

Overview

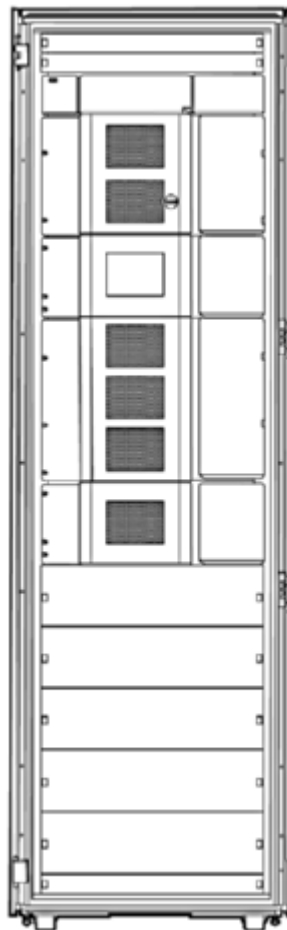
The HP Enterprise Modular Library (EML) E-Series Tape Libraries provide reliability, scalability and manageability with robust data protection and investment protection in heterogeneous Storage Area Network (SAN) environments. The EML delivers superior data availability with protection against SAN event disruptions using the built in HP Extended Tape Library Architecture (ETLA). ETLA intercepts rogue I/O requests from applications or new servers and prevents those requests from interrupting backup or recovery processes. You can also flexibly scale to 3.1 PB compressed (2.5:1) storage capacity or 22 TB/hr compressed (2.5:1) throughput performance from rack-ready or factory racked configurations. Easily manage the EML remotely while simplifying complex environments with logical library partitioning. The EML Tape Libraries are fully integrated into the HP portfolio through interoperability and compatible capacity points. The EML tape library is extensively tested in the HP Enterprise Backup Solutions (EBS) to ensure that it works in the most rigorous environment.

Documentation is provided to enable you to configure, design and implement the best data protection solution for your environment. Entry configurations start at 71 slots. Maximize capacity with 505 slots or maximize performance with 16 LTO-6 Ultrium 6650 FC tape drives, 442 slots. The LTO-6 Ultrium 6650, LTO-5 Ultrium 3280 and LTO-4 Ultrium 1840 tape drives all provide encryption support. The EML delivers value through high reliability data protection, agility through modular scalability and simplicity through ease of management.

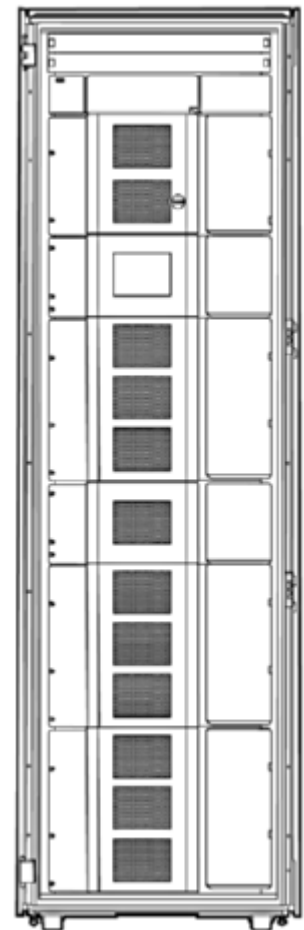
HP EML E-Series Tape Libraries



**103e Configuration
or rack-ready EML71e**



245e Configuration



505e Configuration

Overview

What's New

New EML E-Series Enhancements:

- EML E-Series now support LTO-6 Ultrium 6650 FC tape drives

Key Features

- Scalable capacity from 71 slots to over 500 slots
- Scalable performance up to 16 Ultrium tape drives with 442 slots events
- TapeAssure: Advanced management of drive and media health, utilization, lifecycle, performance monitoring and tracking
- Easy-to-enable AES 256-bit embedded hardware encryption with compression (LTO-6, LTO-5 and LTO-4 Ultrium drives format only)
- Remote Management via Command View for Tape Libraries software or the command line interface
- Easy-to-use Touch-screen Graphical User Interface
- User configurable load ports with removable magazines
- Certified under the HP Enterprise Backup Solutions (EBS)
- LTO-6 Ultrium 6650, LTO-5 Ultrium 3280 or LTO-4 Ultrium 1840 Fibre Channel Tape drives
- Factory rack and rack-ready configurations
- 2,000,000 Mean Swaps Between failure

Customer Benefits

- Scalable Investment Protection: The EML tape library expands in capacity and performance as customer needs change. Through the addition of expansion modules, the EML library scales within the rack footprint to 16 drives and 442 slots for maximum performance or 8 drives and 505 slots for maximum capacity. For field upgrades, follow the rules in the
- Configuration Information" section of this document. Libraries with an "A" suffix part number (for example AG104A) can be upgraded with parts with a "B" suffix, but not vice-versa.
- Manageable: The EML library has been designed to ease the management burdens of data protection in your SAN. Utilizing HP Command View for Tape Libraries Software, management, diagnostic, and configuration features can be accessed from anywhere. Additionally, Command View EVA and Command View for Tape Libraries Software may co-exist on the same general purpose server.
- Compatible: Certified through the HP Enterprise Backup Solutions (EBS), the EML tape library is compatible with leading backup software packages, operating systems, servers, and disk arrays.
- Performance: Performance to meet critical backup windows is achieved through use of state-of-the-art HP Ultrium tape drives.
- Compact: Using a standard rack footprint, the EML library integrates easily into the rack-grid of your data center.
- Resiliency and Reliability: Highly reliable robotics and tape drives coupled with optional redundant power supplies and redundant cooling provide resiliency should a component fail.
- 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. The EML tape libraries can be factory integrated for rapid deployment or mounted at the customer site with rack-ready configurations.

Overview

Family Configuration Comparisons (Examples)

Configuration	EML 71e Rack-ready Configuration	EML 103e Base Configuration	EML 245e	EML 442e Maximum Performance Configuration	EML 505e Maximum Capacity Configuration
# of drives possible	2-4	1-4	1-8	1-16	1-8
# of slots	71 5 in configurable load port	103 5 in configurable load port	245 15 in configurable load port	442 35 in configurable load port	505 35 in configurable load port
Product height within rack	12U + 1U (LTO-6, LTO-5 and LTO-4)*	12U + 1U (LTO-6, LTO-5 and LTO-4)*	24U + 1U (LTO-6, LTO-5 and LTO-4)*	40U + 1U (LTO-6, LTO-5 and LTO-4)*	40U + 1U (LTO-6, LTO-5 and LTO-4)*
Maximum Capacity LTO-6 (2.5:1 compression)	443 TB (LTO-6)	643 TB (LTO-6)	1.5 PB (LTO-6)	22.4TB/hr (LTO-6)	3.1 PB (LTO-6)
Maximum throughput LTO-6 (2:1 compression)	5.6TB/hr (LTO-6)	5.6TB/hr (LTO-6)	11TB/hr (LTO-6)	22.4TB/hr (LTO-6)	11TB/hr (LTO-6)

* For all EML library configurations with LTO-6 Ultrium 6650, LTO-5 Ultrium 3280 and LTO-4 Ultrium 1840 drive(s), an additional 1U height is required for the EML Internal Network Kit.

Configuration/slots	Tape Drives	I/F Controller Cards	Redundant Power Supply
103e/103	1-4	1 (LTO-6) 1 (LTO-5) 1 (LTO-4)	0-1
245e/245	1-8	1 (LTO-6) 1 (LTO-5) 1 (LTO-4)	0-2
348e/348	1-12	1 (LTO-6) 1 (LTO-5) 1 (LTO-4)	0-3
375e/375	1-8	1 (LTO-6) 1 (LTO-5) 1 (LTO-4)	0-2
442e/442	1-16	1 (LTO-6) 1 (LTO-5) 1 (LTO-4)	0-4
469e/469	1-12	1 (LTO-6) 1 (LTO-5) 1 (LTO-4)	0-3
505e/505	1-8	1 (LTO-6) 1 (LTO-5) 1 (LTO-4)	0-2

NOTE: To order an EML library factory integrated (CTO) library, begin by selecting the EML 103e Base Library sku (AG104C). Next add the following #0D1 options for integration into the EML 103e Base Library. Select the number of required slots, the number of tape drives, I/F controller card or cards (1 card for LTO-6, LTO-5 and LTO-4) and the number of redundant power supplies.

NOTE: The EML71e Configuration is not CTO. It is a rack-ready, field rack-mount configuration that can be upgraded to any EML configuration.

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Rack-ready Configuration (EML 71e)

Logic	Options	Component	Quantity	Comments
71e LTO-5 Tape Library -71 Slots -Bundle includes drives, internal network kit, interface controller and basic management software	AW680B	HP EML71e LTO-5 Ultrium 3280 Tape Library	1	Required; Bundles two HP EML LTO-5 Ultrium 3280 FC drives, HP EML e2400-FC 4Gb Controller, HP EML Internal Network Kit and full functionality special edition HP Command View for Tape Libraries Software for EML71e only (no license key required). Permanent license included with capacity upgrade
71e LTO-4 Tape Library -71 Slots -Bundle includes drives, internal network kit, interface controller and basic management software	AH876B	HP EML 71e LTO-4 Ultrium 1840 Tape Library	1	Required; Bundles two HP EML LTO-4 Ultrium 1840 FC drives, HP EML e2400-FC 4Gb Controller, HP EML Internal Network Kit and full functionality special edition HP Command View for Tape Libraries Software for EML71e only (no license key required). Permanent license included with capacity upgrade
Additional Options				
Choose incremental drives	C0K98A AW679B or AH682B	HP EML LTO6 Ultrium 6650 FC Drive or HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO4 Ultrium 1840 FC Drive	0-2	Optional Field installed
EML Secure Manager	T3664A	Secure Manager Tape Library Software for EML	0-1	Optional
Licensed Capacity Upgrade	AH063A	HP EML 71e Licensed Capacity Upgrade	0-1	Optional upgrade of EML 71e to EML103e capacity and configuration; includes permanent license for HP Command View for Tape Libraries Software

CTO Configurations (EML 103e, 245e, 348e, 375e, 442e, 469e and 505e)

Logic	Options	Component	Quantity	Comments
103 Slots	AG104C	HP EML 103e Base Library	1	Required



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	252663-B24 #0D1	PDU, 16A High Voltage Modular -WW	1 or 2	1 Required Second Optional
	T3663A	EML Command View License	1	Required
Library Configure				
Choose drives	C0K98A #0D1 AW679B #0D1or AH682B #0D1	HP EML LTO6 Ultrium 6650 FC Drive or HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO4 Ultrium 1840 FC Drive	1-4	Must be same drive type throughout for CTO
Choose Controller Card Quantity	AD569C#0D1	HP EML e2400-FC 4Gb Controller	1	For EML libraries with LTO-6, LTO-5 or LTO-4 drive(s): 1 HP EML e2400-FC 4Gb Controller
Choose Internal Network Kit	AJ001A #0D1	HP EML Internal Network Kit	0 or 1	1 kit for each EML Library with LTO-6, LTO-5 or LTO-4 drive(s)
Choose Redundant Power Supply	AD563B #0D1	HP EML Redundant Power Supply	0 or 1	Optional
Additional Options				
EML Secure Manager	T3664A	Secure Manager Tape Library Software for EML	0-1	Optional
245 Slots				
	AG104C	HP EML 103e Base Library	1	Required
	AG112C #0D1	HP EML 245e Expansion Module	1	Required, contains qty 1 AD565C and qty 1 AD566C
	252663-B24 #0D1	PDU, 16A High Voltage Modular -WW	1or 2	1 Required Second Optional
	T3663A	EML Command View License	1	Required
Library Configure				
Choose drives	C0K98A #0D1 AW679B #0D1or AH682B #0D1	HP EML LTO6 Ultrium 6650 FC Drive or HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO4 Ultrium 1840 FC Drive	1-8	Must be same drive type throughout for CTO
Choose Controller Card Quantity	AD569B #0D1	HP EML e2400-FC 4Gb Controller	1	For EML libraries with LTO-6, LTO-5 or LTO-4 drive(s): 1 HP EML e2400-FC 4Gb Controller
Choose Internal Network Kit	AJ001A #0D1	HP EML Internal Network Kit	0 or 1	1 kit for each EML Library with LTO-6, LTO-5 or LTO-4 drive(s)
Choose Redundant Power Supply	AD563B #0D1	HP EML Redundant Power Supply	0 or 2	Optional
Additional Options				

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EML Secure Manager	T3664A	Secure Manager Tape Library Software for EML	0-1	Optional
348 Slots	AG104C	HP EML 103e Base Library	1	Required
	AG112C #0D1	HP EML 245e Expansion Module	1	Required, contains qty 1 AD565C and qty 1 AD566C
	AD565C #0D1	HP EML 4-Drive Expansion Module	1	Required
	252663-B24 #0D1	PDU, 16A High Voltage Modular -WW	2	Required
	T3663A	EML Command View License	1	Required
Library Configure				
Choose drives	C0K98A #0D1 AW679B #0D1or AH682B #0D1	HP EML LTO6 Ultrium 6650 FC Drive or HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO4 Ultrium 1840 FC Drive	1-12	Must be same drive type throughout for CTO
Choose Controller Card Quantity	AD569C #0D1	HP EML e2400-FC 4Gb Controller	1	For EML libraries with LTO-6, LTO-5 or LTO-4 drive(s): 1 HP EML e2400-FC 4Gb Controller
Choose Internal Network Kit	AJ001A #0D1	HP EML Internal Network Kit	0 or 1	1 kit for each EML Library with LTO-6, LTO-5 or LTO-4 drive(s)
Choose Redundant Power Supply	AD563A #0D1	HP EML Redundant Power Supply	0 or 3	Optional
Additional Options				
EML Secure Manager	T3664A	Secure Manager Tape Library Software for EML	0-1	Optional
375 Slots	AG104C	HP EML 103e Base Library	1	Required
	AG112C #0D1	HP EML 245e Expansion Module	1	Required, contains qty 1 AD565C and qty 1 AD566C
	AD564B #0D1	HP EML Capacity Expansion Module	1	Required
	252663-B24 #0D1	PDU, 16A High Voltage Modular -WW	1 or 2	1 Required Second Optional
	T3663A	EML Command View License	1	Required
Library Configure				

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Choose drives	C0K98A #0D1 AW679B #0D1or AH682B #0D1	HP EML LTO6 Ultrium 6650 FC Drive or HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO4 Ultrium 1840 FC Drive	1-8	Must be same drive type throughout for CTO
Choose Controller Card Quantity	AD569C #0D1	HP EML e2400-FC 4Gb Controller	1	LTO-6, LTO-5 or LTO-4 drive(s): 1 HP EML e2400-FC 4Gb Controller
Choose Internal Network Kit	AJ001A #0D1	HP EML Internal Network Kit	0 or 1	1 kit for each EML Library with LTO-6, LTO-5 or LTO-4 drive(s)
Choose Redundant Power Supply	AD563B #0D1	HP EML Redundant Power Supply	0 or 2	Optional
Additional Options				
EML Secure Manager	T3664A	Secure Manager Tape Library Software for EML	0-1	Optional
442 Slots				
	AG104C	HP EML 103e Base Library	1	Required
	AG112C #0D1	HP EML 245e Expansion Module	1	Required, contains qty 1 AD565C and qty 1 AD566C
	AD565C #0D1	HP EML 4-Drive Expansion Module	2	Required
	252663-B24 #0D1	PDU, 16A High Voltage Modular -WW	2	Required
	T3663A	EML Command View License	1	Required
Library Configure				
Choose drives	C0K98A #0D1 AW679B #0D1or AH682B #0D1	HP EML LTO6 Ultrium 6650 FC Drive or HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO4 Ultrium 1840 FC Drive	1-16	Must be same drive type throughout for CTO
Choose Controller Card Quantity	AD569C #0D1	HP EML e2400-FC 4Gb Controller	1	For EML libraries with LTO-6, LTO-5 or LTO-4 drive(s): 1 HP EML e2400-FC 4Gb Controller
Choose Internal Network Kit	AJ001A #0D1	HP EML Internal Network Kit	0 or 1	1 kit for each EML Library with LTO-6, LTO-5 or LTO-4 drive(s)
Choose Redundant Power Supply	AD563B #0D1		0 or 4	Optional
Additional Options				
EML Secure Manager	T3664A	Secure Manager Tape Library Software for EML	0-1	Optional



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469 Slots	AG104C	HP EML 103e Base Library	1	Required
	AG112C #0D1	HP EML 245e Expansion Module	1	Required, contains qty 1 AD565C and qty 1 AD566C
	AD565C #0D1	HP EML 4-Drive Expansion Module	1	Required
	AD564B #0D1	HP EML Capacity Expansion Module	1	Required
	252663-B24 #0D1	PDU, 16A High Voltage Modular -WW	2	Required
	T3663A	EML Command View License	1	Required
Library Configure				
Choose drives	C0K98A #0D1 AW679B #0D1or AH682B #0D1	HP EML LTO6 Ultrium 6650 FC Drive or HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO4 Ultrium 1840 FC Drive	1-12	Must be same drive type throughout for CTO
Choose Controller Card Quantity	AD569C #0D1	HP EML e2400-FC 4Gb Controller	1	For EML libraries with LTO-6, LTO-5 or LTO-4 drive(s): 1 HP EML e2400-FC 4Gb Controller
Choose Internal Network Kit	AJ001A #0D1	HP EML Internal Network Kit	0 or 1	1 kit for each EML Library with LTO-6, LTO-5 or LTO-4 drive(s)
Choose Redundant Power Supply	AD563B #0D1	HP EML Redundant Power Supply	0 or 3	Optional
Additional Options				
EML Secure Manager	T3664A	Secure Manager Tape Library Software for EML	0-1	Optional
505 Slots				
505 Slots	AG104C	HP EML 103e Base Library	1	Required
	AG112C #0D1	HP EML 245e Expansion Module	1	Required, contains qty 1 AD565C and qty 1 AD566C
	AD564B #0D1	HP EML Capacity Expansion Module	2	Required
	252663-B24 #0D1	PDU, 16A High Voltage Modular -WW	1 or 2	1 Required Second Optional
	T3663A	EML Command View License	1	Required
Library Configure				
Choose drives	C0K98A #0D1 AW679B #0D1or AH682B #0D1	HP EML LTO6 Ultrium 6650 FC Drive or HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO4 Ultrium 1840 FC Drive	1-8	Must be same drive type throughout for CTO

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Choose Controller Card Quantity	AD569C #0D1	HP EML e2400-FC 4Gb Controller	1	For EML libraries with LTO-6, LTO-5 or LTO-4 drives: 1 HP EML e2400-FC 4Gb Controller
Choose Internal Network Kit	AJ001A #0D1	HP EML Internal Network Kit	0 or 1	1 kit for each EML Library with LTO-6, LTO-5 or LTO-4 drive(s)
Choose Redundant Power Supply	AD563B #0D1	HP EML Redundant Power Supply	0 or 2	Optional
Additional Options				
EML Secure Manager	T3664A	Secure Manager Tape Library Software for EML	0-1	Optional

Product Highlights

Scalability

The HP Enterprise Modular Library provides investment protection as your environment grows and changes. With superb scalability, the EML can flexibly scale to 3.1 PB compressed (2.5:1) storage capacity or 22 TB/hr compressed (2.5:1) throughput performance from rack-ready or factory racked configurations. Additionally, certification under the Enterprise Backup Solutions (EBS) is a continuing process. As servers and HBAs continue to change, backup software packages evolve and improve, the EML E-Series tape library will expand its compatibility.

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 (cooling fans and power supplies). With optional redundant power distribution and power supplies the HP EML Tape Libraries offer the best in high availability for continuous operation. The EML provides superior data availability with protection against SAN event disruptions. Also, this library ensures heterogeneous SAN interoperability and solution support (Certified as an HP Enterprise Backup Solutions (EBS) and uses highly dependable HP Ultrium LTO tape drives designed for 24x7 operations.

Data Privacy

To greatly enhance data privacy, HP EML Tape Libraries are available with LTO-6 Ultrium 6650, LTO-5 Ultrium 3280 and LTO-4 Ultrium 1840 hardware encrypting tape drives for secure high performance backups meeting consortium specifications. 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 Enterprise Backup Solutions (EBS) website at: www.hp.com/go/ebs. The encryption on LTO-6, LTO-5 and LTO-4 media occurs with or without compression, and without speed or capacity penalties. Hardware encryption is not supported on LTO-2 and LTO-3 tapes. LTO-6, LTO-5 and LTO-4 use 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-6, LTO-5 and LTO-4 tape drive(s) are designed to be compliant with the standard for tape drive security (IEEE 1619.1).

ESKM: The HP Enterprise 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-6, LTO-5 and LTO-4 enterprise tape libraries (EML & ESLG3). In addition, the ESKM provides strong auditable security and reliable lifetime key archival. The ESKM and LTO-6/LTO-5/LTO-4 drive encryption in the EML library provides a complete and secure privacy solution to protect customers' confidential data. Please note Secure Manager license is required for CVTL to enable connection to ESKM.

For further information on the ESKM please visit: www.hp.com/go/eskm

HP LTO Ultrium Technology

HP 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 Ultrium Tape Drives can be interchanged directly with Ultrium Tape Drives from other vendors.

Product Highlights

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.
-

HP Ultrium Storage Media

HP recommends that you use HP-branded cartridges in the HP EML 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 EML Internal Network Kit

The purpose of the EML Internal Network Kit is to provide a private management network inside the library to connect the Interface Manager (IM) to the LTO-6, LTO-5 and LTO-4 drives.

Software Components

TapeAssure

HP TapeAssure makes managing, optimizing and archiving on the HP EML and ESL G3 libraries faster and easier. TapeAssure provides comprehensive summaries and detailed information about the status, performance, utilization, and health of all tape drives and media for every HP Enterprise library in the SAN. This data can be exported on demand or at scheduled times to a comma-separated-value (CSV) file for analysis with spreadsheet programs or custom scripts.

NOTE: Minimum system requirements apply. For additional details and further information on TapeAssure please visit: <http://www.hp.com/go/tapeassure>

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

Command View TL 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 EML
- 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

Secure Manager EML

- 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
- Paths to robotics can be separated between multiple independent SANs for isolation purposes

Software Components

HP Data Protector Software

HP Data Protector Software automates high performance backup and recovery, from disk or tape, over unlimited distances, to enable 24x7 business continuity and improve IT resource utilization. Data Protector Software responds to the pressure for lower IT costs and greater operational efficiency by offering acquisition and deployment costs which are 30 - 70 % less than competition. The license model is very simple and easy to understand, helping to reduce complexity. Extensive scalability and features for continuous backup and recovery operations enable growth with a single product. A superb solution, no other software can integrate better with the HP market-leading line of disk and tape family of products, as well as with other heterogeneous storage infrastructures. This solution offers the unique advantage of being able to source hardware, software, and award winning service offerings from a single, trusted source. Data Protector Software simplifies the use of complex backup and recovery procedures with the fastest installation, automated routine tasks, and easy-to-use features. The centralized multi-site management easily allows implementing multi-site changes, adapting in real time to changing business requirements. Appropriate for medium and large companies in any industry, Data Protector Software is the ideal solution to reduce IT costs and complexity while remaining reliable and scalable to grow from single server environments to the largest distributed enterprise infrastructures.

If you are using HP Data Protector Software with your EML tape library, a FREE 61-250 slot License-to-Use entitlement certificate is included in the box.

For further information, please visit our web page at <http://www.hp.com/go/dataprotector>

HP Library and Tape Tools (L&TT)

The EML Tape Library configurations are supported on HP's industry-leading diagnostic tool - HP 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>.

Linear Tape File System (LTFS)

HP LTFS makes tape self-describing, file-based, and easy-to-use, it also provides users with the ability to use standard file operations on tape media for accessing, managing and sharing files with an interface that behaves just like a hard disk. In addition, LTFS provides the ability to share data across platforms, as you would with a USB drive or memory stick. Simply load a tape into the drive, mount it into the file system, and it becomes visible as a disk. For more information, including user guide, downloads and compatibility, visit: <http://www.hp.com/go/ltfs>

HP StoreOpen Automation

HP StoreOpen Automation is a free downloadable application that extends the LTFS capability to HP Autoloaders, HP MSL and ESL Tape Libraries. By simply mounting the tape autoloader or library as a file system, the intuitive HP StoreOpen Automation interface makes it easier to copy, rename, create or move files. When a cartridge folder is selected for use, that tape is automatically moved to an available tape drive.

When two drives are present, HP StoreOpen Automation supports tape-to-tape operations. HP StoreOpen Automation takes advantage of other standard HP Tape Library features including data encryption and HP TapeAssure.

For more information, including user guide, downloads and compatibility, visit: <http://www.hp.com/go/HPStoreOpen>

Software Components

HP Storage Management Pack for Microsoft System Center

The HP Management Pack for Systems Center Operations Manager provides seamless integration with Microsoft Systems Center Operations Manager and now System Center Essentials by integrating predefined discovery and state monitoring policies, event processing rules and tasks, and diagram and topology views for the storage system.

For more information:

http://h18000.www1.hp.com/products/quickspecs/14249_div/14249_div.html

HP Storage Management Pack can be downloaded free from the following website:

<https://h20392.www2.hp.com/portal/swdepot/displayProductInfo.do?productNumber=SCOM>

Compatibility

HP's Enterprise Backup Solutions (EBS) assures that your HP Enterprise Modular Library (EML) 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 EML tape libraries work seamlessly in many environments. HP EML 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 EML, check the tape backup compatibility pages on our web site at:

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

HP Server Compatibility

The HP EML Tape Libraries are supported on the following classes of HP systems:

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

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

OS Support

The HP EML E-Series Tape Libraries are supported on many popular operating systems. For the most up-to-date information, please visit the Enterprise Backup Solutions (EBS) compatibility matrix at <http://www.hp.com/go/ebs>.

Software Support

The HP EML E-Series Tape Libraries are supported on leading backup applications. For the most up-to-date information, please visit the Enterprise Backup Solutions (EBS) compatibility matrix at <http://www.hp.com/go/ebs>.

Service and Support, HP Care Pack, and Warranty Information

Warranty and Services Included with the Product EML Hardware: The warranty for this product consists of 1-year onsite, next business day.
NOTE: The HP EML 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.

EML Software: HP warrants that the Software media will be free of physical defects for a period of ninety (90) days from delivery. HP provides 1-year, 9x5 phone support to enhance the performance and availability of your software. Experienced Response Center engineers provide trustworthy advice on issues such as software features and use, problem diagnosis and resolution, and software defect identification.

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>

Service and Support **Technology Services for increased uptime, productivity and ROI**
Trust HP storage technology experts for every level of service and support. Our integrated portfolio of services for storage help customers reduce costs, optimize data, streamline storage management, and improve backup and recovery. Capitalizing on HP Storage Systems' capabilities requires a service partner who understands your increasingly complex environment. Team with the people who know HP infrastructure hardware and software best—the experienced professionals at HP Services.

Protect your business beyond warranty

Warranty protects against manufacturer defects, however warranty uplifts, such as HP Care Pack Services protect the business-by reducing downtime risks and providing operational consistency for mission-critical and standard business computing.

What HP Storage Technology Services can do for you

HP Storage Technology Services can help you design, deploy, test, integrate, support, and manage IT and infrastructure solutions. HP storage lifecycle support services offers a full spectrum of customer care—from technology support to complex migrations to complete managed services.

Choose the right level of support, deployment and integration services

HP support recommendations are designed to help you enhance technology operations and lower risk—and make it easier for you to seek the right balance between affordability and service-level commitments. Depending on your individual support needs, choose from three levels of care that cover the entire lifecycle to better address your needs—Optimized Care, Standard Care, and Basic Care. If none of our support recommendations meet your needs, we can tailor a service solution for your unique support requirements. Only HP brings together deep expertise, proactive and business critical support and a strong partner network—together with, a full set of infrastructure services designed to power a Converged Infrastructure.

Service and Support, HP Care Pack, and Warranty Information

Standard Care- maintains high level of uptime, along with expert help to cut the cost and complexity of implementation and support

HP Proactive Care 24x7- for a higher return on your storage investment, Proactive Care delivers hardware and software support services designed specifically for your technology; rapid access to Advanced Solution Center Specialists plus, Firmware/Software management and best practice advice. Customers can optimize the return on their IT investment and realize the advantage of running their business critical applications on virtualized infrastructure. **Plus, HP Proactive Select 10 credits per year**, select from an extensive menu of consultancy and technical services, such as onsite firmware upgrades, health checks, assessments, and education.

Additional Option:

HP Proactive Care Personalized Support - The HP Proactive Care Personalized Support option allows for an increased personalization of the Proactive Care support experience through the assignment of an Account Service Manager (ASM) who provides IT best practice advice to help address IT issues and projects. The ASM will develop an annual support plan, provide four days of operational and technical advice, and conduct semi-annual support reviews to ensure the Proactive Care service deliverables address the customer's priorities. This option is only available for Proactive Care customers and may be purchased once per environment.

HP Personalized Support Additional Day - Customers who require more time than is provided by the Personalized Support option can elect to purchase additional days through the Personalized Support Additional Day option. The time may be used to provide extra support reviews and/or more operational & technical advice.

Basic Care-Minimum recommended support

HP Foundation Care 24x7 Service - HP Foundation Care 24x7 connects you to HP 24 hours a day, seven days a week for assistance on resolving issues - hardware onsite response within four hours and software call back within two hours after opening your case. Three years' coverage recommended with HP Care Pack Service.

10 Proactive Select credits per year per array -HP Proactive Select is a flexible way to purchase services to fit your particular environment or situation. Working with an HP Account Support Manager, you select a package of services in the form of services credits that include proactive services spanning many technologies and processes, such as on-site firmware upgrades, health checks, assessments, and education. You tailor the service delivery to improve time to production, optimize performance, or build in continuous improvements.

Implementation

Installation:

Whichever level of care you select, consider our Installation and Startup Services for a smooth implementation:

HP Installation and startup service for HP Storage ESL, MSL, EML Tape Libraries - This comprehensive service provides for the implementation of HP StorageWorks ESL (Enterprise Storage Library), MSL (Midrange Storage Library), and EML (Enterprise Modular Library), products in SAN environments, including the installation of a Fibre Channel Interface Controller. Datasheet: <http://athp.hp.com/portal/go/5981-7355>

Related Services

HP Proactive Select Service (VLS healthcheck, Store Once backup health check)- HP Proactive Select services start with a proactive delivery plan that is developed together by an Account Support Manager (ASM) and the customer to identify IT goals a critical success factors. The ASM then recommends a selection of service activities that align with the objectives in the proactive delivery plan. Customers make the final decision on how credits are used. That decision is documented in the proactive delivery plan.

Service and Support, HP Care Pack, and Warranty Information

For more information www.hp.com/services/storage To learn more on HP Storage Services, please contact your HP sales representative or HP Authorized Channel Partner

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at www.hp.com/go/lookuptool

Configuration Information

Step 1 "Product" Rack-ready Configuration (not shipped in a rack)

NOTE: The HP EML71e Tape Library comes standard as a rack-ready unit and includes a rack-mount hardware specifically designed for field installation in HP 10000 G3 series racks. It does NOT ship with a rack.

Model Name**Model Description:****HP EML 71e LTO-5 Ultrium 3280 Tape Library****AW680B**

Two drive, 71 slot Ultrium cartridge tape library

- Supports up to 4 Fibre Channel Ultrium tape drives
- 2 PCI card slots available
- 5-slot load port with removable magazine

What's included in the box:

- EML 71e Library, 8U and 4U height modules including rack-mount hardware
- Two LTO-5 Ultrium 3280 tape drives
- HP EML Internal Network Kit, 1U height module includes rack-mount hardware
- e2400-FC 4Gb interface controller
- Includes full functionality special edition HP Command View for Tape Libraries Software for EML71e only (no license key required).
- " Sample media labels (LTO-6, LTO-5, LTO-5 WORM, LTO-4, LTO-4 WORM)
- Installation poster
- Documentation CD including User Guide and parts replacement information
- Safety Guide
- Warranty booklet
- Two drive, 71 slot Ultrium cartridge tape library
- Supports up to 4 Fibre Channel Ultrium tape drives
- 2 PCI card slots available
- 5-slot load port with removable magazine

NOTE: The EML 71e LTO-5 Ultrium 3280 Tape Library (AW680B) height is 12U. An additional 1U height is required for the EML Internal Network Kit.

NOTE: This is not a Configure-to-Order (CTO) library. It does not ship with a rack. Configure in an HP 10000 G3 series rack. Can be field upgraded to other EML configurations, therefore assure the destination rack accounts for the maximum intended scaling.

HP EML 71e LTO-4 Ultrium 1840 Tape Library**AH876B**

Two drive, 71 slot Ultrium cartridge tape library

- Supports up to 4 Fibre Channel Ultrium tape drives
- 2 PCI card slots available
- 5-slot load port with removable magazine

What's included in the box:

- EML 71e Library, 8U and 4U height modules including rack-mount

Configuration Information

- hardware
 - Two LTO-4 Ultrium 1840 tape drives
 - HP EML Internal Network Kit, 1U height module includes rack-mount hardware
 - e2400-FC 4Gb interface controller
 - Includes full functionality special edition HP Command View for Tape Libraries Software for EML71e only (no license key required).
 - Sample media labels (LTO-4, LTO-4 WORM) Installation poster
 - Documentation CD including User Guide and parts replacement information
 - Safety Guide
 - Warranty booklet
 - Two drive, 71 slot Ultrium cartridge tape library
 - Supports up to 4 Fibre Channel Ultrium tape drives
 - 2 PCI card slots available
 - 5-slot load port with removable magazine

NOTE: The EML 71e LTO-4 Ultrium 1840 Tape Library (AH876B) height is 12U. An additional 1U height is required for the EML Internal Network Kit.

NOTE: This is not a Configure-to-Order (CTO) library. It does not ship with a rack. Configure in an HP 10000 G3 series rack. Can be field upgraded to other EML configurations, therefore assure the destination rack accounts for the maximum intended scaling.

Step 2 - Additional Options

Select each option with quantities specified.

Model Name	Model Description with Parts Shipped:	Part Number
Secure Manager Tape Library Software for EML		T3664A
	Enables partitioning and access control of tape drives	Quantity: 1 per library
HP EML 71e Licensed Capacity Upgrade		AH063A
	License to electronically expand EML71e capacity from 71 slots to 103 slots. Also includes permanent license for Command View for Tape Libraries Software	Quantity: 1 per library

NOTE: If an EML71e is scaled/upgraded larger than the 12U 103-slot configuration then rack side panels and doors are required for regulatory compliance.

In the 42U HP 10K G3 rack:
Front door: supplied with rack, BW934A
Rear Door: supplied with rack
Side panel kit: BW906A

NOTE: End of configuration steps for rack-ready EML71e

Configuration Information

Step 1 - "Product" - Base Configuration (CTO Factory racking)

Select one:

Model Name:

Model Description:

HP EML 103e Base Tape Library

AG104C

Zero drive, 103 slot Ultrium cartridge tape library

- Supports up to 4 Fibre Channel Ultrium tape drives
- 2 PCI card slots available
- 5-slot load port with removable magazine

What's included in the box:

- EML 103e Base Library integrated in 42U rack with side and filler panels
- Sample media labels (LTO-5, LTO-5 WORM, LTO-4, LTO-4 WORM)
- Installation poster
- Documentation CD including User Guide and parts replacement information
- Safety Guide
- Warranty booklet

NOTE: All EML Configure-to-Order (CTO) libraries are built on this base including the 103e, 245e, 348e, 375e, 442e, 469e, and 505e configurations.

Step 2 - Required Options

Select each required option with quantities specified.

Model Name

Part Number

EML E-Series LTO-6 Ultrium 6650 FC Drive Kit

COK98A

Contents:

- HP LTO-6 Ultrium 6650 Fibre Channel tape drive integrated in EML canister
- Ethernet cable
- Installation poster

Quantity:
1 to 16 drives

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

EML E-Series LTO-5 Ultrium 3280 FC Drive Kit

AW679B

Contents:

- HP LTO-5 Ultrium 3280 Fibre Channel tape drive integrated in EML canister
- Ethernet cable
- Installation poster

Quantity:
1 to 16 drives

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



Configuration Information

EML E-Series LTO-4 Ultrium 1840 FC Drive Kit

AH682B

Contents:

- HP LTO-4 Ultrium 1840 Fibre Channel tape drive integrated in EML canister
- Ethernet cable
- Installation poster

Quantity:
1 to 16 drives

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

HP EML 245e Expansion Module

AG112C

Contents:

- Allows for the expansion from 103 to 245 slots and up to eight tape drives
- Only to be used with CTO library orders
- For field upgrades instead order 1 AD565C and 1 AD566C.

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

Power Distribution Unit

252663-B24

16A Power Distribution Unit with two extension bars

Quantity:
1-2 per library

NOTE: Country specific power cord required

NOTE: The 103, 245, 375 and 505 slot tape libraries require 1 total per unit (second optional). The 348, 442 and 469 slot tape libraries require 2 total per unit because they contain an extra 4-Drive Expansion Module.

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

e2400-FC 4Gb for EML

AD569C

Contents:

- e2400-FC 4Gb interface controller
- Installation poster

Quantity:
For EML libraries with LTO-6, LTO-5 or LTO-4 drive(s):
1 HP EML e2400-FC 4Gb Controller

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

NOTE: When connecting e2400-FC 4G interface controllers to the SAN disable auto speed negotiation of the fibre channel switch ports connected to the controller. The switch ports should be fixed at 1Gb/s, 2Gb/s or 4Gb/s as described in the switch documentation

HP EML Internal Network Kit

AJ001B



Configuration Information

Content:

- Internal LAN Switch
- Cable
- Installation poster

Quantity:
1 kit for each
EML Library with
LTO-6, LTO-5 or
LTO-4 drive(s)

Command View for Tape Libraries Software

T3663A

Contents:

- License to use Command View for EML

Quantity:
1 per library

Step 3 - Additional Options

Select each option with quantities specified.

Model Name

Part Number

HP EML 4-Drive Expansion Module

AD565C

- Adds 4 drive bays. See capacity matrix below for capacity in various configurations
- HP installation included via MCC Code

Quantity:
Up to 3

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

HP EML Capacity Expansion Module

AD564B

- See capacity matrix below for capacity in various configurations
- HP installation included via MCC Code

Quantity:
Up to 2

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

EML Card Cage Module

AD566C

- HP installation included via MCC Code

Quantity:
1

NOTE: only use the card cage module when expanding to more than 4 drives.

NOTE: card cage module includes redundant power supply capability

Redundant Power Supply for EML

AD563B

NOTE: EML Card Cage module includes redundant power supplies - no additional power supply is required for that module.

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

Quantity :
1 per module

Secure Manager Tape Library Software for EML

T3664A

- Enables partitioning and access control of tape drives

Quantity:
1 per library

Configuration Information

Capacity Matrix (CTO)

NOTE: EML 71e is not a CTO configuration but can be upgraded at the customer site

Configuration/Slots	Modules required using EML 103e Base Tape Library	Product height within rack	# drives possible
103e/103 Base	<ul style="list-style-type: none"> HP EML 103e Base Tape Library (AG104C) 	12U + 1U (LTO-6/LTO-5/LTO-4)*	1-4
245e/245	<ul style="list-style-type: none"> HP EML 103e Base Tape Library (AG104C) HP EML 245e Expansion Module (AG112C #0D1) for factory install HP EML 4-Drive Expansion Module (AD565C) and EML Card Cage Module (AD566C) for field install 	24U + 1U (LTO-6/LTO-5/LTO-4)*	1-8
348e/348	<ul style="list-style-type: none"> HP EML 103e Base Tape Library (AG104C) HP EML 245e Expansion Module (AG112C #0D1) HP EML 4-Drive Expansion Module (AD565C #0D1) [Qty1] 	32U + 1U (LTO-6/LTO-5/LTO-4)*	1-12
375e/375	<ul style="list-style-type: none"> HP EML 103e Base Tape Library (AG104C) HP EML 245e Expansion Module (AG112C #0D1) HP EML Capacity Expansion Module(AD564B #0D1) [Qty1] y1] 	32U + 1U (LTO-6/LTO-5/LTO-4)*	1-8
442e/442 Maximum Performance	<ul style="list-style-type: none"> HP EML 103e Base Tape Library (AG104C) HP EML 245e Expansion Module (AG112C #0D1) HP EML 4-Drive Expansion Module (AD565C #0D1) [Qty2] 	40U + 1U (LTO-6/LTO-5/LTO-4)*	1-16
469e/469	<ul style="list-style-type: none"> HP EML 103e Base Tape Library (AG104C) HP EML 245e Expansion Module (AG112C #0D1) HP EML 4-Drive Expansion Module (AD565C #0D1) [Qty1] HP EML Capacity Expansion Module (AD564B #0D1) [Qty1] 	40U + 1U (LTO-6/LTO-5/LTO-4)*	1-12
505e/505 Maximum Capacity	<ul style="list-style-type: none"> HP EML 103e Base Tape Library (AG104C) HP EML 245e Expansion Module (AG112C #0D1) HP EML Capacity Expansion Module (AD564B #0D1) [Qty2] 	40U + 1U (LTO-6/LTO-5/LTO-4)*	1-8

* For all EML library configurations with LTO-6, LTO-5 or LTO-4 Ultrium drive(s), an additional 1U height is required for the EML Internal Network Kit.

Related Options

Media	HP LTO-6 Ultrium 6.25TB MP RW Data Cartridge	C7976A
	HP LTO-6 Ultrium 6.25TB MP RW Data Cartridge Pallet (960 tapes)	C7976AD
	HP LTO-6 Ultrium 6.25 TB BaFe RW Data Cartridge	C7976B
	HP LTO-5 Ultrium 3TB RW Data Cartridge (1 pack)	C7975A
	HP LTO-5 Ultrium 3TB WORM Data Cartridge (1 pack)	C7975W
	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
	Bar Code Labels	
	HP LTO-6 Ultrium RW Bar Code Label Pack	Q2013A
	HP LTO-5 Ultrium RW Bar Code Label Pack (100 pack)	Q2011A
	HP LTO-5 Ultrium WORM Bar Code Label Pack (100 pack)	Q2012A
	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
	Non-Custom Labeled Data Cartridges	
	NOTE: Non-Custom labels will come pre-labeled with a pre-determined number sequence.	
	HP LTO-6 Ultrium 6.25 TB MP RW Non Custom Labeled Data Cartridge (20 Pack)	C7976AN
	HP LTO-6 Ultrium 6.25 TB BeFe RW Non Custom Labeled Data Cartridge (20 Pack)	C7976BN
	HP LTO-5 Ultrium 3TB RW Non Custom Labeled Data Cartridge (20 pack)	C7975AN
	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
	Custom labeled Data Cartridges	
	NOTE: Custom labeled products allow customers to customize a specific sequence printed on each label.	
	HP LTO-6 Ultrium 6.25 TB MP RW Custom Labeled Data Cartridge 20 Pack	C7976AL
	HP LTO-5 Ultrium 3TB RW Custom Labeled Data Cartridge (20 pack)	C7975AL
	HP LTO-5 Ultrium 3TB RW Eco Pack (No Case) Data Cartridge (20 pack)	C7975AC
	HP LTO-5 Ultrium 3TB WORM Custom Labeled Data Cartridge (20 pack)	C7975WL
	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

Related Options

HP Command View for Tape Libraries Software Permanent License (per library) for Command View EML T3663A

NOTE: Please reference the Extended Tape Library Architecture QuickSpecs for more information at: <http://www.hp.com/go/etla>
NOTE: Only the EML71e is bundled with full use special edition HP Command View Tape Library Software (no license key required). A permanent license is granted upon capacity upgrade purchase.

HP Secure Manager Tape Library Software for EML Permanent (per library) License for Secure Manager EML T3664A

NOTE: Please reference the Secure Manager QuickSpecs for more information at <http://www.hp.com/go/etla>

Host Bus Adapters and Controllers for ProLiant & 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 needed. Order Two cables per Interface Controller, and Two cables per LTO-4 tape drive, selecting cable length and converter type to match the appropriate environment.

2m Multi-mode OM3 LC/LC FC Cable	AJ835A
5m LC/LC Multi-Node OM3 FC cable	AJ836A
15m LC/LC Multi-Node OM3 FC cable	AJ837A
30m LC/LC Multi-Node OM3 FC cable	AJ838A
50m LC/LC Multi-Node OM3 FC cable	AJ839A

Power Cord

NOTE: THIS PRODUCT CAN ONLY BE USED WITH AN HP APPROVED POWER CORD FOR THE CUSTOMER'S SPECIFIC GEOGRAPHIC REGION.

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, NEMA L6-20P Plug	AF593A
HP Power Cord, North America, NEMA L6-30P	E7805A
HP Power Cord, Universal PDU, C20 Plug	E7804A
HP Power Cord, Custom Applications, No Plug	E7806A
NOTE: This power cord should only be installed by a qualified electrician	
HP Power Cord, Europe, IEC309 Plug	AF581A
HP Power Cord, Europe, CEE 7/7 Plug	AF576A
HP Power Cord, China, GB16C Plug	AF584A
HP Power Cord, Israel, C-19 straight 2.5 meter length Plug	AF583A
HP Power Cord, Brazil, AR20S Plug	AF592A
HP Power Cord, Australia/New Zealand, AS3112-3	AF577A
HP Power Cord, S. Africa, SABS 164	AF579A
HP Power Cord, Italy/Chile, CE123-50	AF580A
HP Power Cord, India/Bangladesh/Pakistan, IS1293	AF582A



Related Options

HP Power Cord, Taiwan, CNS690
HP Power Cord, UK/SING/HK

AF585A
359615-031

Technical Specifications

Dimensions	Form Factor	Free standing			
		NOTE: EML71e is shipped as a rack-ready/rack-mount, all other configurations are shipped integrated into a Free standing rack			
	Configuration	EML 71e	EML 103e	EML 442e	EML 505e
	Physical (HxDxW)	20.8 x 19 x 32.8 in (52.8 x 48.3 x 83.3 cm)	78.89 x 39.691 x 24 in (200.4 x 101.5 x 59.7 cm)	78.89 x 39.691 x 24 in (200.4 x 101.5 x 59.7 cm)	78.89 x 39.691 x 24 in (200.4 x 101.5 x 59.7 cm)
	Shipping (HxDxW)	59.5 x 24.5 x 36.5 (151.1 x 62.2 x 92.7 cm)	86.22 x 48 x 35.56 in (219 x 121.92 x 90.3 cm)	86.22 x 48 x 35.56 in (219 x 121.92 x 90.3 cm)	86.22 x 48 x 35.56 in (219 x 121.92 x 90.3 cm)
Weight	Out of box (16 drives)	144 lbs (65.5 kg)	433 lbs (196.4 kg)	729 lb (330.7 kg)	644 lbs (292.1 kg)
	Shipping (16 drives)	225 lbs (102.1 kg)	606 lbs (274.5 kg)	902 lb (409.1kg)	817 lbs (370.2 kg)
Control Panel	Touch Screen GUI				
Drive Host Interface	Fibre Channel, 8Gb/4Gb/2Gb Multi-mode optical, LC connector (LTO-6, LTO-5), or 4Gb/2Gb/1Gb Multi-mode optical, LC connector (LTO-4)				
Robotic and Host Interface	Fibre Channel, 4Gb/2Gb/1Gb Multi-mode optical, LC connector				
Storage Capacity	Configuration	EML 71e	EML 442e	EML 505e	
	Number of Slots	71	442	505	
	Number of drive bays	4	16	8	
	Compressed Capacity	443 TB (LTO-6)	2.7 PB (LTO-6)	3.1 PB (LTO-6)	
	LTO-6 (2.5:1)	213TB (LTO-5)	1326TB (LTO-5)	1515 TB (LTO-5)	
	LTO-5/LTO-4 (2:1)	113.6 TB (LTO-4)	707.2 TB (LTO-4)	808 TB (LTO-4)	
Loadport		5 configurable slots: 1 5-slot magazine	35 configurable slots: 7 5-slot magazines	35 configurable slots: 7 5-slot magazines	
Initialization (cartridge inventory) time	A 24U configuration will take less than 18 minutes with bar code labels required, less than 30 minutes with no bar code labels required.				
Cartridge Swap Time	The average exchange time will be less than 36 seconds The worst case exchange time (without errors) will be less than 45 seconds				
Input Requirements	200-240VAC				
Drives Supported	HP LTO-6 Ultrium 6650 Fibre Channel Tape Drives HP LTO-5 Ultrium 3280 Fibre Channel Tape Drives HP LTO-4 Ultrium 1840 Fibre Channel Tape Drives				
Maximum Number of Drives	16 Ultrium Tape Drives				
Reliability (Library Only)	MSBF	2 million load/unload cycles (rated)			
	MTTR	Less than 30 minutes			
Acoustic Noise	Sound power	7.6 Bels			
	Bystander sound pressure	64 dba			
Worldwide Product Safety & EMC Approvals	Safety	IEC 60950			
	EMC	CISPR 22/class A , CISPR 24			
	Country Regulatory Compliance	For country specific compliance contact your local sales representative			

Technical Specifications

Regulatory Model Number	LVLDC-0401	
Temperature Range	Operating	10°C to 35°C
	Transportation	-40°C to 60°C
Relative Humidity (non-condensing)	20% to 80 %	
Voltage Requirement	200 - 240 Volts AC 50 - 60 Hz	
Current Rating (4-drive)	4 Amps	
Typical power (4-drive)	250 Watts	
12u base module	100w	340 Btu/hr
4u card cage module	70w	240 Btu/hr
8u drive module	35w	120 Btu/hr
LTO-5 Ultrium 3280 tape drive	31w	105 Btu/hr
LTO-4 Ultrium 1840 tape drive	20w	70 Btu/hr
Ultrium 1840 reading and writing add	15w	60 Btu/hr
Redundant Power Supply	30w	100 Btu/hr
Altitude	10,000 ft. (3000 m)	

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