

Overview

HPE StoreEver MSL3040 Tape Library

The HPE StoreEver MSL3040 helps you modernize into a true data-first organization and become more competitive and successful. You can manage valuable archival data more effectively, allowing you to harness its power to identify customer needs before your competition or gain insights to develop products and services more rapidly. The MSL3040 is a future-ready, highly scalable, simple-to-manage, cyber resilient tape system that you can massively expand in easy steps to protect up to 28.8 PB of compressed data using LTO-9 technology.



HPE StoreEver MSL3040 Tape Library

Industry leading scalability - from 40-slot Base Library Module to 640 slots in a 48U Rack with 15 Expansion Modules

What's New

- MSL3040 now supports up to 15 expansion modules, with a maximum form factor of 48U
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Standard Features

Key Features

- **High scalability** - Pay as you grow with the fast, non-disruptive addition of Expansion Modules for expansion of tape slots.
 - Start with 40-slot 3U form-factor Base Library Module, and add up to 15 Expansion Library Modules for a total of 640 slots in a 48U rack form factor
 - 28.8PB of total maximum capacity with 640 slots and LTO-9 drives
 - Performance scaling from 1 to 48 LTO HH Tape Drives and transfer rates of up to 300 MB/s per LTO-9 Tape Drive native.
 - **Cost Effective tape solution**
 - Existing customers of MSL 1/8 Autoloaders, MSL2024 and MSL6480 Tape Libraries can repurpose their existing LTO-9, LTO-8, LTO-7 and LTO-6 drives in the new MSL3040 to leverage their investment
 - 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
 - Great flexibility with up to 21 logical library partitions
 - Customer installable, scalable and serviceable
 - **Enterprise-class manageability and reliability**
 - Manage multiple HPE Tape Libraries from any location with HPE StoreEver Command View Tape Libraries (CVTL) software. Download for free at:
<https://www.hpe.com/storage/cvtldownload>
 - Intelligent, proactive and predictive reporting with HPE StoreEver TapeAssure Advanced, a licensed feature of CVTL.
 - HPE Data Verification proactively scans and verifies that data that is stored on tapes is always retrievable if needed. This is also a licensed feature of CVTL.
 - **Advanced security features**
 - Using the HPE Encryption Kit get the simplest, lowest cost encryption and key management solution available - no additional software required
 - HPE Secure Manager License provides an additional level of security that lets you control access to the tape library by authorizing specific servers
 - Achieve higher levels of availability with data path failover and control path failover.
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Standard Features

MSL3040	
Drive Technology Supported	LTO-9 Ultrium 45000 LTO-8 Ultrium 30750 LTO-7 Ultrium 15000 LTO-6 Ultrium 6250
Maximum Number of Drives	48 HH
Maximum Capacity (2.5:1 compression)	1.8 PB (LTO-9, 40 slots) 28.8 PB (LTO-9, 640 slots)
Maximum Data Transfer (Native)	51.4 TB/hr (48 LTO-9 drives)
Drive Interface	8 Gb/sec Fibre Channel 12 Gb/sec SAS (LTO-9) 6 Gb/sec SAS (LTO-8 and earlier)
Mail Slots	5 slots per module

High Scalability

Keep pace with data growth across the lifecycle with the MSL3040's 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 modular design of the MSL3040 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 40 to 640 cartridge slots to store up to 28.8PB* in a single 19-inch rack. Several drive options are available

- Add between 1 and 48 HPE StoreEver LTO-9 Ultrium 45000, LTO-8 Ultrium 30750, LTO-7 Ultrium 15000, LTO-6 Ultrium 6250 FC or SAS tape drives
- Scaling up with the MSL3040 couldn't be easier:
- Start with an empty Base Library
- Add a redundant power supply if required**
- Add between 1 and 3 LTO-9, LTO-8, LTO-7 or LTO-6 half-height tape drives and utilize up to 40 cartridge slots - a fully configured base unit with LTO-9 provides a max capacity of up to 1.8PB (assuming 2.5:1 compression)
- Then add between 1 and 15 empty expansion modules to the Base Library - each 3U expansion module requires a power supply if further drives are to be installed in the expansion. Redundant power supply can be added if required**.
- Expansion modules can be flexibly installed above or below the base library module (up to 8 expansion modules below the base module, and up to 7 expansion modules above the base module)
- You can then configure each expansion module with up to 3x LTO-9, LTO-8, LTO-7, or LTO-6 FC or SAS tape drives and utilize up to 40 cartridge slots per expansion module

Notes:

- *Assumes fully loaded with LTO-9 media cartridges at a 2.5:1 data compression ratio
- **Extra power supplies need to be factory integrated in order to be TAA compliant

Cost Effective Tape Solution

Existing customers of MSL 1/8 Autoloaders, MSL2024, and MSL6480 Tape Libraries can repurpose LTO-9, LTO-8, LTO-7 and LTO-6 drives in the MSL3040 to leverage their investment.

Standard Features

- Expansion modules are customer-installable; easy to configure and remove.
- Integrated bar code reader included.

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:

<https://www.hpe.com/info/rackandpower>

Save rack space, floor space, and power and cooling costs with industry leading storage density. The MSL3040 offers 13 cartridge slots per 1U of rack space providing up to 585 TBs per 1U of rack space using LTO-9 drives.

Partitioning

The MSL3040 Tape Library supports up to 21 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.

Management Console

The HPE StoreEver MSL3040 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 and IPv4 network protocol support
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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

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CVTL Software has been installed. Simply download CVTL from 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:

<https://www.hpe.com/storage/cvtl>

HPE Library and Tape Tools

The MSL3040 Tape Library is supported with HPE Library and Tape Tools (L&TT). L&TT is a free diagnostic tool for all of HPE's 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.

HPE Library & Tape Tools can be downloaded from the following location:

For more information on L&TT, please visit: <https://www.hpe.com/support/tapetools>.

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:

<https://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:

<https://www.hpe.com/storage/StoreOpen>

Safeguarding data for Disaster Recovery

The HPE StoreEver MSL3040 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,
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Standard Features

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-7 and LTO-6 Ultrium tape drives include hardware-based data encryption to prevent unauthorized access to data at rest.
- LTO-9, LTO-8, LTO-7 and LTO-6 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 now supported on HPE Ultrium LTO-9 Drives with the latest firmware.

Data Encryption

The HPE MSL3040 Tape Library offers multiple options for data encryption, depending on the requirements for policy, regulation, compliance, and centralized key management.

- 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, which must be physically accessible so that the USB token can be inserted into the automation device. The second token will be used as a backup token, in case the first one is lost or damaged. The USB key server token will plug into the USB port in the library and will generate and maintain encryption keys for the LTO-4 and later generation drives. 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.
- The HPE MSL3040 is capable of operation using the KMIP 1.2 protocol. One library encryption license will be needed based on the KMIP protocol.

For more information on all supported key management servers, please visit: [the HPE StoreEver Compatibility Matrix](#)

Secure Manager License

HPE MSL3040 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

Standard Features

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 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 generations of LTO Ultrium products

High Availability

To make the most of your library performance, the MSL3040 offers high availability failover capability utilizing LTO-9, LTO-8, LTO-7 and LTO-6 Tape Drives.

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

- This feature requires the HPE StoreEver MSL3040 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 drives)**

- This feature requires the HPE StoreEver MSL3040 High Availability LTO-6 Control Path Failover License.
- SAN wide failure protection

Standard Features

- Both the Control Path (CP) drive and the Control Path Failover (CPF) drive are accessible from the same hosts.
 - 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.
 - Drivers will handle errors before applications see them.
 - **LTO-7 + driver-based Data and Control Path Failover (supports LTO-7 and later FC drives):**
 - LTO-7+ Path Failover supports Data Path and Control Path failover, 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.
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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 HPE's 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, Hewlett Packard Enterprise Locate/Rewind/Append' test. Since the beginning of 2016, almost 700 million meters of media have been pulled and over 40 million gigabytes of data have been written in HPE's 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.

LTO-7 Type M media

The MSL3040 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

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capacity of 12 TB (native), and is indicated with an automation barcode label ending in "L8". 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.

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

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

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 analyzes the results of every tape use to ensure the availability of data placed in long-term storage, archive or DR.

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.

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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.

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 MSL3040 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 MSL3040 User Guide.

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 StoreEver Compatibility Matrix (Formerly EBS) at: <https://www.hpe.com/storage/StoreEverSupportMatrix>

Service and Support

Warranty

Hewlett Packard Enterprise provides a 1-year, next business day onsite, part exchange, limited warranty for the MSL3040 Tape Library and its components including drives, plus 9x5 phone support for the duration of the warranty.

Notes: The HPE MSL3040 Tape Library warranty includes support for Customer Self Repair (CSR). The tape library cartridges, terminators, external cables, drives, magazines, controller board and power supplies are mandatory customer self-repair parts. This means both the removal and replacement of the above parts are designed for easy replacement; the onsite 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 Support Center for further details:

<https://www.hpe.com/us/en/services.html> 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.

HPE Pointnext - Service and Support

No matter where you are in your digital transformation journey, you can count on HPE Pointnext Services to provide the expertise you need, when and where you need it.

Advisory and Professional Services

Our Digital Next Advisory approach can help you identify, prioritize, and implement the right transformation initiatives to create new edge experiences, get real-time insights from all your data, and modernize your IT to enable new opportunities.

Operational Services

Take your IT operations to the next level with expertise and tools that can help save your staff time, manage complexity, and identify new ways to drive efficiency and effectiveness in your IT.

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

Service and Support

- 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/complecare>

HPE Lifecycle Services

Lifecycle Services provide a variety of options to help maintain your HPE systems and solutions at all stages of the product lifecycle. A few popular examples include:

HPE Installation Service

Provides for the basic hardware installation of HPE branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner.

<https://h20195.www2.hpe.com/v2/Getdocument.aspx?docname=5981-9356enw>

HPE StoreEver MSL Tape Library and Autoloader Installation and Startup Service

Provides for the installation of HPE StoreEver MSL Tape Libraries and Autoloaders, including library subcomponents, into SAN environments.

For more information: <https://psnow.ext.hpe.com/doc/4AA6-2765ENW>

HPE Service Credits

Access to prepaid services for flexibility to choose from a variety of specialized service activities, including assessments, performance maintenance reviews, firmware management, professional services, and operational best practices.

- For a list of the most frequently purchased services using service credits, see the [Universal Service Credits Menu](#)
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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 QuickSpecs, 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.

HPE Support Services are sold by Hewlett Packard Enterprise 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/>
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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

Service and Support

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
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Managed services to run your IT operations

HPE GreenLake Management Services provide 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.

Configuration Information

Step 1 - Base Configuration

HPE StoreEver MSL3040

Base Module

Description

HPE MSL3040 Scalable Base Module

Notes:

- This product is TAA (Trade Agreements Act) compliant.
- The base module is 3U rack mountable.
- Base module enables 40 slots
- Standard power supply is included with the base module.
- Redundant power supply is not included as standard, if required it needs to be added to the order. This needs to be factory integrated. Redundant power supply is hot-swappable.
- It does not contain any tape drives, up to 3 HH tape drives may be added to the base module
- MSL3040 rack-rail extends between approximately 683 and 900mm (between 68.3 and 90 cm).

Kit Contents

- 2.5M PDU Power Cord, C13/C14, 10A
- Rack-mount hardware
- Getting started poster
- Power Supply

HPE StoreEver MSL3040 Scalable Library Expansion Module

Notes:

- Expansion module activates 40 slots.
- This product is TAA (Trade Agreements Act) compliant.
- The expansion module is 3U rack mountable.
- It does not contain any tape drives, up to 3 HH tape drives may be added to the expansion module. If drives are added to the expansion module, a power supply is required. Standard or redundant power supplies are not included. If needed, these will have to be added to the order. If TAA compliance is required, power supplies need to be factory integrated, #0D1.

Kit Contents

- Rack-mount hardware
- Getting started poster
- Module interconnect cable (expansion module only)

HPE StoreEver MSL3040 48U Spooling Kit

Notes: The HPE StoreEver MSL3040 48U Spooling Kit can only be installed in existing HPE StoreEver MSL3040 Base Module. The kit contains a new spooling mechanism and instructions to upgrade the existing Q6Q62A and Q6Q62B versions of the MSL3040. The kit is added to the existing MSL3040 base module. The spooling kit will allow installation of up to 7 expansion modules above the base module, allowing an MSL3040 library of 48U rack height maximum.

Configuration Information

Base Module	Maximum number of expansion modules	Maximum tape cartridges
Q6Q62A	6	272
Q6Q62B	6	280
Q6Q62A with S0D78A installed	15	632
Q6Q62B with S0D78A installed	15	640

Description

HPE StoreEver MSL3040 Upgrade Power Supply Kit

Notes:

- Redundant power supply is not included as standard with the base module, if required it needs to be added to the order to be TAA compliant
- In EMEA, for the redundant power supply kit (Q6Q64A) to be integrated into the library base module (Q6Q62C), the library must be factory integrated (#0D1) into a rack.
- If the library, Q6Q62C (HPE MSL3040 Scalable Base Module) is racked (0D1), then the Power Supply kit, Q6Q64A (HPE MSL3040 Upgrade Power Supply Kit) can be integrated (0D1) into the library.
- For the expansion module, neither the standard power supply nor the redundant are included. A power supply is only needed for the expansion module. If TAA compliance is required, power supplies need to be factory integrated, #0D1.
- In EMEA, for the power supply or redundant power supply kits (Q6Q64A) to be integrated into the expansion modules (Q6Q63A), the Power Supply kit (Q6Q64A) must be factory integrated (#0D1) into a rack. If the Expansion Module (Q6Q63A) is racked (0D1), then the Power Supply kit, Q6Q64A (HPE MSL3040 Upgrade Power Supply Kit) drives can be integrated (0D1) into the Expansion Module
- Redundant power supplies are hot-swappable.

Factory Racking

Factory integrate MSL3040 Tape Library with other HPE products such as HPE ProLiant Servers

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

Step 2 - Select Generation & Quantity of LTO Ultrium Tape Drives

Notes: Drive Upgrade Kits are hot-replaceable. The drives should be powered down before removal, but the library does not need to be powered down.

HPE StoreEver MSL LTO-9 Ultrium 45000 FC Drive Upgrade Kit

HPE StoreEver MSL LTO-9 Ultrium 45000 Fibre Channel Drive Upgrade Kit

Notes:

- Half height LTO-9 FC tape drive. For use with the MSL 1/8 Autoloader, MSL2024, MSL3040 or MSL6480 libraries. Drive must be factory integrated (#0D1) into a rack.
- #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.

Configuration Information

HPE StoreEver MSL LTO-9 Ultrium 45000 SAS Drive Upgrade Kit

HPE StoreEver MSL LTO-9 Ultrium 45000 SAS Drive Upgrade Kit

Notes:

- Half height LTO-9 SAS tape drive. For use with the MSL 1/8 Autoloader, MSL2024, MSL3040 or MSL6480 libraries. Drive kit includes a tape drive.
- #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

Description

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

Notes:

- Half height LTO-8 FC tape drive. For use with the MSL2024, 4048, 3040 or 6480 libraries. Drive kit includes a tape drive.
- #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.

HPE StoreEver LTO-8 Ultrium 30750 SAS Drive Kit

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

Notes:

- Half height LTO-8 SAS tape drive. For use with the MSL2024, 4048, 3040 or 6480 libraries. Drive kit includes a tape drive.
- #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

Notes:

- Half height LTO-7 FC tape drive. For use with the MSL2024, 4048, 3040 or 6480 libraries. Drive kit includes a tape drive.
- #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

Configuration Information

Notes:

- Half height LTO-7 SAS tape drive. For use with the MSL2024, 4048, 3040 or 6480 libraries. Drive kit includes a tape drive.
- #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

Notes:

- Half height LTO-6 FC tape drive. For use with the MSL2024, 4048, 3040 or 6480 libraries. Drive kit includes a tape drive.
- #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

Description

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

Notes:

- Half height LTO-6 SAS tape drive. For use with the MSL2024, 4048, 3040 or 6480 libraries. Drive kit includes a tape drive.
- #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.

Step 3 - Select Software Licenses

Select each option as required with quantities specified.

Quantity	Description
	HPE StoreEver MSL TapeAssure Advanced LTU
1 each	HPE StoreEver MSL Command View for Tape Libraries - TapeAssure Advanced LTU

Notes:

- Advanced analytics feature makes use of predictive analytics to predict the likelihood of failures, bottlenecks and load based on the unique capabilities of analytics around drive health and life as well as cartridge health and life.
- One license needed per library and Command View TL must be installed.
- This is a paper license that will be mailed.

Configuration Information

HPE StoreEver MSL TapeAssure Advanced E-LTU

1 each HPE StoreEver MSL Command View for Tape Libraries - TapeAssure Advanced E-LTU

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

1 each HPE StoreEver MSL3040 Command View for Tape Libraries - Data Verification 100 Cartridges E-L

Notes:

– One license needed per library and Command View TL must be installed.

– This is an electronically delivered License.

HPE StoreEver MSL3040 KMIP Key Manager LTU

1 each HPE StoreEver MSL3040 KMIP Key Manager LTU

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

HPE StoreEver MSL3040 KMIP Key Manager E-LTU

1 each HPE StoreEver MSL3040 KMIP Key Manager E-LTU

Notes: This is an electronically delivered License.

HPE StoreEver MSL3040 Secure Manager LTU

1 each HPE StoreEver MSL3040 Secure Manager LTU

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

Quantity

Description

HPE StoreEver MSL3040 Secure Manager E-LTU

1 each HPE StoreEver MSL3040 Secure Manager E-LTU

Notes: This is an electronically delivered License.

HPE StoreEver MSL3040 LTO-7+ Path Failover LTU

1 each HPE StoreEver MSL3040 LTO-7+ Path Failover LTU

Notes: This is an electronically delivered License.

HPE StoreEver MSL3040 LTO-7+ Path Failover E-LTU

1 each HPE StoreEver MSL3040 LTO-7+ Path Failover E-LTU

Notes: This is an electronically delivered License.

HPE StoreEver High Availability MSL3040 LTO-6 Control Path Failover E-LTU

1 each HPE StoreEver MSL3040 High Availability LTO-6 Control Path Failover E-LTU

Notes: This is an electronically delivered License.

HPE StoreEver High Availability MSL3040 LTO-6 Data Path Failover E-LTU

1 each HPE StoreEver MSL3040 High Availability LTO-6 Data Path Failover E-LTU

Notes: This is an electronically delivered License.

Configuration Information

Step 4 - Select Additional Accessories

Power Cords

1 each HPE C13 - C14 WW 250V 10Amp 2.5m Jumper Cord

Notes: This cord ships standard with each MSL3040 Base Tape Library and Power Supply Upgrade Kit. It can be used IEC-320 receptacles.

Regional Power Cord Options

Notes: One PDU cord is shipped with each base module (above). If regional power cords are preferred, order qty (1) for supply purchased. Please select the correct power cord for your geographical location.

Quantity to order: 1 per base module and upgrade power supply

Description

- HPE C13 - Nema 5-15P US/CA 110V 10Amp 1.83m Power Cord
- HPE C13 - CEE-VII EU 250V 10Amp 1.83m Power Cord
- HPE C13 - BS-1363A UK/HK/SG 250V 10Amp 1.83m Power Cord
- HPE C13 - DK-2.5A DK 250V 10Amp 1.83m Power Cord
- HPE C13 - SEV 1011 CH 250V 10Amp 1.83m Power Cord
- HPE C13 - SABS-164 ZA 250V 10Amp 2.5m Power Cord
- HPE C13 - CNS-690 TW 110V 13Amp 1.83m Power Cord
- HPE C13 - GB-1002 CN 250V 10Amp 1.83m Power Cord
- HPE C13 - JIS C8303 JP 100V 12Amp 2.0m Power Cord
- HPE C13 - AS3112-3 AU 250V 10Amp 2.5m Power Cord

Description

- HPE C13 - IRAM -2073 AR 250V 10A 2.5m Power Cord
- HPE C13 - Nema 5-15P TH/PH 250V 10Amp 1.83m Power Cord
- HPE C13 - KSC- 8305 KR 250V 10Amp 1.83m Power Cord
- HPE C13 - SI-32 IL 250V 10Amp 1.83m Power Cord
- HPE C13 - IS-1293 IN 240V 6Amp LV 2.0m Power Cord
- HPE C13 - IS-1293 IN 240V 6Amp LV 2.0m Power Cord

Notes:

- This product can ONLY be used with an HPE approved power cord for your specific geographic region. Use of a non-HPE power cord is not recommended and may result in:
 - o Not meeting individual country specific safety requirements;
 - o Insufficient conductor capacity that could result in overheating with potential personal injury and/or property damage;
 - o An unapproved power cord could fracture resulting in the internal contacts being exposed, which potentially could result in electrical shock.Enterprise disclaims all liability in the event a non-HPE approved power cord is used.

Related Options

Redundant Power Supply Upgrade Kit

Description

HPE StoreEver MSL3040 Upgrade Power Supply Kit

SKU

Q6Q64A

Notes:

Redundant power supply is not included as standard with the base module, if required it needs to be added to the order. This needs to be factory integrated, #0D1, in order to be TAA compliant.

For the expansion module, neither the standard power supply nor the redundant are included. A power supply is only needed if tape drives need to be installed in the expansion module. If TAA compliance is required, power supplies need to be factory integrated, #0D1.

Redundant power supplies are hot-swappable.

Factory Racking

#0D1

Factory integrate the MSL Tape Libraries with other Hewlett Packard Enterprise products such as HPE ProLiant Servers

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 21U in a single rack.

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 Ultrium tape drives in the library. Works independent of application or backup software; doesn't require ISV support.

HPE StoreEver MSL3040 KMIP Key Manager LTU

Q8K98A

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

HPE StoreEver MSL3040 KMIP Key Manager E-LTU

Q8K98AAE

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 StoreEver Compatibility Matrix (Formerly EBS) located at:

<https://www.hpe.com/storage/StoreEverSupportMatrix>.

For more information on FC HBAs, see HPE StoreFabric Adapters at:

<https://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 StoreEver Compatibility Matrix (Formerly EBS) located at: <https://www.hpe.com/storage/StoreEverSupportMatrix>.

For more information on HPE Smart Array RAID controllers, see Fibre HPE P-class RAID controllers at:

<https://www.hpe.com/servers/smartarray/>

Related Options

For more information on HPE ProLiant (SAS) host bus adapters, see H-class HBA controllers at: <https://www.hpe.com/servers/smartarray/>

HBAs and SAS Controllers

Description	SKU
HPE Smart Array P408e-p SR Gen10 (8 External Lanes/4GB Cache) 12G SAS PCIe Plug-in Controller Notes: Recommended for ProLiant Gen10 SAS tape automation connect.	804405-B21
HPE Smart Array E208e-p SR Gen10 (8 External Lanes/No Cache) 12G SAS PCIe Plug-in Controller Notes: Recommended for ProLiant Gen10 SAS tape automation connect.	804398-B21
Microsemi Adaptec HBA 1100-8e Notes: Recommended SAS HBA for DL & ML Gen9 servers only. HPE does not provide official support for this adapter, however the configuration is supported.	A1100-8E

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	NA
OM3/OM4	All drive tapes	0.5m - 500m	0.5m - 380m	0.5m - 150m

Notes: 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 External 2.0m (6ft) Mini-SAS HD 4x to Mini-SAS HD 4x Cable Notes: One cable is required for every LTO-9 tape drive. Use this cable to connect HPE MSL SAS Tape Libraries to Storage HBAs with Mini SAS High Density (HD) SAS (SFF8644) ports.	716197-B21
HPE External 4.0m (13ft) Mini-SAS HD 4x to Mini-SAS HD 4x Cable Notes: One cable is required for every LTO-9 tape drive. Use this cable to connect HPE MSL SAS Tape Libraries to Storage HBAs with Mini SAS High Density (HD) SAS (SFF8644) ports.	716199-B21
HPE External 12Gb Mini SAS High Density to Mini SAS High Density 4-lane 2m Fanout Cable Notes: One cable can connect up to four LTO-9 tape drives. Use this cable to connect HPE MSL SAS Tape Libraries to Storage HBAs with Mini SAS High Density (HD) SAS (SFF8644) ports.	P35176-B21

Related Options

HPE External 12Gb Mini SAS High Density to Mini SAS High Density 4-lane 4m Fanout Cable P35175-B21

Notes: One cable can connect up to four LTO-9 tape drives. Use this cable to connect HPE MSL SAS Tape Libraries to Storage HBAs with Mini SAS High Density (HD) SAS (SFF8644) ports.

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

Notes: One cable is required for every (non LTO-9) tape drive. Use this cable to connect HPE MSL SAS Tape Libraries to Storage HBAs with Mini SAS High Density (HD) SAS (SFF8644) ports.

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

Notes: One cable is required for every (non LTO-9) tape drive. Use this cable to connect HPE MSL SAS Tape Libraries to Storage HBAs with Mini SAS High Density (HD) SAS (SFF8644) ports.

Description

SKU

HPE StoreEver Mini-SAS High Density to 4-lane Mini-SAS External Fanout 2m Cable K2R09A

Notes: One cable can connect up to four (non LTO-9) tape drives. Use this cable to connect HPE MSL SAS Tape Libraries to Storage HBAs with Mini SAS High Density (HD) SAS (SFF8644) ports.

HPE StoreEver Mini-SAS High Density to 4-lane Mini-SAS External Fanout 4m Cable K2R10A

Notes: One cable can connect up to four (non LTO-9) tape drives. Use this cable to connect HPE MSL SAS Tape Libraries to Storage HBAs with Mini SAS High Density (HD) SAS (SFF8644) ports.

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

Notes: One cable can connect up to four (non LTO-9) tape drives. Use this cable to connect HPE MSL SAS Tape Libraries to Storage HBAs with Mini SAS (SFF8088) ports.

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

Notes: One cable can connect up to four (non LTO-9) tape drives. Use this cable to connect HPE MSL SAS Tape Libraries to Storage HBAs with Mini SAS (SFF8088) ports.

Rack Cabinets

The MSL3040 libraries are supported in a variety of HPE Rack offerings.

For more information on the HPE rack offerings, please see the following URL:

<https://www.hpe.com/info/rackandpower>

Notes: If ordering the #0D1 Factory Integration option, the MSL3040 Tape Libraries are certified to ship with one base module and up to 6 expansion modules (up to 21U) 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-9 Ultrium 45TB WORM Data Cartridge Q2079W

HPE LTO-9 Ultrium 45TB WORM Custom Labeled 20 Data Cartridges with Cases Q2079WL

HPE LTO-8 Ultrium 30TB RW Data Cartridge Q2078A

HPE LTO-8 Ultrium 30TB WORM Data Cartridge Q2078W

Related Options

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

Description

	SKU
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 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
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 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 RW Custom Labeled Data Cartridge 20 Pack	C7977AL
HPE LTO-7 Ultrium WORM Custom Labeled Data Cartridge 20 Pack	C7977WL

Related Options

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>

Technical Specifications

MSL3040		
Drive Technology	LTO-9 Ultrium 45000 LTO-8 Ultrium 30750 LTO-7 Ultrium 15000 LTO-6 Ultrium 6250	
Maximum Number of Drives	3 HH (per Module)	
- Per Module		
- Per fully expanded Library	48 HH (per Library)	
Number of Slots	40 (Base Module)/40 (Expansion Module)	
- Per Module		
- Per fully expanded Library	640 (per Library) Notes: (if installing an SOD78A please see the table above)	
Drive Interface	8 Gb Native Fibre Channel 12 Gb/sec SAS (LTO-9) 6 Gb/sec SAS (LTO-8 and earlier)	
Maximum Capacity	Native	720 TB (LTO-9, 40 slots) 480 TB (LTO-8, 40 slots) 240 TB (LTO-7, 40 slots) 100 TB (LTO-6, 40 slots)
	- Per Base Module	
	- Per Full Library	11.52 PB (LTO-9, 640 slots) 7.68PB (LTO-8, 640 slots) 3.84 PB (LTO-7, 640 slots) 1.92 PB (LTO-6, 640 slots)
	Compressed (2.5:1)	1.8 PB (LTO-9, 40 slots) 1.2 PB (LTO-8, 40 slots) 600 TB (LTO-7, 40 slots) 250 TB (LTO-6, 40 slots)
- Per Module		
- Per Library	28.8 PB (LTO-9, 640 slots) 19.2 PB (LTO-8, 640 slots) 9.6 PB (LTO-7, 640 slots) 3.8 PB (LTO-6, 640 slots)	
Maximum Transfer Rate	Native	3.24 TB/hour (with 3 LTO-9 drives) 3.24 TB/hour (with 3 LTO-8 drives) 3.24 TB/hour (with 3 LTO-7 drives) 1.73 TB/hour (with 3 LTO-6 drives)
	- Per Module	
	- Per Library	51.5 TB/hr (with 48 LTO-9 drives) 51.5 TB/hr (with 48 LTO-8 drives) 51.5 TB/hr (with 48 LTO-7 drives) 32 TB/hr (with 48 LTO-6 drives)
	Compressed (2.5:1)	Up to 8.1TB/hr (with 3 LTO-9 drives) Up to 8.1TB/hr (with 3 LTO-8 drives) Up to 8.1TB/hr (with 3 LTO-7 drives) 4.3 TB/hr (with 3 LTO-6 drives)
- 3 HH drives Per Module		
- 48HH drives Per Library	Up to 129.6 TB/hr (with 48 LTO-9 drives) Up to 129.6 TB/hr (with 48 LTO-8 drives) Up to 129.6 TB/hr (with 48 LTO-7 drives) 68.8 TB/hr (with 48 LTO-6 drives)	

Technical Specifications

MSL3040		
Dimensions	Out-of-Box (HxWxD)	5.24 X 18.98 X 35.04 in (13.3 x 48.2 x 89.0 cm)
	Shipping (HxWxD)	12.68 X 27.17 X 45.67 in (32.2 x 69.0 x 116 cm)
Weight	Out of box	Base module: 44.09 lbs (20kg) Expansion module: 33.07 lbs (15kg) Redundant Power Supply: 3 lbs (1kg) Drives (either FC or SAS, LTO-6 thru 9): 5 lbs (2kg)
	Shipping	Base module: 68.34 lbs (31 kg) Expansion module: 52.91 lbs (24kg)

Notes: The weight of each library varies based on the number of modules, power supplies and LTO tape drives contained in the configuration. Configurations with different numbers of modules, tape drives and power supplies can be calculated by adding or subtracting the corresponding weights.

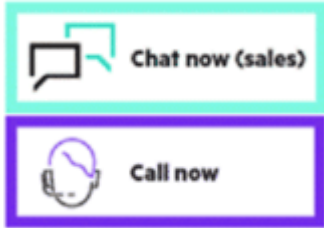
Reliability	MTBF (mean time between failures)	125,000 hours (based on 1M MSBF)
	MSBF (Mean swaps before failure)	1,000,000
Average Cartridge Swap Time (drive to slot, slot to drive)	N/A	26 seconds (Base Unit)
Initialization Time	N/A	77 to 204 seconds Notes: For LTO-9 see LTO-9 media initialization section
Inventory Time	N/A	50 seconds (average) Base unit
Connectors	Drive: (2) Mini-SAS (MSL SAS LTO-8 and earlier models only) (2) Mini-SAS HD (MSL SAS LTO-9 model only) (2) LC Optical Fibre (MSL FC models only) (1) RJ-45 Ethernet data verification port Library: (1) RJ-45 data verification port (1) RJ-45 remote library management port (2) USB ports (supports USB encryption kit or support/maintenance functions)	
Operator Control Panel (front panel)	Monochrome graphic display, 4 inch diagonal, 240 by 128 black dots, 4/3 aspect ratio	
Management Interface	10Base-T, 100Base-TX and 1000BASE-T Mbits/second, auto-configuring interface. RJ-45 connection. Https configurable.	
Input Requirements	100-240 VAC, 3.7A Max., 50/60Hz	
Relative Humidity (non-condensing)	Operating	20% to 80%
	Shipping	20% to 90%
Temperature Range (wet bulb)	Operating (LTO-5 to LTO-8)	50° to 95° F (10° to 35° C)
	Operating (LTO-9)	59° to 89° F (15° to 32° 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	Operating altitude is drive dependent, see the MSL3040 User and Service guide for specifications
	Shipping	35,000 ft (10,675 m)

Summary of Changes

Date	Version History	Action	Description of Change
18-Sep-2023	Version 26	Changed	Technical Specifications section was updated
07-Aug-2023	Version 25	Changed	Related Options and Technical Specifications sections were updated
24-Jul-2023	Version 24	Changed	Standard Features, Service and Support, Configuration Information and Related Options sections were updated
13-Mar-2023	Version 23	Changed	Technical Specifications section was updated
06-Feb-2023	Version 22	Changed	Service and Support, Configuration Information and Technical Specification sections were updated.
10-Jan-2023	Version 21	Changed	Configuration Information section was updated
05-Dec-2022	Version 20	Changed	Overview, Standard Features, Configuration Information, Related Options and Technical Specifications sections were updated
18-Apr-2022	Version 19	Changed	Technical Specifications section was updated
07-Feb-2022	Version 18	Changed	Overview, Standard Features and Configuration Information sections were updated
10-Jan-2022	Version 17	Changed	Overview, Standard Features, Configuration Information, Related Options and Technical Specifications sections were updated
15-Sep-2021	Version 16	Changed	Standard Features and Service and Support sections were updated.
07-Jun-2021	Version 15	Changed	Standard Features section was updated.
01-Feb-2021	Version 14	Changed	Related Options section was updated.
07-Dec-2020	Version 13	Changed	Technical Specifications section was updated
05-Oct-2020	Version 12	Changed	Configuration Information section was updated
08-Sep-2020	Version 11	Changed	Configuration Information section was updated
17-Aug-2020	Version 10	Changed	QuickSpecs layout was updated and Branding Refresh was applied.
09-Dec-2019	Version 9	Changed	Related Options section was updated
07-Oct-2019	Version 8	Changed	Related Options section was updated
03-Jun-2019	Version 7	Changed	Overview section was updated.
15-Apr-2019	Version 6	Changed	Overview and Configuration Information sections were updated.
04-Mar-2019	Version 5	Changed	Related Options section was updated.
01-Oct-2018	Version 4	Changed	Overview, Product Highlights, Service and Support, Configuration Information, Related Options and Technical Specification sections were updated. SKU descriptions were updated. Obsolete SKUs were removed.
05-Mar-2018	Version 3	Changed	Product Highlights and Related Options were revised.
05-Feb-2018	Version 2	Changed	Product Highlights and Related Options were revised.
04-Dec-2017	Version 1	New	New QuickSpecs

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

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