Energy Efficient High Performance Computing Working Group
Full Meeting
September 28, 2009

Attendees

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Meeting Notes

The contact list will be distributed along with the meeting notes. Participants are asked to check their contact information, make changes, and add others if necessary. The contact list is not to be used for any purpose other than EEHPC Working Group business.

A copy of the draft charter was distributed along with the agenda for today's meeting. At a subgroup meeting on the charter, a decision was made to incorporate individual subgroup charters into one charter for the group as a whole. Please review the draft charter and respond with comments to Dale Sartor and Allison Young.

Otto Van Geet discussed the infrastructure metrics subgroup. This subgroup will develop and encourage the use of metrics, and come up with industry standards. The subgroup will also be promoting the use of waste heat and examining fans, power supplies, and air management metrics. Otto and Bill Tschudi had a session with GreenGrid on a metric for the use of waste heat. They agreed upon a metric and want to make it the industry standard. The denominator is the amount of available heat.

Example: If you had a 500 kW IT load and a 500 kW infrastructure load, and you capture 200 kW for heat elsewhere, the metric would be 20%. The exact way to express the metric is still under consideration, but this is essentially what it is measuring.

The subgroup would like to make fans part of infrastructure rather than computing. The driver is that some HPC companies are installing very large fans in the box, while others take fans out of the box and put them in infrastructure. There is gray area in comparing apples to apples with different vendors. Mike Patterson said that HPC machines are unique enough that it is worth tracking down PUE independently.

With regard to waste heat, the subgroup considers that to be air or water used to cool computers that it then used to directly heat elsewhere. Details of this might have to be worked out. Recovering heat from the chiller should be counted, but it gets complicated if the chiller is serving the entire building.

Bill Tschudi discussed the HPC Metrics subgroup. John Shalf suggested subdividing HPC workload into market segments. The group needs to agree on the metrics as well as the desired level of refinement that they want to capture before soliciting volunteers. It is similar to EPA gas mileage. Different vehicles have diff capacities, but the metric is always miler per gallon. Trying to integrate workload makes it more complicated. In terms of a timeline, one year was the stated timeline; however, all subgroups are not on the same timeline. In the short-term, it is reasonable to have a white paper or some document for SC09, which is November 15-20, 2009. Bill and John will get comments on John's document and put it out as a discussion paper for SC09.

Laura DiDio suggested that once metrics are established, it would be beneficial to make them available and put out a survey.

Brent Gorda updated the group on SC09. The Data Center of the Future challenge did not get enough applicants. Instead, they obtained booth space in the hallway just outside the exhibit floor which will showcase the teams that did enter in addition to high-profile data centers currently in the works. This booth would be an opportunity for this working group to advertise its activities. Brent encouraged participants to nail down activities for SC10 in New Orleans as soon as possible. Chip Smith at LBL and Janine Cook are in charge of the student design competition. The group should get in touch with them to discuss incorporating energy efficiency into the competition.

Otto Van Geet discussed the Best Practice Guide and went over the table of contents. He asked the group to provide comments. It is not intended to be a design guide, but rather a guide for owners to use in consultation with designers.

Action Items
1. Update and send out document prepared for GreenGrid meeting (Otto Van Geet and Bill Tschudi)
2. Send out write-up (John Shalf)
3. Provide comments on John Shalf's write-up, the Best Practice Guide, the contact list, and the draft charter (All)

Upcoming Events
BOAF meeting at SC09 is Thursday, November 19 from 12:15 – 1:15 pm in room D139-140