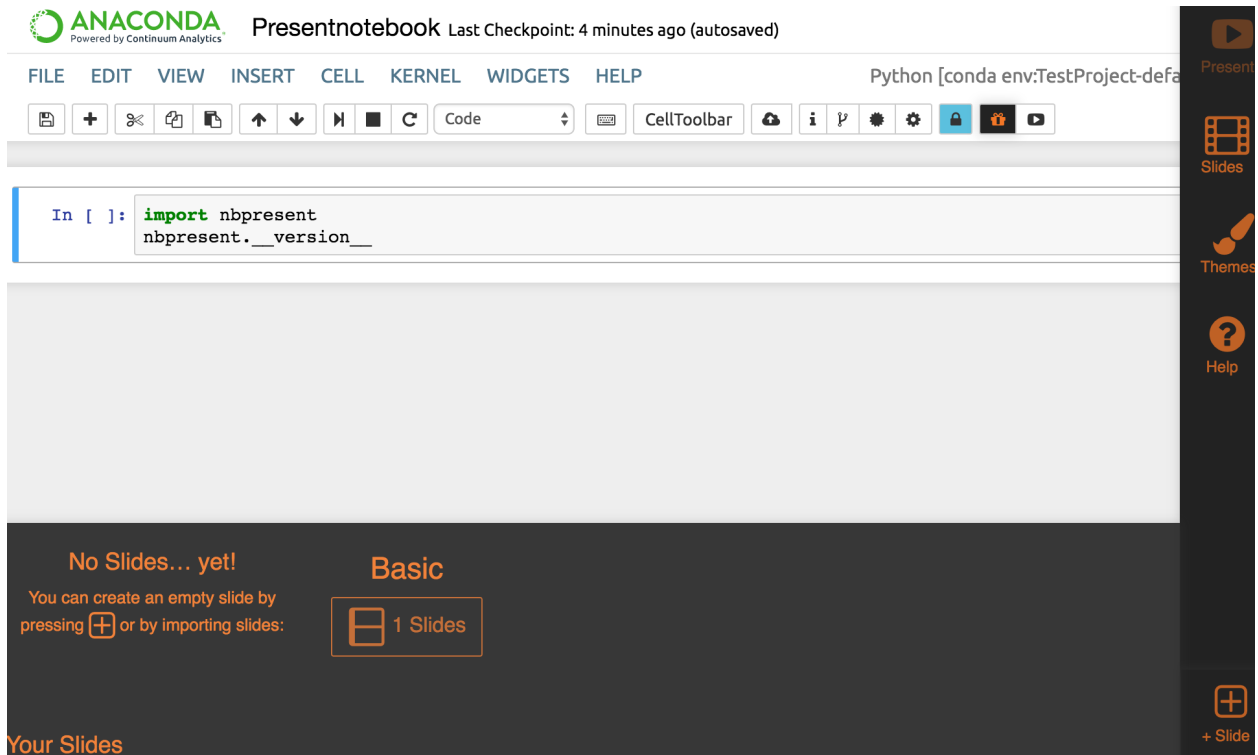
: copy selected cells

: paste cells above

: paste cells below

: undo cell deletion

Close



- 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.

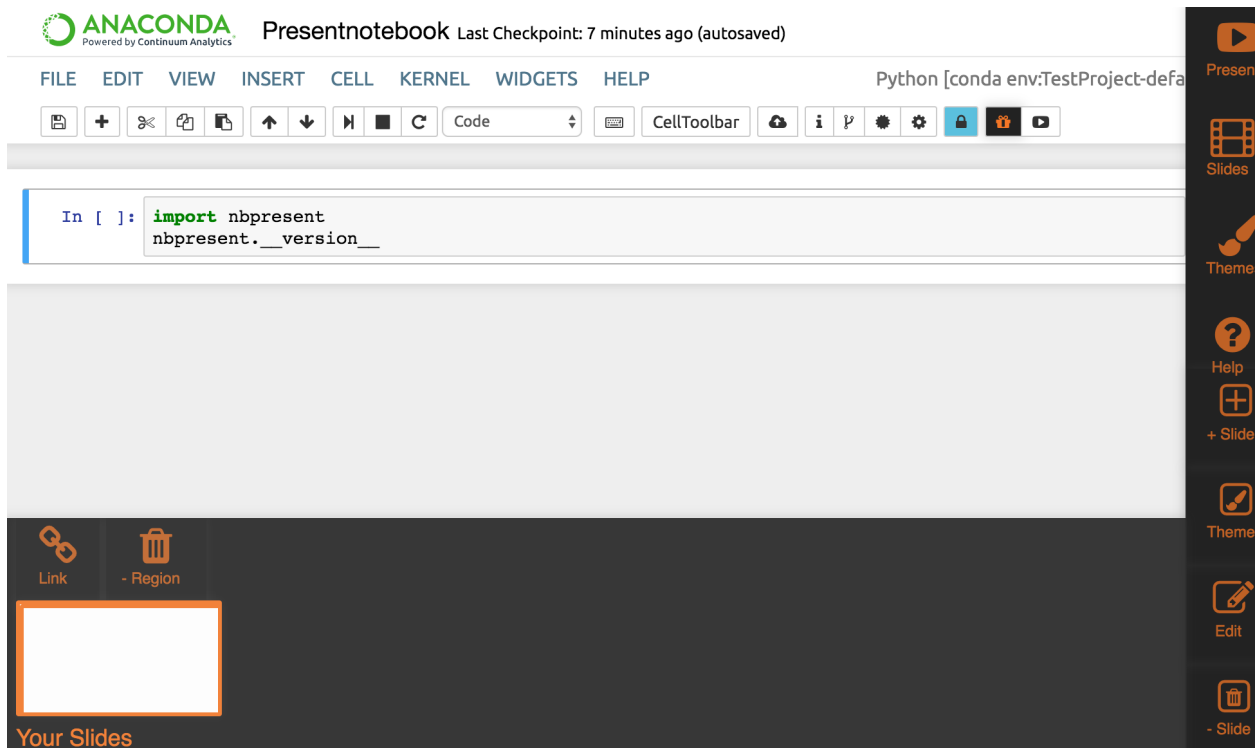


- Saving—Whenever you save your Notebook, all your presentation data will be stored right in the Notebook .ipynb file.

- 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.*

The screenshot shows the Anaconda Embedded AEN interface. At the top is the Anaconda logo. Below it is the 'Info' section with fields for Hostname, Project Home, and Project RC file. The 'Conda Environment' section shows the current environment path and a warning about changing it. The 'Running Apps' section is a table with columns for User, Application, Status, Last Seen, Terminate, Relaunch, and Logs.

User	Application	Status	Last Seen	Terminate	Relaunch	Logs
testuser1	terminal	running	1 hours ago	Terminate	Relaunch	Logs

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.

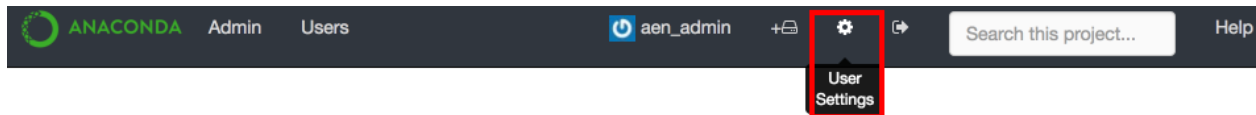
To stop and re-launch any individual application, click the Relaunch button.

To review the run logs of any active application, which may be useful for troubleshooting, click the Logs button.

Managing your account

- *Updating your public profile*
- *Changing your password*
- *Deleting your AEN account*
- *Viewing account operations*
- *Registering an application*

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

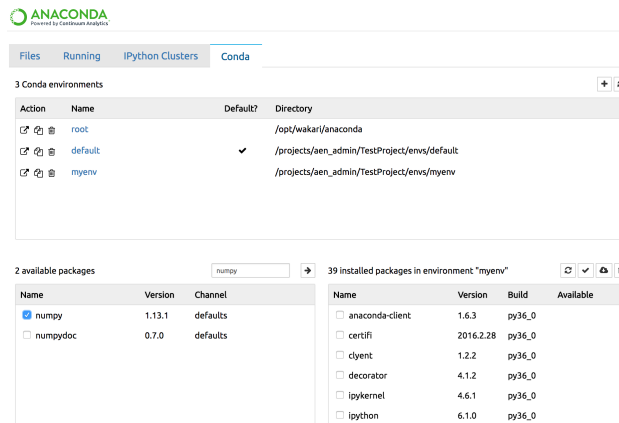
You can create, activate, and install packages and deactivate environments from within the Notebook menu bar.

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.

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
```

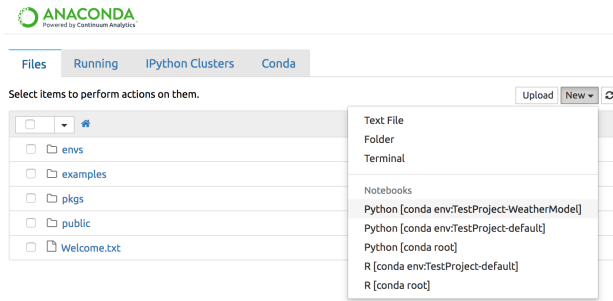
TIP: Python, pip and Jupyter Notebooks are automatically installed in each new environment. You only need to specify NumPy in this command.

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 its output cells.

EXAMPLE: The following screenshot is of a cumulative density function (CDF) plot using values taken from a normal distribution:

For more information, including a [gallery](#), [examples](#), [documentation](#) and a [list of plotting commands](#), see the [Matplotlib website](#).

Bokeh

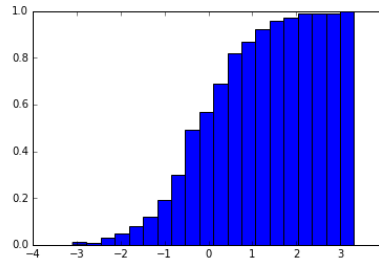
Bokeh is an interactive visualization library that targets modern web browsers to provide elegant, concise construction of novel graphics.

To display Bokeh figures in the output cells of a notebook running the default environment, run:

```
In [1]: import matplotlib.pyplot as plt
        %matplotlib inline

In [2]: import numpy as np
        x = np.random.normal(size=100)

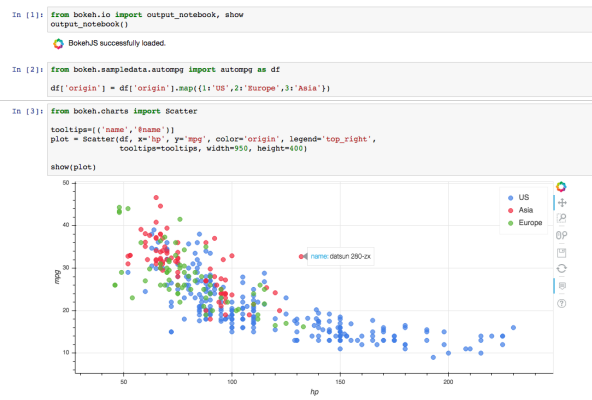
In [3]: plt.hist(x, normed=True, cumulative=True, bins=20);
```



```
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.

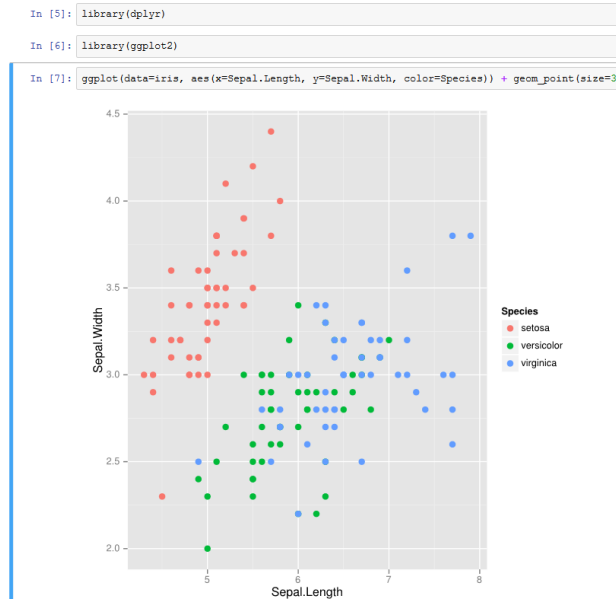
To use ggplot2 with AEN:

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:



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.

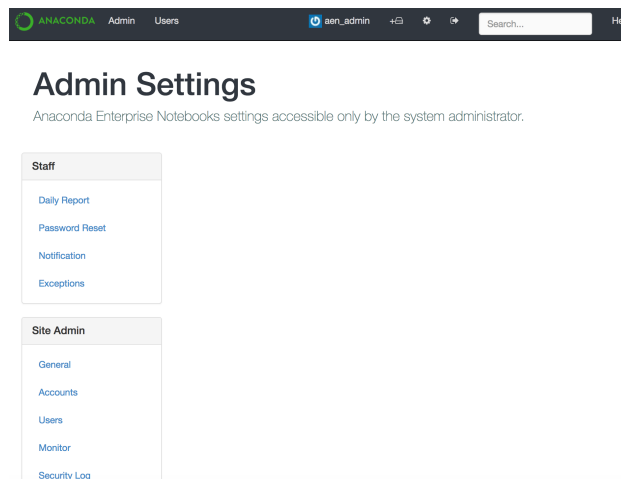
Admin guide

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:



All of the other navigation bar items are the same as for a user account.

Concepts

- *System overview*
- *Server node*
- *Gateway node*
- *Compute node(s)*
- *Supervisor and supervisor*
- *Service Account*
- *Anaconda environments*
- *Projects and permissions*

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.

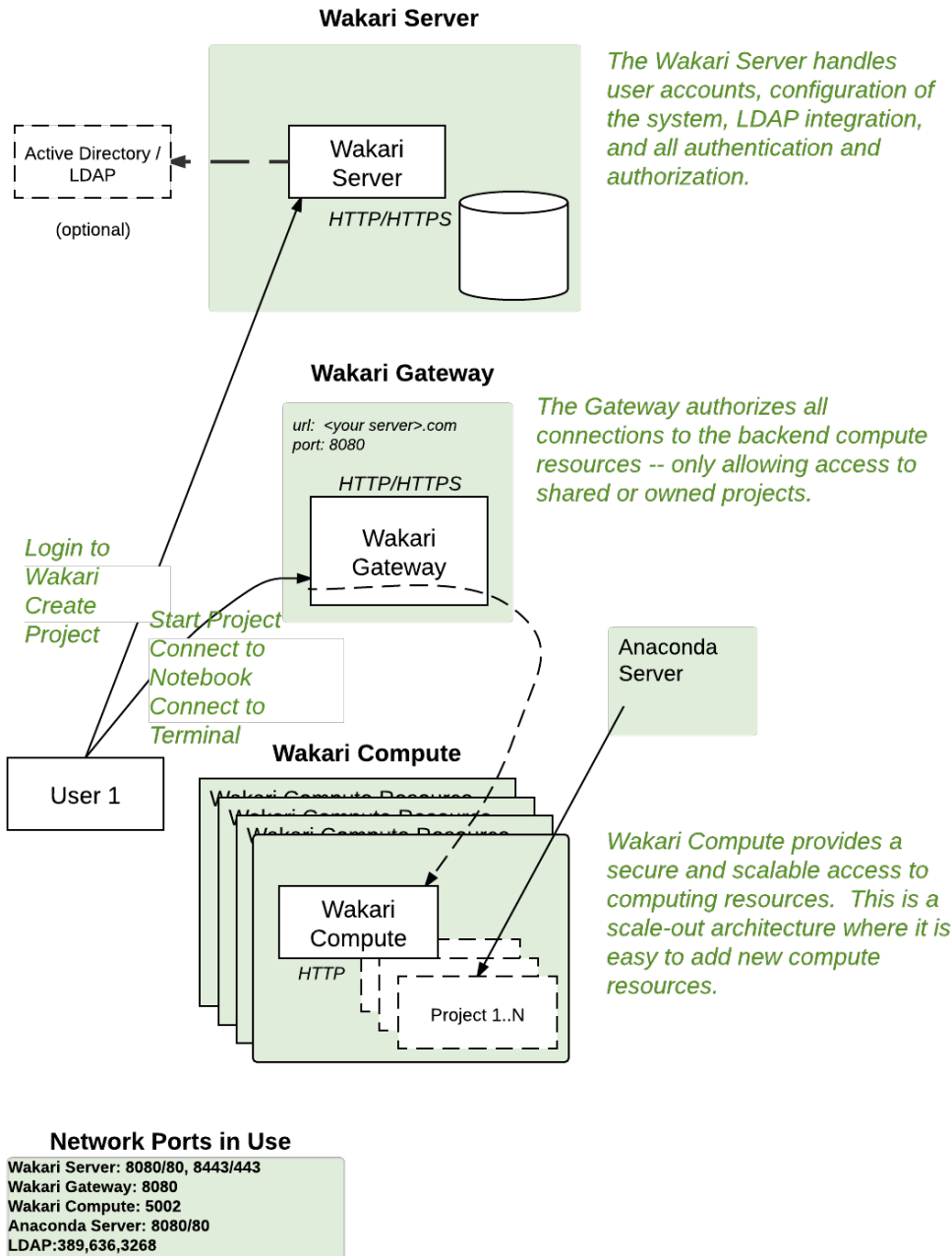
These services can be run on a single machine or distributed across multiple servers.

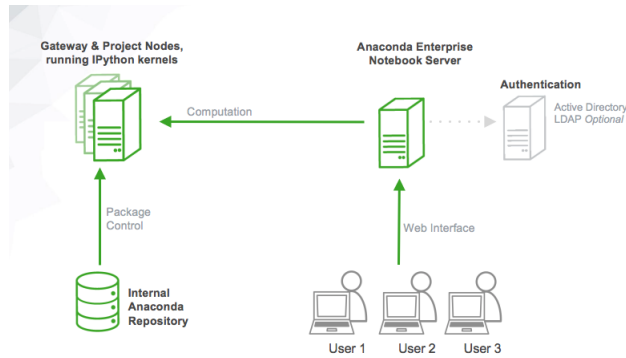
Organizationally, each AEN installation has exactly 1 server instance and 1 or more gateway instances. Each compute node can only be connected to a single gateway. The collection of compute nodes served by a single gateway is called a **data center**. You can add data centers to the AEN installation 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

Anaconda Enterprise Notebooks





- 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
con-figura-tion	/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)
con-trol	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*
- *Software requirements*
- *Security requirements*
- *Network requirements*
- *Other requirements*
- *What's next*

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 libXdmc6 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*
- *Gathering IP addresses or FQDNs*
- *Set up variables*
- *What's next*

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

- *Installing the bzip2 package*
- *Downloading prerequisite RPMs*
- *Installing prerequisite RPMs*
- *Setting variables and changing permissions*
- *Running the AEN server installer*
- *Starting NGINX and Elasticsearch*
- *Testing AEN server installation*
- *Updating your license*
- *What's next*

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'
```

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```
=====

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\T1\textdollarAEN_SERVER`.

The License expired page is displayed.

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:

No license found!

Acquire a license

Thank you for using Anaconda Enterprise Notebooks.

After 45 days, or the end of your paid license agreement, you must renew your license.

Software updates and technical support

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.

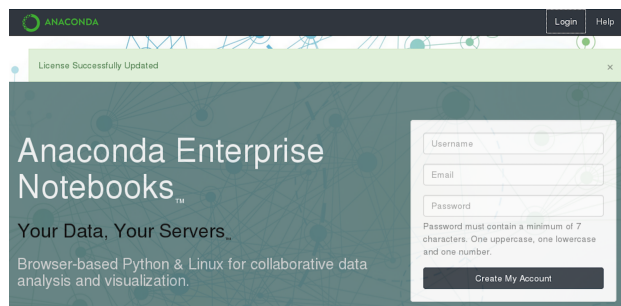
[Contact support for more information.](#)

Upload License File

License File

Browse... No file selected.

Update



What's next

Install the AEN gateway.

Installing the AEN gateway

- *Setting variables and changing permissions*
- *Running the AEN gateway installer*
- *Registering your gateway*
- *What's next*

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
```

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```
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
```

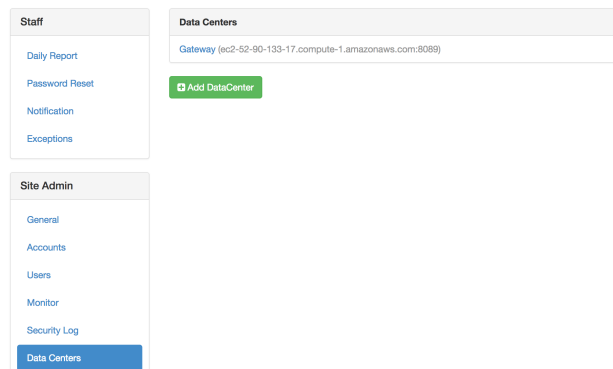
Starting the gateway

Run:

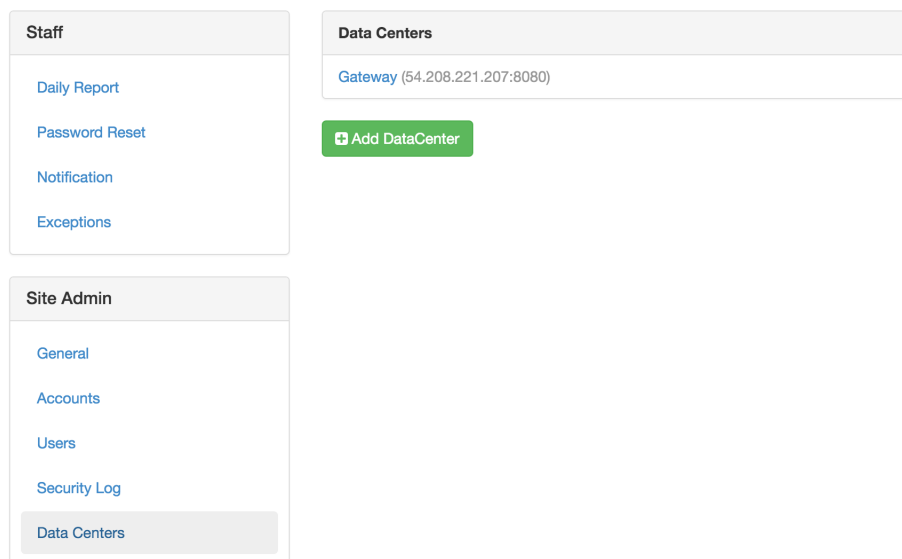
```
sudo service wakari-gateway start
```

Verifying your gateway registration

1. Log into 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:



4. Click your data center:



5. Verify that your data center is registered and the status is {"status": "ok", "messages": []}:

Staff

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Site Admin

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Datacenter Gateway

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)

- *Setting variables and changing permissions*
- *Running the AEN compute installer*
- *Restart the AEN Server*
- *Configuring your compute node(s)*
- *What's next*

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:
5. Click the Add Resource button to open the new resource form.
6. Select the data center to associate this compute node with.

Staff

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[License](#)

Providers

[Enterprise Resources](#)

Resources

Add Resource

Gateway

ec2-54-210-232-251.compute-1.amazonaws.com

remove

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

- *AEN configuration keys*
- *Checking configuration file syntax*

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	\$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 mon- godb instance. Format: mongodb:// <username>:<password>@<host>:<port>/
WAKARI_SERVER		The URL of this AEN server.
DEFAULT_PRIVACY	public	The default project privacy setting—can be either public or private.
SESSION_COOKIE_NAME	wk. enterprise. session	The Cookie name used to maintain Anaconda Enterprise Note- books 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 af- ter 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 ad- dresses are required. See note below 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 pri- mary.
- PORT	389	LDAP subkey—The LDAP port on the LDAP server.
- AUTH_TYPE		LDAP subkey—LDAP Authentication types. simple—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 cer- tificate 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 public or anonymous— assigned users who are not logged in to access projects. To disable public access use the special value disabled. For more information, see Configuring sudo customizations .
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SEARCH_ENABLED	true	Boolean indicating whether ElasticSearch is enabled
SEARCH_SERVER	'localhost:9200'	IP address or domain name and port of ElasticSearch server

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
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 (≥ 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 Configuring SSL .
- 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 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	To make the AEN compute service create groups with the same uid. Set to true /projects folder resides on an NFSv3 volume. 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	13600000 (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.

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	\$WAKARI_SERVER/ static/	The location of static assets.
SUBDOMAIN_ROUTING	false	A boolean that indicates whether subdomains are being used.
refreshTokenExpiration	60000	Idle time in milliseconds before the Gateway session expires.

Table 46: 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_C_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
```

For more information and examples about creating a default project environment with Microsoft R Open (MRO), see *Using MRO in AEN*.

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.

Using MRO in AEN

In AEN 4.2.2 and higher, you can choose to create environments with the Microsoft R Open (MRO) interpreter by installing the `mro-base` package, or create environments with the R interpreter by installing the `r-base` package. Unless you request a change, conda will continue to use the existing interpreter in each environment. In AEN `r-base` is the default.

EXAMPLE: To create a custom environment called `mro_env` with MRO and R Essentials:

```
.. code-block:: bash  
  
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \  
    create -c https://repo.anaconda.com/pkgs/main \  
    -n mro_env r-essentials
```

NOTE: Conda 4.4 and higher include the `main` channel by default. Earlier versions of conda do not.

Making a default project environment with MRO

You can also create an environment with MRO and make this the default AEN project environment.

The first time a new project is started, the default project environment is cloned into the new project's workspace.

1. Create a new conda environment in the `/opt/wakari/anaconda/envs/default` directory.

The command is similar to the one used in the previous example to create a custom environment.

```
sudo -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda \  
    create -c https://repo.anaconda.com/pkgs/main \  
    -p /opt/wakari/anaconda/envs/default r-essentials
```

2. Use `conda` to install any additional packages into the environment.
3. After the environment is created, clone it to check that it works correctly, and then clean up the clone.

```
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
```

NOTE: To convert existing projects, see *Converting an existing project*.

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 `polycoreutils-python`. To install `polycoreutils-python`, if needed, run:

```
sudo yum -y install polycoreutils-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)))"
                   },
    "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.
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 from the Admin Settings interface. 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 the value 'Gateway 1'. Below this, there 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": {
```

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```

    "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=100000 | 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.json", "--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"
```

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```
# 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 PYSARK_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.

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

- *Before you upgrade*
- *Upgrading the AEN server node*
- *Upgrading the AEN gateway node*
- *Upgrading AEN compute nodes*
- *After upgrading*

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*
- *AEN 4.1.1 upgrade instructions.*
- *AEN 4.1.0 upgrade instructions.*
- *AEN 4.0.0 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
```

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```
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 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.

5. 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
```

6. Test the offline cloning step:

```
sudo -E -u $AEN_SRVC_ACCT /opt/wakari/anaconda/bin/conda create \
    -p /opt/wakari/testenvoffline \
    --clone root --offline
```

7. Remove the test environments:

```
sudo rm -rf /opt/wakari/testenv
sudo rm -rf /opt/wakari/testenvoffline
```

8. 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
```

9. 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.

- *Uninstalling a server node*
- *Uninstalling a gateway node*
- *Uninstalling a compute node*
- *OPTIONAL: Removing projects from compute nodes*

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' settings are displayed. It features a checkbox labeled 'Open Registration' which is checked, with the text 'Allow new user signups' below it. A green 'Update' button is located at the bottom of the settings panel.

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 into 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 into 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 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.

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

[General](#)
[Accounts](#)
[Users](#)

Users

Username	Projects	Last Seen
aen_admin	6	Sep 25, 2017 10:05:58 CDT

Viewing a list of currently active users

In the AEN navigation bar, click Users.

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.


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:

The Notification Settings section allows you to create a system message that can be relayed to users.

 ANACONDA

[Admin](#) [Users](#)

 anaconda


  

[Help](#)


Users

List of currently active users in the system.

 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

 ANACONDA

AdminUsers

 anaconda

+📁⚙️↗️

Help

Users

List of currently active users in the system.

 anaconda
 andrew
 bokeh
 christine
 guest
 hubert
 ivan
 paula
 simon
 tanya
 wakari

Staff

[Daily Report](#)
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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

By default, notifications are off.

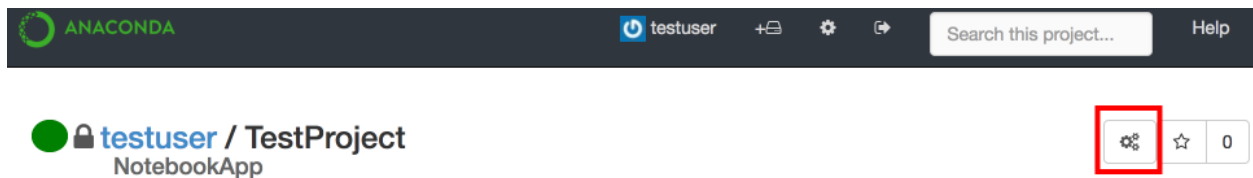
3. To turn on email notifications, select the radio button for the type of email service to use:
 - SES to use Amazon Simple Email Service (SES).
 - SMTP Email Server.
4. If you select SMTP Email Server, complete the SMTP Settings.

NOTE: If you get an error message after changing the SMTP settings, you may need to restart the server.

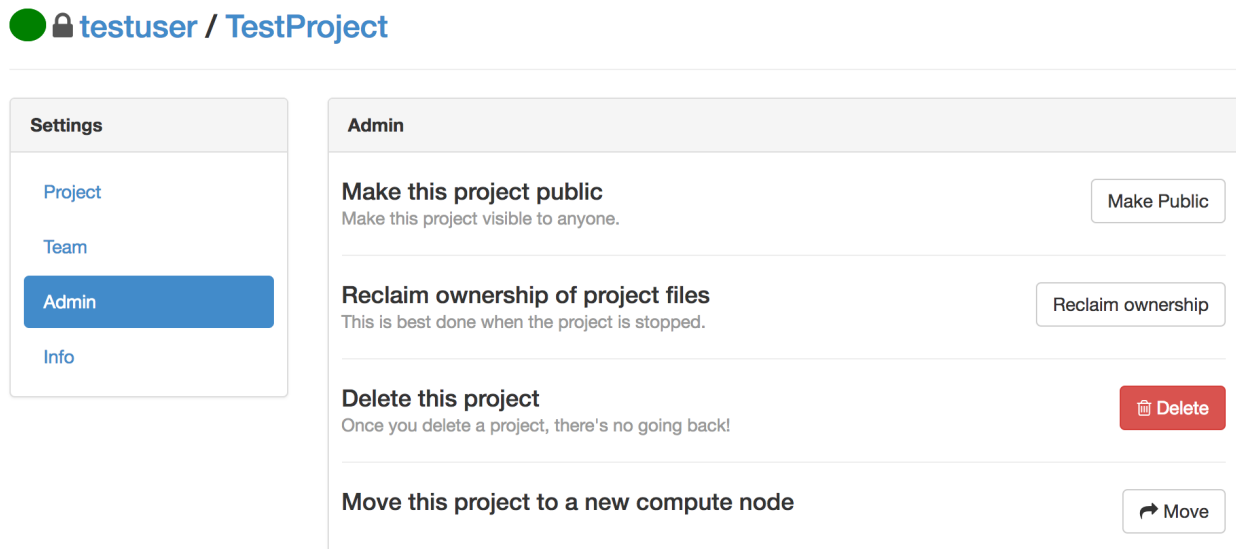
Moving a project to another compute node

If you have multiple compute nodes available and want to move a project from one to another, the project must exist on both nodes.

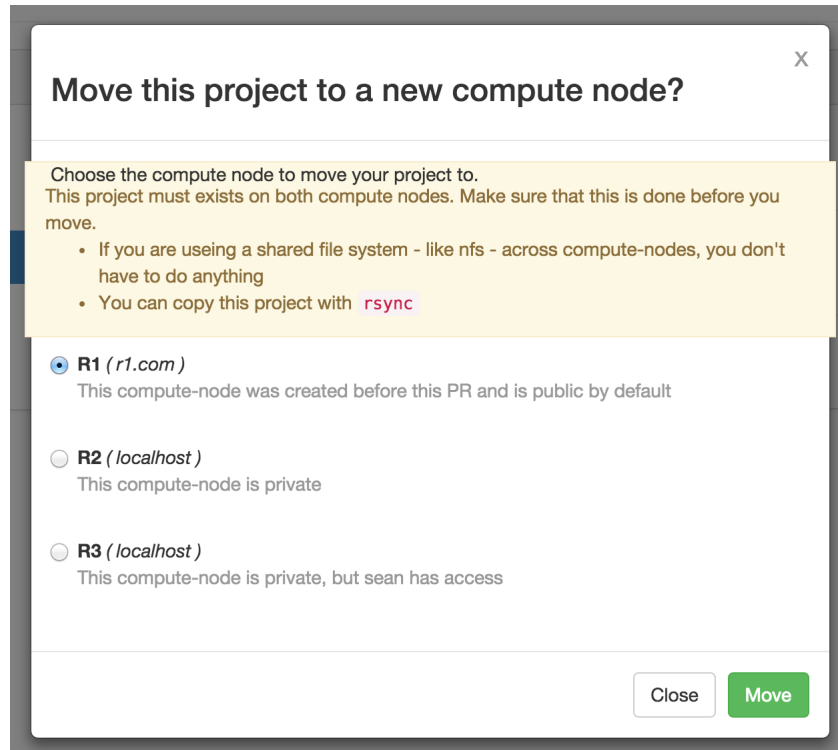
1. Verify that the project has been created on both compute nodes. You can use `rsync` for this job unless you have a shared file system like `nfs`.
2. On the project home page, click the Project Settings icon to open the Project Settings page.



3. In the **Settings** menu, select Admin.



4. Click the 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>
```

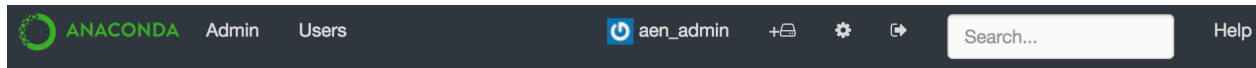
NOTE: Replace <username> with the actual username and <projectname> with the actual project name you are removing.

System management

Opening the Admin dashboard

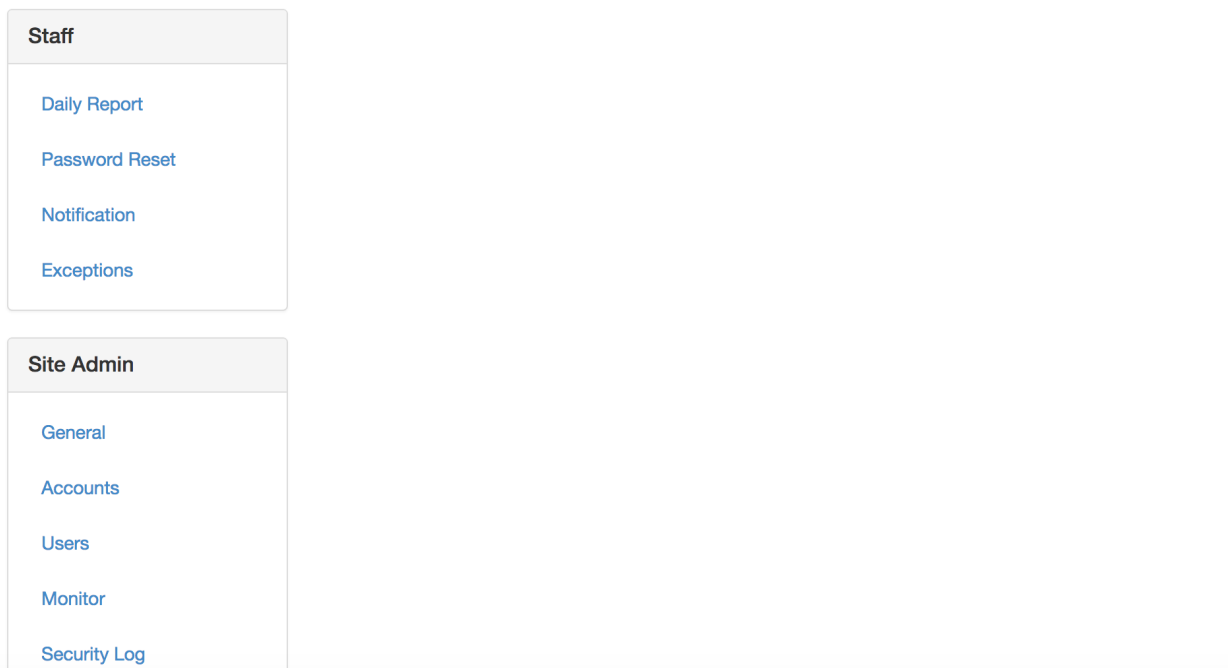
If you have administrator privileges, you see two additional links in the AEN navigation bar—Admin and Users:

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*
- *Important notes*
- *Server component steps*
 - *Backup*

- * *Mongo database*
- * *AEN Server config files (including License file)*
- * *Nginx config (if needed)*
- * *SSL certificates (if needed)*
- *Restore*
 - * *Reinstall AEN-Server*
 - * *Restore Mongo database*
 - * *AEN Server config files (including License file)*
 - * *Nginx config (if needed)*
 - * *SSL certificates (if needed)*
 - * *Restart server*
- *Gateway component steps*
 - *Backup*
 - * *Config files*
 - * *Custom .condarc file (if needed)*
 - * *SSL certificates (if needed)*
 - *Restore*
 - * *Reinstall AEN-Gateway*
 - * *Config files*
 - * *Custom .condarc file (if needed)*
 - * *SSL certificates (if needed)*
 - * *Restart gateway*
- *Compute component steps*
 - *Backup*
 - * *Config files*
 - * *Custom Changes (rare)*
 - * *Create user list*
 - * *Project files*
 - * *Full Anaconda (option 1)*
 - * *Partial Anaconda (option 2)*
 - *Restore*
 - * *Reinstall AEN-Compute*
 - * *Config files*
 - * *Custom changes (rare)*
 - * *Create users*

- * *Project files*
- * *Full Anaconda (option 1)*
- * *Partial Anaconda (option 2)*
- * *Custom environments (if needed)*
- * *Restart compute node*

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
Users	0	1
Projects	0	6

New User Emails

Username	Email
----------	-------

Actions

Count	Action
82	oauth.authenticate

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**. The **Staff** section is currently selected and expanded, showing options: Daily Report, Password Reset, Notification, and Exceptions. The **Exceptions** option is highlighted. The main content area displays a table of exceptions. The first exception is selected, indicated by a red circle around its radio button. The error message is: `jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'`. In the top right corner of the exceptions table, there is a button labeled "Mark all as read".

Exceptions		Mark all as read
<input checked="" type="radio"/>	<code>jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'</code>	
<input type="radio"/>	<code>jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'</code>	
<input type="radio"/>	<code>jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'</code>	
<input type="radio"/>	<code>jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'</code>	
<input type="radio"/>	<code>jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'</code>	
<input type="radio"/>	<code>jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'</code>	
<input type="radio"/>	<code>jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'</code>	
<input type="radio"/>	<code>jinja2.exceptions.UndefinedError: 'wk_server.blueprints.accounts.forms.LoginForm object' has no attribute 'email'</code>	
<input type="radio"/>	<code>elasticsearch.exceptions.ConnectionError:</code>	
<input type="radio"/>	<code>elasticsearch.exceptions.ConnectionError:</code>	
<input type="radio"/>	<code>elasticsearch.exceptions.ConnectionError:</code>	
<input type="radio"/>	<code>elasticsearch.exceptions.ConnectionError:</code>	

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.

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:

5. To close the error details, click the Back link.

Public Profile

Account Settings

Security Log

Applications

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

[← Back](#)

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:

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](#)

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:

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": []}
```

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, :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*
- *Checking the status of gateway node processes*
- *Checking the status of compute node processes*
- *Starting AEN services*
- *Verifying that AEN services are set to start with the system*
- *Stopping AEN services*
- *Restarting AEN services*
- *Identifying extraneous processes*
- *Removing extraneous processes*

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
```

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```
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
```

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```
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 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](#)

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	Terminate	Relaunch	Logs
aen_admin	Test	notebook	running	localhost	Jul 25, 2017 11:54:05 CDT	Terminate	Relaunch	Logs

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.

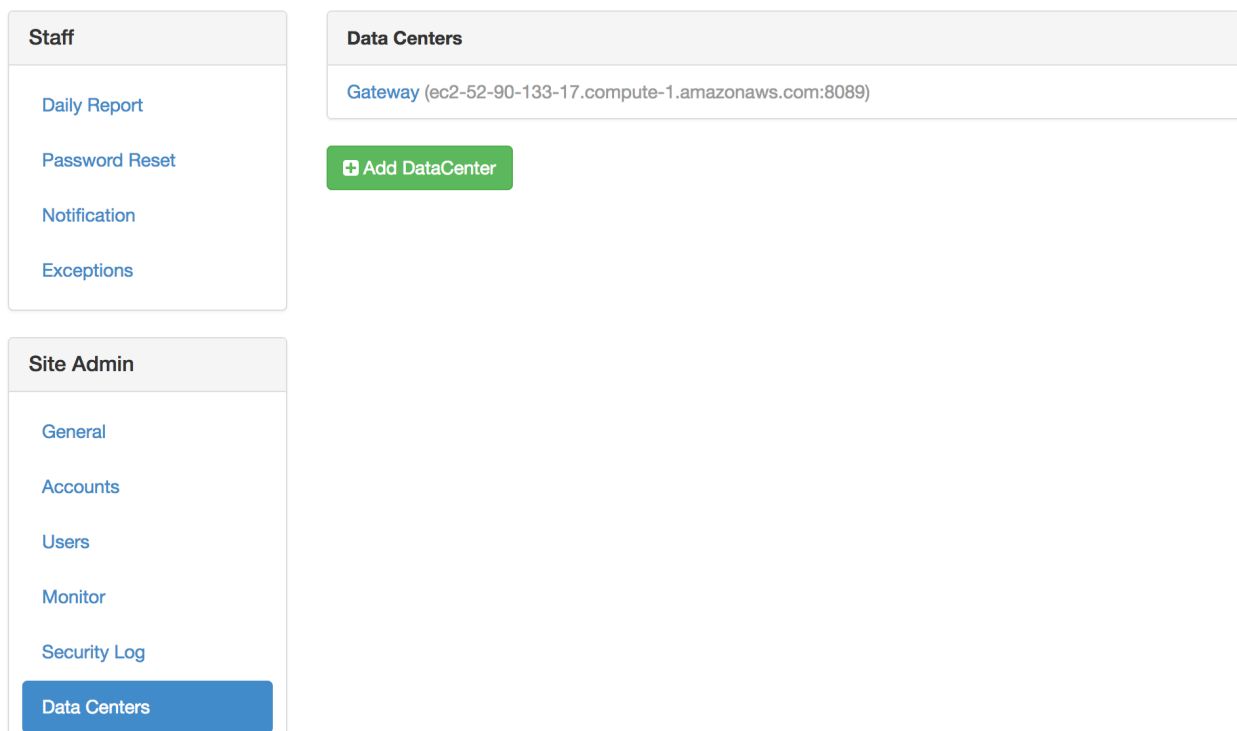
Checking node connections

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*
- *Verifying gateway to compute node connectivity*
- *Verifying gateway to server connectivity*

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	Resources
Daily Report	
Password Reset	
Notification	
Exceptions	

Site Admin
General
Accounts
Users
Monitor
Security Log
Data Centers
Task Queue
License

Providers
Enterprise Resources

Gateway
ec2-54-210-232-251.compute-1.amazonaws.com

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:
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:
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:

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed
Password Reset	<input type="text" value="http://anaconda-enterprise.trl"/>
Notification	Static URL Set static URL where the js can be accessed
Exceptions	<input type="text" value="http://anaconda-enterprise.trl/static/"/>
Site Admin	Default Project Access This will be the default when a user creates a project
General	<input type="radio"/> Public Anyone can see this project. Collaborators have write access
Accounts	<input checked="" type="radio"/> Private No one can see this project except collaborators.
Users	Account Type
Monitor	<input type="text" value="wk_server.plugins.accounts.cloud"/>
Security Log	<input type="button" value="Update"/>
Data Centers	
Task Queue	
License	
Providers	Config Files

Staff

[Daily Report](#)

[Password Reset](#)

[Notification](#)

[Exceptions](#)

Site Admin

General

[Accounts](#)

[Users](#)

[Monitor](#)

[Security Log](#)

[Data Centers](#)

[Task Queue](#)

[License](#)

Providers

General Admin Settings

Wakari Server
Set the main URL where this site will be accessed

Static URL
Set static URL where the js can be accessed

Default Project Access
This will be the default when a user creates a project

☐ Public
Anyone can see this project. Collaborators have write access

☒ Private
No one can see this project except collaborators.

Account Type

Update

Config Files

Staff	General Admin Settings
Daily Report	Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/>
Password Reset	Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/>
Notification	Default Project Access 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.
Exceptions	Account Type <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 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> Wakari Server Set the main URL where this site will be accessed <input type="text" value="http://anaconda-enterprise.trl"/> </div> <div> Static URL Set static URL where the js can be accessed <input type="text" value="http://anaconda-enterprise.trl/static/"/> </div> <div> Default Project Access 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> Account Type <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>Config Files</div>
<div>Providers</div>	

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**.
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 **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.

Staff

[Daily Report](#)
[Password Reset](#)
[Notification](#)
[Exceptions](#)

Site Admin

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Providers

General Admin Settings

Wakari Server
Set the main URL where this site will be accessed

Static URL
Set static URL where the js can be accessed

Default Project Access
This will be the default when a user creates a project

☐ Public
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☒ Private
No one can see this project except collaborators.

Account Type

Update

Config Files

Staff

[Daily Report](#)
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[Exceptions](#)

Site Admin

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[Security Log](#)
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Current License

You have **166 days** remaining on your current license.

Renew your license

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
email	dev@continuum.io

Upload New License

License File

Choose File

No file chosen

Update

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*
- *Browser error: too many redirects*
- *Browser error: too many redirects when starting project apps*
- *Exception: exceptions.TypeError: 'NoneType' object has no attribute '__getitem__'*
- *Error: unix:///opt/wakari/wakari-server/etc/supervisor.sock no such file*
- *Error: “Data Center Not Found” when deleting a project*
- *Forgotten administrator password*
- *Log files being deleted*
- *Error: This socket is closed*
- *Service error 502: Cannot connect to the application manager*
- *502 communication error on Amazon web services (AWS)*
- *Invalid username*
- *Notebook Error: Cannot download notebook as PDF via LaTeX*
- *Unresponsive wk-server thread without error messages*
- *Unresponsive wk-gateway thread without error messages*

- *Error starting projects*
- *Changes in .condarc file are ignored*

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 into 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 into AEN as the administrator user with the new password.

Alternatively you may add an administrator user:

1. Use ssh to log into 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 into 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 into `/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?*
- *Can notebooks be shared with anyone?*
- *Can I disable the option, “publish your notebook to anaconda.org”?*
- *How can I check the version number of my AEN server?*
- *Can I use AEN to access CSV or Amazon S3 data?*
- *Can I install other Python packages?*
- *Can I create a Python environment from the command line?*
- *Can I connect to GitHub with AEN?*
- *Can I print or print preview my Jupyter Notebooks?*
- *Is there a set amount of storage on AEN?*
- *How do I get help, give feedback, suggest features or report a bug?*

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
- 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

Previous version documentation is provided for users who have not yet upgraded to the current version of AEN.

7.4.3 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.

7.5 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 PyPI 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](#).

7.5.1 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.

Getting started

- *Installing Anaconda Client*
- *Finding, downloading and installing packages*
- *Building and uploading packages*
- *Sharing notebooks*
- *Sharing environments*

Installing 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: Client is not necessary to search for and download packages.

This tool can be installed using an Anaconda Prompt or the Terminal application in three ways: with `conda`, with `pip` or with `pip` from source. We recommend using `conda`.

Option 1, `conda`:

```
conda install anaconda-client
```

Option 2, `pip`:

```
pip install anaconda-client
```

Option 3, installing with `pip` from source:

```
pip install git+https://github.com/Anaconda-Platform/anaconda-client
```

After installing, view the complete list of Client tasks with this command:

```
anaconda -h
```

Finding, downloading and installing packages

Searching for public 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 need a Anaconda.org account, to search for public packages, download and install them. You need an account only to access *private packages* without a *token* or to share your packages with others.

To search for packages:

1. In the top Search box, type part or all of the name of a program 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.org search interface. At the top, a search bar contains the text 'quadratic' and a green search button with a magnifying glass icon. Below the search bar is a 'Filters' section with three dropdown menus: 'Type: All', 'Access: All', and 'Platform: All'. Underneath the filters is a table with the following columns: 'Favorites', 'Downloads', 'Package (owner / package)', and 'Platforms'. The table contains one row for the package 'superuser / quadratic_equation'. The 'Favorites' column shows '1', 'Downloads' shows '0', the 'Package' column shows a red notebook icon, the text 'superuser / quadratic_equation', and 'IPython notebook' below it. The 'Platforms' column shows 'ipynt' and 'source'. At the bottom of the table, there are navigation links: '« Previous', 'showing 1 - 1 of 1', and 'Next »'.

For more information, see [Working with packages](#).

Refining your search results

You can filter search results using 3 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.

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.org

You can download and install packages using [Anaconda Navigator](#), the graphical user interface for Anaconda. Advanced users may prefer a terminal window or command 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. Sign Navigator into Anaconda.org so you can search for packages marked as private. Click the top right Sign in to Anaconda Anaconda.org button and type your Anaconda.org username and password, then click the Login button.
3. On the **Environments** tab, in the far-right Search packages box, enter the name of the desired package.
4. In the list to the left of Channels, select either Not installed or All, then click the Search button.
5. Select the checkbox of the package you want to install, then click the Apply button.

For more information, see [Navigator](#).

Using conda in a Terminal window or Anaconda Prompt

To download and install a package into its own environment:

1. Locate a package on Anaconda.org that you want to download, 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:

```
conda install -c username packagename
```

NOTE: For the following examples to work, you need to have [conda downloaded](#) and installed.

TIP: Conda expands `username` to a URL such as <https://anaconda.org/username>, based on the settings in the `.condarc` file.

Building and uploading packages

[Open a Anaconda.org account](#) to upload packages or to access private packages without a token.

To build and upload packages, install the Client command line interface (CLI). For more information, see [Installing Anaconda Client](#).

Use the Terminal window or an Anaconda Prompt to perform the following steps.

1. Install Anaconda Client:

```
conda install anaconda-client
```

2. Log into your Anaconda.org account:

```
anaconda login
```

At the prompt, enter your Anaconda.org username and password.

3. Choose the package you would like to build. For this example, 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 .
```

- Find the path to where the newly-built file was placed so you can use it in the next step:

```
conda build . --output
```

- Upload your newly-built test package to your Anaconda.org account:

```
anaconda login
anaconda upload /your/path/conda-package.tar.bz2
```

NOTE: Replace `/your/path/` with the actual path that you found in the previous step.

For more information, see [conda packages](#).

Sharing notebooks

To share a [Jupyter notebook](#)—formerly IPython notebook—on Anaconda.org:

- To Upload your notebook to Anaconda.org, open the Terminal or an Anaconda Prompt and enter:

```
anaconda upload my-notebook.ipynb
```

NOTE: Replace `my-notebook` with the actual name of your notebook.

- You can see an HTML version of your notebook stored at:

```
http://notebooks.anaconda.org/<USERNAME>/my-notebook
```

NOTE: Replace `<USERNAME>` with your username, and `my-notebook` with the actual name of your notebook.

- Anyone who has access to Anaconda.org can download your notebook. To download the notebook, open the Terminal or an Anaconda Prompt and enter:

```
anaconda download username/my-notebook
```

NOTE: Replace `username` with your username, and `my-notebook` with the actual name of your notebook.

Sharing environments

To share an environment on Anaconda.org:

- See the [conda user guide](#) to create and save a conda environment. Open the Terminal or an Anaconda Prompt and enter:

```
conda env export -n my-environment -f my-environment.yml
```

NOTE: Replace `my-environment` with the actual name of your environment.

- Upload it to Anaconda.org either using the web interface or the `anaconda upload` command.

- Using the web interface:

Go to <https://anaconda.org/USERNAME/environments>.

NOTE: Replace USERNAME with your username.

In the top right corner use the Upload button to upload your environment.

- Using the `anaconda upload` command from the Terminal window or an Anaconda Prompt:

```
anaconda upload my-environment.yml
```

NOTE: Replace `my-environment` with the actual name of your environment.

3. You can see a list of your uploaded environments at:

```
http://envs.anaconda.org/<USERNAME>
```

NOTE: Replace `<USERNAME>` with your username.

4. Anyone can download and install your environment from Anaconda.org.

- Using the web interface:

Go to `https://anaconda.org/USERNAME/environments`.

NOTE: Replace USERNAME with the username.

Select the environment, click the Files tab, and under the Names field click the file to download.

- Using the Terminal or an Anaconda Prompt:

```
conda env create user/my-environment
source activate my-environment
```

NOTE: Replace `my-environment` with the actual name of your environment.

How to...

- *Use packages*
- *Use the Anaconda Client CLI*
- *Build packages*

Use packages

Finding a package

In your browser, you can search Anaconda.org for packages by package name. From the top navigation bar of any page, enter the package name in the search box. You can filter your searches to specify only conda or PyPI packages, and you can sort results by number of favorites or number of downloads by clicking the search results column heading.

Downloading and installing a package from Anaconda.org

To install a conda package, in your Terminal window or Anaconda Prompt run:

```
conda install -c username packagename
```

Conda expands `username` to a URL such as <https://anaconda.org/username> or <https://conda.anaconda.org/username> based on the settings in the `.condarc` file.

NOTE: Replace `username` with your username, and `packagename` with the actual name of the package.

Downloading and installing a PyPI package from Anaconda.org

To install a PyPI package, in your Terminal window or Anaconda Prompt run:

```
pip install --index-url pypi.anaconda.org/USERNAME/simple packagename
```

NOTE: Replace `USERNAME` with your username, and `packagename` with the actual name of the package.

Use the Anaconda Client CLI

Installing Client

For installation and setup instructions, see [Install Anaconda Client](#).

Finding my Client login credentials

Your credentials for Client are those you used to create an account on Anaconda.org.

To get help:

1. Go to <https://anaconda.org>.
2. Select the **Sign In** tab.
3. Click either [I forgot my password](#) or [I forgot my username](#).

Logging into Client

After you have downloaded and configured Client, open a Terminal window or an Anaconda Prompt and run:

```
anaconda login
```

Displaying a list of Client commands

From a Terminal window or an Anaconda Prompt, run:

```
anaconda --help
```

Finding out more about a Client command

From a Terminal window or an Anaconda Prompt, run:

```
anaconda COMMANDNAME -h
```

NOTE: Replace `COMMANDNAME` with the name of the command about which you want more information.

Listing all available Client configuration files

From a Terminal window or an Anaconda Prompt, run:

```
anaconda config --files
```

Listing all of your Client configuration variables

From a Terminal window or an Anaconda Prompt, run:

```
anaconda config --show
```

Finding out more about Client

You can learn more about Client using the help command, documentation, or by visiting the [Nucleus Community forums](#) for free community support.

Build packages

Building and uploading a package

For a quick example, see *Building and uploading packages* in *Getting started*.

Testing a built package

In your Terminal window or Anaconda Prompt run:

```
conda create --use-local -n test PACKAGENAME
```

Specify the `--use-local` option.

NOTE: Replace PACKAGENAME with the actual name of the package.

Uploading a package to Anaconda.org

In a Terminal window or Anaconda Prompt, run:

```
anaconda upload PACKAGENAME
```

NOTE: Replace PACKAGENAME with the actual name of the package.

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, in a Terminal window or Anaconda Prompt run:

```
anaconda upload -h
```

Tutorial

Using labels in the development cycle

Anaconda.org *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. With labels you can upload a file to a specific label, so only users who put that label in the URL they search are able to find it.

Using Anaconda Client, *package* developers can create additional labels such as development labels/dev, test labels/test or other labels that are searched only if the user specifies the label. The following search examples use a *namespace* of travis:

- <https://anaconda.org/travis/labels/main> – the label searched by default.
- <https://anaconda.org/travis> – same as default label with main implicit.
- <https://anaconda.org/travis/labels/dev> – contains the packages in development.
- <https://anaconda.org/travis/labels/test> – contains packages ready to test.
- <https://anaconda.org/travis/labels/any-custom-label> – any label you want to use.

In this example, we show you 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.

Use the Terminal window or an Anaconda Prompt to perform the following steps:

1. Let us start 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 Anaconda.org using the Client *upload* command.

Adding the `--label` option tells Anaconda.org 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 actual path 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.

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
```

You can also manage your package labels from your dashboard: <https://anaconda.org/USERNAME/conda-package>.

Your version 2.0 is now in main:

```
conda search --override -c USERNAME conda-package
```

NOTE: Replace 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.

Tasks

Working with accounts

- *Personal accounts*
- *Organization accounts*

Personal accounts

Overview

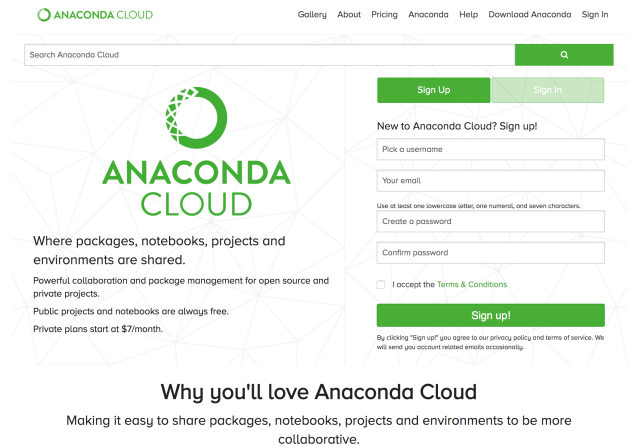
This section explains how to create a free, personal account, log in and out, and access the settings and features of different types of accounts.

Creating a free account

All Anaconda.org users can find, download and use packages without having a Anaconda.org account.

However, you need to create a Anaconda.org account to:

- Author packages.
- Upload packages, notebooks and environments.
- Access shared, private packages.
- Create organizations.



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.
NOTE: There is also a **Sign In** tab for existing users.

3. Select 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 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 free account, logs you in and displays your personal dashboard.

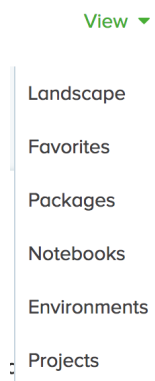
Tip: Anaconda.org displays your profile photo if the email address you used to register on Anaconda.org is associated with a Gravatar account. To associate your email address or to change your Gravatar profile photo, go to gravatar.com.

When you are logged into Anaconda.org, the Profile list appears at the top right of every page. This indicates the name of the currently active user or organization.



The View menu contains these options:

- Landscape: Your home page.
- Favorites: Packages from other users you have starred.
- Packages: Only packages you have created.
- Notebooks: Only notebooks you have created.
- Environments: Only environments you have created.
- Projects: Only projects you have uploaded.



Packages, notebooks and environments that you have created with this account appear on your dashboard. For more information, see [packages](#).

Resetting your password

The **Sign In** tab provides two links to help regain access to your account:

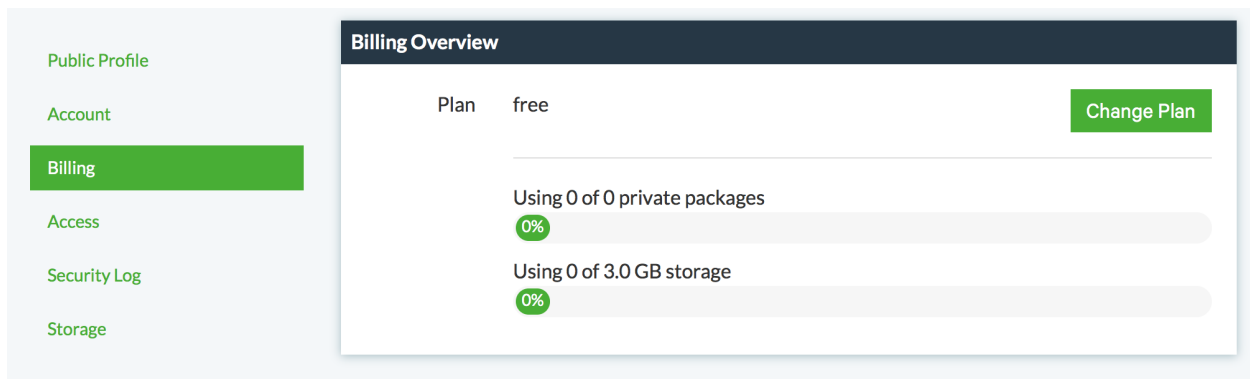
- I forgot my username. Click this link to have the username emailed to the email address of record.
- I forgot my password. Click this link to have a reset password link sent to the email address of record.

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 support@anaconda.com for assistance.

Upgrading or downgrading your plan

To change a Anaconda.org plan:

1. Log in to the Anaconda.org account that you want to change.
2. At the top right of the Anaconda.org interface, in the Profile list, select Settings.
3. Select the Billing option.



4. Click the Change Plan button.
5. Select the desired plan.

If you are moving from a free to a charged plan, enter your credit card information, and then click the OK button.

NOTE: If you need more private packages or storage space than is included in a personal plan, [contact Anaconda](#) so we can customize a plan for you.

NOTE: If you need assistance with billing questions, you can [contact Anaconda](#).

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

You can generate tokens using the Web UI or Anaconda Client.

NOTE: By default, tokens expire after one year.

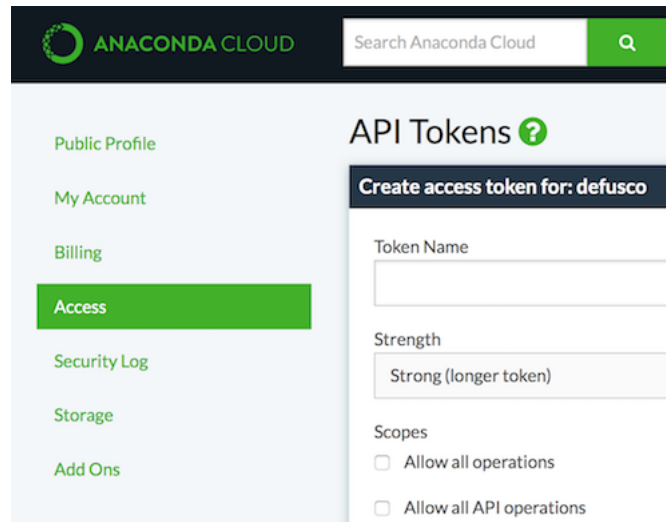
To generate a token using the Web UI:

1. Navigate to:

```
https://anaconda.org/<channel>/settings/access
```

NOTE: Replace <channel> with the actual channel name.

2. From here you can select a name for the token and set the required scopes.



To generate a token with Client:

1. In your Terminal window or Anaconda Prompt run:

```
anaconda auth --create --name YOUR-TOKEN-NAME --scopes 'repos conda:download'
```

NOTE: Replace YOUR-TOKEN-NAME with the token name you want.

2. 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.
3. It can be enabled with the `conda config` command. In your Terminal window or Anaconda Prompt run:

```
conda config --add channels https://conda.anaconda.org/t/<token>/<channel>

Add a channel with a token and a label::

conda config --add channels https://conda.anaconda.org/t/<token>/<channel>/
↪label/<labelname>

NOTE: Replace ``<token>`` with your token string, ``<channel>`` with the channel_
↪name,
``<labelname>`` with the label name used in :ref:`cloud-accounts-generate`.
```

NOTE: If you lose the random alphanumeric string, you need to *revoke the token* and create a new one.

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.

NOTE: Tokens provide access to all packages within a specified channel. Separate permissions per package, notebook or environment may be better handled with *organizations* and *groups*.

Revoking tokens

You can revoke tokens using the Web UI or Anaconda Client.

To revoke a token using the Web UI, navigate to the following URL:

```
https://anaconda.org/<channel>/settings/access
```

NOTE: Replace `<channel>` with the actual channel name.

To revoke a token using Client, in your Terminal window or Anaconda Prompt run:

```
anaconda auth -r YOUR-TOKEN-NAME
```

NOTE: Replace `YOUR-TOKEN-NAME` with the token name you want to revoke.

Organization accounts

Overview

You can create a *Anaconda.org organization* to:

- Share packages, environments or notebooks under an organization's account rather than your personal account.
- Assign multiple account administrators.
- Assign different access permissions to groups of users and customize per-package access by group.
- Host more, larger packages.

Working with organizations

- *Creating an organization*
- *Deleting an organization*
- *Customizing users and groups*
- *Uploading packages to an organization*
- *Creating groups for differing access levels*

Organizations enable you to maintain group-owned repositories and set access levels for various users in the group.

Creating an organization

To create an organization:

1. Log in to Anaconda.org.
2. In the Tools list, select Organizations, and then scroll to the bottom of the page.
3. Supply an organization name.

NOTE: Organization names cannot include spaces or special characters.

4. Supply an email address, 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.

In the Tools list, the Group Membership option shows a list of all organizations to which you belong.

Deleting an organization

To delete an organization you administer and erase all data associated with it:

1. At the top right of the Anaconda.org 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 then requests that you provide the full name of the organization.

Customizing users and groups

To add, remove, or edit group and user access for an organization you administer:

1. At the top right of the Anaconda.org interface, in the Profile list, select the desired organization profile.
2. In the Tools list, select Groups.

3. You can review and edit the current group and user access for an organization, as well as add new groups and users at this address: <https://anaconda.org/<OrgName>/groups/>

NOTE: Replace <OrgName> with the organization name.

NOTE: Users receive a dashboard notification when you add them to an organization.

Uploading packages to an organization

To upload a package to an organization, use the `-u/--user` option and in the Terminal window or an Anaconda Prompt, run:

```
anaconda upload --user ORGANIZATION package.tar.bz2
```

NOTE: Replace `ORGANIZATION` with the organization name, and `package.tar.bz2` with the actual name of the package.

NOTE: Only the co-owners of an organization may upload packages to the organization.

Creating groups for differing access levels

Within an organization, you can create a group to customize access for a group of users. There are four types of permissions you can grant:

- **Read:** 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, cannot delete or transfer the package and cannot lock and unlock labels.
- **Admin:** Provides access do everything except uploading new packages (admin users can still upload to an existing package) and lock and unlock labels.
- **Owners:** The user has full control over the organization and group.

To create a group and set access levels:

1. Click the +New Group button.
2. Give the group a name, and assign the desired permissions– Read-Only, Read-Write or Administration.
3. Add the desired members by username in the Members box.
4. Add the packages which this group can access in the Packages box.
5. Click the Save Group button.

Working with packages

- *Overview*
- *Using package managers*
- *Uploading packages*
- *Using private packages*

- *Removing a previous version of a package*
- *Adding a collaborator to a package*
- *Removing a collaborator from a package*
- *Transferring a package to a new owner*
- *Copying a package*
- *Deleting a package*
- *Using the .conda compression format*

Overview

All files uploaded to Anaconda.org are stored in packages. Each Anaconda.org 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.

Users can create a Anaconda.org package and then upload files into it. 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.

For more information, see *package*.

Note: Throughout this task, replace placeholder text like `USERNAME` and `PACKAGENAME` with the text specific to your project.

Namespaces

A namespace is the part of Anaconda.org where a user or organization may host packages. For example, the user namespace <https://anaconda.org/travis> contains packages that were uploaded and shared by a user named `travis`.

For more information, see *namespace*.

Labels

A label is part of the URLs on Anaconda.org 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`.

For more information, see *label*.

Using package managers

Anaconda.org supports two types of packages, *conda* and *Standard Python* packages. To work with conda or Standard Python packages, you must use their corresponding subdomains:

- To install conda packages from the user `travis`, use the repository URL `https://conda.anaconda.org/travis`
- To install Standard Python packages from the user `travis`, use the repository URL `https://pypi.anaconda.org/travis`

Conda packages

Uploading conda packages

This example shows how to build and upload a [conda](#) package to Anaconda.org using `conda build`.

Use the terminal window or an Anaconda Prompt to perform the following steps:

1. Before you start, 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, [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.

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 the [Anaconda](#) `conda-bld` directory.

4. You can check where the resulting file was placed with the `--output` option:

```
conda build . --output
```

5. You can upload the test package to Anaconda.org with the Anaconda [upload](#) command:

```
anaconda login
#packages can be uploaded with .tar.bz2 or .conda compression formats
anaconda upload /path/to/conda-package.tar.bz2
anaconda upload /path/to/conda-package.conda
```

Note: Replace `/path/to/` with the actual path where you stored the package.

See [Using the .conda compression format](#) for more information on the `.conda` format.

For more information on conda's overall build framework, you may also want to read the articles [Building conda packages](#).

Installing conda packages

You can install conda packages from Anaconda.org by adding channels to your conda configuration.

Use the terminal window or an Anaconda Prompt to perform the following steps:

1. Because conda knows how to interact with Anaconda.org, specifying the channel `sean` translates to <https://anaconda.org/sean>:

```
conda config --add channels sean
```

2. 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
```

3. You can 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 a user channel, `labelname` with the label name and `package` with the package name you want to install.

Standard Python packages

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 window or an Anaconda Prompt to perform the following steps:

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 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>.

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. In your terminal window or an Anaconda Prompt, run:

```
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 prefixed with `/t/$TOKEN` to access private packages.

In your terminal window or an Anaconda Prompt, run:

```
TOKEN=$(anaconda auth --create --name YOUR-TOKEN-NAME)
pip install --index-url https://pypi.anaconda.org/t/$TOKEN/USERNAME/simple-test-
↪package
```

Note: Replace `YOUR-TOKEN-NAME` with the name of the token you created, `USERNAME` with your username and `simple-test-package` with the actual test-package name.

Uploading packages

1. To upload package files to Anaconda.org, use the terminal window or an Anaconda Prompt and the *upload* command:

```
anaconda login
anaconda upload PACKAGENAME
```

Anaconda.org automatically detects packages and notebooks, package or notebook types, and their versions.

2. Your package is now available at:

```
https://anaconda.org/USERNAME/PACKAGENAME
```

3. Your package also can be downloaded by anyone using Client from the terminal window or an Anaconda Prompt:

```
anaconda download USERNAME/PACKAGENAME
```

Using private packages

It is no longer possible to sign up for an individual paid plan with private packages. Anyone who had private packages in the past still has the ability to have those hosted privately.

By default, all packages, notebooks, and environments uploaded to Anaconda.org are accessible to anyone who has access to the repository.

Packages uploaded to your user channel on Anaconda.org can be marked as private using the Web UI:

1. Select the desired package.
2. Select the **Settings** tab.
3. Select Admin in the sidebar.
4. Alternatively, you can reach this page with the following URL:

```
https://anaconda.org/username/package/settings/admin
```

Note: Jupyter notebooks and conda environments can also be marked private using this procedure and URL.

Note: Other Anaconda.org users may access your private packages either with tokens or by logging in.

Private packages with tokens

Note: Replace `token` with the provided token, `channel` with a user channel, `labelname` with the label name, and `packagename` with a package name you want to install.

To make your private packages available to be accessed with tokens:

1. First create an access *token* that includes the following scope for Client:

```
conda:download
```

Or, in the Web UI with:

```
Allow private downloads from conda repositories
```

The token is a random alphanumeric string and this is used to install a package or add a channel from which you want to install private packages.

2. Using the provided token, a user channel can be added to `config` from the terminal window or an Anaconda Prompt with:

```
conda config --add channels https://conda.anaconda.org/t/token/channel
```

3. The token can also be used to install packages without first adding the channel. In the terminal window or an Anaconda Prompt, run:

```
conda install -c https://conda.anaconda.org/t/token/channel packagename
```

To install a package from a channel using token and label name:

```
conda install -c https://conda.anaconda.org/t/token/channel/label/labelname_↵  
↵packagename
```

4. Private PyPI packages can also be installed in the Web UI:

```
https://pypi.anaconda.org/t/token/channel
```

Private packages with login

To make your private packages available to users who have logged in:

1. Create an *organization*.
2. Create a group in that organization, which may be a read-only group.
3. Add to the group the users that you want to grant access to.
4. Upload the package to the organization, or transfer an existing package to the organization.

After you grant them access, other users can download and install your package using the Web UI or Client.

To download a package:

1. In a browser, navigate to the desired channel.
2. If the organization name is `OrgName` and the package name is `conda-package`, use these commands in the terminal window or an Anaconda Prompt:

```
conda install anaconda-client
anaconda login
conda install -c OrgName conda-package
```

Or instead:

```
conda install anaconda-client
anaconda login
conda install -c https://conda.anaconda.org/OrgName conda-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. 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 may instead use the terminal window or an Anaconda Prompt:

1. Run:

```
anaconda remove USERNAME/PACKAGENAME/0.2
```

Note: Replace `USERNAME` with your username, `PACKAGENAME` with the package name and `0.2` with the desired version.

2. You can now see the change on your profile page:

```
https://anaconda.org/USERNAME/PACKAGE
```

Adding a collaborator to a package

You can add other users that are not part of an organization to collaborate on your packages. You will need the usernames of the other users.

1. From your dashboard, select the package by clicking on its name.
2. To display the package settings, select the Settings option.
3. To display the current collaborators, select the Collaborators option.
4. Type the username of the person you want to add as a collaborator, and then click the Add button.

Note: All collaborators are given full read/write permissions to the package, even private packages.

Removing a collaborator from a package

To revoke package access previously granted to a collaborator:

1. From your dashboard select the package by clicking on its name.
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 button 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 the Transfer button.
5. Select the organization name for the new owner.
6. Click the Transfer Ownership button.

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`.

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 run `anaconda copy --from-channel conda-forge --to-channel jsmith glueviz`, you will receive an error that Label `conda-forge` does not exist.

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.

Deleting a package

To delete a package from Anaconda.org, including all of its versions:

1. Select the package name.
2. Select the Settings option.
3. In the left sidebar, select Admin.
4. Click Delete.

You may instead use the terminal window or an Anaconda Prompt:

1. Run:

```
anaconda remove USERNAME/PACKAGENAME
```

2. You can now see the change on your profile page:

```
https://anaconda.org/USERNAME
```

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(extention 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.
↪015 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 2.365
↪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.

Working with notebooks

To begin working with Jupyter Notebooks, see the [Official Jupyter Notebook documentation](#).

To share a [Jupyter notebook](#) on Anaconda.org:

1. Save a notebook.
2. Download and check out the handy JupyterLab and Jupyter Notebook cheat sheet to create and save a notebook.
3. To upload your notebook to Anaconda.org, open Anaconda Prompt or Terminal and enter:

```
anaconda upload my-notebook.ipynb
```

NOTE: Replace `my-notebook` with the actual name of your notebook.

4. You can see an HTML version of your notebook stored at:

```
http://notebooks.anaconda.org/<USERNAME>/my-notebook
```

NOTE: Replace `<USERNAME>` with your username, and `my-notebook` with the actual name of your notebook.

5. Anyone who has access to Anaconda.org can download your notebook. To download the notebook, open Anaconda Prompt or Terminal and enter:

```
anaconda download username/my-notebook
```

NOTE: Replace `username` with your username, and `my-notebook` with the actual name of your notebook.

Working with environments

To share an environment on Anaconda.org:

1. See the [conda user guide](#) to create and save a conda environment. Open the Terminal or an Anaconda Prompt and enter:

```
conda env export -n my-environment -f my-environment.yml
```

NOTE: Replace `my-environment` with the actual name of your environment.

2. Upload it to Anaconda.org either using the web interface or the `anaconda upload` command.

- Using the web interface:

Go to <https://anaconda.org/USERNAME/environments>.

NOTE: Replace `USERNAME` with your username.

In the top right corner use the Upload button to upload your environment.

- Using the `anaconda upload` command from the Terminal or an Anaconda Prompt:

```
anaconda upload my-environment.yml
```

NOTE: Replace `my-environment` with the actual name of your environment.

3. You can see a list of your uploaded environments at:

```
http://envs.anaconda.org/USERNAME
```

NOTE: Replace `USERNAME` with your username.

4. Anyone can download and install your environment from Anaconda.org.

- Using the web interface:

Go to `https://anaconda.org/USERNAME/environments`.

NOTE: Replace `USERNAME` with the username.

Select the environment, go to Files tab and click the file to download under Names field.

- Using the Terminal or an Anaconda Prompt:

```
conda env create user/my-environment
source activate my-environment
```

NOTE: Replace `my-environment` with the actual name of your environment.

Working with 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. 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.

Use the Terminal window or an Anaconda Prompt to upload the spreadsheet:

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 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` and the full filename is `baby-names1.csv`.

Downloading other file types

Files, such as the one created above, are available at:

```
https://anaconda.org/<USERNAME>/<PACKAGENAME>
```

Anyone can download these files using Client from the Terminal window or an Anaconda Prompt:

```
anaconda download <USERNAME>/<PACKAGENAME>
```

NOTE: Replace <USERNAME> with the desired username, and <PACKAGENAME> 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`.

7.5.2 FAQs

- *What is Anaconda.org?*
- *What kind of packages does Anaconda.org support?*
- *Who can find and install my packages?*
- *What is Anaconda, Inc.?*
- *What are Anaconda.org's Terms and Conditions?*
- *How much does Anaconda.org cost?*
- *How do I get started with Anaconda.org?*
- *What kind of account do I have?*
- *What is included in the free version of Anaconda.org?*
- *What is an organization account, and how is it different from an individual account?*

What is Anaconda.org?

Anaconda.org is a package management service by Anaconda. For more information, see [Anaconda.org](https://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.

7.5.3 Help and support

Joining community support

We invite you to join our [Nucleus community forums](#), where you can ask questions, answer questions, and discuss ways to use Anaconda.org. You also can submit requests for new features and make any other comments you may have.

Reporting a bug

Please use the Anaconda.org page [Report a Bug](#) to find the correct point of contact to report the bug you are experiencing. When reporting bugs on GitHub, please search to see if anyone else has reported it, and make a new issue if no one else has.

7.5.4 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 ot 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
  login                 Authenticate a user
```

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logout	Log out from Anaconda.org
notebook	[DEPRECATED in favor of upload/download] Interact with notebooks in anaconda.org
package	Package utils
remove	Remove an object from Anaconda.org . Must refer to the formal package name as it appears in the URL of the package. Also use <code>anaconda show <USERNAME></code> to see list of package names. Example: <code>anaconda remove continuumio/empty-example-notebook</code>
search	Search Anaconda.org
show	Show information about an object
upload	Upload packages to Anaconda.org
whoami	Print the information of the current user
build	Anaconda build client for continuous integration, testing and building packages
worker	Anaconda build client for continuous integration, testing and 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
```

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```
-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

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
  -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]
```

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```

[-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:

        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

```

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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
```

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```

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

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].

```

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```

        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

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

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.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)
```

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```

--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

```

7.5.5 Release notes

Changelog

2.36.1 – 2022-06-09

User-facing changes

- 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

User-facing changes

- 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.
- 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

User-facing changes

- 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

User-facing changes

- 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

User-facing changes

- 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 partly package metadata copying, implement support of PUT and PATCH operations for package copying

2.35.2 - 2021-01-11

User-facing changes

- 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

User-facing changes

- Fixed CIBUILD anaconda-client install

2.35.0 - 2020-11-24

User-facing changes

- 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

User-facing changes

- Removed /about/pricing
- Allow the disabling of new Personal and Organization private accounts via Stripe API

2.33.26 - 2018-07-19

User-facing changes

- Captcha on organization creation

2.33.25 - 2018-07-19

User-facing changes

- Captcha on account creation

2.33.24 - 2018-07-03

User-facing changes

- Removed 'Pricing' links from header and footer

7.5.6 Glossary

- *Anaconda*
- *Anaconda.org*
- *Anaconda Client CLI*
- *Binstar*
- *conda*
- *conda build*
- *conda package*
- *label*

- *Miniconda*
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Anaconda

An easy-to-install, free collection of open source packages, including Python and the conda package manager, with free community support. Over 150 packages are installed with Anaconda. After installing Anaconda, you can install or update over 250 additional open source packages contained in the Anaconda repository using the `conda install PACKAGENAME` command.

NOTE: Replace `PACKAGENAME` with the name of the desired package.

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 PyPI 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 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, download and install them.

For more information, see the [introduction to 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.

Binstar

Binstar was an early project name for Anaconda.org. You may still see the term Binstar in certain command and directory names.

conda

The conda package manager and environment manager program that installs and updates packages and their dependencies, and lets you easily switch between environments on your local computer.

conda build

The command line interface that lets you build packages for your local operating system.

conda package

A compressed file containing system-level libraries, Python modules, executable programs or other components. The file uses the tarball format.

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](#). Like [Anaconda](#), Miniconda is a software package that includes the conda package manager and Python and its dependencies. However, Miniconda does not include any other packages. Once conda is installed by installing either Anaconda or Miniconda, you can install other software packages directly from the command line using `conda install`.

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.

on-site repository

Anaconda.org is powered by Anaconda Repository by Anaconda, Inc. You can run your own private repository behind firewalls or in air-gapped environments. For more information, contact sales@anaconda.com.

organization account

An organization account is a type of account on Anaconda.org that allows multiple individual users to administer packages and control package access to different user groups. It also includes a large amount of storage space.

package

All files uploaded to Anaconda.org are stored in packages. Each Anaconda.org 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.

For example, if a user `travis` uploads a test package named `testpkg`, it is visible at:

```
https://anaconda.org/travis/testpkg
```

Anaconda.org packages may contain multiple files, and these files may be data files such as comma separated value (CSV), tab separated value (TSV), or text (TXT), or package files such as conda packages, PyPI packages or R packages.

NOTE: All packages are public if uploaded by users of free accounts. Packages may be designated as private by upgrading to a paid account.

package manager

A package manager is a tool that facilitates the process of installing, upgrading, configuring and removing packages, including the packages on Anaconda.org. Anaconda.org supports two package managers, [conda](#) and PyPI.

For more information, see [using package managers](#).

repository

A storage location from which software packages may be retrieved and installed on a computer.

source package

“Source” packages are source code only, not yet built for any specific platform, and might be compatible with all, some or only one of the platforms.

token

A token—or authentication token—is the mechanism by which anonymous users can download private packages without using a Anaconda.org account. It is an alpha-numeric code that is inserted into a URL that allows access by anyone who has the URL. You can use Client to generate new tokens to give other users specifically scoped access to packages and collections.

7.6 Anaconda Embedded

The Anaconda Embedded Program allows you to power your products and services with the world's most popular open-source package distribution.

Anaconda Embedded enables you, as a product or service provider, to offer a seamless Python interface for your customers or use Anaconda behind the scenes to power your offering. All Embedded partners receive access to Anaconda's professional repository, experts, and developers, as well as additional benefits like SLAs, co-marketing, and custom development opportunities.

Look for the “Powered By Anaconda” logo to identify products and services that are backed by Anaconda's packages and software.

Learn more about Anaconda Embedded and contact a representative from the [Anaconda Embedded](#) product page.

7.7 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.

For more information, contact sales at sales@anaconda.com.