Jupyter Notebook/Lab

Project Jupyter Notebook and Lab interfaces are available on the CBS cluster, using a server/client model where the computation is performed on a Grid node and the presentation is done by a web browser running on the local system. Consequently, the startup requires **two** steps.

Step 1: Launch the Jupyter server

Use one of these two calls, depending which interface you would like to use:

To launch Jupyter Notebook, type "**notebook**":

```
[rp2927@researchgrid ~]$ notebook
[I 11:35:39.414 NotebookApp] JupyterLab extension loaded from /apps/anaconda3/lib/python3.7/site-
packages/jupyterlab
[I 11:35:39.414 NotebookApp] JupyterLab application directory is /apps/anaconda3/share/jupyter/lab
[I 11:35:39.420 NotebookApp] Serving notebooks from local directory: /user/rp2927
[I 11:35:39.420 NotebookApp] The Jupyter Notebook is running at:
[I 11:35:39.421 NotebookApp] http://research12.gsb.columbia.edu:8888/?
token=ad6bc92f594a24ccf8d06630af567c4e06f8d6a276a07e2c
[I 11:35:39.421 NotebookApp]  or http://127.0.0.1:8888/?token=ad6bc92f594a24ccf8d06630af567c4e06f8d6a276a07e2c
[I 11:35:39.421 NotebookApp] Use Control-C to stop this server and shut down all kernels (twice to skip
confirmation).
[W 11:35:39.436 NotebookApp] No web browser found: could not locate runnable browser.
[C 11:35:39.436 NotebookApp]

    To access the notebook, open this file in a browser:
        file:///user/rp2927/.local/share/jupyter/runtime/nbserver-11525-open.html
    Or copy and paste one of these URLs:
        http://research12.gsb.columbia.edu:8888/?token=ad6bc92f594a24ccf8d06630af567c4e06f8d6a276a07e2c
     or http://127.0.0.1:8888/?token=ad6bc92f594a24ccf8d06630af567c4e06f8d6a276a07e2c
```

To launch JupyterLab, type "**jupyterlab**":

```
[rp2927@researchgrid ~]$ jupyterlab
[I 11:33:49.377 LabApp] JupyterLab extension loaded from /apps/anaconda3/lib/python3.7/site-packages/jupyterlab
[I 11:33:49.378 LabApp] JupyterLab application directory is /apps/anaconda3/share/jupyter/lab
[I 11:33:49.383 LabApp] Serving notebooks from local directory: /user/rp2927
[I 11:33:49.383 LabApp] The Jupyter Notebook is running at:
[I 11:33:49.383 LabApp] http://research11.gsb.columbia.edu:8888/?
token=65952ed7074b1bf25c96823c4c82bd8076d3ec59f57d1862
[I 11:33:49.383 LabApp]  or http://127.0.0.1:8888/?token=65952ed7074b1bf25c96823c4c82bd8076d3ec59f57d1862
[I 11:33:49.383 LabApp] Use Control-C to stop this server and shut down all kernels (twice to skip confirmation).
[W 11:33:49.400 LabApp] No web browser found: could not locate runnable browser.
[C 11:33:49.400 LabApp]

    To access the notebook, open this file in a browser:
        file:///user/rp2927/.local/share/jupyter/runtime/nbserver-18017-open.html
    Or copy and paste one of these URLs:
        http://research11.gsb.columbia.edu:8888/?token=65952ed7074b1bf25c96823c4c82bd8076d3ec59f57d1862
     or http://127.0.0.1:8888/?token=65952ed7074b1bf25c96823c4c82bd8076d3ec59f57d1862
```

As seen in these two examples, both calls will display a short preamble detailing the Jupyter running context, and then print the URLs that can be used to connect to the server.

Only the highlighted URL, containing the "gsb.columbia.edu" address, can be used to connect from the local systems (laptop, personal workstation) !!

Step 2: Connect the local web browser to the Jupyter server

Copy the URL that contains a "gsb.columbia.edu" address and paste it into a web browser running on your local machine (laptop). The familiar Jupyter Notebook and JupyterLab interface will open.

Obs.: Because JupyterLAb is a server extension of the Jupyter Notebook server, you can launch the Lab by calling "notebook" and visiting the /lab URL. More importantly, read JupyterLab URLs (https://jupyterlab.readthedocs.io/en/latest/user/urls.html#urls) to learn how to use URLs to manage workspaces, or to access specific notebooks or files.

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