

Jupyter on NAF

Introduction

We have a JupyterHub instance on <https://naf-jhub.desy.de> which is reachable from worldwide IP ranges, not just the DESY network. In order to use the JupyterHub you need a NAF account, see [Getting a NAF account](#) for details.

Starting Jupyter

To start a Jupyter Job on the NAF JupyterHub, login with your DESY credentials and select Job options like your primary group and whether you wish to use a GPU slot.

You then need to wait until HTCondor starts your jupyter job and the notebook server is spawned. This takes about 20, so don't be too impatient.

Once your server starts you see your AFS \$HOME and can start a new Notebook by clicking on the "New" "Notebook" "Python 3"



Deutsches Elektronen-Synchrotron DESY
A Research Centre of the Helmholtz Association

Log in with DESY Account

Username:

Password:

[Sign In](#)

Welcome to the JupyterHub for NAF Users

In order to login into the JupyterHub you must have your DESY credentials prepared for NAF access. Please follow the documentation of your experiment/group to gain full access to the NAF. You may also be interested in our other services, like the DESY supercomputer Maxwell.

News

- The Primary Group can now be selected from a dropdown menu. For most users the *default* setting will be sufficient. November 7th, 2019
- Hub was interrupted shortly, should work again now. November 7th, 2019
- JupyterHub beta phase is now open for users. November 1st, 2019

Useful Links

- [Jupyter on NAF Confluence Page](#)
- [Jupyter Notebook Documentation](#)

Administration

- If you encounter issues with the JupyterHub, please send an email to unix@desy.de
- or open a ticket in the request tracker rt-system.desy.de directly

JupyterHub for NAF is powered by HTCondor and BIRD



Please contact unix@desy.de if you experience problems with the NAF Jupyterhub

Jupyter on NAF Options

Select Primary Group

Select GPU node

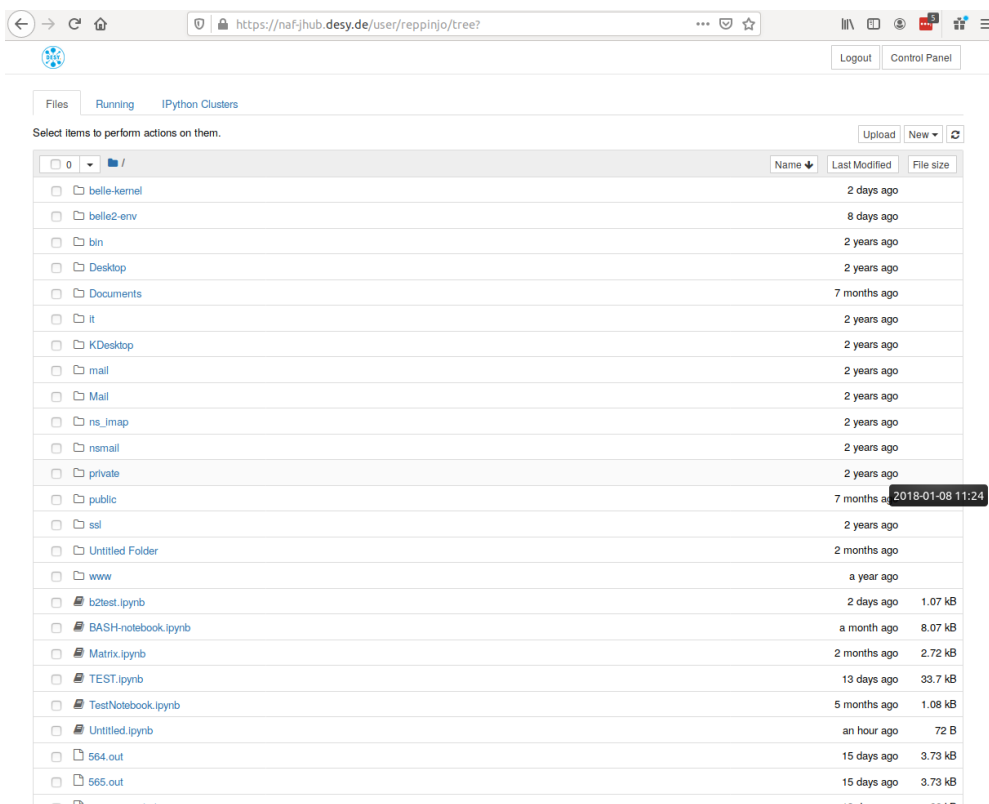
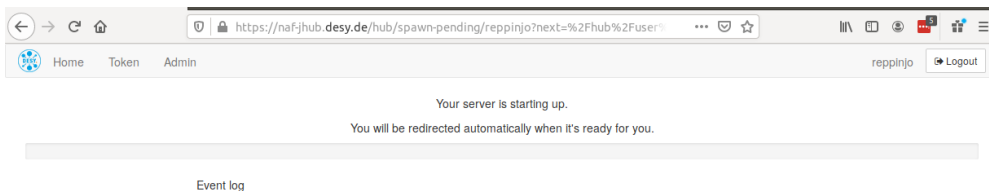
Note: The *nafgpu* resource is needed for GPU nodes

Jupyter Launch Modus

Extra notebook CLI arguments

Environment variables (one per line)

[Spawn](#)



ROOT Notebooks

We have ROOT installed on the *Batch nodes*. To use the Python bindings, simply

```
import ROOT
```

in a Python3 Notebook . Or Select the ROOT C++ Kernel directly from the dropdown menu.

For more information, see the official ROOT documentation https://root.cern.ch/notebooks/HowTos/HowTo_ROOT-Notebooks.html

JupyterLab User Extensions

If users want to use their own extensions they need to build jupyter lab in their HOME directory. Execute the following command from a jupyter session terminal (new Terminal)

```
jupyter lab build --app-dir=.local/share/jupyter/lab
```

Then selecting "JupyterLab with user extensions" on the Jupyter Spawn options page will launch jupyterlab from your \$HOME directory and user extensions can be added.

Using Python Virtualenvs

It is recommended to use virtualenv for your environment. To install a new virtualenv with the desired \$NAME in your AFS home open a terminal ("New" Terminal") and run the following command:

```
python3 -m venv ~/.$NAME
```

And to add the virtualenv to your jupyter notebook session first activate the virtualenv and install the ipython kernel

```
source ~/.$NAME/bin/activate
```

```
pip install ipykernel
```

```
ipython kernel install --user --name=${DISPLAY-NAME}
```

Where \${DISPLAY-NAME} is the text you want to appear in the jupyter notebook selection menu, it does not have to be the same as <NAME>

You can now start jupyter notebooks with the virtualenv kernel

Error Handling

Our current implementation of the JupyterHub is not perfect, here are the errors we are aware of and what to do about them.

Timeout during Spawn

if the spawn of the server takes more than 120 seconds, meaning if HTCondor job doesn't start in this time, the job is cancelled and the JupyterHub returns an error.

This can have various reasons, most likely it's general disturbance in the *BIRD* service and not directly related to the JupyterHub. If you encounter this kind of issue and there is no notification on the login page, send an email to unix@desy.de

Server didn't respond in 60 seconds

This is an error that occurs when the HTCondor job for the jupyter notebook get scheduled but when it starts the node does not have AFS and the job goes into *hold* state.

At the moment the JupyterHub does not recognise this properly and thinks the jobs started and waits for the notebook to become reachable which never happens.

In the future we will implement a proper error handling. At the moment users should send a quick email to unix@desy.de with the error message. We will then disable the node and fix the AFS issues.

Could not find local schedd Error

If you get an error "Could not find local schedd" you simply need to log out and log in again.

The error results from the login cookie being valid but the kerberos token having expired. A fresh login creates a new kerberos token and the error does not appear any longer.

