Overview

HPE StoreEver MSL6480 Tape Library

The HPE StoreEver MSL6480 Tape Library is the gold standard for mid-range tape automation, delivering best-in-class scalability, density, and performance to meet your short-term backup and disaster recovery data protection needs, as well as long-term archive requirements. Keep pace with data growth by seamlessly scaling up to 7 modules-without disrupting daily data protection. The MSL6480 also saves floor space by providing the highest tape drive density per module of any mid-range tape library. The MSL6480 Tape Library reduces the time and resources needed to achieve enterprise-class manageability, equipping you with proactive monitoring on single pane of glass control. The HPE StoreEver MSL6480 Tape Library can also provide medium sized businesses with a last line of defense solution against the threat of ransomware due to its air-gapped, offline capabilities.

HPE StoreEver MSL6480 Tape Library

What's New

- LTO-9 Ultrium 45000 FC and SAS drive upgrade kits and LTO-9 tape media are now available
- LTO-9 Ultrium 45000 SAS drive upgrade kits are available on a 12 Gb/s interface

Standard Features

Key Features

- Easy scalability - pay as you grow with the fast, non-disruptive addition of Expansion Modules for expansion of tape slots.
- Start with an 80-slot 6U form-factor Base Library Module, and add up to 6 Expansion Library Modules for a total of 560 slots in a 42U rack form factor
- 25.2PB of total maximum compressed capacity with 560 slots and LTO-9 drives
- Performance scaling from 1 to 42 LTO HH Tape Drives and transfer rates of 300 MB/s per LTO-9 Tape Drive.
- Industry leading storage density to save rack space, floor space, power, cooling and management costs - 13 cartridge slots (585 TB) per 1U of rack space
- Best in class flexibility with up to 20 logical library partitions
- Customer installable, scalable, and serviceable with a color touch control panel and wizards for installation and configuration
- Integrated bar code reader
- Manage multiple HPE Tape Libraries from a single pane of glass with HPE Command View for Tape Libraries (CVTL) software
- Intelligent, proactive and predictive reporting with HPE StoreEver TapeAssure Advanced (licensed feature of CVTL)
- Using the HPE Encryption Kit get the simplest, lowest cost encryption and key management solution available - no additional software required
- Existing customers of MSL 1/8 Autoloader, MSL2024and MSL3040 Tape Libraries can repurpose their drives in the MSL6480 library to leverage their investment
- The HPE extensive interoperability testing means that MSL6480 integrates with industry-leading servers, operating systems and backup software
- Achieve higher levels of availability with data path failover and control path failover.

Drive Technology Supported	LTO-9 Ultrium 45000 LTO-8 Ultrium 30750 LTO-7 Ultrium 15000 LTO-6 Ultrium 6250
Maximum Number of Drives	42 HH
Maximum Capacity (2.5:1 compression)	25.2 PB (LTO-9, 560 slots) 3.6PB (LTO-9, 80 slots)
Maximum Data Transfer (Native)	45.4 TB/hr (42 LTO-9 drives)
Drive Interface	8 Gb/sec Native Fibre Channel 12 Gb/sec (LTO-9) 6 Gb/sec SAS (LTO-8 and earlier)
Mail Slots	10 slots per module

Scalability

Keep pace with data growth across the lifecycle with the MSL6480's industry leading scalability.

Effortlessly address both short-term and long-term storage capacity and performance needs and respond to unpredictable data growth, variance in service, or changes to backup window and retention period. Scale-out architecture allows you to pay as you grow - simply add in new modules to boost capacity and performance without investing in a whole new library.

The unique modular design of the MSL6480 includes a continuous robotics feature to provide in-box scaling for higher performance, greater scalability, and higher reliability. Upgrades are fast and non-disruptive. Scale vertically from 80 to 560 cartridge slots to store up to 25.2PB* in a single 19-inch rack. Several drive options are available

- Add between 1 and 42 HPE StoreEver LTO-9 Ultrium 45000, LTO-8 Ultrium 30750, LTO-7 Ultrium 15000 or LTO-6 Ultrium 6250 tape drives
  Notes: *Assumes fully loaded with LTO-9 media cartridges at a 2.5:1 data compression ratio.

Scaling up with the MSL6480 couldn't be easier:

Standard Features

- Start with an empty Base Library and standard redundant power supplies.
- Add between 1 and 6 LTO-9, LTO-8, LTO-7 or LTO-6 half-height tape drives and utilize up to 80 cartridge slots - a fully configured base unit with LTO-8 provides a max capacity of up to 3.6PB (assuming 2.5:1 compression).
- Then add between 1 and 6 empty expansion modules to the Base Library - each 6U expansion module includes standard redundant power supplies. Expansion modules can be flexibly installed above or below the base library module.
- You can then configure each expansion module with up to 6x LTO-9, LTO-8, LTO-7 or LTO-6 FC or SAS tape drives and utilize up to 80 cartridge slots per expansion module.

Easy Installation

Expansion modules are customer-installable; easy to configure and remove. The MSL6480 features a color touch operator control panel with wizards for installation and configuration.

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://www.hpe.com/info/rackandpower

Manageability

The HPE StoreEver MSL6480 comes with web-based remote manageability so it 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 (Phase 2 and USGv6 certified) and IPv4 network protocol support
- Command Language Interface (CLI), a menu-driven interface for obtaining library status, configuration information, and tape movement capability

HPE Command View for Tape Libraries

HPE Command View for Tape Libraries (CVTL) provides an easy to use interface for efficiently managing, monitoring and configuring an entire tape library environment From any remote location. HPE StoreEver TapeAssure Advanced is a licensed feature of CVTL that provides predictive analytics on health, performance and utilization related monitoring of all tape drives and cartridges. HPE StoreEver Data Verification Software is also a licensed feature of CVTL which proactively validates and scans, non-disruptively, the quality of data stored on LTO tape cartridges, which ensures a successful restore is possible when critical business data is needed. As of CVTL v6.1, a new capacity planning feature has been added to CVTL which allows users to view consumption metrics which enables accurate and timely future investments

HPE StoreEver TapeAssure Advanced and Data Verification Software can also be trialed for free once the CVTL Software has been installed. Simply download CVTL from
http://www.hpe.com/storage/cvtldownload and get a 60 day instant-on period to experience TapeAssure Advanced features, and trial Data Verification for the MSL3040 & MSL6480 Tape Libraries with a 10 cartridge slot license.

For more information about HPE Command View for Tape Libraries, please visit:
http://http://www.hpe.com/storage/cvtl

Standard Features

Linear Tape File System (LTFS)

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/storage/ltfs**

HPE StoreOpen Software

HPE StoreOpen Software is a free software application that helps LTFS users to use and manage single tape drives, autoloaders and tape libraries
Available for Windows environments for automation products, it provides a native GUI with a familiar look and feel. It is installed automatically as part of the LTFS package and it completely removes the need for low-level terminal commands by guiding users through the full process of select, prepare and mount an LTFS cartridge.

For more information, including user guide, downloads and compatibility, visit:
http://www.hpe.com/storage/StoreOpen

Library and Tape Tools

The MSL6480 Tape Library is supported with HPE Library and Tape Tools (L&TT). L&TT is a free diagnostic tool for all of the HPE tape storage products. This robust diagnostic tool is designed for both the experienced professional and the untrained administrator, and it allows customers to verify the installation, ensure product reliability, perform diagnostics and achieve faster resolution of tape device issues. L&TT performs firmware upgrades, verification of device operation, failure analysis and a range of utility functions. Performance tools assist in troubleshooting issues and system configuration checks warn of common host issues. It also provides seamless integration with HPE support by generating and e-mailing test results and support tickets. HPE Support will require the use of L&TT to troubleshoot most device issues, so it is recommended that a support ticket is pulled and the device assessment test is run before calling.

For more information on L&TT, please visit: **http://www.hpe.com/support/tapetools**.

High density storage

Save rack space, floor space, and power and cooling costs with industry leading storage density. Offering 13 cartridge slots per 1U of rack space (or up to 585 TBs per 1U of rack space) using LTO-9 drives, the MSL6480 provides the highest tape drive density per module of any mid-range tape library.

Partitioning

The MSL6480 Tape Library supports up to 20 logical partitions for greater flexibility and higher asset utilization. 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.

LTO-7 Type M media

The MSL6480 Tape Library supports LTO-7 Type M media. This is the ability of an LTO-8 drive to write 9 TB (native) on a brand new LTO-7 cartridge instead of 6 TB (native) as specified by the LTO-7 format. LTO-7 Type M cartridges will be designated by an automation barcode label ending with the last 2 characters "M8". A standard 6TB LTO-7 cartridge is indicated with an automation barcode label ending in "L7". An LTO-8 cartridge has a capacity of 12 TB (native), and is indicated with an automation barcode label ending in "L8".

Standard Features

Only unused LTO-7 cartridges may be initialized as LTO-7 Type M. Once a cartridge is initialized as Type M, it may not be changed back to a 6TB LTO-7 cartridge. Also, an LTO-7 Type M cartridge can only be written and read in an LTO-8 drive; LTO-7 drives are not capable of reading LTO-7 Type M cartridges.

LTO-7 Type M media supports existing LTO format features including data compression, encryption and partitioning enabling LTFS. LTO-7 Type M media is not supported on WORM cartridges.

LTO-9 drives will not be backward compatible with LTO-7 Type M media.

LTO-9 Media Initialization
Media initialization has been implemented in LTO-9 technology to optimize data placement on each LTO-9 cartridge. The initialization enables the tape drive to intelligently align data to a specific tape cartridge. Each new LTO-9 cartridge requires a one-time initialization prior to starting read/write operations. This initialization is only required for the first use of a new LTO-9 cartridge. Subsequent loads do not require additional initialization. The initialization process varies in time depending on the environmental conditions of tape and drive. Most initializations will complete within an hour; however, in some cases it can take up to 2 hours.
To help customers complete this one-time initialization of new LTO-9 media in tape libraries, the MSL6480 provides an "LTO-9 New Media Initialization Wizard" feature which will guide the user through an automated process to load uninitialized media into LTO-9 tape drives to facilitate the completion of the LTO-9 media initialization process. For more information please reference the **MSL6480 User Guide.**

Notes: LTO-9 WORM media is currently not supported on HPE Ultrium LTO-9 Drives

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.

HPE MSL6480 Tape Libraries include redundancy features for high availability. Dual power supplies are standard for increased system reliability and uptime.

Longevity
Organizations need to be confident that their data in archive is still there when they need it. LTO tape media is specified with a 30 year shelf life, if stored at the "Archival Life Recommended Storage" conditions. HPE TapeAssure Advanced also analyses the results of every tape use to ensure the availability of data placed in long-term storage, archive or DR.

Safeguarding data for Disaster Recovery
The HPE StoreEver MSL6480 Tape Library can provide the 'last line of defense' for your data.
- Tape is inherently 'offline to threats' - tape's removable media is off-line to the threats from viruses, hackers and cyber-attacks that online data on disk is susceptible to. It is also a logically clean copy that won't be accidentally overwritten by mirroring software.
- LTO-9, LTO-8, LTO-7and LTO-6 Ultrium tape drives include hardware based data encryption to prevent unauthorized access to data at rest.
- LTO-8, LTO-7, LTO-6 and LTO-5 cartridges are available with write-once-read-many (WORM) capability to prevent accidental overwriting of data archived on the tape.

Both WORM and hardware-based data encryption features help organizations with compliance to increased data security regulations.

Notes: LTO-9 WORM media is currently not supported on HPE Ultrium LTO-9 Drives

Standard Features

High Availability

To make the most of your library performance, the MSL6480 offers high availability failover capability utilizing LTO-9, LTO-8, LTO-7 andLTO-6 Tape Drives.

Basic Data Path Failover feature (Supports LTO-6 FC drives)

- This feature requires the HPE StoreEver MSL6480 High Availability LTO-6 Data Path Failover License
- Both ports of the drive are physically connected but only one is active.
- Both ports are configured identically.
- If a link failure is detected on the active port, the drive automatically deactivates that link and activates the standby link using the exact same names, reservations, encryption settings, etc.
- Host may detect momentary connection loss then the drive connection recovers..

Basic Control Path Failover feature (Supports LTO-6 FC drives)

- This feature requires the HPE StoreEver MSL6480 High Availability LTO-6 Control Path Failover License.
- The library has a virtual link through Control Path drive back to the switch.
- The library has a unique WWN and shows up on the switch as a unique device instead of as a LUN behind a drive.
- Both links share the same identity and only one is active at a time.
- When one link goes down the other is activated with the same identity as the first link.
- The host may detect a momentary link loss then the library is back at a different switch port but with the same identity.

Driver-based Data Path Failover (supports LTO-6 FC drives)

- This feature requires the HPE StoreEver MSL6480 High Availability LTO-6 Data Path Failover License.
- SAN wide failure protection
- Both ports are connected and both are active but the driver selects between them and uses them one at a time.
- If a link breaks anywhere between the host and the drive, the host side driver switches to another path and recovers outstanding commands.
- Drivers handle errors before applications see them.

Driver-based Control Path Failover (supports LTO-6 FC drives)

- This feature requires the HPE StoreEver MSL6480 High Availability LTO-6 Control Path Failover License.
- SAN wide failure protection
- Both the Control Path (CP) drive and the Control Path Failover (CPF) drive are accessible from the same hosts.
- Drivers will handle errors before applications see them
- If the Control Path drive is lost, the library activates the Control Path Failover drive and the host-based drivers find the robot on the new path.

LTO-7 + driver-based Data and Control Path Failover (supports LTO-9, LTO-8 and LTO-7 drives)

- LTO-7+ Path Failover supports Data Path and Control Path failover with LTO-9, LTO-8 and LTO-7 drives, unlocking feature-sets with just one license enabled in the library.
- Both Drive paths are active; both ports are green and up in the library and the switch.
- The Driver-Based Failover technology has the failover intelligence in the driver that runs on the server. Drivers on the host perform path and command failover recovery.
- Requires host driver support, in addition to minimal tape drive and library firmware features, to manage multiple paths across multiple SAN. Presents a single drive or library path to applications and automatically transfers commands to the new path if the original path is lost.
- The transfer to the failover path is invisible to most applications, avoiding the need for user intervention.
- The Driver-Based Failover will only present one library path and one drive path to the host for each library or drive that is attached to the host.

If an LTO-9, LTO-8 or LTO-7 drive is enabled for Driver-Based Failover, it can still be seen by hosts with a standard driver even though the Driver-Based Failover will not be functional.

Standard Features

Data Encryption

The HPE MSL6480 Tape Library offers multiple options for data encryption, depending on the requirements for policy, regulation, compliance, and centralized key management.

- **HPE MSL Encryption Kit**

  The HPE MSL Encryption Kit provides a library-enabled encryption solution that greatly enhances data privacy, confidentiality, and integrity of your critical business data while supporting compliance requirements. While there are a wide range of encryption solutions available, the HPE MSL Encryption Kit is intended to be an easy and affordable library-enabled solution for small businesses.

  The encryption kit includes two USB key server tokens, product documentation, and firmware support. One encryption kit is needed per library and it must be physically accessible so that the USB token can be inserted into the automation device. One of the two tokens will plug into the USB port in the library and will generate and maintain encryption keys for the LTO-9, LTO-8, LTO-7 and LTO-6 drives/libraries. The second token will be used as a backup token, and will be used if the first token is lost or damaged The USB key server token uses a hardware random number generator, password authentication, and digital envelopes for strong encryption keys and security operations. The encryption kit provides a self-contained solution for autoloaders and MSL libraries with no additional software, PCs, or servers required or involved.

- **Enterprise Secure Key Manager (ESKM) and KMIP**

  The HPE MSL6480 Tape Library is compatible with Hewlett Packard Enterprise's Enterprise Secure Key Manager (ESKM) that provides centralized encryption key management for HPE MSL6480 Tape Libraries. The tape libraries are capable of operation using either the ESKM proprietary protocol or the KMIP 1.2 protocol. One library encryption license will be needed based on the protocol of choice (either ESKM or KMIP).

  For more information on all supported key management servers, please visit:
  http://www.hpe.com/storage/DAPRcompatibility

Secure Manager License

HPE MSL6480 Secure Manager License is an optional software feature that provides an additional level of security that lets you control access to the tape library by authorizing specific servers to access the library's drives and robotics. Secure Manager increases backup reliability by blocking disruptive traffic from unauthorized hosts to the library, which is one of the main causes of failed or incomplete backups.

- Easily configure device-level SAN access 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
- Paths to robotics can be separated between two independent SANs for isolation purposes

Secure Manager allows you to
- Create host access groups
- Add and modify host information
- Map device access to specific hosts
- Allows a disable feature when switch zoning is desired

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. The LTO Ultrium specification is an industry standard format; thus data written on HPE Ultrium Tape Drives can be interchanged directly with LTO Ultrium Tape Drives from other vendors.

Standard Features

Investment protection
HPE LTO tape drives and automation products are founded on the LTO open standard and adhere to the published twelve-generation LTO format roadmap.

The LTO standard for backward compatibility up to generation seven is to write back one generation and read back two generations. Eighth-generation LTO Ultrium drives read and write LTO-7 and LTO-8 media. Ninth-generation LTO Ultrium drives read and write LTO-8 and LTO-9 media.

As part of the LTO open standard, all HPE tape drives and media offer the same standards of compatibility with tape drives and media manufactured by other LTO vendors.

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-9 Ultrium 45000	101 to 300 MB/s
HPE LTO-8 Ultrium 30750	101 to 300 MB/s
HPE LTO-7 Ultrium 15000	101 to 300 MB/s
HPE LTO-6 Ultrium 6250	54 to 160 MB/s

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 from LTO-3 to LTO-8 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
- 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 generation LTO Ultrium products from LTO-3 to LTO-8.

Notes: LTO-9 WORM media is currently not supported on HPE Ultrium LTO-9 Drives

Standard Features

HPE Storage Media

Hewlett Packard Enterprise branded Linear Tape Open (LTO) Ultrium cartridges are designed, manufactured and tested to provide outstanding reliability for backing up, archiving and restoring your data. We continuously monitor the quality of our branded tapes using what we believe is the industry's most comprehensive and forensic specification for quality and reliability. Using real life conditions and both Hewlett Packard Enterprise and non-HPE drives, we supplement extensive in-process QA parametric testing with ongoing drive based scrutiny, to make sure performance is excellent for any combination of device, duty cycle and environment.

Because Hewlett Packard Enterprise is a leading supplier of both LTO tape devices and media, we have the ability to re-create many different scenarios mirroring how customers use their cartridges. And many of the Hewlett Packard Enterprise protocols are either unique in nature or scale, such as the HPE 'Green Tape', and HPE 'Environmental Interchange' tests, or far surpass industry standards, for example, the HPE 'Locate/Rewind/Append' test. Since the beginning of 2021, almost one billion meters of media have been pulled and over 40 million gigabytes of data have been written in the Hewlett Packard Enterpsise demanding GTT protocol. All of these ongoing tests are intended to ensure HPE LTO Ultrium media is the most reliable you can find. Your best choice for ease of support and maximum dependability is to use HPE-branded Ultrium cartridges at all times.

Compatibility

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

Service and Support

HPE Pointnext – Service and Support

Get the most from your HPE Products. Get the expertise you need at every step of your IT journey with **HPE Pointnext Services**. We help you lower your risks and overall costs using automation and methodologies that have been tested and refined by HPE experts through thousands of deployments globally. HPE Pointnext **Advisory Services**, focus on your business outcomes and goals, partnering with you to design your transformation and build a roadmap tuned to your unique challenges. Our **Professional** and **Operational Services** can be leveraged to speed up time-to-production, boost performance and accelerate your business. HPE Pointnext specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

Consume IT on your terms

HPE GreenLake brings the cloud experience directly to your apps and data wherever they are—the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake accelerates digital transformation in a distributed, edge-to-cloud world..

- Get Faster time to market
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

Managed services to run your IT operations

HPE GreenLake Management Services provides services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.

Free up resources with Operational Services from HPE Pointnext Services

HPE delivers services for IT by using proven best practices as well as automation and methodologies that have been tested and refined by HPE experts and artificial intelligence through thousands of deployments globally. Choose from the recommended services for customers purchasing from Hewlett Packard Enterprise or an authorized reseller. Services are quoted using Hewlett Packard Enterprise order configuration tools.

HPE Pointnext Tech Care.

HPE Pointnext Tech Care is the new operational service experience for HPE products. Tech Care goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Pointnext Tech Care has been reimagined from the ground up to support a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Pointnext Tech Care is available in three response levels. Basic, which provides 9x5 business hour availability and a 2 hour response time. Essential which provides a 15 minute response time 24x7 for most enterprise level customers, and Critical which includes a 6 hour repair commitment where available and outage management response for severity 1 incidents.

For more information: **https://www.hpe.com/services/techcare**

HPE Pointnext Complete Care

HPE Pointnext Complete Care is a modular, edge-to-cloud IT environment service that provides a holistic approach to optimizing your entire IT environment and achieving agreed upon IT outcomes and business goals through a personalized and customer-centric experience. All delivered by an assigned team of HPE Pointnext Services experts. HPE Pointnext Complete Care provides:

- A complete coverage approach – edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
- Digitally enabled and AI Driven customer experience

For more information: **https://www.hpe.com/services/completecare**
For more information: **https://www.hpe.com/us/en/services/datacenter-hybrid-services.html**

Service and Support

Parts and Materials

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.Complete Care

HPE Support Center

The HPE Support Center is a personalized online support portal with access to information, tools and experts to support HPE business products. Submit support cases online, chat with HPE experts, access support resources or collaborate with peers. The HPE Support Center Mobile App* allows you to resolve issues yourself or quickly connect to an agent for live support. Now, you can get access to personalized IT support anywhere, anytime.

HPE Insight Remote Support and HPE Support Center are available at no additional cost with a HPE warranty, HPE Support Service or HPE contractual support agreement.
Notes: *HPE Support Center Mobile App is subject to local availability.

For more information: **http://www.hpe.com/services**

For more information

- **http://www.hpe.com/services**
- **https://www.hpe.com/us/en/services/operational.html**

To learn more on HPE Storage Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Contact information for a representative in your area can be found at "Contact HPE" For more information: **https://www.hpe.com/us/en/contact-hpe.html**

HPE Support Services are sold by HPE and Hewlett Packard Enterprise Authorized Service Partners:
- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.

Customers purchasing from a commercial reseller can find HPE Support Services at **https://ssc.hpe.com/portal/site/ssc/**

Connect your devices*

Notes: *Only include if the product can be connected
Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Reduce down time, increase diagnostic accuracy and have a single consolidated view of your environment. By connecting, you will receive 24x7monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Tech Care Service and HPE Complete Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server, storage and networking products, securely connected to HPE support.

Learn more about getting connected at **http://www.hpe.com/services/getconnected**

Configuration Information

Step 1 - Base Configuration
HPE StoreEver MSL6480

Description	SKU
HPE StoreEver MSL6480 Scalable Base Module	QU625A
HPE StoreEver MSL6480 Scalable Expansion Module	QU626A

Notes:
- This product is TAA (Trade Agreements Act) compliant.
- The HPE MSL6480 Tape Library Base and Expansion Modules are 6U rack mountable, 80-slot units. They do not contain any tape drives.

Kit Contents (for each library):
- Two 2.5M PDU Power Cord, C13/C14, 10A
- Rack-mount hardware
- Getting started poster
- Redundant Power Supplies
- Module interconnect cable (expansion module only)

Factory Racking

Factory integrate MSL6480 Tape Library with other HPE products such as HPE ProLiant Servers	#0D1

Notes: #0D1 will appear after the Tape Library part number on the sales order if HPE factory integration is indicated

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Step 2 - Select Generation & Quantity of LTO Ultrium Tape Drives
HPE StoreEver LTO-9 Ultrium 45000 FC Drive Kit

HPE StoreEver LTO-9 Ultrium 45000 FC Drive Kit	R6Q74A

Notes:
- Half height LTO-9 FC tape drive. For use with the Autoloader, MSL2024, MSL3040 or MSL6480 libraries. Drive kit includes a tape drive and documentation
- #0D1 will appear after R6Q74A on the sales order if HPE factory integration is indicated
- For tape drives to be integrated into the library, the library must be factory integrated (#0D1) into a rack

This product is TAA (Trade Agreements Act) compliant.

HPE StoreEver LTO-9 Ultrium 45000 SAS Drive Kit

HPE StoreEver LTO-9 Ultrium 45000 SAS Drive Kit	R6Q75A

Notes:
- Half height LTO-9 SAS tape drive. For use with the Autoloader, MSL2024, MSL3040 or MSL6480 libraries. Drive kit includes a tape drive and documentation
- #0D1 will appear after R6Q75A on the sales order if HPE factory integration is indicated
- For tape drives to be integrated into the library, the library must be factory integrated (#0D1) into a rack

This product is TAA (Trade Agreements Act) compliant.

HPE StoreEver LTO-8 Ultrium 30750 FC Drive Kit

HPE StoreEver MSL LTO-8 Ultrium 30750 FC Drive Upgrade Kit	Q6Q67A

Notes:
- Half height LTO-8 FC tape drive. For use with the Autoloader, MSL2024, MSL3040 or MSL6480 libraries. Drive kit includes a tape drive and documentation
- #0D1 will appear after Q6Q67A on the sales order if HPE factory integration is indicated
- For tape drives to be integrated into the library, the library must be factory integrated (#0D1) into a rack
- This product is TAA (Trade Agreements Act) compliant.

Configuration Information

Description	SKU

HPE StoreEver LTO-8 Ultrium 30750 SAS Drive Kit

HPE StoreEver MSL LTO-8 Ultrium 30750 SAS Drive Upgrade Kit　　　　　　　　　　　　　　Q6Q68A

Notes:
- Half height LTO-8 SAS tape drive. For use with the Autoloader, MSL2024, MSL3040 or MSL6480 libraries. Drive kit includes a tape drive and documentation
- #0D1 will appear after Q6Q68A on the sales order if HPE factory integration is indicated
- For tape drives to be integrated into the library, the library must be factory integrated (#0D1) into a rack
- This product is TAA (Trade Agreements Act) compliant.

HPE StoreEver LTO-7 Ultrium 15000 FC Drive Kit

HPE StoreEver MSL LTO-7 Ultrium 15000 FC Drive Upgrade Kit　　　　　　　　　　　　　　N7P36A

Notes:
- Half height LTO-8 FC tape drive. For use with the Autoloader, MSL2024, MSL3040 or MSL6480 libraries. Drive kit includes a tape drive and documentation
- #0D1 will appear after N7P36A on the sales order if HPE factory integration is indicated
- For tape drives to be integrated into the library, the library must be factory integrated (#0D1) into a rack
- This product is TAA (Trade Agreements Act) compliant.

HPE StoreEver LTO-7 Ultrium 15000 SAS Drive Kit

HPE StoreEver MSL LTO-7 Ultrium 15000 SAS Drive Upgrade Kit　　　　　　　　　　　　　N7P37A

Notes:
- Half height LTO-8 FC tape drive. For use with the Autoloader, MSL2024, MSL3040 or MSL6480 libraries. Drive kit includes a tape drive and documentation
- #0D1 will appear after N7P37A on the sales order if HPE factory integration is indicated
- For tape drives to be integrated into the library, the library must be factory integrated (#0D1) into a rack
- This product is TAA (Trade Agreements Act) compliant.

HPE StoreEver LTO-6 Ultrium 6250 FC Drive Kit

HPE StoreEver MSL LTO-6 Ultrium 6250 Fibre Channel Drive Upgrade Kit　　　　　　　　C0H28A

Kit Contents (for each drive): One HPE StoreEver LTO-6 Ultrium 6250 FC Half-Height Tape Drive

Notes:
- Half height LTO-8 FC tape drive. For use with the Autoloader, MSL2024, MSL3040 or MSL6480 libraries. Drive kit includes a tape drive and documentation
- #0D1 will appear after C0H28A on the sales order if HPE factory integration is indicated
- For tape drives to be integrated into the library, the library must be factory integrated (#0D1) into a rack
- This product is TAA (Trade Agreements Act) compliant.

HPE StoreEver LTO-6 Ultrium 6250 SAS Drive Kit

HPE StoreEver MSL LTO-6 Ultrium 6250 SAS Drive Upgrade Kit　　　　　　　　　　　　　C0H27A

Kit Contents (for each drive): One HPE StoreEver LTO-6 Ultrium 6250 SAS Half-Height Tape Drive

Notes:
- Half height LTO-8 FC tape drive. For use with the Autoloader, MSL2024, MSL3040 or MSL6480 libraries. Drive kit includes a tape drive and documentation
- #0D1 will appear after C0H27A on the sales order if HPE factory integration is indicated
- For tape drives to be integrated into the library, the library must be factory integrated (#0D1) into a rack
- This product is TAA (Trade Agreements Act) compliant.

Configuration Information

Step 3 - Select Software Licenses

Select each option as required with quantities specified

Description	SKU

HPE StoreEver MSL6480 Command View TL LTU (1 each)

| HPE StoreEver MSL6480 Command View TL LTU | TC444A |

Notes: This is a paper license that will be mailed.

HPE StoreEver MSL6480 Command View TL E-LTU (1 each)

| HPE StoreEver MSL6480 Command View TL E-LTU | TC444AAE |

Notes: This is an electronically delivered License.

HPE StoreEver MSL6480 CVTL TapeAssure Advanced LTU (1 each)

| HPE StoreEver MSL6480 Command View for Tape Libraries - TapeAssure Advanced LTU | TC445A |

Notes:
- One license needed per library and Command View TL must be installed.
- This is a paper license that will be mailed.

HPE StoreEver MSL6480 CVTL TapeAssure Advanced E-LTU (1 each)

| HPE StoreEver MSL6480 Command View for Tape Libraries - TapeAssure Advanced E-LTU | TC445AAE |

Notes:
- One license needed per library and Command View TL must be installed.
- This is an electronically delivered License.

HPE StoreEver MSL6480 CVTL Data Verification Software LTU (1each)

| HPE StoreEver Command View for Tape Libraries – Data Verification 100 cartridges LTU | TC443A |

Notes:
- One license needed per library and Command View TL must be installed.
- This is a paper license that will be mailed.

HPE StoreEver MSL6480 CVTL Data Verification Software E-LTU (1each)

| HPE StoreEver Command View for Tape Libraries – Data Verification 100 cartridges E-LTU | TC443AAE |

Notes:
- One license needed per library and Command View TL must be installed.
- This is an electronically delivered License.

HPE StoreEver MSL6480 ESKM Encryption LTU (1 each)

| HPE StoreEver MSL6480 ESKM Encryption LTU | TC469A |

Notes:
- The ESKM Encryption License will enable encryption keys to be received from the HPE ESKM for strong data encryption and key management. One per library is required (regardless of Expansion Module qty)
- This is a paper license that will be mailed.

HPE StoreEver MSL6480 ESKM Encryption E-LTU (1 each)

| HPE StoreEver MSL6480 ESKM Encryption E-LTU | TC469AAE |

Notes:
- The ESKM Encryption License will enable encryption keys to be received from the HPE ESKM. One per library is required (regardless of Expansion Module qty).
- This is an electronically delivered License.

Configuration Information

Description	SKU
HPE StoreEver MSL6480 KMIP 1.2 Key Manager LTU (1 each)	
HPE StoreEver MSL6480 KMIP 1.2 Key Manager LTU	D4T76A
Notes: This is a paper license that will be mailed.	
HPE StoreEver MSL6480 KMIP 1.2 Key Manager E-LTU (1 each)	
HPE StoreEver MSL6480 KMIP 1.2 Key Manager E-LTU	D4T76AAE
Notes: This is an electronically delivered License.	
HPE StoreEver MSL6480 Secure Manager LTU (1 each)	
HPE StoreEver MSL6480 Secure Manager LTU	D4T75A
Notes: This is a paper license that will be mailed.	
HPE StoreEver MSL6480 Secure Manager E-LTU (1 each)	
HPE StoreEver MSL6480 Secure Manager E-LTU	D4T75AAE
Notes: This is an electronically delivered License.	
HPE StoreEver MSL6480 LTO-7+ Path Failover LTU (1 each)	
HPE StoreEver MSL6480 LTO-7 Ultrium Path Failover LTU	P9H33A
HPE StoreEver MSL6480 LTO-7+ Path Failover E-LTU (1 each)	
HPE StoreEver MSL6480 LTO-7 Ultrium Path Failover E-LTU	P9H33AAE
HPE StoreEver High Availability MSL6480 LTO-5/6 Control Path Failover LTU (1 each)	
HPE StoreEver MSL6480 LTO-5/6 Control Path Failover LTU	TC359A
Notes:	
– High Availability Failover supports LTO-5 (full-height only) and LTO-6 FC Tape Drives only.	
– This is a paper license that will be mailed.	
HPE StoreEver High Availability MSL6480 LTO-5/6 Control Path Failover E-LTU (1 each)	
HPE StoreEver MSL6480 LTO-5/6 Control Path Failover E-LTU	TC359AAE
Notes:	
– High Availability Failover supports LTO-5 (full-height only) and LTO-6 FC Tape Drives only.	
– This is an electronically delivered License.	
HPE StoreEver High Availability MSL6480 LTO-5/6 Data Path Failover LTU (1 each)	
HPE StoreEver MSL6480 LTO-5/6 Data Path Failover LTU	TC360A
Notes:	
– Data Path Failover supports LTO-5 (full-height only) and LTO-6 FC Tape Drives only.	
– This is a paper license that will be mailed.	
HPE StoreEver High Availability MSL6480 LTO-5/6 Data Path Failover E-LTU (1 each)	
HPE StoreEver MSL6480 LTO-5/6 Data Path Failover E-LTU	TC360AAE
Notes:	
– Data Path Failover supports LTO-5 (full-height only) and LTO-6 FC Tape Drives only.	
– This is an electronically delivered License.	

Step 4 - Select Additional Options from the next section.

Additional Options

Power Cords

Description	SKU
HPE C13 - C14 WW 250V 10Amp 2.5m Jumper Cord	142257-002

Notes: This cord ships standard with each MSL Tape Library; can be used to connect the rack-mounted device to PDUs with IEC-320 receptacles.

Quantity 2 each

Quantity to order

Regional Power Cord Options

Notes: Two PDU cords are shipped with each module (above). If regional power cords are preferred, order qty (2) per module. One for each power supply that ships with the library; please select the correct power cord for your geographical location.

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

Notes: 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 capacity 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.

Factory Racking

Description	SKU
Factory integrate the MSL Tape Libraries with other Hewlett Packard Enterprise products such as HPE ProLiant Servers	#0D1

Notes: #0D1 will appear after the Tape Library part number on the sales order if HPE factory integration is indicated. One Base Module and up to 6 Expansion Modules can be factory integrated up to 42U in a single rack.

Additional Options

Description	SKU

Encryption

HPE StoreEver 1/8 G2 Tape Autoloader and MSL Tape Library Encryption Kit — AM495A

Notes: The Encryption Kit key server token will generate and retain encryption keys for HPE LTO- 4 and later generation Ultrium tape drives in the library. Works independent of application or backup software; doesn't require ISV support.

HPE StoreEver MSL6480 ESKM Encryption LTU — TC469A

Notes:
— The ESKM Encryption License will enable encryption keys to be received from the HPE ESKM for strong data encryption and key management. One per library is required (regardless of Expansion Module quantity)
— This is a paper license that will be mailed**.**

HPE StoreEver MSL6480 ESKM Encryption E-LTU — TC469AAE

Notes:
— The ESKM Encryption License will enable encryption keys to be received from the HPE ESKM. One per library is required (regardless of Expansion Module quantity)
— This is an electronically delivered license.

HPE StoreEver MSL6480 KMIP 1.2 Key Manager LTU — D4T76A

Notes: This is a paper license that will be mailed.

HPE StoreEver MSL6480 KMIP 1.2 Key Manager E-LTU — D4T76AAE

Notes: This is an electronically delivered license.

FC Host Bus Adapters

The MSL Libraries are certified with a number of Fibre Channel Host Bus Adapters. For the most current list of supported FC HBAs, please reference the HPE Data Agile DAPR Compatibility Matrix (Formerly EBS) and Design Guide located at:
http://www.hpe.com/go/DAPRcompatibility.
For more information on FC HBAs, see HPE StoreFabric Adapters at: **http://www.hpe.com/storage/san/**

SAS Host Bus Adapters

The MSL Libraries are certified with a number of SAS Host Bus Adapters and ProLiant Smart Array Controllers. For the most current list of supported devices, please reference the HPE Data Agile DAPR Compatibility Matrix (Formerly EBS) and Design Guide located at: **http://www.hpe.com/go/DAPRcompatibility**.
For more information on HPE Smart Array RAID controllers, see Fibre HPE P-class RAID controllers at:
http://www.hpe.com/servers/smartarray/
For more information on HPE ProLiant (SAS) host bus adapters, see H-class HBA controllers at:
http://www.hpe.com/servers/smartarray/.

HBAs and SAS Controllers

HPE Smart Array P408e-p SR Gen10 (8 External Lanes/4GB Cache) 12G SAS PCIe Plug-in Controller — 804405-B21

Notes: Recommended for ProLiant Gen10 SAS tape automation connect.

HPE Smart Array E208e-p SR Gen10 (8 External Lanes/No Cache) 12G SAS PCIe Plug-in Controller — 804398-B21

Notes:
— Recommended for ProLiant Gen10 SAS tape automation connect.
— Recommended for ProLiant Gen9 SAS tape automation connect.

Microsemi Adaptec HBA 1100-8e — A1100-8E

Notes: Recommended SAS HBA for DL & ML Gen9 servers only. HPE does not provide official support for this adapter, however the configuration is supported.

Additional Options

Description	SKU
Optical cables	

OM4 LC-LC type cables

HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 1m Cable	QK732A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 2m Cable	QK733A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 5m Cable	QK734A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 15m Cable	QK735A
HPE Premier Flex LC/LC Multi-mode OM4 2 Fiber 30m Cable	QK736A
HPE 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	N/A
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

Notes: 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)

HPE StoreEver Mini-SAS High Density to 4-lane Mini-SAS High Density External Fanout 2m Cable	P35176-B21

Notes: 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 (SFF8644) ports.

HPE StoreEver Mini-SAS High Density to 4-lane Mini-SAS High Density External Fanout 4m Cable	P35175-B21

Notes: 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 (SFF8644) ports.

HPE StoreEver 2m External Mini-SAS to 4x1 Mini-SAS Cable	AN975A

Notes: 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.

HPE StoreEver 4m External Mini-SAS to 4x1 Mini-SAS Cable	AN976A

Notes: 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.

HPE StoreEver Mini-SAS High Density to 4-lane Mini-SAS External Fanout 2m Cable	K2R09A
HPE StoreEver Mini-SAS High Density to 4-lane Mini-SAS External Fanout 4m Cable	K2R10A
HPE External 4.0m (13ft) Mini-SAS HD 4x to Mini-SAS HD 4x Cable	716199-B21

Notes: One cable is required for every LTO-9 tape drive. Use this cable to connect HPE MSL SAS Tape Libraries to 12 Gb SAS Host Bus Adapters.

HPE External 2.0m (6ft) Mini-SAS HD 4x to Mini-SAS HD 4x Cable	716197-B21

Notes: One cable is required for every LTO-9 tape drive. Use this cable to connect HPE MSL SAS Tape Libraries to 12 Gb SAS Host Bus Adapters.

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

Notes: 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.

Additional Options

Description	SKU
HPE 4.0m External Mini SAS High Density to Mini SAS Cable	716193-B21

Notes: 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.

Rack Cabinets

The MSL6480 libraries are supported in HPE G2 Enterprise Series, Enterprise Series, G2 Advanced Series, Advanced Series, Standard Series, and other HPE square hole or round hole racks.

Notes: If ordering the #0D1 Factory Integration option, the MSL6480 Tape Libraries are certified to ship with one base module and up to 6 expansion modules (up to 42U) installed in the HPE Intelligent Series rack.

Media

HPE LTO-9 Ultrium 45TB RW Data Cartridge	Q2079A
HPE LTO-9 Ultrium 45TB RW 960 Data Cartridge Pallet without Cases	Q2079AB
HPE LTO-9 Ultrium 45TB RW 960 Data Cartridge Pallet with Cases	Q2079AD
HPE LTO-9 Ultrium 45TB RW 20 Data Cartridges Library Pack without Cases	Q2079AH
HPE LTO-8 Ultrium 30TB RW Data Cartridge	Q2078A
HPE LTO-8 Ultrium 30TB WORM Data Cartridge	Q2078W
HPE LTO-8 Ultrium 30TB RW 960 Data Cartridge Pallet without Cases	Q2078AB
HPE LTO-8 Ultrium 30TB RW 960 Data Cartridge Pallet with Cases	Q2078AD
HPE LTO-8 Ultrium 30TB RW 20 Data Cartridges Library Pack without Cases	Q2078AH
HPE LTO-7 Ultrium 15TB RW Data Cartridge	C7977A
HPE LTO-7 Ultrium No Case 960 Tape Pallet	C7977AB
HPE LTO-7 Ultrium RW 960 Tape Pallet	C7977AD
HPE LTO-7 Ultrium 15TB Eco Case Data Cartridge 20 Pack	C7977AH
HPE LTO-7 Ultrium WORM Data Cartridge	C7977W
HPE LTO-6 Ultrium 6.25TB RW Data Cartridge	C7976A
HPE LTO-6 Ultrium 6.25TB WORM Data Cartridge	C7976W
HPE LTO-6 Ultrium 6.25TB BaFe RW Data Cartridge	C7976B
HPE LTO-6 Ultrium 6.25TB BaFe WORM Data Cartridge	C7976BW
HPE LTO-5 Ultrium 3TB RW Data Cartridge	C7975A
HPE LTO-5 Ultrium 3TB WORM Data Cartridge	C7975W

Bar Code Labels

HPE LTO-9 Ultrium RW Bar Code Label Pack	Q2017A
HPE LTO-8 Ultrium RW Bar Code Label Pack	Q2015A
HPE LTO-7 Ultrium Type M RW Bar Code Label Pack	Q2016A
HPE LTO-7 Ultrium RW Bar Code Label Pack	Q2014A
HPE LTO-6 Ultrium RW Bar Code Label Pack	Q2013A
HPE LTO-5 Ultrium RW Bar Code Label Pack	Q2011A
HPE LTO-5 Ultrium WORM Bar Code Label Pack	Q2012A

Non-Custom Labeled Data Cartridges

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

HPE LTO-9 Ultrium 45TB RW Non Custom Labeled 20 Data Cartridges with Cases	Q2079AN
HPE LTO-8 Ultrium 30TB RW Non Custom Labeled Library Pack 20 Data Cartridges with Cases	Q2078AN

Additional Options

HPE LTO-7 Ultrium Type M 22.5TB RW 20 Data Cartridges Non Custom Labeled with Cases	Q2078MN
HPE LTO-7 Ultrium RW No Case Custom Labeled Data Cartridge 20 Pack	C7977AC
HPE LTO-7 Ultrium Non Custom Labeled Data Cartridge 20 Pack	C7977AN
HPE LTO-6 Ultrium 6.25TB RW Non Custom Labeled 20 Data Cartridges with Cases	C7976AN
HPE LTO-6 Ultrium 6.25TB BaFe RW Non Custom Labeled Data Cartridges 20 Pack	C7976BN
HPE LTO-5 Ultrium Non-custom Labeled Data Cartridge 20 Pack	C7975AN

Custom Labeled Data Cartridges
Notes: Custom labeled products allow customers to customize a specific sequence printed on each label.

HPE LTO-9 Ultrium 45TB RW Custom Labeled Library Pack 20 Data Cartridges without Cases	Q2079AC
HPE LTO-9 Ultrium 45TB RW Custom Labeled 20 Data Cartridges with Cases	Q2079AL
HPE LTO-8 Ultrium 30TB RW Custom Labeled Library Pack 20 Data Cartridges with Cases	Q2078AL
HPE LTO-8 Ultrium 30TB WORM Custom Labeled Library Pack 20 Data Cartridges with Cases	Q2078WL
HPE LTO-8 Ultrium 30TB RW Custom Labeled Library Pack 20 Data Cartridges without Cases	Q2078AC
HPE LTO-7 Ultrium Type M 22.5TB RW 20 Data Cartridges Custom Labeled with Cases	Q2078ML
HPE LTO-7 Ultrium Type M 22.5TB RW 20 Data Cartridges Custom Labeled Library Pack without Cases	Q2078MC
HPE LTO-7 Ultrium RW Custom Labeled Data Cartridge 20 Pack	C7977AL
HPE LTO-7 Ultrium WORM Custom Labeled Data Cartridge 20 Pack	C7977WL
HPE LTO-6 Ultrium 6.25TB RW Custom Labeled 20 Data Cartridges with Cases	C7976AL
HPE LTO-6 Ultrium 6.25TB RW Custom Labeled 20 Data Cartridges Library Pack without Cases	C7976AC
HPE LTO-5 RW Custom Labeled Data Cartridge 20 Pack	C7975AL
HPE LTO-5 RW Custom Labeled No Case Data Cartridge 20 Pack	C7975AC
HPE LTO-5 WORM Custom Labeled Cartridge 20 Pack	C7975WL

Notes: For more information on LTO media, see:
https://www.hpe.com/us/en/product-catalog/storage/storage-media.hits-12.html

HPE Support Service Options

Same Day Response

HPE 1 year Post Warranty Foundation Care Same business day D2200sb G2 VSA bundle Service	U3DG0PE
HPE 1 year Post Warranty Foundation Care 24x7 MSL6480 Base Tape Library Service	U3CS6PE
HPE 1 year Post Warranty Foundation Care Call to Repair MSL6480 Base Tape Library Service	U3CT4PE
HPE 3 year Foundation Care Same business day D2200sb G2 VSA bundle Service	U3DF7E
HPE 3 year Foundation Care 24x7 MSL6480 Base Tape Library Service	U3CS3E
HPE 3 year Foundation Care Call to Repair MSL6480 Base Tape Library Service	U3CT1E
HPE 4 year Foundation Care 24x7 MSL6480 Base Tape Library Service	U3CS4E
HPE 4 year Foundation Care Call to Repair MSL6480 Base Tape Library Service	U3CT2E

Next Business Day Response

HPE 3 year Foundation Care Next business day MSL6480 Base Tape Library Service	U3CR5E

Additional Options

Hardware Services

Description	SKU
HPE StoreEver MSL3040/6480 Base Module Installation and Startup Service	U8E80E

Notes: 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

MSL6480		
Drive Technology	LTO-9 Ultrium 45000 LTO-8 Ultrium 30750 LTO-7 Ultrium 15000 LTO-6 Ultrium 6250	
Maximum Number of Drives **- Per Module** **- Per fully expanded Library**	6 HH (per Module) 42 HH (per Library)	
Number of Slots **- Per Module** **- Per fully expanded Library**	80 (per Module) 560 (per Library)	
Drive Interface	8 Gb Native Fibre Channel 12 Gb/sec SAS (LTO-9) 6 Gb/sec SAS (LTO-8 and earlier)	
Maximum **Capacity**	**Native** **- Per Module**	1.44 PB (LTO-9, 80 slots) 960 TB (LTO-8, 80 slots) 480 TB (LTO-7, 80 slots) 200 TB (LTO-6, 80 slots)
	- Per Library	10.08 PB (LTO-9, 560 slots) 6.72PB (LTO-8, 560 slots) 3.36 PB (LTO-7, 560 slots) 1.4 PB (LTO-6, 560 slots)
	Compressed (2.5:1) **- Per Module**	3.6 PB (LTO-9, 80 slots) 2.4 PB (LTO-8, 80 slots) 1.2 PB (LTO-7, 80 slots) 500 TB (LTO-6, 80 slots)
	- Per Library	25.2 PB (LTO-9, 560 slots) 16.8 PB (LTO-8, 560 slots) 8.4 PB (LTO-7, 560 slots) 3.5 PB (LTO-6 560 slots)
Maximum Transfer Rate	**Native** **- Per Module**	6.48 TB/hour (with 6 LTO-9 drives) 6.48 TB/hour (with 6 LTO-8 drives) 6.48 TB/hour (with 6 LTO-7 drives) 3.46 TB/hour (with 6 LTO-6 drives)
	- Per Library	45.4 TB/hr (with 42 LTO-9 drives) 45.4 TB/hr (with 42 LTO-8 drives) 45.4 TB/hr (with 42 LTO-7 drives) 24.2 TB/hr (with 42 LTO-6 drives)
	Compressed (2.5:1) **- 6 HH drives Per Module**	Up to 20.64 TB/hr (with 6 LTO-9 drives) Up to 20.64 TB/hr (with 6 LTO-8 drives) Up to 20.64 TB/hr (with 6 LTO-7 drives) 8.6 TB/hr (with6 Ultrium 6250 drives)
	- 42 HH drives Per Library	Up to 144.9 TB/hr (with 42 LTO-9 drives) Up to 144.9 TB/hr (with 42 LTO-8 drives) Up to 144.9 TB/hr (with 42 LTO-7 drives) 60.4 TB/hr (with42 Ultrium 6250 drives)

Technical Specifications

MSL6480		
Dimensions	**Out-of-Box (HxWxD)**	10.55 X 18.7 X 35.1 in (26.8 x 47.5 x 89.2 cm)
	Shipping (HxWxD)	24.2 X 31.5 X 47.2 in (61.5 x 80.0 x 120.0 cm)
Weight	**Out of box**	90.4 lbs (43.6 kg)
	Shipping	120.1 lbs (54.5 kg)
	Notes: The weight of each library varies somewhat based on the type and number of LTO tape drives contained in the configuration. 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.	
Reliability	MTBF (mean time between failures)	100,000 hours (based on 1M MSBF)
	MSBF (Mean swaps before failure)	2,000,000
Average Cartridge Swap Time (drive to slot, slot to drive)	40 seconds (Base Unit)	
Initialization Time	77 to 204 seconds (Up to LTO-8) For LTO-9 see LTO-9 media initialization section	
Inventory Time	1:10 minutes (minimum) to 1:26minutes (maximum) Base unit	
Connectors	Mini-SAS (MSL SAS model only) LC Optical Fibre (MSL FC models only) (1)RJ-45 Ethernet	
Color Control Panel nformation (on front panel)	Color, 5.7 inch diagonal, resistive touchscreen, full VGA , 4/3 aspect ratio	
Management Interface	10/100/1000 Mbits/second, auto-configuring interface. RJ-45 connection. Https configurable.	
Power	200 Watts (max)	
Input Requirements	100-120V, 200-240 VAC, 3.5 to 1.5 Amperes , 50 to 60 Hz	
Relative Humidity (non-condensing)	**Operating**	20% to 80%
	Shipping	10% to 90%
Temperature Range (wet bulb)	**Operating**	50° to 95° F (10° to 35° C)
	Shipping	-22° to 140° F (-30° to 60° C)
	Notes: 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
10-Jan-2022	Version 33	Changed	Overview, Standard Features, Configuration Information and technical Specifications sections were updated.
15-Sep-2021	Version 32	Changed	Standard Features and Service and Support sections were updated.
07-Jun-2021	Version 31	Changed	Standard Features section was updated.
17-May-2021	Version 30	Changed	Overview, Standard Features, Configuration Information and technical Specifications sections were updated.
07-Dec-2020	Version 29	Changed	Configuration Information section was updated.
05-Oct-2020	Version 28	Changed	Configuration Information section was updated.
17-Aug-2020	Version 27	Changed	Standard Features and Configuration Information sections were updated.
09-Dec-2019	Version 26	Changed	Configuration Information and Additional Options sections were updated.
03-Jun-2019	Version 25	Changed	Overview section was updated.
15-Apr-2019	Version 24	Changed	Core Options section was updated.
04-Mar-2019	Version 23	Changed	Additional Options section was updated.
01-Oct-2018	Version 22	Changed	Product Highlights section was updated. SKU descriptions were updated.
04-Jun-2018	Version 21	Changed	Notes for the HPE StoreEver MSL6480 Scalable Expansion Module were revised.
05-Mar-2018	Version 20	Changed	Product Highlights and Related Options were revised.
05-Feb-2018	Version 19	Changed	Overview, Product Highlights, Related Options, and Technical Specifications were revised.
04-Dec-2017	Version 18	Changed	LTO-8 updates.
04-Sep-2017	Version 17	Changed	Changes made throughout all the document.
07-Aug-2017	Version 16	Changed	Changes made to the Product Highlights Section.
13-Jan-2017	Version 15	Changed	Changes to the HPE StoreEver Archive Manager section.
18-Nov-2016	Version 14	Changed	Added the HPE StoreEver Archive Manager in the Product Highlights section.
15-Aug-2016	Version 13	Changed	Changes made to the Configuration Section.
01-Jul-2016	Version 12	Changed	Cosmetic changes.
31-Mar-2016	Version 11	Changed	HPE rebranding, LTO-7 capacity updates, part no corrections.
15-Jan-2016	Version 10	Changed	Updated content and edited. LTO-7 Support added.
01-Dec-2015	Version 9	Changed	Changes made throughout all the document.
24-Apr-2015	Version 8	Changed	Changed from "The HPE StoreEver MSL Encryption Kit provides a self-contained solution for MSL libraries with additional software, PCs, or servers required or involved." To show as: "The HPE StoreEver MSL Encryption Kit provides a self-contained solution for MSL libraries without additional software, PCs, or servers required or involved."
31-Oct-2014	Version 7	Changed	Changes made throughout all the document.
15-Sep-2014	Version 6	Changed	Changes made to the Related Options section.
20-Aug-2014	Version 5	Changed	Changes made throughout all the document.
10-Jun-2014	Version 4	Changed	What´s new section was updated: Product highlights; sku description updated Configuration information
20-Dec-2013	Version 3	Changed	Changes made to the chart in the Overview section. Changes made throughout the Configuration Information.

Summary of Changes

Date	Version History	Action	Description of Change
30-Sep-2013	Version 2	Changed	Changes made to the What's New section: HPE StoreEver MSL6480 now supporting HPE Enterprise Secure Key Manager (ESKM). Protect against connectivity failover through Control Path and Data Path failover now on the MSL6480. Increase library uptime by providing library LUN control failover and drive port to port failover Tape Library. Changes made in the Product Highlights section. Changes made in the Configuration Information. Changes made in the Related Options section and in the Technical Specifications.
10-Jun-2013	Version 1	New	New QuickSpecs

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