

Intel® Enterprise Edition for Lustre* software



Lustre* powers
**60% of the world's
top 100 fastest
computers.**¹



Figure 1. Intel® Manager for Lustre* Dashboard

**1,000,000,000,000
Bytes per second**
Leading-edge Lustre*
configurations can
deliver data
throughput in excess of
1 terabyte per second.⁴

A New Generation of Lustre* Software Expands High Performance Computing into the Commercial Enterprise

The Lustre* file system is the ideal distributed, parallel file system for high performance computing. With Intel® Enterprise Edition for Lustre* software, Intel provides a commercial-grade version of Lustre optimized to address the key storage and data throughput challenges of HPC-class computing.

Intel Enterprise Edition for Lustre software (Intel EE for Lustre software) unleashes the performance and scalability of the Lustre parallel file system as an enterprise platform for organizations large and small. It allows businesses that need large-scale, high-bandwidth storage to tap into the power and scalability of Lustre—with additional features and capabilities including worldwide 24x7 technical support from the Lustre experts at Intel.

Intel® Manager for Lustre* simplifies installation, configuration, and monitoring. This purpose-built management solution is a key component of Intel EE for Lustre software. It reduces management complexity and costs, enabling storage administrators to easily exploit the performance and scalability of Lustre storage. The administrator's dashboard speeds real-time monitoring including tracking usage, performance metrics, events, and errors at the Lustre software layer.

The Intel EE for Lustre Advantage

Intel EE for Lustre software brings the benefits of Lustre and high-performance storage to data-intensive applications. Intel EE for Lustre software provides open interfaces that promote easy integration and interoperability with existing infrastructures, and because Lustre is open source software, IT can grow datacenter storage systems over time and on budget, employing a variety of networking and hardware options.

Performance

Intel EE for Lustre software was designed to enable fully parallel I/O across clients, servers, and storage devices. Metadata and data are stored separately to allow optimization of each function for the different workloads they present.

- Massive data flows efficiently use a high percentage of the underlying storage and network bandwidth for low latency, high-throughput storage performance
- Improves innovation and precision by allowing enterprises to run larger and more complex simulations faster and easier
- Native Lustre client optimized for Intel® Xeon Phi™ coprocessors delivers data 10 times faster than a Network File System (NFS)—boosting application performance
- Improved metadata scalability using Distributed NamespacE (DNE) feature now integrated in Intel Manager for Lustre

What's New?

Differentiated Storage Services (DSS)

Available only with Intel EE for Lustre software, this advanced feature allows data “hints” to be passed through Lustre, enabling cache mechanisms to prioritize data for optimal performance.

Intel Manager for Lustre Monitoring for OpenZFS

Beginning with this release, storage solutions based on Intel EE for Lustre software can exploit the data resiliency and volume management capabilities available with OpenZFS.

Integrated HPC Scheduler “Connector” for MapReduce*

Building upon the unique Intel software “connector” that allows Lustre to replace HDFS, the newest connector couples SLURM* with YARN*, and augments the Hadoop scheduler allowing MapReduce applications to be scheduled like any HPC job.

A Sustained Commitment to Driving Lustre* Forward

Backed and
supported by
OpenSFS and EOFS,
Intel leads the open,
collaborative feature
development of the
Lustre* file system.



Intel is a long-standing and leading contributor to the Lustre* community.



For more information
about the Intel®
Solutions for Lustre*
software portfolio, visit
lustre.intel.com

Support for New System Software

Intel EE for Lustre delivers new support for Red Hat Enterprise Linux* and CentOS* 6.7 servers and clients and Red Hat Enterprise Linux* and CentOS* 7.1 client only

Increasing metadata performance

Customers can now more easily scale out the metadata performance of Lustre taking advantage of the new DNE feature easily using Intel Manager for Lustre

Storage Infrastructure for Big Data Workflows

Tackling the Big Data Challenge

From Wall Street to the Great Wall, enterprises and institutions of all sizes are faced with the benefits and challenges promised by high-performance data analytics applications. But before users can take advantage of the nearly limitless potential locked within their data, they must have affordable, scalable, and powerful software tools to analyze and manage their data. Intel EE for Lustre software provides the tools needed to fuel data-intensive applications.

Industry-Leading File Storage

Today's HPC users are demanding application frameworks to analyze vast amounts of data created by complex simulations. As the most widely deployed file system for HPC, Intel EE for Lustre software plays a critical role for these data-intensive applications, transforming enormous amounts of data into data-driven decisions.

Performance Meets Scalability for Big Data Storage

Intel EE for Lustre software brings the productivity and security of Lustre to the leading Hadoop distributions with software "connectors" allowing users to run MapReduce* applications—without changes—directly on Lustre-powered storage. This optimizes performance while delivering faster, more scalable storage.

Capacity

The object-based storage architecture of Intel EE for Lustre software scales upward to tens of thousands of clients and petabytes of data.

Affordability

Intel EE for Lustre software is based on open source Lustre software, and is hardware, server, and network fabric neutral, providing flexible and affordable ways to scale storage.

Maturity

Proven in the most demanding data environments, Lustre-powered storage solutions have been proven to be stable and reliable, and continue to be backed by Intel, the leading global technical support provider for Lustre solutions of all sizes.

Conclusion

Lustre is POSIX-compliant—vital for today's applications—and capable of handling extremely large amounts of data and huge numbers of files shared concurrently across clustered servers. Storage powered by Lustre software is a breakthrough technology for addressing the exascale and emerging high-performance data analytics challenge.

Now, with Intel EE for Lustre software, organizations have an enterprise-class solution to meet their storage and data requirements.

1. Based on Intel analysis of November 2014 Top500: www.top500.org.
2. IDC survey research, May 2014
3. Configuration: Mellanox IB card in host and Lustre* configuration with Intel® coprocessor. Other optimization with hardware may provide additional benefits.
4. Source: OLCF's 1 TB/s, Next-Generation Lustre File System, Oak Ridge Leadership Computing Facility.

For more complete information about performance and benchmark results, visit www.intel.com/benchmarks

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