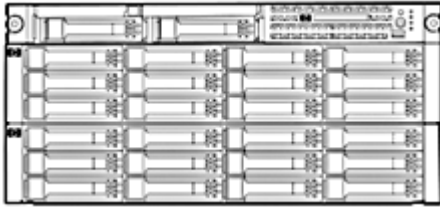


Overview

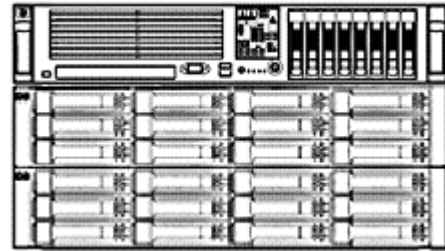
Are you frustrated with your current backup and recovery performance?

The HP StorageWorks 6000 Virtual Library System is a single-node solution that offers fast data protection and backup in complex SAN environments and scales in performance and capacity to 600 MB/sec and 122 TB of useable storage with 2:1 hardware compression. With the licensing of Accelerated deduplication which retains up to 50 times more data readily available on disk, you can obtain faster backup performance since the deduplication process doesn't impact the backup. Low bandwidth replication enables fast, low-cost disaster recovery between remote sites. The VLS6000 integrates seamlessly into existing backup applications and processes. It is a self-managed, auto configured, auto monitored and performance-tuned appliance and easily installed via a simple graphic interface. The VLS6000 uses RAID 6 technology and highly reliable ProLiant servers that reduce the risk of data loss.

HP StorageWorks 6000 Virtual Library System



HP StorageWorks 6200 Virtual Library System



HP StorageWorks 6600 Virtual Library System

Models

HP StorageWorks 6000 Virtual Library System	HP StorageWorks 6218 Virtual Library System	AH809B*
	HP StorageWorks 6227 Virtual Library System	AH810B*
	HP StorageWorks 6636 Virtual Library System	AH811B*
	HP StorageWorks 6653 Virtual Library System	AH812B*
	HP StorageWorks 6000 Virtual Library System Data Deduplication Capacity LTU	T9707A
	HP StorageWorks Virtual Library System Low Bandwidth Replication LTU	T5537A

* #0D1 will appear after this part number on your sales order when factory integration is indicated.

Standard Features

6000 Virtual Library System Customer benefits

- Seamless integration into current backup and recovery processes
 - Fast data restoration and backup performance
 - Cost-effective data protection and on-going management
 - Your valuable data is protected by HP, your trusted and experienced storage vendor.
-

Key Features

- Accelerated deduplication and low bandwidth replication can be licensed for the VLS6000
- A single-node solution that offers industry-leading performance and easily scales in performance and capacity to 600 MB/sec and up to 122 TB of useable storage, with 2:1 hardware compression (VLS6600 only)
- Hardware RAID 6 reduces the risk of data loss
- Certified with popular backup software packages through HP StorageWorks Enterprise Backup Solution (www.hp.com/go/ebs)
- A highly available solution using HP ProLiant servers with redundant subsystems: fans, power supply units, hardware-mirrored systems disks and hot swap array drives
- Ships with Automigration - software included with the VLS GUI which simplifies moving cartridge data from the VLS to a tape library or another Virtual Library System.
- The VLS6000 supports up to 10,000 slots and 32,000 cartridges (only when using the VLS firmware version 3.X or higher required for Accelerated deduplication).

Product Highlights

Accelerated deduplication The VLS6000 now supports the option of capacity licensing for Accelerated deduplication. One VLS6000 license T9707A is required for each shelf with 250 or 500 GB disks (4.4 TB) and two licenses are required for each shelf with 750 GB disks (6.6 TB) or 1 TB disks (8 TB). Accelerated deduplication retains up to 50 times more data readily available on disk by replacing redundant blocks of data with pointers to the original block. Accelerated deduplication delivers fast backup performance since the deduplication process does not impact the backup. Accelerated deduplication delivers fast restore performance since the latest backup copy is always retained in its entirety while data reduction occurs on the previous backups. Accelerated deduplication needs to recognize the specific backup application being used since it initially strips out the cartridge headers in order to decompose all the files and data types in order to do file-level comparisons to previous backups.

Seamless integration The HP 6000 Virtual Library System is deployed, managed and operated just like a tape library minimizing disruptions to your environment. Emulations include the HP ESL E-series and MSL tape libraries as well as 1/8 G2 tape autoloaders. The VLS6000 also emulates the HP Ultrium 230 Tape Drives (LTO-1), HP Ultrium 460 Tape Drives (LTO-2), HP Ultrium 960 Tape Drives (LTO-3), HP Ultrium 1840 Tape Drives (LTO-4 capacity only, no encryption), DLT 7000, DLT 8000, and SDLT 320 Tape Drives.

Fast data restoration and backup performance A single-node solution that offers industry-leading performance and easily scales in performance and capacity to 600 MB/sec and 122 TB of useable storage, with 2:1 hardware compression (VLS6600 only) without impact on performance. Accelerated deduplication (an optional license) retains up to 50 times more data readily available on disk. Accelerated deduplication delivers fast backup performance since the deduplication process does not impact the backup.

Cost-effective data protection and on-going management A self-managed, auto-configuration, auto-monitoring and self diagnosis, auto performance-tuning and load-balancing appliance that is easily installed through a simple interface. As environments and needs change, so does the VLS6000.

Reliability While the HP 6000 Virtual Library System contains reliable hardware featuring hot plug disk drives, standard redundant power supplies and fans as well as hardware RAID 6 protection, the real reliability is for your data protection process. Simplifying the process by which storage is shared means fewer errors occur, allowing your process to run more smoothly and faster.

Low Bandwidth Replication The HP StorageWorks 6200 and 6600 Virtual Library Systems support the license of low bandwidth replication. This application, which layers on top of Accelerated deduplication, allows customers to implement low-cost disaster recovery between multiple geographically-dispersed data centers. It allows these VLS systems to synchronize via low cost IP-WAN connections by only sending the changes (after data deduplication) across the wire. Low bandwidth replication provides an improved disaster recovery solution that allows customers to reduce or eliminate off site vaulting of tapes (including associated services) and reduce or eliminate media handling costs.

Product Highlights

Automigration

The HP StorageWorks 6200 and 6600 Virtual Library Systems support Automigration. This service is a form of "disk cache to tape", called "echo copy", which allows copies of data to be moved off the virtual library to a physical library or another VLS under the control of the VLS, not the backup application. Future updates will allow full integration with ISVs via SMI-S 1.3 specifications supporting what is known as "smart copy". HP Data Protector 6.1 supports smart copy. Automigration is an HP developed intellectual property and does not require licensing. SAN based Automigration is only supported on non-deduplication/replication enabled VLS systems.

Automigration - Echo Copy

Echo copy can streamline the process and reduce the costs of making physical tape cartridges from virtual tape cartridges, for vaulting and off-sitting purposes. Echo copy is run through the Automigration software (a tab on the VLS GUI), not the backup application. It acts as a transparent disk cache to the physical library, so that the backup application writes to virtual cartridges in the virtual library, and Automigration then automatically schedules the copies from virtual cartridges to their matching physical cartridges (with the same barcodes) based on the Automigration policies the user establishes.

Since Echo copy is managed through the Automigration software, not the backup application, the destination library is not visible to the backup application - so no licensing is required. Copy traffic is no longer routed through the SAN which speeds up the copy process. Since the tape library is dedicated to the VLS no copy servers are required. Echo copy also eliminates the need for tape-to-tape copy administration since this is automated through copy policy management. All destination tapes created by echo copy are in the native tape format, so they can be easily restored directly from any tape drive or library that is visible to the backup application.

Automigration - Smart Copy

Smart copy provides the same capabilities with one important exception. Smart Copy allows the backup ISV to initiate the copy with the VLS6000 actually implementing the move. The cartridge bar codes between the two copies are different and the backup ISV is able to track the move. SMI-S 1.3 support is required by the ISV to be able to implement Smart Copy. HP Data Protector 6.1 supports smart copy.

Data Protection Software & ISV support

Check the EBS website for the latest VLS and Accelerated deduplication supported backup ISVs and data types <http://www.hp.com/go/ebs>

Compatibility

HP's Enterprise Business Solutions (EBS) assures that your HP StorageWorks 6000 Virtual Library System works with leading servers, operating systems, and backup applications - and not just those sold by HP. Based on a foundation of extensive interoperability testing, EBS 1-2-3 provides a step-by-step methodology for designing, configuring, and implementing your SAN ensuring HP VLS6000 will work seamlessly in many environments. HP VLS6000 is especially suitable in a mixed system environment. For the latest list of servers, workstations, operating systems, and backup software that support HP 6000 Virtual Library System, check the tape backup compatibility pages on our web site at: <http://www.hp.com/go/ebs>.

Server Compatibility

The HP StorageWorks 6000 Virtual Library System is supported on many popular industry servers including HP ProLiant and HP-UX servers. For a complete list of HP and third party servers, please visit the Enterprise Backup Solution on the Worldwide web at: <http://www.hp.com/go/ebs>.

Product Highlights

OS Support

HP provides extensive support on most major operating systems. For the most up-to-date information, please visit the latest compatibility matrix at <http://www.hp.com/go/ebs>

Backup Software Support

The HP StorageWorks 6000 Virtual Library System is supported on leading backup software applications. As new certifications are achieved, they are posted on the Enterprise Backup Solution Compatibility Matrix. Please visit <http://www.hp.com/go/ebs> for the latest compatibility information.

Warranty Information, HP Care Pack, and Service and Support

Warranty and Services HP warrants only that the Software media will be free of physical defects for a period of ninety (90) days
Included with the Product from delivery.

For more information about HP's Global Limited Warranty and Technical Support, visit:
<http://h18006.www1.hp.com/products/storageworks/warranty.html>

HP Care Pack Services offer upgraded service levels to extend and expand your standard product warranty with easy to buy, easy to use support packages that help you make the most of your hardware and software investments. They let you choose the support levels that meet your business requirements, from basic to mission-critical. They help you contain total cost of ownership.

HP Care Pack warranty extensions can be purchased along with HP products to cost-effectively upgrade or extend your warranty. For many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

Why purchase an HP Care Pack service?

Your standard warranty protects against product defects. HP Care Pack Services help you guard against unplanned downtime, which can reduce your productivity and profitability. These convenient service packages:

- Protect your investment in HP products
- Provide consistent, predictable levels of support across your entire department or business
- Ease budget planning with fixed-cost support that includes parts and labor
- Give you direct access to proven technical and problem-solving expertise
- Offer a choice of response-time and repair-time commitments
- Deliver prompt, measurable results
- Are available whenever and wherever you do business

HP Care Pack availability may vary by country and product.

Recommended Services **HP Care Pack Services recommended for optimal satisfaction of all deployments of your product.**
3-Year HP Support Plus 24 24x7x365 hardware and software services - plus cost-saving software updates and more

HP Support Plus 24 helps you increase performance and availability with comprehensive, consistent hardware and software services. Working with your IT team, HP Services engineers deliver onsite hardware support and over-the-phone software support around-the-clock 365 days per year. Service coverage encompasses HP products and selected multivendor hardware and software.

In addition, this convenient HP Care Pack packaged service makes software updates available to you at substantial savings.

Choose Support Plus 24 when you need to:

- Improve uptime with responsive hardware and software services available anytime
- Cost-effectively obtain expert 24x7 multivendor hardware and software support
- Enjoy consistent service coverage across geographically dispersed sites

Warranty Information, HP Care Pack, and Service and Support

- Update HP and selected third-party software at a predictable cost
- Take advantage of subscription savings on software updates

HP Installation and Startup Service for HP StorageWorks VLS Tape Libraries

HP Installation and Startup Service for HP StorageWorks VLS Tape Libraries provides for the installation and implementation of HP StorageWorks libraries, including library sub-components in SAN environments.

With the assistance of your designated IT storage administrator, an HP storage specialist will engage in a discovery process designed to aid in understanding your company's business, storage application, and backup and recovery needs. This collaboration provides the groundwork to plan, design, and employ your personalized system configuration.

Product Number	Product Name	Service Name	Care Pack Services Product # and Band	Alternate Care Pack Services Product #
AH809A	HP StorageWorks 6218 Virtual Library System	3-Year HP Support Plus 24	HA110A3-8XM	
		HP Installation and Startup Service for HP StorageWorks VLS Tape Libraries	HA114A1-5KG*	UC927E
AH810A	HP StorageWorks 6227 Virtual Library System	3-Year HP Support Plus 24	HA110A3-8XM	
		HP Installation and Startup Service for HP StorageWorks VLS Tape Libraries	HA114A1-5KG*	UC927E
AH811A	HP StorageWorks 6636 Virtual Library System	3-Year HP Support Plus 24	HA110A3-8XN	
		HP Installation and Startup Service for HP StorageWorks VLS Tape Libraries	HA114A1-5KG*	UC927E
AH812A	HP StorageWorks 6653 Virtual Library System	3-Year HP Support Plus 24	HA110A3-8XN	
		HP Installation and Startup Service for HP StorageWorks VLS Tape Libraries	HA114A1-5KG*	UC927E
AF730A	HP StorageWorks 6000 Virtual Library System 2.5 TB Capacity Bundle	3-Year HP Support Plus 24	HA110A3-8XP	
		HP Installation Service - Subsequent Add-on Capacity Bundle	HA113A1-564	
AG170A	HP StorageWorks 6000 Virtual Library System 4.4 TB Capacity Bundle	3-Year HP Support Plus 24	HA110A3-8XP	

Warranty Information, HP Care Pack, and Service and Support

		HP Installation Service - Subsequent Add-on Capacity Bundle	HA113A1-564
AH813A	HP StorageWorks 6000 Virtual Library System 6.6 TB Capacity Bundle	3-Year HP Support Plus 24	HA110A3-8XP
		HP Installation Service - Subsequent Add-on Capacity Bundle	HA113A1-564
AL564A	HP StorageWorks 6000 Virtual Library System 8 TB Capacity Bundle	3-Year HP Support Plus 24	HA110A3-8XP
		HP Installation Service - Subsequent Add-on Capacity Bundle	HA113A1-564
AP334A	HP 6000 Virtual Library System 2Gb Upgrade Node	3-Year HP Support Plus 24	HA110A3-9L1
		HP Installation Service - Tape Library H/W Installation Only	HA113A1-5KG

*HA114A1-5KB configures 1 library and up to 5 SAN host connects.

For each additional 10 hosts, order HA124A1-5B2.

For each additional library on same site, order HA124A1-5B1 (additional library at different site order an additional instance of HA114A1-5KG).

For migration of existing capacity bundles when upgrading system node, order HA124A1-5B2 (new system node must include HA114A1-5KG).

Related Services

Services that will enhance the user experience in many product deployments.

HP Backup and Recovery Solution Service for Data Protector

Cut costs and enhance efficiency with a fully integrated backup environment.

Rapid recovery from system downtime can hinge on the efficiency of your backup and recovery management environment - and on how well that environment is integrated with your storage infrastructure. But integration processes can be time-consuming and complex, and your IT resources are already stretched thin. Where can you find the expert help you need?

For fast, effective integration of your backup solution into an existing or new storage infrastructure, turn to the storage experts at HP Services. Our Backup and Recovery Solution Service (BRSS) provides end-to-end management of your backup integration process. The BRSS team works with you to analyze your business and IT environment; develop a comprehensive integration plan and timetable; design an architecture that suits your critical requirements; install backup software; implement your solution; and validate and monitor your configuration.

Product Number	Product Name	Service Name	Care Pack Services Product # and Band	Alternate Care Pack Service Product #
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Warranty Information, HP Care Pack, and Service and Support

HP Backup and Recovery Solution Service for Data Protector Contact your HP sales rep or Channel Partner for assistance

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>

Remote Support Technology (RST)-HP Remote Support Pack

Taking a more proactive approach to IT support, the HP Remote Support pack plug-in module easily integrates with HP Systems Insight Manager to provide a powerful, unified "single pane of glass" solution for onsite and remote management.

HP Remote Support Pack enhances HP Systems Insight Manager with intelligent event diagnosis plus the automatic submission of hardware event notifications securely to HP support, including acknowledgment and status returns. It adds remote configuration collections to allow the delivery of assessment and proactive services for your SAN storage and HP-UX environments.

Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training courses on storage software, networking, archiving and disk storage systems. Our classes are available in many delivery modalities from traditional instructor-led courses at one of our 80 training centers worldwide to on-site training customized to your needs or online. www.hp.com/learn/storage

HP Services Awards

HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit: <http://h20129.www2.hp.com/services/cache/77318-0-0-225-121.html>.

Warranty Information, HP Care Pack, and Service and Support

Additional Services Information

For more information about HP Care Pack Services for Storage, please visit:
<http://www.hp.com/hps/storage>

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>

Kit Contents

Model	Description	Part Number
HP 6218 Virtual Library System	<p>HP StorageWorks 6218 Virtual Library System</p> <p>Supplied with each Virtual Library System</p> <ul style="list-style-type: none">● HP StorageWorks 6200 Virtual Library System node● HP StorageWorks MSA20 Storage Enclosure configured with twelve 500 GB SATA disk drives● Includes full 16 GB of RAM● Serial Cable● Installation Poster● HP 6000 Virtual Library System Documentation CD● System recovery CD● 4 IEC power cords (2 for the node, 2 for the MSA20) <p>* #OD1 will appear after this part number on your sales order when factory integration is indicated.</p>	AH809B*
HP 6227 Virtual Library System	<p>HP StorageWorks 6227 Virtual Library System</p> <p>Supplied with each Virtual Library System</p> <ul style="list-style-type: none">● HP StorageWorks 6200 Virtual Library System node● HP StorageWorks MSA20 Storage Enclosure configured with twelve 750 GB SATA disk drives● Includes full 16 GB of RAM● Serial Cable● HP StorageWorks Command View Tape Library Software CD● Installation Poster● HP 6000 Virtual Library System Documentation CD● HP Command View Tape Library Software Documentation CD● System recovery CD● 4 IEC power cords (2 for the node, 2 for the MSA20) <p>* #OD1 will appear after this part number on your sales order when factory integration is indicated.</p>	AH810B*
HP 6636 Virtual Library System	<p>HP StorageWorks 6636 Virtual Library System</p> <p>Supplied with each Virtual Library System</p> <ul style="list-style-type: none">● HP StorageWorks 6600 Virtual Library System node● Two HP StorageWorks MSA20 Storage Enclosure each configured with twelve 500 GB SATA disk drives● Includes full 16 GB of RAM● Serial Cable● HP StorageWorks Command View Tape Library Software CD● Installation Poster● HP 6000 Virtual Library System Documentation CD● HP Command View Tape Library Software Documentation CD● System recovery CD● 6 IEC power cords (2 for the node, 2 for each MSA20) <p>* #OD1 will appear after this part number on your sales order when factory</p>	AH811B*

Kit Contents

integration is indicated.

HP 6653 Virtual Library System	<p>HP StorageWorks 6653 Virtual Library System</p> <p>Supplied with each Virtual Library System</p> <ul style="list-style-type: none">● HP StorageWorks 6600 Virtual Library System node● Two HP StorageWorks MSA20 Storage Enclosure each configured with twelve 750 GB SATA disk drives● Includes full 16 GB of RAM● Serial Cable● HP StorageWorks Command View Tape Library Software CD● Installation Poster● HP 6000 Virtual Library System Documentation CD● HP Command View Tape Library Software Documentation CD● System recovery CD● 6 IEC power cords (2 for the node, 2 for each MSA20)	AH812B*
	<p>* #OD1 will appear after this part number on your sales order when factory integration is indicated.</p>	
HP 6000 Virtual Library System 2.5 TB Capacity Bundle	<p>HP StorageWorks 6000 Virtual Library System 2.5 TB Capacity Bundle</p> <p>Supplied with each Virtual Library System Capacity Bundle</p> <ul style="list-style-type: none">● HP 6000 Virtual Library System Capacity License (T4259A)● HP StorageWorks MSA20 Storage Enclosure configured with twelve 250 GB SATA disk drives● 2 IEC power cords● Installation Poster	AF730A*
	<p>* #OD1 will appear after this part number on your sales order when factory integration is indicated.</p>	
HP 6000 Virtual Library System 4.4 TB Capacity Bundle	<p>HP StorageWorks 6000 Virtual Library System 4.4 TB Capacity Bundle</p> <p>Supplied with each Virtual Library System Capacity Bundle</p> <ul style="list-style-type: none">● HP 6000 Virtual Library System Capacity License (T4259A)● HP StorageWorks MSA20 Storage Enclosure configured with twelve 500 GB SATA disk drives● 2 IEC power cords● Installation Poster	AG170A*
	<p>* #OD1 will appear after this part number on your sales order when factory integration is indicated.</p>	
HP 6000 Virtual Library System 6.6 TB Capacity Bundle	<p>HP StorageWorks 6000 Virtual Library System 6.6 TB Capacity Bundle</p> <p>Supplied with each Virtual Library System Capacity Bundle</p> <ul style="list-style-type: none">● HP 6000 Virtual Library System Capacity License (T4259A) - contains quantity 2● HP StorageWorks MSA20 Storage Enclosure configured with twelve 750 GB SATA disk drives● 2 IEC power cords	AH813A*

Kit Contents

- Installation Poster

* #0D1 will appear after this part number on your sales order when factory integration is indicated.

HP 6000 Virtual Library System 8 TB Capacity Bundle

HP StorageWorks 6000 Virtual Library System 8 TB Capacity Bundle

AL564A*

Supplied with each Virtual Library System Capacity Bundle

- HP 6000 Virtual Library System Capacity License (T4259A) - contains quantity 2
- HP StorageWorks MSA20 Storage Enclosure configured with twelve 1 TB SATA disk drives
- 2 IEC power cords
- Installation Poster

* #0D1 will appear after this part number on your sales order when factory integration is indicated.

HP 6000 Virtual Library System 2Gb Upgrade Node

HP 6000 Virtual Library System 2Gb Upgrade Node

AP334A

Supplied with each 2Gb Upgrade Node

- HP StorageWorks 6000 Virtual Library System node
- Includes full 16 GB of RAM
- Includes 3.x Accelerated deduplication firmware
- Serial Cable
- HP StorageWorks Command View Tape Library Software CD
- Installation Poster
- HP 6000 Virtual Library System Documentation CD
- HP Command View Tape Library Software Documentation CD
- System recovery CD
- 2 IEC power cords

NOTE: This node is intended to upgrade older VLS6000 systems (VLS61xx, VLS65xx and VLS68xx) to take advantage of Accelerated deduplication and low bandwidth replication. If the system is a VLS68xx with greater than 8 shelves of storage, the system will have to be split into two separate systems (needing 2 upgrade nodes) to be a supportable VLS6600 configuration.

VLS6000 Capacity License

HP StorageWorks 6000 Virtual Library System Capacity License

T4259A

Supplied with each Virtual Library System Capacity License

- HP 6000 Virtual Library System Capacity License

NOTE: This product enables a customer supplied MSA20 with twelve 250 GB, 500 GB, 750 GB or 1 TB hard disk drives (HDDs) to be licensed to an existing HP 6000 Virtual Library System. If you require the hardware and the license, purchase the HP 6000 Virtual Library System 2.5 TB Capacity Bundle (AF730A), the HP 6000 Virtual Library System 4.4 TB Capacity Bundle (AG170A), the HP 6000 Virtual Library System 6.6 TB Capacity Bundle (AH813A) or the HP 6000 Virtual Library System 8 TB Capacity Bundle (AL564A).

NOTE: Partial configurations cannot be added to the HP 6000 Virtual Library System - each MSA20 must have 12 HDDs of the same capacity installed. 2.5 TB and 4.4 TB

Kit Contents

shelves require 1 license for each shelf, 6.6 TB and 8 TB shelves require 2 licenses for each shelf.

HP VLS6000 Data Deduplication Capacity LTU

HP StorageWorks 6000 Virtual Library System Deduplication Capacity LTU
Supplied with license

T9707A

- One VLS6000 license T9707A is required for each shelf with 250 GB or 500 GB disks (4.4 TB) and two licenses are required for each shelf with 750 GB disks (6.6 TB) or 1 TB disks (8 TB).

NOTE: In addition to the capacity deduplication licensing for VLS here are other key considerations:

1. There is a REQUIREMENT for 16 GB of RAM for each ProLiant server in order to support Accelerated deduplication and low bandwidth replication. Newer VLS6000 systems (AH809B, AH810B, AH811B, and AH812B) come standard with 16 GB of RAM. For older VLS6000 systems shipped with 4 GB RAM (AH809A, AH810A, AH811A, AH812A) you will need to add 12 GB RAM. This involves ordering the following part numbers for each node:
397413-B21 HP 4GB FBD PC2-5300 2x2GB Kit
397415-B21 HP 8GB FBD PC2-5300 2x4GB Kit
2. Minimum of VLS firmware level 3.1 must be used to support Accelerated deduplication. This firmware will only be available (initially) as a web download.
3. You will need to reference the following website for configuration, capacity and performance considerations for sizing VLS Accelerated deduplication configurations and use models. www.hp.com/support/vls_dedup
4. Accelerated deduplication needs to recognize the specific backup application being used since it initially strips out the cartridge headers in order to decompose all the files and data types in order to do file-level comparisons to previous backups. Check the EBS website for the latest Accelerated deduplication supported backup ISVs and data types

<http://www.hp.com/go/ebs>

NOTE: The entire VLS device must be licensed for deduplication - no partial licenses supported. Deduplication licenses will be installed via the VLS GUI license plug-in.

HP VLS Low Bandwidth Replication LTU

HP StorageWorks Virtual Tape Library Low Bandwidth Replication LTU
Supplied with License

T5537A

- One VLS license T5537A is required per VLS6000 for target sites only - none required on source site for active-passive configurations. For active-active configurations involving bi-directional replication, each site requires a license.

NOTE: In addition to the low bandwidth replication licensing for VLS here are other key considerations:

1. All VLS systems involved with replication (whether a source or target) must all be licensed for Accelerated deduplication. In addition they have the same HW requirements and considerations as for Accelerated deduplication (see above).
2. Minimum of VLS firmware level 3.2 must be used to support low bandwidth replication. This replication firmware will be included in the 3.2 release and can be activated through licensing.

Kit Contents

3. Four modes of low bandwidth replication will be supported including: two-site active-passive (replication in one direction), two-site active-active (replication in both directions) many to one supporting up to four sites all replicating to a fifth site and N-way with four sites (similar to two-site active-active). Each site is a source and target.
4. C&I services will provide analysis, design, implementation and testing necessary to deploy a VLS solution with Accelerated deduplication and low bandwidth replication.

Feature Comparison

VLS Firmware Level	2.3 (VLS not running Accelerated deduplication)	3.2 (VLS running Accelerated deduplication)
Supported Platforms	All VLS models: VLS6200, VLS6600, VLS9000, VLS12000 with 4 GB RAM	VLS 4GB models: VLS6200, VLS6600, VLS9000, VLS12000 with 16 GB RAM
VLS9000/VLS12000 node support	Up to 8 nodes	Up to 4 nodes with supported ISVs
Backup Ingest performance	600 MB/sec	550 MB/sec
Number of slots	1024 per library	10000 per library
Number of libraries	16 per node	16 per node
Number of cartridges	8192	32000
Automigration - Echo Copy	Yes	Yes
Automigration - Smart Copy	Yes with DP 6.1**	Yes with DP 6.1**
Delete Cartridge	Yes	Yes
Replication support	High-bandwidth	Low-bandwidth
Hot Add Arrays	Yes	No
Hot Add Nodes	Yes	No
Storage pool support	Multiple storage pools	Single storage pool
Virtual LUN Support	144 per node	96 per node
LUN Masking usability, Command line interface enhancements	No	Yes
	**Important Note: The initial release of Data Protector 6.1 allows customers to manage VLS automigration using only a single drive in the physical tape library that is connected to a Virtual Library System. Please take this into account when deploying Data Protector / VLS solutions. For the time being, customers requiring migration of VLS backup data to tape libraries containing 2 or more drives should do so in the standard way (using the Data Protector Object Copy feature). Work is already in progress for an update release later in 2009, which will allow the automigration of VLS backup data to multiple tape drives simultaneously.	

Related Options

Power Distribution units **NOTE:** For more information on power distribution units, please consult the QuickSpecs on the Worldwide web at:
http://h18000.www1.hp.com/products/quickspecs/11041_div/11041_div.html

Low Voltage Modular PDU Model, 100 - 127 VAC	24A Model - mPDU, 24A, Low	252663-D71
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High Voltage Modular PDU Model(s), 200 - 240 VAC	16A Model - mPDU, 16A, High	252663-B24
	24A Model - mPDU, 24A, High	252663-D72
	40A Model - mPDU, 40A, High	252663-B21
	40A Model - mPDU, 40A, High (power cord attached)	252663-D73

Power Cords (for connection to standard wall outlets)	Power Cord, North American C13, 10A, 1.83m	AF556A
	Power Cord, Euro, C13,10A , 1.83m	AF568A
	Power Cord, UK, C13,10A , 1.83m	AF570A
	Power Cord, Danish, C13, 10A , 1.83m	AF566A
	Power Cord, Swiss, C13,10A , 1.83m	AF565A
	Power Cord, Italian, C13,10A , 1.83m	AF571A
	Power Cord, South Africa, C13,10A , 1.83m	AF567A
	Power Cord, Taiwan, C13,10A , 1.83m	AF561A
	Power Cord, China, C13,10A 1.83m	AF557A
	Power Cord, Japan, C13,10A , 1.83m	AF572A
	Power Cord, Australia, C13,10A , 2.5m	AF569A
	Power Cord, Argentina, C13,10A , 2.5m	AF558A
	Power Cord, Brazil, C13,10A , 1.83m	AF559A
	Power Cord, Korea, C13,10A , 1.83m	AF560A
	Power Cord, Israel, C13,10A , 1.83m	AF564A
	Power Cord, India, C13,10A , 2.0m	AF562A

NOTE: Each unit comes with 2 IEC power cord for the node and two power cords for each MSA20 included (4 cords with the VLS6100 & 6200, 6 cords with the VLS6500 and 6600 and 10 cords with the VLS6800).

FC Host Bus Adapters For more information on FC HBAs please consult the EBS connectivity matrix at <http://www.hp.com/go/ebs>.

Related Options

HP Data Protector software

LTU (license-to-use), media and manuals

Data Protector Starter Pack Single Drive, for Windows B6961AA

Data Protector Starter Pack Single Drive, for HP-UX B6951AA

Data Protector Starter Pack Single Drive, for Sun Solaris B6951DA

LTU only

Data Protector Starter Pack Single Drive, for Windows LTU only B6961BA

Data Protector Starter Pack Single Drive, for HP-UX LTU only B6951BA

Data Protector Starter Pack Single Drive, for Sun Solaris LTU only B6951CA

Media

Data Protector Media B6960MA

Manuals

Data Protector Manuals B6960LA

Drive Extensions

Data Protector drive license for Windows, NetWare, or Linux (Intel) B6963AA

Data Protector drive license for UNIX, NAS, or SAN B6953AA

Data Protector Library Extension, 61-250 Slots B6957BA

Data Protector Library Extension, unlimited Slots B6958BA

Functional Extensions

Data Protector on-line extension for Windows B6965BA

Data Protector on-line extension for UNIX B6955BA

Data Protector open file backup license for 1 server BA153AA

Data Protector open file backup license for 10 servers BA153BA

Data Protector open file backup license for 5 workstations BA154AA

Data Protector open file backup license for 1 Enterprise Server BA155AA

Data Protector open file backup media. no license BA152AA

Data Protector Manager-of-Managers extension for Windows B6966AA

Data Protector Manager-of- Managers extension for UNIX B6956AA

Advanced backup to disk license, 1 TB B7038AA

Manuals for Functional extensions B6960EA

Configuration Information

Step 1 – Select a Configuration

HP StorageWorks 6653 Virtual Library System	AH812B*
HP StorageWorks 6636 Virtual Library System	AH811B*
HP StorageWorks 6227 Virtual Library System	AH810B*
HP StorageWorks 6218 Virtual Library System	AH809B*

* #0D1 will appear after this part number on your sales order when factory integration is indicated

Step 2 – Add additional capacity (optional)

HP StorageWorks 6000 Virtual Library System 8 TB Capacity Bundle	AL564A*
HP StorageWorks 6000 Virtual Library System 6.6 TB Capacity Bundle	AH813A*
HP StorageWorks 6000 Virtual Library System 4.4 TB Capacity Bundle	AG170A*
HP StorageWorks 6000 Virtual Library System 2.5 TB Capacity Bundle	AF730A*

HP 6200 Virtual Library System:
up to three additional capacity bundles may be added to the base unit.

HP 6600 Virtual Library System:
up to six additional capacity bundles may be added to the base unit.

Capacity kits (enclosures) can be mixed within VLS6000 units. All 12 drives within each enclosure (shelf) must be of the same capacity. For example if you have a VLS6218 that has one 500 GB drive enclosure, you can add an additional drive enclosure (capacity bundle) with any one of the four available capacity bundles, 250 GB, 500 GB, 750 GB or 1 TB.

* #0D1 will appear after this part number on your sales order when factory integration is indicated.

Step 3 - Select appropriate Services/Support (optional)

- Determine whether you require services via HP direct/HP authorized enterprise resellers or HP authorized commercial resellers.
- Choose Installation or Installation and Startup service desired. HP recommends Installation and Startup for SAN based libraries. (Details of specific part numbers in service section.)
- Choose support uplift type. There are different service uplifts uplifting years of service, hours of availability and response time. HP recommends three year 24X7 support uplifts for SAN libraries. (Details of specific part numbers in service section.)

Configuration Information

Step 4 - Select the Appropriate Rack

Description	Part Number	Supports Factory Racking	Supports Field Racking
S10614 (14U) Rack Cabinet - Shock Pallet ₂	292302-B22	X	X
10622 (22U) Rack Cabinet - Shock Pallet	AF022A	X	X
10622 (22U) Rack Cabinet - Pallet	AF021A		X
10636 G2 (36U) Rack Cabinet - Shock Pallet	AF012A	X	X
10636 G2 (36U) Rack Cabinet - w/Extension - Shock Pallet	AF014A	X	X
10636 G2 (36U) Rack Cabinet - Pallet	AF011A		X
10636 G2 (36U) Rack Cabinet - Crate	AF013A	X	X
10642 G2 (42U) Rack Cabinet - Shock Pallet	AF002A	X	X
10642 G2 (42U) Rack Cabinet - w/ Extension - Shock Pallet	AF004A	X	X
10642 G2 (42U) Rack Cabinet - Pallet	AF001A		X
10642 G2 (42U) Rack Cabinet - Crated	AF003A		X
Modular Cooling System (MCS) - 42U Cabinet	AF098A	X	X

²14U racks cannot be used for the VLS6600.

NOTE: (Pallet) used to ship empty racks shipped on a truck

(Shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels)

(Crated) used for air shipments of empty racks.

NOTE: It is mandatory to use a shock pallet in order to ship racks with equipment installed.

NOTE: The full line of VLS6000 products can now be integrated and shipped installed in racks

Technical Specifications

	VLS6218*	VLS6227*	VLS6636	VLS6653
Usable Capacity (std - non compressed)	4.4 TB	6.6 TB	8.8 TB	13.2 TB
Usable Capacity (2:1 compression)	8.8 TB	13.2 TB	17.6 TB	26.4 TB
Max Usable Capacity (std – non compressed)	28.4 TB	30.6 TB	56.8 TB	61.2 TB
Max Usable Capacity (2:1 compression)	56.8 TB	61.2 TB	113.6 TB	122.4 TB

* These products employ software compression which will impact system performance

Performance by configuration 4 Gb Models	HP 6200 Virtual Library System		HP 6600 Virtual Library System	
	w/ compression disabled	w/ uncompressible data	w/ 2:1 compressible data	
1 disk enclosure	0.4 TB/hr (100 MB/s)	n/a	n/a	
2 disk enclosures	0.7 TB/hr (200 MB/s)	0.7 TB/hr (200 MB/s)	1.4 TB/hr (400 MB/s)	
3 disk enclosures	1.1 TB/hr (300 MB/s)	1.1 TB/hr (300 MB/s)	2.2 TB/hr (600 MB/s)	
4 disk enclosures	1.4 TB/hr (400 MB/s)	1.4 TB/hr (400 MB/s)	2.2 TB/hr (600 MB/s)	
5 to 8 enclosures	n/a	2.0 TB/hr (560 MB/s)	2.2 TB/hr (600 MB/s)	

NOTE: Maximum theoretical performance values. Actual performance is dependent on environment. Software compression on VLS6200 impacts performance by up to 50%

NOTE: 1MB = 1,000,000 bytes

	HP 6200 Virtual Library System	HP 6600 Virtual Library System
Number of Virtual Libraries	1 to 16	1 to 16
Number of Virtual Tape Drives	1 to 128	1 to 128
Interface	VLS6200 is Two 4 Gb Fibre Channel Ports (LC connectors, auto-negotiating)	VLS6600 is Four 4 Gb Fibre Channel Ports (LC connectors, auto-negotiating)

Power Consumption by Component

VLS6200 Node	852 W
VLS6600 Node	1035 W
MSA20 Enclosure each (with disks)	345 W

RAID Level	VLS6200, VLS6600	RAID 5 or RAID 6
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Technical Specifications

Dimensions and Physical Characteristics HP 6200 Virtual Library System

Form Factor	3U (total installed form factor – base unit)
Physical Dimensions (HxWxD): NOTE: 1 enclosure standard	Node 1.7 x 16.8 x 27.8 in (4.3 x 42.6 x 70.5 cm)
	Disk enclosure 3.5 x 19.2 x 23.5 in (8.8 x 48.8 x 59.7 cm)
	Shipping (HxWxD) 41.0 x 48.0 x 40.0 in (104 x 122 x 102 cm)
Out of Box Weight	Node 37 lb (16.78 kg)
	Disk Enclosure 53 lb (24 kg) (per enclosure)
Shipping Weight	143 lb (64.9 kg)

HP 6600 Virtual Library System

Form Factor	6U (total installed form factor – base unit)
Physical Dimensions (HxWxD): NOTE: 2 enclosures standard	Node 1.7 x 16.8 x 27.8 in (4.3 x 42.6 x 70.5 cm)
	Disk Enclosure 3.5 x 19.2 x 23.5 in (8.8 x 48.8 x 59.7 cm)
	Shipping (HxWxD) 48.0 x 40.0 x 40.0 in (121.9 x 101.6 x 101.6 cm)
Out of Box Weight	Node 37 lb (16.78 kg)
	Disk Enclosure 54.3 lb (24.6 kg) (per enclosure)
Shipping Weight	168 lb (76.2 kg)

HP 6000 Virtual Library System 2.5 TB Capacity Bundle Kit ,HP 6000 Virtual Library System 4.4 TB Capacity, HP 6000 Virtual Library System 6.6 TB Bundle Kit and HP 6000 Virtual Library System 8 TB Bundle Kit

Form Factor	2U
Dimensions	Physical Dimensions (HxWxD) 3.5 x 19.2 x 23.5 in (8.8 x 48.8 x 59.7 cm)
	Shipping (HxWxD) 33.5 x 32.5 x 28.0 in (85.1 x 82.6 x 71 cm)
Weight	Out of Box Weight 53 lb (24 kg) (per enclosure)
	Shipping Weight 68 lb (30.8 kg)

HP 6000 Virtual Library System 2 Gb Upgrade Node - same as specifications for VLS6600 node above.

VLS6000 Capacity License

Shipping (HxWxD)	8.5 x 11.0 in (21.6 x 27.9 cm)
Shipping Weight	1 lb (0.5 kg)

Technical Specifications

Environmental	Operating temperature range	10° to 35° C (50° to 95° F)
	Shipping temperature range	-40° to 66° C (-40° to 150° F)
	Operating Humidity (non-condensing)	20 to 80% Relative Humidity

Worldwide Product Safety and EMC Approvals Safety: Worldwide compliance to 60950-1
EMC: MSA 20 Regulatory Model Number HSTNM-S001 CISPR 22 CISPR 24 & FCC Class A
VLS 61000 and VLS65000 heads: Regulatory Model Number HSTNM-2105 CISPR 22 CISPR 24 & FCC Class B

NOTE: For country specific compliance contact your local sales representative

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