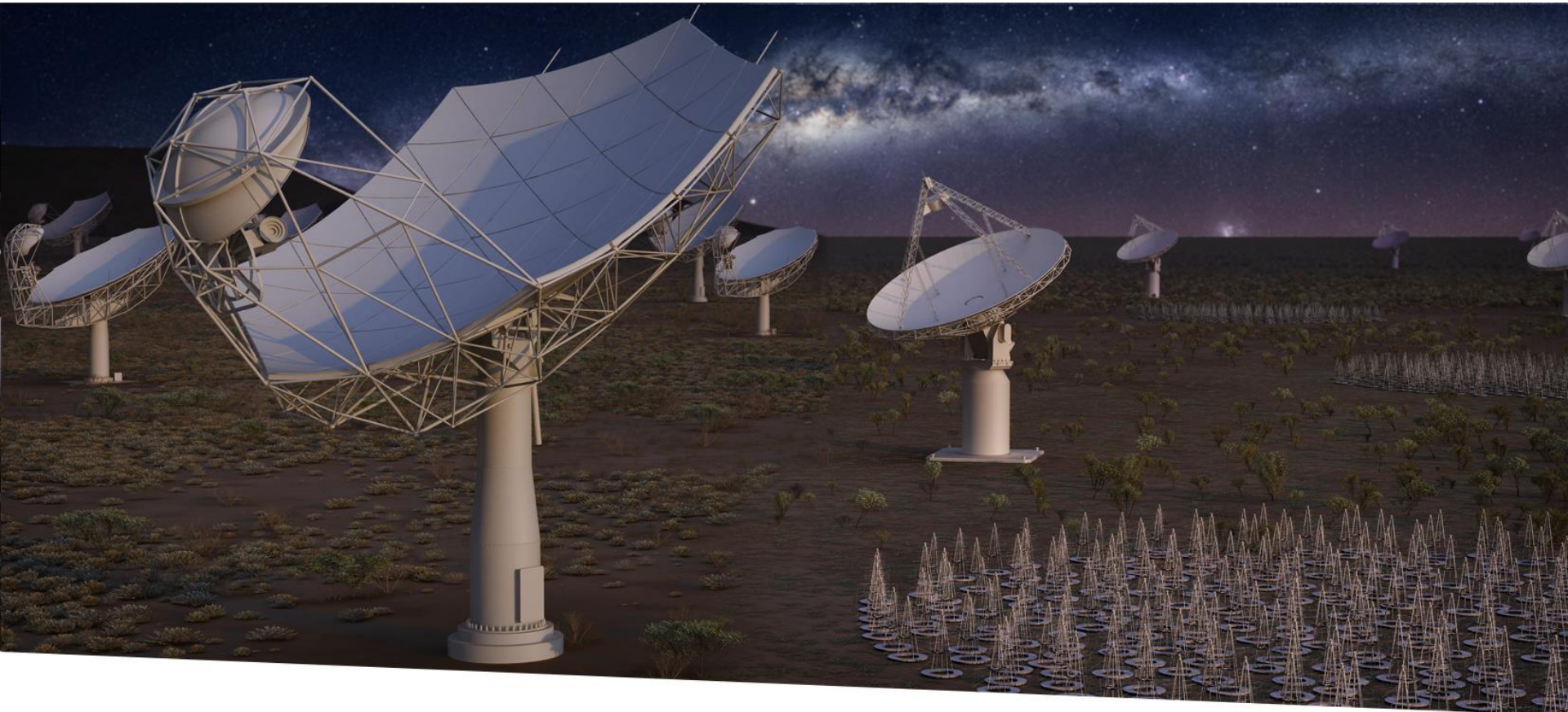


Rucio JupyterLab Extension

Demonstration on local and cloud infrastructure



SQUARE KILOMETRE ARRAY

Exploring the Universe with the world's largest radio telescope

Rob Barnsley

26/10/2020

Background

CERN/Rucio GSoC project to integrate Rucio functionality via a JupyterLab notebook extension.

Basic idea: To simplify the workflow required to interact with data within a Rucio datalake by using a single, intuitive and already recognised interface.

A more detailed presentation from the author here:

https://indico.in2p3.fr/event/22129/contributions/85719/attachments/59615/80633/Rucio-SWAN_Integration_Project_for_ESCAPE.pdf

Project repository here: <https://github.com/rucio/jupyterlab-extension>

Local Deployment (1/2)

how to run it

Two modes: “download” and “replica”:

- **download**: uses the Rucio download client to download files directly from the RSE to the user’s directory.
- **replica**: requires an RSE to be mounted via FUSE

Publicly available docker image capable of running “straight out of the box” upon injecting a few environment variables related to the datalake configuration, e.g. in “download” mode:

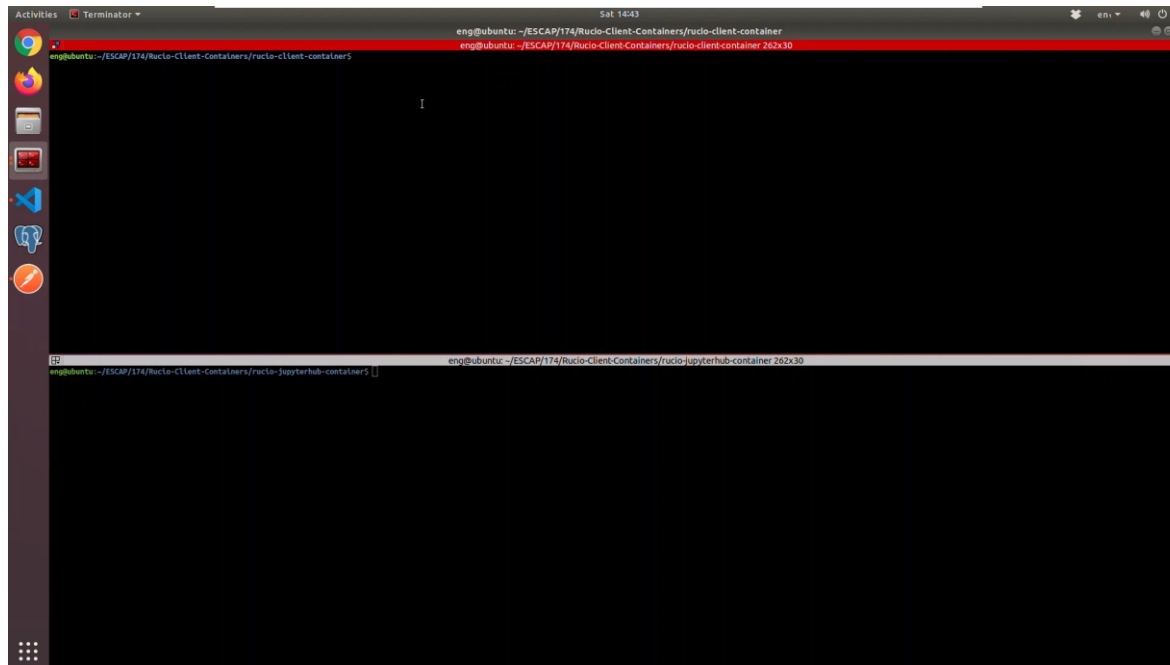
```
$ docker run -d -p 8888:8888 \
  -e RUCIO_MODE=download \
  -e RUCIO_WILDCARD_ENABLED=<1||0> \
  -e RUCIO_BASE_URL=<Rucio base URL> \
  -e RUCIO_AUTH_URL=<Rucio auth URL> \
  -e RUCIO_DISPLAY_NAME=<instance display name> \
  -e RUCIO_NAME=<instance name> \
  -e RUCIO_VO=<VO name> \
  -e RUCIO_VOMS_ENABLED=<1||0> \
  -e RUCIO_VOMS_VOMSES_PATH=</path/to/vomses_file> \
  -e RUCIO_VOMS_CERTDIR_PATH=</path/to/certdir> \
  -e RUCIO_VOMS_VOMSDIR_PATH=</path/to/vomsdir> \
  -e RUCIO_CA_CERT=/certs/rucio_ca.pem \
  -v <path/to/rucio/cert>:/certs/rucio_ca.pem \
  rucio/jupyterlab:latest
```

Local Deployment (2/2)

demonstration using the ESCAPE datalake

Following demonstration makes use of two public docker images:

- **rucio-client**: rucio client enabled for the ESCAPE VO
(<https://hub.docker.com/repository/docker/projectescape/rucio-client>)
- **rucio-jupyterhub**: rucio jupyterlab extension enabled for ESCAPE VO - download mode
(<https://hub.docker.com/repository/docker/projectescape/rucio-jupyterhub>)



Deployment on JupyterHub (1/2)

recap

Have previously demonstrated a JupyterHub prototype running on cloud hosted infrastructure:

- Externally accessible Kubernetes cluster
- Helm based deployment
- Integrated with ESCAPE IAM authentication
- Dynamically provisioned NFS volumes
- Custom notebooks

More information about this can be found at a WP5 tech talk here:

- https://indico.in2p3.fr/event/21938/contributions/84621/attachments/59707/80878/JupyterHub_on_bare-metal_Kubernetes.pdf
- <https://github.com/rohinijoshi06/jupyterhub-on-k8s>

Deployment on JupyterHub (2/2)

demonstration on cloud infrastructure

Live prototype on the cloud here: <http://130.246.212.44/escape>

Note this is not currently served over HTTPS, so don't upload passwordless certificates!

Recognise the following method is not.. ideal ..

SQUARE KILOMETRE ARRAY

Exploring the Universe with the world's largest radio telescope

