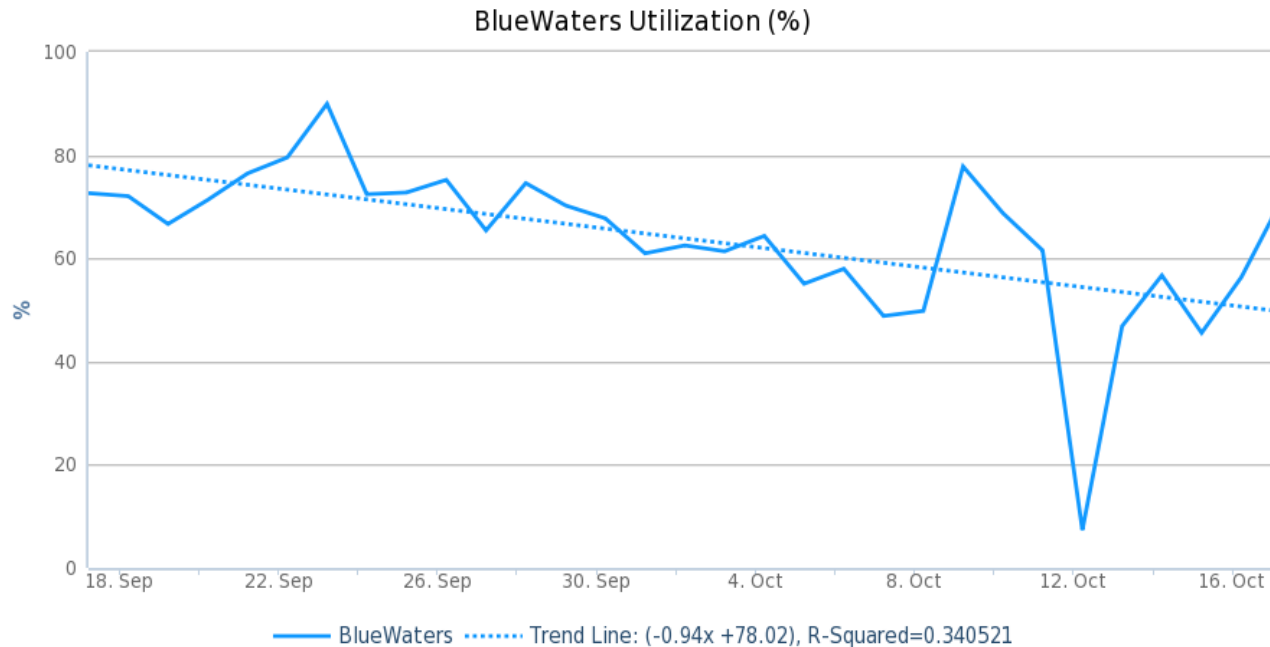# Blue Waters User Monthly Teleconference

Agenda

- Utilization

- Discount Charging

- Recent Events

- Upcoming Maintenance

- New Software

- Upcoming Opportunities

- PUBLICATIONS!

System Utilization

- Utilization since last BW User Call (September 21)

BlueWaters Utilization (%)

BlueWaters ······· Trend Line: (-0.94x +78.02), R-Squared=0.340521

2015-09-17 to 2015-10-17 Src: HPcDB. Powered by XDMoD/Highcharts

- Lack of sufficient job backlog and mix, maintenance.
- Checking accounting records.

Discount charging

Charge factors for completed jobs that meet one or more of the following criteria below are discounted by 25% for each of the following opportunities with a resulting maximum discount of 69% when compounded.

1. job backfills available nodes
2. submit pre-emptible job
3. use flexible wall clock time
4. job wall clock accuracy of 75% or better

- For more information see the
  [July 9th blog entry Charge Factor Discounts for jobs on Blue Waters](#).

Review of Best Practices

- Improper use of login nodes
  - Use compute nodes for all production workloads.
- Avoid excessive calling of job scheduling commands
  - Unintentional denial of service may result otherwise.
- Unbundling of Jobs
  - Independent jobs bundled to 32 nodes or less best for backfill etc.
- Small files usage
  - For application small file IO use projects then scratch.
  - Tar up files before transferring to Nearline.
  - Use directory hierarchies.
  - Avoid many writers to same directory.

Recent Events

- 90+ days without a reboot.
- Scheduler Iteration times
  - Long scheduling times due to number of eligible and running jobs.
  - We are working several ways to improve iteration times.
- Current, Urgent Maintenance
  - Revisiting last weeks maintenance w.r.t. scratch file system. Scale related.

Recent Changes

- Maintenance 10/12
  - SMW upgrade in advance of CLE upgrade
  - Patches to file system server software (Sonexion)
- No intended impact on user experience.

Upcoming Changes

- Software Upgrade - date not set but coming
  - Cray Linux Environment upgrade 5.2UP04
    - Upgrade to CUDA 7.0 from CUDA 6.5
    - CUDA 7.0 support with GNU 4.9
    - Programming environment defaults will change
      - CCE 8.4.X
      - GNU 4.9 (because of CUDA 7)
      - PGI 15.7 (note that 15 and 14 are incompatible)

Upcoming Changes

- File System Upgrade 11/2015-01/2016
  - Lustre upgrade.
  - Move to declustered RAID: GridRAID
  - Move to Hierarchical Storage Management (HSM).
  - Working to minimize inconvenience

File System Upgrade 11/2015 – 01/2016

- Upgrade to Lustre 2.5.1+ server
- Move to Declustered RAID
  - **Fewer OSTs** while keeping same total capacity.
- Internally
  - Data organized better – faster rebuild times
  - Support for Hierarchical Storage Management (HSM) for Lustre to Nearline.
- Externally
  - Better performance.
  - Ease of use from HSM.

File System Upgrade 11/2015 – 01/2016

- Data movement part of the upgrade process.

- Occasional downtimes but most data will be moved in the background.

- NCSA is currently writing the software to do the data movement.

- We will begin with home in November, with scratch planned for January.

Next NSF PRAC Call for Proposals

- [Petascale Computing Resource Allocations](#) (PRAC)

- Deadline is November 13, 2016.

- Webinar is Monday, October 26, 2015 1:00 pm Eastern

  https://nsf.webex.com/mw0401lsp13/mywebex/default.do?siteurl=nsf

- New Program Officer

  - Edward Walker: edwalker@nsf.gov

Next GLCPC Call for Proposals

- [Great Lakes Consortium for Petascale Computation](#) (GLCPC).
- Deadline is November 16, 2015.
- See website for details.

Advanced User Workshop (Rescheduled)

- At NCSA.

- We apologize for the inconvenience of rescheduling.

- The new date will be in March of 2016.

Join NCSA at SC15!

- Please let us know if you will be at SC15.
- Members of the Project Office, SEAS (Tom Cortese, Craig Steffen, JaeHyuk Kwak, Colin MacLean), Networking, Systems (Mike Showerman) will be there among others.
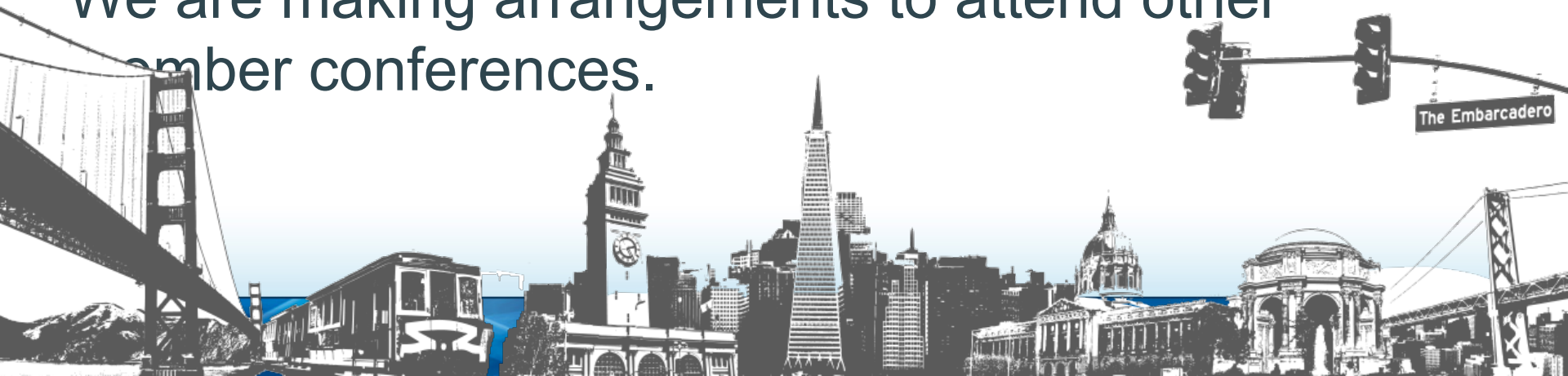
NCSA at AGU!

- The Blue Waters project office and a member of the SEAS team will be at AGU.

- Please let us know if you will be attending. Stop by and say hi.

We are making arrangements to attend other ember conferences.

Annual Blue Waters Symposium

- Be on the look out for a "Save the date" email.

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