

### Overview

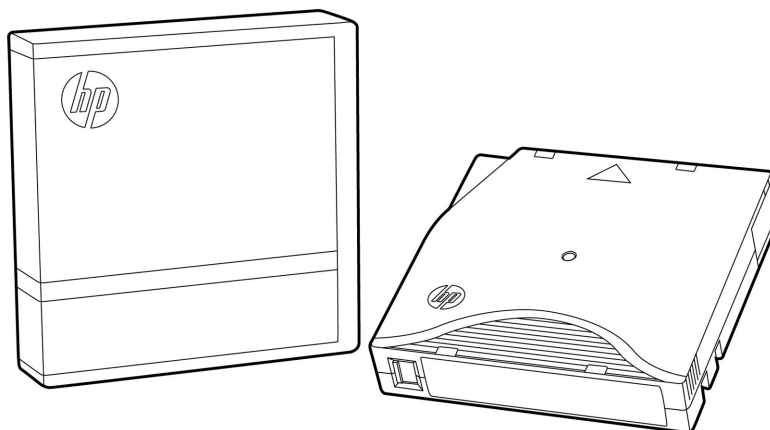
With unbroken market leadership stretching back more than six years (according to Santa Clara Consulting Group) HP is the most popular LTO Ultrium media in the world. That's because HP tapes offer outstanding quality and reliability for every tape drive and every backup and archiving scenario. In 2011, HP carried out over 2.6 million hours of testing, covering all aspects of tape usage; from full volume backups and archiving to rigorous environmental interchange tests. Backed by this uncompromising media qualification process, HP Ultrium data cartridges support all HP StoreEver Ultrium and non HP Ultrium tape devices. Assuming 2.5:1 compression, the latest sixth Generation products minimize interruption to network and SAN backup by being capable of protecting 1.45TB/hour of data and storing up to 6.25 TB on one piece of media (290% greater capacity than HP LTO-4 Ultrium tapes).

#### HP's Bar Code and RFID Labeled Data Cartridges:

HP sells both Labeled and Unlabeled LTO Ultrium data cartridges for automation customers requiring bar code and RFID labeled storage media.

HP's Custom Bar Code and RFID Labeled Data Cartridges allow customers to place a custom order with HP and specifically define the exact barcode sequence printed on each label. Customers should expect a longer lead time for custom order processing. HP Custom Labeled Data Cartridges are sold in 20 packs in the USA and Europe.

HP's Non-Custom Bar Code and RFID Labeled Data Cartridges allow customers to receive labeled data cartridges fast because no customization process is required. These products are perfect for customers that require labeled media but do not need to define the exact sequence printed on each label. Each HP Non-Custom Labeled Data Cartridge will have a unique, pre-defined barcode sequence printed on each label (no duplicate codes). HP's Non-Custom Labeled Data Cartridges are sold in 20 packs and are available worldwide.



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Models		
	HP LTO-6 Ultrium 6.25 TB MP RW Data Cartridge	C7976A
	HP LTO-6 Ultrium 6.25 TB MP RW Custom Labeled Data Cartridge 20 pack	C7976AL
	HP LTO-6 Ultrium 6.25 TB MP RW Non Custom Labeled Data Cartridge 20 pack	C7976AN
	HP LTO-6 Ultrium 6.25 TB MP RW Pallet (960 tapes)	C7976AD
	HP LTO-6 Ultrium 6.25 TB BaFe RW Data Cartridge	C7976B
	HP LTO-6 Ultrium 6.25 TB BaFe RW Non Custom Labeled Data Cartridge 20 pack	C7976BN
	HP LTO-6 Ultrium 6.25 TB MP RW Library Pack (No Case) Custom Labeled Data Cartridge (20 pk)	C7976AC
	HP LTO-6 Ultrium 6.25 TB MP RW Library Pack (No Case) Unlabeled Data Cartridge (20 pk)	C7976AH

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HP LTO-6 Ultrium 6.25 TB MP WORM Data Cartridge	C7976W
HP LTO-6 Ultrium 6.25 TB MP WORM Custom Labeled Data Cartridge (20 pk)	C7976WL
HP LTO-6 Ultrium 6.25 TB MP RW RFID Custom Labeled Data Cartridge (20 pk)	C7976AF
HP LTO-6 Ultrium 6.25 TB BaFe RW Custom Labeled Data Cartridge (20 pk)	C7976BL
HP LTO-6 Ultrium 6.25 TB BaFe RW Library Pack (No Case) Unlabeled Data Cartridge (20 pk)	C7976BH
HP LTO-6 Ultrium 6.25 TB BaFe WORM Data Cartridge	C7976BW
HP LTO-6 Ultrium RW Bar Code Label Pack	Q2013A
HP LTO-5 Ultrium 3TB RW Data Cartridge	C7975A
HP LTO-5 RW Custom Labeled Data Cartridge 20 Pack	C7975AL
HP LTO-5 Ultrium 3TB WORM Data Cartridge	C7975W
HP LTO-5 Ultrium Non-custom Labeled Data Cartridge 20 Pack	C7975AN
HP LTO-5 WORM Custom Labeled Cartridge 20 Pack	C7975WL
HP LTO-5 RW Custom Labeled No Case Data Cartridge 20 Pack	C7975AC
HP LTO-5 Ultrium 3TB RFID RW Custom Labeled Data Cartridge 20 Pack	C7975AF
HP LTO-5 Ultrium 3TB RFID RW Non-custom Labeled Data Cartridge 20 Pack	C7975AJ
HP LTO-5 Ultrium 3TB RFID RW Custom Labeled No Case Data Cartridge 20 Pack	C7975AK
HP LTO-4 Ultrium 1.6 TB RW Data Cartridge	C7974A
HP LTO-4 Ultrium 1.6TB RW Custom Labeled Data Cartridge 20 pack	C7974AL
HP LTO-4 Ultrium 1.6 TB WORM Data Cartridge	C7974W
HP LTO-4 Ultrium 1.6TB Non Custom Labeled Data Cartridge 20 pack	C7974AN
HP LTO-4 Ultrium 1.6 TB WORM Custom Labeled Data Cartridge 20 pack	C7974WL
HP LTO-4 Ultrium 1.6TB RFID RW Custom Labeled Data Cartridge 20 Pack	C7974AF
HP LTO-4 Ultrium 1.6TB RFID Non-custom Labeled Data Cartridge 20 Pack	C7974AJ
HP LTO-4 Ultrium 1.6TB RFID Custom Label No Case Data Cartridge 20 Pack	C7974AK
HP LTO-3 Ultrium 800 GB RW Data Cartridge	C7973A
HP LTO-3 Ultrium 800 GB RW Custom Labeled Data Cartridge 20 pack	C7973AL
HP LTO-3 Ultrium 800 GB Non Custom Labeled Data Cartridge 20 pack	C7973AN
HP LTO-3 Ultrium 800 GB WORM Data Cartridge	C7973W
HP LTO-3 Ultrium 800 GB WORM Custom Labeled Data Cartridge 20 pack	C7973WL
HP LTO-3 Ultrium 800GB RFID RW Custom Labeled Data Cartridge 20 Pack	C7973AF
HP LTO-3 Ultrium 800GB RFID Non-custom Labeled Data Cartridge 20 Pack	C7973AJ
HP LTO-3 Ultrium 800GB RFID Custom Label No Case Data Cartridge 20 Pack	C7973AK
HP LTO-2 Ultrium 400 GB Data Cartridge	C7972A
HP LTO-2 Ultrium 400 GB Custom Labeled Data Cartridge 20 pack	C7972AL
HP LTO-2 Ultrium 400 GB Non Custom Labeled Data Cartridge 20 pack	C7972AN
HP LTO-1 Ultrium 200 GB Data Cartridge	C7971A
HP LTO-1 Ultrium 200 GB Custom Labeled Data Cartridge 20 pack	C7971AL
HP LTO-1 Ultrium 200 GB Non Custom Labeled Data Cartridge 20 pack	C7971AN
HP LTO Ultrium Universal Cleaning Cartridge	C7978A
HP LTO-1 Ultrium Bar Code label pack	Q2001A

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HP LTO-2 Ultrium Bar Code label pack	Q2002A
HP LTO-3 Ultrium RW Bar Code label pack	Q2007A
HP LTO-3 Ultrium WORM Bar Code label pack	Q2008A
HP LTO-4 Ultrium RW Bar Code label pack	Q2009A
HP LTO-4 Ultrium WORM Bar Code label pack	Q2010A
HP LTO-5 Ultrium RW Bar Code Label Pack	Q2011A
HP LTO-5 Ultrium WORM Bar Code Label Pack	Q2012A
HP LTO-5 Ultrium WORM Bar Code Label Pack	Q2012A

MP = Metal particle BaFe = Barium Ferrite

### Key Features & Benefits

- Up to 6.25 TB compressed capacity on HP StoreEver and non-HP LTO-6 devices.
- Supports transfer speeds of 160 MB/s (native), 400 MB/s (2.5:1) with Generation 6
- Two different media options: Metal Particle (MP) and Barium Ferrite (BaFe) in both Metal Particle and WORM formats
- Unique colored cartridges to assist with identification in mixed media environments.
- Superior 'smart grabber' mechanism and mechanical interlock to prevent the leader pin from being pulled inside the tape housing (a key weakness of DLT media). Sensors detect proper connection and prevent leader loss that would ruin the tape.
- Simplified tape path to reduce wear and tear.
- Very low media cost per GB.
- LTO cartridge memory in media to improve access time and provide enhanced media monitoring.
- Durable cartridge designed to minimize wear and debris (important in automation).
- Tested to extremes in HP's media laboratory, to a level of specification unique to Hewlett-Packard. Many of the test procedures required for HP Brand qualification (e.g. load/unload, shoeshine, drop testing and environmental stress testing) are not required for the Ultrium logo.
- HP LTO-6 offers data encryption for enhanced data security - granted FIPS140-2 Level 1 certification
- HP offers both labeled (Custom Labeled and Non-Custom Labeled) and non-labeled Tri Optic and RFID data cartridges.
- Custom labeled offerings allow automation customers the ability to customize their label to their specific needs. This includes the ability to define the barcode label type and to specify an exact label sequence. Custom labels are pre-attached to the media before shipment. Available in Europe and the USA. Europe requires a Minimum Order Quantity of 5 units or 100 total data cartridges (5 units X 20 cartridges).
- HP Non-Custom Labeled media allows automation customers the ability to receive labeled media without having to wait for a custom labeled solution. Barcode sequences are pre-determined by HP and are guaranteed to be unique. LTO-1 and LTO-2 products utilize the double barcode format whereas products from LTO-3 onwards utilize the single barcode format. HP Non-Custom Labeled media is available worldwide.
- HP LTO Ultrium RFID Storage Media provides a faster, more flexible and secure alternative to traditional barcode identification solutions. Rewritable RFID labels enable cartridges to be accurately tracked in real time, anywhere in the world. HP RFID labels are tested to extremes, support worldwide radio frequencies and comply with global data security standards.
- All labeled solutions are shipped in 20 packs.

### Product Highlights

#### Proven Reliability

HP ensures the highest level of quality with media specifications that far exceed industry standards.

- It is doubtful if any other media supplier carries out such exhaustive qualification of the drive and media as they are used in the field. This is because no media supplier is exposed to support of hardware in the field and has a vested interest in reducing media-induced hardware issues.
- In 2011, HP conducted the following media quality procedures:
  - 2.6 million hours of quality control testing for HP branded media. Using 15,000 drives and 8,500 tapes
  - 75,000 miles of new LTO-4 'green tape' were pulled through HP and non-HP devices
  - 75,000 miles of new LTO-5 'green tape' were pulled through HP and non-HP devices
  - 200,000 miles of LTO-5 tape (both green tape and media that was reused) were pulled through HP tape platforms
- HP testing includes procedures like drop testing, creep append, load/unload, environmental stress tests and archival simulation that are not required to gain the LTO Ultrium logo

LTO Ultrium tape technology uses a "best of breed" technology approach, taking the best features from other tape technologies and combining them into a single new technology without the need for design compromises to accommodate legacy compatibility requirements. Designed for the demanding environment of large-scale libraries, Ultrium media has a 30-year archival storage life.

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#### HP Branded Media Specification

HP believes that its test program for HP Ultrium media is the most thorough and comprehensive in the industry. In order to carry the HP Brand, designated cartridges must satisfy an exhaustive battery of additional procedures that relate directly to how the product is used in real life situations when real data and real businesses are at stake. Some of these procedures - e.g. "five corner" environmental interchange, load/unload for automation, ageing simulation and drop testing are not found in the standard logo test. Over 2.6 million test hours on media and drives per year ensures that HP Ultrium media will always offer maximum reliability even in the most extreme conditions.

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#### HP LTO-6 Ultrium Tape Technology

The latest HP LTO-6 Ultrium tape drive technology uses a linear format of 2,176 tracks, writing sixteen (16) tracks simultaneously. The data is written in a serpentine pattern; the tape reverses direction after each set of sixteen tracks is written.

LTO Ultrium formats are open standards. This means that data written on any HP StoreEver LTO Ultrium tape drive for ProLiant servers, autoloaders, MSL, EML or ESL G3 can be interchanged directly with Ultrium tape drives from other vendors.

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#### Compression

LTO-DC is an enhanced version of Advanced Lossless Data Compression (ALDC) hardware compression. Compression is automatically turned "off" if the compressed data would cause an overall expansion in data size.

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#### Compatibility Testing

HP LTO Ultrium data cartridges are fully supported and compatible with HP StoreEver LTO Ultrium tape products. Because HP LTO Ultrium media is LTO Ultrium logo compliant, it may be used with any other non-HP device that bears the LTO Ultrium logo.

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### Product Highlights

<b>Backward Read Compatible</b>		<b>LTO-1 Drive</b>	<b>LTO-2 Drive</b>	<b>LTO-3 Drive</b>	<b>LTO-4 Drive</b>	<b>LTO-5 Drive</b>	<b>LTO-6 Drive</b>
	<b>LTO-2 Media</b>	Not Compatible	Read/Write	Read/Write	Read Only	Not Compatible	Not Compatible
	<b>LTO-3 Media</b>	Not Compatible	Not Compatible	Read/Write	Read/Write	Read Only	Not Compatible
	<b>LTO-4 Media</b>	Not Compatible	Not Compatible	Not Compatible	Read/Write	Read/Write	Read Only
	<b>LTO-5 Media</b>	Not Compatible	Not Compatible	Not Compatible	Not Compatible	Read/Write	Read/Write

### Why Buy LTO?

If you have not yet standardized on a large-tape format then LTO Ultrium tape technology is the preferred choice offering:

- Highest reliability through no compromise design and innovative features like Data Rate Matching.
- High capacity to meet the challenges of data deluge
- High performance - even on slower hosts
- An industry standard - Linear Tape-Open format
- Investment protection - with an eight-generation roadmap with plans to deliver a compressed capacity of 32 TB and a compressed transfer rate of up to 1.18 GB/s.

### Warranty and Support

Includes a limited lifetime warranty, fully supported by a worldwide network of resellers and service providers as well as toll-free 24 X 7 technical phone support during the warranty period. For full details on warranty and support for pre-labeled media, please go to:

<http://www.hp.com/products1/storage/products/storagemedia/index.html>.

### Related Hardware Options

#### Related Hardware Options

##### HP StoreEver LTO Ultrium Tape Drives

The family of HP LTO Ultrium tape drives is HP's premier line of backup devices. Based on the LTO Ultrium format, an open standard with a well-defined six-generation roadmap, HP LTO Ultrium tape drives offer customers the best choice for investment protection. With ultimate reliability and ease of use in mind, even at 100% duty cycles, HP's rugged design builds on superior LTO technology and adds advanced features like hardware data encryption to create a new level of data protection. The tape drives employ dynamic data rate matching to adjust to the speed of the host, reducing wear and tear on both drive and media and increasing performance, even on slower hosts. HP's ultra-durable soft-load feature automatically positions the data cartridge together with the highly reliable HP leader-capture mechanism make your backup and restore operations more reliable. Support for HP One-Button Disaster Recovery provides the easiest way to restore data in the event of a disaster. The family of tape drives also features support for HP TapeAssure which provides a single application for drive management and HP Library and Tape Tools which provides diagnostics, and performance optimization. Included with the HP LTO Ultrium tape drives is the option to download Yosemite Server Backup Basic backup and recovery software providing a backup application to protect a single server. If data is critical to your business, protect it with an HP LTO Ultrium tape drive.

For more information on the HP Ultrium Tape Drives please see the QuickSpec:

[http://h18000.www1.hp.com/products/quickspecs/13572\\_div/13572\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13572_div/13572_div.html)

##### HP MSL2024/MSL4048/MSL8048/MSL8096 Tape Libraries

The HP MSL Tape Libraries meet demanding storage requirement of businesses needing unattended backup, disaster recovery, or archive capability. The MSL Libraries offer a broad choice of storage capacity and interfaces with LTO-5, LTO-4, or LTO-3 Ultrium tape drives. Web-based remote management makes the MSL Libraries easily managed from across the room or across the globe, eliminating the need for remote office IT staff. Quickly and simply manage the tape media both in and out of the library with the standard bar code reader, configurable mail slots, and multiple 12-slot removable magazines. If a tape were lost or stolen, protect important business data from unauthorized access with the library-based encryption option. Library investment and uncertain data growth are easily managed with MSL accessory kits. Quickly increase capacity and/or performance with tool-free drive upgrades, slot license capacity upgrades, or library expandability. Now with TapeAssure to monitor drive and media utilization, monitor operational performance, report life and health information as well as provide notifications of drive and tape parameters that fall below HP recommended standards

For more information on the HP MSL2024/MSL4048/MSL8048/MSL8096 Tape Libraries please see the QuickSpec:

[http://h18000.www1.hp.com/products/quickspecs/13258\\_div/13258\\_div.html](http://h18000.www1.hp.com/products/quickspecs/13258_div/13258_div.html)

##### HP Ultrium Tape Blades

The HP Ultrium Tape Blades are ideal for HP BladeSystem c-Class customers who need an integrated data protection solution. These half-height tape blades provide direct attach data protection for the adjacent server and network backup protection for all data residing within the enclosure. HP Ultrium Tape Blades offer a complete data protection, disaster recovery and archiving solution for BladeSystem c-Class customers.

Each HP Ultrium Tape Blade solution ships standard with the option to download Yosemite Server Backup Basic backup and recovery software. In addition, each tape blade supports HP One-Button Disaster Recovery (OBDR), which allows quick recovery of the operating system, applications and data from the latest full backup set. HP Ultrium Tape Blades are the industry's first tape blades and are developed exclusively for HP BladeSystem c-Class enclosures.

For more information on the HP Ultrium Tape Blades Tape Libraries please see the QuickSpec:

## Related Hardware Options

[http://h18000.www1.hp.com/products/quickspecs/12729\\_div/12729\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12729_div/12729_div.html)

### **HP StoreEver ESL G3 Tape Libraries**

Meeting enterprise data growth challenges head-on, HP ESL G3 Tape Libraries deliver enormous scalability to keep pace with unpredictable data growth. Choose from a range of base configurations and scale up to over 7104 tape cartridges in increments of 100 slots for capacity on demand. Incorporating between 1 and 96 tape drives you can consolidate and store up to 21.3PB (compressed 2:1) of enterprise data.

Supporting data growth is only part of the story: the HP ESL G3 also delivers high availability through dual-robotics capability and redundant power supplies, while host path connectivity failover provides optimal library performance. Management and control of multiple tape libraries is delivered by an intelligent single pane of glass command GUI. Leading library management tools and HP TapeAssure enables predictive and proactive monitoring of tape drives, media and library health. Hardware data encryption solutions provide added data security.

For more information on the HP ESL G3 Tape Libraries please see the QuickSpec:

[http://h18000.www1.hp.com/products/quickspecs/14074\\_div/14074\\_div.html](http://h18000.www1.hp.com/products/quickspecs/14074_div/14074_div.html)

### **HP 1/8 G2 Tape Autoloader**

The HP 1/8 G2 Tape Autoloader provides a cost-effective, easy-to-install, unattended backup that is ideal for an entry-level or remote office automated backup solution. The HP 1/8 G2 autoloader combines incredible storage density and tape library features into a compact 1U form factor. Capable of up to 24TB of compressed capacity in only a 1U form factor, the autoloader is well equipped to offer room for uncertain data growth. Web-based remote management offers the capability to quickly and easily access, configure, monitor, and troubleshoot the autoloader that will reduce dependencies on local IT staff while allowing multiple sites to be supported centrally. Protect confidential business information with native encryption, ensuring that if a tape is lost or stolen your data is protected from unauthorized access. Proactively monitor utilization, operational performance, as well as life and health information for both the drive and media with TapeAssure.

For more information on the HP 1/8 G2 Tape Autoloader please see the QuickSpec:

[http://h18000.www1.hp.com/products/quickspecs/12630\\_div/12630\\_div.html](http://h18000.www1.hp.com/products/quickspecs/12630_div/12630_div.html)

### Technical Specifications

	LTO-2 Ultrium	LTO-3 Ultrium	LTO-4 Ultrium	LTO-5 Ultrium	LTO-6 Ultrium
<b>Magnetic Material</b>	Metal Particle	Metal Particle	Metal Particle	Metal Particle	LTO-6 Ultrium Metal Particle or Barium Ferrite
<b>Recording Density</b>	188 kbits/inch	245 kbits/inch	343 kbits/inch	343 kbits/inch	343 kbits/inch
<b>Number of Data Tracks</b>	512	704	896	1,280	2,176
<b>Recording Capacity</b>	200/400 GB	400/800 GB	800GB/1.6 TB	1.5 TB/3.0 TB	2.5/6.25 TB
<b>Coercivity</b>	2100 - 2400 Oe	2500 - 2700 Oe	2500 - 2700 Oe	2,500 - 2,700 Oe	2,800 - 2,900 Oe for MP 2200-2300 Oe for Ba Fe
<b>Tape Width (mm)</b>	12.65	12.65	12.65	12.65	12.65
<b>Tape Thickness (um)</b>	8.9	8.0	6.6	6.4	6.4
<b>Tape Length (m)</b>	609	680	820	846	846
<b>External Dimensions</b>	1.8 x 4.45 x 4.37 in (2.1 x 11.3 x 11.1 cm)	1.8 x 4.45 x 4.37 in (2.1 x 11.3 x 11.1 cm)	1.8 x 4.45 x 4.37 in (2.1 x 11.3 x 11.1 cm)	1.8 x 4.45 x 4.37 in (2.1 x 11.3 x 11.1 cm)	1.8 x 4.45 x 4.37 in (2.1 x 11.3 x 11.1 cm)
<b>Cartridge Weight</b>	0.63 lb (285.2 g)	0.63 lb (285.2 g)	0.63 lb (285.2 g)	0.63 lb (285.2 g)	0.63 lb (285.2 g)
<b>Archival Life</b>	30 years	30 years	30 years	30 years	30 years
<b>Environmental Requirements</b>	50° to 113° F (10° to 45° C)	60° to 90° F (16° to 32° C)	41° to 73° F (5° to 23° C)	79° F (26° C)	10 to 80% (Operating) 20 to 60% (Archival)

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