

Energy Efficient High Performance Computing Working Group
8/14/12 Meeting Report

INTRODUCTION

The EE HPC WG held a meeting on 8/14/12. This Working Group is composed of members representing major Federal departments and independent agencies, private sector representatives, and members of the academic community. More information can be found at the working group's website, <http://eehpcwg.lbl.gov>. Documents from the group can be found at

<https://docs.google.com/leaf?id=0BzyTVVVRdMKpNWWjNTI5YTEtMTIIZi00YTA5LTlkMTYtZmY3ZDlyZjJjZmMy&hl=en>.

NEXT MEETING October 9th, 9:00-10:00AM Pacific Time

Introductions and Announcements: *Dale Sartor, LBNL*

- July Webinar was a repeat performance of the June ISC BoF on system metrics. The presentations are posted on the EE HPC WG website <http://eehpcwg.lbl.gov/>.
- August Webinar (8/30/12 @ 10:00AM Pacific Time). Anna Maria Bailey will talk about Sequoia, the IBM BlueGene/Q system installed at the Department of Energy's Lawrence Livermore National Laboratory that achieved 16.32 petaflop/s on the Linpack benchmark and is also one of the most energy efficient systems today.
- Upcoming webinars with dates to be determined are Jim Rogers, ORNL on GPU/Jaguar experience and Barcelona Supercomputer Center on Mount Blanc (exascale proto-type using ARM-type processors).
- Program announcement with an energy efficiency focus.
http://www.arl.army.mil/www/pages/8/research/NSA_ARO_BAA.2012-07-12.pdf
- EE HPC WG press coverage links:
http://www.theregister.co.uk/2012/06/12/standardizing_hpc_power_webcast/ and
<http://www.youtube.com/watch?v=ciqygfHkVYc>

Conferences Sub-group Update: *Natalie Bates, LBNL*

- **Recent Conferences:**
 - A Birds of Feather organized by the EE HPC WG was held at the International Supercomputing Conference in June. The speakers were Erich Strohmaier/LBNL and Top500, Herbert Huber/Leibniz Supercomputing Center (LRZ), Buddy Bland/ORNL, Kim Cupps/LLNL, Susan Coghlan/ANL and Nic Dube/HP on behalf of Calcul Quebec. These were the alpha testers for the new power measurement methodology that is being led by the system metrics sub-group. They described their experiences, results and recommendations for improving the methodology.

- **Future Conferences:** (more details at <http://eehpcwg.lbl.gov/events-and-links>)
 - 1st International Workshop on Power Aware Systems and Architectures. Sept 10, 2012. Pittsburgh, PA. <http://ft.ornl.gov/~dol/workshops/pasa/> This workshop is being organized by Dong Li from ORNL. It is held as part of the Annual International Conference on Parallel Processing. Dong Li is a member of the EE HPC WG.
 - Federal Energy Management Program's "Data Center Training for Designers and Operators Live Training". Sept 11, 2012. Golden, CO. http://apps1.eere.energy.gov/femp/training/course_detail_live.cfm/CourseDateId=473
 - 3rd International Conference on Energy-Aware HPC September 12-14, Germany <http://www.ena-hpc.org/> This conference is being organized by Prof. Dr. Thomas Ludwig from the University of Hamburg and co-chaired by Timo Minartz, who is a member of the EE HPC WG.
 - Supercomputing Conference SC12. November 10-16. Salt Lake City, Utah BoF: July 31, 2012 <http://sc12.supercomputing.org/>

The SC'12 Technical Committee has accepted a submission made by the EE HPC Working Group to present a 1 day workshop entitled the "Third Annual Workshop on Energy Efficient High Performance Computing - Redefining System Architecture and Data Centers." Due to the recently dictated travel restrictions, we are planning that this workshop will be replicated in full with a series of webinars available to the public and announced to the membership of the EE HPC WG.

Infrastructure Sub-Group Update: *William Tschudi, LBNL and Dave Martinez, SNL*

- **Energy Efficiency Dashboards.** The dashboard team have been working on capturing both IT and facilities recommendations for dashboard energy efficiency.
- **Commissioning.** Dave Martinez queried if anyone is interested in participating in a commissioning team.

Compute System Sub-group Update: *Craig Steffen/NCSA and Natalie Bates, LBNL*

- **HPC System Metrics.** We are working on an improved power/energy measurement methodology that will be used by the Top500 and the Green500- and now possibly the Graph500 - for submissions on power/energy used while running a workload. In the case of the Top500 and Green500, that workload is High Performance Linpack. The attempt is to achieve a methodology that will allow for an 'apples to apples' comparison of power/energy used by different systems.

In June, we tested an alpha version of the methodology. The alpha testers presented their results and recommendations at an ISC BoF as well as the July EE HPC WG webinar.

The feedback from the alpha testers included several recommendations, including

1. More explicitly define and draw a line in the sand for the system boundary
2. Reconsider whether dc power measurement submissions with estimated power losses over the power supply should be considered a 'high quality' measurement

We are in the process of reviewing the recommendations and writing a beta version of the methodology. This version will be tested in October/November and the results will be presented at SC'12.

We are looking to have all the major vendors and geographies represented as beta testers. Right now, we have beta testers for Cray, IBM and HP and Sun. We are still trying to find sites for Appro, SGI, Bull and Fujitsu. We would also like to have sites in China and Japan as well as additional sites in Europe. Please let Natalie know if you have any leads for beta testers.

PARTICIPANTS

Name	Organization
Anita Cocilova	LLNL
Anna Maria Bailey	LLNL
Axel Auweter	Leibniz Supercomputing Center
Bill Tschudi	LBNL
Bruce Myatt	M+W U.S., Inc.
Craig Steffen	NCSA
Dale Sartor	LBNL
Dennis Symanski	SNL
Garr Di Salvo	ARUP
Joy Gloss	HP
Kurt Keville	MIT
Marriann Silveira	LLNL
Matt Campbell	UCSD
Natalie Bates	LBNL
Rod Mahdavi	LBNL
Rodrigo Garcia da Silva	IBM