Software distribution with Conda

Conda package manager

Conda is a cross-platform, language-agnostic binary package manager

- Open Source and main developer is Continuum Analytics
- Anaconda Python distribution
- Miniconda minimal Python distribution
- conda build for building packages
- Anaconda Cloud for hosting packages
- Possibiliby to host your own packages and channels

Channels

Conda channels are the locations where packages are stored

- **Defaults**: Maintained by Continuum Analytics Provides optimized BLAS support in numpy (Intel MKL) Tensorflow with Cuda support tensorflow-gpu
- **Conda-forge**: Maintained by the open source community More packages than in the defaults channel Updated more frequently

Order of channels matter for resolving dependencies

conda config --add channels conda-forge
conda config --append channels conda-forge

Custom Channels

Ability to create custom channels for software that is not available in other channels

.tps:// anaconda.org /tango-controls/repo			•••
O ANACONDA CLC	OUD Searc	h Anaconda Cloud Q	View 🔻 Help 🔻 🇱 maxiv 🕶
tango-cont	rols / p	ackages	
Packages		Files	Install Instructions
▼ Filters			
Type: all ∽		Access: all 🗸	Label: all ~
Package Name	Access	Summary	🗕 Updated
🔿 tango-test	public	TangoTest device server	2020-05-18
🔿 cpptango	public	Tango-Controls C++ library	2020-05-14
🔿 tango-idl	public	A software toolkit for building control systems	2020-05-14
🔿 itango	public	An interactive Tango client	2020-04-03
🔿 pytango	public	Python binding for the TANGO control system	2019-08-11
🔿 tango	public	A software toolkit for building control systems	2019-03-15
O omniorb	public	Robust high performance CORBA ORB for C++ and	Puthon 2018-10-25

Building own packages with conda-build

conda-build mypackage

```
{% set version = "9.3.2" %}
1
2
3
     package:
       name: pytango
4
      version: {{ version }}
5
6
7
   v source:
8
       url: https://github.com/tango-controls/pytango/archive/v{{ version }}.tar.gz
9
       patches: libtango.patch
10
11 v build:
12
      number: 5
13 vrequirements:
14 v build:
15
         - {{ compiler('cxx') }}
     host:
16 💌
17

    cpptango

18
         - python
19
         - boost
20
         - numpy
21

    cppzmq

22 💌
       run:
23
         - python
24
         - cpptango
25
         - {{ pin_compatible('boost', max_pin='x.x') }}
26
         - numpy
```

Conda environments

A conda environment is a directory that contains a specific collection of conda packages that you have installed

Create new environment

conda create -n myenv python=3.8 numpy h5py scipy

Activate environment

conda activate myenv

Install package in current environment

conda install matplotlib

List packages in current environment

conda list

Conda at MAX IV

Compute cluster

module load Anaconda3/2020.02

Shared Conda on NFS

/mxn/groups/pub/sw/pkg/anaconda3

source /mxn/groups/pub/sw/source_me_for_anaconda

User environments will be installed in Home directory by default (they can get quite large, be careful with disk quota)

In [1]: conda info

active environment	: analysis	
active env location	: /home/clemens/miniconda3/envs/analysis	
shell level	: 2	
user config file	: /home/clemens/.condarc	
populated config files	: /home/clemens/.condarc	
conda version	: 4.8.3	
conda-build version	: 3.18.11	
python version	: 3.8.2.final.0	
virtual packages	:glibc=2.31	
base environment	: /home/clemens/miniconda3 (writable)	
channel URLs	: https://conda.anaconda.org/maxiv/linux-64	
	https://conda.anaconda.org/maxiv/noarch	
	https://conda.anaconda.org/conda-forge/tinux-64	
	https://conud.anaconud.org/conud-forge/hoarch	
	https://repu.anaconda.com/pkgs/main/tinux-04	
	https://repo.anaconda.com/pkgs/main/hoarch	
	https://repo.anaconda.com/pkgs/r/tindx-04	
nackage cache	· /home/clemens/miniconda3/nkgs/1/houren	
puckage cache	/home/clemens/.conda/nkgs	
envs directories	: /home/clemens/miniconda3/envs	
	/home/clemens/.conda/envs	
platform	: linux-64	
user-agent	: conda/4.8.3 requests/2.23.0 CPython/3.8.2 Linux/5.6.	
15-arch1-1 arch/ glibc/2	.31	
UID:GID	: 1000:1000	
netrc file	: None	
offline mode	: False	

Note: you may need to restart the kernel to use updated packages.