

Monthly Photon/Neutron/Muon Community Meeting

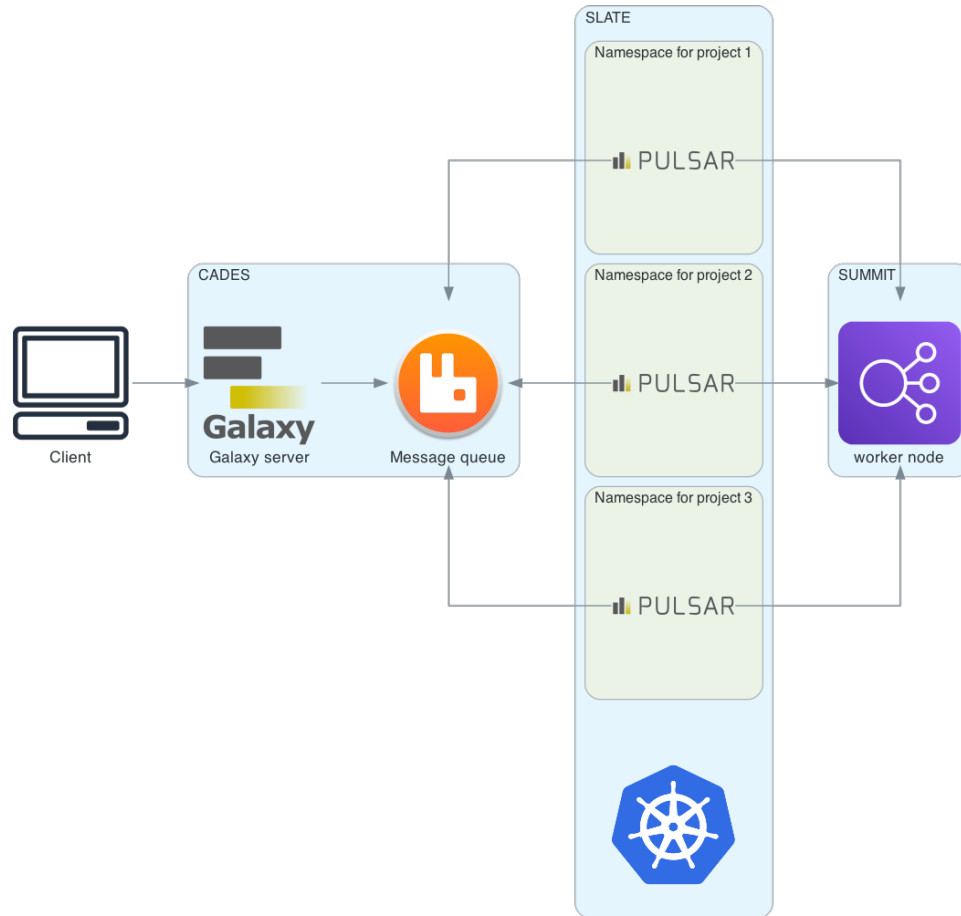
1 March 2023

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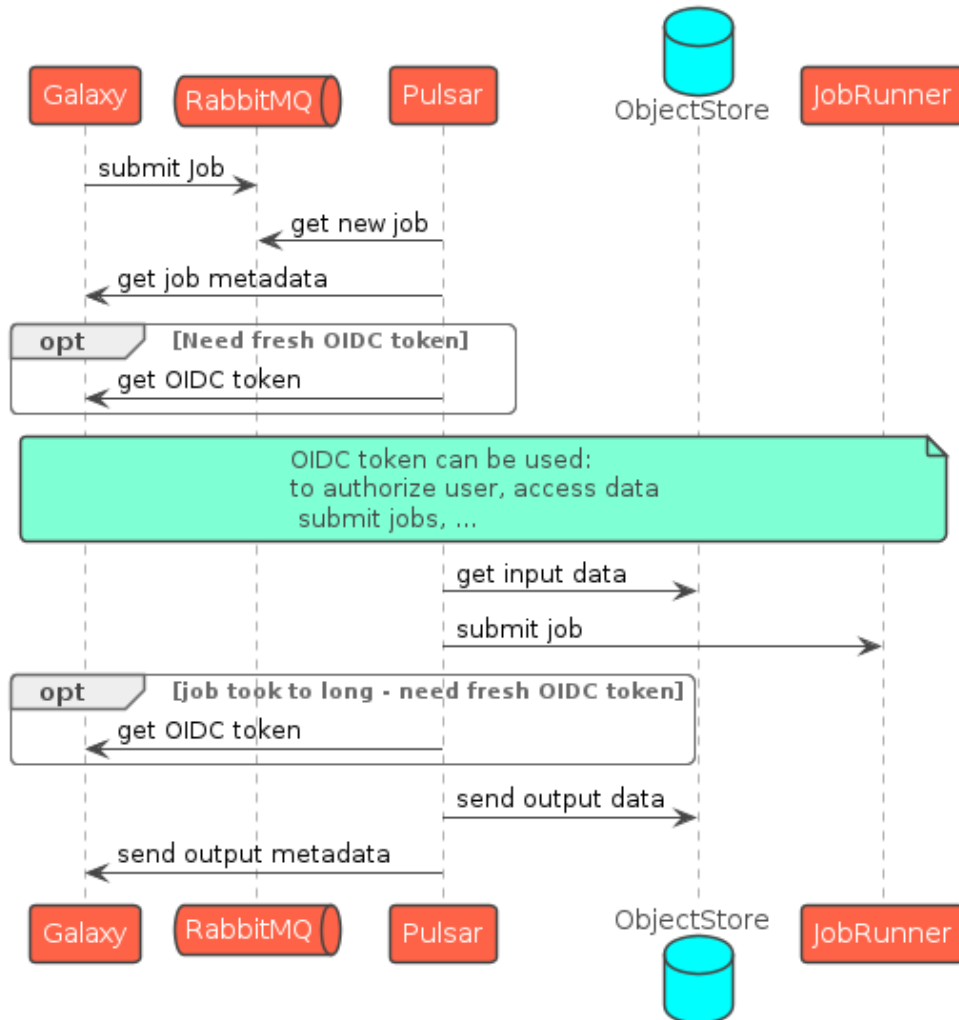
ORNL Neutrons Galaxy – Architecture for HPC jobs



- Services in a Cloud
 - Galaxy core service
 - RabbitMQ
 - Non-HPC jobs (via other Pulsars) and interactive tools
- Slate Cluster
 - Kubernetes to host Pulsar containers
 - Access to Summit filesystems and job orchestrator
 - Pulsar submits jobs to Summit
 - Pulsar (for now) exchanges data with Galaxy
- Summit
 - Where actual jobs will run
 - Behind a job scheduler

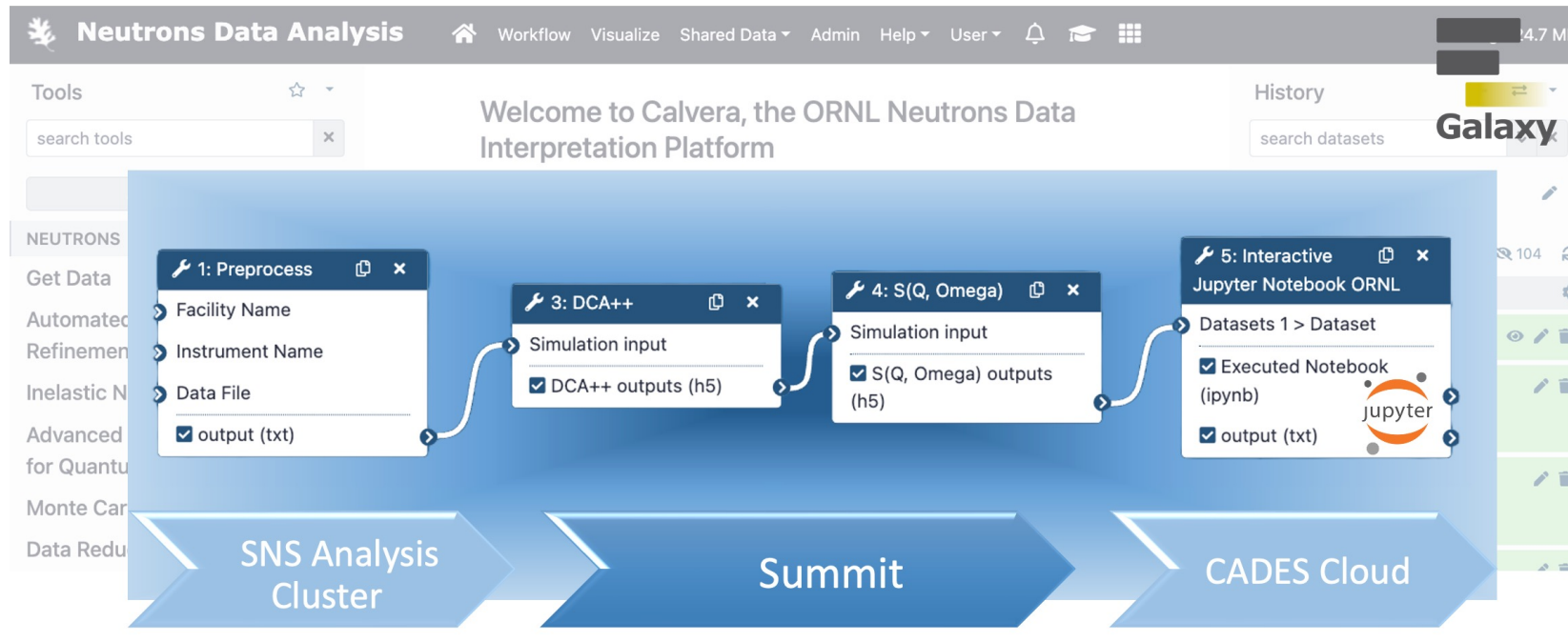
ORNL Neutrons Galaxy – Security

Using OIDC tokens when running jobs via Pulsar

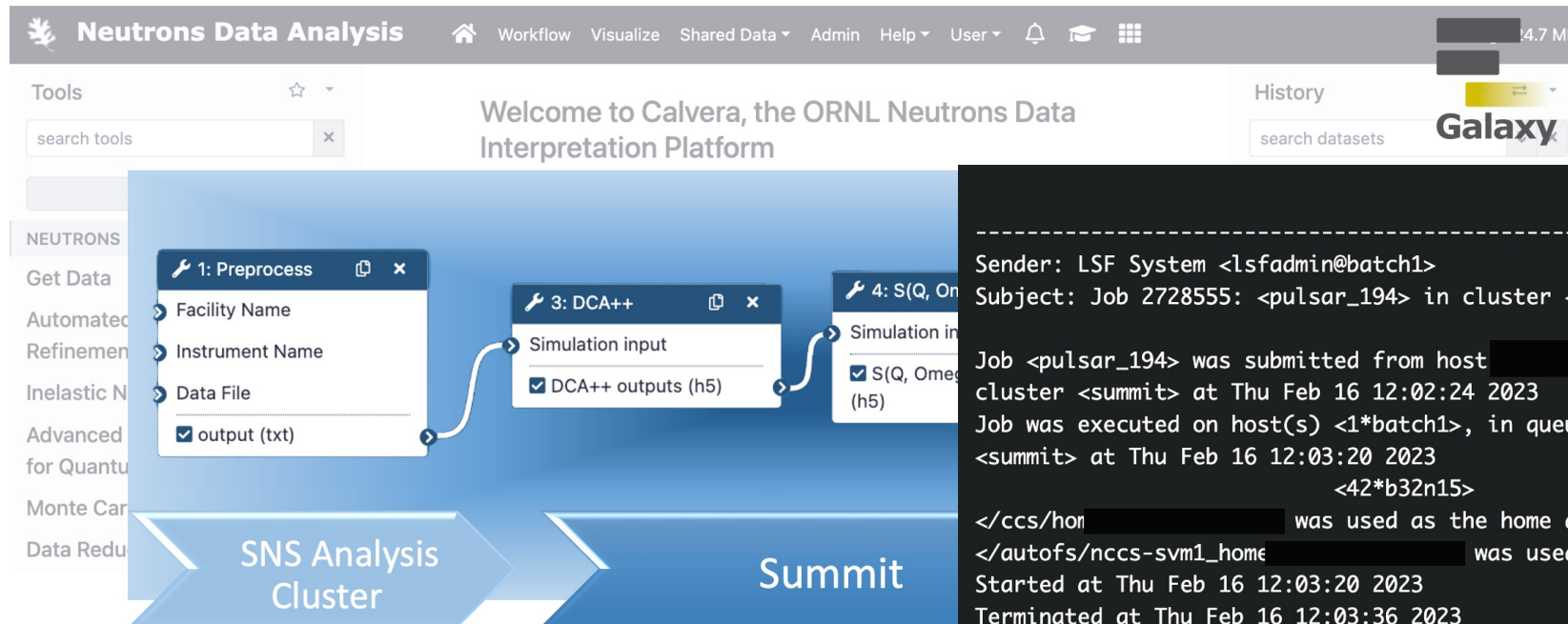


- Authentication via OIDC tokens
 - An endpoint to get token added to Galaxy API
 - Authentication plugin in Pulsar: request ID token, verify and extract the username
 - Authorization plugin in Pulsar: check if a user is allowed to submit jobs to Summit (using a list for now)
- Firewall configuration
 - We need connections between HPC and Cloud – Pulsar->Galaxy, Pulsar->RabbitMQ
 - Thanks to RabbitMQ, only outbound connections
 - Inbound might be needed for data management solution (when Galaxy requests some data from HPC) – use message queue as well?

ORNL Neutrons Galaxy – “Demo”



ORNL Neutrons Galaxy – “Demo”



```
-----
Sender: LSF System <lsfadmin@batch1>
Subject: Job 2728555: <pulsar_194> in cluster <summit> Done

Job <pulsar_194> was submitted from host [REDACTED] by user [REDACTED]
cluster <summit> at Thu Feb 16 12:02:24 2023
Job was executed on host(s) <1*batch1>, in queue <batch>, as user [REDACTED] in cluster
<summit> at Thu Feb 16 12:03:20 2023
                                <42*b32n15>
</ccs/home[REDACTED]> was used as the home directory.
</autofs/nccs-svm1_home[REDACTED]> was used as the working directory.
Started at Thu Feb 16 12:03:20 2023
Terminated at Thu Feb 16 12:03:36 2023
Results reported at Thu Feb 16 12:03:36 2023

The output (if any) is above this job summary.

PS:

Read file </ccs/proj.[REDACTED]194/stderr> for stderr output of this job.
```


ORNL Neutrons Galaxy – ToDo



- Containerize tools
 - Singularity
- Directing jobs to Summit
 - Total Perspective Vortex (TPV)
- Configure required job resources
 - TPV/job destination config, tool parameters
- Automate configuration/deployment
 - Gitlab/Ansible
- Data management
 - Rucio
- Monitoring – services, jobs
- Frontier?