OAK RIDGE National Laboratory

OLCF's Constellation Project

DOI's at the OLCF (and ORNL in General)

ORNL is managed by UT-Battelle LLC for the US Department of Energy

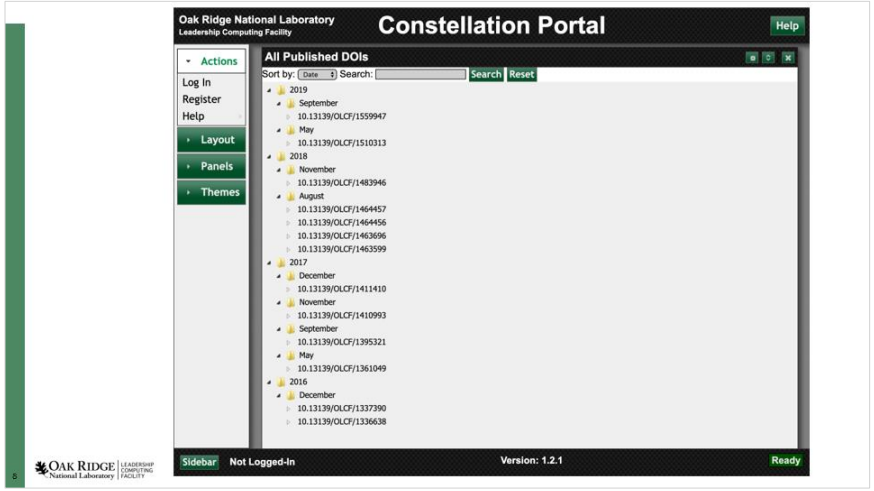
U.S. DEPARTMENT OF ENERGY

Overview

- Started as a means to provide OLCF users with a place to store and publish their simulation results
  - Plans to integrate tightly with OLCF resources (automatically scrape files for metadata, for example)
  - Not implemented yet…
  - Assumption was that we'd be handling large (multi-gigabyte) datasets
- Opened the service up to everyone at the lab Summer 2019

User's Perspective

- Custom web service
  - https://doi.ccs.ornl.gov
- File transfers via Globus Online
  - Globus is designed to handle large files: error checking, automatic restart after interruption, multiple streams, etc…
  - Most OLCF users are familiar with it. (Lab-wide users seem to be less familiar)

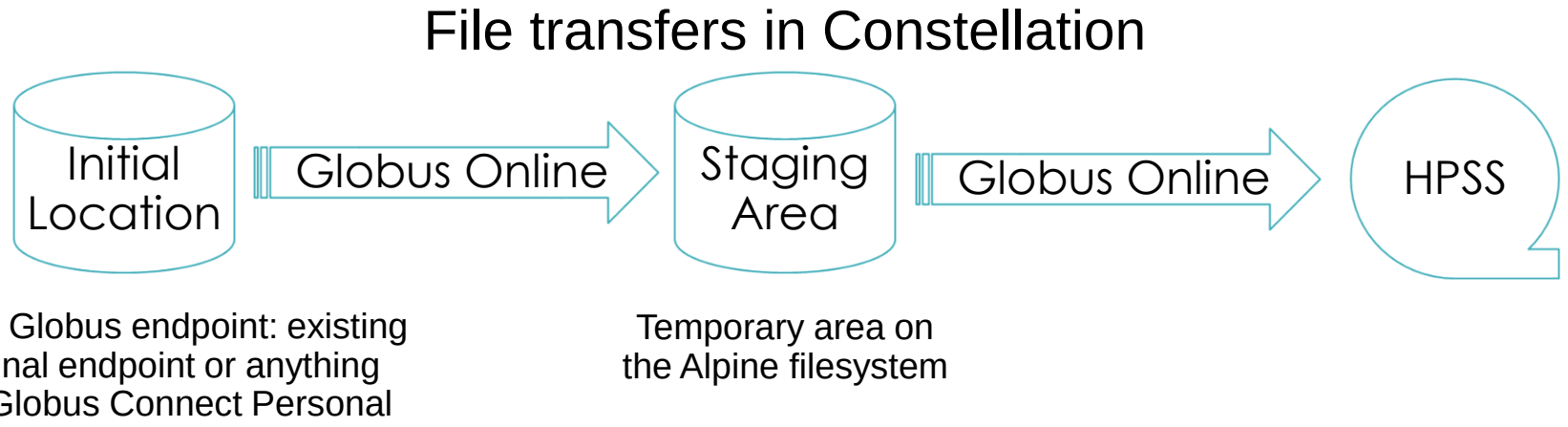


Behind The Scenes – Metadata Handling

- Standard MariaDB database
- Metadata manually entered (by users) via web interface
- Metadata (and data) is manually reviewed by admins
  - This isn't scalable, but we have plans in case the volume of requests increases significantly
- Metadata is sent to OSTI via the E-Link interface
  - OSTI issues the actual identifier string
- The "landing page" for the DOI is generated from the metadata

Behind The Scenes – Bulk Data

- Globus Online for all transfers
- Temporary staging area (OLCF parallel filesystem)
- HPSS for the final, long-term storage
- High speed network connections between staging area and HPSS



Thoughts And Musings On Operations

- The biggest operational issues haven't been technical; they've been people and policy issues
- Where are all the users? Where is all the data?
  - Uptake has been slow. "If you build it, they will come" apparently only works with baseball…
  - Less data than expected: one DOI was ~550GB, but most are < 10GB
- Upper management doesn't like the concept of forever
  - Can't get anyone to commit to resources for "forever". All I can officially get is a commitment for the next FY (sometimes with a verbal commitment to renew for another year).
  - Practically speaking, data in HPSS is forever, and we're such a small percentage that it's not worth trying to account for it

Questions?

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