

Scientific Computing Operations for ENP

October 2024

Bryan Hess

Thursday, October 10, 2024

 **Jefferson Lab**

 U.S. DEPARTMENT OF
ENERGY | Office of
Science



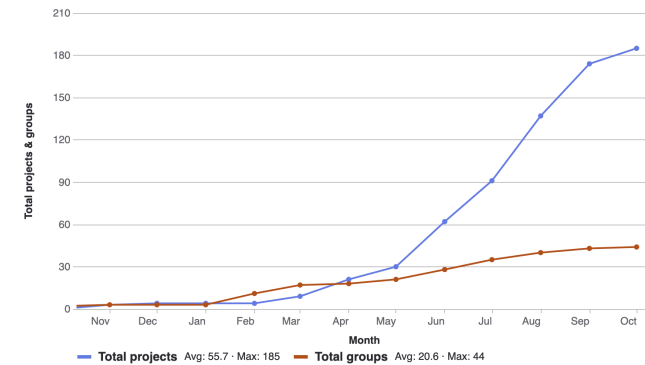
Data Center News

- October 8 Annual Preventative Maintenance for Electrical & Mechanical Completed
 - Target is one PM outage per year
 - Breakers and UPSes exercised, switch gear serviced
 - Mechanical Systems serviced: filters, strainers, DX units, etc.
- Near-term power (FY25)
 - Adding two PDUs on the data center floor
 - One to replace temporary panels, one for capacity bump
 - This will bring up close to current cooling capacity.
- Power expansion planning (beyond FY25)
 - Working with the AE and FM&L towards a 35% design
 - Evaluating options for liquid cooling (Rear Door Heat Exchangers)
 - Evaluating power distribution options (208V vs 415V)
- Central Utility Plant (CUP) Chilled water pipe replacement is underway
 - No completion time update from FM&L yet. Expect several months.

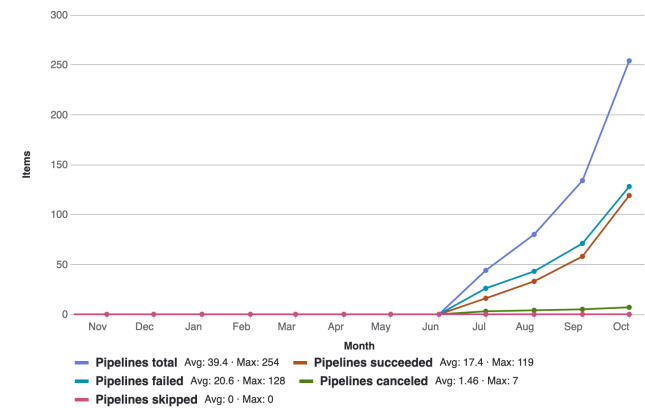
Code.jlab.org Gitlab Status

- CI/CD is in use, but lightly
 - Ready for heavier use
- Container Registry is in use
- Pages in Use, available off-site
- Google Authentication Issue fixed
- Regularly patched and updated

Total projects & groups



Pipelines



Maintenance Planning Overview for the remainder of 2024

- October
 - Groundwork for read-only cache (not user visible)
 - Groundwork for database server upgrade
 - Squid/CVMFS upgrades to support site-wide access to CVMFS
 - Standard Patching: Gitlab, Systems, Jupyter
- November
 - Change to read-only /cache
 - Database server upgrades (for Jasmine, Cache)
 - Podman for Slurm jobs [tentative – container caching/deletion issue being worked]
 - QOS for jobs >24hours [tentative]
- December
 - Patching, but no large changes before the annual lab shutdown

2025 Look-Ahead

- January
 - Focus on preparation for running experiments
 - Retiring end of life hardware
 - Planning Data Center changes (cabinets, networking, power, cooling) for new procurements
- Procurements
 - Farm25 specification and purchase to begin early in CY25
 - Replace dated in-Rack PDUs (CATS item related to melted plug)

Reminder: Transition to read-only /cache

- The design for transitioning to a read-only /cache area is nearly complete
- Preparatory changes will be made in October
- Documentation including Notifications, Knowledge Base Articles will be published
- How will this work?
 - /cache will be writable by data movers (jcache, jput, jmirror) and SWIF
 - New version of Jasmine will be pushed out later in October
 - `jput/jmirror -cache` will be able to immediately place a file in /cache (no round-trip to tape)
 - Contract: All files in /cache are backed by tape storage with minimal latency to tape

Open Science Grid Updates

- Progress continues on the Pelican/OSDF implementation. New capabilities:
 - Writing files directly to JLab with token AuthN and **username mappings** (multi-user XRootD)
 - Writing files to work and Lustre areas that are mapped into the OSDF namespace
 - Replication to other OSG sites
 - Streaming copy or read of Pelican files.
 - This will continue to expand as we gain experience with it
- Data Transfer nodes are being reconfigured to support Pelican/OSDF and multi-user support
- EIC workloads are increasing
- Network headroom in 100Gig circuits

