

NEXT General Membership Meeting

Date: Tuesday, June 14th, 2022

Time: 9:00AM PT

<https://lbnl.zoom.us/j/92364992188>

Meeting ID: 923 6499 2188

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[iCalendar \(.ics\) files](#)

Energy Efficient High Performance Computing Working Group

04/12/2022 Meeting Report

INTRODUCTION: The [Energy Efficient High Performance Computing Working Group \(EE HPC WG\)](#) held a meeting on 04/12/22. This Working Group is composed of members representing major governmental departments and independent agencies, private sector representatives, and members of the academic community. More information can be found at the working group's website, <https://eehpcwg.llnl.gov/>.

APR'22 MINUTES:

Liquid Cooling Specification, report by Dale Sartor

I am reporting on progress with a broader open liquid cooling specification. We've completed the spec for the transfer fluid. As I mentioned last time, it's a living document so it'll be subject to improvements over time. The specification was submitted for consideration to both the Open Compute Project (OCP) as well as the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE). With OCP, it'll be an OCP spec. With ASHRAE, it would be for integration into the upcoming liquid cooling book that they update every few years and that is currently being revised. So that's what is in progress. Our hope is to harmonize specifications across various organizations relative to the transfer fluid and wetted materials. Both OCP and ASHRAE are working on another specification that would involve 25% glycol. That means that there will be one spec for treated water and another spec for 25% glycol.

System-Level Power Measurement, report by Thomas Ilsche

We had two meetings and we started discussing the scope of the document and our group. We had a summary of the feedback that has been solicited during Green500 Bofs over the years. This feedback is qualitative and from sites that have used the methodology for a L2 or L3 submission. Not much has happened yet, but I think we're getting off to a good start.

Operational Data Analytics (ODA), report by Michael Ott

The ODA Team is still inviting different sites to come in and talk about their activities. Most recently, we had Sandia National Laboratory. Ben Schwaller and Jim Brandt talked about an initiative called 'app-sys-fusion' that is developing data collection at the system and application levels, analyzing it, and presenting relevant information to application code teams. Then, we had further discussion from Sandia with a focus on the facility and facility infrastructure ODA capabilities. David Martinez presented an overview of their Nlyte Data Center system from a

management/user perspective. Why it was chosen, what it has delivered, how they intend to use it in the future. David Smith then shared screen for a hands-on deep dive into the way it works. We are also trying to find people to help organize a Birds of Feather submission for SC22 in Dallas this year. Hopefully, it will take place in person so we can have a proper BoF session.

Website Migration, report by Gregg Barrett

The EE HPC WG portal website [<https://eehpcwg.llnl.gov/>] generally has a new look and feel. It's got some new content and it should be easy to navigate and has everything in one place. So, looking forward to folks just browsing and providing some feedback because, obviously, this is not something which is static, but something, which is going to evolve over the coming months as well.

Procurement, report by Gert Svensson

The procurement document talks about the Energy Efficiency in procurements and we are continuously improving that document. Now, we would like to improve it regarding sustainability and other environmental considerations as well like CO2 budgets and site location. We also would like to collaborate more with the vendors and we are seeking more collaboration and involvement from the vendors. If you are interested in working with this interesting topic, you are welcome to contact us. We are also looking for more recent procurement documents which you could share with us. That way we can see what is going on in the market today and we can improve our document for other people.

Natalie added that there had been a data center sustainability summit meeting on April 6 and 7 that was hosted by the United States General Services Administration. It did have an HPC specific session, but it mostly focused on the energy, environment and infrastructure benefits that result from a transition from government-owned data centers to commercially-owned facilities, cloud computing, or software-as-a-service.

[<https://www.gsa.gov/blog/2022/04/15/data-center-sustainability-summit-2022-recap-it-modernization-and-green-tech>]

Liquid Cooling "How-to" Team, report by Natalie Bates

This is a report on the other liquid cooling team. Under Dale's lead, we produced the transfer fluid document that is, as Dale already reported, currently being reviewed and utilized by OCP and ASHRAE. Major kudos to Dale and the other team participants. That is excellent work. The hand off to those organizations seems to be well underway, so high leverage activity. I really appreciate all the work that went into it, and it was a lot of work.

Now, rather than moving on to the other subsystems that might be part of an overall liquid-cooled rack specification, we've decided to move a little bit sideways. Dave Martinez and David Sickinger have started a team that will develop a how-to for liquid cooling. It is geared towards taking all of the learnings that we've had in the very large HPC centers that have been using liquid cooling for a long time and coming up with recommendations. A guideline for taking

baby steps. How do you start doing liquid cooling? What are some of the initial things that one might do? It doesn't take a green field approach. I already have a site. I want to start doing some liquid cooling. What are some things that I can do? What are the first steps I should take? We have ~ 45 people that have signed up for that team.

Conferences, report by Natalie Bates

We have two major workshops that we are currently in the process of planning. One is the EE HPC WG Workshop. This is a workshop that we held at SC for years, but in 2012 we went virtual and we're going to keep it virtual again this year. It's going to be held on May 17th and 18th. We have a really good program lined up. The first day is going to have David Patterson as our keynote speaker. Dave is from Google and will talk about ML and sustainability. Thanks to Gregg Barrett for securing Dave as our keynote. He is very well known and should be a major draw for participants. This will be followed by a roadmap for HPC platform architecture perspective. What will it look like over the next five years? What are some of the subsystems that are really going to affect our power and energy requirements in the facility? Then we're going to have a panel session on sustainability and another session on cooling. The second day as I said, it's going to be two days. So the first day is three hours, the second day is just going to be two hours. The second day, I will give an update on the EE HPC Working Group. Then we will do breakout sessions, five different breakout sessions that are going to try and encourage the same kind of networking and community and discussion that we have attained in the past with our in-person workshop. That is difficult to do with the virtual workshop. These breakout sessions will be run like a virtual birds of a feather. We're not exactly sure how we're going to do it, but we will probably be sending out a survey monkeys to solicit participation and feedback and dialogue before the meeting. Workshop presentations and recordings have been posted on the [website](#).

[link: <https://sites.google.com/eehpcwg.org/ee-hpc-wg-workshop-site/home>]

The other workshop is the EE HPC State of the Practice workshop. I sent out a call for participation and announced that it will be as part of the Cluster2022 Conference that is currently planned for Heidelberg on September 6th. We were expecting that the Cluster2022 Conference would allow for hybrid participation as they did in the past two years. It may be, however, that the organizers can allow for an in-person only event. Given the state of the situation today with Covid and other global uncertainties, we have told the cluster organizers that unless the workshop can be held as a virtual or hybrid event that we will no longer want to participate. So I'm hoping that we will be able to continue with Cluster2022, but there is uncertainty. The EE HPC SOP workshop is a great opportunity for people to submit written work on things that you think are interesting. We accept both short for page and long papers and we have rigorous peer review of those papers. This will be our fourth Annual EE HPC SOP Workshop.

Website:

<https://sites.google.com/eehpcwg.org/eehpcsop2022-site/home>

Submission:

<https://easychair.org/conferences/?conf=eehpcsop2022>

As Michael said, it's time to start thinking about birds of a feather for SC22. The submission for birds of a feather is July 1st. So anybody that's interested in doing a birds of a feather, please let me know. We need to think about doing that. We will definitely do a joint submission with the Green500. We are looking at doing a panel that focuses on managing HPC through major disruptions, like Covid and supply chain disruptions, the war in Ukraine. How might we plan for and mitigate the disruptions that we're seeing.

ISC is right around the corner and we do have a Green500 Bof there. There is also a Monitoring and Operational Data Analytics (MODA) workshop and Michael Ott will be speaking at that workshop. MODA is a workshop that's been held at ISC for a couple years now.

Finally, we are planning an ORNL/Frontier Showcase Event similar to the one we did last year with RIKEN/Fugaku.

MEMBER ANNOUNCEMENTS:

Jimil Shah announced the International Technical Conference and Exhibition on Packaging and Integration of Electronic and Photonic Microsystems. [<https://event.asme.org/InterPACK>]

Allan Cantrel gave an update on an HPC and OCP

A.cantle@nallasway.com

OCP Global Summit 2021 - Introduction to OCP HPC :

<https://www.youtube.com/watch?v=doYYZzWvZ-Q>

OCP HPC Wiki - <https://www.opencompute.org/wiki/HPC>

Jefferey Murrell announced the Better Building, Better Plant Summit on May 17-19, 2022, there will be a Decarbonizing Data Centers workshop. If you have any questions, please contact me at Jefferey.Murrell@ee.doe.gov

MEETING PARTICIPANTS:

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