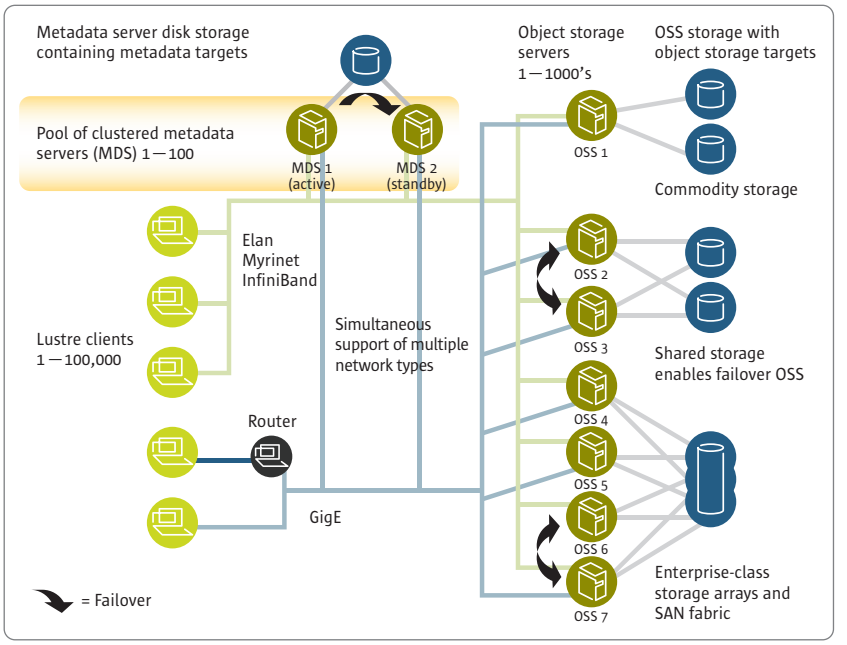
LUSTRE™ FILE SYSTEM
OPEN. SCALABLE. FAST.

The Lustre™ file system redefines performance and scalability standards for the world's largest and most complex computing environments. Lustre is the leading cluster file system in high-performance computing. Powering more than 40% of the top 100 supercomputers in the world, it supports tens of thousands of compute nodes, petabytes of data storage, and hundreds of GB/sec of I/O throughput. Most recently, the Lustre file system was selected by the HEPiX Storage Working Group to manage more than 6 PB of storage at multiple HEPiX sites. With its outstanding scalability and stability, the Lustre file system is also an ideal solution for commercial areas such as energy and rich media.



The Lustre file system: The right choice

Lustre technology combines superior scalability, performance, and stability with open standards and open source, helping you keep your systems up and running while also saving you both time and money.

Extreme scalability

With the Lustre file system, customers can process and manage much larger volumes of data than with traditional file systems. The Lustre object-based storage architecture scales to tens of thousands of nodes, petabytes of data, and billions of files.

Proven performance

Built for speed, the Lustre file system delivers serious performance, with dramatic increases in throughput and I/O. In fact, as much as 130 GB/sec of aggregate I/O bandwidth has been observed in one production cluster. And increasing delivered bandwidth is easy: just add more data servers — scaling is almost linear.

Production-quality stability

The Lustre file system organizes all servers in active-active failover pairs, delivering production-quality stability and failover with no single point of failure. Deployed in both large and small clusters around the world, it helps meet the uptime requirements of business-critical and national-security applications.

Sun microsystems

Open source

The Lustre file system is developed and maintained as open-source software under the GNU General Public License. It features an open networking protocol and POSIX file system semantics, ensuring broad support for industry-standard platforms and heterogeneous networking environments.

The Lustre 1.8 file system

Version 1.8 of the Lustre file system is planned for release in late December 2008. This release build off the already solid Lustre platform and includes a more efficient recovery scheme, better data management, and improved performance.

Key features and changes include:

- Version-based recovery
- Object storage server (OST) pools
- Object storage server (OSS) read cache
- Client interoperability with 2.0

The Lustre file system in action

Education: Pittsburgh Supercomputing Center

The Pittsburgh Supercomputing Center provides computing power and expertise to help scientific and engineering research. PSC chose the Lustre file system because they knew it would deliver the performance and availability their researchers needed and because features such as Lustre LNET routing would help them in designing a more stable and flexible high-performance computing solution. By taking advantage of Lustre LNET routing, PSC built a wide-area file system that supports several compute platforms and integrates with the PSC archival system.

"We needed both a reliable, very high-performance parallel file system for production research and an open development platform for our research into advanced HPC infrastructure and wide-area file systems. The Lustre File System delivered on both counts."

J. Ray Scott
Director of Systems and Operations,
Pittsburgh Supercomputing Center

In addition, PSC is also testing Lustre technology to extend the file system to users across the TeraGrid, a National Science Foundation project that integrates eight high-performance computing centers across the United States to support open scientific research. As a result, PSC is one of the lead sites running the Lustre file system on the TeraGrid through a project called "the Lustre-WAN," which provides users with a common file system that can be accessed from any site on the TeraGrid.

Energy: Chevron

Chevron is the second-largest integrated energy company in the United States and operates around the world. When the Technical Computing team at Chevron Energy Technology Company (CETC) decided they needed an alternative file system, they chose the Lustre file system, because of its scalability and performance, to build high-performance computer clusters that could handle the growing volume of data and easily scale to meet future needs.

With Lustre, CETC was able to work on bigger problems and solve them faster than ever before. The Lustre file system provided a way to easily scale the number of cluster nodes on a single file system. And because the Lustre file system can handle the distribution of job processes across cluster nodes, fewer personnel are needed, which saves money. Decreased maintenance time also contributes to lower costs. According to CETC, once Lustre is installed, it runs without needing much attention.

Media and Entertainment: Framestore

Framestore is the largest visual effects and computer animation studio in Europe. To keep pace with both the trends and demands in the visual effects industry, Framestore has more than doubled the number of processors in its render farm cluster, resulting in storage bottlenecks from scalability issues. To meet this challenge, Framestore chose the Lustre file system for its highly scalable, available, and robust features.

The Lustre file system provided Framestore with a cost-effective solution that was able to grow with the size of the render farm. The open-source Lustre file system integrated seamlessly into Framestore's existing application environment, helping eliminate the need to buy expensive, specialized systems to expand their capabilities. Since deployment, Framestore has been able to dramatically increase I/O performance, reliability, and scalability.

"Lustre gives us double the storage, at three times less cost of competing solutions. If our render farm gets bigger, we can quickly and easily add more nodes to the Lustre file system."

Daire Byrne
Senior Systems Integrator, Framestore

With the Lustre file system, Framestore has a storage solution that provides the scalability and flexibility it needs to successfully grow and evolve as it heads into the future.

Support and services

Sun Microsystems provides professional services, technical support, and training for the Lustre file system. We recommend that you take advantage of technical assistance from Sun to help ensure a smooth, efficient deployment. If you have any questions on how Sun can help you install and configure Lustre, contact your Sun sales representative or send an email to lustre-solutions@sun.com.

Learn more

For more information on the Lustre file system, or to download the software or join the Lustre community, visit sun.com/lustre.

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