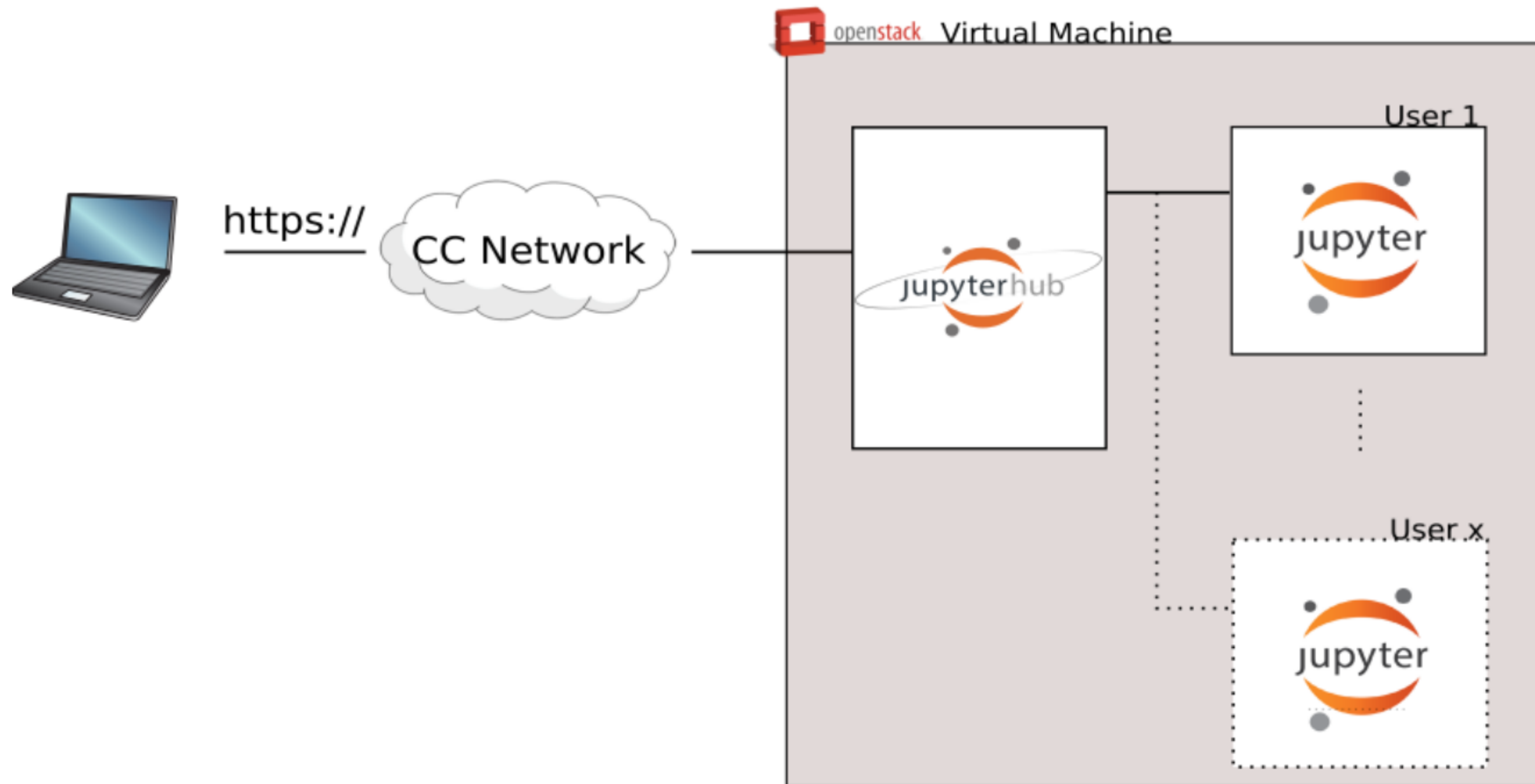
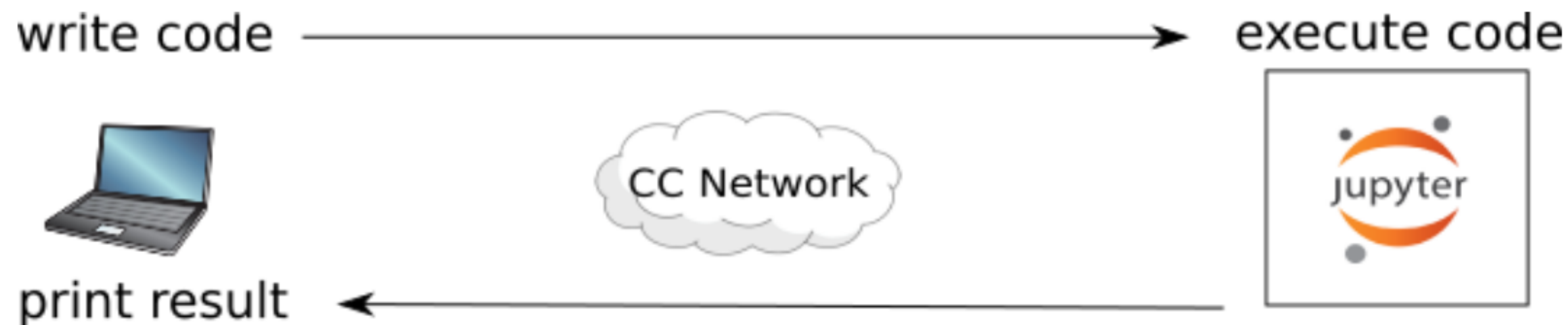


# PYTHON & LSST STACK TRAINING SESSION

## JUPYTERHUB PLATFORM





AstropyExample Last Checkpoint: an hour ago (read only) Control Panel Logout

File Edit View Insert Cell Kernel Widgets Help Not Trusted | Isst-stack

Code

```
In [1]: import numpy as np
import matplotlib
import matplotlib.pyplot as plt
%matplotlib inline
```

The following line is needed to download the example FITS files used here.

```
In [2]: from astropy.utils.data import download_file
```

### Viewing and manipulating FITS images

```
In [3]: from astropy.io import fits
```

```
In [4]: image_file = download_file('http://ccosvm0883.in2p3.fr:8080/bertrand/examples/wise-m51-band4.fits', cache=True )
Downloading http://ccosvm0883.in2p3.fr:8080/bertrand/examples/wise-m51-band4.fits [Done]
```

### Opening FITS files and loading the image data

I will open the FITS file and find out what it contains.

```
In [5]: hdu_list = fits.open(image_file)
hdu_list.info()
```

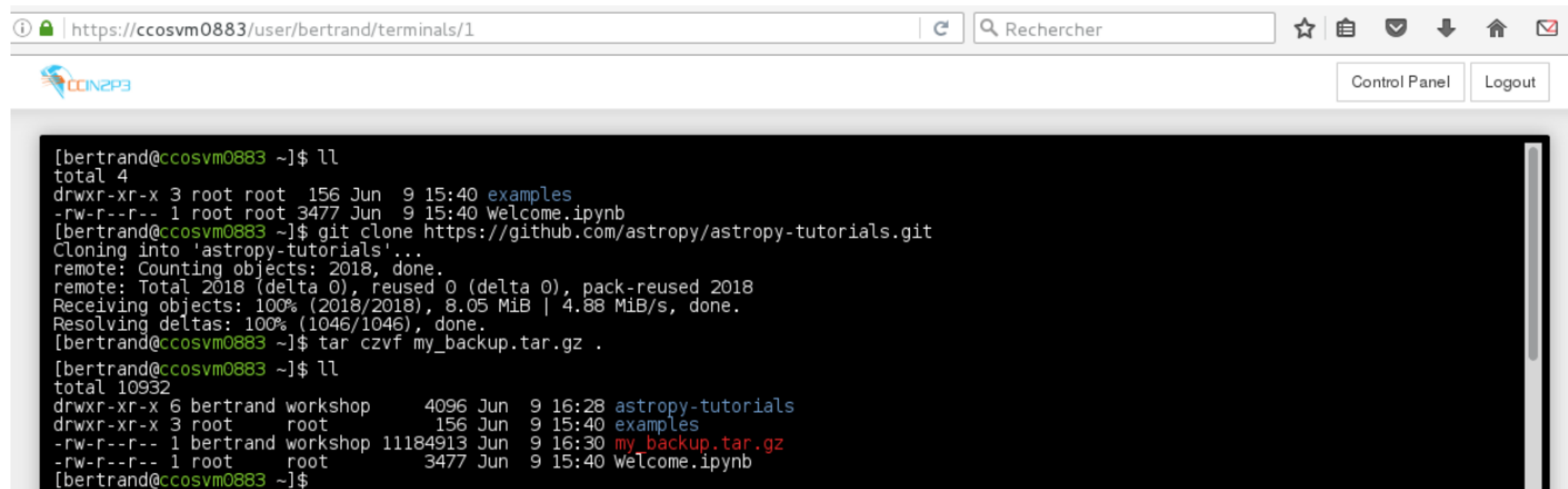
```
Filename: /mnt/users/bertrand/.astropy/cache/download/py3/93ef44a8b08d256791c650777f110ce4
No.  Name      Type      Cards  Dimensions Format
0  PRIMARY  PrimaryHDU  59     (438, 438) float32
```



# Anaconda environment with 3 available "kernels"

The screenshot shows the CCIN2P3 Anaconda web interface. At the top left is the CCIN2P3 logo. At the top right are buttons for 'Control Panel' and 'Logout'. Below the logo are tabs for 'Files', 'Running', and 'Clusters'. The 'Files' tab is active, showing a file browser with the text 'Select items to perform actions on them.' Below this, there are three items: a folder icon, a folder named 'examples', and a file named 'Welcome.ipynb'. To the right of the file browser are buttons for 'Upload', 'New', and a refresh icon. The 'New' dropdown menu is open, showing a list of options under the heading 'Notebook:'. The options are 'Python 2', 'Python 3', and 'Isst-stack'. Below this, under the heading 'Other:', are the options 'Text File', 'Folder', and 'Terminal'.





The screenshot shows a terminal window within a web browser. The browser's address bar displays the URL `https://ccosvm0883/user/bertrand/terminals/1`. The browser's search bar contains the word "Rechercher". In the top right corner of the terminal interface, there are buttons for "Control Panel" and "Logout". The terminal itself shows the following sequence of commands and output:

```
[bertrand@ccosvm0883 ~]$ ll
total 4
drwxr-xr-x 3 root root 156 Jun  9 15:40 examples
-rw-r--r-- 1 root root 3477 Jun  9 15:40 Welcome.ipynb
[bertrand@ccosvm0883 ~]$ git clone https://github.com/astropy/astropy-tutorials.git
Cloning into 'astropy-tutorials'...
remote: Counting objects: 2018, done.
remote: Total 2018 (delta 0), reused 0 (delta 0), pack-reused 2018
Receiving objects: 100% (2018/2018), 8.05 MiB | 4.88 MiB/s, done.
Resolving deltas: 100% (1046/1046), done.
[bertrand@ccosvm0883 ~]$ tar czvf my_backup.tar.gz .
[bertrand@ccosvm0883 ~]$ ll
total 10932
drwxr-xr-x 6 bertrand workshop 4096 Jun  9 16:28 astropy-tutorials
drwxr-xr-x 3 root root 156 Jun  9 15:40 examples
-rw-r--r-- 1 bertrand workshop 11184913 Jun  9 16:30 my_backup.tar.gz
-rw-r--r-- 1 root root 3477 Jun  9 15:40 Welcome.ipynb
[bertrand@ccosvm0883 ~]$
```



**Do not use Safari (mac users)**

**Protocol is https but certificate for this session is home made**

**Turn off Docker**

**Keep your tickets during the entire session**



Thanks for your attention and happy coding ;)

Any questions?

[bertrand.rigaud@cc.in2p3.fr](mailto:bertrand.rigaud@cc.in2p3.fr)

