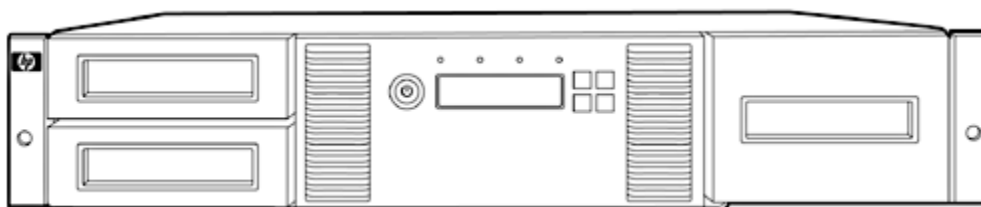


Overview

The HP StorageWorks MSL2024 Tape Library combines library features and up to 19.2 TB compressed capacity (2:1) in a compact 2U form factor. The MSL2024 Tape Library offers the latest generation LTO tape drives; either one Ultrium 960 SCSI or FC, or up to two Ultrium 920 or 448 tape drives. A second Ultrium 920 or 448 tape drive can be installed later if backup needs change. Ideal for replicated systems, web-based management allows centralized management of many sites. The library also offers two 12-slot removable magazines, one mail slot and barcode reader for efficient media management. All MSL2024 Tape Libraries and associated kits are RoHS compliant.



What's New

- The HP StorageWorks MSL2024 Tape Library offers increased LTO3 tape drive density via integration of up to two HP StorageWorks Ultrium 920 Tape Drives.

Key Features

- 19.2 TB of compressed storage capacity (2:1) in a 2U form factor (Ultrium 920 or 960 tape technology)
- Web-based remote management capability
- Integrated barcode reader
- Removable magazines with single mail slot
- Upgrade from one to two Ultrium 920 or 448 tape drives
- Flexible interface
- RoHS compliant
- Customer replaceable components
- Extensive compatibility testing

Customer benefits

- Provides an amazing amount of backup and recovery storage without consuming valuable rack space.
- Allows a remote administrator to control, configure, monitor and troubleshoot the device, thus relieving the customer of requiring onsite IT resources.
- Provides faster inventory times and facilitates tracking of media.
- Offers single cartridge or bulk loading of media, as well as providing for bulk storage of media off-site.
- Upgrade the performance of the tape library through the addition of a second Ultrium 448 tape drive.
- SCSI and FC interfaces provide options for installing the tape library into a SCSI or SAN environment.
- Meets lead-free initiatives in the European region.
- Modular design of tape library allows for quick repair of unit to reduce product downtime.
- Works with industry-leading servers, operating systems and backup software.

Overview

Family Comparison	MSL2024 Ultrium 960 FC Tape Library	MSL2024 Ultrium 960 Tape Library	MSL2024 Ultrium 920 Tape Library	MSL2024 Ultrium 448 Tape Library
Drive Technology	Ultrium 960 FC	Ultrium 960 SCSI	Ultrium 920	Ultrium 448
Number of Drives	1	1	1 or 2	1 or 2
Capacity (compressed 2:1)	19.2 TB	19.2 TB	19.2 TB	9.6 TB
Maximum Data Transfer (compressed 2:1)	160 MB/s	160 MB/s	240 MB/s (2 drives)	96 MB/s (2 drives)
SCSI Interface	4 Gb Native Fibre Channel 2 Gb Native Fibre Channel	Ultra320 SCSI LVD/SE	Ultra320 SCSI LVD/SE	Ultra160 SCSI LVD/SE

Product Highlights

Manageability

The MSL2024 Tape Library allows web-based remote manageability; the unit can be 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 upload capabilities
- Diagnostic tests and information
- Cartridge movement for maintenance and management purposes
- Cleaning cartridge support
- Security and access control
- SNMP support for IP communications

Easy Installation

The MSL2024 Tape Library is shipped as a rack-ready unit. The rack mount hardware included with the library allows installation in a variety of HP racks which include the 10000 series, 9000 series, 5000 series and System/E racks.

Fibre Connectivity

The MSL2024 Tape Library can be moved from a SCSI to a SAN environment via the HP StorageWorks N1200-320 4Gb Network Storage Router. This 1U external router includes one 4Gb FC port and two LVD-SCSI ports. The router delivers end-to-end throughput of up to 140 MB/s, enabling full usage of tape drives during the read/write process. Data can be backed up and restored in significantly less time, or increasing larger data sets can be backed up within the current backup window. Reference the EBS compatibility matrix for the most up-to-date configuration information at <http://www.hp.com/go/ebs>

A MSL2024 SCSI-based Tape Library can also be moved into a SAN environment by upgrading to an Ultrium 960 FC Tape Drive.

Serviceability

Modular in construction, the MSL2024 Tape Library has easily replaceable components minimizing the Mean-Time-to-Repair on the unit. Replaceable components include the tape drive, the magazines, and the chassis (includes robot, power supply, controller board). HP StorageWorks Library and Tape Tools (L&TT) provides easy access to the MSL2024 error log, generates support tickets, and enables firmware downloads. L&TT can be downloaded for free at <http://www.hp.com/support/tapetools>

LTO Ultrium Technology

HP StorageWorks LTO (Linear Tape Open) Ultrium Tape Drives use best of breed technology. By taking the best features from other tape technologies and combining them into a single new technology, Ultrium tape drives are in a league of their own. Inclusion of innovative features such as Adaptive Tape Speed (ATS) ensure that Ultrium drives can meet the performance and reliability demands of a library environment. LTO technology is an open industry standard format; thus data written on HP StorageWorks Ultrium Tape Drives can be interchanged directly with Ultrium Tape Drives from other vendors.

Product Highlights

Data Rate Matching

Data Rate Matching combines sophisticated buffer management with HP's exclusive Infinitely Variable Adaptive Tape Speed technology, to allow the tape drive to match its transfer rate to the host speed dynamically and continuously across the whole 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 performance, regardless of the speed of the host or the network
- It minimizes rewinding and repositioning of the tape, thus reducing wear and increasing reliability

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.

The Ultrium 960 and 920 tape drives feature 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 Ultrium 960 and 920 can archive large amounts of data for periods of up to 30 years in a secure, untampered state. Since all Ultrium 960 and 920 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 Ultrium 960 and 920 offers 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
- High-capacity, low-cost HP WORM media that can store 800GB of data on a single data cartridge
- Support from many backup and archiving software vendors, providing the most comprehensive and mainstream support in the industry
- The LTO open standard that offers greater choice and compatibility across all third-generation Ultrium products

NOTE: While all HP Ultrium 960 and 920 tape drives support LTO Ultrium WORM media, some third-generation LTO Ultrium tape drives from other manufacturers may not include read and write support for LTO Ultrium WORM media. For non-HP third-generation LTO Ultrium tape drives, please check the manufacturers' specifications to ensure this support is provided if you are using your WORM media. If WORM support is not provided, the drive will eject the WORM tape cartridge immediately upon insertion into the tape drive.

HP StorageWorks Library and Tape Tools

The MSL2024 Tape Library is supported on HP's industry-leading diagnostic tool - HP StorageWorks Library and Tape Tools (L&TT). L&TT is a single, convenient program that's a snap to install and simple to operate. L&TT's intuitive user interface eliminates the need for training and deploys in less than five minutes. This robust diagnostic tool is designed for both the experienced professional and the untrained administrator. It ensures product integrity through self-diagnostics and fast resolution to device concerns. Additional information on L&TT plus download information can be found at <http://www.hp.com/support/tapetools>.

Product Highlights

HP Storage Media

HP recommends that you use HP-branded cartridges in the MSL2024 Tape Library 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.

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. Customization must comply with all relevant product specifications and factory supported configurations.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, and HP 9000 servers as well as MSA, VA7xxx, EVA, and XP disk arrays, rackable tape libraries and configurable network switches.

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

Compatibility

HP's extensive compatibility testing program assures that your HP StorageWorks MSL2024 Tape Library works with leading servers, operating systems, and backup applications - and not just those sold by HP. The MSL2024 works 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 MSL2024, check the HP StorageWorks Enterprise Backup Solution compatibility matrix at <http://www.hp.com/go/ebs>.

Server Compatibility The MSL2024 is supported on a wide range of HP systems. For details of which MSL2024 works 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

Warranty The warranty for this product consists of 1-year parts exchange, next business day.

Warranty Upgrade Options

- Response - Upgrade on-site response from next business day to same day 4-hours
- Coverage - Extend hours of coverage from 5 days x 9 hours to 7 days x 24 hours
- Duration - Select duration of coverage for a minimum period of 1 year or multiple years

HP Care Pack Information

HP Care Pack is defined as an upgrade to the product warranty attribute, available for a specific duration and hours of coverage.

- HP Care Pack is not available for less than the products warranty duration.
- HP Care Pack is available for sale anytime during the warranty period for most products, but the commencement date will be the same as the warranty start date (delivery date to end user customer). Proof of purchase may be required.
- HP Care Pack services are prepaid.

For additional HP Care Pack (hardware & software) information, as well as orderable part numbers, please refer to the URL <http://www.hp.com/hps/carepack/>.

Hardware Product Services

- Installation services
- On-site Maintenance (includes warranty support)
- Response time upgrades during the warranty period
- Post-warranty coverage
- RAID setup and performance consulting via statement of work

For additional hardware installation and maintenance information, please refer to the URL listed below:

<http://www.hp.com/hps/hardware/>

eSupport HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal

The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit <http://www.hp.com/support>

Service and Support, HP Care Pack, and Warranty Information

Support Services

HP Services provides up to a three-year, limited warranty, fully supported by a worldwide network of resellers and service providers and 9x5 hardware technical phone support during the warranty period. In addition, available service offerings include a full range of optional packaged hardware and software services:

- Installation and start up
- Extended coverage hours and enhanced response times
- System management and performance services
- Availability and recovery services

Components

The following brick level options/components do not have individual HP Care Pack Services. These items will be included in product HP Care Pack Services into which they are installed.

Disk Drives	Tape Drives	CD/DVD ROM	SCSI Hubs in SBBs	Adapters
Bus Converters	Backplane RAID Controllers	Power Supplies	Cabling	Fans

Configuration Information

NOTE: The HP StorageWorks MSL2024 Tape Library comes standard as a one or two drive, 24-slot unit which is shipped rack-ready; a racking kit is included in the box. For specific regional power cord requirements, a separate power cord must be ordered.

Step 1 – Base Configuration

Select one:

Model Name	Model Description	Part Number
HP StorageWorks	HP MSL2024 1 Ultrium 960 4 Gb FC Drive Library	AG326B
MSL2024 Tape Library	HP MSL2024 1 Ultrium 960 FC Drive Library	AG326A
	HP MLS2024 1 Ultrium 960 Drive Library	AG115A
	HP MSL2024 1 Ultrium 920 Drive Library	AH169A
	HP MSL2024 2 Ultrium 920 Drive Library	AH170A
	HP MSL2024 1 Ultrium 448 Drive Library	AG116A
	HP MSL2024 2 Ultrium 448 Drive Library	AG117A

Kit Contents (for each library):

- 6' VHDCI to HDTS68 SCSI cable (1 per tape drive)
- .5M LVD HDTS to LVD HDTS daisy chain cable (Ultrium 920 and 448 configurations only)
- HDTS68 SCSI terminator (1 per tape drive)
- Rack mount hardware (for use with HP 10000 series, 9000 series, 5000 series or System/E racks)
- Documentation kit including User & Service Guide (CD) and Getting Started Poster

Step 2 – Required Options

Select each required option with quantities specified:

Power Cord	Description	Quantity	Part Number
	Power Cord, US	1 each	E7743A
	NOTE: Can be used to connect the rack mounted device to PDUs with NEMA 5-15R receptacles.		
	PDU Power Cord	1 each	E7742A
	NOTE: Can be used to connect the device to PDUs with IEC-320 receptacles.		
	Power Cord, European	1 each	AD526A
	Power Cord, Australian	1 each	AD527A
	Power Cord, United Kingdom	1 each	AD528A
	Power Cord, Switzerland	1 each	AD529A
	Power Cord, Denmark	1 each	AD530A
	Power Cord, Japan	1 each	AD531A
	Power Cord, South Africa	1 each	AD532A
	Power Cord, China	1 each	AD533A
	Power Cord, Latin America (2 cords)	1 each	AD534A
	Power Cord, Taiwan	1 each	AF913A

NOTE: One power cord is required; there is no power cord included in the box with the MSL2024. Please select the correct power cord for your geographical location.

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

Configuration Information

used.

Related Options

Factory Racking	<p>Factory integrate the MSL2024 Tape Library with other HP products such as HP ProLiant Servers.</p> <p>NOTE: #0D1 will appear after the MSL2024 Tape Library part number on the sales order if HP factory integration is indicated.</p>	#0D1
Tape Drives	<p>HP MSL2024/4048 Ultrium 448 Drive Upgrade Kit NOTE: For use with the MSL2024 1 Ultrium 448 Drive Library to upgrade from one to two drives; only two Ultrium 448 drives per MSL2024 Tape Library.</p> <p>HP MSL2024/4048 Ultrium 920 Drive Upgrade Kit NOTE: For use with the MSL2024 1 Ultrium 920 Drive Library to upgrade from one to two drives; only two Ultrium 920 drives per MSL2024 Tape Library.</p> <p>HP MSL2024/4048 Ultrium 960 Drive Upgrade Kit NOTE: For use with the MSL2024 Tape Library to upgrade to Ultrium 960 tape technology; only one Ultrium 960 drive per MSL2024 Tape Library.</p> <p>HP MSL2024/4048 Ultrium 960 FC Drive Upgrade Kit NOTE: For use with the MSL2024 Tape Library to upgrade to Ultrium 960 FC tape technology; only one Ultrium 960 FC drive per MSL2024 Tape Library.</p> <p>HP MSL2024/4048 Ultrium 960 4 Gb FC Drive Upgrade Kit NOTE: For use with the MSL2024 Tape Library to upgrade to Ultrium 960 4 Gb FC tape technology; only one Ultrium 960 4 Gb FC drive per MSL2024 Tape Library.</p>	<p>AG118A</p> <p>AH173A</p> <p>AG327A</p> <p>AG328A</p> <p>AG328B</p>
Magazine Kits	<p>HP MSL2024 Ultrium Left Magazine Kit NOTE: For use only on the left side of the MSL2024; additional 12-slot magazine which includes an import/export slot.</p> <p>HP MSL2024/4048 Ultrium Right Magazine Kit NOTE: For use only on the right side of the MSL2024; additional 12-slot magazine.</p>	<p>AG119A</p> <p>AG120A</p>
Rack-to-Tabletop Conversion Kit	<p>HP MSL2024 Rack-to-Tabletop Conversion Kit NOTE: For use in converting the rack-ready MSL2024 Tape Library into a tabletop model.</p>	AG121A
Fibre Connectivity	<p>HP N1200-320 4Gb Network Storage Router NOTE: For use in connecting a MSL2024 SCSI Tape Library to a SAN; reference the EBS compatibility matrix for the most up-to-date configuration information at http://www.hp.com/go/ebs</p>	AG314A

Related Options

Rack Cabinets	10622 (22U) Rack Cabinet - Shock Pallet	245163-B22
	10636 (36U) Universal Rack Cabinet - Shock Pallet	AF012A
	10636 (36U) Universal Rack Cabinet with extension - Shock Pallet	AF014A
	10642 (42U) Universal Rack Cabinet - Shock Pallet	AF002A
	10642 (42U) Universal Rack Cabinet with extension - Shock Pallet	AF004A

NOTE: The MSL2024 Tape Library is certified to ship in HP 10000 series racks which include a shock pallet. It is mandatory to use a shock pallet in order to ship racks with equipment installed.

5642 (42U) Rack Cabinet	358254-B21
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NOTE: This rack ships unassembled and boxed on a standard size pallet. It is an industry standard 19" wide rack with side panels and rear doors; it does not ship with the front door or casters.

NOTE: For additional HP ProLiant rack information, visit <http://h18004.www1.hp.com/products/servers/proliantstorage/racks/index.html>

Media	HP Ultrium 800GB RW Data Cartridge (1 pack)	C7973A
	HP Ultrium 800GB WORM Data Cartridge (1 pack)	C7973W
	HP Ultrium 400GB Data Cartridge (1 pack)	C7972A
	HP Ultrium 200GB Data Cartridge (1 pack)	C7971A
	HP Ultrium Universal Cleaning Cartridge (1 pack)	C7978A
	HP Ultrium 3 RW Bar Code Labels (100 pack)	Q2007A
	HP Ultrium 3 WORM Bar Code Labels (100 pack)	Q2008A
	HP Ultrium 2 Bar Code Labels (100 pack)	Q2002A
	HP Ultrium 1 Bar Code Labels (100 pack)	Q2001A
	HP Ultrium 800GB RW Custom Labeled Data Cartridge (20 pack)	C7973AL
	HP Ultrium 800GB WORM Custom Labeled Data Cartridge (20 pack)	C7973WL
	HP Ultrium 800GB RW Non-Custom Labeled Data Cartridge (20 pack)	C7973AN
	NOTE: Non-custom labels will come pre-labeled with a pre-determined number sequence.	
	HP Ultrium 400GB Custom Labeled Data Cartridge (20 pack)	C7972AL
	HP Ultrium 400GB Non-Custom Labeled Data Cartridge (20 pack)	C7972AN
	NOTE: Non-custom labels will come pre-labeled with a pre-determined number sequence.	
	HP Ultrium 200GB Custom Labeled Data Cartridge (20 pack)	C7971AL
	HP Ultrium 200GB Non-Custom Labeled Data Cartridge (20 pack)	C7971AN
	NOTE: Non-custom labels will come pre-labeled with a pre-determined number sequence.	
	HP Ultrium 400GB Storage Media Kit	C8014A
	NOTE: Kit includes 20 HP Ultrium 400GB data cartridges, one HP Ultrium Universal Cleaning Cartridge, 20 colored labels, a protective carrying case that can be used to securely store or transport data cartridges, one copy of "The Essentials of Successful Tape Backup," and one copy of HP StorageWorks Data Protector Express Evaluation Software (60 day free trial).	
	HP Ultrium 200GB Storage Media Kit	C8013A
	NOTE: Kit includes 20 HP Ultrium 200GB data cartridges, one HP Ultrium Universal Cleaning Cartridge, 20 colored labels, a protective carrying case that can be used to securely store or transport data cartridges, one copy of "The Essentials of Successful Tape Backup," and one copy of HP StorageWorks Data Protector Express Evaluation Software (60 day free trial).	

Related Options

Host Bus Adapters

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

Cable Kits

6 ft VHDCI/HDTS68 SCSI Cable Kit	341176-B21
12 ft VHDCI/HDTS68 SCSI Cable Kit	341177-B21
2m SW LC/SC FC Cable Kit	221691-B21
5m SW LC/SC FC Cable Kit	221691-B22
15m SW LC/SC FC Cable Kit	221691-B23
2m SW LC/LC FC Cable Kit	221692-B21
5m SW LC/LC FC Cable Kit	221692-B22
15m SW LC/LC FC Cable Kit	221692-B23

HP Care Pack Options **Same Day Response**

Warranty upgrade to 1-year, 13x5, 4 hour response/onsite, electronic	UE290E
Warranty upgrade to 1-year, 24x7, 4 hour response/onsite, electronic	UE291E
Warranty upgrade to 1-year, 24x7, call-to-repair, 6 hour response/onsite, electronic	UE292E
Warranty upgrade to 3-year, 13x5, 4 hour response/onsite, electronic	UE295E
Warranty upgrade to 3-year, 24x7, 4 hour response/onsite, electronic	UE296E
Warranty upgrade to 3-year, 24x7, call-to-repair, 6 hour response/onsite, electronic	UE308E
Warranty upgrade to 4-year, 13x5, 4 hour response/onsite, electronic	UE298E
Warranty upgrade to 4-year, 24x7, 4 hour response/onsite, electronic	UE299E
Warranty upgrade to 5-year, 13x5, 4 hour response/onsite, electronic	UE300E
Warranty upgrade to 5-year, 24x7, 4 hour response/onsite, electronic	UE301E

Next Business Day Response

Warranty upgrade to 1-year next business day/onsite, electronic	UE289E
Warranty upgrade to 3-year next business day/parts exchange, electronic	UE293E
Warranty upgrade to 3-year next business day/onsite, electronic	UE294E

Hardware Services

Installation services, electronic	U2090E
SAN installation & startup service, electronic	UA871E

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

	MSL2024 Ultrium 960 FC	MSL2024 Ultrium 960	MSL2024 Ultrium 920	MSL2024 Ultrium 448
Drive Technology	Ultrium 960 FC	Ultrium 960 SCSI	Ultrium 920	Ultrium 448
Number of Drives	1	1	1 or 2	1 or 2
Number of Slots	24	24	24	24
Capacity	9.6 TB native 19.2 TB compressed	9.6 TB native 19.2 TB compressed	9.6 TB native 19.2 TB compressed	4.8 TB native 9.6 TB compressed
Interface	4 Gb Native FC 2 Gb Native FC	Ultra320 SCSI LVD/SE	Ultra320 SCSI LVD/SE	Ultra160 SCSI LVD/SE
Maximum Transfer Rate (1 drive configs)	80 MB/s (288 GB/hr) native 160 MB/s (576 GB/hr) compressed	80 MB/s (288 GB/hr) native 160 MB/s (576 GB/hr) compressed	60 MB/s (216 GB/hr) native 120 MB/s (432 GB/hr) compressed	24 MB/s (86.4 GB/hr) native 48 MB/s (172.8 GB/hr) compressed
Dimensions	Out-of-Box (HxWxD) Shipping (HxWxD)	3.4 x 17.5 x 31.5 in (8.8 x 44.5 x 80.7 cm) 9.8 x 22.8 x 39 in (25 x 58 x 99 cm)		
Weight	Out-of-Box Shipping	34.3 lb (15.6 kg) 57.5 lb (26.1 kg)		
Reliability	MSBF (mean swaps between failures) MTBF (mean time between failures)	1,000,000 robot load/unload cycles 100,000 hours (based on 1M MSBF)		
Cartridge Swap Time	45 sec (drive to slot, slot to drive)			
Initialization Time	65 to 80 seconds			
Inventory Time	2:15 minutes (using bar code labeled cartridges)			
Connectors	(2) 68-pin HDTs (located on back of MSL2024) (1) RJ-45 (located on back of MSL2024) (1) USB port (diagnostic only; located on back of MSL2024)			
LED Indicators (on front panel)	Ready LED (Green): shows ready status information Clean LED (Amber): shows fault status information Attention LED (Amber): shows fault status information Error LED (Amber): shows fault status information			
Power	80 Watts (max)			
Input Requirements	100 to 240 VAC, 50 to 60 Hz, 1.0 Amperes			
Relative Humidity (non-condensing)	Operating Shipping	10 % to 80% 10 % to 90%		
Temperature Range (wet bulb)	Operating Shipping	41° to 95° F (5° to 35° C) -22° to 140° F (-30° to 60° C)		
Altitude	Operating Shipping	15,000 ft (4,575 m) 35,000 ft (10,675 m)		

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