BLUE WATERS
SUSTAINED PETASCALE COMPUTING

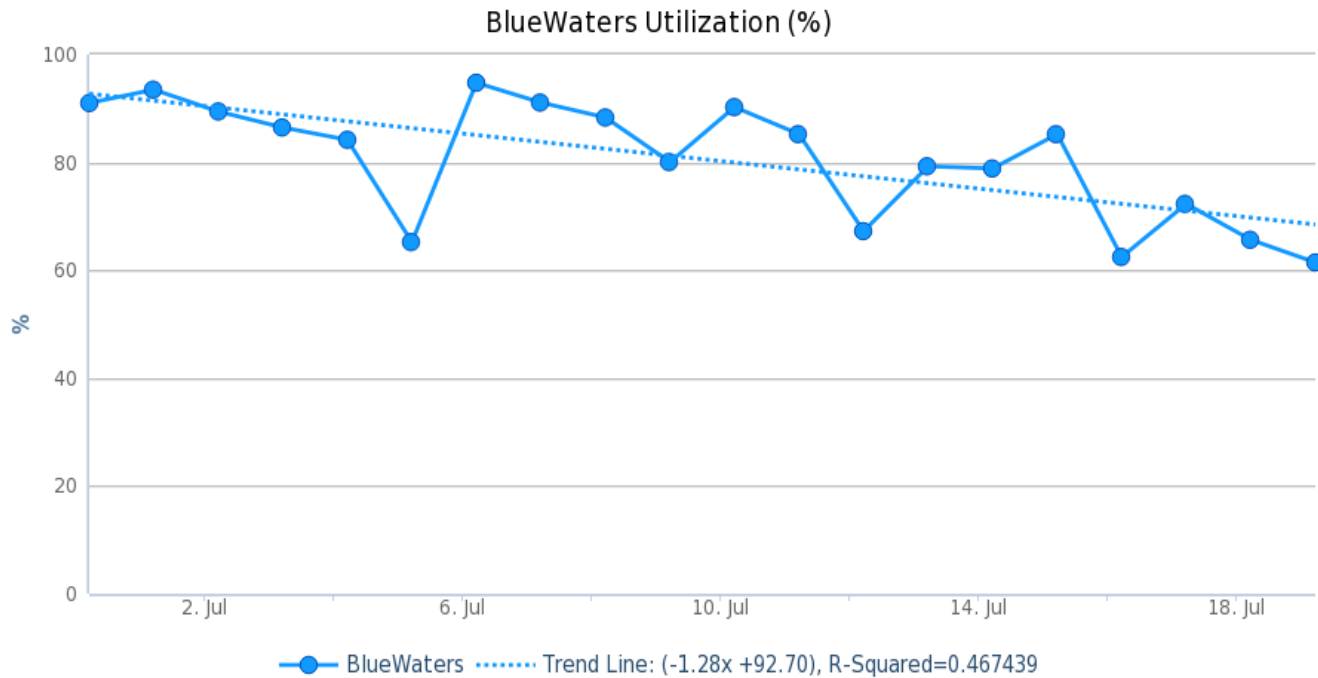# Blue Waters User Monthly Teleconference

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

BlueWaters Utilization (%)

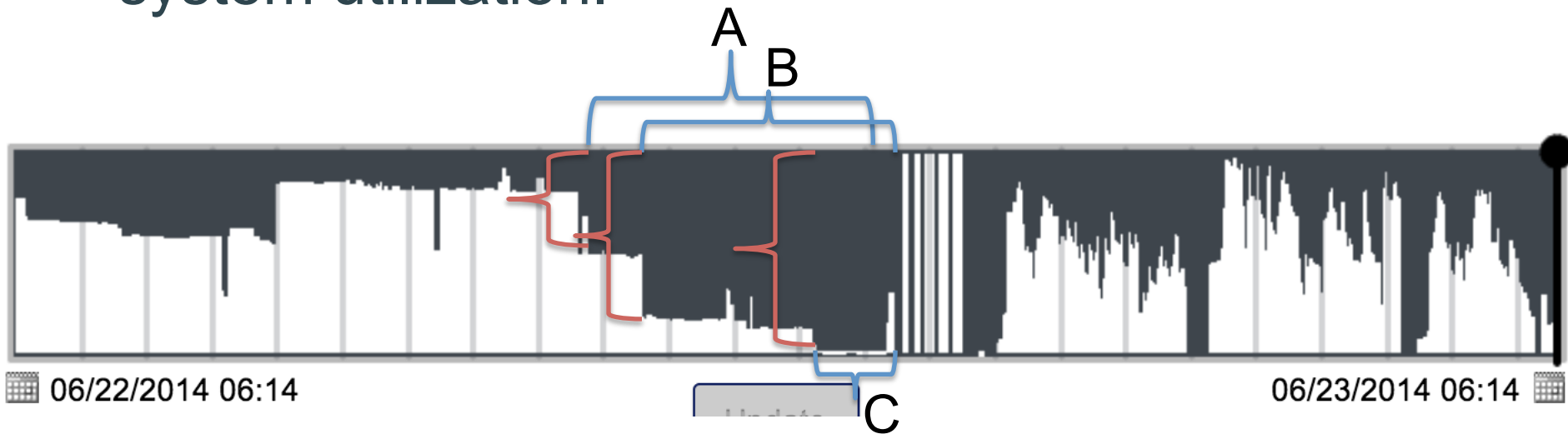BlueWaters ······· Trend Line: (-1.28x +92.70), R-Squared=0.467439

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.
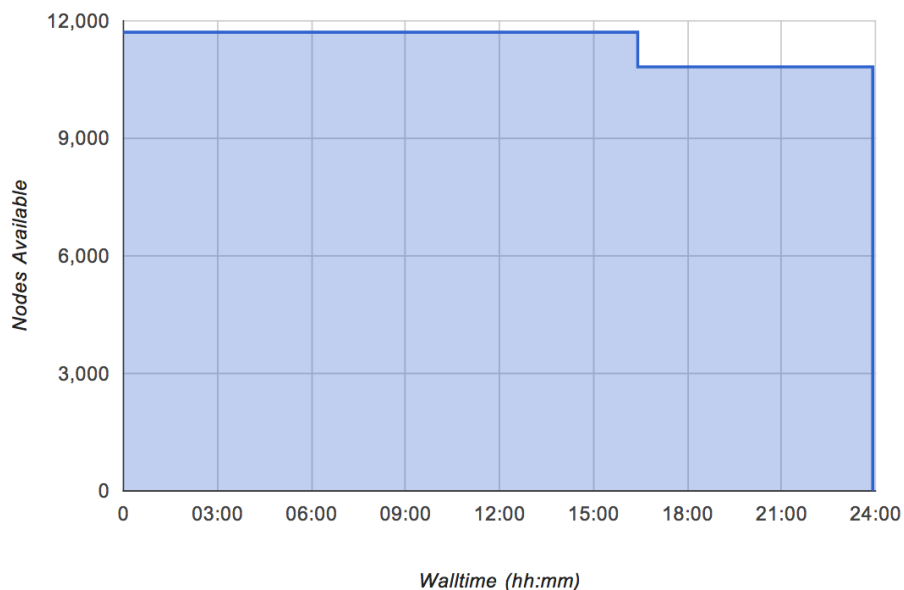
Backfill

- 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.

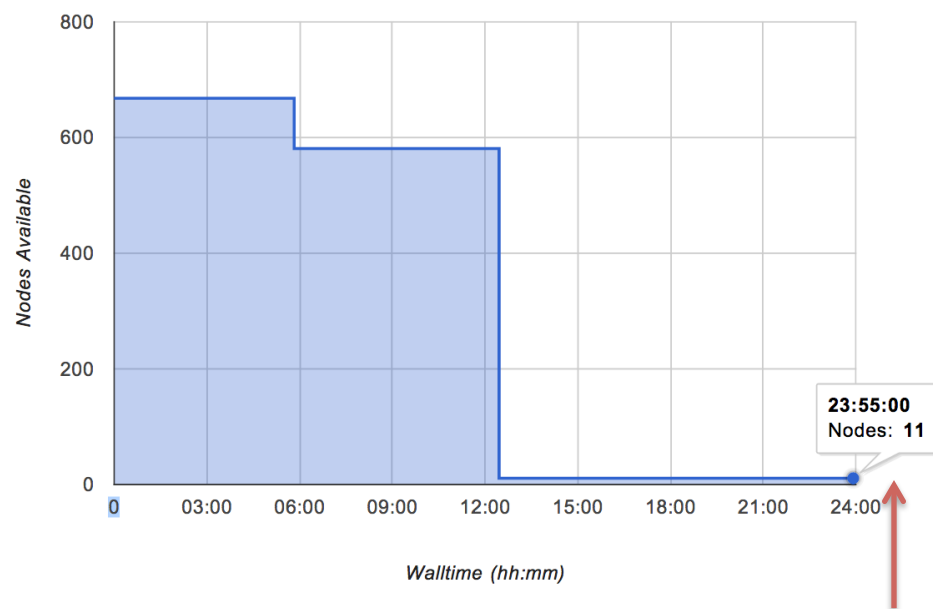- Added a realtime chart of backfill opportunities
  https://bluewaters.ncsa.illinois.edu/why-isn-t-my-job-running#backfill

Backfill

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

XE Nodes Available for Walltime

XK Nodes Available for Walltime
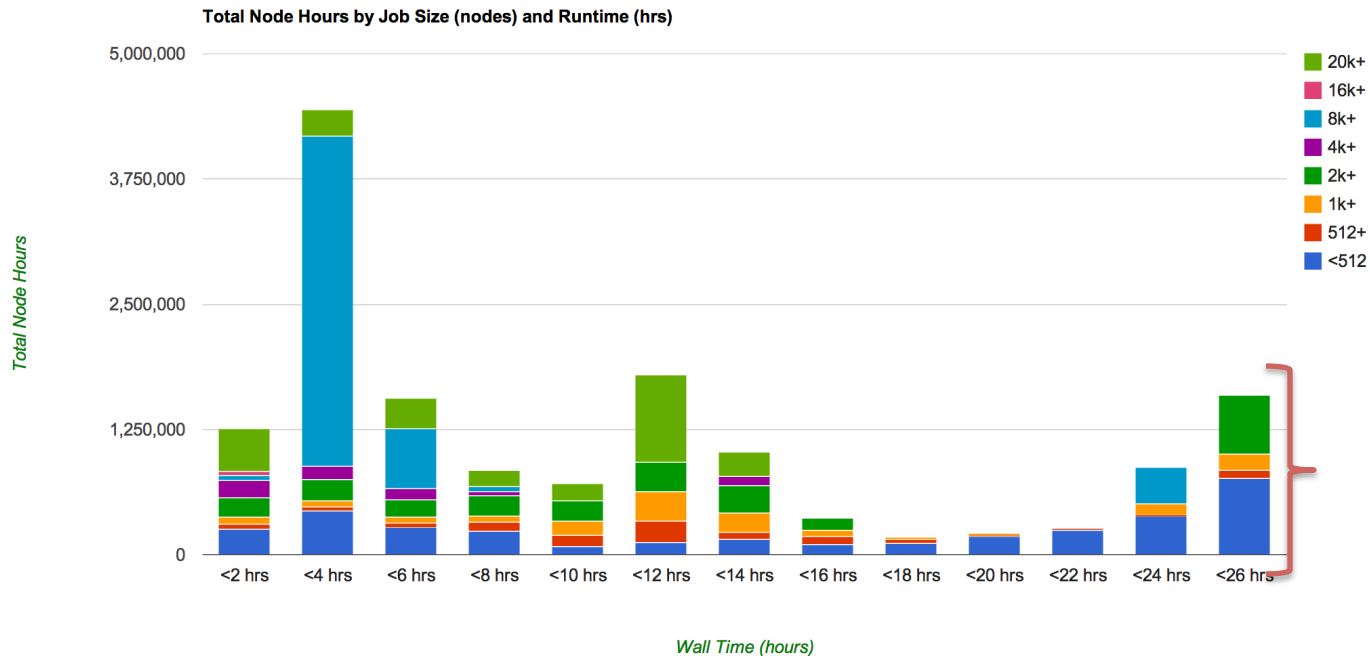
23:55:00
Nodes: 11

Backfill

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

Total Node Hours by Job Size (nodes) and Runtime (hrs)

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 😷), 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)