Lustre Roadmap

HPC Software Workshop
Open Storage Track, Regensburg 2009

Dan Ferber
Sun Microsystems
Welcome to
The Sun HPC Software Workshop
Regensburg, Germany
Open Storage Track
LUG and Regensburg Participation

<table>
<thead>
<tr>
<th>Location</th>
<th>Total Registrants</th>
<th>Organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miami Beach, FL</td>
<td>68</td>
<td>40</td>
</tr>
<tr>
<td>Sonoma, CA</td>
<td>122</td>
<td>43</td>
</tr>
<tr>
<td>Sausalito, CA</td>
<td>125</td>
<td>43</td>
</tr>
<tr>
<td>Regensburg</td>
<td>50</td>
<td>25</td>
</tr>
</tbody>
</table>
Thank You

Sponsors

Customer Lustre Presenters
Arnie Wiebalck, Daniel Kobras,
Otto Buechner, Rajmund Krivec,

Sun Lustre Presenters
Andreas Dilger, Dan Ferber, Harriett Coverston
Johann Lombardi, Sven Trautman, Torben Kling-Petersen
Enhanced lustre.org Wiki

High Performance and Scalability
For the world's largest and most complex computing environments, the Lustre™ file system redefines high performance, scaling to tens of thousands of nodes and petabytes of storage with groundbreaking I/O and metadata throughput.

More on Lustre performance, service, and support at sun.com/lustre

September HPC Software Workshop in Germany is Full
The Lustre Advanced Seminar and Open Storage Workshop in Regensburg, Germany this September 7-10 is at capacity. Slides from presentations will be posted after the event. Please consider joining the Sun Lustre team at SC09 November 14-20 in Portland, Oregon and also at LUG 2010 April 14-16 at Monterey Bay, California. Registration for LUG 2010 will be available in November.

Lustre 1.8.1
Lustre 1.8.1 is now available for download. Lustre 1.8.1 offers several robust, new features including Adaptive Timeouts, OSS Read Cache, CST Pools and Version-based Recovery. Read more about 1.8 features and why you should upgrade.
Lustre Support Matrix on lustre.org

Lustre Releases

This table lists major Lustre releases, including the release date, end of life (EOL) date, and a link to the release’s change log.

<table>
<thead>
<tr>
<th>Lustre Version</th>
<th>Release Date</th>
<th>EOL Date</th>
<th>Change Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8-1.8.x</td>
<td>May 2009</td>
<td>TBD</td>
<td>Change log 1.8.x</td>
</tr>
<tr>
<td>1.6-1.6.x</td>
<td>2007</td>
<td>June 2010</td>
<td>Change log 1.6.x</td>
</tr>
<tr>
<td>1.4-1.4.x</td>
<td>2006</td>
<td>June 2009</td>
<td>Change log 1.4.x</td>
</tr>
</tbody>
</table>

Lustre Support Matrix

This matrix lists the kernels, o2fsprogs and network versions that are officially supported by each Lustre release, and for which we provide compiled Lustre packages (RPMs).

- A "supported" version has been tested and verified against Lustre, and we provide official support for it.
- A "not supported" version has not been tested against Lustre, and we do not provide official support for it. "Not supported" versions are not recommended for use with Lustre, although they may work in a given environment.

NOTE:
For detailed information about the Lustre 1.8 release, see Change Log 1.8.x.
For detailed information about the Lustre 1.6.x releases, see Change Log 1.6.

<table>
<thead>
<tr>
<th>Supported Kernels</th>
<th>Lustre Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kernel / Version</td>
<td>1.8.1 1.8.0.1 1.8.0 1.6.7.2 1.6.7.1 1.6.6 1.6.5.1 1.6.4.3</td>
</tr>
<tr>
<td>RHEL 5</td>
<td></td>
</tr>
<tr>
<td>2.6.18-128.1.14.64</td>
<td>1.8.0.1 X X</td>
</tr>
<tr>
<td>2.6.18-128.1.6.64</td>
<td>X X X X X X</td>
</tr>
</tbody>
</table>

Open Storage Track at Sun Regensburg HPC Software Workshop
Lustre's OEM Ecosystem
Sun Lustre Storage System
http://sun.com/scalablestorage

- Fully integrated Lustre storage solution based on proven reference architecture
- Offers compelling price/performance value through Sun Open Storage products
- Optimized software stack with automated install and configuration tools
- Sun Professional Services and Support to ensure success
Professional Services & Support

**Enterprise Installation Service**
- HPC and storage installation services

**Lustre Implementation Services**
- Highly flexible, modular design
- Design, implementation and information transfer

**Sun Spectrum Hardware Services Plans**
- Dependable maintenance coverage and technical assistance

**Sun Spectrum Software Services Plans**
- Online technical support, updates (patches), and knowledgeable

Sun expertise for your SUCCESS
More About Lustre Storage System

- Lustre on Sun.com
  http://sun.com/lustre

- Sun Lustre Storage System on Sun.com
  http://sun.com/scalablestorage

- White paper – Solving the I/O Bottleneck: Sun Lustre Storage Solution

- Presentation Tomorrow - Wednesday
  09:30-10:00
  Open Storage Track
Some 2009 Accomplishments

• Lustre on 7 of top 10 Supercomputers in the world

• Supercomputer JuRoPA2 Forschungszentrum Jülich
  > Sun, Intel, Bull, ParTec partnering with Jülich

• New IO performance record
  > 240 GB/s aggregate on ORNL Jaguar

• Advancement on development goals
  > Hundreds of bugs fixes and enhancements to HEAD
  > Lustre 2.0 alpha releases
  > Lustre kDMU server partnership with Jülich
  > 1.8.1 release of Lustre

• Lustre Internals Guide – Partnership with ORNL
## Lustre Roadmap

### Available Now
- Lustre 1.8.1
  - OST pools
  - OSS read cache
  - Adaptive timeouts
  - Version based recovery (VBR)
- Lustre 2.0 alpha

### Q4 2009
- Lustre 2.0
  - Server and client restructured for CMD and ZFS
  - Server Change Logs
  - Commit on Share
  - SOM Preview

### 2010
- ZFS Lustre GA
- HSM for HPSS
- Improved SMP scaling
- Size on MDS
- Fast Recovery
- Clustered MetaData Preview

### 2011+
- Clustered MetaData GA
- Online Data Migration
- MD Write Back Cache
- Proxies
- Other HPCS related features

### Linux Distributions and end of Life Info at:
http://wiki.lustre.org/index.php/Lustre_Support_Matrix

### Other Features In Progress
- Windows Native Client
- Security GA
- Network Request Scheduler
- pNFS exports
- HSM/SAM-QFS
- Scalable health monitoring

### lustre.org Community Site
Use, Learn, Download, Contribute, Get Involved

### Open Storage Track at Sun Regensburg HPC Workshop 2009

- Integrate Lustre with ZFS/DMU (kernel space)
- Exabytes of storage, trillions of files, 100,000s of clients
- TBs/sec of throughput, 100K MDS operations
- Community driven tools and interfaces
Thank You – and say hello to:

- Andreas Dilger, Senior Staff Engineer, Lustre Group
- Harriett Coverston SAM/QFS Engineering
- Johann Lombardi Lustre Engineering
- Sven Trautman Lustre Engineering
- Torben Kling-Petersen Lustre Field Engineering