

# Lustre Community

**HPC Software Workshop  
Open Storage Track, Regensburg 2009**

**Dan Ferber  
Sun Microsystems**

A large, stylized lightning bolt graphic on the left side of the slide, set against a dark blue background with a lighter blue curved border. The lightning bolt is bright white and yellow, striking downwards.

# Agenda

- Lustre Community Program
- Program Tasks and Status
- Next Steps
- Q&A

# Lustre Community Program

- Promote growth of Lustre features, performance, quality, and stability vis-a-vis community collaboration, which allows greater productivity for Lustre users
  - > Feature and fix contributions
  - > Testing, bug finding, and use cases
  - > Enhanced documentation
  - > Best practices
  - > Increased Lustre knowledge in community
  - > Technical discussions
  - > Awareness of roadmap and plans
  - > Feedback

# Lustre Community Program Tasks

- Technical information collaborations
  - > PRACE and Juropa2 Juelich kDMU
  - > Oak Ridge Lustre Center of Excellence Workshops
  - > CEA HSM
  - > DARPA HPCS
  - > NRL changelogs, replication, and WAN
  - > Annual Lustre User Group each Spring in United States
  - > Continued Autumn Workshops in Europe
  - > ISC and Supercomputing
  - > Lustre-discuss and lustre-devel

# Lustre Community Program Tasks

- Lustre Knowledge – [Sheila.Barthel@Sun.com](mailto:Sheila.Barthel@Sun.com)
  - > Lustre operations manual
  - > ORNL/Sun Lustre internals manual
  - > Lustre architecture documents and presentations
  - > Lustre Quick Start Guide
- Other Lustre Community Resources
  - > ORNL LCE workshop slides and papers
  - > Lustre User Group Slides and Videos
  - > Bugzilla, and Lustre downloads
  - > Searchable lustre-discuss archive
  - > Lustre Quick Start and Lustre Storage Server Blueprints
  - > Lustre technical papers

# lustre.org Community

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## 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](http://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 Monterrey 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](#), [OST Pools](#) and [Version-based Recovery](#). [Read more](#) about 1.8 features and why you should upgrade.

**Download**

Download this open source software for free.

» [Get Lustre](#)

**Learn**

Find out about Lustre interoperability, features and publications.

» [Projects and Roadmap](#) » [Publications](#)

**Use**

User resources to make Lustre perform at its best.

» [Install and Configure](#) » [Administer](#)

**Contribute**

Developer resources and tools to contribute to Lustre.

» [Code](#) » [Test](#) » [Pre-Release Versions](#)

**Get Involved**

Find groups and community developer projects.

» [Community](#) » [Lustre Centers of Excellence](#)

# sun.com/lustre Community

The screenshot shows a web browser window displaying the Sun Microsystems website for the Lustre File System. The browser's address bar shows the URL <http://www.sun.com/software/products/lustre/>. The page features a navigation menu with links for Downloads & Trials, Products, Services, Solutions, Support, and Training. A search bar is also present. The main content area highlights the Lustre File System as "The #1 High Performance Open Source File System" with a "Download Lustre" button. Below this, there are tabs for Overview, Features, Tech Specs, Resources, Support, and Get It. The Overview tab is active, showing a description of the file system and a list of downloads. A sidebar on the right contains a "Downloads" section with links to various documents and a "Feedback" button.

**Lustre File System**

The #1 High Performance Open Source File System

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Overview | Features | Tech Specs | Resources | Support | Get It

**lustre** Designed to meet the demands of the world's largest high-performance compute clusters, the Lustre file system redefines scalability and provides groundbreaking I/O and metadata throughput.

» Download the Lustre File System Networking White Paper (pdf)

**At a Glance**

- Production-quality stability and failover
- No single point of failure
- Scales to meet high performance computing demands
- Supports unprecedented metadata and I/O performance rates
- Aggregates petabytes into a group or enterprise-wide file system

**Average Customer Rating**

**Product Rating**

★★★★★ (2 Ratings)

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**Spotlight**

» Lustre 1.8.1 is Now Available for Download

» Contact Sun

Print-friendly Page

**Downloads**

- » Download Lustre
- » Lustre File System Data Sheet
- » Lustre File System Networking White Paper
- » Peta-Scale I/O with the Lustre File System White Paper
- » Lustre File System: High-Performance Storage Architecture and Scalable Cluster File System White Paper

FEEDBACK

# http://wikis.sun.com/display/BluePrints/Main Community

Lustre File System - Demo Quick Start Guide - Blueprints - wikis.sun.com

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## Lustre File System - Demo Quick Start Guide

Tools

Added by vicky\_hardman, last edited by vicky\_hardman on Mar 03, 2009 (view change)

### Lustre File System: Demo Quick Start Guide [Download](#)

by **Torben Kling-Petersen**  
March 2009

The Lustre™ file system is a scalable, secure, robust, and highly-available cluster file system that addresses the I/O needs, such as low latency and extreme performance, of large computing clusters. Designed, developed, and maintained by Sun Microsystems, the Lustre file system is intended for environments where traditional shared file systems, such as NFS, do not scale to the required aggregate throughput or large number of nodes.

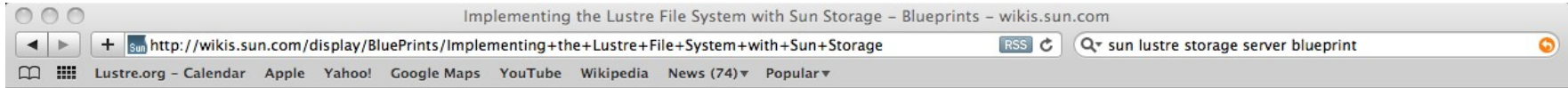
While the Lustre file system has been around for a number of years in the Open Source arena and there are a large number of installations worldwide, getting started without reading a 500+ page manual - and having to be a Linux expert as well - is difficult. This paper provides a simple cookbook for non-Linux experts on how to set up a Linux-based Lustre file system using small servers, workstations, PCs, or other available hardware for demonstration purposes.

#### Contents

- Lustre file system overview
- Configuration overview
- Preliminary setup
  - Installing the Linux operating system
  - Creating the virtual volumes
  - Installing the Lustre stack
- Lustre file system configuration
  - Metadata Server
  - Object Store Servers
  - Client
- Managing the file system
  - Using stripes
  - Handling full OSTs
  - Migrating data within a file system



# http://wikis.sun.com/display/BluePrints/Main Community



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## Implementing the Lustre File System with Sun Storage

Tools

1 Added by jennifer.tsay, last edited by Kemer on Apr 20, 2009 (view change)

### Implementing the Lustre File System with Sun Storage: High Performance Storage for High Performance Computing

by Sean Cochrane  
June 2008

This article has been replaced by:

### Solving the HPC I/O Bottleneck: Sun Lustre Storage System [Download](#)

by Sean Cochrane, Ken Kutzer, and Lawrence McIntosh  
April 2009

#### Labels

hpc cluster blueprint



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**Contribute**

- Making a Contribution**

**Getting started...**

  - » See [Finding a Project](#) for information about how to select a project, find a bug to fix, or help with Lustre testing.
  - » Read the [Lustre Contribution Policy](#) and sign and return a Contributor Agreement.
  - » Join the [Lustre Development Mailing List](#) for developers.

**Developing your code...**

  - » See [Accessing Lustre Code](#) for how to download Lustre code.
  - » See [CVS Branching Best Practices](#) for how to use branches in the CVS version control system.
  - » Follow [Lustre Coding Guidelines](#) to avoid problems when merging your code.
  - » Use the [Lustre Documenting Code](#) guidelines to add reference documentation to your Lustre code contribution.

**Testing your code...**

  - » See [Testina Lustre Code](#) for procedures to
- Developer Resources**
  - » [Lustre Architecture](#) wiki offers feature and architectural descriptions, quality attribute scenarios, and vision & scope articles about Lustre.
  - » [Lustre design documents](#)
    - » [High-Level Designs](#) describe the overall design of Lustre features and projects.
    - » [Detailed-Level Designs](#) describe the design of individual aspects of a project.
  - » [Cvs Tips](#) provides some tips for using the CVS version control system.
  - » [Lustre FAQ](#) addresses popular topics, issues and questions from the Lustre community.

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**Wiki Toolbox**

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FOR THE DEPARTMENT OF ENERGY

ORNL/TM-2009/117

# ORNL and Sun Internals Manual Collaboration

## Understanding Lustre Filesystem Internals

April 2009

Prepared by

Feiyi Wang  
Sarp Oral  
Galen Shipman  
National Center for Computational Sciences

Oleg Drokin  
Tom Wang  
Isaac Huang  
Sun Microsystems Inc.

See:  
[wiki.lustre.org](http://wiki.lustre.org)  
and then click  
*Lustre Centers  
of Excellence*




# Next Steps

- Keep improving the Lustre internals manual
- Have people use the new “Contributing Code” page
- Operations and programming best practices pages
- Continue dialogues on lustre-discuss and lustre-devel
- Community testing of Lustre 2.0 alpha code drops
- SC09 – Lustre/kDMU BOF and Snowbird Presentation
- LUG 2010 April 14-16 in Monterrey, California
- Another European Open Storage workshop track with more customer presentations next time
- What else?

# Call to Action: Lustre 2.0 Testing

- Intermediate Release Milestones Until GA
  - > New builds every 4-6 weeks
  - > Builds will be available for download via FTP
  - > Release milestone criteria and test results will be published on [lustre.org](http://lustre.org)
- We need ample community testing and feedback
  - > Please install, test and provide feedback
  - > Post defects in Bugzilla and comments/suggestions to [lustre-discuss](http://lustre-discuss)
  - > We are recruiting beta test sites talk to [Jessica.Popp@Sun.com](mailto:Jessica.Popp@Sun.com)

- 
- Thank You
  - Questions and Suggestions

Q & A