Adding Cloud Based Interactive Compute Capabilities to Globus Endpoints

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http://www.nationaldataservice.org/
Globus World
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Overview

- What is the National Data Service?
- NDS Labs Workbench
- Integration with Globus Auth
- Running personal connect inside container infrastructure
- Launching applications local to files found in Globus Endpoint
Towards a National Data Service

Vision: National initiative toward enabling scientists to broadly publish, find, and reuse digital data collections.

- NDS core organization:
  - Director and dedicated staff at SDSC/NCSA
  - Steering and technical advisory committees
  - Provides support for NDS pilots (storage, compute, human resources)

- Memorandums of understanding with:
  - Research Data Alliance (RDA-US)
  - Earth Science Information Partners (ESIP)
  - Midwest Big Data Hub (MBDH)
  - NSF Earthcube

- 1st US GO FAIR implementation network
NDS Labs Workbench

https://www.workbench.nationaldataservice.org

- NDS initiative started in January 2016
- Community-driven platform
- Designed to share, discover, evaluate, develop, and test research data management and analysis tools
- Open platform -- community members recommend and/or contribute tools
- Evolving into a platform for data access, education and training.
Labs Workbench Platform: A Collaborative Environment

- **Scalable platform** that enables remote access to data and containerize software
- Used by researchers and developers to collaborate in data-intensive projects.
- The same platform can be used for workshops/training around the same data/software used for research
Background: Container Orchestration with Kubernetes

- High availability cluster
- Scheduling of containers on worker nodes
- Shared storage
- URL-Based routing with ingress controller
NDS Labs Workbench

- Single Sign-on
- Catalog of applications
- Supports most browser-based applications
- Quick-start URLs to launch application
- Shared, mounted volumes
Workbench Integration With Globus

- Sign-in With Globus Auth
- Globus Tokens stored in user’s home directory
- Run personal connect inside container infrastructure
- Launch applications local to files found in Globus Endpoint
Single Sign-on with Globus Auth

Welcome to the Labs Workbench!

Labs Workbench is an environment where developers can prototype tools and capabilities that help build out the NDS framework and services. In particular, it is a place that can host the development activities of NDS pilot projects.

Learn more

Already have an account?

Start using Labs Workbench!

Sign in here

See Also:
- Feature Overview
- F.A.Q.
- User's Guide
- Developer's Guide
- Acceptable Use Policy

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OAuth Credentials Available to Apps

- When user logs in, a JSON file is persisted to a private directory in the user’s home directory:
  
  ```
  % cat ~/.globus/oauth2.json
  {
    "urn:globus:auth:scope:data.materialsdatafacility.org:all": "...",
    "urn:globus:auth:scope:search.api.globus.org:search": "...",
    "urn:globus:auth:scope:transfer.api.globus.org:all": "...
  }
  ```

- Multiple scopes are retrieved and configurable
- File is refreshed when tokens expire
Run Globus Personal Connect With Ease

Add Globus Personal Connect to your list of applications
Run Globus Personal Connect With Ease

Obtain setup key from Globus Website
Run Globus Personal Connect With Ease

Paste key as property for new application
Run Globus Personal Connect With Ease

Launch configured application
Run Globus Personal Connect With Ease

Initiate transfers
Hosting Applications Near to Globus Endpoint

Provide QuickStart URL in Globus Publish Record

Access to applications like:

- R Studio
- Jupyter
- Geoserver
- H₂O
- Zeppelin
How Can You Help?

● Investigators to share use cases
● Open Source Developers to Enhance codebase
● Data owners to deploy workbench instance near their data and provide analytic apps
● Use NDS Labs Workbench in your next tutorial or hackathon session
Thank You

For further information, please contact:

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