

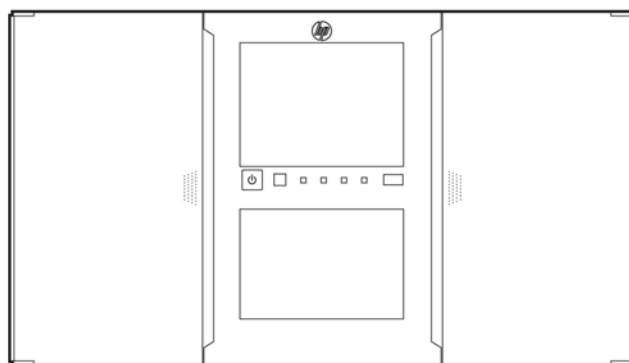
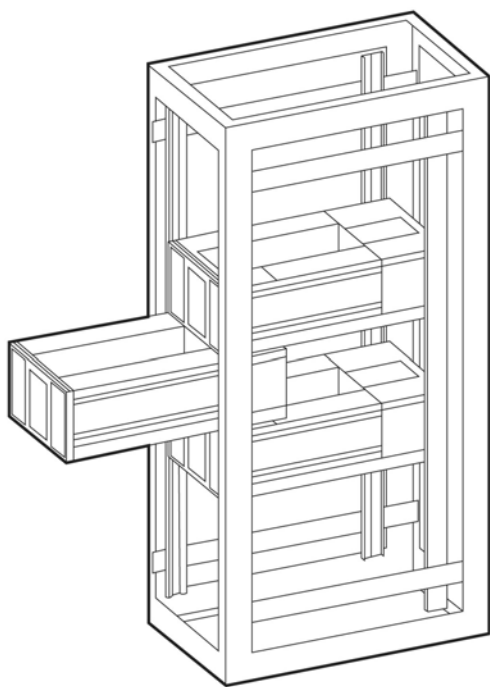
### Overview

#### HP StoreEver MSL6480 Tape Library

Are your ever expanding data storage, protection and retention needs getting out of hand?

The HP 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 archival requirements. Keep pace with data growth by seamlessly scaling up to 7 modules-without disrupting daily data protection. You also save expensive space, as the MSL6480 provides 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. Competitively priced, the MSL6480 Tape Library offers an outstanding return on your storage investment.



#### HP StoreEver MSL6480 Tape Library

Industry leading scalability - from an 80-slot Base Library Module to 560 slots in a 42U Rack with the addition of up to 6 Expansion Modules

#### What's New

- HP StoreEver MSL6480 now supporting KMIP 1.2 compliant Encryption Key Servers including HP ESKM (Enterprise Secure Key Manager)
- Protect against connectivity failover and increase library uptime by providing library LUN control failover and drive port to port failover. Increase backup reliability by blocking disruptive traffic from unauthorized hosts to the library with Secure Manager.

#### Key Features

- Setting the gold standard for mid-range library scalability - pay as you grow with the fast, non-disruptive addition of Expansion Modules

### Overview

- 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 form factor
- In-box capacity scaling from 80 to 560 cartridge slots, 240 TB to 3.5 PBs\*
- Performance scaling from 1 to 42 LTO HH Tape Drives for a max throughput of 60.4 TB/hour\* or select 1-21 LTO FH Tape Drives.
- Industry leading storage density to save rack space, floor space, power, cooling and management costs - 13 cartridge slots (81 TB) per 1U of rack space
- Best in class flexibility with up to 20 partitions
- Customer installable, scalable and serviceable with a color touch control panel and wizards for installation and configuration
- Intelligent, proactive and predictive reporting with HP StoreEver TapeAssure Advanced
- Manage multiple HP Tape Libraries from a single pane of glass with HP StoreEver CommandView Tape Library software
- Native drive data encryption with the simplest, lowest cost encryption and key management solution available - no ISV support needed
- Existing customers of MSL2024, 4048, 8048 and 8096 Tape Libraries can repurpose their drive canisters in the new MSL6480 to leverage their investment
- HPs 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.
- Designed to integrate easily with HP Converged Infrastructure including HP StoreOnce and HP StoreAll disk based retention platforms.

\*Assumes fully populated and expanded MSL6480 Tape Library with LTO-6 at 2.5:1 compression

MSL Family Comparison	MSL2024	MSL4048	MSL6480
<b>Drive Technology Supported</b>	LTO-6 Ultrium 6250 LTO-5 Ultrium 3000, 3280 LTO-4 Ultrium 1840, 1760	LTO-6 Ultrium 6250 LTO-5 Ultrium 3000, 3280 LTO-4 Ultrium 1840, 1760	LTO-6 Ultrium 6250 LTO-5 Ultrium 3000, 3280 LTO-4 Ultrium 1840, 1760
<b>Maximum Number of Drives</b>	2	4	42 HH 21 FH
<b>LTO-6 Maximum Capacity (2.5:1 compression) LTO-5/LTO-4</b>	150 TB (LTO-6)	300 TB (LTO-6)	3.5 PB (LTO-6, 560 slots) 500 TB (LTO-6, 80 slots)
<b>Maximum Capacity (2:1 compression)</b>	72 TB (LTO-5) 38.4 TB (LTO-4)	144 TB (LTO-5) 76.8 TB (LTO-4)	1.68 PB (LTO-5, 560 slots) 240 TB (LTO-5, 80 slots)
<b>Maximum Data Transfer (2.5:1 compression)</b>	2.8 TB/hr (two 6250)	4.8 TB/hr (four 6250)	60.4 TB/hr (42x 6250)
<b>Maximum Data Transfer (2:1 compression)</b>	2 TB/hr (two 3000) 1.1 TB/hr (two 1760)	4.0 TB/hr (four 3000)	42.0 TB/hr (42 x 3000)
<b>Drive Interface</b>	8 Gb Native Fibre Channel (LTO 6, 5) 4 Gb Native Fibre Channel (LTO 4, 3) 6 Gb/sec SAS (LTO 6, 5) 3 Gb/sec SAS (LTO , 4)	8 Gb Native Fibre Channel (LTO 6, 5) 4 Gb Native Fibre Channel (LTO 4, 3) 6 Gb/sec SAS (LTO 6, 5) 3 Gb/sec SAS (LTO 4)	8 Gb Native Fibre Channel (LTO 6, 5) 4 Gb Native Fibre Channel (LTO-4) 6 Gb/sec SAS (LTO 6, 5) 3 Gb/sec SAS (LTO-4)

### Product Highlights

#### 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 3.5 PB\* in a single 19-inch rack. Several drive options are available

- Half Height Drives: add in between 1 and 42x HP StoreEver LTO-6 Ultrium 6250, LTO-5 Ultrium 3000 or LTO-4 Ultrium 1780 half-height SAS or FC drives for speeds of up to 60.4 TB/hour
- Full Height Drives: add in between 1 and 21x HP StoreEver LTO-5 Ultrium 3280 FC or LTO-4 Ultrium 1840 FC tape drives for speeds up to 30.2 TB/hour.
- Any mixture of HH or FH drives in the same library

Scaling up with the MSL6480 couldn't be easier:

- Start with an empty Base Library and standard redundant power supplies.
- Add between 1 and 6 LTO-5 or LTO-6 half-height tape drives or 1 to 3 LTO-5 or LTO-4 full-height tape drives, and utilize up to 80 cartridge slots - a fully configured base unit with LTO-6 provides a max capacity of up to 500 TBs and speeds of up to 8.4 TB/hour (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-6, LTO-5, or LTO-4 half-height tape drives or 3. LTO-5 or LTO-4 FC tape drives, and utilize up to 80 cartridge slots

\*Assumes fully loaded with LTO-6 at a 2.5:1 data compression ratio

---

#### 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 HP racks. For more information on the HP rack offerings, please see the following URL:

<http://h18004.www1.hp.com/products/servers/platforms/rackandpower.html>

---

#### Manageability

The HP 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

### Product Highlights

- 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

---

### HP Command View for Tape Libraries

HP Command View TL for Tape Libraries aggregates multiple HP tape libraries for centralized management. It is also the nerve center for TapeAssure data collection and analysis and, importantly it is able to manage HP ESL G3, ESL E-Series, EML, and MSL tape libraries.

With Command View TL monitor backup logs, check drive status, receive trouble alerts, diagnose problems, and much more -- through a simple browser interface from anywhere in the world.

Set up and configure your FC or SAS attached tape library in less than two hours with configuration wizards and graphical interface:

- Select from a list of multiple supported libraries to manage
- View asset information for the library system
- View health summaries for all components of the library system
- View library inventory: slots, media, and drives
- Search for media by barcode label
- View details on drives and robotics, including WWNs, speeds, and connection types
- Configure hosts/HBA-to-drive mapping and masking settings with Secure Manager
- Automatically discover hosts and HBAs on the SAN or add your own for access control and security purposes
- Upgrade firmware on all library components
- Configure SNMP and email trap/event destinations to receive alerts asynchronously
- View persistent event logs for the library system

---

### TapeAssure Advanced

The HP MSL6480 is available with HP StoreEver TapeAssure Advanced - complete tape infrastructure analytics software designed to reduce unscheduled backup downtime, mitigate the risks in hardware failures and increase the return on investment through higher asset utilization.

HP StoreEver TapeAssure Advanced Software provides an intuitive, easy to use dashboard, and advance analytics feature for performance, health and utilization related to tape drives and cartridges. TapeAssure Advanced Software is integrated into HP StoreEver Command View TL Software for single pane of glass management, monitoring and analytics.

TapeAssure Advanced Software provides a dashboard display with pie charts, live and historical graphs for performance, health and utilization data, and highlights issues in the tape infrastructure.

### Product Highlights

Advanced analytics feature makes use of predictive analytics to forecast the likelihood of failures, bottlenecks and load balancing issues in the tape infrastructure. It has unique capabilities of analytics around drive and library health and life as well as cartridge health and life. Analysis of drive/tape utilization forecast helps to plan hardware investments in a better way.

**NOTE:** HP StoreEver TapeAssure Advanced Software is licensed by tape library; one license is required for each tape library.

---

#### 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 81 TBs per 1U of rack space) using LTO-6 drives, the MSL6480 provides the highest tape drive density per module of any mid-range tape library.

---

#### Partitioning

The MSL6480 Tape Library can be partitioned 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.

**NOTE:** The MSL6480 supports up to 20 partitions.

---

#### 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 HP 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.

HP 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 in normal ambient conditions. HP TapeAssure Advanced also analysis the results of every tape use to ensure the availability of data placed in long-term storage, archive or DR.

HP StoreOpen with LTFS makes accessing files as easy as disk. Retrieve files from long-term storage without dependency on backup software or hardware.

---

#### Safeguarding data for Disaster Recovery

The HP 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-5 and LTO-6 Ultrium tape drives include hardware based data encryption to prevent unauthorized access to data at rest.
- LTO-5 and LTO-6 cartridges are available with write-once-read-many (WORM) capability to prevent accidental overwriting of data archived on the tape.

### Product Highlights

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

#### High Availability

To make the most of your library performance, the MSL6480 offers failover features:

- For High Availability the MSL6480 Data Path and control path failover features are bundled together to provide both drive and robotic failover. .
- Data Path Failover:
  - 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.
- Control Path Failover
  - 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.
- **Advanced Failover Features with MSL6480 LTO-6 drives:** LTO-6 drives unlock additional failover capability
- **Advanced Data Path Failover** (using LTO-6 drives)
  - 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
- **Advanced Control Path Failover** (using LTO-6 drives)
  - SAN wide failure protection
  - 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

#### Data Encryption

With solutions for the small to medium business through the enterprise, safeguard your data while it's in the library, after export, and when it is offsite with integrated security features. HP offers two encryption offerings, a native library-based data encryption and key management capabilities deliver one of the lowest costs data security solutions and doesn't require ISV support.

#### Data encryption with HP StoreEver

The HP StoreEver LTO-6, LTO-5 and LTO-4 Ultrium tape drives utilize the Advanced Encryption

### Product Highlights

Standard (AES) with the longest and most secure keys -- 256 bits - for tape-based data encryption. AES-256 encryption is implemented using the Galois Counter Mode (GCM). This method adds Message Authentication Codes to ensure the integrity as well as privacy of the backup data stored on tape. The HP LTO-6, LTO-5 and LTO-4 Ultrium Tape Drives are designed to be compliant with the standard for tape media security (IEEE 1619.1).

#### **HP StoreEver MSL6480 Library-enabled encryption solution for the small to medium business**

The HP MSL6480 offers an encryption solution that includes two USB key server tokens, product documentation, and firmware support. One encryption kit is needed per library or autoloader.

How it works:

- One USB key server token is installed in the USB port of the library to enable encryption. The token must remain in the tape library or tape autoloader while encryption is enabled.
- The USB key server token generates and stores keys for the LTO-6, LTO-5 or LTO-4 Ultrium drives. The USB key server token uses a hardware random number generator, with strong hardware security\*, password authentication, and digital envelopes for strong encryption keys and security operations.
- A second USB key server token is provided in the kit to be used as a backup token which can be stored in a secure location.
- The keys are transferred securely token-to-token for backup or export, with no exposure to insecure PCs, servers, or networks. An option is also provided to save the token contents to a secure file.
- The most recently added keys on the token are able to be saved to a file to enable you to seed new tokens with keys from other tokens.

The HP StoreEver MSL Encryption Kit provides a self-contained solution for MSL libraries with additional software, PCs, or servers required or involved.

\* The HP MSL Encryption Kit product is not FIPS validated. However, it is built from a device containing a FIPS 140-2 Level 3 validated cryptographic module.

#### **HP Enterprise Secure Key Manager (ESKM) for encryption key sharing across the enterprise**

HP MSL6480 is integrated with HP's Enterprise Secure Key Manager (ESKM) to provide centralized encryption key management for HP ESL G3, ESL E-Series, EML & MSL6480 Tape Libraries. The tape libraries support the ESKM in either the ESKM proprietary mode or the KMIP 1.2 protocol. One library encryption license will be needed based on the protocol of choice (either ESKM or KMIP protocol)

- Automatic policy-based key generation and management supporting key/cartridge granularity
- ISV transparent key archival and retrieval for multiple libraries
- Extensible to emerging open standards
- Strong auditable security for encryption keys
  - Hardened server appliance
  - Secure identity-based access, administration and logging
  - Operable in FIPS mode (FIPS 140-2 level 2).
- Reliable lifetime key archival
  - Automatic multi-site clustering, key replication and failover

### Product Highlights

- Comprehensive backup and restore functionality for keys
- Redundant device components and active alerts

---

**Secure Manager License** HP 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** HP LTO (Linear Tape Open) Ultrium Tape Drives use best of breed technology.. Inclusion of innovative features such as HP Adaptive Tape Speed (ATS) ensure that HP Ultrium drives can meet the performance and reliability demands of a library environment. LTO technology is an open industry standard format; thus data written on HP Ultrium Tape Drives can be interchanged directly with Ultrium Tape Drives from other vendors.

---

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

---

**Data Rate Matching** Data Rate Matching combines sophisticated buffer management with HP's exclusive variable Adaptive Tape Speed technology, to allow the tape drive to match its transfer rate to the host speed dynamically and continuously across the wide range of transfer rates. This feature ensures that the tape drive continues to stream data regardless of the environment, and brings two big advantages:

- It optimizes backup performance and maximizes overall efficiency allowing the drive to respond immediately to any 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**

HP LTO-6 Ultrium 6250

**ATS data transfer rate range (native)**

54 to 160 MB/s



### Product Highlights

HP LTO-5 Ultrium 3280/3000	47 to 140 MB/s
HP LTO-4 Ultrium 1840	40 to 120 MB/s
HP LTO-4 Ultrium 1760	35 to 80 MB/s

#### HP 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.

LTO-6, LTO-5, LTO-4 Ultrium and LTO-3 Ultrium tape drives features the ability to archive and store data in a 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, the tape drives can archive large amounts of data for periods of up to 30 years in a secure, 'untampered' state. Since all LTO-6, LTO-5, LTO-4 and LTO-3 Ultrium tape drives include support for both rewritable and WORM media, IT organizations can now easily integrate a secure, long-term archiving solution into their current data protection strategy. As compared to other technologies that feature support for WORM storage, the tape drives offer the advantages of:

- 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 third- and fourth-generation Ultrium products

#### HP Data Protector software

HP Data Protector software automates high performance backup and recovery, from disk or tape, over unlimited distances, to enable 24x7x365 business continuity and improve IT resource utilization. Data Protector software responds to the pressure for lower IT costs and greater operational efficiency by offering acquisition and deployment costs which are 30 - 70 % less than competition. The license model is very simple and easy to understand, helping to reduce complexity. Extensive scalability and features for continuous backup and recovery operations enable growth with a single product. A superb solution, no other software can integrate better with the HP market-leading line of disk and tape family of products, as well as with other heterogeneous storage infrastructures. As an integral component of the fast-growing HP software portfolio, which includes storage resource management, archiving, replication, and device management software, Data Protector software also fully integrates with the HP management solutions, allowing managing data protection as an essential element of an overall IT service. This solution offers the unique advantage of being able to source hardware, software, and award winning service offerings from a single, trusted source.

Data Protector software simplifies the use of complex backup and recovery procedures with the fastest installation, automated routine tasks, and easy-to-use features. The centralized multi-site management easily allows implementing multi-site changes, adapting in real time to changing business requirements. Appropriate for medium and large companies in any industry, Data Protector software is the ideal solution to reduce IT costs and complexity while remaining reliable and scalable

### Product Highlights

to grow from single server environments to the largest distributed enterprise infrastructures.

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

#### **Linear Tape File System (LTFS)**

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

#### **HP StoreOpen Automation**

HP StoreOpen Automation is a free downloadable application that extends the LTFS capability to HP Autoloaders, HP MSL and ESL G3 Tape Libraries. By simply mounting the tape autoloader or library as a file system, the intuitive HP StoreOpen Automation interface makes it easier to copy, rename, create or move files. When a cartridge folder is selected for use, that tape is automatically moved to an available tape drive.

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

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

#### **HP Storage Media**

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

All HP cartridges must satisfy an exhaustive battery of additional tests that relate directly to real life situations, where real data and real businesses are at stake. The benefit of the HP brand specification for media is consistent quality. Through the testing of thousands of HP drives and HP cartridges, the ideal formulation for backup performance is defined and then continuously monitored. This hugely resource-intensive process is unique to HP and affords deep insight into the HP+HP backup solution for a wide range of environments and duty cycles. Your best choice for ease of support and maximum dependability is to use HP-branded Ultrium cartridges at all times.

HP strongly encourages the use of bar code labels on tapes to track media and ensure optimum library performance and usability. Correctly labeling your media will allow the library to quickly determine media and drive compatibility.

### Compatibility

**Compatibility**

HP's extensive compatibility testing program assures that your HP MSL Tape Libraries work with leading servers, operating systems, and backup applications - and not just those sold by HP. The MSL libraries work seamlessly in many environments, making them especially suitable if you have a mixed system environment. For the latest list of servers, workstations, operating systems, and backup software that support the MSL tape libraries, check the HP Enterprise Backup Solution compatibility matrix at: <http://www.hp.com/go/ebs>.

---

**Server Compatibility**

The MSL Tape Library is supported on a wide range of HP systems. For details of which MSL Libraries work with which systems, including third-party systems, reference the EBS compatibility matrix at: <http://www.hp.com/go/ebs> for the latest hardware compatibility information.

---

**OS Support**

Reference the EBS compatibility matrix for the most up-to-date OS compatibility information at: <http://www.hp.com/go/ebs>.

---

**Software Support**

Reference the EBS compatibility matrix for the most up-to-date software compatibility information at: <http://www.hp.com/go/ebs>.

### Service and Support, HP Care Pack, and Warranty Information

#### Service and Support

#### Services to accelerate time to results

HP Storage Services bring you a rich portfolio of consulting and support services designed to add value to our core storage products and solutions. We have the know-how and experience to put storage technology to work for you. We work closely with you as your strategic partner, leveraging our full services portfolio to make sure that everything works to optimize your enterprise.

Choose from services aligned to our storage product offerings and lifecycle. From mission-critical onsite services to innovative web-based remote support, you choose the precise level of attention and support your business demands.

#### Design, integrate, migrate and transform

Choose from a rich portfolio of services to make the most of HP StoreEver MSL6480 Tape Library Storage, so you can efficiently and affordably consolidate, manage, and extract value from unstructured data.

**Start here to understand your data protection options. Next, develop a methodical plan and design the optimal HP StoreEver MSL6480 Tape Library Storage, that addresses your unique technology requirements.**

**HP Backup Recovery Efficiency Analysis** - Assessment of how efficiently backup components are being used as the amount of data to be backed up continues to grow exponentially via analysis intelligence and a snapshot of your current backup environment.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8490ENW.pdf>

**HP Backup Recovery Impact Analysis** - Focus placed on service requirements and design as the key to success for gaining a clear understanding of the role of increasingly diverse data protection strategies.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-1175ENW.pdf>

**HP Backup Recovery Modernization** - Initial discovery, interviews, reference architecture design, proposal content development, vendor grading, and final recommendations carried out so as to require minimal resources and locations on your part.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-1199ENW.pdf>

#### Deploy and Implement

**Implement HP StoreEver MSL6480 Tape Library correctly-right from the start-so you can count on reduced risk and accelerated deployment, while implementing a best-practice configuration from day one.**

**HP Installation and Startup Service for HP StoreEver Storage Systems** - Installation and testing of your hardware and software onsite, including configuration of the storage deployment

**HP Storage and Data Consultant Residency Services** - Strategically augments current environment with HP resources who become your trusted advisor to provide answers that are right for your storage and backup environment

**HP Storage Data Migration Service** - End-to-end data migration service providing seamless discovery, assessment, planning, and design, completely customizable to your organization's storage area network (SAN) or network attached storage (NAS) environment and using innovative software to help you migrate to HP storage quickly and efficiently

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-0774ENW.pdf>

**HP Proactive Select** - A flexible way to purchase services to fit your environment with an extensive menu of HP Proactive Select event and technical services, such as onsite firmware upgrades, health

### Service and Support, HP Care Pack, and Warranty Information

checks, assessments, and education

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENW.pdf>

#### Operate and support

**Choose the right support to maximize uptime, free up your resources, and achieve improved value- as you get the most out of the existing IT assets while accelerating time-to-revenue.**

**HP Proactive Care 24x7** - Integrated proactive and reactive hardware and software support to help prevent problems and outages and to rapidly resolve a problem if one occurs. With products connected to HP, we help proactively prevent problems with tailored reports, analysis, and recommendations. When there is a problem an enhanced call experience with end to end case management helps resolve problems quickly.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf>

**HP Proactive Care Personalized Support** - An option-if you have HP Proactive Care- to bring increased personalization of HP Proactive Care through the assignment of a local Account Service Manager (ASM) who develops a support plan and delivers IT best practice advice to help address IT issues and projects

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-3446ENW.pdf>

**HP Foundation Care 24x7:** HP Foundation Care 24x7 connects you to HP around the clock for assistance on resolving issues with hardware onsite response within four hours and software call back within two hours after opening your case. Utilize HP Support Center for fast, easy online access to HP.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA4-8876ENW.pdf>

**Get connected and get back to business-** HP Storage Technology Services provide the path to get your HP Simply StoreIT solutions and your business connected to HP. Once connected, our experts are able to scan your system and run health checks, then use that data to create personalized reports and recommendations for actions to take to prevent problems and downtime.

**Problem prevention with personalized consultation :** Your system is monitored 24x7 and you will be notified when issues occur. Data is automatically submitted into HP's call center and authorized Channel partners for problem resolution. If a part is required, then parts dispatch is automatically invoked. We provide centralized access to your system information and case information via a personalized dashboard that may be accessed from anywhere, at anytime. You gain access to our vast knowledge base for self-help. Plus, you can tap into the knowledge of not only HP experts, but also Channel partners and other IT professionals

**HP Education Services** - Comprehensive training for new, as well as experienced, storage administrators designed to expand your skills and keep you up to speed with the latest storage and virtualization technology from HP Storage. <http://education.hp.com/curr-storsan.htm>

**Optimized Care-**With products connected to HP and proactive advice, deliver the highest levels of performance and stability through deployment and proactive

**Choose from three levels of operate and support care**

**HP Proactive Care 24x7, plus 20 HP Proactive Select credits for the 1st year**

**Additional options - HP Proactive Care Personalized Support (once per Proactive Care support new environment), an additional day of HP Personalized Support, and 10 additional HP Proactive Select credits per year, per array**

### Service and Support, HP Care Pack, and Warranty Information

management practices

**Standard Care**—With products connected to HP and proactive advice, maintain high level of uptime, along with expert help to cut the cost and complexity of implementation and support

**HP Proactive Care 24x7, plus 10 HP Proactive Select credits for the 1st year**

**Additional options - HP Proactive Care Personalized Support (once per Proactive Care support new environment), an additional day of HP Personalized Support, and 10 additional HP Proactive Select credits per year, per array**

**Basic Care**—With products connected to HP and proactive advice, minimum recommended support

**HP Foundation Care 24x7**

**Additional options - 10 Proactive Select credits per year**

**For more information**

[www.hp.com/services/storage](http://www.hp.com/services/storage)

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

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

[www.hp.com/go/lookuptool](http://www.hp.com/go/lookuptool)

---

### Configuration Information

#### Step 1 - Base Configuration

HP StoreEver MSL6480	Model description	Part Number
	HP StoreEver MSL6480 Scalable Base Module	QU625A
	HP StoreEver MSL6480 Scalable Expansion Module	QU626A

**NOTE:** The HP MSL6480 Tape Library Base and Expansion Modules are 6U rack mountable, 80-slot units. They do not contain any tape drives.

Up to 6 HH tape drives or 3 FH tape drives may be added to the Base Module and each Expansion Module - see below for HP StoreEver LTO-6, LTO-5 and LTO-4 Tape Drive ordering information.

**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)

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

<b>HP StoreEver LTO-6 Ultrium 6250 FC Drive Kit</b>	HP StoreEver MSL LTO-6 Ultrium 6250 FC Drive Upgrade Kit <b>Kit Contents</b> (for each drive): One HP StoreEver LTO-6 Ultrium 6250 FC Half-Height Tape Drive <b>NOTE:</b> Each HP MSL6480 Tape Library Module is able to hold up to six tape drives - to a maximum of 42 drives in a fully expanded Library.	COH28A
<b>HP StoreEver LTO-6 Ultrium 6250 SAS Drive Kit</b>	HP StoreEver MSL LTO-6 Ultrium 6250 SAS Drive Upgrade Kit <b>Kit Contents</b> (for each drive): One HP StoreEver LTO-6 Ultrium 6250 SAS Half-Height Tape Drive <b>NOTE:</b> Each HP MSL6480 Tape Library Module is able to hold up to six tape drives - to a maximum of 42 drives in a fully expanded Library.	COH27A
<b>HP StoreEver LTO-5 Ultrium 3280 FC Drive Kit</b>	HP MSL LTO-5 Ultrium 3280 Fibre Channel Drive Upgrade Kit <b>Kit Contents</b> (for each drive): One HP StoreEver LTO-5 Ultrium 3280 Fibre Channel Full-Height Tape Drive <b>NOTE:</b> Each HP MSL6480 Tape Library Module is able to hold up to three Full-Height tape drives - to a maximum of 21 drives in a fully expanded Library	BL535B
<b>HP StoreEver LTO-5 Ultrium 3000 FC Drive Kit</b>	HP MSL LTO-5 Ultrium 3000 Fibre Channel Drive Upgrade Kit <b>Kit Contents</b> (for each drive):  One HP StoreEver LTO-5 Ultrium 3000 FC Half-Height Tape Drive <b>NOTE:</b> Each HP MSL6480 Tape Library Module is able to hold up to six tape drives - to a maximum of 42 drives in a fully expanded Library	BL544B
<b>HP StoreEver LTO-5 Ultrium 3000 SAS Drive Kit</b>	HP MSL LTO-5 Ultrium 3000 SAS Drive Upgrade Kit <b>Kit Contents</b> (for each drive): One HP StoreEver LTO-5 Ultrium 3000 SAS Half-Height Tape Drive <b>NOTE:</b> Each HP MSL6480 Tape Library Module is able to hold up to six tape drives -	BL540B

### Configuration Information

<p><b>HP StoreEver LTO-4 Ultrium 1840 FC Drive Kit</b></p>	<p>to a maximum of 42 drives in a fully expanded Library.</p> <p>HP MSL LTO-4 Ultrium 1840 4Gb FC Drive Upgrade Kit</p> <p><b>Kit Contents</b> (for each drive): One HP StoreEver LTO-4 Ultrium 1840 Fibre Channel Full-Height Tape Drive</p> <p><b>NOTE:</b> Each HP MSL6480 Tape Library Module is able to hold up to three tape drives - to a maximum of 21 Full-Height drives in a fully expanded Library.</p>	<p>AJ042B</p>
<p><b>HP StoreEver LTO-4 Ultrium 1760 SAS Drive Kit</b></p>	<p>HP MSL LTO-4 Ultrium 1760 SAS Drive Upgrade Kit</p> <p><b>Kit Contents</b> (for each drive): One HP StoreEver LTO-4 Ultrium 1760 SAS Half-Height Tape Drive</p> <p><b>NOTE:</b> Each HP MSL6480 Tape Library Module is able to hold up to three tape drives - to a maximum of 42 Full-Height drives in a fully expanded Library.</p>	<p>AK383B</p>

### Step 3 - Select Software Licenses

Select each option as required with quantities specified:

Software Licenses	Quantity	Description	Part Number
	1 each	<p>HP StoreEver MSL6480 Command View TL LTU</p> <p>Provides management and control through a single pane of glass, while TapeAssure provides comprehensive summaries and detailed information about the status, performance, utilization, and health of all tape drives and tape media. Utilization and performance reporting features allow you to optimize the use of your HP MSL Tape Libraries and Tape Drives</p> <p><b>NOTE:</b> This is a paper license that will be mailed</p>	TC444A
	1 each	<p>HP StoreEver MSL6480 Command View TL E-LTU</p> <p>Provides management and control through a single pane of glass, while TapeAssure provides comprehensive summaries and detailed information about the status, performance, utilization, and health of all tape drives and tape media. Utilization and performance reporting features allow you to optimize the use of your HP MSL Tape Libraries and Tape Drives</p> <p><b>NOTE:</b> This is an electronically delivered License</p>	TC444AAE
	1 each	<p>HP StoreEver MSL6480 TapeAssure Advanced LTU</p> <p>One per library</p> <p><b>NOTE:</b> Advanced analytics feature makes use of predictive analytics to predict the likelihood of failures, bottlenecks and load balancing issues in the tape infrastructure. It has unique capabilities of analytics around drive health and life as well as cartridge health and life.</p> <p><b>NOTE:</b> One license needed per library and Command View TL must be installed.</p> <p><b>NOTE:</b> This is a paper license that will be mailed.</p>	TC445A
	1 each	<p>HP StoreEver MSL6480 TapeAssure Advanced E-LTU</p>	TC445AAE



### Configuration Information

One per library

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

**NOTE:** One license needed per library and Command View TL must be installed.

1 each	<p><b>NOTE:</b> This is an electronically delivered License</p> <p>HP StoreEver MSL6480 ESKM Encryption LTU</p> <p><b>NOTE:</b> the ESKM Encryption License will enable encryption keys to be received from the HP ESKM for strong data encryption and key management. One per library is required (regardless of Expansion Module qty)</p>	TC469A
1 each	<p><b>NOTE:</b> This is a paper license that will be mailed.</p> <p>HP StoreEver MSL6480 ESKM Encryption E-LTU</p> <p><b>NOTE:</b> the ESKM Encryption License will enable encryption keys to be received from the HP ESKM. One per library is required (regardless of Expansion Module qty)</p>	TC469AAE
1 each	<p><b>NOTE:</b> This is an electronically delivered License</p> <p>HP StoreEver MSL6480 KMIP 1.2 Key Manager LTU</p> <p>Enables the library to request encryption keys from either key managers below for encryption key management:</p> <ul style="list-style-type: none"> <li>• HP ESKM version 4.0 or greater using KMIP 1.2 protocol</li> <li>• SafeNet's KeySecure 460 key manager using KMIP protocol</li> </ul>	D4T76A
1 each	<p><b>NOTE:</b> This is a paper license that will be mailed.</p> <p>HP StoreEver MSL6480 KMIP 1.2 Key Manager E-LTU</p> <p>Enables the library to request encryption keys from either key managers below for encryption key management:</p> <ul style="list-style-type: none"> <li>• HP ESKM version 4.0 or greater using KMIP 1.2 protocol</li> <li>• SafeNet's KeySecure 460 key manager using KMIP protocol</li> </ul>	D4T76AAE
1 each	<p><b>NOTE:</b> This is an electronically delivered License</p> <p>HP StoreEver MSL6480 Secure Manager LTU</p> <p>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</p>	D4T75A
1 each	<p><b>NOTE:</b> This is a paper license that will be mailed.</p> <p>HP StoreEver MSL6480 Secure Manager E-LTU</p> <p>Provides an additional level of security that lets you control access to</p>	D4T75AAE

### Configuration Information

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

**NOTE:** This is an electronically delivered License  
 1 each HP StoreEver High Availability MSL6480 Control Path Failover LTU TC359A

Control path failover uses library and drive firmware to create a new Fibre Channel path to a a robot if the original path is lost.

**NOTE:** High Availability Failover cannot be used with LTO-4 tape drives.

**NOTE:** This is a paper license that will be mailed.  
 1 each HP StoreEver High Availability MSL6480 Control Path Failover E-LTU TC359AAE

drivesControl path failover uses library and drive firmware to create a new Fibre Channel path to a robot if the original path is lost.

**NOTE:** High Availability Failover cannot be used with LTO-4 tape

**NOTE:** This is an electronically delivered License  
 1 each HP StoreEver High Availability MSL6480 Data Path Failover LTU TC360A

Control path failover uses library and drive firmware to create a new Fibre Channel path to a drive if the original path is lost.

**NOTE:** High Availability Failover cannot be used with LTO-4 tape drives

**NOTE:** This is a paper license that will be mailed.  
 1 each HP StoreEver High Availability MSL6480 Data Path Failover E-LTU TC360AAE

Control path failover uses library and drive firmware to create a new Fibre Channel path to a drive if the original path is lost.

**NOTE:** High Availability Failover cannot be used with LTO-4 tape drives

**NOTE:** This is an electronically delivered License

### Step 4 - Select Additional Accessories

Power Cords	Quantity	Description	Part Number
	2 each	HP C13 - C14 WW 250V 10Amp 2.5m Jumper Cord <b>NOTE:</b> This cord ships standard with each MSL Tape Library; can be used to connect the rack-mounted device to PDUs with IEC-320 receptacles.	142257-002
	<b>Quantity to order</b>	Regional Power Cord Options <b>NOTE:</b> Two PDU cords are shipped with each module (above). If	

### Configuration Information

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.

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

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

### Related Options

**Factory Racking** Factory integrate the MSL Tape Libraries with other HP products such as HP ProLiant Servers #0D1  
**NOTE:** #0D1 will appear after the Tape Library part number on the sales order if HP factory integration is indicated. Only the Control Module and one Expansion Module can be factory integrated. Expansion module s 2-6 and all tape drives are field installed.

**Encryption** HP 1/8 G2 Tape Autoloader and MSL Tape Library LTO-4 Encryption Kit AM495A  
**NOTE:** The Encryption Kit key server token will generate and retain encryption keys for HP LTO-6, LTO-5 or LTO- 4 Ultrium tape drives in the library. Does not require support from ISV.

HP StoreEver MSL6480 ESKM Encryption LTU TC469A  
**NOTE:** the ESKM Encryption License will enable encryption keys to be received from the HP ESKM for strong data encryption and key management. One per library is required (regardless of Expansion Module qty)  
**NOTE:** This is a paper license that will be mailed.

HP StoreEver MSL6480 ESKM Encryption E-LTU TC469AAE  
**NOTE:** the ESKM Encryption License will enable encryption keys to be received from the HP ESKM. One per library is required (regardless of Expansion Module qty)  
**NOTE:** This is an electronically delivered License

HP StoreEver MSL6480 KMIP 1.2 Key Manager LTU D4T76A  
 Enables the library to request encryption keys from either key managers below for encryption key management:

- HP ESKM version 4.0 or greater using KMIP 1.2 protocol
- SafeNet's KeySecure 460 key manager using KMIP protocol

**NOTE:** This is a paper license that will be mailed.

HP StoreEver MSL6480 KMIP 1.2 Key Manager E-LTU D4T76AAE  
 Enables the library to request encryption keys from either key managers below for encryption key management:

- HP ESKM version 4.0 or greater using KMIP 1.2 protocol
- SafeNet's KeySecure 460 key manager using KMIP protocol

**NOTE:** 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 see the HP Storage EBS (Enterprise Backup Solutions) Compatibility Matrices document and EBS Design Guide located at: [www.hp.com/go/ebs](http://www.hp.com/go/ebs).

For more information on FC HBAs, see Fibre Channel Host Bus Adapters at: <http://h18006.www1.hp.com/storage/saninfrastructure/hba.html>.

**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 see the HP Storage EBS (Enterprise Backup Solutions) Compatibility Matrices document and EBS Design Guide located at:

### Related Options

[www.hp.com/go/ebs](http://www.hp.com/go/ebs).

For more information on HP Smart Array RAID controllers, see Fibre HP Smart Array RAID controllers at: <http://h18004.www1.hp.com/products/servers/proliantstorage/arraycontrollers/index.html>.

For more information on HP ProLiant (SAS) host bus adapters, see: <http://h18004.www1.hp.com/products/servers/proliantstorage/adapters/index.html>.

### Slot Expansion Modules

	<b>HBA/ Controller Product Number</b>
HP H221 Host Bus Adapter <b>NOTE:</b> Recommended for ProLiant Gen8 SAS tape automation connect	650931-B21
HP H222 Host Bus Adapter <b>NOTE:</b> Recommended for ProLiant Gen8 SAS tape automation connect	650926-B21
HP Smart Array P222/512 FBWC 6Gb 1-port Int/1-port Ext SAS Controller <b>NOTE:</b> for ProLiant Gen8 SAS tape automation connect	631667-B21
HP Smart Array P421/1GB FBWC 6Gb 2-ports Ext SAS Controller <b>NOTE:</b> for ProLiant Gen8 SAS tape automation connect	631673-B21
HP Smart Array P421/2GB FBWC 6Gb 2-ports Ext SAS Controller <b>NOTE:</b> for ProLiant Gen8 SAS tape automation connect	631674-B21
HP Smart Array P721m/512 FBWC 6Gb 4-ports Ext Mezzanine SAS Controller <b>NOTE:</b> Recommended for Gen8 C series blade enclosure tape automation connect.	655636-B21
HP Smart Array P721m/2GB FBWC 6Gb 4-ports Ext Mezzanine SAS Controller <b>NOTE:</b> Recommended for Gen8 C series blade enclosure tape automation connect	650072-B21
HP Smart Array P212/ZM 1-ports Int/1-ports Ext PCIe x8 SAS Controller <b>NOTE:</b> for ProLiant G6/G7 SAS tape automation connect. 256MB or larger write cache recommended for more than two tape drives.	462828-B21
HP Smart Array P212/256 1-ports Int/1-ports Ext PCIe x8 SAS Controller <b>NOTE:</b> Recommended for ProLiant G6/G7 SAS tape automation connect.	462834-B21
HP Smart Array P411/256 2-ports Ext PCIe x8 SAS Controller <b>NOTE:</b> Recommended for ProLiant G6/G7 SAS tape automation connect.	462830-B21
HP Smart Array P411/512 BBWC 2-ports Ext PCIe x8 SAS Controller <b>NOTE:</b> Recommended for ProLiant G6/G7 SAS tape automation connect.	462832-B21
HP Smart Array P711m/1G 6Gb FBWC 4-ports Ext Mezzanine SAS Controller <b>NOTE:</b> Recommended for C-series blade enclosure tape automation connect.	513778-B21
HP Smart Array P712m/256 6Gb 2-ports Int/2-ports Ext Mezzanine SAS Controller <b>NOTE:</b> Recommended for C-series blade enclosure tape automation connect.	488348-B21
HP Smart Array P700m/256 4-ports Ext PCIe x8 SAS Controller	
HP Smart Array P700m/512 4-ports Ext PCIe x8 SAS Controller	

### Optical cables

#### OM4 LC-LC type cables

HP Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable	QK732A
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable	QK733A
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable	QK734A

### Related Options

HP Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable	QK735A
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable	QK736A
HP Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable	QK737A

Allowed cable lengths:

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

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

### Cable Kits (SAS)

HP 2m External Mini-SAS to 4x1 Mini-SAS Cable	AN975A
<b>NOTE:</b> One cable is required for every four autoloaders or every four library drives. Use this cable to connect HP MSL SAS Tape Libraries to Mini-SAS (SFF8088) ports.	
HP 4m External Mini-SAS to 4x1 Mini-SAS Cable	AN976A
<b>NOTE:</b> One cable is required for every four autoloaders or every four library drives. Use this cable to connect HP MSL SAS Tape Libraries to Mini-SAS (SFF8088) ports.	
HP External SAS to mini-SAS Fanout Cable	AH587A
<b>NOTE:</b> One cable is required for every four drives. Use this cable to connect HP MSL SAS Tape Libraries to legacy 3Gb SAS controllers with Infiniband (SFF8470) connectors.	

### Rack Cabinets

The MSL6480 libraries are supported in a variety of HP Rack offerings, including the HP Intelligent Series Racks and the HP 10000 G2 Series Racks. For more information on the HP rack offerings, please see the following URL: <http://h18004.www1.hp.com/products/servers/platforms/rackandpower.html>

**NOTE:** If ordering the #OD1 Factory Integration option, the MSL6480 Tape Libraries are only certified to ship with one base module and one expansion module installed in the HP Intelligent Series rack.

### Media

HP LTO-6 Ultrium 6.25TB MP RW Data Cartridge	C7976A
HP LTO-6 Ultrium 6.25TB MP WORM Data Cartridge	C7976W
HP LTO-6 Ultrium 6.25TB BaFe RW Data Cartridge	C7976B
HP LTO-6 Ultrium 6.25TB BaFe WORM Data Cartridge	C7976BW
HP LTO-5 Ultrium 3TB RW Data Cartridge	C7975A
HP LTO-5 Ultrium 3TB WORM Data Cartridge	C7975W
<b>Bar Code Labels</b>	
HP LTO-6 Ultrium RW Bar Code Label Pack	Q2013A
HP LTO-5 Ultrium RW Bar Code Label Pack	Q2011A
HP LTO-5 Ultrium WORM Bar Code Label Pack	Q2012A

### Non-Custom Labeled Data Cartridges

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

### Related Options

HP LTO-6 Ultrium 6.25TB MP RW Non Custom Labeled Data Cartridge 20 Pack	C7976AN
HP LTO-6 Ultrium 6.25TB BaFe RW Non Custom Labeled Data Cartridges 20 Pack	C7976BN
HP LTO-5 Ultrium Non-custom Labeled Data Cartridge 20 Pack	C7975AN

#### Custom Labeled Data Cartridges

**NOTE:** Custom labeled products allow customers to customize a specific sequence printed on each label.

HP LTO-6 Ultrium 6.25TB MP RW Custom Labeled Data Cartridge 20 Pack	C7976AL
HP LTO-6 Ultrium 6.25TB MP RW Custom Labeled Data Cartridge No Case 20 Pack	C7976AC
HP LTO-6 Ultrium 6.25TB MP RFID RW Custom Labeled Data Cartridge 20 Pack	C7976AF
HP LTO-5 RW Custom Labeled Data Cartridge 20 Pack	C7975AL
HP LTO-5 RW Custom Labeled No Case Data Cartridge 20 Pack	C7975AC
HP LTO-5 WORM Custom Labeled Cartridge 20 Pack	C7975WL

**NOTE:** For more information on LTO media, see: <http://h18006.www1.hp.com/storage/storagemedia.html?psn=storage>

### HP Care Pack Options

#### Same Day Response

HP 1year 4hour 13x5 MSL8096 HW Support	UF835E
HP 1year 4hour 24x7 MSL8096 HW Support	UF836E
HP 1year 6hour 24x7 Call to Repair MSL8096 HW Support	UF837E
HP 3 year 4 hour 13x5 MSL8096 Hardware Support	UF839E
HP 3 year 4 hour 24x7 MSL8096 Hardware Support	UF840E
HP 3 year 6 hour 24x7 Call to Repair MSL8096 Hardware Support	UF841E
HP 4 year 4 hour 13x5 MSL8096 Hardware Support	UF842E
HP 4 year 4 hour 24x7 MSL8096 Hardware Support	UF843E
HP 5year 4hour 13x5 MSL8096 HW Support	UF844E
HP 5year 4hour 24x7 MSL8096 HW Support	UF845E

#### Next Business Day Response

HP 3 year Next business day MSL8096 Hardware Support	UF838E
--	--------

#### Hardware Services

HP Install Storage MSL 5060/6060 Tape Service	U4824E
HP Startup for 1 MSL 10U Library Service	UA872E

**NOTE:** In order to maximize ROI and product uptime, and minimize the cost of ownership, Hewlett-Packard 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

		<b>MSL6480</b>
<b>Drive Technology</b>		LTO-6 Ultrium 6250 LTO-5 Ultrium 3000/3280 LTO-4 Ultrium 1840/1760
<b>Maximum Number of Drives</b> - Per Module - Per fully expanded Library		6 HH or 3 FH (per Module) 42 HH or 21 FH (per Library)
<b>Number of Slots</b> - Per Module - Per fully expanded Library		80 (per Module) 560 (per Library)
<b>Drive Interface</b>		8 Gb Native Fibre Channel (LTO-6, LTO-5) 6 Gb/sec SAS (LTO-6, LTO-5) 8 Gb Native Fibre Channel (LTO-4) 6 Gb/sec SAS (LTO-4)
<b>Maximum Capacity</b>	<b>Native</b> - Per Module	200 TB (LTO-6, 80 slots) 120 TB (LTO-5, 80 slots)
	- Per Library	1.4 PB (LTO-6, 560 slots) 840 TB (LTO-5, 560 slots)
	<b>Compressed (2.5:1)</b> - Per Module - Per Library	500 TB (LTO-6, 80 slots) 3.5 PB (LTO-6 560 slots)
	<b>Compressed (2:1)</b> - Per Module - Per Library	240 TB (LTO-5, 80 slots) 1.68 PB (LTO-5, 560 slots)
<b>Maximum Transfer Rate</b>	<b>Native</b> - Per Module	3.46 TB/hour (LTO-6) 3 TB/hour (LTO-5)
	- Per Library	24 TB/hr (LTO-6) 21 TB/hr (LTO-5)
	<b>Compressed (2.5:1)</b> - Per Module - Per Library	8.6 TB/hr (LTO-6) 60.4 TB/hr (LTO-6)
	<b>Compressed (2:1)</b> - Per Module - Per Library	6.0 TB/hr (LTO-5) 42 TB/hr (LTO-5)
		<b>MSL6480</b>
<b>Dimensions</b>	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)
<b>Weight</b>	Out of box	90.4 lbs (43.6 kg)
	Shipping	120.1 lbs (54.5 kg)
		<b>NOTE:</b> The weight of each library varies somewhat based on the type and number of LTO tape drives



### Technical Specifications

	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.	
<b>Reliability</b>	MTBF (mean time between failures)	100,000 hours (based on 1M MSBF)
	MSBF (Mean swaps before failure)	2,000,000
<b>Average Cartridge Swap Time (drive to slot, slot to drive)</b>		40 seconds (Base Unit)
<b>Initialization Time</b>		77 to 204 seconds
<b>Inventory Time</b>		1:10 minutes (minimum) to 1:26minutes (maximum) Base unit
<b>Connectors</b>	Mini-SAS (MSL SAS model only) LC Optical Fibre (MSL FC models only) (1)RJ-45 Ethernet	
<b>Color Control Panel information (on front panel)</b>	Color, 5.7 inch diagonal, resistive touchscreen, full VGA , 4/3 aspect ratio	
<b>Management Interface</b>	10/100/1000 Mbytes/second, auto-configuring interface. RJ-45 connection. Https configurable.	
<b>Power</b>	200 Watts (max)	
<b>Input Requirements</b>	100-120V, 200-240 VAC, 3.5 to 1.5 Amperes , 50 to 60 Hz	
<b>Relative Humidity (non-condensing)</b>	Operating	20% to 80%
	Shipping	20% to 90%
<b>Temperature Range (wet bulb)</b>	Operating	50° to 95° F (10° to 35° C)
	Shipping	-22° to 140° F (-30° to 60° C)
	<b>NOTE:</b> Library operating temperature limits are based on the industry standard tape limit.	
<b>Altitude</b>	Operating	13,000 ft
	Shipping	35,000 ft (10,675 m)

### Summary of Changes

Date	Version History	Action	Description of Change:
10-jun-2014	From Version 3 to 4	Changed	What 's new section was updated: Product highlights; sku description updated
		Added	Configuration information
20-dec-2013	From Version 2 to 3	Changed	Changes made to the chart in the Overview section.  Changes made throughout the Configuration Information.
		Changed	Changes made to the What's New section:  HP StoreEver MSL6480 now supporting HP 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.
30-sept-2013	From Version 1 to 2	Changed	

### Summary of Changes

© Copyright 2014 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

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