Conda and Installations

Information

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Overview

- Conda Basics
- Conda Enviornments
- Conda Install
- Managing Conda
- Anaconda GUI
- Conda on Summit

Conda Documentation

- Conda: https://docs.conda.io/projects/conda/en/latest/user-guide/index.html
- Anaconda: https://docs.anaconda.com/

Conda basics

- Conda is an open source package manager developed by the Anaconda.
- Primarily used with Python and Rstudio
- Conda != Anaconda
  - Conda: Package and Environment Manager
  - Anaconda: Conda w/ Python and various tools.
- 2 Ways to install
  - Miniconda – https://docs.conda.io/en/latest/miniconda.html
  - Anaconda – https://www.anaconda.com/
- We will be using miniconda today! (Anaconda works too if already installed)

Miniconda Installation

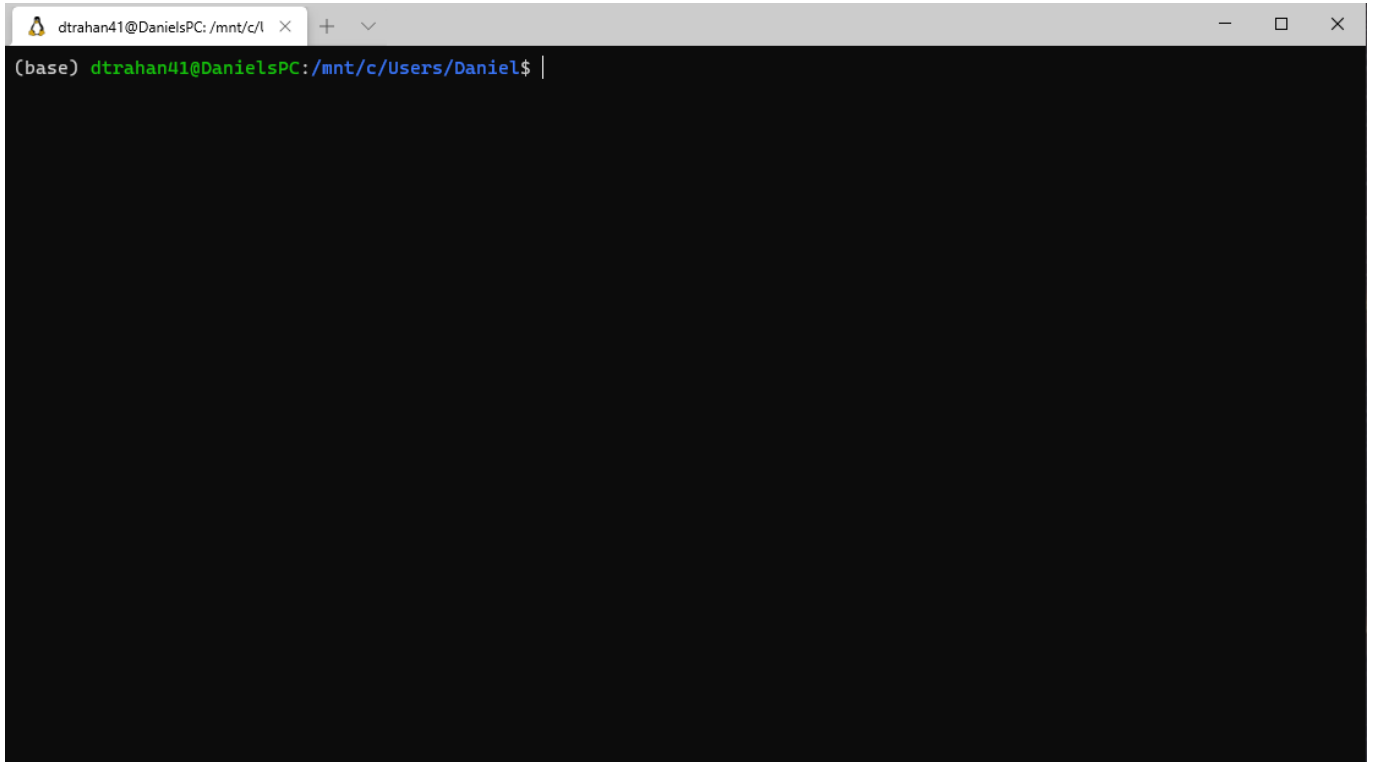
- To install Miniconda,
  1. Download the Miniconda installation utility for your platform of choice
  2. Follow the instructions prompted by the installer
  3. Open a terminal to access conda
- Linux Users:
  1. Download the shell script.
  2. Run the shell script and specify your desired installation directory
  3. Open a terminal to access conda
- Go ahead and open a terminal or a miniconda terminal

Opening Miniconda

- Open Terminal
  - “(base)” prefix prepends prompt.
  - Will show current conda environment.
- Run the command:

```
conda help
```

…to validate your installation .



Anatomy of Conda commands:

- Conda commands all come in the form:

```
conda <sub-command> --flags <additional-parameters>
```

- Where `<sub-command>` refers to a Conda command group and where `<additional-parameters>` refers to any additional variables that can passed to the sub-command.
- Example:

```
conda install -c conda-forge tensorflow
```

Conda Environments

- Reminder: Conda is both a package and an environment manager.
- Conda environments allow you to set up compartmentalized installations of software.

- Create an environment with:

```
conda create –n <your-environment-name>
```

- Activate an environment with:

```
conda activate <your-environment-name>
```

- Once activated, the “(base)” prefix will change to your chosen env name.

More on Conda Environments

- Conda also allows for the creation of certain environments in external directories with the `--prefix` flag.

```
conda create --prefix=/path/ <your-environment-name>
```

- List currently available environments:

```
conda info --envs
```

- Deactivate an environment with:

```
conda deactivate
```

Why use Conda Environments?

- Conda environments are useful because software installations may require various dependencies that may or may not conflict with your current applications.
- Conda environments are also disposable, and can be easily discarded.
- Recommendation: Keep base installation relatively clean and use environments to isolate installations.

Conda Install (1)

- Installing packages is a relatively simple task with Anaconda.
- You can install a package by running the command:

```
conda install <package>
```

- Running this command will install `<package>` to your current conda environment.
- You can specify a version of the package to install by assigning the package a version number.

```
conda install <package>=<version>
```

Conda Install (2)

- Conda also allows for the installation of software to a new custom environment through the conda create command:

```
conda create -n <your-environment-name> <package1> <package2>=version
```

- List out what software you have installed in your current environment with:

```
conda list
```

- This command will create the environment specified by `<your-environment-name>` and install `<package1>` and `<package2>` to the environment.

Example

- Create a conda environment named notebook with the package jupyter.
- Once the environment is created and software is installed run the command jupyter-notebook.

- Hint: Make sure you have the new environment loaded!

Example: Answer

- Create the environment and install with the command:

```
conda create –n notebook jupyter
```

- Load the environment:

```
conda activate notebook
```

- Run Jupyter:

```
jupyter-notebook
```

Conda Channels

- Conda packages can be installed from various sources beyond the Anaconda channel.
- A “channel” is a directory that holds packages that conda can install.
- This can done the `conda install` command:

```
conda install -c <channel> <package1>
```

- Popular channels include
  - Conda Forge
  - intel
  - Bioconda

Conda Config

- Conda provides various settings within a specialized file in called .condarc.
- Normally located in your home directory but accessible anywhere you can run anaconda.
- You can show the contents of these files using the command:

```
conda config --show
```

- You can then add or remove to these files using the conda

```
conda config --add channels conda-forge
conda config --remove channels conda-forge
```

Environment Sharing

- Anaconda allows for environment sharing through the exporting of environments.

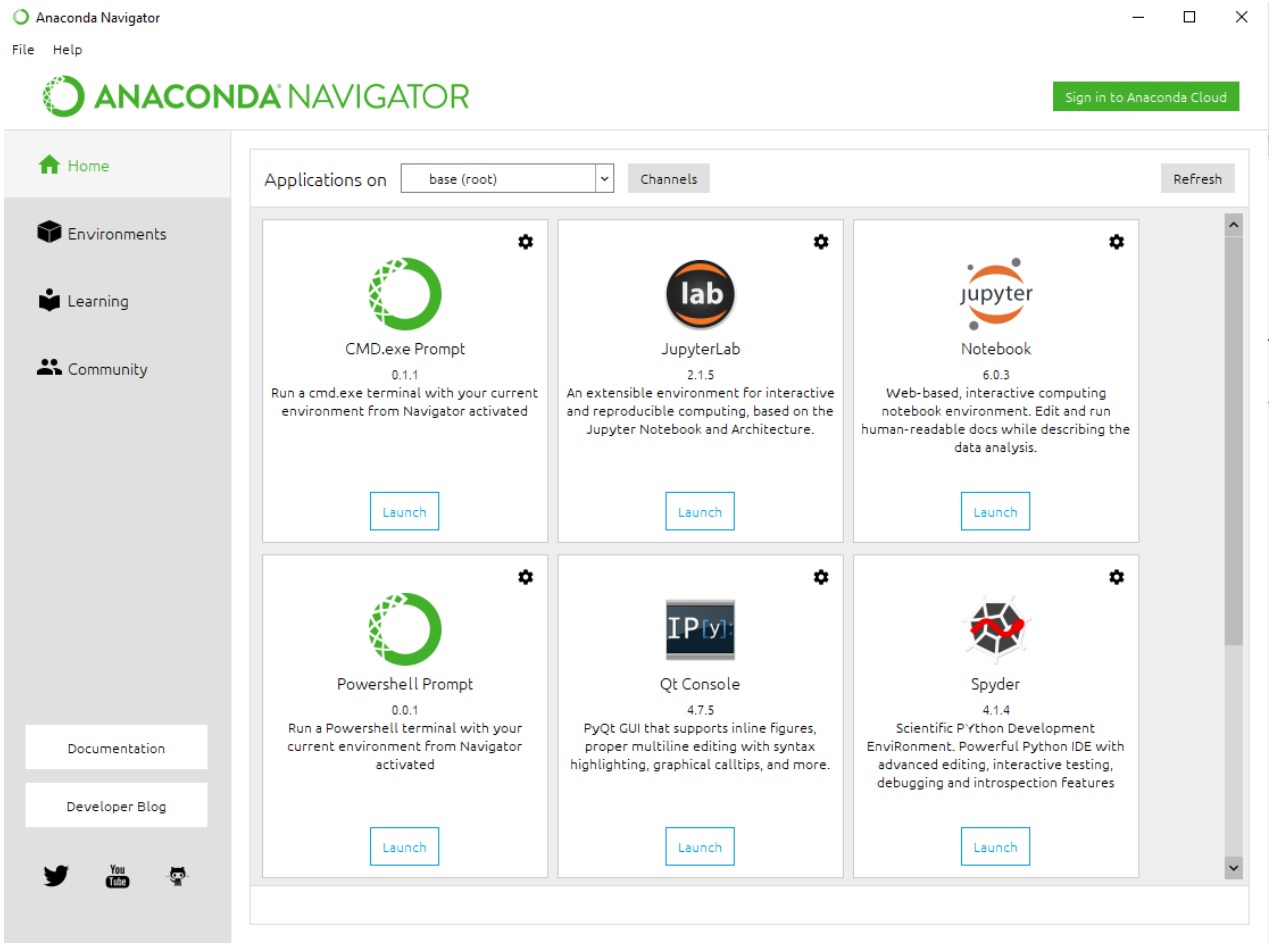
```
conda env export > environments.yml
```

- Another user can then generate a new environment based on your packages with:

```
conda create -n <new-environment-name> --file environments.yml --prune
```

Anaconda GUI

- Anaconda provides a GUI to access all of the features of conda and more!



Conda on Summit (1)

- Summit users have access to Conda as well!
- Once logged in and on a compile node run the commands:

```
source /curc/sw/anaconda3/latest
conda config --add pkgs_dirs /projects/$USER/.conda_pkgs
conda config --add envs_dirs /projects/$USER/software/anaconda/envs
```

- After setup, simply create a conda environment and install whichever software you'd like.
  - Installations must occur within a conda environment
  - Environments are stored within your projects directory at: `/projects/$USER/software/anaconda/envs`

Conda on Summit (2)

- Notes on using conda on Summit:
  - Users must load conda into their shell within every instance of a new shell to access their environments. This is done with:

```
source /curc/sw/anaconda3/latest
```

  - RC offers their own publicly available environment that can be loaded with the command:

```
conda activate idp
```

  - More information on Conda on Summit can be found here: https://curc.readthedocs.io/en/latest/software/python.html

Questions?

Thanks!

- Survey: http://tinyurl.com/curc-survey2018
- Email: Daniel.Trahan@colorado.EDU
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