Intel® and Lustre*

Growth of Lustre Adoption and Intel's continued commitment

Brent Gorda
General Manager
High Performance Data Division
The competition is clear

Figure 12: Top Storage Management Software Provided by Surveyed HPC Sites
N=246 mentions

- Lustre
- GPFS
- Tivoli Storage Manager (TSM)
- NFS
- HPSS
- SAM-QFS/FS
- Data ONTAP
- Operating System
- GlusterFS
- Storage Manager
- ZFS
- HDFS

HPC User Site Census: Middleware – April 2014

Source: Intersect360 Research, 2013
Intel® Lustre Products

Our strategy is to:

- Lead the community out of the single-vendor era, for broader community participation
  - Support and help OpenSFS* as the community grows
  - Transition to community-led releases
- Broaden the reach of Lustre by adding value through features and support
  - Intel® Manager for Lustre, Hadoop* Adaptors for Lustre, Cloud Edition, ZFS*, more
- Provide leading quality, features, and worldwide support

Intel® is the leading contributor to the Lustre project
We make Lustre for your storage platform
Natural progression to OpenSFS + EOFS

Community Driving Roadmap and Releases

- Feature releases to come from OpenSFS
- Intel® is participating with donation of effort, plus help for transition
- Intel® is on the OpenSFS Board
- New chairperson position is open

Alignment is a core need of the Lustre community

- Let’s focus efforts to go after GPFS* as we grow Lustre
Intel® Corporation’s work on Lustre

With greater community participation on feature releases:

• Frees up a significant amount of resources
• We are putting this leading talent to work for our customers
• Enabling more effective competition with GPFS

In addition, we are hiring for new projects

• User-space programmers needed for DAOS work
• Intel® suite of Lustre Products
Intel® Supported Solutions for Lustre

Intel® ENTERPRISE Edition for Lustre software
- Maximum performance with minimal complexity and cost for multi-petabyte file systems
- Operational simplicity, combined with flexible, extensible, productive storage
- Simplified installation, configuration, management provided by Intel® Manager for Lustre

Intel® CLOUD Edition for Lustre software
- Cost-effective access to parallel storage on Amazon Web Services* (AWS) to boost cloud
- Multiple support options available

Intel® FOUNDATION Edition for Lustre software
- Delivers the latest functions and features, fully supported by Intel®
- Ideal for organizations that prefer to design and deploy their own open source configurations and want to augment in-house management/support with Intel® expertise
Intel® Enterprise Edition for Lustre Software v2.2

- ZFS + IML support for ZFS
- Dynamic Kernel Module Support (DKMS)
- Intel® TrueScale Fabric support
- Intel® Xeon Phi™ Coprocessor support
- Intel® Labs DSS caching software
- Support for Red Hat® Enterprise Linux® 6.6
- IOPS Read/Write Heat-Maps
- Apache® Hadoop 2.5 compatibility (optimized)
- Cloudera® Hadoop 5.2 compatibility (optimized)
- Robinhood Policy Engine
- SUSE® Linux® Enterprise Server Support
- Support for Hadoop (optimized) with HPC scheduler

Supported by Intel’s WW support team
Intel® Foundation Edition for Lustre software

Intel® proudly announces fully supported Maintenance Releases for the most adopted versions of Lustre:

– Intel® FE for Lustre Software v2.5.4 (available today)
– Intel® FE for Lustre Software v2.7.1 (targeted availability Q3-2015)

Available as part of a support relationship with one of Intel’s more than 100+ Lustre partners and OEM’s world wide. And backed by our WW support team 24x7x356.

Additional Maintenance Releases available as demand requires.
<table>
<thead>
<tr>
<th>Intel® Lustre Partners (now &gt; 100)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>2CRSI</th>
<th>ATIPA Technologies - Microtech Computers, Inc. (Kansas)</th>
<th>Cluster Technology Limited</th>
<th>Dot Hill Systems Corp.</th>
<th>HGST, a Western Digital Company</th>
<th>KAUAC</th>
<th>Oxalya OVH</th>
<th>R Systems Na, Inc (R-HPC)</th>
<th>System Fabric Works</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptive Computing</td>
<td>Berkcom</td>
<td>Colfax International</td>
<td>Eclipse Holdings</td>
<td>HPC Middle East HPCME</td>
<td>Locuz</td>
<td>PARATERA Beijing</td>
<td>SAS Institute</td>
<td>TechTerrain</td>
</tr>
<tr>
<td>Advanced Clustering Technologies</td>
<td>Bioteam, Inc</td>
<td>Compecta</td>
<td>EMC Corp</td>
<td>HPCNow!</td>
<td>Lufac</td>
<td>PC Omega</td>
<td>Scalable Informatics</td>
<td>Terascale</td>
</tr>
<tr>
<td>Advanced HPC</td>
<td>Boston Limited</td>
<td>Corporate Technical</td>
<td>Enterprise Integration</td>
<td>Huawei</td>
<td>NEC GMBH</td>
<td>PCPC DIRECT, LTD.</td>
<td>Science+Computing</td>
<td>Transtec AG</td>
</tr>
<tr>
<td>ALINEOS</td>
<td>Bull</td>
<td>DALCO</td>
<td>Exeliz</td>
<td>Integrated Archive Systems</td>
<td>Network Technologies Mexico</td>
<td>Q-Lustar</td>
<td>SGI, Inc.</td>
<td>Vion</td>
</tr>
<tr>
<td>Alpha System</td>
<td>Business Connexion</td>
<td>DDN</td>
<td>Format</td>
<td>Integrity Solutions</td>
<td>NJ Dataprint Pvt Ltd</td>
<td>RAID Inc.</td>
<td>SICORP</td>
<td>Wipro Technologies</td>
</tr>
<tr>
<td>APEX CNS</td>
<td>Bytes System Integration</td>
<td>Dell Inc.</td>
<td>Harrington HPC Microsystems</td>
<td>ISBC</td>
<td>NOVATTE</td>
<td>Reachcloud</td>
<td>Source Code Corporation</td>
<td></td>
</tr>
<tr>
<td>Area Data System</td>
<td>Caton Sistemas Alternativos</td>
<td>Delta Computer Products</td>
<td>Harwood International IT Group Indonesia</td>
<td>Ocf</td>
<td>Redapt</td>
<td>Supermicro Computer, Inc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Other names and brands may be claimed as the property of others.*
Legal Information

- No license (express or implied, by estoppel or otherwise) to any intellectual property rights is granted by this document.
- Intel disclaims all express and implied warranties, including without limitation, the implied warranties of merchantability, fitness for a particular purpose, and non-infringement, as well as any warranty arising from course of performance, course of dealing, or usage in trade.
- This document contains information on products, services and/or processes in development. All information provided here is subject to change without notice. Contact your Intel representative to obtain the latest forecast, schedule, specifications and roadmaps.
- The products and services described may contain defects or errors known as errata which may cause deviations from published specifications. Current characterized errata are available on request.
- Copies of documents which have an order number and are referenced in this document may be obtained by calling 1-800-548-4725 or by visiting www.intel.com/design/literature.htm.
- Intel technologies’ features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. No computer system can be absolutely secure. Check with your system manufacturer or retailer or learn more at http://www.intel.com/content/www/us/en/software/intel-solutions-for-lustre-software.html.
- Intel may make changes to specifications and product descriptions at any time, without notice.
- Any code names featured are used internally within Intel to identify products that are in development and not yet publicly announced for release. Customers, licensees and other third parties are not authorized by Intel to use code names in advertising, promotion or marketing of any product or services and any such use of Intel's internal code names is at the sole risk of the user.
- *Other names and brands may be claimed as the property of others.
- Intel, Intel Inside, the Intel logo and Xeon Phi are trademarks of Intel Corporation in the United States and other countries.
- Material in this presentation is intended as product positioning and not approved end user messaging.
- © 2015 Intel Corporation
Thank You.