Energy Efficient High Performance Computing Working Group
2/14/12 Meeting Report

INTRODUCTION

The EE HPC WG held a meeting on 2/14/12. 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=0BzyTVVVRdMKpNWVjNTI5YTEtMTllZi00YTA5LTlkMTYtZmY3ZDIyZjJjZmMy&hl=en.

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

NEXT Webinar March 13th, 10:00-11:00AM Pacific Time

Dennis Symanski of EPRI will be presenting

Running High Performance Computers on High Voltage Direct Current

Introductions and Announcements: *Dale Sartor, LBNL*

- Dale introduced participants and then announced that this meeting would be followed by a Webinar on "Co-designing HPC systems and facilities," presented by Michael Oberg, UCAR.

Conferences Sub-group Update: *Marriann Silveira, LLNL and Anna Maria Bailey, LLNL*

- **Future Conferences (more details at** http://eehpcwg.lbl.gov/events-and-links)
  - The Green Grid Technical Forum (members only). Mar 6-7. San Jose, California
  - Compute Canada and BCNET's HPC Symposium. May 1-3. Canada
  - National Laboratories Information Technology. May 29-Jun 1. Sun Valley, ID.
  - International Green Computing Conference. June 5-8. San Jose, California
  - International Supercomputing Conference. June 17-21. Hamburg, Germany
  - GovEnergy. August 19-22. St. Louis, MO.
  - 3rd International Conference on Energy-Aware HPC September 12-14, Germany
  - Supercomputing Conference SC12. November 10-16. Salt Lake City, Utah
  - Greenbuild 2012. November 14-16. San Francisco, California

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

- **Liquid cooling.** We have moved into the adoption phase and are no longer meeting as a group. The adoption plan includes driving it through RFP guidelines, re-writing a succinct version of Henry's paper for a broader/executive audience, and submitting articles to targeted publications (e.g., SPO, ASHRAE).
- **Shifting IT load.** Michael Patterson has drafted a whitepaper that reviews successes and issues with PUE and explores some of the gaps in the metric. It disassembles the metric and then applies the simple logic to the IT then to the IT and Infrastructure as a whole. This methodology is shown to produce two new metrics, with the higher level metric being a combination of PUE and IT EUE to give Total EUE. This draft whitepaper has been through a couple of iterations by the Shifting IT Load team. The team has been expecting to ultimately collaborate with The Green Grid on this effort.
- **Energy Efficiency Dashboards.** The dashboard team has been meeting regularly and is reviewing a draft document that attempts to capture energy efficiency HPC facility and system requirements from the perspective of three different audiences: the Director, the IT manager and the Facilities manager. The team has also started to review actual dashboards from existing DOE facilities. Last week, the team reviewed LBNL/NERSC's dashboards and later this month will review NREL's dashboards.

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

- **HPC System Metrics.** The Computing System Sub-Group has developed a draft document on power measurement methodology that has been sent out to the entire EE HPC WG for review. The title of this document is "HPC Energy Efficiency Workload Metrics: Power Measurement Methodology," and it recommends a methodological approach for measuring, recording, and reporting the power used by an HPC system while running a workload.
- **System Power Monitoring and Management.** This team had its first meeting and is drafting a set of requirements for system power measurement, monitoring and management features.

PARTICIPANTS

Name	Organization
Anna Maria Bailey	LLNL
Natalie Bates	LBNL
Joe Breen	University of Utah
Anita Cocilova	LLNL
Matt Campbell	UDSC
David Grant	ORNL
Steve Harrington	Flometrics
Josip Loncaric	LANL
Florent Parent	CLUMEQ
Dale Sartor	LBNL

Marriann Silveira	LLNL
Vali Sorell	Syska Hennessy Group
Bill Tschudi	LBNL
Adam Walters	FNAL
Ralph Wescott	PNNL
Alan Yoder	NetApp, Inc.