

Energy Efficient High Performance Computing Working Group
June 14, 2011 Meeting Report

INTRODUCTION

The EE HPC WG held a meeting on June 14, 2011. 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=0BzyTVVVRdMKpNwVjNTI5YTEtMTIIZi00YTA5LTlkMTYtZmY3ZDIyZjJjZmMy&hl=en>.

NEXT MEETING September 13th, 9:00-10:00AM Pacific Time

NEXT Webinar July 12th, 10:00-11:00AM Pacific Time

Introductions and Announcements: *Bill Tschudi*

Bill Tschudi began the meeting. At the beginning of May the working group had about 160 members. Of these members about half are affiliated with the Federal sector, while the rest come from the private sector and academia.

Conferences Sub-group Update: *Marriann Silveira*

SC'11.

If you have colleagues who would like to subscribe to the SC11 monthly newsletter, they should send an email from the address they want subscribed, with 'subscribe' in the subject line, to:

sc-newsletter-request@group.supercomputing.org

Date: November 12-21, 2011

Location: Seattle, Washington

<http://sc11.supercomputing.org/>

Potential EE HPC WG Topics:

- Power Management
- Liquid Cooling
- Getting the Data Center ready for Multi-Petascale and Exascale
- HPC System/Rack Power Budget
- Free Cooling and Heat Re-use Case Studies
- DC Power Demonstrations
- Glass House and Regional Strengths and Weaknesses
- Storage and Networking Energy Efficiency
- EE HPC WG BoF – Submission deadline July 22

Second International Green Computing Conference (IGCC'11)

Date: July 25-28, 2011

Location: Orlando, Florida

More Information: <http://www.green-conf.org>

Deadlines: Papers are due March 18.

GovEnergy

Date: August 7-10, 2011

Location: Cincinnati, Ohio

More information: <http://www.govenergy.gov/>

Second International Conference on Energy-Aware HPC Computing

Date: September 7-9, 2011

Location: Germany

More Information: <http://www.ena-hpc.org/>

More information on upcoming events can be found at: <http://eehpcwg.lbl.gov/events-and-links>

Infrastructure Sub-Group Update: *William Tschudi and Henry Coles*

Bill Tschudi thanked Otto VanGeet for his work with the Infrastructure Sub Group. Otto will be stepping back, and Dave Martinez of Sandia National Laboratory will be playing a bigger role in leading the group.

The key activities of the Infrastructure Sub Group are listed below.

- Developing liquid cooling temperature guidelines, which are almost finalized and will be taken to the ASHRAE committee for recommendation
- Creating infrastructure metrics that can fairly account for shifts from infrastructure to IT or vice versa without penalizing either
- Incorporating the use of DC Pro Tool into DOE's site sustainability plans
- Incorporating on-site data center energy practitioner into DOE site sustainability plans
- Presenting (Mike Patterson has the lead) paper at ASHRAE conference on the use of waste heat and waste heat metric
- Preparing ASHRAE paper (Bill Tschudi has the lead) dealing with alternate cooling that uses conduction to get out of servers
- Creating data center programming guide and Guide on how to consider 90.1 in data centers (LBNL)
- Examining corrosion levels due to air contamination (results on LBNL website)

Mike Patterson volunteered to work on the in-the-box/ out-of-the-box PUE measurement issue. Christiaan Best says that he has fan power use data that may be useful in this process.

The group is also working on a set of standard specs for water-cooled systems. They have developed an algorithm and approach, and have agreed upon the calculation method. They will work with ASHRAE to combine them with other ASHRAE cooling guidelines.

Compute System Metrics Sub-group Update: *Craig Steffen*

The Compute System Sub-group has surveyed data centers from the Green500 and asked about their reporting, metrics, power measures and energy measures, etc.

The group is also working on an MOU between the EE HPC WG, GreenGrid and the Top500. Legal issues have been cleared up and the MOU is now in the pipeline. The group expects to include more interested DOE participants

There is a new proposal for a metrics document to be created which treats energy measurement in a tiered fashion. It will help to encourage more detailed reporting.

Representatives from this team will be presenting at ISC a week from today and at the GreenGrid Technical Summit meeting in July.

Webinar Series

Directly following the EE HPC WG Meeting on June 14, Dave Martinez of Sandia will give a webinar presentation on Sandia National Lab's Red Sky cooling solution.

Rick Rivera, LANL will present on July 12th at 10AM. He'll speak about an on-line monitoring system for power measurements from substations to SWB associated with IT loads, mechanical loads and general building loads. The system can access real-time power measurement and real-time PUE calculations. LANL also installed wireless thermal sensors at rack-level, ceiling, supply, return, and static pressure. This monitoring system has made a world of difference and enabled the data center to run more efficiently, reducing PUE from 1.65 to 1.32.

Anna Maria Bailey, LLNL will present on Power Monitoring on September 13th immediately after the EEHPCWG meeting.

PARTICIPANTS

Name	Organization
Caleb Rockenbaugh	NREL
Christiaan Best	Green Revolution Cooling
Bill Tschudi	LBNL
Dale Sartor	LBNL
Adam Lewis	University of Louisiana
Jim Crow	NERSC
Mike Patterson	Intel
Robert Welch	Ameresco
Marriann Silveira	LLNL
Dave Martinez	SNL
Dale Sartor	LBNL
Craig Steffen	NCSA
Allison Young	Energetics