

Overview

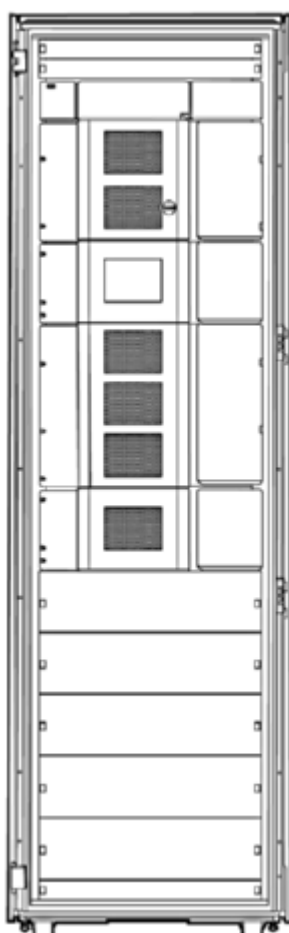
The HP Enterprise Modular Library (EML) E-Series Tape Libraries provide reliability, scalability and manageability with robust data protection and investment protection in heterogeneous Storage Area Network (SAN) environments. The EML delivers superior data availability with protection against SAN event 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 1515 TB compressed (2:1) storage capacity or 16.1 TB/hr compressed (2:1) throughput performance from rack-ready or factory racked configurations. Easily manage the EML remotely while simplifying complex environments with logical library partitioning. The EML is ideally suited for medium to large data centers and as a companion for the HP Enterprise Virtual Array (EVA) family.

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-5 Ultrium 3280 FC tape drives and 442 slots. The LTO-5 Ultrium 3280 and LTO-4 Ultrium 1840 tape drives provide encryption support. The EML delivers value through high reliability data protection, agility through modular scalability and simplicity through ease of management.

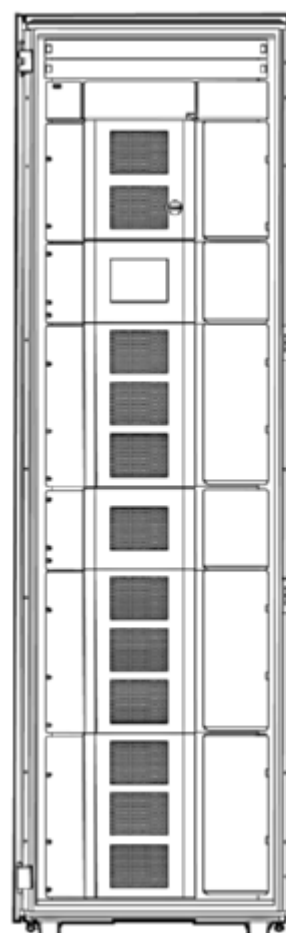
HP EML E-Series Tape Libraries



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



245e Configuration



505e Configuration

Overview

What's New

New EML E-Series Enhancements:

- Integration of the HP LTO-5 Ultrium 3280 tape drive with 8Gb Fibre Channel drive interface and increased capacity and performance.
- HP EML 71e LTO-5 Ultrium 3280 Tape Library
- TapeAssure: Advanced management of drive and media health, utilization, lifecycle, performance monitoring and tracking. Now with detailed media health and usage information included in Command View TL's TapeAssure tab.
- Additional features included in Command View TL 2.7, for further details visit: <http://www.hp.com/go/ETLA>

Key Features

- Scalable capacity from 71 slots to over 500 slots
- Scalable performance up to 16 Ultrium tape drives with 442 slots
- ETLA protects tape drives from SAN 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-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-5 Ultrium 3280 or LTO-4 Ultrium 1840 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.
- Improves reliability of backup and recovery processes: Utilizing device-level access control, part of the Extended Tape Library Architecture, the EML tape library minimizes the effect of rogue programs on backup and recovery processes.
- 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-4 and LTO-5)*	12U + 1U (LTO-4 and LTO-5)*	24U + 1U (LTO-4 and LTO-5)*	40U + 1U (LTO-4 and LTO-5)*	40U + 1U (LTO-4 and LTO-5)*
Maximum Capacity (2:1 compression)	213TB (LTO-5)	309TB (LTO-5)	735 TB (LTO-5)	1326TB (LTO-5)	1515 TB (LTO-5)
Maximum throughput (2:1 compression)	4.0TB/hr (LTO-5)	4.0 TB/hr (LTO-5)	8.1TB/hr (LTO-5)	16.1 TB/hr (LTO-5)	8.1 TB/hr (LTO-5)

* For all EML library configurations with 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-5) 1 (LTO-4)	0-1
245e/245	1-8	1 (LTO-5) 1 (LTO-4)	0-2
348e/348	1-12	1 (LTO-5) 1 (LTO-4)	0-3
375e/375	1-8	1 (LTO-5) 1 (LTO-4)	0-2
442e/442	1-16	1 (LTO-5) 1 (LTO-4)	0-4
469e/469	1-12	1 (LTO-5) 1 (LTO-4)	0-3
505e/505	1-8	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 (AG104B). 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-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	AW680A	HP EML71e LTO-5 Ultr 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	AH876A	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	AW679A or AH682A	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	AG104B	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	AW679A#0D1or AH682A #0D1	HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO-4 Ultrium 1840 FC Drive	1-4	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-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-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	AG104B	HP EML 103e Base Library	1	Required
	AG112B #0D1	HP EML 245e Expansion Module	1	Required, contains qty 1 AD565B and qty 1 AD566B
	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	AW679A#0D1or AH682A #0D1	HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO-4 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-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-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
348 Slots	AG104B	HP EML 103e Base Library	1	Required

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	AG112B #0D1	HP EML 245e Expansion Module	1	Required, contains qty 1 AD565B and qty 1 AD566B
	AD565B #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	AW679A#0D1or AH682A #0D1	HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO-4 Ultrium 1840 FC Drive	1-12	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-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-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				
	AG104B	HP EML 103e Base Library	1	Required
	AG112B #0D1	HP EML 245e Expansion Module	1	Required, contains qty 1 AD565B and qty 1 AD566B
	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				
Choose drives	AW679A#0D1or AH682A #0D1	HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO-4 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-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-5 or LTO-4 drive(s)

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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	AG104B	HP EML 103e Base Library	1	Required
	AG112B #0D1	HP EML 245e Expansion Module	1	Required, contains qty 1 AD565B and qty 1 AD566B
	AD565B #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	AW679A#0D1or AH682A #0D1	HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO-4 Ultrium 1840 FC Drive or	1-16	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-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-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
469 Slots	AG104B	HP EML 103e Base Library	1	Required
	AG112B #0D1	HP EML 245e Expansion Module	1	Required, contains qty 1 AD565B and qty 1 AD566B
	AD565B #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				

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Choose drives	AW679A#0D1or AH682A #0D1	HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO-4 Ultrium 1840 FC Drive	1-12	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-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-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	AG104B	HP EML 103e Base Library	1	Required
	AG112B #0D1	HP EML 245e Expansion Module	1	Required, contains qty 1 AD565B and qty 1 AD566B
	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	AW679A#0D1or AH682A #0D1	HP EML LTO5 Ultrium 3280 FC Drive or HP EML LTO-4 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-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-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 (Investment Protection) The HP Enterprise Modular Library provides investment protection as your environment grows and changes. With superb scalability, the EML can flexibly scale to 1515 TB compressed (2:1) storage capacity or 16.1 TB/hr compressed (2:1) 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.

Manageability HP 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 (EML Secure Manager) -- 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 (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 (HP Extended Tape Library Architecture). 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 now available with LTO-5 Ultrium 3280 and LTO-4 Ultrium 1840 hardware encrypting tape drives for secure high performance backups meeting consortium specifications for LTO-5 and 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 Enterprise Backup Solutions (EBS) website at: www.hp.com/go/ebs. The encryption on 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-5 and 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-5 Ultrium 3280 and LTO-4 Ultrium 1840 tape drive(s) are designed to be compliant with the emerging 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-5 and LTO-4 enterprise tape libraries (EML & ESL). In addition, the ESKM provides strong auditable security and reliable lifetime key archival. The ESKM and LTO-5/LTO-4 drive encryption in the EML library provides a complete and secure privacy solution to protect customers' confidential data.

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

Density HP EML E-Series Libraries exceptional density and integrate seamlessly into rack-grid data centers.

Product Highlights

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.

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.

Mixed Media

Extending the E-Series flexibility and investment protection, the HP EML E-Series tape libraries support mixing drive technology (LTO-5 Ultrium 3280 FC and LTO-4 Ultrium 1840 FC). One drive type can be specified for CTO and the other drive types must be field installed.

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.

Removable Magazines The EML tape library comes standard with removable magazines in every load port. The magazines allow easy loading and unloading of media and are ideal for storage.

LTO-5 Ultrium 3280 and LTO-4 Ultrium 1840 FC Interface Controller With LTO-5 Ultrium 3280 and 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 4Gb Interface Controller is still needed to control the robot.

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-5 and LTO-4 drives.

Software Components

Extended Tape Library Architecture (ETLA) The HP 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 Secure Manager) further increase backup performance and reliability. HP offers a balanced solution - neither piecemeal nor monolithic - that includes a generous initial feature set and allows users to buy only the advanced options they need.

The HP Interface Manager and Command View for Tape Libraries software 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.

TapeAssure HP TapeAssure makes managing, optimizing and archiving on the HP EML and ESL E-Series 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 ETLA or TapeAssure please visit: <http://www.hp.com/go/ETLA> and <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

Software Components

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

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. As an integral component of the fast-growing HP software portfolio, which includes storage resource management, archiving, replication, and device management software, Data Protector Software also fully integrates with the HP OpenView management solutions, allowing managing data protection as an essential element of an overall IT service. 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>.

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>

For increased uptime, productivity and ROI -HP Care Pack packaged services for Storage

These days, you need to get the most out of your storage investment-you can't afford not to. When you buy HP storage products and solutions, it's also a good time to think about what levels of service and support you may need. To help take the worry out of deploying, designing, maintaining, and managing your environment, we've designed a portfolio of service options that are as: flexible, reliable and scalable as your storage. Unlike storage-only vendors, we take a holistic approach to your entire environment, bridging storage, servers, blades, software and network infrastructures with our HP Care Pack packaged services for Storage.

Protect your business beyond the warranty

When it comes to robustness and reliability, standard warranties on today's computing equipment have matured just as the technologies have matured. Good news on some fronts-but also a source of potential problems and subsequent consequences that come from depending on standard warranties alone. Standard warranty protects against product defects and some causes of downtime- but not the business. By using a standard approach to warranty uplifts, such as HP Care Pack Services, you can reduce downtime risks and be more certain of operational consistency for both mission-critical and standard business computing. Simply put, HP Care Pack Services normalize the warranty of combined products - helping you proactively guard against unplanned downtime.

Extending warranties with HP Care Pack Services

For cost-effective upgrading or extending your standard warranty, HP Care Pack Services offer a suite of standard reactive hardware and software support services that are sold separately, or combined as with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition, with HP Proactive Select we offer an innovative approach to service delivery that gives you the flexibility to acquire the specific proactive services you need today, then add services as your needs evolve. HP Proactive Select offers a broad set of technical or per-event type service options - including server, storage, and network, SAN device, and software, environment, installation and education services. Services that you can mix and match depending on your specific requirements, from preliminary planning and equipment delivery to installation, configuration, integration, and testing, through every level of ongoing support. Our HP Care Pack packaged services for Storage assures help when you need it most. And for many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

HP Storage Services: Offering reliability, flexibility and value-just like your storage

HP Storage Services offers a full spectrum of customer care, from technology support to complex migrations to completely managed services. HP Factory Express provides customization,

Service and Support, HP Care Pack, and Warranty Information

integration and deployment services for turnkey solutions. HP Education offers flexible, comprehensive training on storage networking, disk storage systems, and storage software to help your IT staff get the most out of your investments. And HP Financial solutions extend innovative financing and asset management programs to cost-effective buy, manage and eventually retire your older equipment.

HP Storage Services, the trusted business technology experts who manage your technology in action, because when technology works, business works. <http://www.hp.com/hps/storage>

NOTE: Care Pack Services availability may vary by product and country.

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

Deployment and Per Event Service Descriptions

HP Installation & Startup for HP Enterprise Modular Libraries

- Provides for the implementation of HP EML products in SAN environments (ESL/MSL service also available), including the installation of a Fibre Channel Interface Controller(s) and tape drive(s).
- 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 highly recommends that a Hardware Implementation Service (HA114A1) is purchased. This service covers pre-installation preparation activities, installation and configuration of the library, drive(s), and interface controllers, Command View for EML license installation (if applicable), Secure Manager Software for EML license installation (if applicable), configuration of hosts (up to 5, additional handled via HA124A1 5B2 per additional 10) and switches, verification testing and customer orientation.

Recommended Services

3-Year HP Support Plus 24

For a higher return on your storage investment, HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. Available 24x7, this 3-year combined reactive support option delivers onsite hardware support and over-the-phone software support around-the-clock. Leverage the full strength of HP Technology Services - customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.

- Improve uptime with responsive hardware and software services
- Enjoy consistent service coverage across geographically dispersed sites
- Update HP software at a predictable cost
- Increase customer satisfaction-with no interoperability gaps

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf>

HP ESL, MSL, EML Tape Libraries Installation and Startup

Deployment of your HP Enterprise Storage (ESL) Library products in SAN environments, including the installation of a Fibre Channel Interface Controller.

- System installation and setup by an HP technical specialist
- Verification prior to installation that all service prerequisites are met

Service and Support, HP Care Pack, and Warranty Information

- Delivery of the service at a mutually scheduled convenient time
- Provides product installation according to the product specifications
- Offers deployment activities that are designed to bring the Fibre Channel-based tape library into operation
- Helps improve performance
- Makes the most of the value of the HP ESL, MSL, and EML libraries in an IT environment by leveraging HP knowledge in implementing Fibre Channel-based systems and solutions
- Helps reduce implementation-related disruptions in the IT environment
- Helps increase system reliability and provides more effective data management

<http://h20195.www2.hp.com/v2/GetPDF.aspx/5981-7355EN.pdf>

Optional Services

HP Backup and Recovery Solution Service

For customers who need help implementing their backup software:

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

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

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-7442EN.pdf>

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>

Customer Technical Training

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

Service and Support, HP Care Pack, and Warranty Information

HP Services Awards HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and awards reflect our services team's dedication, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit:
<http://h20219.www2.hp.com/services/cache/433028-0-0-225-121.htm>

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

If you have specific questions, contact your local HP representative. Contact information for a representative in your area can be found at "Contact HP" <http://www.hp.com>

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 G1 or G2 series racks. It does NOT ship with a rack.

Model Name	Model Description:	
HP EML 71e LTO-5 Ultrium 3280 Tape Library	Two drive, 71 slot Ultrium cartridge tape library <ul style="list-style-type: none">• Supports up to 4 Fibre Channel Ultrium tape drives• 2 PCI card slots available• 5-slot load port with removable magazine	AW680A

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-5, LTO-5 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 (AW680A) 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 G1 or HP 10000 G2 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	Two drive, 71 slot Ultrium cartridge tape library <ul style="list-style-type: none">• Supports up to 4 Fibre Channel Ultrium tape drives• 2 PCI card slots available• 5-slot load port with removable magazine	AH876A
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What's included in the box:

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

Configuration 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 (AH876A) 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 G1 or HP 10000 G2 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:	Quantity	Part Number
Secure Manager Tape Library Software for EML	Enables partitioning and access control of tape drives	1 per library	T3664A
HP EML 71e Licensed Capacity Upgrade	License to electronically expand EML71e capacity from 71 slots to 103 slots. Also includes permanent license for Command View for Tape Libraries Software	1 per library	AH063A

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 G2 rack:
Front door: supplied with rack, AF009A
Rear Door: supplied with rack
Side panel kit: AF054A

In the 42U HP 10K G1 rack:
Front Door: supplied with rack
Rear Door: supplied with rack
Side panel Kit: 246099-B21

NOTE: End of configuration steps for rack-ready EML71e

Configuration Information

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

Select one:

Model Name: HP EML 103e Base Tape Library	Model Description: Zero drive, 103 slot Ultrium cartridge tape library	AG104B
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- 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	Model Description with Parts Shipped:	Quantity	Part Number
HP EML 245e Expansion Contents: Module	<ul style="list-style-type: none"> • 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 AD565B and 1 AD566B. <p>NOTE: #0D1 will appear after this part number on your sales order when factory integration is indicated.</p>		AG112B
Power Distribution Unit	16A Power Distribution Unit with two extension bars <p>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.</p> <p>NOTE: #0D1 will appear after this part number on your sales order when factory integration is indicated.</p>	1-2 per library	252663-B24
EML E-Series LTO-5 Ultrium 3280 FC Drive Kit	Contents: <ul style="list-style-type: none"> • HP LTO-5 Ultrium 3280 Fibre Channel tape drive integrated in EML canister • Ethernet cable • Installation poster <p>NOTE: #0D1 will appear after this part number on your sales order when factory integration is indicated.</p>	1 to 16 drives	AW679A
EML E-Series LTO-4 Ultrium 1840 FC Drive	Contents: <ul style="list-style-type: none"> - 	1 to 16 drives	AH682A

Configuration Information

Kit	<ul style="list-style-type: none"> • HP LTO-4 Ultrium 1840 Fibre Channel tape drive integrated in EML canister • Ethernet cable • Installation poster <p>NOTE: #0D1 will appear after this part number on your sales order when factory integration is indicated.</p>		
e2400-FC 4Gb for EML	<p>Contents:</p> <ul style="list-style-type: none"> • e2400-FC 4Gb interface controller • Installation poster <p>NOTE: #0D1 will appear after this part number on your sales order when factory integration is indicated.</p> <p>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</p>	For EML libraries with LTO-5 or LTO-4 drive(s): 1 HP EML e2400-FC 4Gb Controller	AD569B
HP EML Internal Network Kit	<p>Content:</p> <ul style="list-style-type: none"> • Internal LAN Switch • Cable • Installation poster 	1 kit for each EML Library with LTO-5 or LTO-4 drive(s)	AJ001A
Command View for Tape Libraries Software	<p>Contents:</p> <ul style="list-style-type: none"> • License to use Command View for EML 	1 per library	T3663A

Step 3 - Additional Options

Select each option with quantities specified.

Model Name	Model Description with Parts Shipped:	Quantity	Part Number
HP EML 4-Drive Expansion Module	<p>Adds 4 drive bays. See capacity matrix below for capacity in various configurations</p> <p>HP installation included via MCC Code</p> <p>NOTE: #0D1 will appear after this part number on your sales order when factory integration is indicated.</p>	Up to 3	AD565B
HP EML Capacity Expansion Module	<p>See capacity matrix below for capacity in various configurations</p> <p>HP installation included via MCC Code</p> <p>NOTE: #0D1 will appear after this part number on your sales order when factory integration is indicated.</p>	Up to 2	AD564B
EML Card Cage Module	<p>NOTE: only use the card cage module when expanding to more than 4 drives.</p> <p>NOTE: card cage module includes redundant power supply capability</p>	1	AD566B
Redundant Power Supply for EML	<p>HP installation included via MCC Code</p> <p>NOTE: EML Card Cage module includes redundant power supplies - no additional power supply is required for that module.</p> <p>NOTE: #0D1 will appear after this part number on your sales order when factory integration is indicated.</p>	1 per module	AD563B

Configuration Information

Additional Power Distribution Unit 16A Power Distribution Unit with two extension bars 1 per library 252663-B24
NOTE: Country specific power cord required

NOTE: This optional redundant Power Distribution Unit for 103, 245, 375 and 505 slot libraries is not factory integrated (not CTO).

Secure Manager Tape Library Software for EML Enables partitioning and access control of tape drives 1 per library T3664A

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 (AG104B) 	12U + 1U (LTO-5/LTO-4)*	1-4
245e/245	<ul style="list-style-type: none"> HP EML 103e Base Tape Library (AG104B) HP EML 245e Expansion Module (AG112B #0D1) for factory install HP EML 4-Drive Expansion Module (AD565B) and EML Card Cage Module (AD566B) for field install 	24U + 1U (LTO-5/LTO-4)*	1-8
348e/348	<ul style="list-style-type: none"> HP EML 103e Base Tape Library (AG104B) HP EML 245e Expansion Module (AG112B #0D1) HP EML 4-Drive Expansion Module (AD565B #0D1) [Qty1] 	32U + 1U (LTO-5/LTO-4)*	1-12
375e/375	<ul style="list-style-type: none"> HP EML 103e Base Tape Library (AG104B) HP EML 245e Expansion Module (AG112B #0D1) HP EML Capacity Expansion Module(AD564B #0D1) [Qty1] 	32U + 1U (LTO-5/LTO-4)*	1-8
442e/442 Maximum Performance	<ul style="list-style-type: none"> HP EML 103e Base Tape Library (AG104B) HP EML 245e Expansion Module (AG112B #0D1) HP EML 4-Drive Expansion Module(AD565B #0D1) [Qty2] 	40U + 1U (LTO-5/LTO-4)*	1-16
469e/469	<ul style="list-style-type: none"> HP EML 103e Base Tape Library (AG104B) HP EML 245e Expansion Module (AG112B #0D1) HP EML 4-Drive Expansion Module(AD565B #0D1) [Qty1] HP EML Capacity Expansion Module(AD564B #0D1) [Qty1] 	40U + 1U (LTO-5/LTO-4)*	1-12

Configuration Information

505e/505 Maximum Capacity	<ul style="list-style-type: none">• HP EML 103e Base Tape Library (AG104B)• HP EML 245e Expansion Module (AG112B #0D1)• HP EML Capacity Expansion Module(AD564B #0D1) [Qty2]	40U + 1U (LTO-5/LTO-4)*	1-8
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* For all EML library configurations with 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-5 Ultrium 3TB RW Data Cartridge (1 pack)	C7975A	
	HP LTO-5 Ultrium 3TB WORM Data Cartridge (1 pack)	C7975W	
	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 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	
	Non-Custom Labeled Data Cartridges		
	NOTE: Non-Custom labels will come pre-labeled with a pre-determined number sequence.		
	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-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	

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	

Related Options

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>.

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 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, Argentina, IRAM 2073	AF578A
HP Power Cord, S. Africa, SABS 164	AF579A
HP Power Cord, Italy/Chile, CE123-50	AF580A
HP Power Cord, India/Bangladesh/Pakistan, IS1293	AF582A
HP Power Cord, Taiwan, CNS690	AF585A
HP Power Cord, UK/SING/HK	359615-031

Technical Specifications

Dimensions	Form Factor	Free standing				
	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-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					
Drive Performance (1Kb = 1,000 bytes)		LTO-5 Ultrium 3280 FC	LTO-4 Ultrium 1840 FC			
	Native Data transfer rate	140 MB/s with LTO 5 media 120 MB/s with LTO 4 media 80 MB/s with LTO 3 media	120 MB/s with LTO 4 media 80 MB/s with LTO 3 media 35.6 MB/s with LTO 2 media			
	Data transfer rate, compressed (assumes 2:1 data compression)	280 MB/s with LTO 5 media 240 MB/s with LTO 4 media 160 MB/s with LTO 3 media	240 MB/s with LTO 4 media 160 MB/s with LTO 3 media 71.2 MB/s with LTO 2 media			
	Data rate matching range	47-140 MB/s	40-120 MB/s			
	Data access time (from BOT)					
	Rewind time from EOT	38 seconds typical for LTO 3 media 46 seconds typical for LTO 4 media 47 seconds typical for LTO 5 media	46 seconds typical for LTO 2 media 52 seconds typical for LTO 3 media 62 seconds typical for LTO 4 media			
	Rewind tape speed	< 96 seconds for LTO 5 media < 93 seconds for LTO 4 media < 78 seconds for LTO 3 media	< 124 seconds for LTO 4 media < 102 seconds for LTO 3 media < 92 seconds for LTO 2 media			

Technical Specifications

	Average load time	<19 seconds (RW) <22 seconds (WORM)	7 m/s for (LTO 3 and LTO 2 media)		
	Average unload time	<19 seconds (RW) <22 seconds (WORM-initialized) Uninitialized	<19 seconds (RW) 22 seconds (WORM-initialized) Uninitialized		
Storage Capacity	Configuration		EML 71e	EML 442e	EML 505e
	Number of Slots		71	442	505
	Number of drive bays		4	16	8
	Compressed Capacity (2:1)		213TB (LTO-5) 113.6 TB (LTO-4)	1326TB (LTO-5) 707.2 TB (LTO-4)	1515 TB (LTO-5) 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-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
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

Technical Specifications

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.