



IBM LTO Ultrium 8, 7, 6, and 5 Tape Drives for Lenovo Product Guide

The family of IBM LTO Ultrium Tape Drives for Lenovo (Machine Type 6160) is external, stand-alone or rack-mountable tape drives that contain an LTO Ultrium 8, Ultrium 7, Ultrium 6, or Ultrium 5 Tape Drive that is designed for the heavy demands of backup tape storage. The drives deliver IBM tape reliability and performance at a cost-effective price.

TS2280 Model H8S incorporates the LTO Ultrium 8 Half-High SAS Tape Drive. TS2270 Model H7S incorporates the LTO Ultrium 7 Half-High SAS Tape Drive. TS2260 Model H6S incorporates the LTO Ultrium 6 Half-High SAS Tape Drive. TS2250 Model H5S incorporates the LTO Ultrium 5 Half-High SAS Tape Drive. These tape drives use a dual-port 6 Gbps SAS interface for connection to a wide range of servers.

The LTO Ultrium Tape Drives from Lenovo are excellent choices if you use tape drives that require larger-capacity or higher-performance tape backup. The TS2280, TS2270, TS2260, and TS2250 Tape Drives are an excellent choice for tape backup solutions for Lenovo servers.



Figure 1. TS2280 Tape Drive for Lenovo

Did you know?

Featuring the latest LTO Ultrium 8 technology, the TS2280 Tape Drive provides up to 30 TB of 2.5:1 compressed backup storage capacity.

With LTO Ultrium 7, the TS2270 Tape Drive provides up to 15 TB of 2.5:1 compressed backup storage capacity. With LTO Ultrium 6, the TS2260 Tape Drive provides up to 6.25 TB of 2.5:1 compressed backup storage capacity. With LTO Ultrium 5, the TS2250 Tape Drive provides up to 3 TB of 2:1 compressed backup storage capacity.

With IBM LTO Tape offerings that are available from Lenovo, Lenovo can be your trusted partner that offers "one stop shop" and single point of contact for delivery of leading edge technologies and innovations from Lenovo and other leading IT vendors. These offerings can satisfy the wide range of your end-to-end IT infrastructure needs, including handheld devices, notebooks, personal computers, servers, storage, networking, services, management software, and financing.

Key features

The IBM LTO Ultrium Tape Drives deliver the following features:

- Entry-level tape drives for high capacity, high performance, and high reliability.
- Adherence to LTO specifications.
- Support for one half-high LTO Ultrium 8 (TS2280), LTO Ultrium 7 (TS2270), Ultrium 6 (TS2260), or Ultrium 5 (TS2250) SAS Tape Drive.
- Native cartridge capacity of up to 12 TB (Ultrium 8), 6 TB (Ultrium 7), up to 2.5 TB (Ultrium 6), or up to 1.5 TB (Ultrium 5).
- Native data transfer rate of up to 300 MB/s (Ultrium 8 or Ultrium 7), up to 160 MB/s (Ultrium 6), or up to 140 MB/s (Ultrium 5).
- Mixed media support, including IBM LTO Ultrium 8, 7, 6, and 5 Write Once Read Many (WORM) media.
- Remote monitoring of status of the tape drive.
- Encryption support in the tape drive to work with Application Managed Encryption.
- Optional rack-mount with the shelf to accommodate up to two tape drives side-by-side in a 2U rack space.
- A dual-port 6 Gbps SAS attachment for connection to select Lenovo servers that run Microsoft Windows and Linux server operating systems.
- Support from an extensive ecosystem of backup software vendors.

The following figure shows the TS2270 Tape Drive.



Figure 2. TS2270 Tape Drive for Lenovo

The following figure shows the TS2260 Tape Drive.



Figure 3. TS2260 Tape Drive for Lenovo

The following figure shows the TS2250 Tape Drive.



Figure 4. TS2250 Tape Drive for Lenovo

The IBM LTO Ultrium Tape Drives include the following IBM LTO Ultrium features:

- Dual-stage head actuator
The 16-channel actuator (LTO Ultrium 5 and 6) and 32-channel actuator (LTO Ultrium 7 and 8) provide precision head alignment to help support higher track density and improved data integrity.
- Independent tape loader and threader motors and positive pin retention
These technologies help improve the reliability of loading and unloading a cartridge and retain the pin, even if tension is dropped. An independent loader motor that is coupled with the positive pin retention causes the tape to thread with a higher level of reliability.
- Graceful dynamic braking
If there is a power failure, reel motors maintain tension and gradually decelerate instead of stopping abruptly, which helps reduce tape breakage, stretching, or loose tape wraps during a sudden power outage.
- Servo and track layout technology
There are 6656 data tracks in Ultrium 8, 3584 data tracks in Ultrium 7, 2176 data tracks in Ultrium 6, and 1280 data tracks in Ultrium 5. The high-bandwidth servo system features a low mass servo to help more effectively track servo bands and improve data throughput with damaged media in less-than-optimal shock and vibration environments.
- Surface Control Guiding Mechanism
IBM patented Surface Control Guiding Mechanism guides the tape along the tape path in the Ultrium 8, 7, 6, and 5 Tape Drives. This method uses the surface of the tape (rather than the edges) to control tape motion. This configuration helps reduce tape damage (especially to the edges of the tape) and tape debris, which comes from the damaged edges and can accumulate in the head area.
- Giant Magneto Resistive (GMR) head design (LTO Ultrium 7, 6, and 5 tape drives)
IBM LTO Ultrium Tape Drives use GMR head technology with beveled contouring for reducing striction and friction. This head design was demonstrated in enterprise tape products to help minimize contact, edge damage, debris accumulation, and wear on the tape as it moves over the read/write heads.
- Tunneling magnetoresistive (TMR) head technology (LTO Ultrium 8 tape drives)
IBM LTO Ultrium 8 Tape Drives use TMR head technology, which helps achieve increased storage capacity and high data integrity.
- Digital speed matching
The LTO Ultrium Tape Drives perform dynamic speed matching to adjust the drive's native data rate as closely as possible to the net host data rate (after data compressibility is factored out). This matching helps reduce the number of backhitch repositions and improve throughput performance.

- **Robust drive components optimized for automation environments**
To help enhance reliability and prolong the life of the drives, some of the most robust components available are used, such as an all metal clutch, steel ball bearings in the loader, robust leader block design, and a single circuit card.
- **Power management**
The power management function of the Ultrium 8, 7, and 6 Tape Drives controls the drive electronics to be completely turned off or in a low-power mode when the circuit functions are not needed for drive operation.
- **Adaptive read equalization**
This equalization automatically compensates for dynamic changes in readback signal response.
- **Dynamic amplitude asymmetry compensation**
This compensation dynamically optimizes readback signals for linear readback response from MR read head transducers.
- **LTO Data Compression (LTO-DC)**
The Ultrium LTO uses LTO-DC, which is an implementation of a Lempel-Ziv class 1 (LZ-1) data compression algorithm. LTO-DC is an extension of Adaptive Lossless Data Compression (ALDC) and an improvement over previous IBM lossless compression algorithms. IBM patented "Scheme-Swapping" compression looks ahead at incoming data and determines the most efficient storage method (ALDC or pass-through mode) to help optimize data compression and increase data throughput.
- **LTO Cartridge Memory (LTO-CM)**
Contained within the LTO Ultrium data cartridge is the LTO-CM, which is a passive, contactless silicon storage device that is physically a part of the cartridge. The LTO-CM holds information about that specific cartridge, the media in the cartridge, and the data on the media. The storage capacity of the Generation 8, 7, and 6 LTO-CM is 16320 bytes, which is double capacity of Generation 5 LTO-CM 8160 bytes. Communication between the drive and the LTO-CM is via a low-level RF field transmitted by the drive to the cartridge.
- **Statistical Analysis and Reporting System (SARS)**
The Ultrium Tape Drive uses SARS to help isolate failures between media and hardware. SARS uses the cartridge performance history that is saved in the CM module and the drive performance history that is kept in the flash EEPROM to help determine the likely cause of failure. SARS causes the drive to request a cleaner tape, mark the media as degraded, and indicate that the hardware is degraded.
- **Highly integrated electronics that use IBM engineered copper technology**
This technology reduces the number of components in the drive, helping lower chip temperatures, and reduces power requirements to deliver a more reliable drive. The sixth-generation drive electronics provide error correction of soft errors in the memory arrays in data and control paths.

Components and connectors

The following figure shows the front of the TS2260. The front view of the TS2280, TS2270, and TS2250 is similar to the front view of the TS2260.

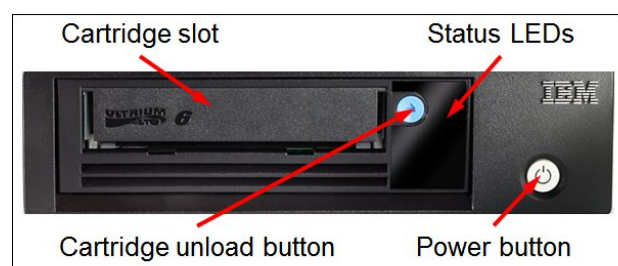


Figure 5. Front view of the TS2260

The following figure shows the rear of the TS2280, TS2270, TS2260, or TS2250.

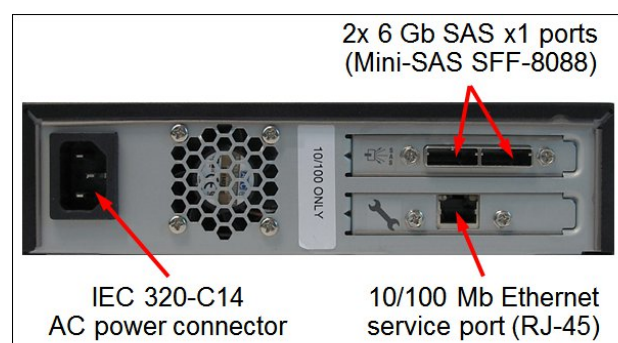


Figure 6. Rear view of the TS2280, TS2270, TS2260, or TS2250

System specifications

The following table lists the TS2280, TS2270, TS2260, and TS2250 Tape Drives system specifications.

Table 1. System specifications

Attribute	Specification
Form factor	Standalone or 2U rack mount (on a fixed shelf)
Drive technology	• TS2280: LTO Ultrium 8 half-high drive • TS2270: LTO Ultrium 7 half-high drive • TS2260: LTO Ultrium 6 half-high drive • TS2250: LTO Ultrium 5 half-high drive
Drive interface	2x 6 Gb SAS x1 ports (Mini-SAS SFF-8088)
Number of drives	1
Number of cartridge slots	1
Cartridge capacity	• LTO 8: 12 TB native; up to 30 TB compressed (with 2.5:1 compression ratio) • LTO 7: 6 TB native; up to 15 TB compressed (with 2.5:1 compression ratio) • LTO 6: 2.5 TB native; up to 6.25 TB compressed (with 2.5:1 compression ratio) • LTO 5: 1.5 TB native; up to 3.0 TB compressed (with 2:1 compression ratio)

Attribute	Specification
Data transfer rate	• LTO 8: Up to 300 MB/s native; up to 750 MB/s compressed (with 2.5:1 compression) • LTO 7: Up to 300 MB/s native; up to 750 MB/s compressed (with 2.5:1 compression) • LTO 6: Up to 160 MB/s native; up to 400 MB/s compressed (with 2.5:1 compression) • LTO 5: Up to 140 MB/s native; up to 280 MB/s compressed (with 2:1 compression)
Security features	Application Managed Encryption (AME) with optional third-party software (such as IBM Spectrum Protect)
Management interfaces	1x Ethernet port (UTP, RJ-45) for drive status and servicing only
Cooling	Fixed internal fan
Power supply	One 73 W AC fixed power supply with IEC 320-C14 power connector
Hot-swap parts	None
Dimensions	Width: 213 mm (8.4 in.) Depth: 332 mm (13.1 in.) Height: 58 mm (2.3 in.)
Weight	4.3 kg (9.4 lb.)
Warranty	Three-year customer-replaceable unit and onsite warranty with 9x5 next business day terms.
Service and support	Optional warranty service upgrades are available through Lenovo Services: 24x7 coverage, 2-hour or 4-hour response time, committed repair (select countries), up to 5 years of warranty extension, installation services.
Host operating systems*	Microsoft Windows Server 2008 R2, 2012, 2012 R2, and 2016; Red Hat Enterprise Linux (RHEL) 6 and 7; SUSE Linux Enterprise Server (SLES) 11 and 12.
ISV backup software compatibility	Arcserve Backup, ASG Time Navigator, Barracuda Yosemite Backup, CommVault Simpana, Dell NetVault Backup, EMC NetWorker, HPE/Micro Focus Data Protector, IBM Spectrum Archive, IBM Spectrum Protect, Microsoft System Center Data Protection Manager, Symantec Backup Exec, Symantec NetBackup.

* The operating systems shown are for Lenovo servers. The LTO Ultrium Tape Drives might support other operating systems. For a full list of supported operating systems, refer to the System Storage Interoperation Center: <http://ibm.com/systems/support/storage/ssic>.

Models

The following table lists the ordering information for the LTO Ultrium Tape Drive models.

Table 2. LTO Ultrium Tape Drive models

Description	Part number	Machine Type-Model	Feature code
IBM TS2280 Tape Drive Model H8S	6160S8E	6160-H8S	B1EV
IBM TS2270 Tape Drive Model H7S	6160S7E	6160-H7S	ATP3
IBM TS2260 Tape Drive Model H6S	6160S6E	6160-H6S	AS5P
IBM TS2250 Tape Drive Model H5S	6160S5E	6160-H5S	AS5R

The part numbers for the tape drives models include the following items:

- One TS2280 (half-high LTO Ultrium 8), TS2270 (half-high LTO Ultrium 7), TS2260 (half-high LTO Ultrium 6), or TS2250 (half-high LTO Ultrium 5) SAS Tape Drive
- One universal cleaning cartridge
- Documentation package

Notes:

- The Rack mount kit is not included; it should be ordered with the tape drive, if needed (for ordering information, see the following table). The rack mount kit includes a fixed shelf on which the drive is placed.
- A power cable is not included with the tape drive. A 10A/100-250V, C13 to IEC 320-C14 rack power cable, or a country-specific line cord must be ordered with the tape drive (for ordering information, see [Power cables](#)).
- The Rack mount kit includes one 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable, and a country-specific line cord also can be ordered, if needed (for ordering information, see [Power cables](#)).

Table 3. Rack mount kit

Description	Part number	Feature code	Maximum quantity
6160 Rack Mount Shelf Kit w/PDU Line Cord	00NV426	AS1C	1

A SAS cable is required to attach an LTO Ultrium SAS Tape Drive to a SAS host adapter. The following table lists the supported cable options.

Table 4. SAS cables

Description	Part number	Feature code	Maximum quantity
SAS connectivity cables: SAS (SFF-8470 host) to Mini-SAS (SFF-8088 tape)			
2 m SAS/Mini-SAS 1x Cable (host SFF-8470 to target SFF-8088)	00NA007	5402	1*
SAS connectivity cables: Mini-SAS (SFF-8088 host) to Mini-SAS (SFF-8088 tape)			
2 m Mini-SAS/Mini-SAS 1x Cable (host SFF-8088 to target SFF-8088)	00NA009	AS0Z	1
SAS connectivity cables: Mini-SAS HD (SFF-8644 host) to Mini-SAS (SFF-8088 tape)			
HD-SAS Cable to Mini-SAS (4 m)	00NV419	AS10	1
Y SAS HD to Mini-SAS Cable (3 m)	00NV420	AS12	1**

* Not supported with the TS2270 LTO 7 tape drive.

** The Y SAS HD cable is used to connect up to two SAS tape drives to a single Mini-SAS HD x4 port on a supported SAS HBA.

Tape media

LTO Ultrium Tape Drives support the following backward compatibility for the previous generations of tape media:

- LTO Ultrium 8 Tape Drives can read and write LTO Ultrium 8 and Ultrium 7 data cartridges.
- LTO Ultrium 7 Tape Drives can read and write LTO Ultrium 7 and Ultrium 6 data cartridges, and can read Ultrium 5 data cartridges.
- LTO Ultrium 6 Tape Drives can read and write LTO Ultrium 6 and Ultrium 5 data cartridges, and can read Ultrium 4 data cartridges.
- LTO Ultrium 5 Tape Drives can read and write LTO Ultrium 5 and Ultrium 4 data cartridges, and can read Ultrium 3 data cartridges.

The following table lists tape media options that can be ordered for the TS2280, TS2270, TS2260, and TS2250.

Table 5. Tape media

Description	Part number	Feature code	Supported tape drive models
Cleaning cartridge			
Ultrium Cleaning Cartridge (universal)	00NA017	AS1E	TS2280, TS2270, TS2260, TS2250
Data cartridges			
Ultrium 8 Data Cartridge 1-Pack	01KP956	B1EX	TS2280
Ultrium 8 Data Cartridges 5-Pack	01KP955	B1EW	TS2280
Ultrium 7 Data Cartridge 1-Pack	01KP957	B1EY	TS2280, TS2270
Ultrium 7 Data Cartridges 5-Pack	00WF771	ATNZ	TS2280, TS2270
Ultrium 6 Data Cartridge 1-Pack	01KP958	B1EZ	TS2270, TS2260
Ultrium 6 Data Cartridges 5-Pack	00NA025	AS24	TS2270, TS2260
Ultrium 5 Data Cartridges 5-Pack	00NA023	AS23	TS2270 (read-only), TS2260, TS2250

Note: A 5-Pack of the Ultrium 5, 6, 7, or 8 Data Cartridges includes five unattached loose labels.

Power cables

If the TS2280, TS2270, TS2260, or TS2250 is ordered with the rack mount kit, it includes one 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable. A country-specific line cord also can be ordered, if needed.

If the TS2280, TS2270, TS2260, or TS2250 is ordered without a rack-mount kit, it does not include a power cable. A country-specific line cord or a rack power cable must be ordered with the tape drive.

The part numbers and feature codes to order the power cables (one power cable per tape drive) are listed in the following table.

Table 6. Power cables

Description	Part number	Feature code
Country-specific power cords		
2.8m, 10A/120V, C13 to NEMA 5-15P (US) Line Cord	00NA027	AS29
2.8m, 10A/230V, C13 to CEE7-VII (Europe) Line Cord	00NA029	AS2A
2.8m, 10A/230V, C13 to DK2-5a (Denmark) Line Cord	00NA031	AS2B
2.8m, 10A/230V, C13 to BS 1363/A (UK) Line Cord	00NA033	AS2C

Description	Part number	Feature code
2.8m, 10A/230V, C13 to SI 32 (Israel) Line Cord	00NA035	AS2D
2.8m, 10A/230V, C13 to SEV 1011-S24507 (Sws) Line Cord	00NA037	AS2E
2.8m, 10A/230V, C13 to SABS 164 (South Africa) Line Cord	00NA039	AS2F
2.8m, 10A/230V, C13 to CEI 23-16 (Italy) Line Cord	00NA041	AS2G
2.8m, 10A/230V, C13 to AS/NZS 3112 (Aus/NZ) Line Cord	00NA043	AS2H
2.8m, 10A/208V, C13 to NEMA 6-15P (US) Line Cord	00NA045	AS2J
2.8m, 10A/220V, C13 to IRAM 2073 (Argentina) Line Cord	00NA047	AS2K
2.8m, 10A/220V, C13 to CNS 10917-3 (Taiwan) Line Cord	00NA049	AS2L
2.8m, 10A/220V, C13 to GB 2099.1 (China) Line Cord	00NA051	AS2M
2.8m, 10A/110V, C13 to CNS 10917-3 (Taiwan) Line Cord	00NA053	AS2N
2.8m, 12A/100V, C13 to JIS C-8303 (Japan) Line Cord	00NA055	AS2P
2.8m, 12A/220V, C13 to KSC 8305 (S. Korea) Line Cord	00NA057	AS2Q
2.8m, 10A/240V, C13 to IS 6538 (India) Line Cord	00NA059	AS2R
2.8m, 10A/220V, C13 to NBR 6147 (Brazil) Line Cord	00NA061	AS2T
Rack power cord		
4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	00NA063	AS2U

Physical specifications

The LTO Ultrium Tape Drives have the following dimensions and weight (approximate):

- Height: 58 mm (2.3 in.)
- Width: 213 mm (8.4 in.)
- Depth: 332 mm (13.1 in.)
- Weight: 4.3 kg (9.4 lb.)

Operating environment

The LTO Ultrium Tape Drives are supported in the following environment:

- Air temperature:
 - Operating: 10 °C - 38 °C (50 °F - 100 °F)
 - Non-operating: -40 °C - 60 °C (-40 °F - 140 °F)
 - Maximum altitude: 3,048 m (10,000 ft)
- Humidity:
 - Operating: 20% - 80%
 - Non-operating: 10% - 90%
- Electrical power:
 - 100 V AC - 240 V AC; 0.48 A - 0.2 A
 - Frequency: 50 Hz / 60 Hz
 - Power consumption: 48 watts

Warranty and service upgrades

The TS2280, TS2270, TS2260, and TS2250 Tape Drives have a three-year CRU and onsite limited warranty with 9x5/next business day (NBD) terms.

Some countries might have different warranty terms and conditions than the standard warranty. This is due to local business practices or laws in the specific country. Local service teams can assist in explaining country-specific terms when needed. Examples of country-specific warranty terms are second or longer business day parts delivery or parts-only base warranty.

If warranty terms and conditions include onsite labor for repair or replacement of parts, Lenovo will dispatch a service technician to the customer site to perform the replacement. Onsite labor under base warranty is limited to labor for replacement of parts that have been determined to be field-replaceable units (FRUs). Parts that are determined to be customer-replaceable units (CRUs) do not include onsite labor under base warranty.

If warranty terms include parts-only base warranty, Lenovo is responsible for delivering only replacement parts that are under base warranty (including FRUs) that will be sent to a requested location for self-service. Parts-only service does not include a service technician being dispatched onsite. Parts must be changed at customer's own cost and labor and defective parts must be returned following the instructions supplied with the spares parts.

Also available are Lenovo Services warranty upgrades and post-warranty maintenance agreements, with a well-defined scope of services, including service hours, response time, term of service, and service agreement terms and conditions.

Lenovo warranty service upgrade offerings are country-specific. Not all warranty service upgrades are available in every country. For information about Lenovo warranty service upgrade offerings that are available in your country or area, refer to the following resources:

- Service part numbers in Lenovo Data Center Solution Configurator (LESC):
<http://dcsc.lenovo.com/#/services>
- Lenovo Services Availability Locator
<http://lenovolocator.com/>

In general, the following Lenovo warranty service upgrades are available:

- Warranty and maintenance service upgrades:
 - 3, 4, or 5 years of warranty service coverage
 - 1-year or 2-year post-warranty extensions
 - Foundation Service: 9x5 service coverage with next business day onsite response
 - Essential Service: 24x7 service coverage with 4-hour onsite response or 24-hour committed repair (available only in select countries)
 - Advanced Service: 24x7 service coverage with 2-hour onsite response or 6-hour committed repair (available only in select countries)
- Hardware Installation Services
Lenovo experts can seamlessly manage the physical installation of your server, storage, or networking hardware. Working at a time convenient for you (business hours or off shift), the technician will unpack and inspect the systems on your site, install options, mount in a rack cabinet, connect to power and network, check and update firmware to the latest levels, verify operation, and dispose of the packaging, allowing your team to focus on other priorities.

For service definitions, country-specific details, and service limitations, please refer to the following documents:

- Lenovo Statement of Limited Warranty for Data Center Group (DCG) Servers and System Storage
<http://pcsupport.lenovo.com/us/en/solutions/ht503310>
- Lenovo Data Center Services Agreement
<http://support.lenovo.com/us/en/solutions/ht116628>

Regulatory compliance

The LTO Ultrium Tape Drives conform to the following regulations:

- FCC: Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, Class A
- European Union Council Directive 2004/108/EC
- EN 55022, Class A
- Australia and New Zealand Class A Statement
- Japan VCCI Class A statement
- People's Republic of China Class A Electronic Emission statement
- Taiwan Class A compliance statement
- Korea KCC Class A statement
- Russia Electromagnetic Interference (EMI) Class A Statement

Interoperability

Lenovo provides end-to-end storage compatibility testing to deliver interoperability throughout the network. The TS2280, TS2270, TS2260, and TS2250 Tape Drives support attachment to Lenovo servers by using SAS storage connectivity.

Note: Tables that are provided in this section are for ordering reference purposes only. End-to-end storage configuration support (including adapters and operating systems) *must* be verified through the System Storage Interoperation Center (SSIC):

<http://ibm.com/systems/support/storage/ssic>

SAS connectivity

The following table lists currently available Lenovo SAS adapters that are compatible with the LTO Ultrium Tape Drives. Other SAS HBAs also might be supported (see the Interoperation Center for details).

Table 7. SAS adapters

Description	Part number
ThinkSystem SAS HBAs	
ThinkSystem 430-8e SAS/SATA 12Gb HBA (2x Mini-SAS HD x4 SFF-8644 external ports)	7Y37A01090
ThinkSystem 430-16e SAS/SATA 12Gb HBA (4x Mini-SAS HD x4 SFF-8644 external ports)	7Y37A01091
System x SAS HBAs	
N2225 SAS/SATA HBA (12 Gb SAS, 2x Mini-SAS HD x4 SFF-8644 external ports)	00AE912
N2226 SAS/SATA HBA (12 Gb SAS, 4x Mini-SAS HD x4 SFF-8644 external ports)	00AE916
ThinkServer SAS HBAs	
Lenovo ThinkServer 9300-8e PCIe 12Gb 8 Port External SAS Adapter by LSI (2x Mini-SAS HD x4 SFF-8644 external ports)	4XB0F28703

Operating systems

The LTO Ultrium Tape Drives support host attachments to the Lenovo servers with the following operating systems:

- Microsoft:
 - Microsoft Windows Server 2016
 - Microsoft Windows Server 2012 R2
 - Microsoft Windows Server 2012
 - Microsoft Windows Server 2008 R2
- Red Hat:
 - Red Hat Enterprise Linux 7
 - Red Hat Enterprise Linux 6
- SUSE:
 - SUSE Linux Enterprise Server 12
 - SUSE Linux Enterprise Server 11

Note: The LTO tape drives are supported when attached and run from the host operating system, however, in virtualization environments (for example, Hyper-V, KVM, Xen), the tape drives are not supported in the guest operating systems.

ISV backup software compatibility

The Independent Software Vendors (ISVs) indicate support for the LTO Ultrium Tape Drives for the following ISV backup software:

- Arcserve Backup
- ASG Time Navigator
- Barracuda Yosemite Backup
- CommVault Simpana
- Dell NetVault Backup
- EMC NetWorker
- HPE/Micro Focus Data Protector
- IBM Spectrum Protect
- IBM Spectrum Archive Drive Edition
- Microsoft System Center Data Protection Manager
- Symantec Backup Exec
- Symantec NetBackup

For more information, see the Independent Software Vendor matrix for IBM LTO, which is available at:
http://www.ibm.com/systems/resources/lto_isv_matrix.pdf

Rack cabinets

The following table lists the rack cabinets that are offered by Lenovo that can be used with the LTO Ultrium Tape Drives in IT solutions.

Table 8. Rack cabinets

Description	Part number
25U S2 Standard Rack (1000 mm deep; 2 sidewall compartments)	93072RX
25U Static S2 Standard Rack (1000 mm deep; 2 sidewall compartments)	93072PX
42U S2 Standard Rack (1000 mm deep; 6 sidewall compartments)	93074RX
42U 1100mm Enterprise V2 Dynamic Rack (6 sidewall compartments)	93634PX
42U 1100mm Enterprise V2 Dynamic Expansion Rack (6 sidewall compartments)	93634EX
42U 1200mm Deep Dynamic Rack (6 sidewall compartments)	93604PX
42U 1200mm Deep Static Rack (6 sidewall compartments)	93614PX
42U Enterprise Rack (1105 mm deep; 4 sidewall compartments)	93084PX
42U Enterprise Expansion Rack (1105 mm deep; 4 sidewall compartments)	93084EX

For more information, see the list of Product Guides in the Rack cabinets category:
<http://lenovopress.com/servers/options/racks#rt=product-guide>

Power distribution units

The following table lists the power distribution units (PDUs) that are offered by Lenovo that can be used with the LTO Ultrium Tape Drives in IT solutions.

Table 9. Power distribution units

Description	Part number
0U Basic PDUs	
0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with NEMA L6-30P line cord	00YJ776
0U 36 C13/6 C19 32A/200-240V 1 Phase PDU with IEC60309 332P6 line cord	00YJ777
0U 21 C13/12 C19 32A/200-240V/346-415V 3 Phase PDU with IEC60309 532P6 line cord	00YJ778
0U 21 C13/12 C19 48A/200-240V 3 Phase PDU with IEC60309 460P9 line cord	00YJ779
Switched and Monitored PDUs	
0U 20 C13/4 C19 Switched and Monitored 24A/200-240V/1Ph PDU w/ NEMA L6-30P line cord	00YJ781
0U 20 C13/4 C19 Switched and Monitored 32A/200-240V/1Ph PDU w/ IEC60309 332P6 line cord	00YJ780
0U 18 C13/6 C19 Switched / Monitored 32A/200-240V/346-415V/3Ph PDU w/ IEC60309 532P6 cord	00YJ782
0U 12 C13/12 C19 Switched and Monitored 48A/200-240V/3Ph PDU w/ IEC60309 460P9 line cord	00YJ783
1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord)	46M4002
1U 9 C19/3 C13 Switched and Monitored 60A 3Ph PDU with IEC 309 3P+Gnd cord	46M4003
1U 12 C13 Switched and Monitored DPI PDU (without line cord)	46M4004
1U 12 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord	46M4005
Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)	
Ultra Density Enterprise C19/C13 PDU Module (without line cord)	71762NX
Ultra Density Enterprise C19/C13 PDU 60A/208V/3ph with IEC 309 3P+Gnd line cord	71763NU
C13 Enterprise PDUs (12x IEC 320 C13 outlets)	
DPI C13 Enterprise PDU+ (without line cord)	39M2816
DPI Single Phase C13 Enterprise PDU (without line cord)	39Y8941
C19 Enterprise PDUs (6x IEC 320 C19 outlets)	
DPI Single Phase C19 Enterprise PDU (without line cord)	39Y8948
DPI 60A 3 Phase C19 Enterprise PDU with IEC 309 3P+G (208 V) fixed line cord	39Y8923
Front-end PDUs (3x IEC 320 C19 outlets)	
DPI 30amp/125V Front-end PDU with NEMA L5-30P line cord	39Y8938
DPI 30amp/250V Front-end PDU with NEMA L6-30P line cord	39Y8939
DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8934
DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8940
DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8935
Universal PDUs (7x IEC 320 C13 outlets)	
DPI Universal 7 C13 PDU (with 2 m IEC 320-C19 to C20 rack power cord)	00YE443
NEMA PDUs (6x NEMA 5-15R outlets)	
DPI 100-127V PDU with fixed NEMA L5-15P line cord	39Y8905
Line cords for PDUs that ship without a line cord	
DPI 30a Line Cord (NEMA L6-30P)	40K9614
DPI 32a Line Cord (IEC 309 P+N+G)	40K9612

Description	Part number
DPI 32a Line Cord (IEC 309 3P+N+G)	40K9611
DPI 60a Cord (IEC 309 2P+G)	40K9615
DPI 63a Cord (IEC 309 P+N+G)	40K9613
DPI Australian/NZ 3112 Line Cord (32A)	40K9617
DPI Korean 8305 Line Cord (30A)	40K9618

For more information, see the list of Product Guides in the PDU category:
<http://lenovopress.com/servers/options/pdu#rt=product-guide>

Uninterruptible power supply units

The following table lists the uninterruptible power supply (UPS) units that are currently offered by Lenovo that can be used with the LTO Ultrium Tape Drives in IT solutions.

Table 10. Uninterruptible power supply units

Description	Part number
RT1.5kVA 2U Rack or Tower UPS (100-125VAC) (8x NEMA5-15R 12A outlets)	55941AX
RT1.5kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A outlets)	55941KX
RT2.2kVA 2U Rack or Tower UPS (100-125VAC) (8x NEMA 5-20R 16A outlets)	55942AX
RT2.2kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 1x IEC 320 C19 16A outlets)	55942KX
RT3kVA 2U Rack or Tower UPS (100-125VAC) (6x NEMA5-20R 16A, 1x NEMA L5-30R 24A outlets)	55943AX
RT3kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 1x IEC 320 C19 16A outlets)	55943KX
RT5kVA 3U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 2x IEC 320 C19 16A outlets)	55945KX
RT6kVA 3U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 2x IEC 320 C19 16A outlets)	55946KX
RT8kVA 6U Rack or Tower UPS (200-240VAC) (4x IEC 320-C19 16A outlets)	55948KX
RT11kVA 6U Rack or Tower UPS (200-240VAC) (4x IEC 320-C19 16A outlets)	55949KX
RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) (4x IEC 320-C19 16A outlets)	55948PX
RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) (4x IEC 320-C19 16A outlets)	55949PX

For more information, see the list of Product Guides in the Uninterruptible Power Supply Units category:
<http://lenovopress.com/servers/options/ups#rt=product-guide>

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For your region specific offers please ask your Lenovo sales representative or your technology provider about the use of Lenovo Financial Services. For more information, see the following Lenovo website:
<http://www.lenovofs.com>

Related publications and links

For more information, see the following resources:

- Lenovo Storage product page:
<http://www.lenovo.com/systems/storage>
- US Announcement Letter - IBM TS2270 Tape Drive for Lenovo:
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS115-155>
- US Announcement Letter - IBM TS2260 Tape Drives for Lenovo:
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS114-128>
- US Announcement Letter - IBM TS2250 Tape Drive for Lenovo:
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS114-134>
- Lenovo Data Center Solution Configurator (DCSC):
<http://dcsc.lenovo.com>
- System Storage Interoperation Center (SSIC):
<http://ibm.com/systems/support/storage/ssic>

Related product families

Product families related to this document are the following:

- [Tape Drives](#)
- [Backup Units](#)

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