

SUN STORAGE 7000 SERIES FAMILY

KEY FEATURES AND BENEFITS

RADICAL SIMPLICITY
COMBINED WITH
BREAKTHROUGH
PRICE/PERFORMANCE

FEATURES

- Unprecedented management tools to easily find and fix issues as well as optimize performance
- Active-active cluster option
- No additional software license fees—all software features including protocols and data services are included
- Optimized storage hierarchy with Hybrid Storage Pools containing DRAM, SSD, and HDD drives
- Seamless multiprotocol integration and secure data sharing between Microsoft Windows and UNIX clients
- No additional software license fees—all software features including protocols and data services are included

BENEFITS

- Radical simplification of storage management
- High performance and high availability
- Lower energy consumption at up to 75 percent less than the cost of competitive solutions
- Scalability in multiple dimensions to adapt to your changing business needs by increasing compute power, storage capacity, or performance independently
- Ecoefficiency due to reduced power consumption of SSD and HDD disk drives rather than high RPM drives

Exponential data growth is challenging today's IT managers to scale their storage capacity while still delivering high performance and staying within tight IT budgets. Oracle can help ease this pain by offering the first unified storage solution that optimizes performance with Hybrid Storage Pools and delivers radical simplification of storage deployment and management—all at a cost that redefines the economics of storage. Oracle's Sun Storage 7000 Series family helps simplify storage deployment and management with its unprecedented easy-to-use interface, DTrace Analytics software, and self-healing capabilities. These features enable you to quickly find and fix issues, minimize downtime, and reduce the time and cost of deployment.



Figure 1. The Sun Storage 7000 Series family helps simplify storage deployment and management with its unprecedented easy-to-use management interface, DTrace Analytics software, and self-healing capabilities.

Meeting Today's IT Challenges

Storage requirements are growing at a rapid pace with explosive data growth from applications such as social networking, high-performance computing (HPC), and Web-based business applications that foster sharing of information. IDC estimates that the total amount of digital information created, captured, and replicated will grow at a rate of 58 percent per year, reaching 1,610 EB by 2011.¹

As much as 95 percent of this data will be unstructured data that will continue to fuel the need for file-based storage solutions such as network-attached storage (NAS) and unified storage solutions that extend beyond NAS by providing storage area network (SAN) connectivity as well.

¹ IDC, "The Diverse and Exploding Digital Universe," March 2008.

Fast Access to Large Volumes of Data

One of the unique requirements of today's Web 2.0 and HPC applications is that they must provide both high performance and the ability to preserve and manage large volumes of file-based data. IT managers are being asked to continuously meet these growing storage capacity needs on flat or declining IT budgets—all while continuing to support high service levels for more and more users.

Sun Storage 7000 Series

The Sun Storage 7000 series is a family of unified storage systems that offers new innovations in storage, including enterprise-class data services, massive scale, and superior performance while delivering significant cost savings. These systems feature a common, easy-to-use management interface that requires no additional training, and have the industry's most comprehensive analytics environment to help isolate and resolve issues to minimize impact to your business. An advanced Hybrid Storage Pool design automatically optimizes performance and helps lower power and cooling requirements, enabling the Sun Storage 7000 family to deliver breakthrough performance while radically simplifying the way you manage your storage.

Storage That Is Easy to Deploy, Analyze, and Optimize

Provisioning and management is dramatically simplified in Sun Storage 7000 series systems through the easy-to-use management interface that takes the guesswork out of system installation, configuration, and tuning.

DTrace Analytics software provides the industry's only comprehensive and intuitive analytics environment. Administrators have all of the tools they need to quickly identify and diagnose system performance issues, perform capacity planning, and debug live storage and networking problems before they become challenging for the entire network. The real-time analysis and monitoring functionality is based on the award-winning DTrace technology and uses built-in instrumentation to provide in-depth analysis of key storage subsystems. Systems also include the comprehensive self-healing capabilities of Oracle's Fault Management Architecture (FMA). FMA automatically and silently detects and diagnoses underlying system problems and automatically responds by taking faulty components offline.



Figure 2. DTrace Analytics software provides the industry's only comprehensive and intuitive analytics environment.

Performance and Scalability to Meet Your Business Needs

To deliver high performance using cost-effective components, the Sun Storage 7000 series file system, ZFS, seamlessly optimizes access to the different types of media in the Hybrid Storage Pools. ZFS was designed to automatically recognize different I/O patterns and place data in the best storage media for optimal performance.

ZFS transparently executes writes to low-latency SSD media so that writes can be quickly acknowledged, allowing the application to continue processing. ZFS then automatically flushes the data to high-capacity drives as a background task. Another type of SSD media acts as a cache to reduce read latency, and ZFS also transparently manages the process of copying frequently accessed data into this cache to seamlessly satisfy read requests from clients.

Scalability in Multiple Dimensions

Unlike traditional storage architectures, Oracle's Unified Storage Systems support scalability in multiple dimensions with the ability to scale I/O throughput, processor performance, and total storage capacity to meet your application needs. As application requirements change, IT managers can choose to

- Increase computational power by adding more CPUs and cache
- Expand total capacity by adding enterprise-class SATA drive expansion units
- Increase performance using additional SSD to buffer storage reads or writes

Easy on Your Budget

Oracle's Unified Storage Systems deliver higher performance at half the cost of traditional storage solutions by using cost-effective components and providing a rich set of built-in software features. While many other vendors charge license fees for protocols and data services such as CIFS, NFS, HTTP, and replication, these and

other software features are included in the price of the Unified Storage Systems. No additional software licenses are required. The systems also offer economic value by reducing energy consumption and data center space requirements. Energy efficiency is improved through the use of 7200 RPM drives and SSD, both of which require significantly less power to operate than 15 K RPM drives.

A Range of Configurations

To meet a variety of customer needs for capacity, price, and performance, the Sun Storage 7000 series family comes in three different configurations plus a cluster configuration that offers maximum availability.

All nonclustered systems come bundled with the same software including data protocols, replication, compression, and DTrace Analytics software for system troubleshooting and performance optimization. Clustered systems include an additional software module for cluster software features.

Sun Storage 7110 System

This entry-level, easy-to-install storage appliance is well suited for small and medium businesses, and departments, or remote offices of large corporations. It uses the same software as the high-end configurations, and delivers a 2 TB or 4.2 TB of raw capacity in a 2U package using 10 K RPM SAS drives. With the Sun Storage 7110 system, customers can acquire easy-to-use enterprise data management functionality at entry-level costs.

Sun Storage 7210 System

The Sun Storage 7210 system is a midrange configuration that radically simplifies enterprise storage management and offers extremely high density with up to 48 TB of raw capacity in a 4U system, and can scale to 142 TB with two optional Sun Storage J4500 arrays. This system includes write-optimized SSD, so it is ideal for organizations that require high volume throughput for write operations and yet do not require the extensive capacity available in the high-end Sun Storage 7410 system. The system uses 7200 RPM SATA II drives to achieve high energy efficiency.

Sun Storage 7310 System

The Sun Storage 7310 redefines mission-critical entry storage for the enterprise, with simplified management, performance, efficiency, and seamless expansion to meet your growing needs. It provides a high-availability cluster option with scalability up to 96 TB raw capacity, and supports the hybrid storage pool that can be configured with up to 600 GB of read-cache and optional write-optimized cache for enhanced application performance.

Sun Storage 7410 System

This high-end unified storage system is available in a single or cluster configuration. It offers radically simplified storage management and up to 288 TB of raw capacity for extreme scalability. The Sun Storage 7410 system also delivers superior performance while reducing energy consumption with its inventive Hybrid Storage Pool architecture.

Cluster Configurations

For customers that require maximum protection against downtime, the Sun Storage 7310 and 7410 systems also support a two-node cluster configuration with no single point of failure. The Sun Storage 7310 and 7410 Cluster Systems feature an active-active architecture with no single point of failure that enables high performance and high availability to maximize business productivity.

Sun Storage 7000 Series Family Configurations

Sun Storage 7000 Series Family Configurations						
	Key Customer Requirement	Maximum Storage Capacity	Space (Rack Units)	Write Optimized SSD	Read Optimized SSD	Cluster Option
Sun Storage 7110 system	Low-priced entry-level system with all software features	2 TB or 4.2 TB (16 x 2.5 in. 146 GB or 300 GB disks)	2U	N	N	N
Sun Storage 7210 system	Midrange scalability and performance in a compact energy-efficient 4U system	48 TB (48 x 3.5 in. 1 TB disks) and up to 142 TB with two J4500 arrays*	4U	Up to 2 SSDs	N	N
Sun Storage 7310 system	Entry-level cluster option for high availability	96 TB	1U per node, 4U per storage array	Up to 16 SSDs for cluster configuration	Up to 6 per node (600 GB total)	Y
Sun Storage 7410 system	Best price/performance and maximum growth path	288 TB	2U per node, 4U per storage array	Up to 16 SSDs for cluster configuration	Up to 6 per node (600 GB total)	Y

*There are two specific configurations of the Sun Storage J4500 array that can be used with the Sun Storage 7210 system: a 24 TB array with 48 x 500 GB 7,200 RPM drives and a 48 TB array with 48 x 1 TB 7,200 RPM drives.

Sun Storage 7000 Series Family Specifications

Sun Storage 7000 Series Family Specifications				
	7110	7210	7310	7410
Architecture				
Processor	Quad-Core AMD Opteron processor, 1.9 GHz	Two Quad-Core AMD Opteron processors, 2.3 GHz	Up to two 2.3 GHz Quad-Core AMD Opteron processors, per node	Up to four 2.3 GHz Quad-Core AMD Opteron processors, per node
Main memory	Up to 8 GB	Up to 64 GB	Up to 64 GB per node	Up to 128 GB per node
Read Flash Accelerator (cache)	N/A	N/A	Up to 600 GB per node	Up to 600 GB per node

Sun Storage 7000 Series Family Specifications (cont'd)				
	7110	7210	7310	7410
Base Configurations				
Configuration options	<ul style="list-style-type: none"> 14 x 146 GB SAS 10 K RPM drives 14 x 300 GB SAS 10 K RPM drives 	<ul style="list-style-type: none"> 11.5 TB (46 x 250 GB) 22.5 TB (45 x 500 GB) and 1x Write Flash Accelerator (SSD) 23 TB (46 x 500 GB) 44 TB (44 x 1 TB) and 2 x Write Flash Accelerator (SSD) 46 TB (46 x 1 TB) Supports up to two Sun Storage J4500 expansion arrays in two specific configurations 	<ul style="list-style-type: none"> Up to 96 TB using high capacity 7200 RPM disks Supports 24-drive storage expansion arrays with optional Write Flash Accelerator (SSD) 	<ul style="list-style-type: none"> Up to 288 TB using high capacity 7200 RPM disks Supports 24-drive storage expansion arrays with optional Write Flash Accelerator (SSD)
Software				
File system	ZFS (128-bit capacity)			
File level protocol	NFS v2/v3/v4, CIFS, HTTP, WebDAV, FTP/SFTP/FTPS			
Block level protocol	iSCSI			
Data compression	Four levels of data compression available			
Replication	1:N, N:1, manual, scheduled, continuous			
Monitoring	DTrace Analytics (for system tuning and debugging); dashboard monitoring for key system performance metrics			
Automated serviceability	"Phone Home" capability with automatic case creation, configurable alerts			
RAID	Striping, mirroring, single-parity RAID, double-parity RAID, wide stripes			
Remote management	HTTPS, SSH, SNMP v2/v3, IPMI			
Snapshots	Read only, read/write (clone), restore			
Directory services	NIS, AD, LDAP			
Data security	Checksum data and metadata, antivirus quarantine			
Network services	NTP, DHCP, SMTP			
Standard and Optional Interfaces				
Integrated network	Four 10/100/1000 Base-T Ethernet ports			
Optional network connectivity	Dual GigE UTP; Dual GigE MMF; Quad Gigabit Ethernet UTP; Dual 10 GigE Fiber XFP (requires fiber transceiver)			
Optional tape backup HBA	Dual channel 4 Gb FC HBA; Dual channel Ultra320 SCSI HBA			
Power				
AC power	100 V to 120 V / 200 V to 240 V (50/60 Hz)	200 V to 220 V AC @ 10 Amps, 100 V to 110 V with three PSUs	100 V to 120 V / 200 V to 240 V AC (50/60 Hz)	90 V to 264 V AC (47 Hz to 63 Hz)
Operating temperature/humidity (single, nonrack system)	5°C to 35°C (41°F to 95°F), 10% to 90% relative humidity, noncondensing	5°C to 32°C (37°F to 91°F), 10% to 90% relative humidity, noncondensing, 27°C max wet bulb	5°C to 35°C (41°F to 95°F), 10% to 90% relative humidity, noncondensing	5°C to 35°C (41°F to 95°F), 10% to 90% relative humidity, noncondensing

Sun Storage 7000 Series Family Specifications (cont'd)				
	7110	7210	7310	7410
Nonoperating temperature/humidity (single, non-rack system)	40°C to 65°C (-40°F to 149°F), up to 93% relative humidity, noncondensing	-40°C to 65°C (-40°F to 149°F), up to 93% relative humidity, noncondensing, 38°C max. wet bulb	40°C to 70°C (-40°F to 149°F), up to 93% relative humidity, non-condensing	-40°C to 70°C (-40°F to 158°F), up to 93% relative humidity, noncondensing
Altitude (operating) (single, non-rack system)	Up to 3,000 m, maximum ambient temperature is derated by 1°C per 300 m above 900 m	Up to 4,000 m, maximum ambient temperature is derated by 1°C per 300 m above 900 m	Up to 3,000 m, maximum ambient temperature is derated by 1°C per 300 m above 900 m	Up to 3,048 m, maximum ambient temperature is derated by 1°C per 300 m above 900 m
Regulations (Meets or Exceeds the Following Requirements)				
Safety	IEC 60950, UL/CSA 60950, EN60950, CB Scheme with all country differences	IEC 60950, UL/CSA 60950-1, EN60950, CB Scheme with all country differences	IEC 60950, UL/CSA 60950, EN60950, CB Scheme with all country differences	IEC 60950, UL/CSA 60950, EN60950, CB Scheme with all country differences
RFI/EMI	FCC CFR 47 Part 15 Class A, EN 55022 Class A, EN 61000-3-2, EN 61000-3-3, EN 300-386	FCC Class A, Part 15 47 CFR, EN55022, CISPR 22, EN300-386:v1.3.2, ICES-003	FCC CFR 47 Part 15 Class A, EN 55022 Class A, EN 61000-3-2, EN 61000-3-3, EN 300-386	FCC CFR 47 Part 15 Class A, EN 55022 Class A, EN 61000-3-2, EN 61000-3-3, EN 300-386
Immunity	EN55024, EN300-386	EN55024, EN300-386:v1.3.2	EN55024, EN300-386	EN55024, EN300-386

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Contact Us

For more information about Oracle's Sun Storage 7000 Series family, please visit oracle.com/storage or call +1.800.786.0404 to speak to an Oracle representative.



Oracle is committed to developing practices and products that help protect the environment

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