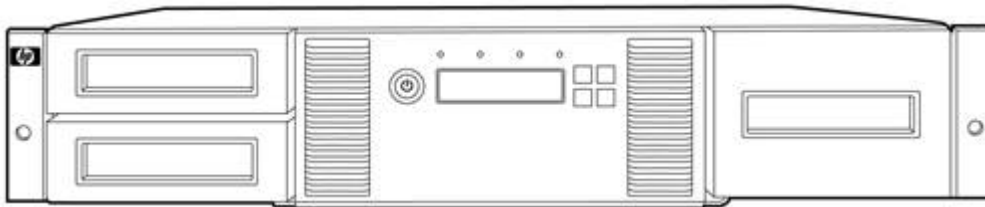


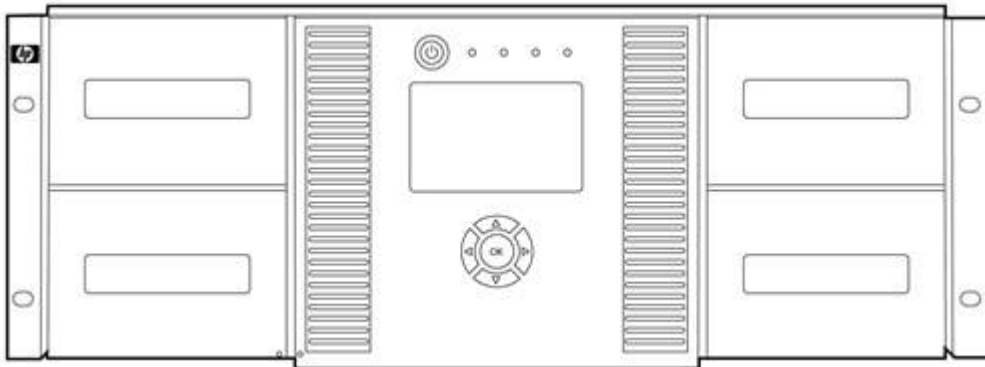
Overview

HPE StoreEver MSL2024 and MSL4048 Tape Libraries

The HPE StoreEver MSL Tape Libraries meet demanding storage requirements of businesses needing unattended backup, disaster recovery, or archive capability. The MSL Libraries offer a broad choice of storage capacity and technology including LTO-7, LTO-6, LTO-5, or LTO-4, Ultrium tape drives. Web-based remote management makes the MSL Libraries easily managed from across the room or across the globe, eliminating the need for remote office IT staff. Quickly and simply manage the tape media both in and out of the library with the standard bar code reader, configurable mail slots, and multiple 12-slot removable magazines. If a tape were lost or stolen, protect important business data from unauthorized access with data encryption options. MSL library investment protection and uncertain data growth are easily managed within the MSL library portfolio. Quickly increase capacity and/or performance with tool-free drive upgrades in the MSL2024 or 4048, or move tape drive kits to the MSL6480 for library scalability and additional enterprise class features. Proactively receive detailed information about your MSL libraries with TapeAssure. Information about the library, drives, and media are all monitored for utilization, operational performance, and life and health information. Prevent problems before they occur by proactively receiving notification if any library, drive or tape media parameters fall below Hewlett Packard Enterprise recommended standards.



HPE StoreEver MSL2024 Tape Library



HPE StoreEver MSL4048 Tape Library

Overview

Key Features

- Exceptional storage density: Up to 360 TB with MSL2024, 720TB with an MSL4048, and up to 8,400TB of with an MSL6480 ((capacity based upon 2.5:1 compression using LTO-7 tape cartridges)
 - Easy-to-use web-based remote management
 - Integrated bar code reader
 - Tool-free tape drive upgrades
 - Leverage tape drives in an MSL2024 or 4048 into an MSL6480 for investment protection.
 - Customer upgradeable redundant power supply in the MSL4048.
 - Multiple interface choices available (FC or SAS)
 - Removable magazines with user-configurable mail slots
 - Easy-to-enable AES 256-bit embedded hardware encryption with compression
 - Extensive OS and software compatibility testing
 - Proven high reliability
 - Achieve the highest level of encryption security to secure confidential business information while meeting compliance guidelines with the HPE 1/8 G2 & MSL Encryption Kit or KMIP 1.2 Encryption Key Manager License.
 - Proactively monitor utilization, operational performance, and overall life and health of the drives and media with TapeAssure and TapeAssure Advanced.
 - Quick, easy, and affordable capacity growth.
-

Product Highlights

Manageability

The MSL Tape Libraries come with web-based remote manageability so they can be easily monitored and managed from across the room or across the globe. Functions included in the management tool include:

- Status information on the drive and system
- System configuration operations and reporting
- System error and status logs
- Library and drive firmware upgrade capabilities
- Diagnostic tests and information
- Cartridge movement for maintenance and management purposes
- Cleaning cartridge support
- Security and access control
- SNMP support for IP communication
- Partitioning and Encryption management
- HTTPS capable
- IPv6 and IPv4 network protocol support

TapeAssure

HPE TapeAssure makes managing, optimizing and archiving on the HPE StoreEver MSL Tape libraries easier. TapeAssure provides comprehensive summaries and detailed information about the status, performance, utilization, and health of all tape drives and cartridges. TapeAssure utilization and performance reporting features allow you to optimize the use of your existing HPE MSL tape libraries to make informed purchasing decisions if an increase in capacity is needed.

- Modify backup schedules to make best use of the drives and tapes available and evenly distribute their workload
- Predict and prevent failures through early warnings and recommended service actions
- Determine if each drive and each tape is experiencing a high (or low) rate of usage
- Know when to retire tapes
- Find out the compression ratios actually achieved

TapeAssure builds a database of drive and tape history information that you can export as .CSV (comma-separated-value) files and import into Excel or other tools to create pivot-charts, pie charts and bar charts for graphical presentation or further analysis. This data can be automatically exported on a schedule or on demand and written to a local or network drive where analysis scripts can also be run.

TapeAssure real time alerts notify instantly if drive and data quality standards are not being achieved:

- In-depth analysis pinpoints if drive, tape or data characteristics fall below Hewlett Packard Enterprise backup and archiving standards
- View alerts and statistics is real-time in the Command View TL GUI

TapeAssure Advanced

HPE StoreEver TapeAssure Advanced Software is a licensed feature that leverages the information from TapeAssure but will additionally provide an intuitive, easy to use dashboard, and advance analytics feature for performance, health and utilization related to tape libraries, drives and cartridges.

Advanced analytics feature makes use of predictive analytics to predict the likelihood of failures, bottlenecks and load balancing issues in the tape infrastructure. It has unique capabilities of analytics around drive health and life as well as cartridge health

Product Highlights

and life.

TapeAssure Advanced is well integrated into HPE Command View TL Software for a single pane of glass management, monitoring and analytics. HPE TapeAssure Advanced Software provides a dashboard display with pie charts, live and historical graphs for performance, health and utilization data, and highlights issues in the tape infrastructure.

NOTE: CommandView TL is a required pre-requisite for TapeAssure Advanced.

Easy Installation

The MSL Tape Libraries are shipped as a rack-ready unit. The rack mount hardware included with the library allows installation in a variety of HPE racks. For more information on the HPE rack offerings, please see the following URL:
<http://h18004.www1.hp.com/products/servers/platforms/rackandpower.html>

Partitioning

The MSL Tape Libraries now include the ability to be configured as a partitioned library. MSL Libraries may be configured with up to one partition per drive; four partitions if four drives are installed. Partitioning allows each partitioned library to be presented to the host as an independent library, separate from other partitions in the library. Hosts for each partition own independent sets of media and can use ISV software that is different from the other partitions allowing maximum flexibility and utilization of the MSL library.

Proven Reliability

With a rating of 2,000,000 robot load/unload cycles, the MSL Tape Libraries provides necessary high reliability for today's demanding environment. To improve reliability and longevity, all HPE Ultrium products feature Data Rate Matching (DRM). This allows the tape drive to dynamically and continuously adjust the speed of the drive, to match the speed of the host or network. This increases performance, reduces mechanical wear on the tape drive and extends tape life.

Disaster Recovery and Security

Removable media also has the advantage that data is held 'offline' which means that archive data on tape has the additional level of protection from the threats to on-line data from viruses, hackers and cyber-attacks. LTO-6 Ultrium tape drives include hardware based data encryption to prevent unauthorized access to data at rest and cartridges are available with write-once-read-many (WORM) capability to prevent accidental overwriting of data archived on the tape. Both WORM and hardware data encryption features help organizations to comply with increased data security regulations

Product Highlights

Data Encryption

The HPE 1/8 G2 & MSL Encryption Kit provides a library-enabled encryption solution providing data privacy, confidentiality, and integrity of your critical business data while supporting compliance requirements. The HPE 1/8 G2 & MSL Encryption Kit is an easy and affordable library-enabled encryption solution for small businesses.

Protect the confidentiality and integrity of your data:

The encryption kit includes two USB key server tokens, product documentation, and firmware support. One encryption kit is needed per library or autoloader. One USB key server token is installed in the USB port of the library to enable encryption. The token must remain in the tape library or tape autoloader while encryption is enabled. The USB key server token generates and stores keys for the LTO-6, LTO-5 or LTO-4 Ultrium drives. The USB key server token uses a hardware random number generator, a cryptographic module running on FIPS 140-2 Level 3 validated hardware, password authentication, and digital envelopes for strong encryption keys and security operations. A second USB key server token is provided in the kit to be used as a backup token which can be stored in a secure location. The keys are transferred securely token-to-token for backup or export, with no exposure to insecure PCs, servers, or networks. An option is also provided to save the token contents to a secure file. You may now also save the most recently added keys on the token to a file to enable you to seed new tokens with keys from other tokens. The encryption kit provides a self-contained solution for MSL libraries with no additional software, PCs, or servers required or involved.

Protect IT resources and meet compliance requirements:

With the HPE 1/8 G2 & MSL Encryption Kit, users can enable or disable encryption, configure and manage the USB key server tokens, restore encrypted data, as well as a variety of other tasks. In addition, the LTO-6, LTO-5 and LTO-4 Ultrium tape drives use the Advanced Encryption Standard (AES) with the longest and most secure keys -- 256 bits. AES-256 encryption is implemented using the Galois Counter Mode (GCM). This method adds Message Authentication Codes to ensure the integrity as well as privacy of the backup data stored on tape. The HPLTO-6, LTO-5 and LTO-4 Ultrium Tape Drives are designed to be compliant with the standard for tape media security (IEEE 1619.1).

Protect critical business data across an enterprise:

To meet requirements for larger scale encryption key managers, the MSL family of libraries also supports KMIP 1.2 compliant key managers. With the purchase of the MSL KMIP Encryption License, the MSL library will be able to request encryption keys from KMIP 1.2 compliant key managers, for data encryption and key management.

For more information on servers supported, please visit:

<http://www.hpe.com/go/BURCompatibility>

Serviceability

Modular in design, the MSL Tape Libraries has easily replaceable components minimizing the Mean-Time-to-Repair on the unit. Replaceable components include the tape drive, the magazines, the power supply and the controller board. HPE Library and Tape Tools (L&TT) provides easy access to the MSL error log, generates support tickets, and enables firmware downloads. L&TT can be downloaded for free at: <http://www.hpe.com/support/tapetools>.

Product Highlights

LTO Ultrium Technology

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

HPE LTO tape drives and automation products are founded on the LTO open standard and adhere to the published LTO format roadmap to generation 8 at 32TB of compressed capacity per cartridge by Generation 8. With in-built two generation backwards compatibility, LTO customers can be assured of investment protection.

Data Rate Matching

Data Rate Matching combines sophisticated buffer management with variable tape drive motor speeds to match the tape drive transfer rate to the host output. . This feature ensures that the tape drive continues to stream data regardless of the environment, and brings three big advantages:

- It optimizes performance and maximizes overall efficiency, allowing the drive to respond immediately to any data speed changes from the host.
- It minimizes rewinding and repositioning of the tape, significantly reducing physical wear and increasing reliability.
- It minimizes the power requirements for the drive by reducing the number of repositions needed.

LTO Ultrium Tape Drive	ATS data transfer rate range (native)
HPE LTO-7 Ultrium 15000	101 to 300 MB/s
HPE LTO-6 Ultrium 6250	54 to 160 MB/s
HPE LTO-5 Ultrium 3280/3000	47 to 140 MB/s
HPE LTO-4 Ultrium 1840	40 to 120 MB/s
HPE LTO-4 Ultrium 1760	35 to 80 MB/s
HPE LTO-3 Ultrium 920	26 to 60 MB/s

Product Highlights

HPE Ultrium WORM Critical to the success of data retention policies in highly regulated environments is the ability to store and manage data in an unalterable state. Following stringent guidelines set forth by regulatory agencies such as the SEC and HIPPA, IT organizations must now integrate new solutions and policies that can verify the integrity of stored data for periods that can extend well beyond seven years. Every generation of LTO Ultrium since LTO-3 tape drives feature the ability to archive and store data in a read-only, non-rewriteable format that meets the most stringent regulatory guidelines. Using a combination of integrated fail-safe features in the drive firmware, cartridge memory, and tape formatting, LTO Ultrium provides the ability to archive large amounts of data for periods of up to 30 years in a secure, untampered state. Ultrium tape drives include support for both rewritable and WORM media providing for a secure, long-term archiving solution into any data protection strategy. LTO Ultrium WORM provides the following advantages:

- A single drive to support all backup and archiving needs
- Two distinctive tape cartridges to easily distinguish and manage both rewriteable and WORM data cartridges
- A specially designed WORM data cartridge with multiple integrated fail-safe features to prevent accidental or intentional overwriting of data
- High-capacity, low-cost HPE WORM media that can store up to 6.25 TB (2.5:1 compression) of data on a single data cartridge
- Support from many backup and archiving software vendors, providing the most comprehensive and mainstream support in the industry
- The LTO open standard that offers greater choice and compatibility across all third- and fourth-generation Ultrium products

NOTE: While all HPE LTO-7, LTO-6, LTO-5, LTO-4, and LTO-3 Ultrium tape drives support LTO Ultrium WORM media, some LTO Ultrium tape drives from other manufacturers may not include read and write support for LTO Ultrium WORM media. For non-HPE LTO Ultrium tape drives, please check the manufacturers' specifications to ensure this support is provided if you are using your WORM media. If WORM support is not provided, the drive will eject the WORM tape cartridge immediately upon insertion into to the tape drive

Product Highlights

HPE Data Protector software

HPE 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 Hewlett Packard Enterprise 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 Hewlett Packard Enterprise software portfolio, which includes storage resource management, archiving, replication, and device management software, Data Protector software also fully integrates with the HPE 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.

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

Linear Tape File System (LTFS)

HPE 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.hpe.com/go/ltfs>

Product Highlights

HPE StoreOpen Automation

HPE StoreOpen Automation is a free downloadable application that extends the LTFS capability to HPE Autoloaders, HPE MSL and ESL Tape Libraries. By simply mounting the tape autoloader or library as a file system, the intuitive HPE 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, HPE StoreOpen Automation supports tape-to-tape operations. HPE StoreOpen Automation takes advantage of other standard HPE Tape Library features including data encryption and HPE TapeAssure.

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

HPE Library and Tape Tools

The MSL Tape Libraries are supported on HP's industry-leading diagnostic tool - HPE Library and Tape Tools (L&TT). L&TT is a single, convenient program that is easy 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.hpe.com/support/tapetools>.

HPE Storage Media

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

All HPE 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 Hewlett Packard Enterprise brand specification for media is consistent quality. Through the testing of thousands of HPE drives and HPE cartridges, the ideal formulation for backup performance is defined and then continuously monitored. This hugely resource-intensive process is unique to Hewlett Packard Enterprise and affords deep insight into the HP+HPE 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. Correctly labeling your media will allow the library to quickly determine media and drive compatibility.

Product Highlights

Factory Express Portfolio for Servers and Storage

HPE Factory Express offers configuration, customization, integration and deployment services for HPE servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. Customization must comply with all relevant product specifications and factory supported configurations. Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. Hewlett Packard Enterprise products supported through Factory Express include a wide array of servers and storage: HPE Integrity, HPE ProLiant, HPE ProLiant Server Blades, HPE BladeSystem, and HPE 9000 servers as well as MSA, VA7xxx, EVA, and XP disk arrays, rackable tape libraries and configurable network switches.

Type of service support varies by platform and product family. For more information on Factory Express services for your specific server model or storage device please contact your sales representative or go to: <http://www.hpe.com/go/factory-express>.

Compatibility

HP's extensive compatibility testing program assures that your HPE MSL Tape Libraries work with leading servers, operating systems, and backup applications - and not just those sold by HP. The MSL libraries work seamlessly in many environments, making them especially suitable if you have a mixed system environment. For the latest list of servers, workstations, operating systems, and backup software that support the MSL tape libraries, check the HPE Data Agile BURA Compatibility Matrix (Formerly EBS) at: <http://www.hpe.com/go/BURACompatibility>.

Server Compatibility

The MSL Tape Library is supported on a wide range of HPE systems. For details of which MSL Libraries work with which systems, including third-party systems, reference the HPE Data Agile BURA Compatibility Matrix (Formerly EBS) at: hpe.com/go/BURACompatibility for the latest hardware compatibility information.

OS Support

Reference the HPE Data Agile BURA Compatibility Matrix (Formerly EBS) for the most up-to-date OS compatibility information at: hpe.com/go/BURACompatibility.

Software Support

Reference the HPE Data Agile BURA Compatibility Matrix (Formerly EBS) for the most up-to-date software compatibility information at: hpe.com/go/BURACompatibility.

Compatibility

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OS Support

Reference the HPE Data Agile BURA Compatibility Matrix (Formerly EBS) for the most up-to-date OS compatibility information at: hpe.com/go/BURACompatibility.

Software Support

Reference the HPE Data Agile BURA Compatibility Matrix (Formerly EBS) for the most up-to-date software compatibility information at: hpe.com/go/BURACompatibility.

Service and Support, HP Care Pack and Warranty Information

Warranty	MSL2024: The warranty for this product consists of 1-year parts exchange, next business day MSL4048: The warranty for this product consists of 1-year parts exchange, next business day
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NOTE: The HPE MSL Tape Libraries 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 HPE Services to replace these replaceable units (RUs) for an additional charge. Also, customers who purchase an HPE Support Agreement have the option to perform CSR or receive onsite support.

Please refer to Hewlett Packard Enterprise's Limited Warranty Statement for further details:

<http://h18006.www1.hpe.com/storage/warranty.html>

For increased uptime, productivity and ROI -HPE 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 HPE 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 HPE 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 HPE 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, HPE Care Pack Services normalize the warranty of combined products - helping you proactively guard against unplanned downtime.

Extending warranties with HPE Care Pack Services

For cost-effective upgrading or extending your standard warranty, HPE 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 HPE 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. HPE 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 HPE Care Pack packaged services for Storage assures help when you need it most. And for many products, post-warranty HPE Care Pack Services are available when your original warranty has expired.

Service and Support, HP Care Pack and Warranty Information

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

HPE Storage Services offers a full spectrum of customer care, from technology support to complex migrations to complete completely managed services. HPE Factory Express provides customization, integration and deployment services for turnkey solutions. HPE 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 HPE Financial solutions extend innovative financing and asset management programs to cost-effective buy, manage and eventually retire your older equipment.

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

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

HPE Care Pack Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:

- Services for customers purchasing from Hewlett Packard Enterprise or an enterprise reseller are quoted using Hewlett Packard Enterprise order configuration tools.
- Customers purchasing from a commercial reseller can find HPE Care Pack Services at <http://www.hpe.com/go/lookuptool>

Recommended Services

HPE Foundation Care 24x7 connects you to Hewlett Packard Enterprise 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 HPE Care Pack Service.

HPE ESL, MSL Tape Libraries Installation and Startup
Deployment of your HPE Midrange Storage Library (MSL) products in SAN environments:

- System installation and setup by an Hewlett Packard Enterprise technical specialist
- Verification prior to installation that all service prerequisites are met
- 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 HPE ESL, MSL, and EML libraries in an IT environment by leveraging Hewlett Packard Enterprise 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.hpe.com/v2/GetPDF.aspx/5981-7355EN.pdf>

HPE Backup and Recovery Solution Service

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?

Service and Support, HP Care Pack and Warranty Information

For fast, effective integration of your backup solution into an existing or new storage infrastructure, turn to the storage experts at HPE 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.

- By engaging Hewlett Packard Enterprise to implement HPE Data Protector, customers' IT staff can stay focused on their core tasks and priorities, resulting in less impact to your business
- Professional backup and recovery planning that aligns with customer's business needs and implementation that reduces project execution time and risk to the storage environment
- HP's expertise with backup and recovery helps ensure issues are avoided

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

Optional Services

5-Year HPE Support Plus 24

As an alternative to our recommended support level, for customers who need to improve uptime with responsive 24x7 product support:

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

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

Choose Support Plus 24 when you need to:

- Improve uptime with responsive hardware and software services available anytime
- Cost-effectively obtain expert 24x7 multivendor hardware and software support
- Enjoy consistent service coverage across geographically dispersed sites
- Update Hewlett Packard Enterprise and selected third-party software at a predictable cost
- Take advantage of subscription savings on software updates

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

Service and Support, HP Care Pack and Warranty Information

eSupport

HPE 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 Hewlett Packard Enterprise 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 a Hewlett Packard Enterprise service agreement. To access the support portal, visit: <http://www.hpe.com/support>

Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HPE storage solution. Hewlett Packard Enterprise 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. <http://www.hpe.com/learn/storage>

HPE Services Awards

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

Additional Services Information

For more information about HPE Care Pack Services for Storage, please visit: <http://www.hpe.com/services/storage>

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

Configuration Information

Step 1 - Select Base Library

HPE StoreEver MSL Tape Libraries	Description	Part Number
	HP MSL2024 0-Drive Tape Library NOTE: Includes 24 slots, zero drives.	AK379A
	HP MSL4048 0-Drive Tape Library NOTE: Includes 48 slots, zero drives.	AK381A
	Kit Contents (for each library): <ul style="list-style-type: none"> • One 2.5M PDU Power Cord, C13/C14, 10A (part number 142257-002) • One RJ-45 Ethernet cable • Rack-mount hardware • Flyer for Yosemite Server Backup software* *NOTE: Yosemite Server Backup Basic comes with 30 days of free Maintenance and Support. After that time, customers have the option to upgrade to a retail version with Maintenance and Support 	
Factory Racking	Factory integrate the MSL2024 & 4048 Tape Libraries with other HPE products such as HPE ProLiant Servers NOTE: #0D1 will appear after the Tape Library part number on the sales order if HPE factory integration is indicated	#0D1

Step 2 - Select Generation & Quantity of Ultrium Tape Drives

Select each option as required with quantities specified:

Tape Drives	Description	Part Number
	HP StoreEver MSL LTO-7 Ultrium 15000 FC Drive Upgrade Kit NOTE: Half height LTO-7 Fibre Chanel tape drive. For use with the MSL2024, 4048, or 6480 libraries. Drive kit includes a tape drive and documentation	N7P36A
	HP StoreEver MSL LTO-7 Ultrium 15000 SAS Drive Upgrade Kit NOTE: Half height LTO-7 SAS tape drive. For use with the MSL2024, 4048, or 6480 libraries. Drive kit includes a tape drive and documentation	N7P37A
	HP StoreEver MSL LTO-6 Ultrium 6250 SAS Drive Upgrade Kit NOTE: Half height LTO-6 SAS tape drive. For use with the MSL2024, 4048, , or 6480 libraries. Drive kit includes a tape drive and documentation.	C0H27A
	HP StoreEver MSL LTO-6 Ultrium 6250 FC Drive Upgrade Kit NOTE: Half height LTO-6 FC tape drive. For use with the MSL2024, 4048, or 6480 libraries. Drive kit includes a tape drive and documentation.	C0H28A
	HP MSL LTO-5 Ultrium 3000 SAS Drive Upgrade Kit NOTE: Half height LTO-5 SAS tape drive. For use with the MSL2024, 4048, 6, or 6480 libraries. Drive kit includes a tape drive and documentation.	BL540B
	HP MSL LTO-5 Ultrium 3000 Fibre Channel Drive Upgrade Kit NOTE: Half height LTO-5 FC tape drive. For use with the MSL2024, 4048, , or 6480 libraries. Drive kit includes a tape drive and documentation.	BL544B
	HP MSL LTO-5 Ultrium 3280 Fibre Channel Drive Upgrade Kit NOTE: Full height LTO-5 FC tape drive. For use with the MSL2024, 4048, , or 6480 libraries. Drive kit includes a tape drive and documentation.	BL535B

Configuration Information

HP MSL LTO-4 Ultrium 1760 SAS Drive Upgrade Kit AK383B
NOTE: Half height LTO-4 SAS tape drive. For use with the MSL2024, 4048, , or 6480 libraries. Drive kit includes a tape drive and documentation.

Step 3 - Select Software Licenses

TapeAssure Advanced	<p>HP StoreEver MSL TapeAssure Advanced LTU TC406A Advanced analytics feature makes use of predictive analytics to predict the likelihood of failures, bottlenecks and load balancing issues in the tape infrastructure. It has unique capabilities of analytics around drive health and life as well as cartridge health and life. NOTE: One license needed per library and Command View TL must be installed. NOTE: This is a paper license that will be mailed</p> <p>HP StoreEver MSL TapeAssure Advanced E-LTU TC406AAE HPE StoreEver TapeAssure Advanced Software provides advanced analytics for predictive analysis the likelihood of failures, bottlenecks and load balancing issues in the tape infrastructure. It has unique capabilities of analytic s around drive health and life as well as cartridge health and life. NOTE: One license needed per library and Command View TL must be installed. NOTE: This is an electronically delivered License.</p>
Encryption Options/Licenses	<p>HP 1/8 G2 Tape Autoloader and MSL Tape Library LTO-4 Encryption Kit AM495A NOTE: For use with new or installed LTO-6, LTO-5 MSL2024/4048/8048/8096 or 6480 Tape Libraries. The Encryption Kit key server token will generate and retain encryption keys for HPE LTO-6, LTO-5 Ultrium tape drives in the library. Does not require support from ISV.</p> <p>HP StoreEver MSL2024/4048/8096 KMIP Encryption LTU TC468A NOTE: For use with MSL2024/4048/8048/8096 Tape libraries using LTO-6, LTO-5 tape drives. The license will enable secure connectivity with supported KMIP 1.2 compliant key management servers. See the HPE Data Agile BURA Compatibility Matrix (Formerly EBS) for the list of supported servers. (http://www.hpe.com/go/BURACompatibility). NOTE: This license will be delivered via hard copy in the mail.</p> <p>HP StoreEver MSL2024/4048/8096 KMIP Encryption E-LTU TC468AAE NOTE: For use with MSL2024/4048/8048/8096 Tape libraries using LTO-6, LTO-5 tape drives. The license will enable secure connectivity with supported KMIP 1.2 compliant key management servers. See the HPE Data Agile BURA Compatibility Matrix (Formerly EBS) for the list of supported servers. (http://www.hpe.com/go/BURACompatibility) NOTE: This license will be delivered electronically.</p>

Configuration Information

Step 4 - Select Additional Accessories

Regional Power Cords **NOTE:** One PDU power cord is shipped per library. IF not using the included PDU cord mentioned above (part number 142257-002) please select the correct power cord for your geographical location below.

Quantity	Description	Part Number
1 each	HP C13 - Nema 5-15P US/CA 110V 10Amp 1.83m Power Cord	AF556A
1 each	HP C13 - CEE-VII EU 250V 10Amp 1.83m Power Cord	AF568A
1 each	HP C13 - BS-1363A UK/HK/SG 250V 10Amp 1.83m Power Cord	AF570A
1 each	HP C13 - DK-2.5A DK 250V 10Amp 1.83m Power Cord	AF566A
1 each	HP C13 - SEV 1011 CH 250V 10Amp 1.83m Power Cord	AF565A
1 each	HP C13 - CEI-23-50 IT/CL 250V 10Amp 1.83m Power Cord	AF571A
1 each	HP C13 - SABS-164 ZA 250V 10Amp 2.5m Power Cord	AF567A
1 each	HP C13 - CNS-690 TW 110V 13Amp 1.83m Power Cord	AF561A
1 each	HP C13 - GB-1002 CN 250V 10Amp 1.83m Power Cord	AF557A
1 each	HP C13 - JIS C8303 JP 100V 12Amp 2.0m Power Cord	AF572A
1 each	HP C13 - AS3112-3 AU 250V 10Amp 2.5m Power Cord	AF569A
1 each	HP C13 - IRAM -2073 AR 250V 10A 2.5m Power Cord	AF558A
1 each	HP C13 - Nema 5-15P TH/PH 250V 10Amp 1.83m Power Cord	AF559A
1 each	HP C13 - KSC- 8305 KR 250V 10Amp 1.83m Power Cord	AF560A
1 each	HP C13 - SI-32 IL 250V 10Amp 1.83m Power Cord	AF564A
1 each	HP C13 - IS-1293 IN 240V 6Amp LV 2.0m Power Cord	AF562A

WARNING: This product can ONLY be used with an HPE approved power cord for your specific geographic region. Use of a non-HPE approved power cord may result in: 1) not meeting individual country specific safety requirements; 2) insufficient conductor ampacity that could result in overheating with potential personal injury and/or property damage; and 3) an unapproved power cord could fracture resulting in the internal contacts being exposed, which potentially could subject the user to a shock hazard. Hewlett Packard Enterprise disclaims all liability in the event a non-HPE approved power cord is used.

For a complete list of power cord options, please see:
<http://www.hpe.com/products/powercords>

Related Options

Redundant Power Supply Upgrade Kit	<p>HP MSL Redundant Power Supply Upgrade Kit</p> <p>NOTE: For use in the MSL4048, 8048 or 8096 Tape Libraries to add a second customer-installable power supply into the unit. HPE MSL Redundant Power Supply ships with PDU power cord (C13/C14, 10A, P/N 142257-002). If a user wishes to connect to HPE MSL Redundant Power Supply to 110V US wall outlet power then the US Power Cord (P/N AF556A) must be ordered separately. If customers require a power cord, they can check the power cord matrix for the appropriate cord. Please see the UPS and PDU cable matrix's on the Power Protection page under Power Cords that lists cable descriptions, requirements, and specifications for UPS and PDU units at the new HPE Power Cord Link @ HPE.com. Use the following new link: http://www.hpe.com/products/powercords</p>	AH220A
Magazine Kits	<p>HP MSL2024 Ultrium Left Magazine Kit</p> <p>NOTE: For use in the MSL 2024tape Libraries in either the upper or lower left position. User-enabled mail slots can be configured at either 0 or 3 slots.</p> <p>HP MSL Ultrium Left Magazine Kit</p> <p>NOTE: For use in the MSL 4048, 8048, or 8096 tape Libraries in either the upper or lower left position. When used in the lower left position, user-enabled mail slots can be configured at either 0 or 3 slots.</p> <p>HP MSL Ultrium Right Magazine Kit</p> <p>NOTE: For use only on the right side of the MSL 2024, 4048, 8048, or 8096 Tape Libraries; additional 12-slot magazine for either the right upper or lower position.</p>	<p>AG119A</p> <p>AG330A</p> <p>AG120A</p>
Rack Cabinets	<p>The MSL libraries are supported in a variety of HPE Rack offerings, including the HPE Intelligent Series Racks and the HPE 10000 G2 Series Racks. For more information on the HPE rack offerings, please see the following URL: http://www.hpe.com/go/rackandpower</p> <p>NOTE: The MSL Tape Libraries are certified to ship in HPE racks which include a shock pallet. It is mandatory to use a shock pallet in order to ship racks with equipment installed.</p>	
Media	<p>HP LTO-7 Ultrium 15 TB RW Data Cartridge</p> <p>HP LTO-7 Ultrium 15 TB No Case Pallet of 960 Tapes</p> <p>HP LTO-7 Ultrium 15 TB Pallet of 960 Tapes</p> <p>HP LTO-7 Ultrium 15 TB Eco Pack (20 Pack)</p> <p>HP LTO-7 Ultrium 15 TB WORM Data Cartridge</p> <p>HP LTO-6 Ultrium 6.25TB MP RW Data Cartridge</p> <p>HP LTO-6 Ultrium 6.25TB MP RW 960 Tape Pallet</p> <p>HP LTO-6 Ultrium 6.25TB MP WORM Data Cartridge</p>	<p>C7977A</p> <p>C7977AB</p> <p>C7977AD</p> <p>C7977AH</p> <p>C7977W</p> <p>C7976A</p> <p>C7976AD</p> <p>C7976W</p>

Related Options

HP LTO-6 Ultrium 6.25TB BaFe RW Data Cartridge	C7976B
HP LTO-6 Ultrium 6.25TB BaFe WORM Data Cartridge	C7976BW
HP LTO-5 Ultrium 3TB RW Data Cartridge	C7975A
HP LTO-5 Ultrium 3TB WORM Data Cartridge	C7975W
HP LTO4 Ultrium 1.6TB Read/Write Data Cartridge	C7974A
HP LTO4 Ultrium 1.6TB WORM Data Tape Cartridge	C7974W
HP Ultrium Universal Cleaning Cartridge	C7978A
Bar Code Labels	
HP LTO-7 Ultrium RW Bar Code Label Pack	Q2014A
HP LTO-6 Ultrium RW Bar Code Label Pack	Q2013A
HP LTO-5 Ultrium RW Bar Code Label Pack	Q2011A
HP LTO-5 Ultrium WORM Bar Code Label Pack	Q2012A
HP LTO-4 Ultrium Read/Write Bar Code Label Pack	Q2009A
HP LTO-4 Ultrium WORM Bar Code Label Pack	Q2010A
Non-Custom Labeled Data Cartridges	
NOTE: Non-Custom labels will come pre-labeled with a pre-determined number sequence.	
HP LTO-7 Ultrium 15 TB RW Custom Labeled No Case Library Pack (20 pack)	C7977AC
HP LTO-7 Ultrium 15 TB RW Non-Custom Labeled Data Cartridge (20 pack)	C7977AN
HP LTO-6 Ultrium 6.25TB MP RW Non Custom Labeled Data Cartridge 20 Pack	C7976AN
HP LTO-6 Ultrium 6.25TB BaFe RW Non Custom Labeled Data Cartridges 20 Pack	C7976BN
HP LTO-5 Ultrium Non-custom Labeled Data Cartridge 20 Pack	C7975AN
HP LTO-4 Ultrium 1.6TB Non-custom Label Data Cartridge 20 Pack	C7974AN
Custom labeled Data Cartridges	
NOTE: Custom labeled products allow customers to customize a specific sequence printed on each label.	
HP LTO-7 Ultrium 15 TB RW RFID Custom Labeled Data Cartridge (20 pack)	7977AF
HP LTO-7 Ultrium 15 TB RW Custom Labeled Data Cartridge (20 pack)	C7977AL
HP LTO-7 Ultrium 15 TB WORM Custom Labeled Data Cartridge (20 pack)	C7977WL
HP LTO-6 Ultrium 6.25TB MP RW Custom Labeled Data Cartridge 20 Pack	C7976AL
HP LTO-5 RW Custom Labeled Data Cartridge 20 Pack	C7975AL
HP LTO-5 RW Custom Labeled No Case Data Cartridge 20 Pack	C7975AC
HP LTO-5 WORM Custom Labeled Cartridge 20 Pack	C7975WL
HP LTO-4 Ultrium 1.6TB RW Custom Label Data Cartridge 20 Pack	C7974AL
HP LTO-4 Ultrium 1.6TB WORM Custom Label Data Cartridge 20 Pack	C7974WL

FC Host Bus The MSL Libraries are certified with a number of Fibre Channel Host Bus Adapters. For



Related Options

- Adapters** the most current list of supported FC HBAs, please see the HPE Storage HPE Data Agile BURA Compatibility Matrix (Formerly EBS) and Design Guide located at: <http://www.hpe.com/go/BURACompatibility>.
- For more information on FC HBAs, see Fibre Channel Host Bus Adapters at: <http://h18006.www1.hpe.com/storage/saninfrastructure/hba.html>.
- SAS Host Bus Adapters** The MSL Libraries are certified with a number of ProLiant SAS Host Bus Adapters and Smart Array Controllers. For the most current list of supported devices, please see the HPE Data Agile BURA Compatibility Matrix (Formerly EBS) and Design Guide located at: <http://www.hpe.com/go/BURACompatibility>.
- For more information on HPE Smart Array RAID controllers, see Fibre HPE Smart Array RAID controllers at: <http://h18004.www1.hpe.com/products/servers/proliantstorage/arraycontrollers/index.html>.
- For more information on HPE ProLiant (SAS) host bus adapters, see: <http://h18004.www1.hpe.com/products/servers/proliantstorage/adapters/index.html>.

HBA/Controllers for Tape Automation Connect	HBA/ Controller Product Number
HP H241 12Gb 2-ports Ext Smart Host Bus Adapter NOTE: Recommended for ProLiant Gen9 SAS tape automation connect.	726911-B21
HP H221 PCIe 3.0 SAS Host Bus Adapter NOTE: Recommended for ProLiant Gen8 SAS tape automation connect	729552-B21
HP Smart Array P222/512 FBWC 6Gb 1-port Int/1-port Ext SAS Controller NOTE: Recommended for ProLiant Gen8 SAS tape automation connect.	631667-B21
HP Smart Array P421/1GB FBWC 6Gb 2-ports Ext SAS Controller NOTE: Recommended for ProLiant Gen8 SAS tape automation connect.	631673-B21
HP Smart Array P421/2GB FBWC 6Gb 2-ports Ext SAS Controller NOTE: Recommended for ProLiant Gen8 SAS tape automation connect.	631674-B21
HP Smart Array P721m/512 FBWC 6Gb 4-ports Ext Mezzanine SAS Controller NOTE: Recommended for Gen8 C series blade enclosure tape automation connect.	655636-B21
HP Smart Array P721m/2GB FBWC 6Gb 4-ports Ext Mezzanine SAS Controller NOTE: Recommended for Gen8 C series blade enclosure tape automation connect	650072-B21
HP Smart Array P711m/1G 6Gb FBWC 4-ports Ext Mezzanine SAS Controller NOTE: Recommended for C series blade enclosure tape automation connect.	513778-B21
HP Smart Array P712m/256 6Gb 2-ports Int/2-ports Ext Mezzanine SAS Controller NOTE: Recommended for C series blade enclosure tape automation connect.	488348-B21

Related Options

HPE Smart Array P700m/256 4-ports Ext PCIe x8 SAS Controller

HPE Smart Array P700m/512 4-ports Ext PCIe x8 SAS Controller

Optical cables

OM4 LC-LC type cables

HP Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable QK732A

HP Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable QK733A

HP Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable QK734A

HP Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable QK735A

HP Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable QK736A

HP Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable QK737A

Allowed cable lengths:

External Cable type	Drive type	2Gb	4Gb	8Gb
OM2	All drive types	0.5m - 300m	0.5m - 150m	NA
OM3/OM4	All except LTO-5 Ultrium 3000	0.5m - 500m	0.5m - 380m	0.5m - 150m
OM3/OM4	LTO-5 Ultrium 3000	0.5m - 300m	0.5m - 150m	0.5m - 50m

NOTE: The HPE MSL LTO-5 Ultrium 3000 Drive contains an internal OM2 optical cable and limits the maximum allowed cable lengths to those as specified for OM2. The lowest OM rating in a path from the drive to the switch or HBA will dictate the maximum length of the connection path.

Cable Kits (SAS)

HP Mini SAS High Density to 4-lane Mini SAS External Fanout 2 Meter Cable K2R09A

HP Mini SAS High Density to 4-lane Mini SAS External Fanout 2 Meter Cable K2R09A

HP 2.0m External Mini SAS High Density to Mini SAS Cable 716191-B21

NOTE: One cable is required for every tape drive. Use this cable to connect HPE MSL SAS Tape Libraries to the HPE H241 Smart Host Bus Adapter.

HP 4.0m External Mini SAS High Density to Mini SAS Cable 716193-B21

NOTE: One cable is required for every tape drive. Use this cable to connect HPE MSL SAS Tape Libraries to the HPE H241 Smart Host Bus Adapter

HP SAS Min-Min 1x-2M Cable Assembly Kit AE470A

NOTE: One SAS autoloader only. Use this cable to connect HPE SAS external tape devices to HPE SAS controllers with external Mini-SAS (SFF8088) connectors.

Related Options

HP SAS MIN-MIN 1X-4M Cable Assembly Kit	AE465A
NOTE: One SAS autoloader only. Use this cable to connect HPE SAS external tape devices to HPE SAS controllers with external Mini-SAS (SFF8088) connectors.	
HP 2m External Mini-SAS to 4x1 Mini-SAS Cable	AN975A
NOTE: One cable is required for every four autoloaders or every four library drives. Use this cable to connect HPE MSL SAS Tape Libraries to Mini-SAS (SFF8088) ports.	
HP 4m External Mini-SAS to 4x1 Mini-SAS Cable	AN976A
NOTE: One cable is required for every four autoloaders or every four library drives. Use this cable to connect HPE MSL SAS Tape Libraries to Mini-SAS (SFF8088) ports.	
HP External SAS to mini-SAS Fanout Cable	AH587A
NOTE: One cable is required for every four drives. Use this cable to connect HPE MSL SAS Tape Libraries to HPE SAS controllers with Infiniband (SFF8470) connectors.	

HPE Care Pack Options

Same Day Response	
HP 3 year 4 hour 24x7 MSL 2024 Hardware Support	UE296E
HP 3 year 4 hour 9x5 MSL 2024 Hardware Support	UG635E
HP 3 year 4 hour 24x7 MSL4048 Library Hardware Support	UD835E
HP 3 year 4 hour 9x5 MSL 4048 Library Hardware Support	UE940E
Next Business Day Response	
HP 3 year Next business day MSL 2024 Hardware Support	UE294E
HP 3 year Next business day MSL4048 Library Hardware Support	UD833E
NOTE: In order to maximize ROI and product uptime, and minimize the cost of ownership, Hewlett-Packard Enterprise recommends the 3-year, 24 x 7 service options. These offerings will ensure that any product issue can be tackled when they occur (most back up issues will occur outside standard business hours) and that the service coverage regarding period, covers the minimum expected life of the host system.	

Technical Specifications

		MSL2024	MSL4048
Drive Technology		LTO-7 Ultrium 15000 LTO-6 Ultrium 6250 LTO-5 Ultrium 3280 LTO-5 Ultrium 3000 LTO-4 Ultrium 1840 LTO-4 Ultrium 1760	LTO-7 Ultrium 15000 LTO-6 Ultrium 6250 LTO-5 Ultrium 3280 LTO-5 Ultrium 3000 LTO-4 Ultrium 1840 LTO-4 Ultrium 1760
Maximum Number of Drives		1 (Ultrium 3280, 1840) 2 (Ultrium 15000, 6250, 3000, 1760)	2 (Ultrium 3280, 1840) 4 (Ultrium 15000, 6250, 3000, 1760)
Number of Slots		24	48
Drive Interface		8 Gb Native Fibre Channel 4 Gb Native Fibre Channel 6 Gb/sec SAS 3 Gb/sec SAS	8 Gb Native Fibre Channel 4 Gb Native Fibre Channel 6 Gb/sec SAS 3 Gb/sec SAS
Maximum Capacity	Native	60 TB (LTO-6) 36 TB (LTO-5) 19.2 TB (LTO-4)	120 TB (LTO-6) 72 TB (LTO-5) 38.4 TB (LTO-4)
	Compressed (2.5:1)	150 TB (LTO-6)	300 TB (LTO-6)
	Compressed (2:1)	72 TB (LTO-5) 38.4 TB (LTO-4)	144 TB (LTO-5) 76.8 TB (LTO-4)
Maximum Transfer Rate	Native	2.16 TB/hr (two 15000) 1.15 TB/hr (two 6250) 504 GB/hr (one 3280) 1.0 TB/hr (two 3000) 432 GB/hr (one 1840) 576 GB/hr (two 1760)	4.32 TB/hr (four 15000) 2.3 TB/hr (four 6250) 1.0TB/hr (two 3280) 2.0 TB/hr (four 3000) 864 GB/hr (two 1840) 1.1 TB /hr (four 1760)
*For more information about the MSL6480 please visit http://www.hpe.com/go/msl6480			

		MSL2024	MSL4048
Dimensions	Out-of-Box (HxWxD)	3.4 x 18.9 x 31.7 in (8.7 x 48 x 80.6 cm)	6.9 x 18.9 x 31.7 in (17.5 x 48 x 80.6 cm)
	Shipping (HxWxD)	10.7 x 23.2 x 38.9 in (27.1 x 58.9 x 98.7 cm)	13.7 x 23.2 x 38.9 in (34.8 x 58.9 x 98.7 cm)
Weight	Out of box	32.9 lb (14.9 kg)	47.2 lbs (21.4 kg)
	Shipping	56.9 lb (25.8 kg)	74.7 lbs (33.9 kg)
<p>NOTE: The weight of each library varies somewhat based on the type and number of LTO tape drives contained in the configuration. The weights shown here are for MSL2024/4048 configurations with 1/2 drives respectively per model. Configurations with different numbers of tape drives can be calculated by adding or subtracting the weight of a tape drive. An LTO-6 Ultrium 6250 drive weighs 2.10 kg/4.63 lbs.</p>			
Reliability	MSBF (mean swaps between failures)	2 Million robot load/unload cycles	
	MTBF (mean time between failures)	100,000 hours (based on 1M MSBF)	

Technical Specifications

Average Cartridge Swap Time (drive to slot, slot to drive)		45 seconds	45 seconds
Initialization Time		80 to 120 seconds	
Inventory Time		1:20 minutes (using bar code labeled cartridges)	2:15 minutes (using bar code labeled cartridges)
Connectors	Mini-SAS (MSL SAS model only)- 68-pin HDTS (MSL SCSI models only) LC Optical Fibre (MSL FC models only) (1)RJ-45 Ethernet (1) USB port		
LED Indicators (on front panel)		Ready LED (Green): shows ready status information Clean LED (Amber): shows fault status information Attention LED (Amber): shows fault status information Error LED (Amber): shows fault status information	
Management Interface		10/100 Mbytes/second, auto-configuring interface. RJ-45 connection. Https configurable.	
Power		MSL2024: 168 Watts (max) MSL4048: : 312 Watts (max)	
Input Requirements		100 to 240 VAC, 50 to 60 Hz, 2.5 Amperes	
Relative Humidity (non-condensing)	Operating	20% to 80%	
	Shipping	20% to 90%	
Temperature Range (wet bulb)	Operating	50° to 95° F (10° to 35° C)	
	Shipping	-22° to 140° F (-30° to 60° C)	
	NOTE: Library operating temperature limits are based on the industry standard tape limit.		
Altitude	Operating	13,000 ft (4000 m)	
	Shipping	35,000 ft (10,675 m)	

Summary of Changes

Date	Version History	Action	Description of Change
01-Dec-2015	From Version 45 to 46	Changed	Changes made throughout the QuickSpecs.
3-Apr-2015	From Version 44 to 45	Changed	Deleted portions related to MSL library Extenders as they are no longer valid.
30-Jan-2015	From Version 43 to 44	Changed	Removed skus that are going EOL. Updated naming on a few skus. Changes made to the Related Options, Config Info, Product Highlights and Overview Sections.
31-Oct-2014	From Version 42 to 43	Changed	Changes made throughout the QuickSpecs.
9-May-2014	From Version 41 to 42	Changed	Recommended Services was revised.
31-Jan-2014	From Version 39 to 41	Added	MSL Library Extender was added to Related Options
2-Dec-2013	From Version 38 to 39	Changed	Edits were mostly to reflect the removal of the LTO-3 Ultrium 920 and the MSL8048 and MSL8096 and to add the MSL6480 throughout.
30-Sep-2013	From Version 37 to 38	Changed	Product descriptions were revised in Configuration and Related Options.
22-Mar-2013	From Version 36 to 37	Added	Added StoreEver throughout entire QS Compatibility: Added Compatibility section to section. Related Options: Added HBAs/Controllers for Tape Automation Connect section.
		Removed	Product Highlights: Removed Ease of Use with LTFS and HPE StoreOpen section
		Changed	Overview: Updated product description and key features sections Product Highlights: Updated TapeAssure, Included backup and recovery software sections. Service and Support, HPE CarePack and Warranty Information: Updated Warranty section Configuration Information: Updated all section in Step 1 and first section in Step 2 Related Options: Updated Optical cables, Cable Kits (SCSI,SAS), Rack Cabinets and Media sections. Technical Specification: Updated Chart sections Maximum Capacity, Average Cartridge Swap Time in Extended Libraries (drive to slot, slot to drive) and Connectors sections.
18-Jan-2013	From Version 34 to 35	Changed	Changes were made in the following sections: Configuration Information: Step 1/HPE StoreEver MSL4048 Tape Library

Summary of Changes

			Related Options: Encryption, Table Top Conversion Kit, Media
21-Dec-2012	From Version 33 to 34	Changed	Changes were made in the following sections: Overview: Family Comparison Related Options: Optical Cables
4-Dec-2012	From Version 32 to 33	Changed	Changes were made throughout the QuickSpecs.
12-Oct-2012	From Version 31 to 32	Changed	Change made to URL in Service and Support, HPE Care Pack, and Warranty Information section.
24-Sep-2012	From Version 30 to 31	Changed	Changes made throughout the QuickSpecs.
7-Sep-2012	From Version 29 to 30	Changed	Changes made to the North America and Canada versions.
17-Aug-2012	From Version 28 to 29	Changed	Changes made to the Related Options section.
10-Aug-2012	From Version 26 to 28	Changed	Changes made to Product Highlights and Related Options.
22-Jun-2012	From Version 25 to 26	Changed	Changes made to Product Highlights and Related Options.
6-Apr-2012	From Version 24 to 25	Changed	FC Host Bus Adapters were added to Related Options HPE MSL4048 2 LTO-4 Ultrium 1840 and 1760 and 1 LTO-3 Ultrium 920 SCSI Tape Libraries were removed from HPE MSL4048 Tape Library HPE U320e SCSI Host Bus Adapter was removed from SCSI Host Bus Adapters
16-Mar-2012	From Version 23 to 24	Removed	Mentions of LTO-3 Ultrium 960 and PremierFlex OM3+ LC/LC type cables and OM2 LC-LC type cables were removed.
10-Feb-2012	From Version 22 to 23	Added	Added HPE Smart Array P711m and HPE Smart Array P712m adapters to the options section.
13-Jan-2012	From Version 21 to 22	Changed	HPE StoreOpen Automation was revised.
30-Sep-2011	From Version 20 to 21	Added	Linear Tape File System (LTFS) and HPE StoreOpen Automation were added to Product Highlights.
2-Sep-2011	From Version 19 to 20	Changed	Drive interface was updated in the Family Comparison chart Optical cables were revised in Related Options Connectors was completely revised in Technical Specifications
8-Jul-2011	From Version 18 to 19	Changed	Revisions were made in Configuration Information and to Redundant Power Supply Upgrade Kit in Related Options.
17-Jun-2011	From Version 16 to 18	Changed	OM3 LC-LC type cables were revised and 2m SW LC/SC FC Cable Kit was removed from OM2 LC-LC type cables in Optical Cables.
8-Jun-2011	From Version 15 to 16	Removed	Removed StorageWorks throughout the document.






Summary of Changes

27-Sep-2010	From Version 14 to 15	Changed	<p>Family Comparison chart was revised</p> <p>Software in the Box was changed to Included backup and recovery software in Product Highlights</p> <p>Tape Libraries were completely revised and mentions of HPE Data Protector Express Basic backup and recovery software was added throughout Step 1</p> <p>Easy and economical upgrade of the included software to Data Protector Express was added to Product Highlights</p> <p>Optical Cables were added to Related Options</p> <p>Upgrade included software to Data Protector Express was added to Related Options</p> <p>Customer Benefits was removed from the Overview</p> <p>2m, 5m and 15m SW LC/SC FC Cable Kits were removed from Cable Kits</p> <p>5642 (42U) Rack Cabinet was removed from Rack Cabinets</p>
21-Jun-2010	From Version 13 to 14	Changed	<p>Revisions were made throughout the Overview and Product Highlights sections</p> <p>Service and Support, HPE Care Pack, and Warranty Information was completely revised</p> <p>HPE LTO-5 Ultrium RW Bar Code Labels and WORM Bar Code Labels were added and Storage Media Kits were removed from Media</p> <p>All mentions of LTO-5 Ultrium 3000 was added</p>
29-Mar-2010	From Version 12 to 13	Changed	<p>LTO-5 Ultrium 3280 Tape Drives were added throughout the QuickSpecs, TapeAssure was added to Product Highlights and Documentation kit including User and Service Guide (CD) and Getting Started Poster was removed throughout Step 1 of the Configuration Information.</p>
15-Jan-2010	From Version 11 to 12	Changed	<p>NOTE for HPE StorageWorks MSL2024 Ultrium Left Magazine Kit was revised in Magazine Kits.</p>
11-Dec-2009	From Version 10 to 11	Changed	<p>PDU Power Cords was revised in Step 2 of the Configuration Information section.</p>
25-Nov-2009	From Version 9 to 10	Changed	<p>SAS and SCSI Host Bus Adapters and Controller/HBA and Cable Recommendation Matrix were modified in Related Options and Native Maximum Transfer Rate was revised for LTO-4 Ultrium 1760 in the Technical Specifications section.</p>

Summary of Changes

9-Oct-2009	From Version 8 to 9	Removed	Removed part number AH219A from Step 1 of Configuration Information.
24-Sep-2009	From Version 7 to 8	Added	Added part numbers AK379A & AK381A to step 1 of the Configuration Information section.
		Removed	Removed part number AH219A from the Recommended Services section.
14-Sep-2009	From Version 6 to 7	Added	<p>MLS8048 Tape Library throughout the QuickSpecs</p> <p>Slot license upgrade to the Product Highlights and Related Options sections</p> <p>StorageWorks to Model descriptions throughout the Configuration Information and Related Options sections</p>
		Changed	The title has changed.
29-Jul-2009	From Version 5 to 6	Added	Added pointers to the Library Extender and Data Encryption sections in Product Highlights.
8-Jul-2009	From Version 4 to 5	Changed	Corrected two part numbers in the Related Options section.
19-Jun-2009	From Version 3 to 4	Added	<p>Software in the Box to the Product Highlights section</p> <p>HPE Data Protector Express Software CD to HPE StorageWorks MSL2024 and MSL 4048 Tape Libraries in Step 1 of the Configuration Information section</p> <p>HPE MSL2024/4048/8096 LTO-4 Ultrium 1760 SCSI Drive Upgrade Kit and HPE MSL 2024/4048/8096 LTO-2 Ultrium 448 SCSI Drive Upgrade Kit to Tape Drives in the Related Options section</p> <p>2m SFF8088-to-SFF8088 1x SAS Cable Kit and 4m SFF8088-to-SFF8088 1x SAS Cable Kit to Cable Kits in the Related Options section</p> <p>Controller/HBA & Cable Recommendation Matrix to the Related Options section</p>
		Changed	<p>Updated NOTES for HPE SC44Ge SAS Host Bus Adapter in Host Bus Adapters and throughout Cable Kits in the Related Options section</p> <p>Revised LTO-2 Ultrium 448 Drive Technology for MSL2024 in the Technical Specifications section</p>
12-May-2009	From Version 2 to 3	Changed	The title has changed.
23-Apr-2009	From Version 1 to 2	Changed	Changes made within the Family Comparison, Product Highlights, Related Options and Technical Specifications.

Summary of Changes

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

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