

Sun StorageTek™ 9985V

Delivering a complete, flexible, and modular enterprise storage and virtualization solution



Highlights

- The same advanced crossbar architecture, reliability, enterprise functionality, and storage services as the Sun StorageTek™ 9990, in a smaller modular package
- Embedded storage virtualization for consolidating, managing, and providing transparent data mobility for up to 96 PB of external heterogeneous disk
- Tiered storage management for optimizing the alignment of storage costs with business needs and creating a tiered storage infrastructure across all storage systems (internal and external)
- Thin provisioning for improving storage utilization, providing non-disruptive capacity upgrades, and lowering TCO
- Virtual Partitioning of cache, disk, and I/O for helping organizations meet their security and service-level agreements
- Powerful suite of software for ease of storage management and data protection
- VMware ESX support for flexibility and further TCO reduction
- Open systems and mainframe connectivity



Most comprehensive and fully integrated enterprise storage and services platform with embedded virtualization, thin provisioning, tiered storage management, and universal replication in an efficient modular package.

Sun StorageTek™ 9985V — delivering industry-leading enterprise-class functionality for smaller enterprises

Today smaller enterprises are confronted with the same challenges as larger enterprises, including escalating data growth, improving application performance and availability, addressing longer data retention and greater data protection needs, business continuity, disaster recovery, as well as simplifying the management of increasingly complex infrastructures, all with less budget. The Sun StorageTek 9985V, powered by the latest generation of very reliable massively parallel crossbar switch architecture, delivers the same enterprise-class functionality as the Sun StorageTek 9990V with less money and a smaller footprint. With its embedded

virtualization capability for up to 96 PB of external heterogeneous storage, virtual partitioning of storage resources, tiered storage management, thin provisioning, and universal replication, not only does the StorageTek™ 9985V greatly improve storage and management efficiency, increase application performance, ensure data protection and business continuity, but it also significantly reduces operational costs and total cost of ownership (TCO).

Datacenter features in a flexible modular package

What sets the StorageTek 9985V system apart from the rest of the Sun StorageTek™ 9900 family is its modular packaging, enabling more deployment options without sacrificing advanced functionality. The StorageTek 9985V can be configured as an enterprise

storage system, a virtualization engine for heterogeneous external storage, or both.

Simplify management — save time

- Improve utilization and flexibility of legacy systems by virtualizing them into a single, flexible storage pool for ease of management
- Reduce management complexity via a single console and a common set of software tools to manage any storage resource connected to the StorageTek 9985V
- Enable non-disruptive data migration across heterogeneous environments without risk

Improve storage utilization and efficiency — save money

- Improve storage utilization, reduce cost, and enable non-disruptive capacity upgrades with Dynamic Provisioning — allocate virtual storage to applications with less physical disks and add only when needed, without interrupting critical business applications
- Reduce cost and improve storage efficiency with Tiered Storage Manager by building a tiered storage foundation for enabling Data Lifecycle Management across different tiers of internal and external storage to better match the value of data to the type of storage it is kept on
- Lower cost by archiving data to virtualized, externally attached SATA-based storage systems

Maximize performance and availability — enhance business continuity

- Gain best performance and availability with fourth generation crossbar switch architecture
- Ensure application QoS and enhanced security with virtual partitioning of key storage resources into Private Virtual Storage Machines
- Improve storage cost-effectiveness and respond quickly to evolving business needs with Virtual Partitioning and Tiered Storage Manager to better match application requirements to storage attributes

Reduce the environmental footprint — less power and cooling

- Increase disk utilization, reduce power, cooling, and floorspace with thin provisioning — require less physical disks to support overprovisioning and workloads
- Enable non-disruptive data migration to newer, more energy efficient storage systems
- Small footprint, large virtual storage space

Software choices to optimize your StorageTek 9985V storage system

To ensure data is protected, highly available, and easy to manage, organizations need software that can optimize their storage system. The StorageTek 9985V offers the same full suite of award-winning software as the StorageTek 9990V, including Dynamic Provisioning for optimizing storage utilization, the Universal Volume Manager for storage virtualization, Virtual Partition 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 Dynamic Provisioning

The Sun StorageTek 9900 Dynamic Provisioning software improves storage utilization, simplifies storage provisioning, and enables an easy, transparent way of adding additional storage when needed without disruptions to applications. Also known as thin provisioning, Dynamic Provisioning allows certain open systems customers the ability to overallocate storage to an application without it actually being physically installed until needed. This minimizes the cost associated with overallocating and underutilization of storage resources. It also helps simplify performance optimization by transparently spreading many hosts' individual I/O patterns across many physical disks, thereby reducing performance management concerns and optimizing performance/throughput. Dynamic provisioning reduces costs, power and cooling, improves performance, simplifies management, and minimizes application service interruptions.

Sun StorageTek 9900 Universal Volume Manager

Simplified management is a key component of large-scale data storage consolidation. The Sun StorageTek 9900 Universal Volume Manager software allows you to manage multiple storage systems connected to the StorageTek 9900 system under a single point of control. Using Universal Volume Manager, you can virtualize and manage up to 96 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. Data can be migrated transparently between different systems.

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 StorageTek 9985V system and any attached, virtualized systems to create up to eight independently managed Virtual Private Storage Machines. Virtual Private Storage Machines create separate, dedicated storage resources for specific users, servers, or applications. StorageTek 9900 Virtual Partitioning Manager allocates storage resources based on business requirements and individual 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 Tiered Storage Manager

Sun StorageTek 9900 Tiered Storage Manager lets you store and manage data according to its current business value, storing it on the appropriate media, or storage tier, to satisfy quality of service and cost requirements as they change over time. For example, a critical piece of information included in an online transaction 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. In addition, the new delta resynch feature coupled with three datacenter multihop support, provide the most concurrent multi-site replication capability and enhanced data protection available. Together, these features make Universal Replicator one of the best solutions for enterprises with zero or near zero recovery point and time objectives.

You can use this software, for example, to replicate from a Sun StorageTek 9990, 9990V or 9985 system to a Sun StorageTek 9985V system and other heterogeneous storage systems virtualized behind it, 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 ShadowImage In-System Replication

Sun StorageTek 9900 ShadowImage In-System Replication software uses high-speed, nondisruptive local mirroring to rapidly

create multiple copies of mission-critical data within all StorageTek 9990 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-onwrite (COW) feature.

Sun StorageTek 9900 Device Manager

Sun StorageTek 9900 Device Manager software allows you to manage all 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. StorageTek 9900 Device Manager software helps mitigate risk by allowing automated failover and providing quick access to complementary products. By reducing training costs and allowing singlepoint administration, this software can help reduce operational costs.

Sun StorageTek 9900 Tuning Manager

Sun StorageTek 9900 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. StorageTek 9900 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 StorageTek 9900 Device Manager, it can help reduce TCO by maximizing storage utilization, improving storage performance and capacity management.

Learn More

To learn more about the Sun StorageTek 9990V disk system, visit sun.com/storage

Sun StorageTek 9985V System Specifications

System capacity

Internal storage (with 1 TB drives)	236.3 TB
Number of disks (with spares)	5 to 240
Hot spares (maximum)	1 to 16
RAID levels	1, 1+0, 5, 6
External storage support (total)	96 PB

Maximum internal raw capacity/supported drives

1 TB 7.2K-rpm drives	236.3 TB
450 GB 15K-rpm drives	105.7 TB
400 GB 10K-rpm drive	94.5 TB
300 GB, 15K-rpm drives	72 TB
146 GB, 15K-rpm drives	35 TB

Usable capacity for RAID 5 (7D+1P) with 400 GB drives

Open systems	77.2
z/OS compatible (3390 M)	73.3

Usable capacity for RAID 1 (2D+2d) with 400 GB drives

Open systems	46.5 TB
z/OS compatible (3390 M)	42.7 TB

Data cache

Cards	1 to 8
Minimum memory	4 GB
Maximum memory	128 GB

Control memory

Minimum control memory	4 GB
Maximum control memory	16 GB

Logical device (LUNs) support

Open Systems	Up to 65,536
z/OS	Up to 65,536

Virtual partition volumes

Private virtual storage machines	Up to 16
----------------------------------	----------

Front-end directors

Number of front-end directors	1 to 3
FC ports per director	16 ports
FICON/ESCON ports per director	8 ports
Virtual host ports	1,024 per physical port
Maximum Fibre Channel port performance	4 Gb/s

Physical interfaces (Max)

Fibre Channel	48
ESCON	24
FICON	24

Back-end directors

Number of back-end directors	1 to 2
------------------------------	--------

Power

AC input,	
one phase	60 Hz: 200 V, 208 V or 230 V
	50 Hz: 200 V, 220 V, 230 V or 240 V

Environment

Heat (BTU/hr)	1,952	Primary Rack w/controller	Primary Rack/Controller/Expansion Rack
Power (kVA)	.59		23,447
			7.18

Dimensions (Primary controller and disk rack/Optional disk expansion rack)

Height	200 cm (78.7in.)
Width	121 cm (47.6 in.)
Depth	105 cm (41.3 in.)
Weight (max.)	1017 kg (2245 lbs.)

Operating System Support (1)

Open Systems	Sun (Solaris™ 7, 8, 9, 10); Microsoft Windows (2000, 2003 Server); IBM AIX, HP (HP-UX, Tru64, OpenVMS); Novell NetWare; Red Hat and SuSE Linux; VMWare ESX
Mainframe	IBM OS/390, MVS/ESA, MVS/XA, VM/ESA, VSE/ESA, z/OS, z/OS.e, z/VM, zVSE; Red Hat Linux for S/390 and zSeries; TPF

Host failover and alternate path support

Host failover and alternate path support	SunCluster ; 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; ; VERITAS Volume Manager/ DMP
--	---

Software

Storage virtualization and DLM	Sun StorageTek 9900 Universal Volume Manager Sun StorageTek 9900 Virtual Partitioning Manager Sun StorageTek 9900 Tiered Storage Manager
Business continuity, disaster recovery	Sun StorageTek 9900 Universal Replicator Sun StorageTek 9900 TrueCopy Replication Sun StorageTek 9900 ShadowImage In-System Replication Sun StorageTek 9900 Business Continuity Manager Sun StorageTek 9900 Compatible Mirroring for FlashCopy Sun StorageTek Tiered Storage Manager
Data protection and Sun storage management	StorageTek 9900 Protection Manager Sun StorageTek 9900 Device Manager Sun StorageTek 9900 Dynamic Link Manager Sun StorageTek 9900 Tuning Manager Sun StorageTek 9900 Global Link Manager

Provisioning

Provisioning	Sun StorageTek 9900 Dynamic Provisioning
--------------	--

SRM

SRM	Sun StorageTek Storage Services Manager
-----	---

Sun StorageTek 9900V Software Suites

Sun StorageTek 9900V Software Suites	Basic Operating System software Basic Operating System Virtualization software Disaster Recovery software Disaster Recovery Extended software In-System Replication software Compatible Mirroring for FlashCopy software
--------------------------------------	---

Warranty and Service

Warranty	Three years coverage (24 x7, 4 hr response)
Installation service	Sun StorageTek 9900 Installation Service (included)
Service upgrades	SunSpectrum SM service upgrades are available

¹ Consult a Sun Sales and Systems Engineering representative for the latest information regarding supported operating systems and software.