

ClusterStor™ 1500

Engineered Solution for Lustre®

DEPARTMENTAL SCALE-OUT STORAGE
Data Sheet

Best ROI Acceleration, Performance & Value

Compute clusters can reduce the time to results only if the data storage that feeds it can meet the challenge in performance, availability and manageability. Data bottlenecks continue to constrain research and development departments across a myriad of industries that are seeking more data granularity, accuracy and resolution from their applications.

Network based storage solutions, such as NFS, can't keep up, leaving CPUs idle. Additionally, block based RAID array storage provides only part of a storage solution leaving you to figure out what the right components need to be, how to tune it and how to get the most out of your investment.

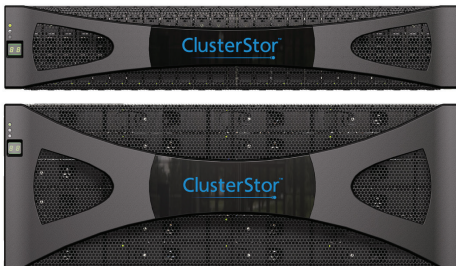
ClusterStor 1500 solutions feature scale-out storage building blocks, the Lustre parallel filesystem and a comprehensive management platform that eliminates the guesswork usually associated with building and optimizing your own HPC storage solution.

ClusterStor 1500 is HPC storage engineered for rapid deployment, easy management, and data throughput performance that break productivity barriers otherwise created by unbalanced storage solutions.

Solution Overview

Core to all ClusterStor solutions are scale-out building blocks called Scalable Storage Units (SSU). Each is balanced specifically for the ClusterStor model you chose and enables you to scale Lustre® filesystem capacity and performance predictably with additional Scalable Storage Units (SSUs) or Expansion Storage Units (ESUs).

Lustre is the most popular parallel filesystem for the top supercomputers and ClusterStor 1500 makes it easy to deploy and use. The Lustre file system is an open-source file system with a vibrant community. It is purpose designed to enable high performance parallel file access for parallel compute clusters at scale. Lustre provides a single filesystem that is distributed across all available object server targets within each Scalable Storage Unit or Expansion Storage Unit. In turn each file is striped across the filesystem enabling all disk drives to participate in read and write I/O requests simultaneously.



ClusterStor™



ClusterStor™ 1500 Engineered Solution for Lustre®

Linear Scaling and High Availability

ClusterStor 1500's hardware and integrated Lustre file system architecture enables scale-out performance from over 1 GB/sec to over 100 GB/sec and capacity from 80 TB up to 10.5 PB of raw storage capacity. Configurations provide scale-out performance linearly and capacity can be added with up to three Expansion Storage Units to each Scalable Storage Unit. Adding Scalable Storage Units adds further scale-out performance and file system processing capability.

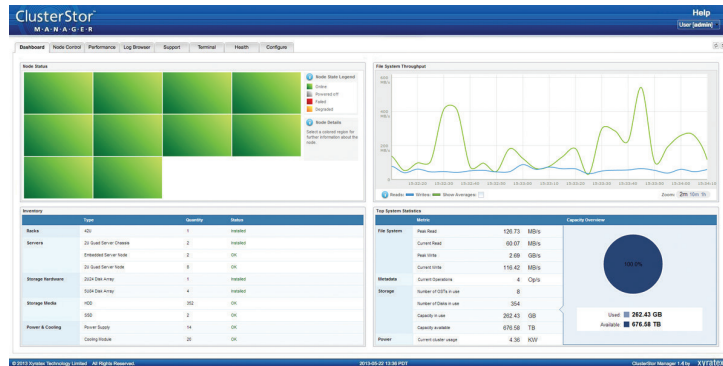
ClusterStor 1500 comes with a high availability ClusterStor Management Unit that includes all metadata services for Lustre and at least one Scalable Storage Unit; each with their own embedded high availability object storage servers.

ClusterStor Manager

ClusterStor Manager, a comprehensive system management application, is included with every system. ClusterStor Manager is web browser based, part of ClusterStor's distributed management framework and is responsible for pulling everything together as a singly managed system. ClusterStor Manager consolidates management of the storage infrastructure, RAID data protection layer, operating system, and the file system into a single, easy-to-use, administrator interface bringing unprecedented system visibility to the system administrator.

ClusterStor Node Status View

ClusterStor Inventory Health and Status View



ClusterStor Active Filesystem Throughput Monitoring

ClusterStor Asset Utilization and Capacity Statistics

ClusterStor Manager brings to life powerful, intuitive, context-aware real-time monitoring and proactive management

Seagate Services

Seagate Services puts our rich domain expertise to work for you. Our data management experts can help you optimize your infrastructure across the full range of the information management lifecycle using the best, most reliable data storage technologies and services. We'll put best-in-class solutions to work for you from a comprehensive portfolio of on-premise, cloud and hybrid storage solutions that enable safe storage and reliable access to information to unlock revenue potential and enable your organization to realize the full value of your data, with:

- Professional Services for strategic consulting, solutions design services, implementation and migration
- Managed Services to simplify operations and maximize ongoing value
- Training Services to develop skills and expertise that optimize your investment
- Support Services for expert help when you need it, backed by solid SLAs and trusted experts

Take the Next Step:

To learn more about Seagate® Cloud Systems and Solutions, visit www.seagate.com/hpc

No one knows storage like we do; for more than 35 years, Seagate's global solutions, products and services have enabled the safekeeping of more than 40% of the world's digital information.



ClusterStor™ 1500

Engineered Solution for Lustre®

Specifications

General Information

File System Performance	From 1.25GB/s up to 105GB/s sustained reads and writes
Raw OST Capacity	From 80TB (using 4TB SAS HDDs) up to 10.5PB (using 6TB SAS HDDs)
Usable File System Capacity	From 60.4TB (using 4TB SAS HDDs) up to 7.5PB (using 6TB SAS HDDs)
Cluster Management Unit (CMU)	2U high availability two node server with embedded storage
Scalable Storage Unit (SSU)	4U high availability two node server with embedded storage
Expansion Storage Unit (ESU)	4U high availability storage expansion embedded storage
Lustre® Data Network Protocol Connectivity	Infiniband QDR / FDR or 40/10 Gb/s Ethernet
Management Network	1 Gigabit Ethernet (dual management network)
File System	Lustre® 2.1 + Seagate supported enhancements
Maximum Files	Up to 280 Million

Disk Drives

CMU HDDs	Dual ported 6Gb/s SAS drives
SSU and ESU HDDs	Dual ported 6Gb/s SAS drives
CMU Storage	16 HDDs, 2.5" 450GB 10K RPM
SSU Storage	2 HDDs, 2.5" 300GB 15K RPM, RAID 1, 1+1 21 HDDs, twenty 3.5" 7.2K RPM, RAID 6 (8+2) (4 or 6 TB capacity per drive) plus one hot spare
ESU Storage	21 HDDs, twenty 3.5" 7.2K RPM, RAID 6 (8+2) (4 or 6 TB capacity per drive) plus one hot spare

CMU Dimensions

Height	87.9mm (3.46") 2 EIA units
Width	483mm (19") IEC rack compliant
Depth	630mm (24.8")
Weight	25.4kg (56.0lbs) with drives

Systems Availability

Hot Swappable	Disk Drives, Redundant Power Cooling Modules and Redundant Server Modules
---------------	---

SSU & ESU Dimensions

Height	175mm (6.89") 4 EIA units
Width	483mm (19") IEC rack compliant
Depth	630mm (24.8")
SSU Weight	47.4kg (104.5lbs) with drives
ESU Weight	43.0kg (94.8lbs) with drives

Altitude, Power & Temperatures

Operational Altitude	0 to 3,000m (0 to 10,000')
Non-operational Altitude	-300 to 12,192m (-1000 to 40,000')
Voltage	100-240V AC (IEC C14 inlets)
Frequency	60/50Hz
Power Conversion Efficiency	>83% @ 100V, >85% @ 240V >30% load)
Temperature Range	5° to 35°C (de-rate 5°C above 2,133m, 7,000')
Humidity	20% to 80% non-condensing

Warranty Information

Hardware	1 Year
Software	90 Days

Environmental Standards

Seagate is registered through BSI to the international standard for environmental management systems ISO 14001:2004 and holds certificates for each of its three manufacturing locations at Havant UK, Guadalajara Mexico and Seremban Malaysia.

seagate.com

AMERICAS Seagate Technology LLC 10200 South De Anza Boulevard, Cupertino, California 95014, United States, 408-658-1000
 ASIA/PACIFIC Seagate Singapore International Headquarters Pte. Ltd. 7000 Ang Mo Kio Avenue 5, Singapore 569877, 65-6485-3888
 EUROPE, MIDDLE EAST AND AFRICA Seagate Technology SAS 16-18, rue du Dôme, 92100 Boulogne-Billancourt, France, 33 1-4186 10 00

© 2015 Seagate Technology LLC. All rights reserved. Printed in USA. Seagate, Seagate Technology and the Wave logo are registered trademarks of Seagate Technology LLC in the United States and/or other countries. ClusterStor is either a trademark or registered trademark of Seagate Technology LLC or one of its affiliated companies in the United States and/or other countries. All other trademarks or registered trademarks are the property of their respective owners. When referring to drive capacity, one gigabyte, or GB, equals one billion bytes and one terabyte, or TB, equals one trillion bytes. Your computer's operating system may use a different standard of measurement and report a lower capacity. In addition, some of the listed capacity is used for formatting and other functions, and thus will not be available for data storage. Actual data rates may vary depending on operating environment and other factors. Seagate reserves the right to change, without notice, product offerings or specifications. CSES-DS130.1-1506US, June 2015