

Sun StorageTek™ 9990 System The Ultimate Storage Platform



Highlights

- Unparalleled capacity, connectivity, and host support allows massive storage consolidation projects
- Storage virtualization enables multiple storage systems to be managed as one and creates a dynamic tiered storage infrastructure
- Logical partitioning of cache, disk, and I/O helps organizations meet service-level agreements
- Remote replication with disk-based journaling for multi-datacenter disaster recovery
- Market proven reliability ensures 24x7 access to data
- Superior scalability, performance, and availability for the most demanding data management needs



With capabilities well beyond those of any other storage system, including controller-based storage virtualization, tiered storage management, storage resource partitioning, and superior performance, connectivity and scalability, the Sun StorageTek™ 9990 system helps you match your IT investment to your business requirements so you can tame the data explosion and better manage the increasingly complex datacenter. Thanks to its unparalleled storage consolidation and virtualization capabilities, the Sun StorageTek 9990 system provides you with an application-oriented solution that helps improve efficiencies and simplify management, increasing ROI, and reducing TCO.

The industry's most advanced storage system

With controller-based storage virtualization of up to 32 PB, multiple storage systems appear as more internal storage in a common pool, enabling you to maximize resource utilization and simplify their management. The system's single-console management software provides centralized management and a common set of migration, copy and replication services, to simplify your infrastructure and lower your total cost of storage ownership. When combined with storage resource partitioning you can realize massive storage consolidation and

aggregation plans, and unify data and storage services across your datacenter, improving productivity and utilization. With a market-proven, third-generation architecture, full redundancy, no single point of failure, proactive self-monitoring with "call home" capability, and prompt support by mission-critical centers worldwide, the Sun StorageTek 9990 system delivers the extreme availability required to keep your business up and running 24x7. And with over two M/s I/Os per second and 81 MB/s aggregate internal bandwidth performance, the Sun StorageTek 9900 system supports the most rigorous datacenter requirements.

Software choices to optimize your storage system

To ensure data is protected, highly available, and easy to manage, organizations need software that can optimize their storage system. The Sun StorageTek 9990 and the smaller Sun StorageTek™ 9985 systems offer a full suite of software, including the Universal Volume Manager for storage virtualization, Virtual Partitioning Manager for resource allocation, Tiered Storage Manager for data lifecycle management and Universal Replicator for complex business continuity and disaster recovery plans.

Sun StorageTek™ 9900 Universal Volume Manager

Simplified management is a key component of large-scale data storage. The Sun StorageTek 9900 Universal Volume Manager software allows you to manage multiple storage systems connected to the Sun StorageTek 9990 system under a single point of control. Using Universal Volume Manager, you can virtualize and manage up to 32 PB of mixed storage systems from Sun and other vendors as if they were all one system. External storage volumes form a shared storage pool that can be used by multiple servers and multiple applications.

Sun StorageTek™ 9900 Virtual Partitioning Manager

Sun StorageTek 9900 Virtual Partitioning Manager software enables the logical partitioning of ports, cache, and disk capacity on a Sun StorageTek 9990 system and any attached, virtualized systems to create up to 32 independently managed Virtual Private Storage Machines. Virtual Private Storage Machines create separate, dedicated storage resources for specific users, servers, or applications. Sun StorageTek 9900 Virtual Partitioning Manager allocates storage resources based on business requirements



The Sun StorageTek 9990 system.

and priorities, and allows you to update the allocation as needed, helping ensure the most efficient allocation of resources and enabling organizations to meet service-level agreements. To the host, partitions appear as individual, independently managed storage systems. Access to partitions is secure because administrators can only configure and manage resources within their assigned partitions.

Sun StorageTek™ 9900 HiCommand Tiered Storage Manager

Sun StorageTek 9900 HiCommand Tiered Storage Manager lets you store and manage data according to its current business value, storing it on the appropriate media, or tier, to satisfy quality of service and cost requirements as they change over time. A critical piece of information included in an online transaction, for example, becomes less important when the transaction is complete. The Tiered Storage Manager enables administrators to easily match price, performance,

and availability needs to storage system characteristics. This software manages and automates the movement of data into the correct tier according to cost, performance, data protection, and business requirements.

Sun StorageTek™ 9900 Universal Replicator

Replication of data is key to business continuity, maximizing uptime and enabling disaster recovery. The ability to replicate effectively in any environment over any distance without data loss is critical. The Sun StorageTek 9900 Universal Replicator goes beyond traditional replication to achieve unmatched data protection. Delivering the ability to asynchronously replicate over any distance in a heterogeneous environment, this software represents a technological breakthrough that enables you to significantly lower the cache and resource consumption of the primary storage system.

You can use this software, for example, to replicate from a Sun StorageTek 9900 system to a Sun StorageTek 9985 system, regardless of the distance. The software uses performance-optimized disk-based journaling and a pull-style replication engine to help mitigate link failures, preventing data loss even in the event of a communications breakdown. This software also helps you to improve bandwidth utilization and optimize your resource usage.

Sun StorageTek™ 9900 TrueCopy

Remote Replication

Sun StorageTek 9900 TrueCopy Remote Replication software automates the data recovery process, so that in case of an interruption, business operations can resume in a matter of seconds. With both synchronous and asynchronous capability, TrueCopy replicates data independent of the host, over any distance, without affecting application performance for data duplication, backup and disaster recovery. Whether an interruption is a planned test or an unexpected disruption, Sun StorageTek 9900 TrueCopy Remote Replication software reduces recovery time by using continuously available online copies. This software facilitates regulatory compliance, reduces the frequency and duration of planned maintenance outages, and improves business resilience by enabling nondisruptive testing. The synchronous replication of Sun StorageTek 9900 TrueCopy Remote Replication software complements Sun StorageTek 9900 Universal Replicator Software to help you achieve advanced multi-datacenter replication, with up-to-date copies of data in various locations.

Sun StorageTek™ 9900 ShadowImage

In-System Replication

Sun StorageTek 9900 ShadowImage In-System Replication Software uses high-speed, non-disruptive local mirroring to rapidly create multiple copies of mission-critical data within

all Sun StorageTek 9900 series systems, in both mainframe and open-system environments. This software keeps your data RAID-protected and fully recoverable, simplifying and speeding the recovery process. Its consistency-group function provides multivolume, point-in-time copies of applications and databases. Through its Quick Restore feature, it reduces recovery time from data corruption. ShadowImage can handle large data volumes without affecting performance, creating copies for backup, testing, and data mining without impacting revenue-generating applications. ShadowImage reduces testing time and increases competitive advantage by facilitating information sharing within the organization and providing always-available copies of current production data. Space-efficient copies can be created by using the copy-on-write (COW) feature.

Sun StorageTek™ 9900 HiCommand Device Manager

Sun StorageTek 9900 HiCommand Device Manager software allows you to manage all Sun StorageTek 9900 series systems and any other storage products that comply with the Storage Management Initiative Specification (SMI-S) from a single, central platform. It enables users to logically organize and manage storage to reflect the needs of different organizations or departments. This software provides an immediate view of available storage and current usage, enabling easy deployment of storage resources according to current needs. It simplifies automation of data management and configuration — improving organizational operations. Sun StorageTek 9900 HiCommand Device Manager software helps mitigate risk by allowing automated failover and providing quick access to complementary products. By reducing training costs and allowing single-point administration, this software can help reduce operational costs.

Sun StorageTek™ 9900 HiCommand Tuning Manager

Sun StorageTek 9900 HiCommand Tuning Manager Software maps, monitors, analyzes, and reviews storage network resources. This software provides an intuitive, Web-based interface that enables forecasting of future storage needs. Sun StorageTek 9900 HiCommand Tuning Manager software integrates seamlessly with key business applications such as Oracle® and Microsoft SQL to facilitate consolidation of storage resource management procedures. Fully integrated with Sun StorageTek 9900 HiCommand Device Manager, it can help reduce total cost of ownership by maximizing storage utilization, improving storage performance and capacity management.

Sun StorageTek™ 9900 Storage Area Management (SAM) Suite

The Sun StorageTek 9900 Storage Area Management (SAM) suite is a comprehensive, application-oriented suite of components that allows you to manage the performance and capacity of your entire storage infrastructure. This suite manages users' Sun StorageTek 9900 series system's performance and functionality according to their specific business needs. The suite's management modules visually render and administer your entire data infrastructure as a shared utility, supporting multiple-vendor storage systems, switches, servers, host bus adapters, and file systems that serve business applications. Centralized control of the multivendor storage environment enables you to rapidly deploy applications and ensure their availability, reduce errors and operational costs, maximizing return on current and future storage investments, while enhancing the simplified management of heterogeneous storage environments.

Sun StorageTek 9990 System Specifications

System performance

System I/Os	2.5 M/s
Aggregate internal bandwidth (max. config.)	81 GB/s (68 GB/s data, 13 GB/s control)

System capacity

Internal storage (with 300 GB drives)	330 TB
Number of disks (with spares)	Five to 1,152
Hot spares (maximum)	One to 40
RAID levels	1, 1+0, 5, 6
External storage support (total)	32 PB

Maximum internal raw capacity

300 GB, 10K-rpm drives	330 TB
146 GB, 15K/10K-rpm drives	165 TB
73 GB, 15K-rpm drives	85 TB

Usable capacity for RAID 5 (max.) with 300 GB drives

Open systems	287.8 TB
z/OS compatible	270.4 TB

Usable capacity for RAID 1+ (max.) with 300 GB drives

Open systems	165.0 TB
S/390 compatible	143.6 GB

Data cache

Cards	Four
Base memory	32 GB
Maximum memory	256 GB

Control memory

Control memory	Up to 12 GB
----------------	-------------

Logical device support

Open systems	Up to 16,384
z/OS	Up to 65,536

Virtual partition volumes

Private virtual storage machines	Up to 32
----------------------------------	----------

Front-end directors

Number of front-end directors	One-six
Number of simultaneous data transfers	Up to 16 or 32 per front-end director
Interface speed (Fibre Channel)	One, two, or four Gb/s

Physical interfaces

Maximum (redundant pairs)	
Fibre Channel	0-192 (32, 64, 96, 128, 160, 192)
ESCON	0-96 (16, 32, 48, 64, 80, 96)
FICON	0-96 (8, 16, 24, 32, 40, 48, 96)
NAS blades/ports	0-4/0-32

Back-end directors

Number of back-end directors	Two, four
Disk drives per back-end director	Up to 256 HDDs

Environment

	Sun StorageTek 9990 control frame	Sun StorageTek 9990 array frame
Heat	8.68 kW	7.07 kW
Power	9.077 kVA	7.636 kVA

Dimensions and weight

	Control frame (DKC)	Array frame (DKU)
Height	186.0 cm (73.2 in.)	186.0 cm (73.2 in.)
Width	78.2 cm (30.77 in.)	65.0 cm (25.59 in.)
Depth	92.5 cm (36.42 in.)	92.5 cm (36.42 in.)
Weight (max.)	590.0 kg (1,300.73 lbs.)	430.0 kg (947.99 lbs.)

Learn More

Contact a Sun sales representative for more information, or visit Sun on the Web at: sun.com/storage/highend.

Software

Storage virtualization and DLM	Sun StorageTek™ 9900 Universal Volume Manager Sun StorageTek™ 9900 Virtual Partitioning Manager Sun StorageTek™ 9900 HiCommand Tiered Storage Manager
Business continuity, disaster recovery, and data movement	Sun StorageTek™ 9900 Universal Replicator Sun StorageTek™ 9900 TrueCopy Remote Replication Sun StorageTek™ 9900 ShadowImage In-System Replication Sun StorageTek™ 9900 Business Continuity Manager Sun StorageTek™ 9900 Volume Migration Software Sun StorageTek™ 9900 FlashCopy
Data protection storage management	Sun StorageTek™ 9900 Data Retention Utility Sun StorageTek™ 9900 HiCommand Device Manager Sun StorageTek™ 9900 HiCommand Tuning Manager Sun StorageTek™ 9900 Dynamic Link Manager Sun StorageTek™ 9900 SAM Suite

Operating system support ⁽¹⁾

Open systems	Solaris™ Operating System HP-UX IBM AIX VMware Red Flag Linux Novell NetWare Red Hat Linux SUSE Linux SGI IRIX Microsoft Windows 2000 and 2003 Microsoft Windows NT Compaq Tru64 UNIX
Mainframe	OS/390 MVS/ESA MVS/XA TPF/MPLF VM/ESA VM/XA VM/HPO VSE/ESA VSE/SP z/OS Linux® for Z Series
Host failover and alternate path	Sun™ Cluster 3.2 VERITAS Cluster Server (VCS)-Solaris HP MC/ServiceGuard IBM HACMP Microsoft Cluster Server (MSCS) Compaq TruCluster Novell Cluster Services VMS Cluster Sun StorageTek 9900 SDLM Sun StorageTek Traffic Manager Software (SSTM) VERITAS Volume Manager/DMP

¹ Consult a Sun sales and systems engineering representative for the latest information regarding supported operating systems and servers.