

BLUE WATERS

SUSTAINED PETASCALE COMPUTING

7/21/14

Blue Waters User Monthly Teleconference



GREAT LAKES CONSORTIUM
FOR PETASCALE COMPUTATION

CRAY®

Agenda

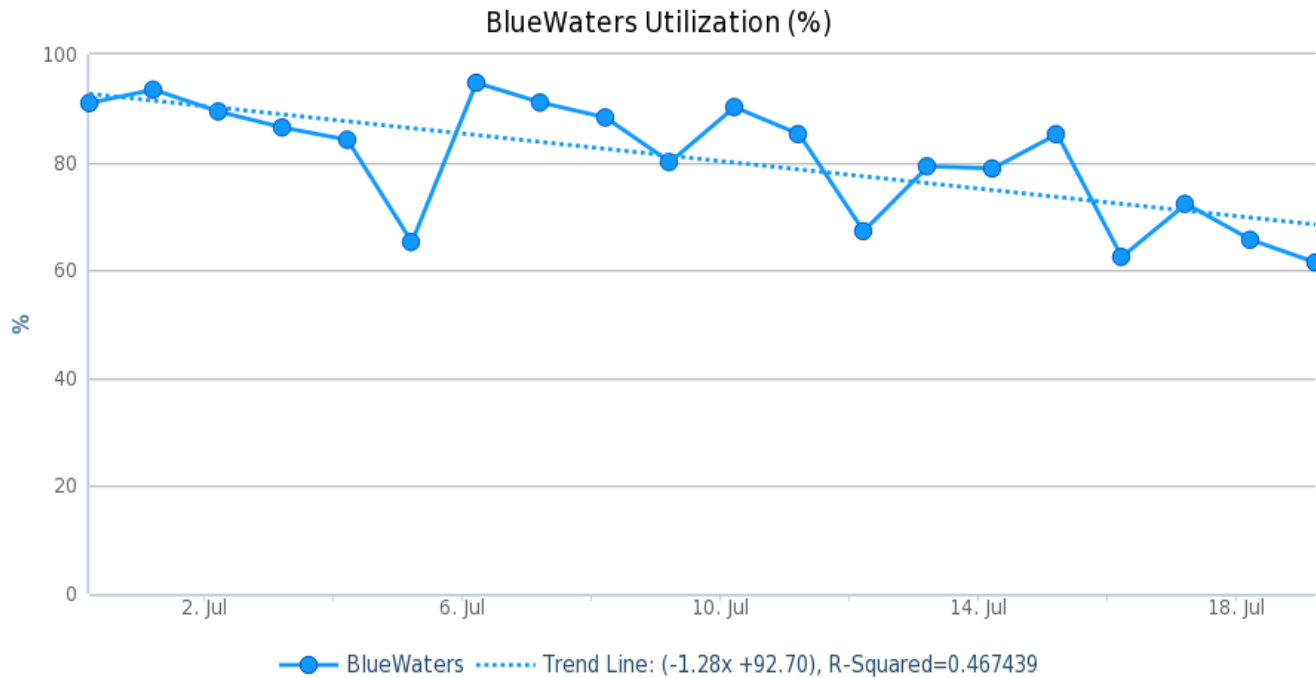
- Upcoming changes to the programming environment.
- Taking advantage of backfill, revisit.
- Save the date for Blue Waters Advanced User workshop: the week of October 13th.
- SC14 Conference
- XSEDE and VSCSE training opportunities.
- Requests for Science Successes.
- Special Topic: Blue Waters and NCSA Network Services

Recent System Events and Updates

Recent Changes

- Previously
 - Increase of the minimum time before preemption of “low” queue jobs to 4 hrs (up from 30 minutes).
 - June 5th through July 8th: 50% discount for all jobs plus an additional discount of 50% for jobs using 1/4 or more of the total available XE nodes (> 5599 nodes).
- Recently
 - None

- Utilization since July 1



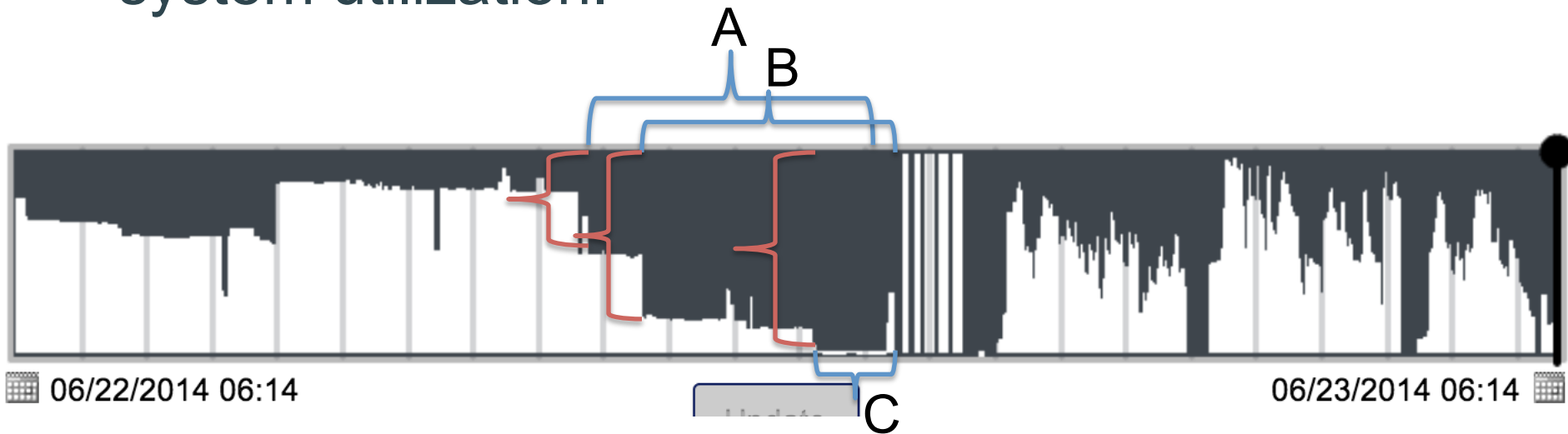
2014-06-30 to 2014-07-19 Src: HPCDB. Powered by XDMoD/Highcharts

Upcoming changes

- Planned Programming Environment (PE) changes
 - Next PE will require rebuild of MPI based applications.
 - Please try the new release. See <https://bluewaters.ncsa.illinois.edu/pe-updates>
 - MPT 7.0.0 release adheres to the “MPICH ABI Compatibility Initiative” - <https://www.mpich.org/abi>
 - Support dynamically linked applications between MPICH compatible versions on similar supported processors without recompiling.
- Change to showq reporting (this week)
 - To report nodes and not processors. Change your scripts if needed.
- Change to file access time on login nodes (this week)
 - Will enable ATIME mounting. Accessing file via usual commands will change file atime.

Backfill - revisit

- Workload mix, larger jobs or system reservations cause gaps in runnable work which lowers system utilization.



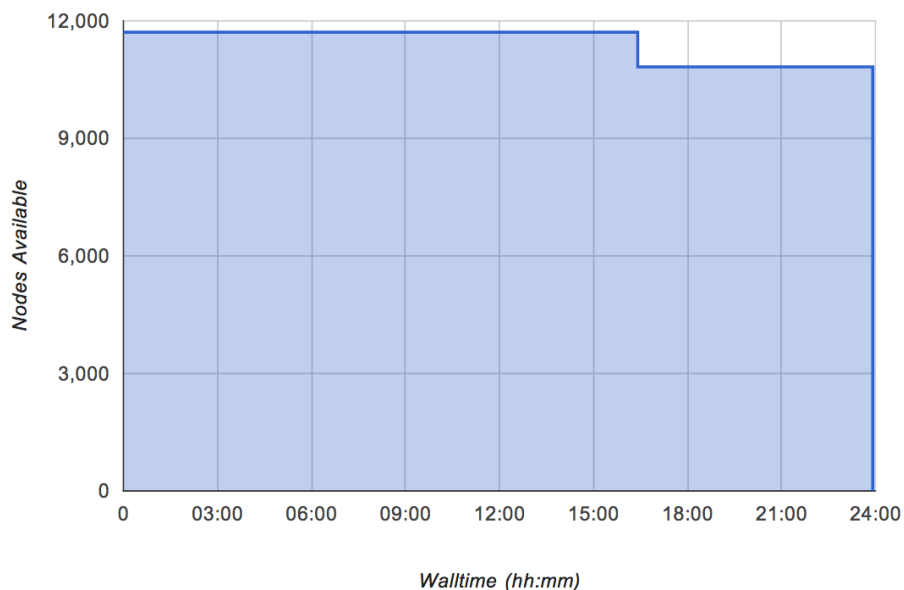
Backfill

- Backfill is an optimization policy that allows a scheduler to make better use of available resources by running jobs out of order.
- It attempts to schedule some of the remaining lower-priority jobs in the gaps left over from the higher-priority jobs.
- Backfill allows a higher utilization than would be otherwise possible, while remaining mostly true to the original job priorities.
- Added a realtime chart of backfill opportunities
<https://bluwaters.ncsa.illinois.edu/why-isn-t-my-job-running#backfill>

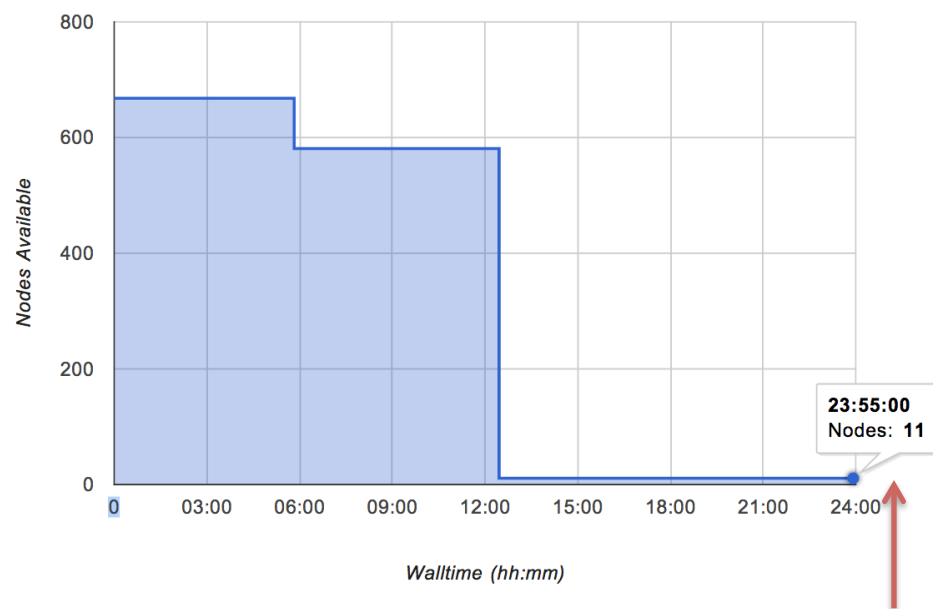
Backfill

At 2014-07-18 11:01:45, the following backfill windows were available.

XE Nodes Available for Walltime

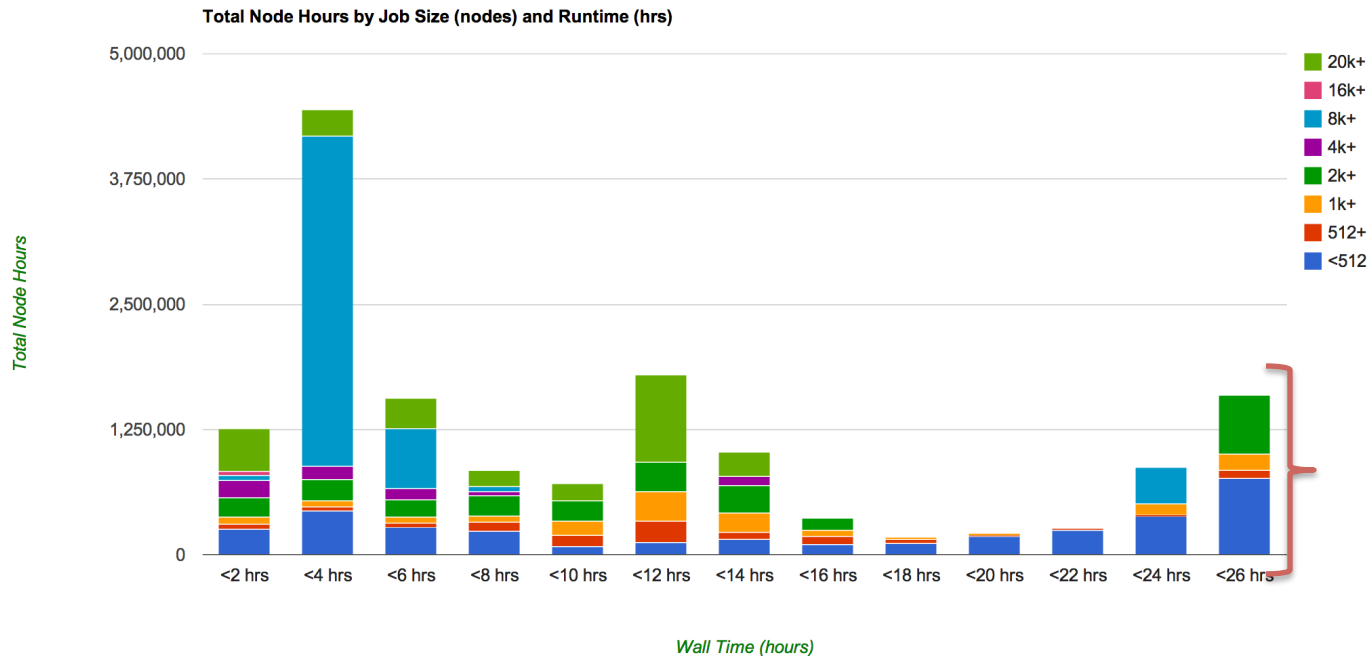


XK Nodes Available for Walltime



Backfill

- Avoid specifying longest permitted wallclock time.
- Usage versus wallclock for the last month.



Data Sharing Service Update

- Phase 1 based on Globus Online.
- Working on sharing sponsorship – completed.
- Finalizing procedural aspects.
 - DOI
 - Metadata
 - Agreements and Policies

Blue Waters Advanced User Workshop

- The week of October 13th at NCSA.
- More hands-on sections with Cray, NVIDIA, Allinea, ...
- Bring your own code.
- Tie in with YT visualization workshop from Matthew Turk (NCSA).

VSCSE and XSEDE Events


VSCSE

- Science Visualization - August 25-26
 - NCSA hosting local site
 - <http://www.vscse.org/summerschool/2014/>

XSEDE topical training

- OpenACC – August 5
 - NCSA to host local site
 - <https://www.xsede.org/web/xup/course-calendar/-/training-user/class/291/>

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
- 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

Future Topics?

- Please send us your suggestions on topics for future teleconferences / webinars

Special Presentation

- Paul Wefel – Blue Waters and NCSA Network Engineering team (NETENG)