Blue Waters User Monthly Teleconference
Agenda

• Moving Data: Nearline Best Practices
• Recent Events and Changes to Blue Waters
• Usage, Utilization and other Items
• Upcoming Opportunities
• Request for publications!
Nearline Use Best Practices

- Nearline will be offline 12/19/2019.
- For projects expiring 3/31/2019
  - Avoid putting new data into Nearline.
- If you need to upload files to Nearline
  - Consider short-term use such as for checkpoints.
  - Bundle or package many, smaller files into fewer, larger files using utilities like tar, or similar.
  - Prefer files in the GB range (1-1000).
- How much and how many in Nearline project space?
  https://bluewaters.ncsa.illinois.edu/usage-project-details?project=<psn>
Globus Online Use Best Practices

• When moving lots of data off of Nearline
  • Use managed Globus endpoints hosted on robust data transfer nodes (DTN), when possible, such as XSEDE, DOE labs, larger institutes and organizations.
  • Globus Online (GO) retries on endpoint errors
    • Check your remote endpoint quota
    • Check for remote endpoint expiration
  • Too many remote endpoint errors
    • Consider transfer from Nearline to Blue Waters scratch.
    • Then from Blue Waters scratch to remote site.
• Monitor your transfer activity https://app.globus.org/activity
Globus Online Use Best Practices

- When using Globus Connect Personal client
  - Usually on a smaller resource: desktop, laptop, VM.
  - Smaller network “pipe” and slower IO speeds.
  - LAN might not be in good shape.
Globus Python SDK or Python CLI

- Use Python SDK or Python CLI to script or automate transfer processing.
- [https://docs.globus.org/cli/](https://docs.globus.org/cli/)
Recent Events and Outages

• 2/6 – High speed network (HSN) instability necessitated compute system reboot. Under analysis.
• 2/1 – Nearline software patch applied post-maintenance.
• 1/31 - Nearline software and hardware maintenance completed.
Upcoming outage
Recent Changes

- No changes to report.
Outstanding Issues

- CUDA 9.1 and GCC 6.3
  - broken std::tuple with GCC 6
  - Patch to gcc/6.3.0, as a work-around.
  - Known issue with optimization flag: -ftree-loop-vectorize
    - Observed 20% performance impact when disabled.
    - Plan to disable by default. User can re-enable.
Upcoming Changes

- Preparing to make PE 18-06 default. See [PE Changes page](#) on the portal.
- For testing ... 
  - module unload PrgEnv-cray; module load PrgEnv/cray-18_06-cuda-9.1
  - module unload PrgEnv-gnu; module load PrgEnv/gnu-6.3.0-cuda-9.1
  - module unload PrgEnv-intel; module load PrgEnv/intel-18.0.3.222-cuda-9.1
  - module unload PrgEnv-pgi; module load PrgEnv/pgi-18.3.0-cuda-9.1
- Add as needed 
  - OpenACC
    - module add craype-accel-nvidia35
  - CUDA
    - module add cudatoolkit/9.1.85_3.10-1.0502.df1cc54.3.1
  - HDF5
    - module add cray-hdf5/1.10.2.0
    - module add cray-hdf5-parallel/1.10.2.0
Usage, Utilization and other Items

- Overall Utilization since last user call

![Graph showing BlueWaters Utilization and utilization for XE, Full System, and XK for a specific period.]
Backlog

• Since last user call.
• Vertical axis in units of nodes. Colors are different users.
• Red below the x-axis indicates unreserved nodes. Blue below the x-axis indicates draining.
• Increase in backlog.
• Many projects expire 3/31.
Workload Details

- Some full system XE jobs. Larger XK jobs.
- Data combines XE and XK jobs.
- Since last user call.
Job scheduler iteration time

- Keeping iteration time mostly under 5 minutes.
XSEDE Training Events

- March 5 - GPU Programming Using OpenACC
- April 2-3 - Big Data

https://portal.xsede.org/course-calendar
Petascale Computing Institute

- August 19-23, 2019
- Looking for host sites.
- Stay tuned.
Blue Waters Symposium

- When: June 3-6, 2019
- Where: Sunriver, OR.
- Serves as the PRAC annual meeting.
- Registration emails sent February 15th.
Blue Waters Weekly Webinar Series

The next scheduled webinar is:
Reproducible data analysis with Snakemake - Johannes Köster March 20, 2019

- For more information about the webinar series, including registration, abstracts, speakers, as well as links to Youtube recordings, please visit the Blue Waters webinar series webpage.
- Make sure to RSVP on Facebook and on the Blue Waters Portal.
- We welcome suggestions for topics that will benefit the petascale community. Send your suggestions to bw-eot@ncsa.illinois.edu.
Request for Science Successes

• We need to be current on products that result from time on Blue Waters such as:
  • Publications, Preprints (e.g. arXiv.org), Presentations.
  • Very interested in data product sharing.
• Appreciate updates sooner than annual reports.
  • Send to gbauer@illinois.edu
• NSF PRAC teams send information to PoCs.
• See the Share Results section of the portal as well.
• Be sure to include proper acknowledgment
  • Blue Waters - National Science Foundation (ACI 1238993)
  • NSF PRAC – OCI award number