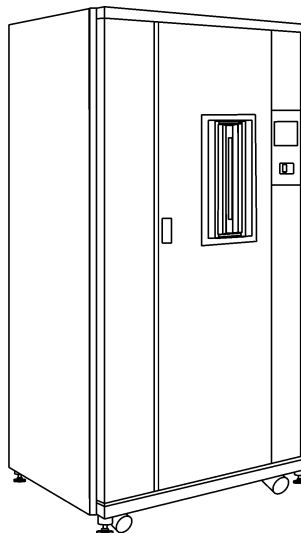# QuickSpecs

Overview

At A Glance

- The Ultimate in High-Capacity Unattended Backup and Restore:

  - The HP StorageWorks ESL9322S2 provides the ultimate in high-capacity unattended backup and restore for customers with large server pools and centralized backup and restore requirements, serviced by network attached storage devices or storage area networks. The consolidation of tape backup into a single shared storage device requires these devices to provide both high capacity and high performance, and the need for redundancy and high availability. With High availability features, component level redundancy and high capacity, the ESL9322S2 can provide years of fully automated operation for backup, save and restore, and hierarchical storage management of critical data, it is qualified with a variety of industry-standard backup application solutions and operating systems. With 222 or 322 slots and up to eight hot plug SDLT drives, the ESL9322S2 offers up to 51.52 TB of native data storage and native transfer rates up to 460.8 GB/hr.

HP StorageWorks ESL9322S2 Tape Library

Standard Features

HP StorageWorks ESL9322S2 Tape Library Model	The HP StorageWorks ESL9322S2 Tape Library comes with up to 8 HP SDLT 160/320 GB tape drives (number of drives determined by SKU chosen) and has two models with 222 and 322 slots respectively.

ESL9322S2, 222 slot, 2 SDLT 160/320 drive, enterprise library	293409-B22
ESL9322S2, 222 slot, 8 SDLT 160/320 drive, enterprise library	293409-B28
ESL9322S2, 322 slot, 2 SDLT 160/320 drive, enterprise library	293410-B22
ESL9322S2, 322 slot, 8 SDLT 160/320 drive, enterprise library	293410-B28

The ESL9322S2 comes with a complete 222 or 322 slot library system configured with the associated number of drives, installation and user's manual, one-piece SDLT media, a copy of the Hewlett-Packard Storage Management Solutions CD. Customers are required to also purchase the necessary number of add-on drives, host bus adapters, SCSI cables, SDLT media, country specific power cords (pair) and applications software licenses in order to complete the library solution.

Due to the size and weight of the unit, a pre- sales site survey is required. The pre-sales site survey document is on http://www.compaq.com/support/techpubs/installation_guides/146587-001.html
NOTE: This Web site is available in English only.

Installation services can be ordered separately on Hewlett-Packard Services as part of each library order (requires scheduling with local Hewlett-Packard Services provider). **NOTE**: Does not include special site work, which may be required as a result of not meeting minimum site survey requirements.

The ESL9000 Series Library Family	HP StorageWorks ESL9000 series of DLT libraries offer customers both high performance and high reliability. With its high availability feature set, the ESL9000 series provides for maximum uptime. Based on PCI backplane architecture, the ESL9000 series also provides a simple upgrade path for future "plug-in" features. The ESL9322S2 library is part of the ESL9000 series libraries.
High Availability	As data becomes more and more mission critical, and downtime becomes more costly to the enterprise, customers are requiring high availability consolidated storage solutions which offer hot swappable components and redundancies of key operating sub-systems (tape drives, controllers, power supplies). With redundant power distribution, power supplies, and cooling fans, coupled with "hot pluggable" drive carriers, hot swap power supplies and cooling fan modules, the ESL9322S2 offers the best in high availability for continuous operation.
Hot Pluggable Drives	The ESL9322S2 uses hot pluggable drive carriers, allowing drive replacement and additional drives to be added for capacity expansion without interrupting backup and restore functions. These hot pluggable drive trays allow for easy scalability of performance, as well as provide an easy upgrade path towards future drive technologies. **NOTE**: The ESL9322S2 accepts only library ready drives specifically modified for use in the ESL9322S2 library.
Proven Reliability	Using SDLT 160/320 tape drives, and proven library robotics with a rating of 2,000,000 load/unload cycles, the ESL9322S2 provides the necessary high reliability.

Standard Features

SDLT Technology	Digital Linear Tape uses a proven linear recording technology, a highly accurate tape guide system, and a read after write correction system to provide high-capacity, high reliability data backup and restoration. DLT has fast become the industry-standard secondary storage tape format for departmental and enterprise backup. The new generation SDLT tape drive, in addition to enhanced capacity and backup performance provides advantages several new features such as Laser Guided Magnetic Recording (LGMR™) technology, Pivoting Optical Servo (POS), Magneto-Resistive Cluster Heads (MRC) , Partial Response Maximum Likelihood (PRML) channel technology and Backward Read Compatible with earlier generation of DLT drives, to be able to read media written in DLT IV format.
Manageability	The ESL9322S2 configurations are fully supported through Insight Manager, providing information to administrators for both robotic and tape status changes, and fault status of redundant components. HP TSMC (Tape Storage Management Console) software provides diagnostics and easy firmware upgrade capabilities. Other data and automation manageability features, including multi-host direct connectivity, are provided via specific, third party applications software packages.
Warranty	One year parts exchange, one year on-site next day service
	Additional Warranty protection can be purchased for all ESL9322S2 DLT library products at the following URL: http://h18006.www1.hp.com/products/storageworks/warranty.html. **NOTE**: This Web site is available in English only.

Server Support			
	High-End ProLiant Servers	ProLiant DL760	
		ProLiant ML750	
	Departmental ProLiant Servers	ProLiant DL580G2	
		ProLiant ML570G2	
		ProLiant ML530G2	
	Workgroup ProLiant Servers	ProLiant DL380G2	
		ProLiant ML370	
		ProLiant ML350	
	AlphaServer Systems	AlphaServer GS320, GS160, GS 80	
		AlphaServer ES45	
		AlphaServer ES40	
		AlphaServer DS20E	
	SCSI controller supported Hewlett-Packard ProLiant servers	64-bit/66 MHz dual channel dual channel Wide Ultra3 SCSI Adapter	129803-B21
		64-bit/66 MHz Single Channel Wide Ultra3 SCSI Adapter	154457-B21
	Hewlett-Packard AlphaServer systems	StorageWorks Ultra LVD single channel	3X-KZPCA-AA
	HP-UX servers	Superdome	
		rp8400	
		rp7400 (N class)	
		rp5400 series (L Class)	
		rp2450/2470 (A class)	
		K class	
		D Class	

Standard Features

Fibre Channel Controllers	ProLiant Servers	64-bit/66 MHZ PCI to FC HBA (Persian/NetWare®)
		fca2101 HBA (lp952)
		QLA2200 (Linux®)
		QLA2340 (Linux and NetWare 6.0) FCA-2101 HBA (lp952)
		KGPSA-CB HBA (NT lp8000)
	AlphaServer systems	KGPSA-CA HBA (Alpha lp8000)
		FCA-2354 HBA (lp9002)
	HP-UX Servers	A6684A FC
		A6685A FC
		A5158A 1G FC
		A6795A 2G FC
	Fibre Channel Routers	NSR m2402
		FC router e2400

Application Support		For the latest updated compatibility matrix for ISV backup software supported go to: http://www.compaq.com/products/storageworks/ebs/EBScompatmatrix.html **NOTE**: This Web site is available in English only.
	Automation and Network Utilities	Insight Manager v7.0
		HP Tape Storage Management Console v2.3 (NT/2000), 2.0 (NetWare)
		MRU (Media Robot Utility) v1.4
		HP Library and Tape Tools V 2.9

Device/ISV/OS ESL SDLT160/320 Models	Windows® NT® 4.0 SP6a	Windows 2000 SP2	Tru64 UNIX® 4.0g 5.1a	HP-UX* 11i, 11.0, 10.2,	NetWare 5.1 SP3	NetWare 6.0	Linux RH 7.1, 7.2 Linux SuSe® 7.0	Sun™ Solaris™ 2.6, 2.7, 2.8	AIX 4.3.3
Direct Attach									
VERITAS NetBackup 4.5	✓	✓							
VERITAS NetBackup 3.4.3	✓	✓							
Legato NetWorker 6.1.2	✓	✓					✓		
VERITAS Backup Exec 8.6	✓	✓			✓	✓			
CA BrightStor ARCServe 2000	✓	✓							
CA BrightStor ARCServe 7									
HP/EBS SAN									
HP Omniback 4.x	✓	✓		✓	✓				✓
HP Data Protector	✓	✓		✓	✓				✓
VERITAS NetBackup 4.5	✓	✓	✓	✓				✓	✓
VERITAS NetBackup 3.4.3	✓	✓	✓	✓				✓	✓
Legato NetWorker 6.1.2	✓	✓	✓	✓			✓	✓	
VERITAS Backup Exec 8.6	✓	✓			✓	✓			
VERITAS Backup Exec 9.0					✓				
CA BrightStor ARCServe 2000	✓	✓							
* HP-UX commands fbackup\frecover and backups launched using HP-UX Site Area Manager are not supported									

HP Service & Support, CarePaq and Warranty Information

Hewlett-Packard Installation and CarePaq Information	Compaq Services provides a three-year, limited warranty, fully supported by a worldwide network of resellers and service providers, and also provides hardware technical phone support. In addition, available service offerings include a full range of hardware and software services:

- Installation and start up
- Extended coverage hours and enhanced response times
- System management and performance services

Additional Warranty protection and/or HP Installation packages can be purchased for the ESL9322S2 library products:

Software Product Services	

- Stand-alone telephone support
- Rights to a new license
- Media and documentation updates

Hardware Product Services	

- Installation services
- On-site Maintenance (includes warranty support)
- Response time upgrades during the warranty period
- Post-warranty coverage

For additional hardware installation and maintenance information please refer to the URLs listed below:
English: http://www.compaq.ca/English/service/cusserv/carepaq/carepaq.htm
French: http://www.compaq.ca/Francais/service/ccs/carepaqf/carepaqf.htm

Warranty Upgrade Options	

- Response - Upgrade on-site response from next business day to same day 4-hours
- Coverage - Extend hours of coverage from 5 days x 9 hours to 7 days x 24 hours
- Duration - Select duration of coverage for a minimum period of 1year or multiple years

Installation Services Sample part numbers:	For library SKUs (0 to 8 drive units)	163463-002 FM-T6INS-IN

NOTE: Certain restrictions and exclusions apply. Consult the Hewlett-Packard Customer Support Centre for details.

Related Options

		Part Number
ESL9322S2 Library System	ESL9322S2 222 slot 2 DRV SDLT 160/320	293409-B22
	ESL9322S2 222 slot 8 DRV SDLT160/320	293409-B28
	ESL9322S2 322 slot 2 DRV SDLT160/320	293410-B22
	ESL9322S2 322 slot 8 DRV SDLT160/320	293410-B28
	Supplied with each Library Unit	
	Library unit (pre-configured with drives)	
	Documentation kit	
	Documentation CD including translations	
	Users Guide	
	Unpacking and Installation Guide	
	Pre-Installation Site Survey	
	Diagnostic CD	
	Diagnostic Software Guide	
	Warranty Card	
	Safety Card	
	Driver CD	
	(1) SDLT 160/320 Media Cartridge	
	Bar code labels	
	Cleaning Labels	
	(2) Keys	
	SCSI terminators (1 per drive, installed)	
	Diagnostic cable (for PC attach)	
	Supplied with each library	
	2 Line Cords (IEC 320 C19), US/Canada	
Power Cord (Pair Required)	ESL9000 POWER CORDS 2X*	146210-001
	NOTE: Shipped with all units.	
Drive, capacity, and memory upgrade kits	ESL9000 LVD SDLT 160/320 upgrade drive in hot plug canister	293414-B21
	ESL9322S2, slot upgrade 222 TO 322 slots*	293588-B21
	ESL9000 5 MB Memory Module for ESL9198 & ESL9326 libraries, (required to support firmware versions 3.00 and later)	274673-B21
	NOTE: *Serial number of your existing library is required when ordering these capacity upgrade SKUs, please enter the serial number in the comments section of the purchase order, and inform your Secondary Storage Product Manager.	

Related Options

		Part Number
Media and Bar Code Labels	MSL5000 dual magazine DLT/SDLT pack (2 x 13 slot magazines, left and right)	188527-B21
	SDLT media 5-pack	188527-B22
	SDLT media 10-pack	188527-B26
	Supplied with each Power Cord	
	Additional media	
	Additional magazines	
	Bar code labels	
SCSI Cables	Wide/Wide SCSI cable, 5 m	328215-001
	Wide/Wide SCSI cable, 10 m	328215-002
	Wide/Wide SCSI cable, 15 m	328215-003
	Wide/Wide SCSI cable, 20 m*	328215-004
	SCSI Cable, VHDCI/Wide, 6 ft	341176-B21
	SCSI Cable, VHDCI/Wide, 12 ft	341177-B21
	SCSI Cable, VHDCI/Wide, 10 m	201160-B21
	SCSI Cable, VHDCI/Wide, 20 m*	201160-B23

NOTE: Check the cable-adapter matrix for tape libraries on:
 ftp://ftp.compaq.com/pub/products/storageworks/tape-and-optical-storage/adapter-cable-matrix.pdf
  NOTE: This Web site is available in English only.
* Requires 221249-B21 LVD extender kit

SCSI Host Bus Adapter/Hewlett-Packard Fibre Channel to SCSI Router (optional)	***ProLiant Controllers***	
	64-bit/66 MHz PCI dual channel Wide Ultra3 SCSI adapter	129803-B21
	Alpha Controllers	
	Single Channel Ultra LVD Controller	3X-KZPCA-AA
	Network Storage Router *(required for SAN configuration)*	
	Network Storage Router m2402 (2FC X 4 LVD SCSI)	262653-B21
	Embedded Data Router, ESL9000embedded fibre option e2400 – Base 2 FC X 4 LVD SCSI ports (Includes card cage for installation of embedded router which is required for configuration) (Includes two router cards each with 1 FC X 2 LVD SCSI ports, 4 VHDCI-WIDE SCSI cable, user guide CD, and the ESL9000 cPCI card cage)	262665-B21
	It is recommended that the installation CarePaq be ordered with this SKU.	
	Embedded Data Router, ESL9000embedded fibre option e2400 – Upgrade 2 FC X 4 LVD SCSI ports (Includes: two 1FC x 2LVD SCSI router cards, four	262664-B21

NOTE: Host Bus adapter for SCSI connectivity from server to tape library in direct SCSI environment
  Network Storage Router, Embedded FC Router to connect SCSI Library to Fibre Channel Hub/Switch.

LVD Extender Kit	LVD Extender kit (Required for HBA to Library SCSI cable lengths exceeding 10 m)	221249-B21
ESL9000 magazine	ESL9000 UNIVERSAL LOAD PORT magazine (2x4 slot)(fixed)	302254-B21

Related Options

	Part Number
Data Protection Suites for Backup and Restores	
CommVault Galaxy	
Phan Kit, CommVault Galaxy	281593-B21
DP Suite, SAN standard	281585-B21
DP Suite, SAN advanced	281588-B21
DP Suite, Network	281582-B21

Additional CommVault Galaxy Suite Descriptions

Phan Kit, CommVault Galaxy – Media Kit that contains live trial software

DP Suite, SAN standard – Entry level SAN kit that contains:
ISV application software for six servers on the SAN
Two server clients for backing up over the LAN
Each SAN server has a choice of a database agent or open file systems option
Support for up to eight shared automated, tape drives

DP Suite, SAN advanced – Data centre SAN kit that contains:
ISV application software for fourteen servers on the SAN
Two server clients for backing up over the LAN
Each SAN server has a choice of a database agent or open file systems option
Support of up to sixteen shared, automated tape drives

DP Suite, Network – Designed for backing up a single server and server clients over the network using a tape drive, an autoloader or business class automation. Includes choice of one database agent or open file systems option.

CA BrightStor ARCserve	
Phan Kit, CA ARCserve	283915-B21
DP Suite, single server	281576-B21
DP Suite, SAN standard	281583-B21
DP Suite, SAN advanced	281586-B21
DP Suite, Network	281581-B21

Additional CA BrightStor ARCserve Suite Descriptions

Phan Kit, CA ARCserve – Media Kit that contains live trial software

DP Suite, single server – Designed for backing up a single server, with no server clients, using a single internal or external tape drive.

DP Suite, SAN standard – Entry level SAN kit that contains:
ISV application software for six servers on the SAN
Two server clients for backing up over the LAN
Each SAN server has a choice of a database agent or open file systems option
Support for up to eight shared automated, tape drives

DP Suite, SAN advanced – Data centre SAN kit that contains:
ISV application software for fourteen servers on the SAN
Two server clients for backing up over the LAN
Each SAN server has a choice of a database agent or open file systems option
Support of up to sixteen shared, automated tape drives

DP Suite, Network – Designed for backing up a single server and server clients over the network using a tape drive, an autoloader or business class automation. Includes choice of one database agent or open file systems option.

Related Options

	Part Number
Data Protection Suites for **Backup and Restores** *(continued)*	
VERITAS Backup Exec	
Phan Kit, VERITAS Backup Exec	283914-B21
DP Suite, SAN standard	281584-B21
DP Suite, SAN advanced	281587-B21
Additional VERITAS Backup Exec Suite Descripitions	
Phan Kit, VERITAS Backup Exec – Media Kit that contains live trial software	
DP Suite, SAN standard – Entry level SAN kit that contains:	
ISV application software for six servers on the SAN	
Two server clients for backing up over the LAN	
Each SAN server has a choice of a database agent or open file systems option	
Support for up to eight shared automated, tape drives	
DP Suite, SAN advanced – Data centre SAN kit that contains:	
ISV application software for fourteen servers on the SAN	

Technical Specifications

SCSI Identification	Product ID	ESL9000 Series	
	Vendor ID	HP	
Control Panel	Library and Drive Status		
	Move tape cartridges		
	Load/Unload tape drives		
	Maintenance (drive cleaning, diagnostics)		
	Library Configuration		
	Statistics		
SCSI Interface	Ultra2 SCSI LVD, 68HD Interconnect		
	(External cable length between library and HBA, limited to 10 m without LVD extender, extends up to 25 m when using the LVD extender)		
Form Factor	Free Standing		

Dimensions (H x W x D)		Unit	Packaged
	Height	75 in/190.5 cm	80 in/203.2 cm
	Width	40 in/101.6 cm	52 in/132.1 cm
	Depth	29 in/73.7 cm	48 in/121.9 cm

Unit Weight	Without data cartridges, 0 drives	1072 lb/487 kg	
	Without data cartridges, 8 drives	1180 lb/536 kg	1362 lb/617.8 kg
	322 data cartridges, 8 drives	1335 lb/606.6 kg	

Performance (native)	Minimum configuration	2 Hewlett-Packard SDLT 160/320 drives, native transfer rates up to 115.2 GB/hr
(16 MB/s per drive)	Maximum configuration	8 Hewlett-Packard SDLT 160/320 drives, native transfer rates up to 460.8 GB/hr

Storage Capacity	ESL9322S2 (222 slots) - Supports 222 SDLT cartridges for native capacity up to 35.52 TB native, 71.04 TB compressed (2:1)
	ESL9322S2 (322 slots) - Supports 322 SDLT cartridges for native capacity up to 51.52 TB native, 103.04 TB compressed (2:1)
Input/Output Port	2 x 4-slot fixed
Initialization Time	< 7 minutes
Cartridge Swap time	33 seconds average
Cartridge Passthrough time - end to end	78 seconds average
Swaps	135 swap/hour

Electrical Specifications	AC Voltage	Auto-range to domestic and international AC voltages	
		AC Voltage Range: 90 to 132 VAC or 180 to 264 VAC, single phase	
		Nominal: 100 to 120 VAC or 220 to 240 VAC	
		Line Frequency Range: 47 to 63Hz	
		AC Receptacle: IEC-320 C19 Type 100-120V/200-240V, 50/60 Hz, 20A/16A (5-20P plug for U.S. and Canada)	
	Power Consumption	1200 VA Maximum	

Acoustic Noise	Noise Power Emission Level	Idle	7.8 bels
		Operating	8.1 bels

Technical Specifications

Reliability (Library Only)	MTBF	250,000 hours
	MSBF	2,000,000 load/unload cycles
Regulatory Compliance	Safety	UL1950, CSA C22.2 950, EN 60950:1992/A11, IEC 60950:1992/A11, DHHS/FDA (US CFR21 part 1040, Class 1 laser)
	EMI	EN 60825:1994/A11, FCC Part 15 Class A, CISPR Publication 22 Class A, ICES-003 Class A, VCCI Class 1, SMA AZ/NZS 3548 Class A
	EMC	EN6100-3-2, EN50082-1: 1992, EN50022: 1994