

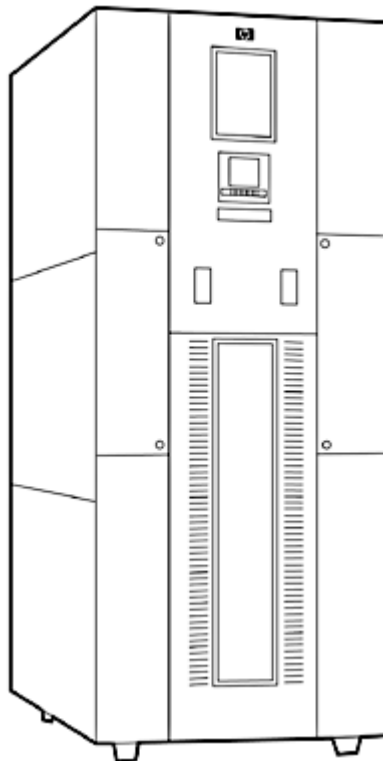
### Overview

The family of HP StorageWorks Enterprise Systems Library (ESL) E-Series Tape Libraries offers best-in-class drive and cartridge densities. In a single cabinet, the ESL E-Series contains from 322 to 712 LTO cartridges or 286 to 630 SDLT cartridges and has the ability to scale to twenty-four drives. The ESL E-Series achieves drive densities up to 109 TB of compressed (2:1) storage capacity per square foot. The ESL E-Series can be managed as a single library with up to five frames containing up to 3546 Ultrium cartridges or 3138 SDLT cartridges and up to 44 tape drives.

The ESL E-Series supports a mixture of LTO-4 Ultrium 1840 Fibre Channel, LTO-3 Ultrium 960 Fibre Channel and SDLT 600 tape technology.

HP StorageWorks E-Series Tape Libraries are fully integrated into HP StorageWorks Extended Tape Library Architecture (ETLA). ETLA protects against SAN event disruptions caused by rogue I/O requests from applications or servers. ETLA provides improved backup and restore reliability by preventing such requests from interrupting the backup or recovery processes. This helps to significantly reduce IT resources and the time spent investigating and resolving backup failures. ETLA simplifies the installation and integration of the library into the SAN by providing a simple point-and-click integration process. It also provides remote management of multiple tape libraries (ESL, EML, VLS) from a single pane of glass.

The ESL E-Series Tape Library provides the ability to easily partition the library into up to six logical tape libraries to adapt to ongoing changes that take place in the SAN environment. The ESL E-Series libraries combined with the HP ETLA offer customers with enterprise storage area networks (SAN) superior reliability and expandability, ease of integration, and simplicity of installation and operation.



### Overview

#### What's New

New ESL E-Series Enhancements:

- Centralized encryption key management solution through Secure Key Manager (SKM)
- Integration of the HP StorageWorks LTO-4 Ultrium 1840 Tape Drive.
- LTO-4 Ultrium 1840 tape drive hardware encryption for secure, high-performance backups.

#### Standard Features

- Best-in-Class single-frame and multi frame reliability with 3M MSBF (mean swaps between failure).
- Best-in-Class Drive Density: up to 24 tape drives in a single frame; up to 44 drives with up to five E-Series frames using the ESL E-Series Cross Link Kit and ESL E-Series Cross Link Expansion Kit.
- Best-in-Class Cartridge Capacity: up to 712 Ultrium cartridges or 630 SDLT cartridges in a single frame; Up to 3546 Ultrium cartridges or 3138 SDLT cartridges with five frames using the ESL E-Series Cross Link Kit and Cross Link Expansion Kit.
- Available in half populated configurations: 322 Ultrium or 286 SDLT slots.
- Easy-to-enable AES 256-bit embedded hardware encryption with compression
- Removable Load Port Magazines
- Smaller Form Factor: 109 TB (compressed 2:1) per square foot with LTO-4 Ultrium 1840 technology and 712 cartridges.
- Complete, unobtrusive management and control of the entire library system including robotics, drives, Interface Controllers, and Interface Manager card.
- Web-based, centralized user interface, in addition to telnet interface on Interface Manager card.
- Automation of complex and repetitive library system management tasks.
- High SAN availability since management traffic stays out of the data path.
- SNMP support including asynchronous alerting.
- Integration with major enterprise management applications.
- Best-in-class interoperability and security with Advanced Secure Manager ESL.
- New ESL E-Series models ending in "C" include an improved front door.

#### Customer Benefits

- More storage capacity in less floor space.
- Automatic, consistent configuration through Extended Tape Library Architecture (ETLA).
- Reduced cost of ownership with management of all library system components from a single pane of glass.
- Decreases both costs and administrative work through enhanced manageability from any location.
- Provides a high level of encryption security, with compression, for strong backup data privacy to secure confidential information and address compliance quickly. Encryption key management support via HP Data Protector Software and other ISV backup applications.
- Delivers best-in-class interoperability with Enterprise Business Solutions (EBS) without "special" work-arounds. It will work in your environment.
- Simplifies the complex task of setting up library robotics, drives, and Interface Controllers in a SAN.
- Minimizes uncertainty in complex SAN environments by allowing only authorized servers to access tape drives and critical data.
- Eliminates backup server and LAN bottlenecks by allowing data to move directly from disk to tape under the control of your backup application - but without application server overload.
- Provides investment protection by enabling an easy upgrade path as interface technologies change.
- Supports WORM media (using the LTO-4 Ultrium 1840 FC or the LTO-3 Ultrium 960 FC) providing a fail-safe method for permanently storing data records.
- The E-Series tape libraries are factory integrated to reduce installation time and improve the customer experience.

#### Family Comparison



### Overview

	ESL 712e	ESL 322e	ESL 630e	ESL286e
<b>Announce Date</b>	February 2004	July 2004	February 2004	July 2004
<b>Drive Technology</b>	LTO-4 Ultrium 1840 FC, LTO-3 Ultrium 960 FC	LTO-4 Ultrium 1840 FC, LTO-3 Ultrium 960 FC	SDLT 320, SDLT 600	SDLT 320, SDLT 600
<b>Maximum Cartridge Count</b>	712	322	630	286
<b>Maximum Drive Count</b>	44	44	44	44
<b>Maximum Capacity (compressed 2:1)</b>	5673 TB	515 TB	1882 TB	171 TB
<b>Interface Manager</b>	Included	Included	Included	Included
<b>ETLA Components: (not included)</b>				
	<b>Interface Controller</b>	<ul style="list-style-type: none"> <li>• e2400-160 FC Interface Controller (for use with SCSI drives)</li> <li>• e2400-FC 2Gb Interface Controller (Use 1 for each ESL library containing any number of LTO-4 Ultrium 1840 drives)</li> <li>• e2400-FC 4G Interface Controller (Use 1 for every 4 LTO-3 Ultrium 960 FC Tape Drives)</li> </ul>	e2400-160 FC Interface Controller	
	<b>Internal Network Kit</b>	Use 1 for each ESL library with LTO-4 Ultrium 1840 drive(s)	HP StorageWorks ESL LTO-4 Ultrium 1840 Internal Network Kit	
	<b>Command View ESL</b>	Requires Purchase of Permanent License (per library)	Requires Purchase of Permanent License (per library)	
	<b>Secure Manager ESL</b>	Requires Purchase of Permanent License (per library)	Requires Purchase of Permanent License (per library)	

### Product Highlights

#### Manageability

HP StorageWorks Extended Tape Library Architecture will save library and SAN administrators time and money by simplifying library setup, configuration, and troubleshooting, increasing reliability and robustness of libraries in the SAN, integrating with leading enterprise management applications, and offering advanced features -- such as Access Control (Secure Manager ESL) -- that further increases backup performance and reliability. HP offers a balanced solution - neither piece-meal nor monolithic - that includes a generous initial feature set and allows users to buy only the advanced options they need.

#### Reliability

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-plug components and redundancies of key operating subsystems (tape drives and power supplies). With redundant power distribution and power supplies the HP StorageWorks ESL Tape Libraries offer the best in high availability for continuous operation. HP ESL E-Series also offers 3M MSBF (mean swap between failure) for single frame and also multiple frame solutions.

#### Data Privacy

To greatly enhance data privacy, HP StorageWorks ESL Tape Libraries are now available with LTO-4 Ultrium 1840 hardware encrypting tape drives for secure high performance backups meeting consortium specifications for LTO-4. HP Data Protector Software can enable the drive encryption and provide basic key management capabilities. Additional information regarding ISV's supporting hardware encryption is available on the HP StorageWorks Enterprise Backup Solution website at [www.hp.com/go/ebs](http://www.hp.com/go/ebs). The encryption on LTO-4 media occurs with or without compression, and without speed or capacity penalties. You can read LTO-2 and LTO-3 tapes, and write LTO-3 tapes, but hardware encryption is not supported in these formats.

LTO-4 uses the Advanced Encryption Standard (AES) with the longest and most secure keys -- 256 bits. AES-256 is implemented within Galois Counter Mode (GCM). This is a method of increasing AES security by efficiently adding Message Authentication Codes to ensure the integrity of the backup data stored on tape. The HP LTO-4 Ultrium 1840 Tape Drive is designed to be compliant with the emerging standard for tape drive security (IEEE 1619.1).

SKM: The HP StorageWorks Secure Key Manager reduces your risk of a costly data breach and reputation damage while improving regulatory compliance with a secure centralized encryption key management solution for HP LTO-4 enterprise tape libraries (EML & ESL). In addition, the SKM provides strong auditable security and reliable lifetime key archival. The SKM and LTO-4 drive encryption in the ESL library provides a complete and secure privacy solution to protect customers' confidential data.

For further information on the SKM please visit:

[http://h18006.www1.hp.com/products/storageworks/secure\\_key/index.html](http://h18006.www1.hp.com/products/storageworks/secure_key/index.html)

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

#### Density

HP StorageWorks ESL Libraries provide optimum density offering more capacity in less physical storage space. The ESL 712e with LTO-4 Ultrium 1840 technology reaches to 109 TB of compressed (2:1) capacity per square foot.

#### Scalability

HP StorageWorks ESL Libraries (322e and the 286e) are scalable to larger cartridge configurations via a licensing key. To increase library capacity, a license key can be purchased that will enable an additional panel/drawer of cartridges to become available for use.

### Product Highlights

In the HP StorageWorks ESL Libraries, slots are grouped into panels. When you purchase a 322e or 286e, left side panels one, two and three are enabled by default. Up to three license keys would be needed (P/N AA942A) for a 322e or 286e to become a full slot count library. The first license enables panel four, the second license would enable panel five, and the third license would enable panels six and seven. The following table explains the panel layout:

Panel 1	Upper Left	Panel 4	Upper Right
Panel 2	Middle Left	Panel 5	Middle Right
Panel 3	Lower Left	Panel 6	Lower Right
		Panel 7	Back Wall

Number of slots enabled is dependant upon the library technology. Ultrium based libraries will house 108 slots per panel and an SDLT based library will house 96 slots per upper and lower panels (panels containing removable magazines have slightly fewer slots due to the magazines).

HP StorageWorks ESL Cross Link Kit (PN:AA947A) and ESL Cross Link Expansion Kit (PN: AF903A) allow you to connect up to five 712e or 630e tape libraries together as a single tape libraries to scale up to 3546 LTO slots (5673 TB, compressed 2:1) or 3138 SDLT slots (1882 TB, compressed 2:1) and up to forty-four tape drives.

The ESL E-Series Cross Link Kit requires specific software and firmware supplied on CD with the Cross Link Kit. Software licenses are required only on the first or primary library frame.

Small count tape libraries (322e, 286e) are only supported in multi-frame configurations if upgraded to a fully populated tape library and only if they are the first or primary tape library.

**NOTE:** When installing the Cross Link Kit you will lose one cluster of either tape drives or slots along the back wall of the first ESL cabinet. In an LTO library, the back wall clusters hold 14 slots. In an SDLT library, the back wall clusters hold 12 slots. To review the Cross Link Kit installation guide and Cross Link Expansion Kit guide, please visit: <http://www.hp.com/go/automated> , ESL E-Series, Manuals.

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#### HP LTO Ultrium Technology

HP StorageWorks LTO (Linear Tape Open) Ultrium Tape Drives use best of breed technology. By taking the best features from other tape technologies and combining them into a single new technology, Ultrium tape drives are in a league of their own. Inclusion of innovative features such as Adaptive Tape Speed (ATS) ensure that Ultrium drives can meet the performance and reliability demands of a library environment. LTO technology is an open industry standard format; thus data written on HP StorageWorks Ultrium Tape Drives can be interchanged directly with Ultrium Tape Drives from other vendors.

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#### Data Rate Matching

Data Rate Matching combines sophisticated buffer management with HP's exclusive Infinitely Variable Adaptive Tape Speed technology, to allow the tape drive to match its transfer rate to the host speed dynamically and continuously across the whole range of transfer rates. This feature ensures that the tape drive continues to stream data regardless of the environment, and brings two big advantages:

- It optimizes backup performance, regardless of the speed of the host or the network.
- It minimizes rewinding and repositioning of the tape, reducing wear and increasing reliability

### Product Highlights

#### WORM (Write-Once, Read-Many) Drive and Media Support

Critical to the success of data retention policies in highly regulated environments is the ability to store and manage data in an unalterable state. Following stringent guidelines set forth by regulatory agencies such as the SEC and HIPPA, IT organizations must now integrate new solutions and policies that can verify the integrity of stored data for periods that can extend well beyond seven years.

The LTO-4 Ultrium 1840 and the LTO-3 Ultrium 960 tape drives feature the ability to archive and store data in a non-rewriteable format that meets the most stringent regulatory guidelines. Using a combination of integrated fail-safe features in the drive firmware, cartridge memory, and tape formatting, the tape drives can archive large amounts of data for periods of up to 30 years in a secure, untampered state. Since all LTO-4 Ultrium 1840 and LTO-3 Ultrium 960 tape drives include support for both rewritable and WORM media, IT organizations can now easily integrate a secure, long-term archiving solution into their current data protection strategy. As compared to other technologies that feature support for WORM storage, the tape drives offer the advantages of:

- A single drive to support all backup and archiving needs
- Two distinctive tape cartridges to easily distinguish and manage both rewriteable and WORM data cartridges
- A specially designed WORM data cartridge with multiple integrated fail-safe features to prevent accidental or intentional overwriting of data
- High-capacity, low-cost HP WORM media that can store up to 1.6TB (2:1 compression) of data on a single data cartridge
- Support from many backup and archiving software vendors, providing the most comprehensive and mainstream support in the industry
- The LTO open standard that offers greater choice and compatibility across all third- and fourth-generation Ultrium products

**NOTE:** While all HP LTO-4 Ultrium 1840 and LTO-3 Ultrium 960 tape drives support LTO Ultrium WORM media, some third- and fourth-generation LTO Ultrium tape drives from other manufacturers may not include read and write support for LTO Ultrium WORM media. For non-HP third- and fourth-generation LTO Ultrium tape drives, please check the manufacturers' specifications to ensure this support is provided if you are using your WORM media. If WORM support is not provided, the drive will eject the WORM tape cartridge immediately upon insertion into to the tape drive

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#### 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. SDLT, in addition to enhanced capacity and backup performance, provides several features such as Laser Guided Magnetic Recording (LGMR) technology, Pivoting Optical Servo (POS), Magneto-Resistive Cluster Heads (MRC), and Partial Response Maximum Likelihood (PRML) channel technology. SDLT 600 drives are Backward Read Compatible with tapes written in SDLT 220 and SDLT 320 drives, as well as tapes written in VS160 drives.

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### Product Highlights

#### Mixed Media

Extending the E-Series flexibility and investment protection, the HP StorageWorks ESL E-Series tape libraries support mixing drive technology within a single frame. Technologies included are LTO-4 Ultrium 1840 FC, LTO-3 Ultrium 960 FC, and SDLT 600 can be done in libraries that have all slots fully enabled. The 322e and 286e would require the license of all the additional slots prior to mixing technology.

The mixed media kit consists of three panels to be installed on the left side of the library. One left upper panel, one left middle panel (including magazines) and one left lower panel of the new, foreign technology will be provided. One to three panels can be converted to the new technology at any time and will be installed on the left side of the library. In addition, Secure Manager ESL with the partitioning will manage the configuration.

#### HP Ultrium Storage Media

HP recommends that you use HP-branded cartridges in the HP ESL E-Series Tape Libraries to assure the highest level of protection for your valuable data. The test program for HP media is the most thorough and comprehensive in the industry.

All HP cartridges must satisfy an exhaustive battery of additional tests that relate directly to real life situations, where real data and real businesses are at stake. The benefit of the HP brand specification for media is consistent quality. Through the testing of thousands of HP drives and HP cartridges, the ideal formulation for backup performance is defined and then continuously monitored. This hugely resource-intensive process is unique to HP and affords deep insight into the HP+HP backup solution for a wide range of environments and duty cycles. Your best choice for ease of support and maximum dependability is to use HP-branded Ultrium cartridges at all times.

HP strongly encourages the use of bar code labels on tapes to track media and ensure optimum library performance and usability. Correctly labeling your media will allow the library to quickly determine media and drive compatibility.

#### HP SDLT Storage Media

HP specifies performance goals to the supplier and monitors the quality of product being shipped. HP defines a brand standard for SDLT media just as it is for Ultrium. This means that the end-user can be confident in having the highest levels of quality and reliability from HP SDLT media. Like all HP storage media, SDLT media is tested thoroughly with HP drives, libraries and autoloaders to ensure maximum performance, retrievability and reliability.

#### Removable Magazines

To ease the management of cartridges to and from the library, the HP StorageWorks ESL E-Series libraries include user configurable removable magazines. The 712e and 322e can select magazine configurations in 0, 16, 32 or 48 slot count capacity. The 630e and 286e can select magazine configurations in 0, 14, 28 or 42 slot count capacity.

#### LTO-4 Ultrium 1840 FC Interface Controller

With LTO-4 Ultrium 1840 drives, HP delivers dual-port, native fibre SAN connectivity, while HP's Extended Tape Library Architecture (ETLA) continues to provide Secure Manager and partitioning features. One e2400-FC 2Gb interface controller is still needed and recommended for the robot. A e2400-FC 4Gb Interface Controller can be requested but is not needed for performance.

### Product Highlights

**LTO-3 Ultrium 960 FC or SDLT 600 Interface Controllers** As a key component of the Extended Tape Library Architecture, the Interface Controllers are integrated into the entire tape library solution. Similar to disk array controllers, the Interface Controllers provide the highest level of security, reliability, and broad interoperability for tape drives being connected into a storage area network. The ESL E-Series tape libraries utilize two Interface Controllers to accommodate both SCSI and fibre channel tape drives. The e2400-160 FC Interface controller will be used with the SDLT 320 tape drive. The e2400-FC 4Gb Interface controller and e2400-FC 2Gb Interface controller will be used with the LTO-3 Ultrium 960 FC tape drive. Each controller manages up to four tape drives and provides either 4Gbit FC or 2Gbit FC connections to the SAN. (In effect, two drives per switch port)

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**HP ESL LTO-4 Ultrium 1840 Internal Network Kit** The purpose of the ESL Internal Network Kit is to provide a private management network inside the library to connect the Interface Manager (IM) to the LTO-4 drives.



### Software Components

#### Extended Tape Library Architecture (ETLA)

The HP StorageWorks Extended Tape Library Architecture (ETLA) will save library and SAN administrators time and money by simplifying library setup, configuration, and troubleshooting. HP's architecture increases reliability and robustness of libraries in the SAN, and integrates with leading enterprise management applications. Advanced features such as Access Control (HP StorageWorks Secure Manager) further increase backup performance and reliability. HP offers a balanced solution - neither piece-meal nor monolithic - that includes a generous initial feature set and allows users to buy only the advanced options they need.

The HP StorageWorks Interface Manager and Command View for ESL Tape Libraries are the next step in HP's Extended Tape Library Architecture, itself a key component of the HP Adaptive Infrastructure strategy. This architecture delivers tape libraries that are self-aware - self-managed, automatically maintained, continuously available - and network-aware - resilient, secure, and adaptable. HP's high-end tape libraries provide the reliability, interoperability, and advanced functionality required for your enterprise SAN environment.

**NOTE:** For more information please visit: <http://www.hp.com/go/automated>.

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#### Intelligent SAN-Aware Functionality

- Caching and intelligent network behavior to control SAN traffic
- Robust and automated configuration and verification of Interface Controller settings
- SAN-aware event tracking and detection of conflicts
- Persistent history and intelligent analysis of events and logs
- Persistent drive numbering and mapping across component swaps and reboot

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#### Command View for Tape Libraries software Web Interface Features

- Select from a list of multiple supported libraries to manage
- View asset information for the library system
- View health summaries for all components of the library system: drives, robotics, Interface Controllers, and Interface Manager
- View library inventory: slots, media, and drives
- Search for media by barcode label
- View details on drives, robotics, Interface Controllers, and Interface Manager, including WWNs, speeds, and connection types
- Configure hosts/HBA-to-drive mapping and masking settings with Secure Manager ESL
- Automatically discover hosts and HBAs on the SAN or add your own for access control and security purposes
- Upgrade firmware on all library components
- Configure IP network parameters for the management station and Interface Manager cards in each library
- Configure SNMP trap/event destinations to receive alerts asynchronously
- View persistent event logs for the library system

### Software Components

#### Secure Manager for Tape Libraries software

- Easily configure device-level security settings
  - Allow only authorized servers to access tape drives and critical data
  - Manage access control from a single pane of glass, through the library itself
  - Library partitioning - Up to six "virtual" partitions available. Load ports can be configured in only two of the partitions. The other four partitions cannot contain load ports.
  - Paths to robotics can be separated between two independent SANs for isolation purposes
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#### HP StorageWorks Library and Tape Tools (L&TT)

The ESL Tape Library configurations are supported on HP's industry-leading diagnostic tool - HP StorageWorks Library and Tape Tools (L&TT). L&TT is a single, convenient program that's a snap to install and simple to operate. L&TT's intuitive user interface eliminates the need for training and deploys in less than five minutes. This robust diagnostic tool is designed for both the experienced professional and the untrained administrator. It ensures product integrity through self-diagnostics and fast resolution to device concerns. Additional information on L&TT plus download information can be found at: <http://www.hp.com/support/tapetools>.

### Compatibility

HP's Enterprise Business Solutions (EBS) assures that your HP StorageWorks Enterprise Systems Library (ESL) E-Series 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 ESL tape libraries work seamlessly in many environments. HP ESL libraries are especially suitable if you have a mixed system environment. For the latest list of servers, workstations, operating systems, and backup software that support HP ESL E-Series, check the tape backup compatibility pages on our web site at: <http://www.hp.com/go/ebs>.

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**HP Server Compatibility** The HP StorageWorks ESL E-Series Tape Libraries are supported on the following classes of HP systems:

- HP ProLiant servers
- HP-UX Servers
- HP AlphaServers

**NOTE:** For details of which models work with which systems, including third-party systems, visit: <http://www.hp.com/go/ebs> for the latest hardware compatibility information.

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**OS Support** The HP StorageWorks ESL E-Series Tape Libraries are supported on the following operating systems:

- HP-UX
- AIX
- Linux
- NetWare
- OVMS
- Tru64
- Solaris
- Windows

**NOTE:** Please visit: <http://www.hp.com/go/ebs> for the latest compatibility information.

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**Software Support** The HP StorageWorks ESL E-Series Tape Libraries are supported on the following ISV's:

- HP OpenView Storage Data Protector
- Computer Associates ARCserve
- EMC Legato Networker
- IBM Tivoli Storage Manager
- Symantec VERITAS Backup Exec
- Symantec VERITAS NetBackup

**NOTE:** Please visit <http://www.hp.com/go/ebs> for the latest compatibility information.

### Service and Support, HP Care Pack, and Warranty Information

**Warranty and Services Included with the Product** **ESL Hardware:** The warranty for this product consists of 1-year onsite, next business day. NOTE: The HP ESL Enterprise Tape Library warranty includes support for Customer Self Repair (CSR). The tape library cartridges, terminators, external cables, drives, magazines, controller board and power supplies are mandatory customer self repair parts. This means both the removal and replacement of the above parts are designed for easy replacement; the on-site warranty does not extend to these parts. However, customers may request HP Services to replace these replaceable units (RUs) for an additional charge. Also, customers who purchase an HP Support Agreement have the option to perform CSR or receive onsite support

**ESL Software:** HP provides 1-year, 9x5 phone support. HP also warrants that the Software media will be free of physical defects for a period of ninety (90) days from delivery.

For business-critical requirements, the level of support may be increased through a full range of upgrade products. You can learn more about HP's Global Limited Warranty and Technical Support by visiting: <http://h18006.www1.hp.com/products/storageworks/warranty.html>

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### Deployment and Per Event HP Installation & Startup for HP StorageWorks Service Descriptions

- Provides for the implementation of HP StorageWorks ESL (Enterprise Storage Library) products in SAN environments, including the installation of a Fibre Channel Interface Controller
- Minimizes implementation-related disruptions to your environment and helps ensure increased system reliability and more effective data management

Due to the complexities involved with the initial installation of an enterprise Library into a SAN environment, Hewlett Packard requires that the Installation & Start-up service (HA114A1) is purchased.

The Tape Library Installation & Start Up covers pre-installation preparation activities, installation and configuration of the library into the customers SAN. Installation of: Command View ESL license installation (if applicable); Secure Manager ESL license installation (if applicable); configuration of hosts (up to 5, additional hosts handled via HA114A1 5B2 per additional 10) and switches; Verification testing and customer orientation.

Service	Description	Comments
HA114A1 # 5DQ:	Installation and start-up:	1 library and up to 5 SAN host connects
HA124A1 #5B1:	Additional day:	Each additional library on the same site(*)
HA124A1 #5B2:	Additional half day:	Additional SAN host connects up to 10 hosts
HA124A1 #5B2:	Additional half day:	Per Crosslink Kit

For more information please visit: [http://www.hp.com/hps/storage/ns\\_info.html#related](http://www.hp.com/hps/storage/ns_info.html#related)

### Service and Support, HP Care Pack, and Warranty Information

#### Recommended Services

In order to maximize ROI and product uptime, and minimize the cost of ownership, Hewlett Packard recommends:

#### 3 years 24 x 7 Hardware Support

- Guards against downtime, which reduces productivity and profitability
- Eases budget planning with fixed-cost support that includes parts and labor
- Direct access to proven technical and problem-solving expertise

#### 3 years 24 x 7 Software Support

- Improve the productivity of system managers and operators
- Improve system performance and reduce downtime due to software defects
- Expedite problem resolution through expert-level technical resources
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP and selected third-party software at a predictable cost
- Take advantage of subscription savings on software updates
- Keep your license compliancy up-to-date

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**HP Care Pack Information** 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.

Supporting your Adaptive Enterprise journey

HP Services helps you make the Adaptive Enterprise real for your organization. The breadth, depth, and quality of HP hardware and software support services can help you improve the performance of your IT support processes and resolve the complex software and hardware problems that tax user productivity. HP Care Pack services help you increase IT environment stability, efficiency, and agility from the desktop to the data center, and improve the productivity of your employees.

### Service and Support, HP Care Pack, and Warranty Information

**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/>.

Key for HP Care Pack Service availability in the table below:

**E** = Service available for customers purchasing direct and via enterprise resellers

**C** = Service available for customers purchasing via commercial resellers

**N/A** = Service not applicable

HP Care Pack Services Deployment and Per Event Services	Service Available
HP Installation	E/C
HP Installation & Startup	E/C
HP Implementation	N/A

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 Next Day Hardware Support	E/C	E/C	C	C
HP 4 Hr, 9x5 HW Support	E/C	E/C	C	C
HP 4 Hr, 13x5 Hardware Support	E/C	E/C	C	C
HP 4 Hr, 24x7 Hardware Support	E/C	E/C	C	C
HP 6 HR Call-to-Repair HW Support	E/C	E/C	C	C
HP Software Support	E/C	E/C	C	C
HP Software Support 24x7	E/C	E/C	C	C
HP Support Plus	E/C	E/C	C	C
HP Support Plus 24	E/C	E/C	C	C
HP Proactive Essentials 9x5, 10 SW Incidents	N/A	N/A	N/A	N/A
HP Proactive Essentials 9x5, 25 SW Incidents	N/A	N/A	N/A	N/A
HP Proactive Essentials 9x5 Unlimited	N/A	N/A	N/A	N/A
HP Proactive Essentials 24x7, 25 SW Incidents	N/A	N/A	N/A	N/A
HP Proactive Essentials 24x7, 50 SW Incidents	N/A	N/A	N/A	N/A
HP Proactive Essentials 24x7 Unlimited	N/A	N/A	N/A	N/A
HP Proactive 24 Service*	E/C	E/C	N/A	N/A
HP Critical Service*	E/C	E/C	N/A	N/A

**\*NOTE:** Both Proactive 24 & Critical Service only relate to 'reactive elements'. 'Proactive elements' are available on time & materials basis. (SW is supported separately per package).

**NOTE:** Due to the scalability of the product, Service offerings match that of the purchase motion. I.e. support for the robotics, drives, software is purchased separately.

### Service and Support, HP Care Pack, and Warranty Information

To find HP Care Pack Services available via HP authorized commercial resellers, visit [http://h30125.www3.hp.com/csn/salesmktg/elfpack/elf\\_nonlkup\\_ctrylang.asp?code=ELNL](http://h30125.www3.hp.com/csn/salesmktg/elfpack/elf_nonlkup_ctrylang.asp?code=ELNL)

#### Care Pack Service Product Numbers

#### Installation Services

Service	Description
HA113A1#5DQ	Tape Library H/W Installation Only
HA113A1#5DU*	Subsequent Add-on Tape Drive Installation
HA113A1#5J5	Command View ESL Installation Into SAN
HA113A1#5J5	Secure Manager ESL Installation Into SAN
HA113A1#5DP	Installation-Interfaces for libraries
HA113A1#5JH	ESL Miscellaneous Kit Installation
HA113A1#5KH	ESL E Series Cross Link Kit
HA114A1#5Dq	Tape Library Installation & Start Up

\* For add-on tape drive installation, HA113A1 5DU, the Internal Network Kit (AH997A) is included in the installation of LTO-4 drives.

#### Upgradeable Services

Service	Description	Bands				
		630e 286e	712e 322e	Tape Drives	Interface Controllers	Crosslink
HA101A3	HW, 3-year, next-day, 13x5, on-site	4B7	4B6	LTO-3 8G5 LTO-4 80X	8SV	80A
HA103A3	HW, 3-year, 4-hour, 13x5, on-site	4B7	4B6	LTO-3 8G5 LTO-4 80X	8SV	80A
HA104A3	HW, 3-year, 4-hour, 24x7, on-site	4B7	4B6	LTO-3 8G5 LTO-4 80X	8SV	80A
HA105A3	HW, 3-year, 6hr CTR, 24x7, on-site <sup>2</sup>	4B7	4B6	LTO-3 8G5 LTO-4 80X	8SV	80A
HA106A3	SW, 3-year, Phone-in, 9x5 <sup>1</sup>	8FC	8FC	N/A	N/A	N/A
HA107A3	SW, 3-year, Phone-in, 24x7 <sup>1</sup>	8FC	8FC	N/A	N/A	N/A
HA109A3	HW Only, Support Plus, 3-year, 13x5 <sup>3</sup>	4B7	4B6	LTO-3 8G5 LTO-4 80X	8SV	80A
HA110A3	HW Only Support Plus 24, 3-year, 24x7 <sup>3</sup>	4B7	4B6	LTO-3 8G5 LTO-4 80X	8SV	80A
HA111A3	HW Only, Proactive 24, 3-year, 24x7 <sup>4</sup>	4B7	4B6	LTO-3 8G5 LTO-4 80X	8SV	80A
HA112A3	HW Only, Critical Service, 3-year, 24x7 <sup>4</sup>	4B7	4B6	LTO-3 8G5 LTO-4 80X	8SV	80A

<sup>1</sup>Software supported under this service is Command View ESL or Secure Manager ESL (SW support for each package purchased separately).

<sup>2</sup>6hr CTR 'standalone' service is not offered in Latin or North America.

<sup>3</sup>Support Plus covers 4hr H/W response (SW is supported separately per package).

<sup>4</sup>Both Proactive 24 & Critical Service only relate to 'reactive elements', work is ongoing to offer the 'proactive elements' in the near future (SW is supported separately per package).

### Service and Support, HP Care Pack, and Warranty Information

The Care Pack information quoted above relates to 3 year offerings only, 1yr, 4yr & 5yr packs are available for each offering (replace A3 with A1, A4 or A5).

The drive cluster(s) (AA938A) and Interface Controllers (AD576A, AA960A & AA928A) are covered under any uplift purchased for the tape library.

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#### 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>

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#### HP Education Services

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

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#### 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](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>



### Configuration Information

#### Step 1 - "Product" - Base Configuration

Select one:

Model Name	Model Description:	Part Number
ESL 712e	<p>Zero drive, 712 LTO cartridge base library includes:</p> <ul style="list-style-type: none"><li>● One drive cluster: capable of handling up to four tape drives. It houses the e2400-FC 4Gb Interface Controller.</li><li>● One card cage. It houses the e2400-FC 2Gb Interface Controller..</li><li>● Six 8-slot Removable Magazines</li><li>● Interface Manager: management card</li></ul> <p>FC robotics</p> <p><b>NOTE:</b></p> <ol style="list-style-type: none"><li>1. If the e2400-160 FC Interface Controller is used, it can be housed in either the drive cluster or the card cage depending on the configuration.</li><li>2. The Interface manager can be housed in either the drive cluster or the card cage depending on the configuration.</li></ol> <p>What's included in the box:</p> <ul style="list-style-type: none"><li>● Serial cable to attach to a diagnostic port</li><li>● 2 Ethernet cables for internal connections</li><li>● HP StorageWorks ESL E-Series Documentation CD</li><li>● HP StorageWorks ESL E-Series Tape Library Unpacking and Installation Guide</li><li>● Q2007-67000 HP Ultrium 3 RW barcode label sample kit</li><li>● Q2008-67000 HP Ultrium 3 WORM barcode label sample kit</li><li>● Media and Bar Code Ordering Sheet</li><li>● Warranty and Safety information</li></ul>	AA934C
ESL 322e	<p>Zero drive, 322 LTO cartridge base library includes:</p> <ul style="list-style-type: none"><li>● One drive cluster: capable of handling up to four tape drives</li><li>● One card cage for the e2400-160 FC, e2400-FC 4Gb or e2400-FC 2Gb Interface Controllers</li><li>● Six 8-slot Removable Magazines</li><li>● Interface Manager: management card</li><li>● FC robotics</li></ul> <p>What's included in the box:</p> <ul style="list-style-type: none"><li>● Serial cable to attach to a diagnostic port</li><li>● 2 Ethernet cables for internal connections</li><li>● HP StorageWorks ESL E-Series Documentation CD</li><li>● HP StorageWorks ESL E-Series Tape Library Unpacking and Installation Guide</li><li>● Q2007-67000 HP Ultrium 3 RW barcode label sample kit</li><li>● Q2008-67000 HP Ultrium 3 WORM barcode label sample kit</li><li>● Media and Bar Code Ordering Sheet</li><li>● Warranty and Safety information</li></ul>	AA939C
ESL 630e	<p>Zero drive, 630 SDLT cartridge base library includes:</p> <ul style="list-style-type: none"><li>● One drive cluster: capable of handling up to four tape drives</li><li>● One card cage for the e2400-160 FC Interface Controllers</li><li>● Six 7-slot Removable Magazines</li><li>● Interface Manager: management card</li><li>● FC robotics</li></ul>	AA935C

### Configuration Information

What's included in the box:

- Serial cable to attach to a diagnostic port
- 2 Ethernet cables for internal connections
- 1 SCSI cable for internal connection
- HP StorageWorks ESL E-Series Documentation CD
- HP StorageWorks ESL E-Series Tape Library Unpacking and Installation Guide
- Q2006-67000 HP SDLT II barcode label sample kit
- Media and Bar Code Ordering Sheet
- Warranty and Safety information

What's included in the box:

- Serial cable to attach to a diagnostic port
- 2 Ethernet cables for internal connections
- 1 SCSI cable for internal connection
- HP StorageWorks ESL E-Series Documentation CD
- HP StorageWorks ESL E-Series Tape Library Unpacking and Installation Guide
- Q2006-67000 HP SDLT II barcode label sample kit
- Media and Bar Code Ordering Sheet
- Warranty and Safety information

**NOTE:** Customers are required to also purchase the necessary number of add-on drives, host bus adapters, SCSI cables, media, country specific power cords (pair) and applications software licenses in order to complete the library solution.

**NOTE:** Installation services will be quoted as part of each library order.

## Step 2 - Required Options

Select each required option with quantities specified.

Model Name	Model Description with Parts Shipped:	Quantity	Part Number
ESL E-Series Drive Cluster	Single Drive Cluster capable of holding one to four drives. Parts shipped include: <ul style="list-style-type: none"> <li>• One Ethernet cable</li> <li>• Power Cable</li> </ul>	One for every four drives	AA938A
ESL E-Series LTO-4 Ultrium FC Drive Upgrade Kit	Single tape drive, installed into drive cluster. Parts shipped include: <ul style="list-style-type: none"> <li>• Installation poster</li> </ul>	1 to 24 drives (44 with expansion)	AH194A
ESL E-Series Ultrium 960 FC Drive Upgrade Kit	Single tape drive, installed into drive cluster. Parts shipped include: <ul style="list-style-type: none"> <li>• Installation poster</li> </ul>	1 to 24 drives	AD595A
ESL E-Series SDLT 600 Drive Upgrade Kit	Single tape drive, installed into drive cluster. Parts shipped include: <ul style="list-style-type: none"> <li>• Installation poster</li> <li>• Terminator</li> </ul>	1 to 24 drives	AA946A
ESL LTO-4 Ultrium 1840 Internal Network Kit	24-port switch used with LTO-4 Ultrium 1840 drives	One per ESL library with LTO-4 Ultrium 1840 drive(s)	AH997A

### Configuration Information

ESL E-Series e2400-160 FC Interface Controller	Single controller card for use with SCSI Ultrium 460, SDLT 600 and SDLT 320 Tape Drives, 2 FC X 4 LVD SCSI ports. Parts shipped include: <ul style="list-style-type: none"> <li>• Four SCSI cables</li> <li>• 1 ethernet cable</li> </ul>	One for every four SDLT 600 SCSI Tape Drives	AA960A
ESL E-Series e2400-FC 2Gb Interface Controller	Single controller card for use with Native Fibre Ultrium Tape Drives, 2 FC X 4 FC ports. Parts shipped include: <ul style="list-style-type: none"> <li>• Four Fibre Channel cables</li> <li>• 1 ethernet cable</li> </ul>	One per ESL Library with LTO-4 Ultrium drive(s) Or One for every four ESL E LTO-3 Ultrium 960 FC Tape Drives	AA928A
ESL E-Series e2400-FC 4G Interface Controller	Single controller card for use with Native Fibre Ultrium Tape Drives, 2 FC X 4 FC ports. Parts shipped include: <ul style="list-style-type: none"> <li>• Four Fibre Channel cables</li> <li>• 1 ethernet cable</li> </ul> <p><b>NOTE:</b> HP strongly recommends customers purchase the installation service HA113A1#5DP "Installation-Interfaces for libraries" when selecting the ESL E-Series e2400-FC 4G Interface controller as an upgrade option.</p>	One for every four ESL E LTO-3 Ultrium FC Tape Drives (Can be used in place of the e2400-FC 2Gb Interface Controller if desired)	AD576A
Command View for ESL, License	Permanent License for Command View for ESL	One per library	343374-B21

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

### Step 3 - Additional Options

Select each option with quantities specified.

Model Name	Model Description with Parts Shipped:	Quantity	Part Number
Licensed Capacity Panel Upgrade for ESL E-Series (322e and 286e)	License key to upgrade capacity in the ESL 322e or 286e libraries. This license enables one additional panel/drawer of slots <ul style="list-style-type: none"> <li>• License Key</li> <li>• Installation Guide</li> </ul>	One license per panel/drawer is needed. Up to three per library as needed	AA942A
ESL E-Series Ultrium Removable Magazine Kit	Six 8 slot magazines for ESL 712e or ESL 322e to be used in removable load ports <b>NOTE:</b> For customers converting a library from fixed load port to a removable load port need to ALSO order the Removable Magazine conversion kit (AD548A)	As many as needed	AA944A
ESL E-Series Ultrium Mixed Media Kit	Three Ultrium LTO slot panels to convert left side of an SDLT base library frame (ESL 630e) to a mixed media environment. <b>NOTE:</b> Will require CE installation.	One per library as needed	AD546A

### Configuration Information

Secure Manager for ESL, License	Permanent License for Secure Manager for ESL. Parts shipped include: Installation Guide. <b>NOTE:</b> This software is highly recommended for all E-Series libraries, but is required in order to use the Partitioning or Mixed Media features.	One per library as needed	343376-B21
ESL E-Series Cross Link Kit	The Kit includes the extensible cross link rail and cam mechanism that extends the Cross Link cartridge shuttle for robotic access. It also includes a Cross Link controller in cluster five position of the primary, or first, tape library and takes the same power as a cluster controller. In addition the motor assembly, sensor, cables and belt are included. <b>NOTE:</b> Will require CE installation.	One per two libraries	AA947A
ESL E-Series Cross Link Expansion	Kit The Kit includes the expansion track assembly, belt, screws, straps, brackets cosmetic plate, Ethernet cables, wrench and Install Guide.	Up to three to support five library frames	AF903A

#### Multi-Frame (Cross Link) ESL E-Series Reference

	1	2	3	4	5	Max. Total = 5
Type allowed	286e A, 322e A 630e, 612e	630e, 712e	630e, 712e	630e, 712e	630e, 712e	
Cross Link kit required	1					Only 1 needed
Extension kit required			1 +	1	+1	Max. Total = 3
Min drives, per frame	4	4 <sup>B</sup>	4 <sup>B</sup>	4 <sup>B</sup>	4 <sup>B</sup>	Min. Total = (4 * # of frames) + 1
Max drives, per frame	20 <sup>C</sup>	24 <sup>C</sup>	8 <sup>C</sup>	8 <sup>C</sup>	8 <sup>C</sup>	Max. Total = 44
Command View TL and Secure Manager	1 CV, 1 SM					Only 1 needed for whole system
Installation and start-up service	1					Only 1 needed
Additional day start-up service		1	1 +	1 +	1 +	Max. Total = 4
Additional 1/2 day start-up service		1	1 +	1 +	1 +	Max. Total = 4
<b>NOTES:</b>						

**CAUTION:** All drive clusters -- except the last cluster in the last frame -- should have 4 drives each. Otherwise, "phantom" drives will be reported, leading to configuration errors.

<sup>A</sup> 286e and 322e as the 1st frame must be fully licensed up to maximum slots

<sup>B</sup> The "last" frame may contain a minimum of 1 cluster with 1 drive

<sup>C</sup> Total drives in all frames must be <45

### Related Options

	Description	Part Number
ESL E-Series Tape Library Upgrade Kits	ESL E-Series LTO-4 Ultrium 1840 FC Drive Upgrade Kit	AH194A
	ESL E-Series LTO-3 Ultrium 960 FC Drive Upgrade Kit	AD595A
	ESL E-Series SDLT 600 Drive Upgrade Kit	AA946A
	<p><b>NOTE:</b> The HP StorageWorks SDLT 600 Tape Drive includes support for WORM (Write-Once, Read-Many) functionality. WORM implementation is dependent on the backup application and more information on which applications support WORM can be found at: <a href="http://www.hp.com/go/connect">http://www.hp.com/go/connect</a>.</p> <p>WORM technology provides an enhanced level of security against accidental or malicious alteration of data on tape cartridges. WORM can be important when implementing data retention policies to be compliant with regulations regarding the storage of data on non-rewritable, non-erasable media. The SDLT 600 tape drive ships with support for WORM and can be set to WORM mode using the backup application. Once the cartridge has been set up for WORM, you will be unable to erase or overwrite the data on it, although you will be able to append data until the cartridge is full. WORM media can be read as often as required. When implementing WORM an unformatted or blank Super DLTape II 600GB data cartridge is required.</p>	
	ESL E-Series Drive Cluster	AA938A
	ESL E-Series LTO-4 Ultrium 1840 Internal Network Kit	AH997A
	ESL E-Series e2400-160 FC Interface Controller	AA960A
	ESL E-Series e2400-FC 2Gb Interface Controller	AA928A
	ESL E-Series e2400-FC 4G Interface Controller	AD576A
	ESL E-Series Ultrium Removable Magazine Kit	AA944A
	ESL E-Series SDLT Removable Magazine Kit	AA945A
	ESL E-Series Removable Magazine Conversion Kit	AD548A
	ESL E-Series Ultrium Mixed Media Kit	AD546A
	ESL E-Series SDLT Mixed Media Kit	AD547A
	ESL E-Series Cross Link Kit	AA947A
	ESL E-Series Cross Link Expansion Kit	AF903A
HP StorageWorks Command View for Tape Libraries	Command View for ESL, License <b>NOTE:</b> Please reference the Extended Tape Library Architecture QuickSpecs for more information at <a href="http://www.hp.com/go/automated">http://www.hp.com/go/automated</a>	343374-B21
HP StorageWorks Secure Manager for Tape Libraries	Secure Manager for ESL, License <b>NOTE:</b> Please reference the Secure Manager ESL QuickSpecs for more information at <a href="http://www.hp.com/go/automated">http://www.hp.com/go/automated</a>	343376-B21

### Related Options

<b>Media</b>	HP LTO4 Ultrium 1.6TB RW Data Cartridge (1 pack)	C7974A
	HP LTO4 Ultrium 1.6TB WORM Data Cartridge (1 pack)	C7974W
	HP Ultrium 800GB RW Data Cartridge (1 pack)	C7973A
	HP Ultrium 800GB WORM Data Cartridge (1 pack)	C7973W
	HP Ultrium 400GB data cartridge (1 pack)	C7972A
	HP Ultrium Universal Cleaning Cartridge (1 pack)	C7978A
	HP LTO4 Ultrium RW Bar Code Labels (100 pack)	Q2009A
	HP LTO4 Ultrium WORM Bar Code Labels (100 pack)	Q2010A
	HP Ultrium 3 RW Bar Code Labels (100 pack)	Q2007A
	HP Ultrium 3 WORM Bar Code Labels (100 pack)	Q2008A
	HP Ultrium 2 Bar Code Labels (100 pack)	Q2002A
	HP SDLT 600 GB Data Cartridge	Q2020A
	HP SDLT 600 Bar Code Labels	Q2006A

#### Non-Custom Labeled Data Cartridges

**NOTE:** Non-Custom labels will come pre-labeled with a pre-determined number sequence.

HP LTO4 Ultrium 1.6TB RW Non-Custom Labeled Data Cartridge (20 pack)	C7974AN
HP Ultrium 800GB RW Non-Custom Labeled Data Cartridge (20 pack)	C7973AN
HP Ultrium 400GB Non-Custom Labeled Data Cartridge (20 pack)	C7972AN
HP Ultrium 200GB Non-Custom Labeled Data Cartridge (20 pack)	C7971AN

#### Custom labeled Data Cartridges

**NOTE:** Custom labeled products allow customers to customize a specific sequence printed on each label.

HP LTO4 Ultrium 1.6TB RW Custom Labeled Data Cartridge (20 pack)	C7974AL
HP LTO4 Ultrium 1.6TB WORM Custom Labeled Data Cartridge (20 pack)	C7974WL
HP Ultrium 800GB RW Custom Labeled Data Cartridge (20 pack)	C7973AL
HP Ultrium 800GB WORM Custom Labeled Data Cartridge (20 pack)	C7973WL
HP Ultrium 400GB Custom Labeled Data Cartridge (20 pack)	C7972AL
HP Ultrium 200GB Custom Labeled Data Cartridge (20 pack)	C7971AL

#### Media Kits

HP Ultrium 200 GB Storage Media Kit	C8013A
HP Ultrium 400 GB Storage Media Kit	C8014A

**NOTE:** Kit includes 20 data cartridges, one cleaning cartridge, 20 colored labels, a protective carrying case that can be used to securely store or transport data cartridges, one copy of "The Essentials of Successful Tape Backup," and one copy of HP StorageWorks Data Protector Express Evaluation Software (60 day free trial).

### Host Bus Adapters and Controllers for ProLiant Servers

**NOTE:** For a complete list of supported HBA's, please visit: <http://www.hp.com/go/ebs>.

### Related Options

#### Host Bus Adapters and Controllers for Alpha Servers

**NOTE:** For a complete list of supported HBA's, please visit: <http://www.hp.com/go/ebs>.

#### Fibre Channel Cables

**NOTE:** Additional Fibre Channel Cables are required. Order one cable per Interface Controller, selecting cable length and converter type to match the appropriate environment.

2m SW LC/SC FC Cable Kit	221691-B21
5m SW LC/SC FC Cable Kit	221691-B22
15m SW LC/SC FC Cable Kit	221691-B23
2m SW LC/LC FC Cable Kit	221692-B21
5m SW LC/LC FC Cable Kit	221692-B22
15m SW LC/LC FC Cable Kit	221692-B23

#### Power Cord

**NOTE:** THIS PRODUCT CAN ONLY BE USED WITH AN HP APPROVED POWER CORD FOR THE CUSTOMER'S SPECIFIC GEOGRAPHIC REGION. ORDER TWO POWER CORDS FOR EACH LIBRARY. ALL CORDS ARE RATED AT 250 VAC AND 16 AMPS.

**WARNING:** Use of a non-HP approved power cord may result in (1) use of a power cord that does not meet individual country specific safety requirements; (2) a power cord with insufficient conductor ampacity that could result in overheating with potential personal injury and/or property damage; and/or (3) an unapproved power cord could fracture resulting in the internal contacts being exposed which potentially could subject the user to a shock hazard. Use ONLY an HP approved power cord for your particular country. HP disclaims all liability in the event a non-HP approved power cord is used.

HP Power Cord, North America and Japan, NEMA L6-20P Plug	340653-001
HP Power Cord, Universal PDU, C20 Plug	E7804A
HP Power Cord, Custom Applications, No Plug	E7806A
<b>NOTE:</b> This power cord should only be installed by a qualified electrician	
HP Power Cord, Europe, CEE 7/7 Plug (Regular or Standard Chord)	AF576A
HP Power Cord, Europe, IEC309 Plug (Splash-proof or waterproof)	AF581A
HP Power Cord, China, GB16C Plug	AF584A
HP Power Cord, Israel, C19 straight 2.5 meter plug	AF583A
HP Power Cord, Brazil, AR20S Plug	AF586A

**NOTE:** Order Local power cords separately, pairs are required.

### Technical Specifications

<b>Dimensions</b>	<b>Form Factor</b>	<b>Free standing</b>		
	<b>Physical (HxWxD)</b>	75 x 30 x 50 in (191 x 76 x 127 cm)		
	<b>Shipping (HxWxD)</b>	80 x 48 x 56 in (203.2 x 121.9 x 142.2 cm)		
<b>Weight</b>	<b>Out of box (24 drives)</b>	1,294 lbs (483 kg)		
	<b>Shipping (24 drives)</b>	1,459 lbs (544.6 kg)		
<b>SCSI Identification</b>	<b>Product ID</b>	ESL E-Series		
	<b>Vendor ID</b>	HP		
<b>Control Panel</b>	Library Status			
	Load Port controls			
	Library Diagnostics			
	Basic Library Operations			
	Library, Drive, Interface Controller remote manageability will be handled via Command View Tape Library			
<b>Host Interface</b>	Fibre Channel, 4Gb/2Gb/1Gb Multi-mode optical, LC connector			
<b>Configurations</b>	<b>Drives installed in library</b>	<b>ESL 712e Cartridges</b>	<b>ESL 630e Cartridges</b>	
	1-4	712	630	
	5-8	698	618	
	9-12	684	606	
	13-16	670	594	
	17-20	656	582	
	21-24	642	570	
<b>Drive Performance (native)</b>		<b>LTO-4 Ultrium 1840 FC</b>	<b>LTO-3 Ultrium 960 FC</b>	<b>SDLT 600</b>
	<b>Native Capacity</b>	800 GB	400 GB	300GB
	<b>Native Transfer Rates</b>	120 MB/s	80 MB/s	36 MB/S
<b>Maximum Storage Capacity</b>		<b>ESL 712e</b>	<b>ESL 630e</b>	
	<b>Native Capacity</b>	2836 TB	941 TB	
	<b>Compressed Capacity</b>	5673 TB	1882 TB	
	<b>NOTE: Compressed data listed above is assuming 2:1 compression.</b>			
<b>Input/Output Port</b>	ESL 712e	6 removable magazines (each with 8 cartridges)		
	ESL 630e	6 removable magazines (each with 7 cartridges)		
	ESL 322e	6 removable magazines (each with 8 cartridges)		
	ESL 286e	6 removable magazines (each with 7 cartridges)		
<b>Initialization (cartridge inventory) time</b>	Less than 3 minutes, fully loaded with labeled cartridges			
<b>Cartridge Swap Time</b>	18 to 20 seconds, consisting of two Move Medium commands			
<b>Input Requirements</b>	Auto-range to domestic and international AC voltages			
	Nominal / Range Line	50 Hz / 60Hz		
	Frequency			
	Range Line Voltage	200 VAC to 240 VAC		
	Typical Input Current	8A max		
<b>Power Requirement</b>	Two IEC 320 C19 Male connector inside back door			



### Technical Specifications

<b>Power Consumption</b>	VA max 1600W (Standard 2N power)
<b>External Cables</b>	See "Related Options" Section
<b>Connectors</b>	FC LC Connector
<b>Drives Supported</b>	SCSI Drives: SDLT 600 Native Fibre Drives: LTO-4 Ultrium 1840 FC, LTO-3 Ultrium 960 FC
<b>Maximum Number of Drives</b>	24 drives in a single frame 44 drives with expansion cabinets
<b>Acoustic Noise</b>	Sound Power Level Operating 7.3 Bel Idle 7.3 Bel
<b>Reliability (Library Only)</b>	<b>MTBF</b> 250,000 power-on hours 100% duty cycle <b>MSBF</b> 3 million load/unload cycles (rated) <b>MTRR</b> Less than 30 minutes
<b>Relative Humidity (non-condensing)</b>	<b>Operating</b> Operating: 20% to 80% non-condensing <b>Shipping</b> Shipping & Storage: 5% to 95% non-condensing
<b>Temperature Range</b>	<b>Operating</b> Dry Bulb: 15° to 32° C/59° to 90° F Wet Bulb: 25° C (77° F) maximum <b>Shipping</b> Dry Bulb: -40° to 66° C/-40° to 151° F Wet Bulb: 46° C (115° F) maximum
<b>Regulatory Compliance</b>	<b>Safety</b> UL60950-1:2003,1st ED. (USA); IEC 60950:1999 3rd ED; 60950:2000 (international) <b>EMC</b> CISPR 22/class A, CISPR 24, FCC/Class A <b>Country Regulatory Compliance</b> For country specific compliance contact your local sales representative. <b>Regulatory Model Number</b> LVLDC-0301

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For tape drives and media, 1 GB = 1 billion bytes. Actual formatted capacity is less.