

# BLUE WATERS

SUSTAINED PETASCALE COMPUTING

9/24/17

## Blue Waters User Monthly Teleconference



GREAT LAKES CONSORTIUM  
FOR PETASCALE COMPUTATION

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# Agenda

- Recent Events, Coming Changes to Blue Waters
- Usage, Utilization and other Items
- Upcoming Opportunities
- Request for publications!

## Recent Events and Outages

- No events of note.
- Normal events such as DIMM or Opteron failures can cause application failure.
  - Recommend that job scripts be written to handle application failure due to hardware issue.
  - Use aprun restart option.
  - Checkpoint appropriately.

## Recent Changes

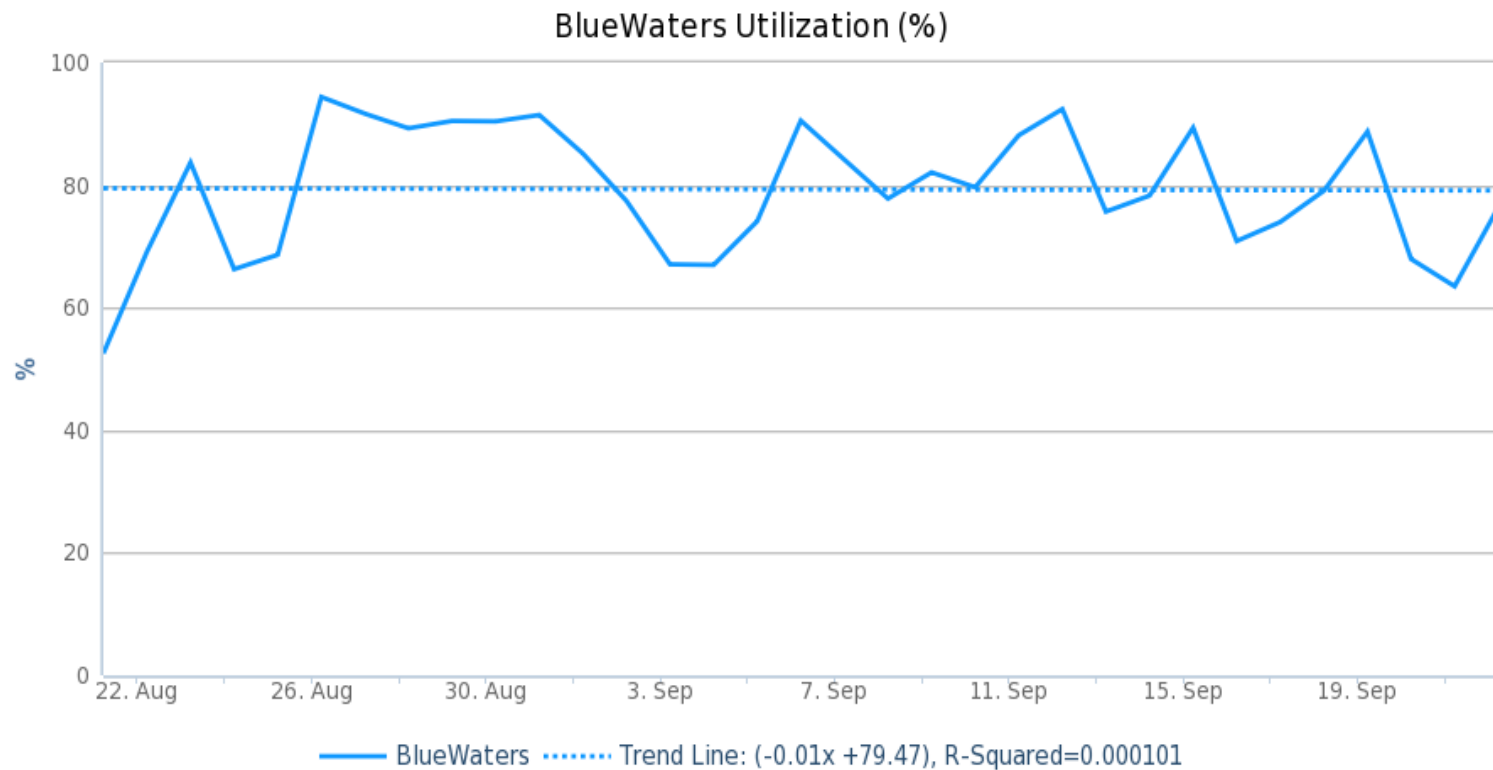
- Newer compilers available (not default)
  - PGI 17.5.0
  - Intel 2016 Update 4
  - (Looking at Intel 2017 update 4)

## Recent Changes

- Limits on MOM node use within a job
  - Each job has a MOM node to launch executable on compute nodes. Several jobs share a MOM node.
  - The changes will help prevent MOMs (shared resource) from running out of memory (OOM) or having excessive loads.
  - maximum number of MOM processes per job: 2048
  - maximum MOM memory per job process: 4 GB
  - Always use aprun to execute on compute node
    - This includes python pre/post-processing steps
  - Look for
    - `fork: No space left on device`
    - `Process Error: failed to allocate memory`

# Usage, Utilization and other Items

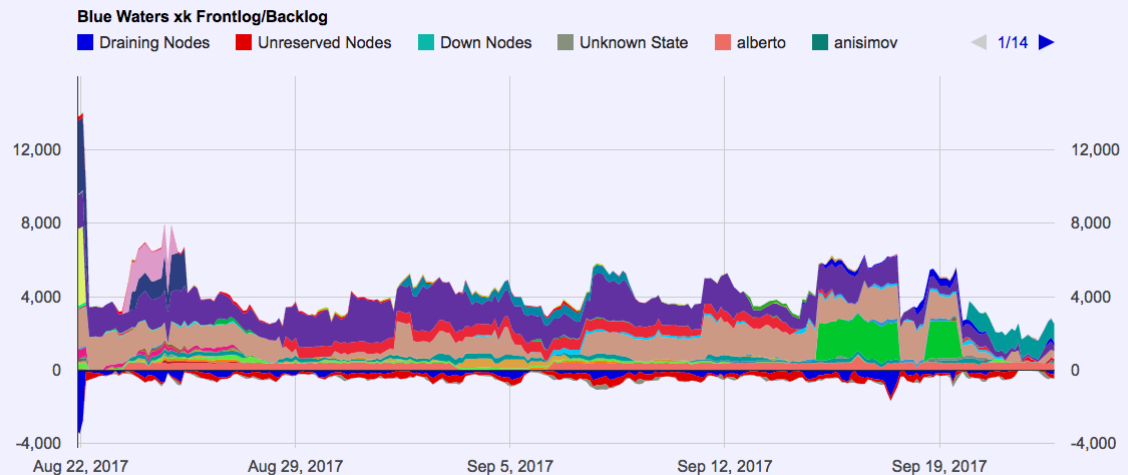
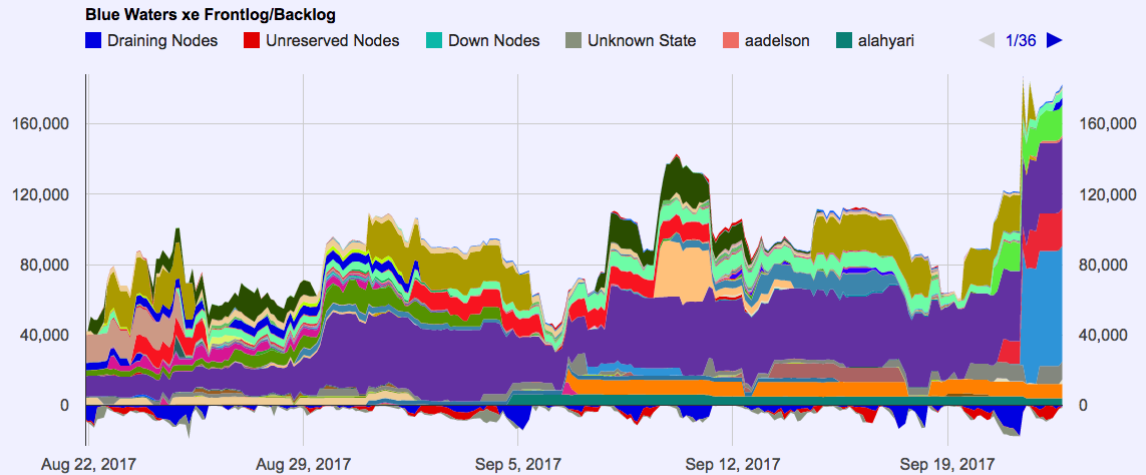
- Utilization since (August 21)



2017-08-21 to 2017-09-22 Src: HPcDB. Powered by XDMoD/Highcharts

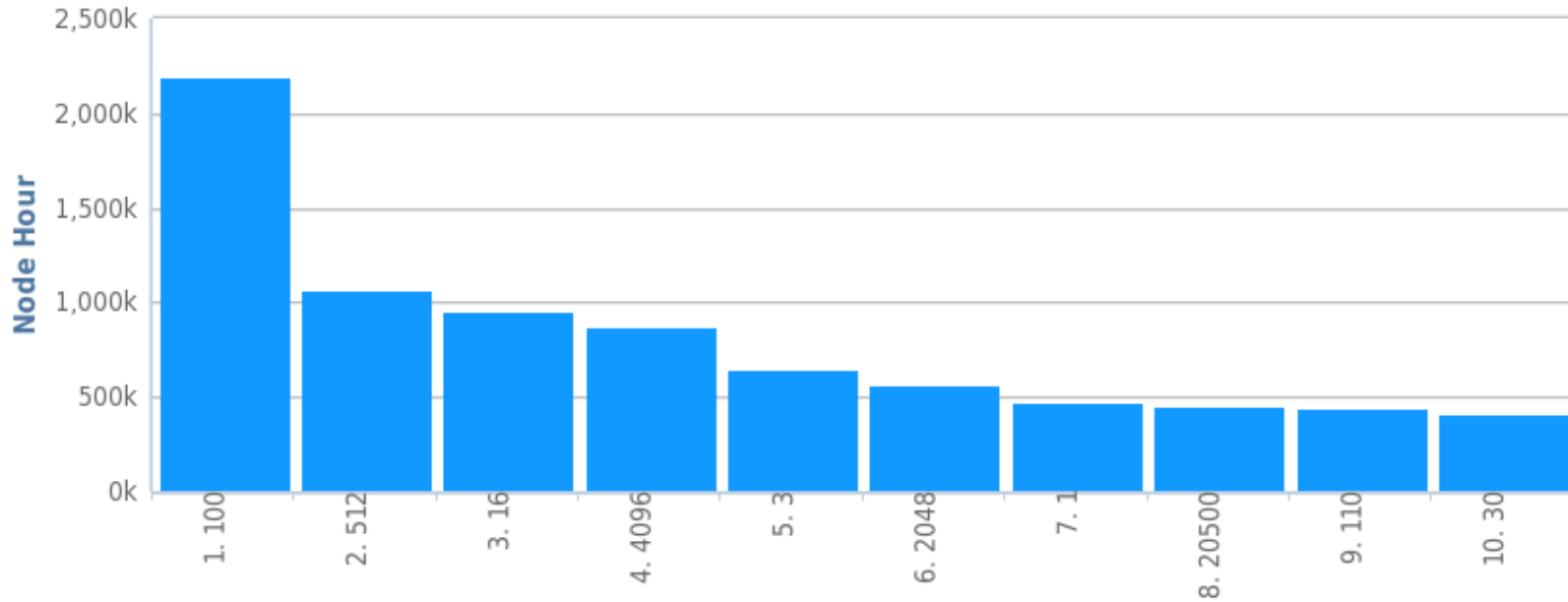
## Backlog

- Since 8/21
- 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.
- Data feed dropped after emergency maintenance.
- XE region shows dropping backlog but several large allocations expire end of the month.
- XK region has seen increase in backfill.



# Workload Details

Node Hours: Total: by Node Count

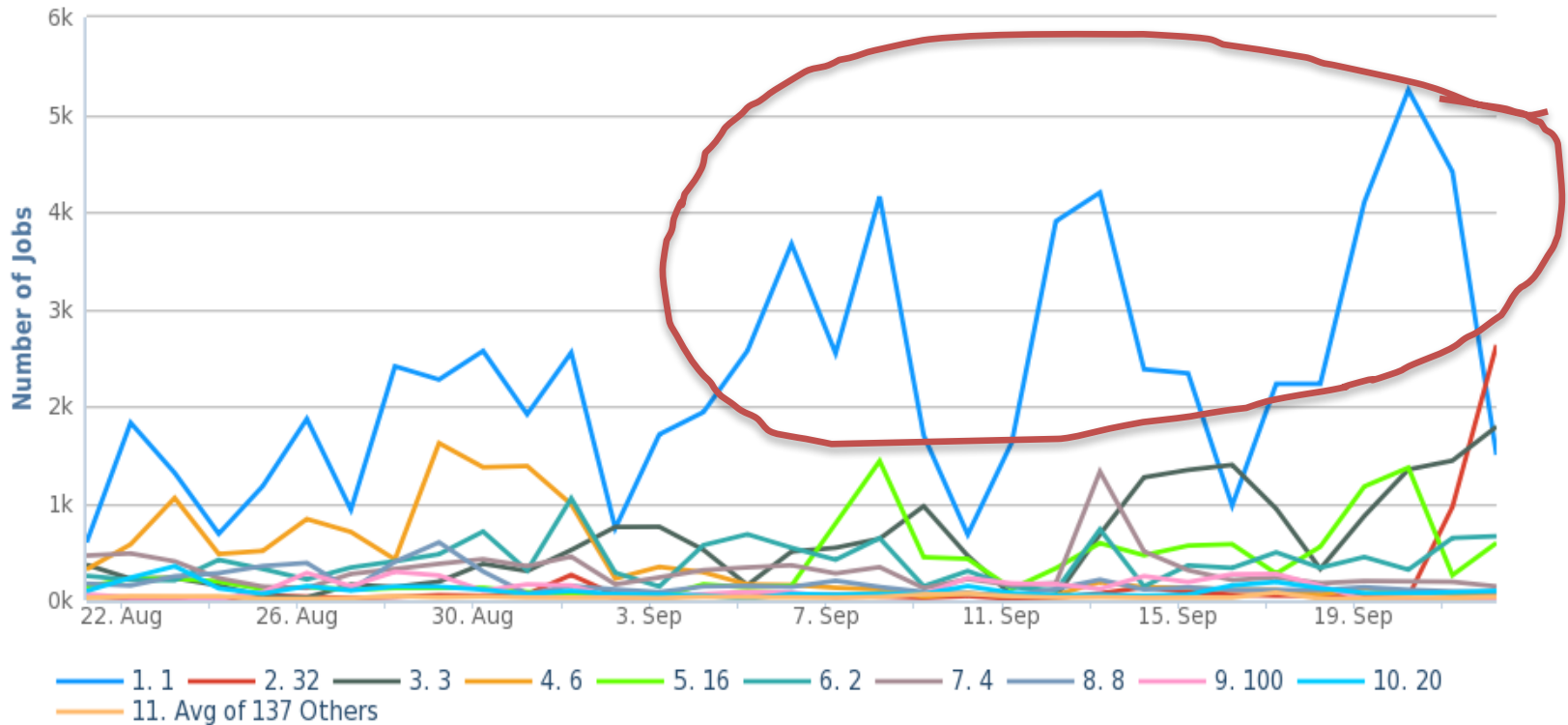


- Data combines XE and XK jobs.
- Since (8/21).
- Fewer large node count jobs.



# Job scheduler iteration time

Number of Jobs Running: by Node Count



2017-08-21 to 2017-09-22 Src: HPCDB. Powered by XDMoD/Highcharts


Is job bundling having desired impact on iteration time?

# Blue Waters Weekly Webinar Series

- 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](#).

September 27, 2017	Software Engineering Practices - rescheduled to November 29	Jeff Carver	--	--	Survey
October, 2017					
No webinar on October 4, 2017					
October 18, 2017	Opportunities and Challenges: Diversifying your Workforce	Toni Collis	--	--	--

## 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](https://arxiv.org) ), Presentations.
  - Very interested in data product sharing.
- Appreciate updates sooner than annual reports.
  - Send to [gbauer@illinois.edu](mailto: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