

# LUG 2014

Lustre® User Group

Miami, FL April 8-10



# Welcome!

Welcome to the 12<sup>th</sup> Annual Lustre® User Group Conference. As key stakeholders in the open source file system community, your participation and input is invaluable. This conference is our primary venue for discussions and seminars on open source parallel file system technologies.

While you are here, we invite you to:

*Learn, Share, Develop Best Practices, Provide Feedback to Developers, and Provide Feedback to LUG Organizers*

Following LUG, OpenSFS will host public meetings beginning at 12:30pm on Thursday, April 10. Sessions will be held in Salon GHJK, adjacent to the Grand Ballroom.

- 12:30pm - 1:30pm: Community Development Working Group
- 1:40pm - 2:40pm: Benchmarking Working Group
- 2:50pm - 3:50pm: Technical Working Group

## Agenda

LUG will feature three days of sessions and a panel led by the world's leading developers, administrators, solution providers, and users of Lustre.

## Presentations

- All presentations will be held in the Grand Ballroom
- All sponsor exhibit tables will be located in the Grand Ballroom Foyer

## Meals

Breakfast will be served in the Grand Ballroom Foyer (3rd Floor) and lunch will be served in the Bayfront Terrace South (1st Floor). The networking reception on Day 1 will be held on the Lower Pool Deck (5th Floor).

- Breakfast will be served on Days 1, 2 and 3, and lunch will be served on Days 1 and 2
- Snacks will be provided during morning and afternoon breaks

## Technical Poster Exhibitions

This year, we are excited to add technical poster exhibitions for easy access at any point during the event. See the full list at the end of the Agenda.

- Posters will be located outside the Grand Ballroom Foyer

# Tuesday, April 8 • Day 1

7:00am - 9:00am	<b>Registration &amp; Breakfast</b>
9:00am - 9:10am	<b>Welcome Remarks</b> Galen Shipman, OpenSFS
9:10am - 9:40am	<b>OpenSFS and EOFS Update</b> Galen Shipman, OpenSFS Hugo Falter, EOFS
9:40 am - 10:10am	<b>Lustre Releases</b> Christopher Morrone, OpenSFS
10:10am - 10:30am	<b>Break</b>
10:30am - 11:00am	<b>Lustre Client Performance Comparison and Tuning (1.8.x to 2.x)</b> John Fragalla, Xyratex
11:00am - 11:20am	<b>Moving Lustre Forward – What We’ve Learned and What’s Coming</b> Brent Gorda, Intel
11:20am - 11:50am	<b>Lustre Client IO Performance Improvements</b> Andrew Uselton, Intel
11:50am - 12:10pm	<b>Xyratex Update (Lustre Acquisition, Futures, etc.)</b> Michael Connolly, Xyratex
12:10pm - 1:10pm	<b>Lunch</b>
1:10pm - 1:40pm	<b>Lustre 2.5 Performance Evaluation: Performance Improvements with Large I/O Patches, Metadata Improvements, and Metadata Scaling with DNE</b> Hitoshi Sato, GSIC, TITECH Shuichi Ihara, DataDirect Networks
1:40pm - 2:10pm	<b>Lustre Future Features</b> Andreas Dilger, Intel
2:10pm - 3:10pm	<b>Lustre Feature Details</b> Mike Pershin, Intel Jinshan Xiong, Intel John Hammond, Intel
3:10pm - 3:30pm	<b>OpenSFS, Lustre, and HSM: An Update from Cray</b> Cory Spitz, Cray Jason Goodman, Cray
3:30pm - 4:00pm	<b>Break</b>
4:00pm - 4:30pm	<b>“Project” Quota for Lustre: A Proposed New Feature</b> Shuichi Ihara, DataDirect Networks
4:30pm - 5:00pm	<b>Dynamic LNET Config</b> Amir Shehata, Intel
5:00pm - 5:30pm	<b>LLNL Production Plans and Best Practices</b> Marc Stearman, Lawrence Livermore National Laboratory
5:30pm - 7:30pm	<b>Evening Reception</b>

# Wednesday, April 9 • Day 2

8:00am - 9:00am	<b>Registration &amp; Breakfast</b>
9:00am - 9:30am	<b>State of the Lustre Community</b> Tommy Minyard, OpenSFS
9:30am - 10:00am	<b>PLFS and Lustre Performance Comparison</b> Brett Kettering, Los Alamos National Laboratory
10:00am - 10:30am	<b>Break</b>
10:30am - 11:00am	<b>Running Native Lustre Client inside Xeon Phi</b> Dmitry Eremin, Intel Zhiqi Tao, Intel
11:00am - 11:20am	<b>Integrating Array Management into Lustre</b> Roger Ronald, System Fabric Works Kevin Moran, System Fabric Works
11:20am - 11:50am	<b>Metadata Benchmarks and MD Performance Metrics</b> Sorin Faibish, EMC
11:50am - 12:10pm	<b>Practical Applications of Lustre/ZFS Hybrid Systems</b> Josh Judd, WARP Mechanics
12:10pm - 1:10pm	<b>Lunch</b>
1:10pm - 1:40pm	<b>Collective I/O for Exascale I/O Intensive Applications</b> Sai Narasimhamurthy, Xyratex
1:40pm - 2:10pm	<b>SSD Provisioning for Exascale Storage Systems: When, Where and How much?</b> Devesh Tiwari, Oak Ridge National Laboratory
2:10pm - 2:40pm	<b>Exascale Computing Vision</b> Eric Barton, Intel
2:40pm - 3:10pm	<b>An Efficient Distributed Burst Buffer System for Lustre</b> Bradley Settlemyer, Oak Ridge National Laboratory
3:10pm - 3:30pm	<b>Lustre for the Real World: Experiences with Lustre Beyond Standard HPC Applications</b> Robert Triendl, DataDirect Networks
3:30pm - 4:00pm	<b>Break</b>
4:00pm - 5:00pm	<b>Panel: 2020 HPC Platform Architectures and their Impact on Storage</b> Moderator: Stephen Simms, Indiana University Panelists: Al Geist, Oak Ridge National Laboratory Rob Ross, MCS, ANL Lee Ward, Sandia National Laboratory Terri Quinn, Lawrence Livermore National Laboratory
5:00pm - 5:30pm	<b>Lustre File System Acceleration Using Server or Storage-Side Caching: Basic Approaches and Application Use Cases</b> James Coomer, DataDirect Networks

# Thursday, April 10 • Day 3

8:00am - 9:00am	<b>Registration &amp; Breakfast</b>
9:00am - 9:30am	<b>Run Hadoop Map Reduce Jobs on Lustre</b> Zhiqi Tao, Intel
9:30am - 10:00am	<b>Progress Report on Efficient Integration of Lustre and Hadoop/YARN</b> Weikuan Yu, Auburn University Omkar Kulkarni, Intel
10:00am - 10:30am	<b>Break</b>
10:30am - 11:00am	<b>OpenSFS Benchmarking Working Group Filesystem Monitoring Task Effort</b> Andrew Uselton, Intel
11:00am - 11:30am	<b>Fine-grained File System Monitoring with Lustre Jobstat</b> Patrick Fitzhenry, DataDirect Networks Daniel Rodwell, National Computational Infrastructure, Australian National University
11:30am - 12:00pm	<b>Lustre Log Analyzer: A Community-centric Effort to Improve Lustre Log Analysis</b> Kalpak Shah, DataDirect Networks
12:00pm - 12:10pm	<b>Closing</b>
12:10pm	<b>End of LUG 2014</b>

## Technical Poster Exhibition • April 8-10

**Correlation of File and Batch System Activities in the HRSK-II Project**  
Michael Kluge, TU Dresden

**Cooperative Work with SAMBA on Lustre**  
Giuseppe Bruno, Banca d'Italia

**Data Separation on Lustre Systems with ZFS**  
Kyle Lamb, Lawrence Livermore National Laboratory  
Brett Kettering, Lawrence Livermore National Laboratory

**Lustre Experience at Diamond Light Source (DLS)**  
Frederik Ferner, Diamond Light Source

**OpenSFS Benchmarking Work Group**  
Sarp Oral, Oak Ridge National Laboratory

**What is so Hard about Backing up a PiB Sized Filesystem?**  
Andy Loftus, University of Illinois

We hope you enjoyed LUG 2014 and welcome your input!

Complete the LUG Conference survey for your chance to win a *Kindle Fire HD Tablet*,  
*Bose® Acoustic Noise Cancelling Headphones*, or a *GoPro Hero 3 Camera*.

# Join the OpenSFS Community

OpenSFS ensures the health and stability of open source file systems, a key HPC technology and an important component in a growing list of non-HPC markets.

We work tirelessly for:

- Stabilization, support, and maturation of Lustre as open source
- Critical new technology development programs like Exascale
- Shared support and development costs
- Community engagement
- Building awareness and expansion of the technical knowledge base

Our goal is the continued evolution of robust open source file systems for - and under - the control of the HPC community.

Your involvement is essential to the future of OpenSFS.

Visit our website for more information:  
[www.opensfs.org](http://www.opensfs.org)



**About OpenSFS:** OpenSFS (Open Scalable File Systems) is a strong and growing nonprofit organization dedicated to the success of the Lustre® file system. OpenSFS was founded in 2010 to advance Lustre development, ensuring it remains vendor-neutral, open, and free. Since its inception, OpenSFS has been responsible for advancing the Lustre file system and delivering new releases on behalf of the open source community. Through working groups, events, and ongoing funding initiatives, OpenSFS harnesses the power of collaborative development to fuel innovation and growth of the Lustre file system worldwide.

---

## LUG 2014 Planning Committee

**Sebastien Buisson** - Bull

**Aurélien Degrémont** - CEA

**Stephane Thiell** - CEA

**Stephen Simms** - Indiana University

**Bill Webster** - Intel

**Mark Gary** - Lawrence Livermore National Laboratory

**Parks Fields** - Los Alamos National Laboratory

**Sarp Oral** - Oak Ridge National Laboratory

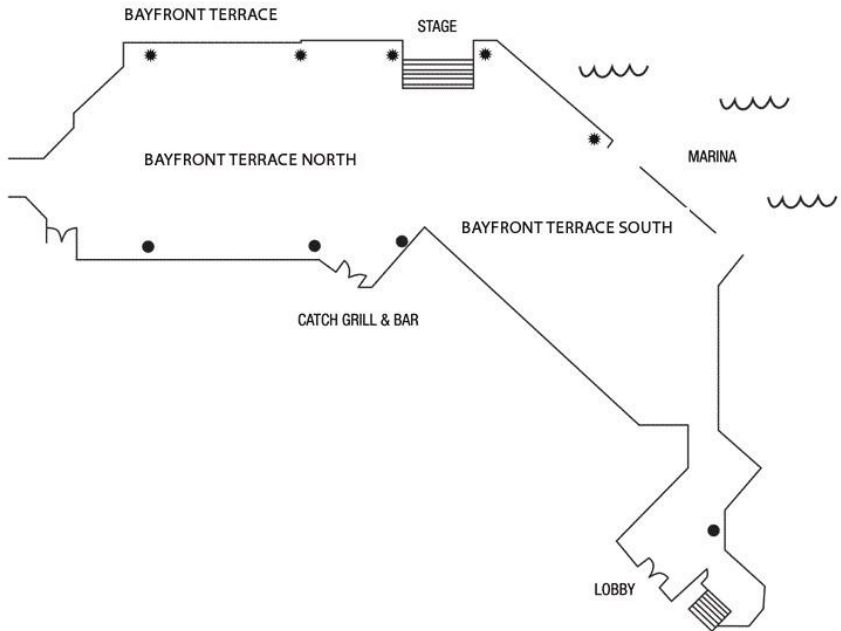
**Jesse Casman** - Oppkey

**Branislav Radovanovic** - NetApp

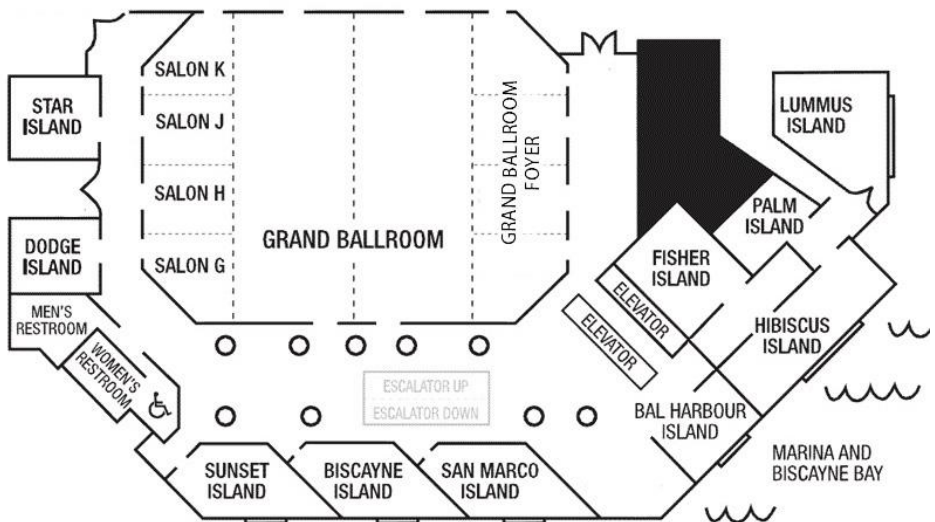
**Steve Monk** - Sandia National Laboratories

**Michael Connolly** - Xyratex

## LEVEL 1



## LEVEL 3 FOYER



LUG 2014 is Made Possible by our Generous Sponsors

Gold Sponsors

**CRAY**<sup>®</sup>

**DataDirect**<sup>™</sup>  
NETWORKS



**xyratex.**

Silver Sponsors



[www.opensfs.org](http://www.opensfs.org)