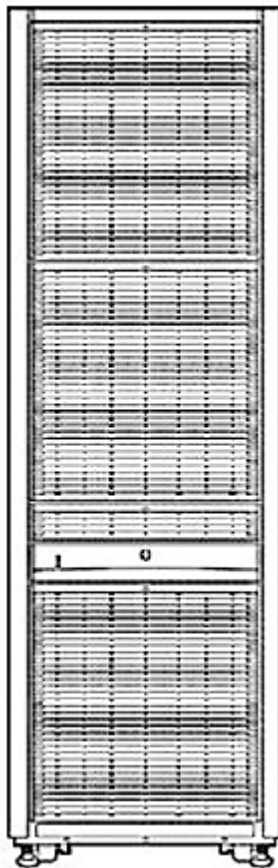## *Overview*

The HP StorageWorks 200 Storage Virtualization System (SVS200) decreases the stress of everyday data management by minimizing the complexity of the SAN and reducing the total cost of storage ownership.

The advanced virtualization technology in the SVS200 simplifies data migration, volume management, and data replication in SAN environments-supporting up to 16 petabytes of heterogeneous storage-all of which can be managed from one single pane of glass.

The SVS200 enables transparent data movement for array decommissioning, repurposing, upgrading, maintenance, data center moves, consolidation, implementation of information lifecycle management (ILM) policies, and performance tuning. The SVS200 simplifies the management of virtual volumes, dynamically reallocating capacity, pooling heterogeneous volumes into a single reservoir that results in increased capacity utilization. The SVS200 enables local and remote heterogeneous data replication for data distribution, data mining, backup, restore, and data validation testing.

The SVS200 is designed for organizations that demand the most from their storage. No single point of failure and boot-once scalability meets the needs of today and tomorrow-without ever requiring a power down.

The SVS200 delivers storage virtualization based on a proven high-performance/high-availability disk array architecture. In a world where every business decision seems to triggers an IT event, the SVS200 enables an adaptive enterprise--one that can quickly capitalize on and manage change.

Overview

What's New

Functionality Element   SVS200

Storage Virtualization   For businesses with heterogeneous arrays who want to reduce their total cost of storage ownership the SVS200 delivers application transparent data mobility and volume management along with heterogeneous data replication based on a proven high-performance/high-availability disk array architecture.

- Transparent data movement for array decommissioning, repurposing, upgrading, maintenance, data center moves or consolidation, implementation of ILM policies, and performance tuning.
- Simplifies the management of virtual volumes, dynamically reallocating capacity, pooling heterogeneous volumes into a single reservoir that results in increased capacity utilization.
- Local and remote heterogeneous data replication for data distribution, data mining, backup and restore, and data validation testing.

Key Features and Benefits

HP StorageWorks 200 Storage Virtualization System is a storage virtualization solution that decreases the stress of heterogeneous data management by minimizing the complexity of the SAN and reducing the total cost of storage ownership.

Application transparent data mobility   Transparent data movement for array decommissioning, repurposing, upgrading, maintenance, data center moves or consolidation, implementation of ILM policies, and performance tuning.

- Data movement within an array or to a different array.
- Non-disruptive data migration.
- No SAN or Server reconfiguration.
- Fewer staff management hours.
- Eliminate application downtime.
- More agile environment.

Simplified volume management and provisioning   Simplifies the management of virtual volumes, dynamically reallocating capacity, pooling heterogeneous volumes into a single reservoir that results in increased capacity utilization.

- Reduce costs and complexity in provisioning heterogeneous storage.
- Heterogeneous storage appears as a single pool of capacity, managed from a single console, easing administrative tasks.
- Physical storage resources can be reallocated without a disruptive remounting of volumes on servers.
- Single management tool across platforms

Heterogeneous local and remote data replication   Local and remote heterogeneous data replication for data distribution, data mining, backup and restore, and data validation testing.

- Data can be replicated between unlike storage systems both synchronously and asynchronously, locally and over wide-area distances.

Increased capacity utilization   Heterogeneous storage appears as a single pool of capacity, increasing capacity utilization.

No single point of failure-online scalability   All components are redundant and hot-swappable, including: processors, I/O interfaces, power supplies, batteries, and fans. Non-disruptive online upgrades allows capacity and features to added to meets the needs of today and tomorrow-without ever requiring a power down.

Based on a proven architecture   SVS200 is a virtualization appliance based on the XP12000/XP10000 mature disk array technology.

QuickSpecs

Standard Features

SVS200 Hardware
The SVS200 hardware consists of a rack that supports one or two SVS200 Bundles. Each SVS200 Bundle that contains the control panel, service processor (SVP), Cache Memory, Shared Memory, Crossbar Switch, Batteries, Client-Host Interface Processors (CHIPs).

Server connectivity
The SVS200 connects to a variety of servers and operating systems. For details on which servers and operating systems are currently supported, please contact your resellers and your HP technical support to review the supported server and operating system information.

Client Host Interface Processors (CHIPs)
Client Host Interface Processors (CHIPs) provide connections to host or servers that use the SVS200 for data storage (either directly connected to the servers or through SAN switches). The CHIPs are configured in pairs for redundancy.

16 ports of 2 Gbps Fibre Channel is included in every SVS200. One additional 32 port 2 Gbps Fibre Channel CHIP can be optionally installed in an SVS200 for a total of 48 Fibre Channel ports.

Cache memory
The SVS200 supports up to 32 GB of Cache. Cache Memory is used to temporarily store data from the host until it is written to disk, or to stage data requested by the host from the disk.

Cache is configured as two sets of memories located in different power domains, into which data that is to be written on the disk is mirrored, so the data will not be lost even if a failure occurs.

Cache can also be allocated to particular host/port combinations to ensure that those hosts/ports enjoy optimized performance of Cache-oriented I/O. These cache partitions are assigned to specified disk array groups. Up to 8 partitions of at least 4 GB can be created in an SVS200. Assigning cache in this way provides another method for tuning performance for data access for performance critical applications. Cache can be partitioned separate from storage partitions.

Shared memory
Shared Memory of up to 6 GB is independent of the Cache Memory and is used to store tables, side files, and other information, thus freeing up the Cache Memory for user data. Shared Memory is also used to store system configuration information. The configuration information includes system components mapping, LUN maps, Cache pointers, and RAID levels.

Batteries
The SVS200's power fail strategy provides for environmental-friendly Nickel-Hydride batteries, which maintain system operation for up to 20 milliseconds during power outages and protect data in Cache and Shared Memory for at least 36 hours.

SAN Switch support details
The SVS200 connects to the leading Fibre Channel switches in the industry today. For detailed information on supported switch configurations, please contact your sales representative.

Standard Features

Software Components

Software Features   A full complement of management software tools is included with every SVS200. Optional software is available to implement data replication and partitioning.

Included software titles:

HP StorageWorks Command View XP Advanced Edition - Provides centralized web-based management for the SVS200 and XP disk arrays. It consists of a user friendly GUI, SMI-S provider, host agents, and a command line interface (CLI).

HP StorageWorks LUN Configuration and Security Manager XP - Add and delete paths, create custom-sized volumes, and configure LUN security to provide controlled, secure access to data stored behind an SVS200.

HP StorageWorks External Storage XP - Connects external storage devices to an SVS200. Supported devices include HP MSA, EVA and XP; EMC, HDS, and IBM disk arrays.

HP StorageWorks XP Tiered Storage Manager - Enables data migration to match key user quality of service requirements to the storage attributes of the SVS200 controlled storage.

Optional software titles:

HP StorageWorks Business Copy XP - Makes nearly instantaneous local full or space efficient Point-In-Time copies or mirrors of data without ever interrupting online production.

HP StorageWorks Continuous Access XP Synchronous/Asynchronous - Enable synchronous or asynchronous data mirroring between local and remote SVS200 and/or HP XP disk arrays.

HP StorageWorks XP Disk/Cache Partition - Allows resources on a single SVS200 to be divided into a number of distinct subsystems that are independently and securely managed.

Service and Support, HP Care Pack, and Warranty Information

Warranty and Services Included with the Product

Services included with the SVS200 are:

- Basic installation and start up
- Basic installation of included software
- 1 year of 9x5 reactive hardware support - next business day
- 1 year of software support
- Rights to software updates
- HP warrants only that the Software media will be free of physical defects for a period of ninety (90) days from delivery.

For more information about HP's Global Limited Warranty and Technical Support, visit ftp://ftp.compaq.com/pub/products/storageworks/warranty/EN_321708-008.pdf

Recommended Services

- HP Proactive 24 Service
- HP Support Plus 24 Service is recommended to cover any devices used as external storage that will appear as a LUNs on the SVS200
- Data Replication service
  - Accelerate your time-to-ROI with HP implementation and integration expertise
  - Enjoy rapid results when you deploy industry-leading HP Data Replication technologies
  - Provides optimal solution to meet your IT and business needs via flexible scalable services

Available HP Care Pack Services

Extend your product warranty with a wide choice of cost-saving support packages.

HP Care Pack Services are sold by HP and HP authorized enterprise and commercial resellers. Services for customers purchasing via direct and enterprise resellers are quoted using HP order configuration tools. Additional information about HP Care Pack Service features and benefits is available at http://www.hp.com/hps/carepack/services/.

For more information about Deployment and Per Event Services for HP Storage, visit http://www.hp.com/hps/storage/.

HP Care Pack Services Availability Services	1 yr	3 yr	4 yr	5 yr
HP Proactive 24 Service	Included	Available	Available	Available
HP Critical Service	Available	Available	Available	Available

Service and Support, HP Care Pack, and Warranty Information

Deployment and Per Event Service Descriptions

- Performance Tuning and Optimization
  - Ongoing analysis and tuning designed to keep your SVS200 running efficiently.
- Performance Analysis
  - Provides data collection, detailed I/O analysis, and enhancement recommendations.
- High Availability Storage Assessment
  - Identify potential risks to business success that may exist in your environment.
- Availability Assessment for SANs
  - Recommendations for reducing or eliminating risks to the availability of your SAN infrastructure.
- SAN Solution Service
  - You get a powerful network storage solution up-and-running quickly and efficiently, with minimal disruption and rapid returns on your SAN investment.
- HP Open Systems Data Migration
  - Transfers your critical information to a new or reconfigured storage array in an open systems environment - across a data center or around the world.
- HP Open Systems Data Migration Extension
  - Accommodates additional capacity to be migrated beyond what is included in the base HP Open Systems Data Migration Service.
- LUN Implementation
  - When redeploying your storage array, this service maximizes effectiveness by providing the necessary activities to implement a new LUN or Virtual Disk (Vdisk) configuration.
- Data Replication Solution Service
  - Ensures a timely, cost-effective deployment of your data replication solution that cuts risk and shortens your time-to-results.

eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal
The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit http://www.hp.com/support

Instant Support Enterprise Edition (ISEE)
HP Instant Support Enterprise Edition (ISEE) provides a single remote monitoring and support solution for your IT data center. ISEE uses continuous hardware event monitoring and automated notification to identify and prevent potential critical problems.

ISEE is a feature of HP Hardware Support Onsite Service with Next-Day response or better, Proactive Essentials, Proactive 24, Critical Service and warranty support for the selected products.

Service and Support, HP Care Pack, and Warranty Information

For more information or to download ISEE, visit http://www.hp.com/go/instantsupport

HP Education Services	For more information about HP Education Services for Storage and SAN, visit http://education.hp.com/curr-storsan.htm

Additional Services Information	For more information about Deployment, Per Event, Consulting and Education services for HP Storage, visit: http://www.hp.com/hps/storage/ For more information about HP Care Pack Services for Storage, visit: http://www.hp.com/hps/carepack/storage/cp_networked.html For more information about HP Storage Software, services and updates, visit: http://h18006.www1.hp.com/storage/software.html If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" http://www.hp.com

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Configuration Information

An extensive list of accessories is available for this product. For more information, please contact your reseller or authorized HP representative to work with the requirements to configure the product correctly.

New Orders

HP 200 Storage Virtualization System SSP	AE071A

NOTE: The SVS200 is a Structured Solution Product (SSP). This product number (AE071A) is a zero-price ordering mechanism that is used as an "umbrella" product to indicate to the ordering system that this is a new SVS200 order.

HP SVS200 Rack Assembly
Required, one or two SVS200 bundles can be installed in one rack for new orders.

HP SVS200 Rack Assembly	AE072A
4.5M power cord w/Nema L6-30P plug	AE072A#001
4.5M power cord with stripped ends	AE072A#002
4.5M power cord w/ IEC309 plug	AE072A#003
4.5M power cord w/ CEE7/7 plug	AE072A#004

SVS200 Bundle
Contains all hardware and software required to support up to the indicated capacity (Min 1, Max 2)

HP SVS200 1 TB Bundle (Includes 16 Fibre Channel ports, 4 GB Cache, 2 GB Shared Memory, Batteries)	AE073A
HP SVS200 6 TB Bundle (Includes 16 Fibre Channel ports, 12 GB Cache, 2 GB Shared Memory, Batteries)	AE074A
HP SVS200 16 TB Bundle (Includes 16 Fibre Channel ports, 16 GB Cache, 2 GB Shared Memory, 1 additional Battery)	AE075A
HP SVS200 32 TB Bundle (Includes 16 Fibre Channel ports, 24 GB Cache, 2 GB Shared Memory, 1 additional Battery)	AE076A
HP SVS200 64 TB Bundle (Includes 16 Fibre Channel ports, 24 GB Cache, 2 GB Shared Memory, 1 additional Battery)	AE077A
HP SVS200 Above 64 TB Bundle (Includes 16 Fibre Channel ports, 24 GB Cache, 2 GB Shared Memory, 1 additional Battery)	AE078A

Client-Host Interface Processor pair (Max1 pr)

HP SVS200 32 Port 2 Gbps FC CHIP	AE084A

Cache Memory (Beyond what is included in the base bundle)

HP SVS200 4 GB Cache Memory	AE086A

Shared Memory (Beyond what is included in the base bundle)

HP SVS200 1 GB Shared Memory	AE088A

Battery (Beyond what is included in the base bundle)

HP SVS200 Battery	AE090A

1 additional Battery required when exceeding 12 GB cache or when exceeding 3 GB Shared Memory. The second additional Battery required when exceeding 28 GB cache.

Configuration Information

Upgrade Orders

HP SVS200 Upgrade SSP	AE071AU

NOTE: This product number (AE071AU) is a zero-price ordering mechanism that is used as an "umbrella" product to indicate to the ordering system that this is an upgrade order for an existing SVS200.

HP StorageWorks 200 Storage Virtualization System upgrade components

HP SVS200 Upgrade 1 TB to 6 TB Bundle (Software LTU, no hardware)	BA701AU
HP SVS200 Upgrade 6 TB to 16 TB Bundle (Software LTU, no hardware)	BA702AU
HP SVS200 Upgrade 16 TB to 32 TB Bundle (Software LTU, no hardware)	BA703AU
HP SVS200 Upgrade 32 TB to 64 TB Bundle (Software LTU, no hardware)	BA704AU
HP SVS200 Upgrade to Above 64 TB Bundle (Software LTU, no hardware)	BA705AU
HP SVS200 Upgrade 32 Port 2 Gbps FC CHIP	AE084AU
HP SVS200 Upgrade 4 GB Cache Memory	AE086AU
HP SVS200 Upgrade 1 GB Shared Memory	AE088AU
HP SVS200 Upgrade Battery	AE090AU

Optional Software

HP StorageWorks Business Copy XP

HP Business Copy XP 1TB LTU (0-1TB)	T1713AA
HP Business Copy XP 1TB LTU (2-6TB)	T1713AB
HP Business Copy XP 1TB LTU (7-15TB)	T1713AC
HP Business Copy XP 1TB LTU (16-31TB)	T1713AD
HP Business Copy XP 1TB LTU (32-63TB)	T1713AE

HP StorageWorks Continuous Access XP Synchronous

HP Continuous Access XP Synchronous 1TB LTU (0-1TB)	T1711AA
HP Continuous Access XP Synchronous 1TB LTU (2-6TB)	T1711AB
HP Continuous Access XP Synchronous 1TB LTU (7-15TB)	T1711AC
HP Continuous Access XP Synchronous 1TB LTU (16-31TB)	T1711AD
HP Continuous Access XP Synchronous 1TB LTU (32-63TB)	T1711AE

HP StorageWorks Continuous Access XP Asynchronous

HP Continuous Access XP Asynchronous 1TB LTU (0-1TB)	T1777AA
HP Continuous Access XP Asynchronous 1TB LTU (2-6TB)	T1777AB
HP Continuous Access XP Asynchronous 1TB LTU (7-15TB)	T1777AC
HP Continuous Access XP Asynchronous 1TB LTU (16-31TB)	T1777AD
HP Continuous Access XP Asynchronous 1TB LTU (32-63TB)	T1777AE

HP StorageWorks XP Disk Cache Partition

HP XP Disk Cache Partition 1TB(0-1) LTU	T1722AA
HP XP Disk Cache Partition 1TB(2-6TB)LTU	T1722AB
HP XP Disk Cache Partition 1TB(7-15TB)LTU	T1722AC
HP XP Disk Cache Partition1TB 16-31TB LTU	T1722AD
HP XP Disk Cache Partition1TB 32-63TB LTU	T1722AE

Technical Specifications

Model	HP StorageWorks 200 Storage Virtualization System
Capacity	Up to 16 PB of external storage capacity
Maximum number of Logical Devices (LDEVs)	16,834
Cache memory	4 GB to 32 GB
Shared memory	1 GB to 6 GB
Battery backup time	36 hours minimum
Operating Systems	HP-UX, Windows, Solaris, AIX, Linux
Host Interface	Fibre Channel
Host Ports	16 or 48 ports of 2 Gbps Short Wave Fibre Channel **NOTE:** 16 Fibre Channel ports are included in every SVS200. One additional 32 port Fibre Channel CHIP pair can be added to an SVS200.
Regulatory Approvals	This product meets all applicable safety and regulatory specifications
Rack Physical Dimensions	Width x Depth x Height 24 x 36.4 x 75.6 in (610 x 925 x 1920 mm) Max Weight 903 lb (410 kg)
Rack Shipping Dimensions	Width x Depth x Height 37.4 x 43.7 x 80 in (950 x 1110 x 2030 mm) Max Weight 1153 lb (524 kg)

Heat Dissipation and Power Consumption Specifications

Parameter	SVS200 Bundle (max)
Power consumption (kVA)	1.6
Heat dissipation (kW)	1.5
BTUs per hour	5123
Kcal per hour	1290

AC line voltage requirements

20-amp, 50 or 60 Hz, Single-phase operation

Parameter	Nominal Rated Voltage (VAC)				
	200	**208***	**220**	**230**	**240**
Minimum operating voltage (VAC)	184	191	202	212	221
Maximum operating voltage (VAC)	212	220	233	244	254
Number of power cords per SVS200 Bundle	2	2	2	2	2
Number of circuit breakers per SVS200 Bundle	2	2	2	2	2
Recommended circuit breakers	20A	20A	20A	20A	20A
*60 Hz only					

Technical Specifications

Environmental Specifications

Item	Condition		
	Operating[1]	**Non-operation[2]**	**Shipping & Storage[3]**
Temperature (ºC)	16 to 32	-10 to 43	-25 to 60
Relative Humidity (%)[4]	20 to 80	8 to 90	5 to 95
Max. Wet Bulb (ºC)	26	27	29
Temperature Deviation (ºC/hour)	10	10	20
Vibration[5]	5 to 10Hz: 0.25mm 10 to 300Hz: 0.05G	5 to 10Hz: 2.5mm 10 to 70Hz: 0.5G 70 to 99Hz: 0.05mm 99 to 300Hz: 1.0G	0.5G, 5min. At the resonant frequency with the highest displacement found between 3~100Hz
Shock	—	8G, 15ms	Horizontal: Incline Impact 1.22m/s
			Vertical: Rotational Edge 0.15m
Acoustic Level[6]	65dB	—	—

NOTES:

1. Environmental specification for operating condition should be satisfied before the subsystem is
   powered on. Maximum temperature of 32ºC should be strictly satisfied at air inlet portion. Recommended temperature range is 21 to 24ºC.
2. Non-operating condition includes both packing and unpacking conditions unless otherwise specified.
3. On shipping/storage condition, the product should be packed with factory packing.
4. No condensation in and around the equipment should be observed under any conditions.
5. The above specifications of vibration apply to all three axes.
6. Measurement Condition: The point 1m far from floor and surface of the product.

Accessories

An extensive list of accessories is available for this product; for more information, please contact your HP sales representative

Safety

This product meets all applicable safety and regulatory specifications