



IBM TS3100 and TS3200 Tape Libraries for Lenovo Product Guide

IBM TS3100 and TS3200 Tape Libraries for Lenovo (Machine Type 6173) combine IBM tape and automation reliability at a cost effective price. Both libraries support entry-level, unattended backup, open system attachment flexibility, and enhanced capacity and performance.

The TS3100 is a 2U rack mount library that can accommodate up to two Ultrium half-high tape drives or one Ultrium full-high tape drive with 24 cartridge slots in two removable magazines, including a standard one-cartridge I/O station, a remote management unit, and a barcode reader.

The TS3200 is a 4U rack mount library that can accommodate up to four Ultrium half-high tape drives or two Ultrium full-high tape drives with 48 data cartridge slots in four removable magazines, including a standard three-cartridge I/O station, a remote management unit, and a barcode reader.

The choice of the tape drives for the TS3100 and TS3200 tape libraries includes IBM LTO Ultrium 7, Ultrium 6, Ultrium 5, and Ultrium 4 Half High (HH) and Full High (FH) tape drives with SAS or Fibre Channel host connectivity interfaces.

The TS3100 and TS3200 are ideal solutions if you need an entry-level larger capacity or higher performance tape backup with or without random access. These libraries are excellent choices for tape automation for Lenovo System x®, ThinkServer®, BladeCenter®, and Flex System™ servers.

The TS3100 Tape Library is shown in the following figure.



Figure 1. IBM TS3100 Tape Library for Lenovo

Did you know?

Featuring the latest LTO Ultrium 7 technology, the TS3100 and TS3200 Tape Libraries provide up to 360 TB and 720 TB of 2.5:1 compressed backup storage, respectively.

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 to 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 TS3100 and TS3200 deliver the following features:

- Entry-level tape libraries that are designed for high capacity, high performance, and high reliability.
- Adherence to LTO specifications.
- Support for half-high or full-high LTO Ultrium 7, Ultrium 6, Ultrium 5, or Ultrium 4 tape drives with SAS or Fibre Channel interfaces.
- Support for one full-high or up to two half-high tape drives in the TS3100; support for up to two full-high, or up to four half-high, or a combination of one full-high and up to two half-high tape drives in the TS3200.
- Native data transfer rate of up to 300 MB/s (Ultrium 7), up to 160 MB/s (Ultrium 6), up to 140 MB/s (Ultrium 5), or up to 120 MB/s (Ultrium 4).
- Native cartridge capacity of up to 6 TB (Ultrium 7), up to 2.5 TB (Ultrium 6), up to 1.5 TB (Ultrium 5), or up to 800 GB (Ultrium 4).
- Two (TS3100) or four (TS3200) removable magazine that can house up to 12 data cartridges to enable quick population of the tape library and ease the storage needs for media.
- A 1-slot I/O station (TS3100) or a 3-slot I/O station (TS3200) to help support continuous library operations, while importing and exporting media with little or no disruption to library operation.
- A standard bar code reader with which you can operate the TS3100 or TS3200 in sequential or random access mode.
- Mixed media support, including IBM LTO Ultrium 7, 6, 5, and 4 WORM (Write Once Ready Many) media.
- Remote management capabilities to allow for remote administration of the TS3100 and TS3200 through a web interface.
- Multi-path feature to allow sharing of the library robotics across heterogenous applications independently of each other. The library can be partitioned into up to four logical libraries (each partition must have at least one drive). It also can provide each logical library its own separate and distinct drives, storage slots, and control paths.
- Optional System Managed and Library Managed Encryption on LTO Ultrium 7, Ultrium 6, Ultrium 5, and Ultrium 4 tape drives with a Transparent LTO Encryption feature.
- Optional Path Failover that enables the host device driver to transparently switch to an alternative path if there is a communication path failure to the application.
- An optional rack mount kit, an extra power supply for the TS3200 and more cartridge magazines.
- 3 Gb or 6 Gbps SAS, or 4 Gb or 8 Gb Fibre Channel attachments for connection to select System x, ThinkServer, BladeCenter, and Flex System servers that run Microsoft Windows and Linux server operating systems.
- Support from an extensive ecosystem of backup software vendors.

The TS3200 Tape Library is shown in the following figure.



Figure 2. IBM TS3200 Tape Library for Lenovo

The IBM LTO Ultrium Tape Drives includes the following other IBM LTO Ultrium features:

- **Dual-stage head actuator**
The 16-channel actuator (LTO Ultrium 4, 5, and 6) and 32-channel actuator (LTO Ultrium 7) 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 to retain the pin even if tension is dropped. An independent loader motor, 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 3584 data tracks in Ultrium 7, 2176 data tracks in Ultrium 6, 1280 data tracks in Ultrium 5, and 896 data tracks in Ultrium 4. 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**
The IBM patented Surface Control Guiding Mechanism guides the tape along the tape path in the Ultrium 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**
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.
- **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 loader, robust leader block design, and a single circuit card.
- Power management
The power management function of the Ultrium 7 and Ultrium 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.
- Separate writing of multiple filemarks
Separate writing of multiple filemarks evokes any write command of two or more filemarks to cause a separate data set to be written that contains all filemarks after the first. It helps improve performance if a subsequent append overwrites somewhere after the first filemark. This change helps prevent having to rewrite data sets that contain customer data and the first filemark, if such an append occurs.
- 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 7 and 6 LTO-CM is 16320 bytes, which is double the capacity of Generation 5 and 4 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 drive 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 degraded.
- Highly integrated electronics that uses IBM engineered copper technology
This technology reduces the total number of components in the drive, helps 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 TS3100 Tape Library.

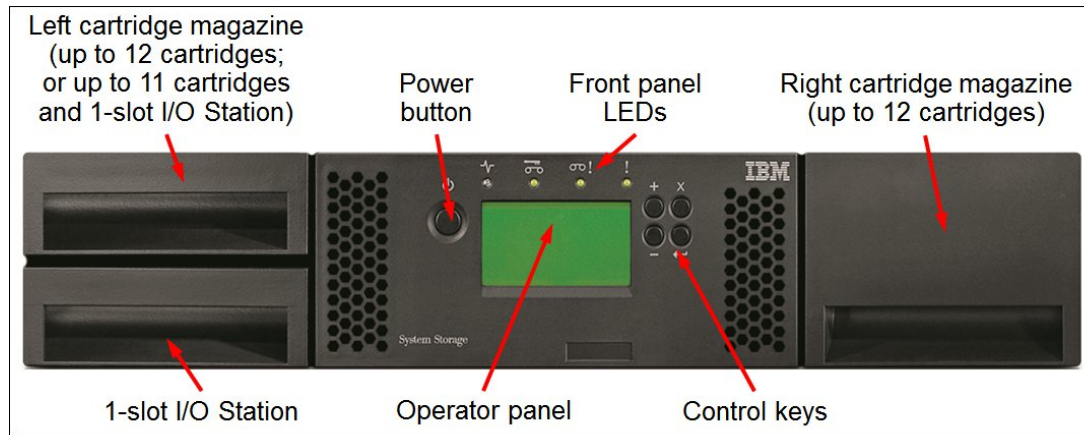


Figure 3. Front view of the TS3100 Tape Library

The following figure shows the front of the TS3200 Tape Library.

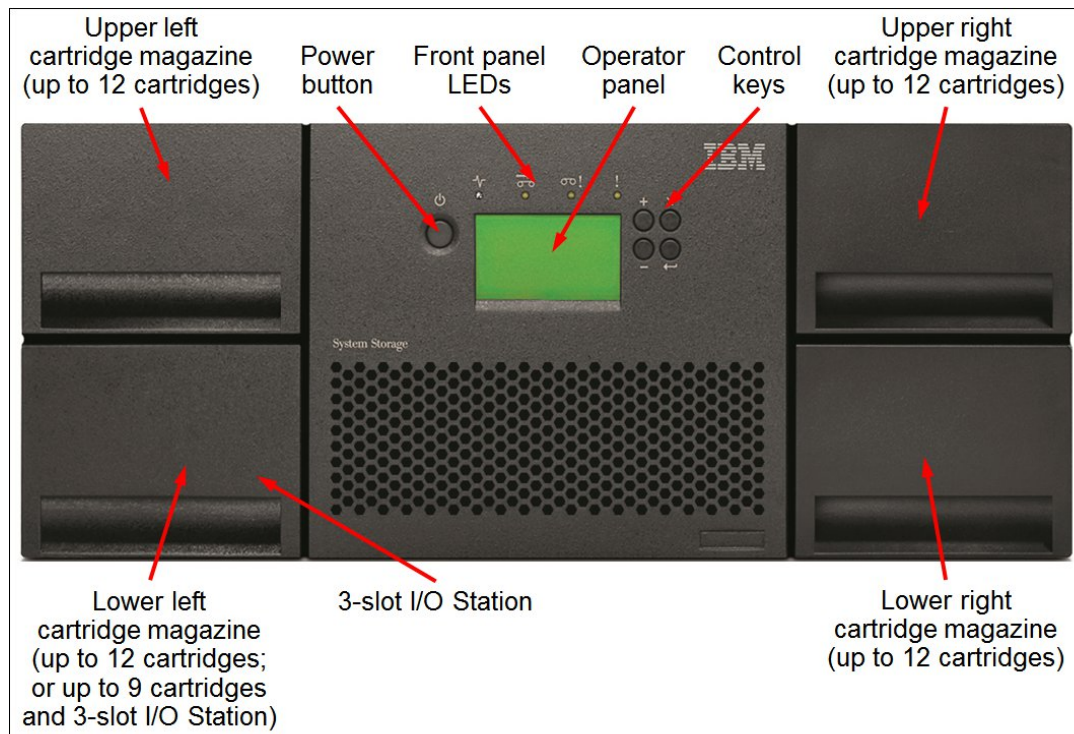


Figure 4. Front view of the TS3200 Tape Library

The following figure shows the rear of the TS3100 Tape Library with the full high SAS drive sled.

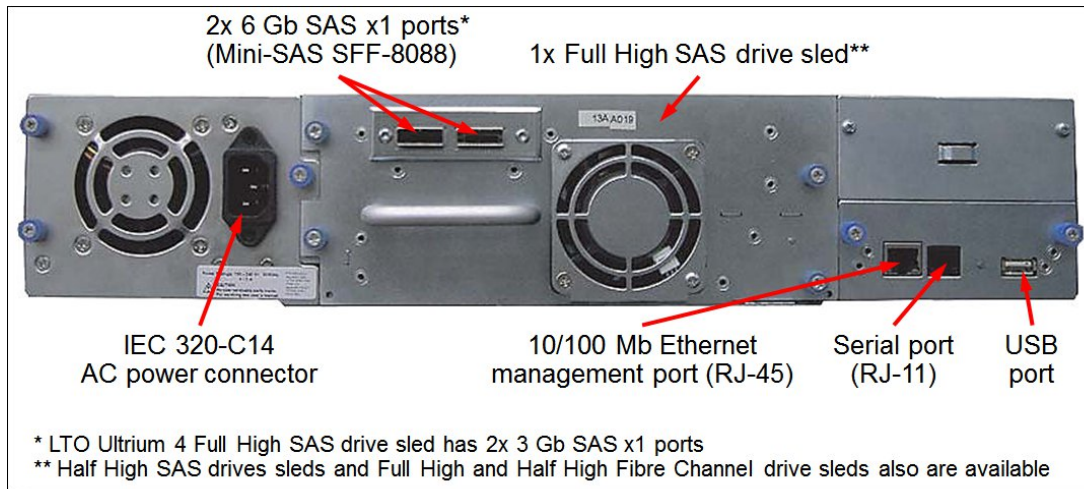


Figure 5. Rear view of the TS3100 Tape Library

The following figure shows the rear of the TS3200 Tape Library with the full high and half high Fibre Channel drive sleds, and the half high SAS drive sled.

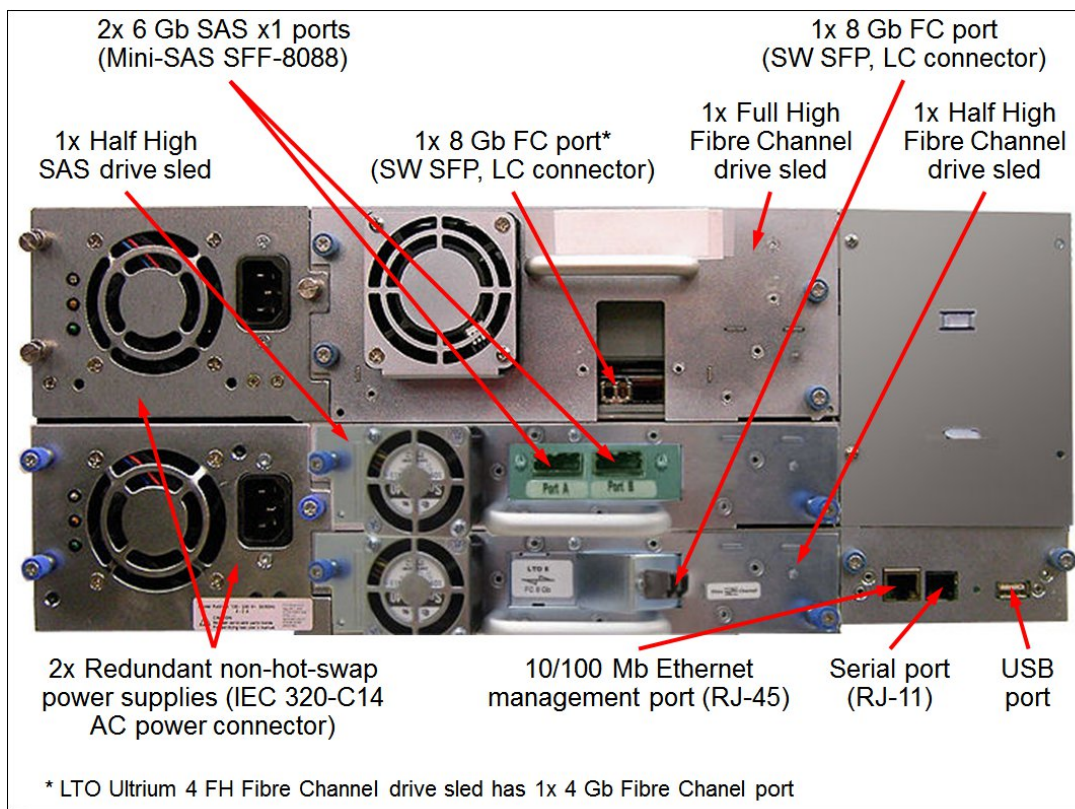


Figure 6. Rear view of the TS3200 Tape Library

System specifications

The following table lists the TS3100 and TS3200 Tape Libraries system specifications.

Table 1. System specifications

Components	Specification
Form factor	<ul style="list-style-type: none"> • TS3100: 2U rack mount or stand-alone • TS3200: 4U rack mount or stand-alone
Drive technology	LTO Ultrium 7, LTO Ultrium 6, LTO Ultrium 5, and LTO Ultrium 4 Full-High (FH) and Half-High (HH) drives
Drive interface	Ultrium 7, Ultrium 6, and Ultrium 5 FH and HH drives and Ultrium 4 HH V2 drives (per one drive): <ul style="list-style-type: none"> • 2x 6 Gb SAS x1 ports (Mini-SAS SFF-8088) • 1x 8 Gb FC port (SFP SW optics, LC connector) Ultrium 4 FH drives (per one drive): <ul style="list-style-type: none"> • 2x 3 Gb SAS x1 ports (Mini-SAS SFF-8088) • 1x 4 Gb FC port (SFP SW optics, LC connector)
Number of drives	<ul style="list-style-type: none"> • TS3100: Up to 1 FH drive, or up to 2 HH drives • TS3200: Up to 2 FH drives, or up to 4 HH drives, or a combination of 1 FH drive and up to 2 HH drives
Number of cartridge slots	<ul style="list-style-type: none"> • TS3100: 24 • TS3200: 48
Cartridge capacity	<ul style="list-style-type: none"> • LTO7: 6 TB native; up to 15 TB compressed (with 2.5:1 compression ratio) • LTO6: 2.5 TB native; up to 6.25 TB compressed (with 2.5:1 compression ratio) • LTO5: 1.5 TB native; up to 3.0 TB compressed (with 2:1 compression ratio) • LTO4: 800 GB native; up to 1.6 TB compressed (with 2:1 compression ratio)
Total backup capacity	TS3100: <ul style="list-style-type: none"> • LTO7: Up to 144 TB native; up to 360 TB compressed (with 2.5:1 compression) • LTO6: Up to 60 TB native; up to 150 TB compressed (with 2.5:1 compression) • LTO5: Up to 36 TB native; up to 72 TB compressed (with 2:1 compression) • LTO4: Up to 19.2 TB native; up to 38.4 TB compressed (with 2:1 compression) TS3200: <ul style="list-style-type: none"> • LTO7: Up to 288 TB native; up to 720 TB compressed (with 2.5:1 compression) • LTO6: Up to 120 TB native; up to 300 TB compressed (with 2.5:1 compression) • LTO5: Up to 72 TB native; up to 144 TB compressed (with 2:1 compression) • LTO4: Up to 38.4 TB native; up to 76.8 TB compressed (with 2:1 compression)
Data transfer rate	Per one drive: <ul style="list-style-type: none"> • LTO7: Up to 300 MB/s native; up to 750 MB/s compressed (with 2.5:1 compression) • LTO6: Up to 160 MB/s native; up to 400 MB/s compressed (with 2.5:1 compression) • LTO5: Up to 140 MB/s native; up to 280 MB/s compressed (with 2:1 compression) • LTO4: Up to 120 MB/s native; up to 240 MB/s compressed (with 2:1 compression) Per TS3100 with 2 drives: <ul style="list-style-type: none"> • LTO7: Up to 600 MB/s native; up to 1.5 GB/s compressed (with 2.5:1 compression) • LTO6: Up to 320 MB/s native; up to 800 MB/s compressed (with 2.5:1 compression) • LTO5: Up to 280 MB/s native; up to 560 MB/s compressed (with 2:1 compression) • LTO4: Up to 240 MB/s native; up to 480 MB/s compressed (with 2:1 compression) Per TS3200 with 4 drives: <ul style="list-style-type: none"> • LTO7: Up to 1.2 GB/s native; up to 3 GB/s compressed (with 2.5:1 compression) • LTO6: Up to 640 MB/s native; up to 1.6 GB/s compressed (with 2.5:1 compression) • LTO5: Up to 560 MB/s native; up to 1.12 GB/s compressed (with 2:1 compression) • LTO4: Up to 480 MB/s native; up to 960 MB/s compressed (with 2:1 compression)

Components	Specification
Software features	Multi-path (Library partitioning), Path Failover (optional), Transparent LTO encryption (optional)
Security features	Secure Socket Layer (SSL), user level security, LTO encryption (optional)
Management interfaces	<ul style="list-style-type: none"> Operator panel 1x 10/100 Mb Ethernet port (UTP, RJ-45) for remote management: Web-based GUI; SNMP and email notifications
Cooling	Fixed internal fans
Power supplies	<ul style="list-style-type: none"> TS3100: One fixed 250 W AC fixed power supply with IEC 320-C14 power connector TS3200: Up to two redundant non-hot-swap 250 W AC power supplies with IEC 320-C14 power connector (the second power supply is optional)
Hot-swap parts	SAS and Fibre Channel drive sleds
Dimensions	<ul style="list-style-type: none"> Width: Rack mount 448 mm (17.6 in.), standalone 448 mm (17.6 in.) Depth: Rack mount 740 mm (29.1 in.), standalone 810 mm (31.9 in.) Height: <ul style="list-style-type: none"> TS3100: Rack mount 87 mm (3.4 in.), standalone 98 mm (3.8 in.) TS3200: Height: Rack mount 175 mm (6.9 in.), standalone 185 mm (7.3 in.)
Weight	<ul style="list-style-type: none"> TS3100: 15 kg (33 lb) without rack mount kit TS3200: 21.3 kg (47 lb) without rack mount kit
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, 4-hour response time, 1-year or 2-year warranty extensions, up to 5 years of Remote Technical Support (RTS)
Host operating systems	Microsoft Windows Server 2008, 2008 R2, 2012 and 2012 R2; Red Hat Enterprise Linux (RHEL) 5, 6, and 7; SUSE Linux Enterprise Server (SLES) 10 and 11
ISV backup software compatibility	Arcserve Backup, ASG Time Navigator, Barracuda Yosemite Backup, CommVault Simpana, Dell NetVault Backup, EMC NetWorker, IBM Spectrum Protect, HP OpenView Storage Data Protector, Microsoft System Center Data Protection Manager, Symantec Backup Exec, and Symantec NetBackup

Standard models

The following table lists the ordering information for the TS3100 and TS3200 Tape Library models.

Table 2. Part numbers and feature codes for ordering TS3100 and TS3200 models

Description	Part number	Feature code (6173-L2U)*	Feature code (6173-L4U)*
TS3100 Tape Library Model L2U	61732UL	AS5W	None
TS3200 Tape Library Model L4U	61734UL	None	AS5X

* Machine Type (first four digits); Model (last three digits and letters)

The part numbers for the TS3100 and TS3200 Tape Library models include the following items:

- One TS3100 or TS3200 Tape Library with one power supply and with the Bar Code Reader
- Two (TS3100) or four (TS3200) removable 12-cartridge magazines
- Warranty information
- Documentation CD that includes *Setup, Operator, and Service Guide*

Notes:

- Tape drives are not included; at least one tape drive must be ordered with the TS3100 or TS3200 unit (for ordering information, see Table 4).
- Rack mount kit is not included; it must be ordered with the TS3100 or TS3200 unit, if required (for ordering information, see Table 3).
- A power cable is not included. A 10A/100-250V, C13 to IEC 320-C14 rack power cable, or a country-specific line cord must be ordered with the TS3100 or TS3200 unit (for ordering information, see Table 8).

The TS3200 unit supports redundant power with the optional second power supply that can be ordered with the unit. A power cable is not included with the optional power supply (for ordering information, see Table 8).

The following table lists the rack mount kit for the TS3100 and TS3200 units and the optional power supply for the TS3200 unit.

Table 3. Rack mount kit and power supply

Description	Part number	Feature code	Maximum quantity
Rack mount kit (for both TS3100 and TS3200)			
6173 Rack Mount Kit	00NA089	AS1B	1
Additional power supply (for TS3200 only)			
Additional Power Supply for TS3200	00NA071	AS0W	1

Tape drive options

The TS3100 Tape Library can accommodate up to two LTO Ultrium half-high tape drives or one LTO Ultrium full-high tape drive. The TS3200 Tape Library can accommodate up to four LTO Ultrium half-high tape drives, up to two LTO Ultrium full-high tape drives, or a combination of up to two LTO Ultrium half-high tape drives and one LTO Ultrium full-high tape drive.

The following table lists ordering information for the tape drives for the TS3100 and TS3200.

Table 4. Tape drive options

Description	Part number	Feature code	Maximum qty per one TS3100 / TS3200
Half High 8 Gb Fibre Channel			
6173 LTO Ultrium 7 Half High Fibre Drive Sled	00WF769	ATP2	2 / 4
6173 LTO Ultrium 6 Half High Fibre Drive Sled	00NA119	AS21	2 / 4
6173 LTO Ultrium 5 Half High Fibre Drive Sled	00NA113	AS1W	2 / 4
6173 LTO Ultrium 4 Half High Fibre Drive Sled	00NA103	AS1P	2 / 4
Full High 8 Gb Fibre Channel			
6173 LTO Ultrium 7 Fibre Channel Drive	00WF765	ATP0	1 / 2
6173 LTO Ultrium 6 Fibre Channel Drive	00NA115	AS1Y	1 / 2
6173 LTO Ultrium 5 Fibre Channel Drive	00NA107	AS1S	1 / 2
Full High 4 Gb Fibre Channel			
6173 LTO Ultrium 4 Fibre Channel Drive Sled	00NA101	AS1M	1 / 2

Description	Part number	Feature code	Maximum qty per one TS3100 / TS3200
Half High 6 Gb SAS			
6173 LTO Ultrium 7 Half High SAS Drive Sled	00WF767	ATP1	2 / 4
6173 LTO Ultrium 6 Half High SAS Drive Sled	00NA117	AS1Z	2 / 4
6173 LTO Ultrium 5 Half High SAS Drive Sled	00NA111	AS1U	2 / 4
6173 LTO Ultrium 4 Half High SAS DriveV2 Sled	00NA105	AS1Q	2 / 4
Full High 6 Gb SAS			
6173 LTO Ultrium 5 SAS Drive Sled	00NA109	AS1T	1 / 2
Full High 3 Gb SAS			
6173 LTO Ultrium 4 SAS Drive Sled	00NA121	AS1N	1 / 2

A SAS cable or Fibre Channel cable is required to attach a tape drive in the TS3100 or TS3200 Tape Library to a host. One cable is required per one drive. The following table lists supported cable options.

Table 5. Cable options

Description	Part number	Feature code	Maximum qty per one TS3100 / TS3200
SAS connectivity cables - Mini-SAS (SFF-8088 host) to Mini-SAS (SFF-8088 tape)			
Mini-SAS/Mini-SAS 4x Interposer	00NA077	AS0Y	1 / 1**
2 m Mini-SAS/Mini-SAS 1x Cable (host SFF-8088 to target SFF-8088)	00NA009	AS0Z	2 / 4
Mini-SAS to Mini-SAS Cable (5.5 m)	00NV418	AS11	2 / 4
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	2 / 4
Y SAS HD to Mini-SAS Cable (3 m)	00NV420	AS12	1 / 2*
Fibre Channel connectivity cables			
13 m LC-LC Fibre Cable	00NA085	AS1A	2 / 4
25 m LC-LC Fibre Cable	00NA087	6025	2 / 4

** The interposer is used on the host side to connect up to four SAS tape drives to a single Mini-SAS x4 port on a SAS HBA with up to four 2 m Mini-SAS to Mini-SAS cables (part number 00NA009). 5.5 m Mini-SAS to Mini-SAS cables (part number 00NV418) are not supported with the interposer.

* 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 SAS HBA.

Tape media

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

- 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.
- LTO Ultrium 4 tape drives can read and write LTO Ultrium 4 and Ultrium 3 data cartridges, and can read Ultrium 2 data cartridges.

The TS3100 supports up to 24 data cartridges and comes standard with two removable tape magazine with 12 cartridge slots each. The TS3200 supports up to 48 data cartridges and comes standard with four removable tape magazines with 12 cartridge slots each. More removable tape magazines can be ordered with the TS3100 or TS3200, if needed.

The following table lists tape media options and extra magazines that can be ordered for the TS3100 and TS3200.

Table 6. Tape media and extra magazines

Description	Part number	Feature code	Supported tape drive types
Cleaning cartridge			
Ultrium Cleaning Cartridge (universal)	00NA017	AS1E	LTO7, LTO6, LTO5, LTO4
Data cartridges			
Ultrium 7 Data Cartridges 5-Pack	00WF771	ATNZ	LTO7
Ultrium 6 Data Cartridges 5-Pack	00NA025	AS24	LTO7, LTO6
Ultrium 5 Data Cartridges 5-Pack	00NA023	AS23	LTO7 (read-only), LTO6, LTO5
Ultrium 4 Data Cartridges 5-Pack	00NA021	AS22	LTO6 (read-only), LTO5, LTO4
Optional magazines for TS3100			
6173 Right Side Tape Magazine	00NA091	AS1F	LTO7, LTO6, LTO5, LTO4
6173 Left Side 2U Tape Magazine	00NA097	AS1J	LTO7, LTO6, LTO5, LTO4
Optional magazines for TS3200			
6173 Right Side Tape Magazine	00NA091	AS1F	LTO7, LTO6, LTO5, LTO4
6173 Left Upper 4U Tape Magazine	00NA093	AS1G	LTO7, LTO6, LTO5, LTO4
6173 Left Lower 4U Tape Magazine	00NA095	AS1H	LTO7, LTO6, LTO5, LTO4

Software options

The functionality of the TS3100 and TS3200 can be expanded with the following optional software features:

- Path Failover
- Transparent LTO Encryption

The TS3100 and TS3200 offer an optional path failover feature that enables the host device driver to resend the command to an alternative control path for the same logical library to ensure smooth library operations if there is a communication error. With control path failover, the alternative control path can include another HBA, SAN, or library control path drive. The device driver starts error recovery and continues the operation on the alternative control path without interrupting the application.

IBM Ultrium 7, Ultrium 6, Ultrium 5, and Ultrium 4 tape drives are encryption-capable and they support the following modes of encryption management:

- System Managed: Available Linux and Windows; uses IBM device driver on a host system to setup encryption
- Library Managed: Available for Linux and Windows; requires an Extensible Key Management (EKM) server
- Application Managed: Available with third-party software such as IBM Spectrum Protect

System Managed and Library Managed Encryption requires an optional Transparent LTO Encryption license. Application Managed Encryption does not require a license.

The following table lists ordering information for optional software features.

Table 7. Optional software features for TS3100 and TS3200

Description	Part number	Feature code	Maximum quantity
6173 Path Failover	00NA069	AS0R	1
6173 Transparent LTO Encryption	00NA083	AS18	1

Power cables

The TS3100 and TS3200 ship standard without power cables. The part numbers and feature codes to order the power cables are listed in the following table.

Table 8. Part numbers and feature codes for ordering power cables

Description	Part number	Feature code	Maximum qty per one TS3100 / TS3200
Country-specific power cords			
2.8m, 10A/120V, C13 to NEMA 5-15P (US) Line Cord	00NA027	AS29	1 / 2*
2.8m, 10A/230V, C13 to CEE7-VII (Europe) Line Cord	00NA029	AS2A	1 / 2*
2.8m, 10A/230V, C13 to DK2-5a (Denmark) Line Cord	00NA031	AS2B	1 / 2*
2.8m, 10A/230V, C13 to BS 1363/A (UK) Line Cord	00NA033	AS2C	1 / 2*
2.8m, 10A/230V, C13 to SI 32 (Israel) Line Cord	00NA035	AS2D	1 / 2*
2.8m, 10A/230V, C13 to SEV 1011-S24507 (Sws) Line Cord	00NA037	AS2E	1 / 2*
2.8m, 10A/230V, C13 to SABS 164 (South Africa) Line Cord	00NA039	AS2F	1 / 2*
2.8m, 10A/230V, C13 to CEI 23-16 (Italy) Line Cord	00NA041	AS2G	1 / 2*

Description	Part number	Feature code	Maximum qty per one TS3100 / TS3200
2.8m, 10A/230V, C13 to AS/NZS 3112 (Aus/NZ) Line Cord	00NA043	AS2H	1 / 2*
2.8m, 10A/208V, C13 to NEMA 6-15P (US) Line Cord	00NA045	AS2J	1 / 2*
2.8m, 10A/220V, C13 to IRAM 2073 (Argentina) Line Cord	00NA047	AS2K	1 / 2*
2.8m, 10A/220V, C13 to CNS 10917-3 (Taiwan) Line Cord	00NA049	AS2L	1 / 2*
2.8m, 10A/220V, C13 to GB 2099.1 (China) Line Cord	00NA051	AS2M	1 / 2*
2.8m, 10A/110V, C13 to CNS 10917-3 (Taiwan) Line Cord	00NA053	AS2N	1 / 2*
2.8m, 12A/100V, C13 to JIS C-8303 (Japan) Line Cord	00NA055	AS2P	1 / 2*
2.8m, 12A/220V, C13 to KSC 8305 (S. Korea) Line Cord	00NA057	AS2Q	1 / 2*
2.8m, 10A/240V, C13 to IS 6538 (India) Line Cord	00NA059	AS2R	1 / 2*
2.8m, 10A/220V, C13 to NBR 6147 (Brazil) Line Cord	00NA061	AS2T	1 / 2*
Rack power cord			
2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	00NA063	AS2U	1 / 2*

* With two power supplies in the TS3200.

Physical specifications

The TS3100 and TS3200 Tape Libraries have the following dimensions and weight (approximate):

- Width: Rack mount 448 mm (17.6 in.), stand-alone 448 mm (17.6 in.)
- Depth: Rack mount 740 mm (29.1 in.), stand-alone 810 mm (31.9 in.)
- Height:
 - TS3100: Rack mount 87 mm (3.4 in.), stand-alone 98 mm (3.8 in.)
 - TS3200: Height: Rack mount 175 mm (6.9 in.), stand-alone 185 mm (7.3 in.)
- Weight:
 - TS3100: 15 kg (33 lb) without rack mount kit
 - TS3200: 21.3 kg (47 lb) without rack mount kit

Operating environment

The TS3100 and TS3200 Tape Libraries are supported in the following environment:

- Air temperature:
 - Operating: 10 °C - 35 °C (50 °F - 95 °F)
 - Non-operating: -30 °C - 60 °C (-22 °F - 140 °F)
 - Maximum altitude: 2,500 m (8,200 ft)
- Humidity:
 - Operating: 15% - 80%
 - Non-operating: 10% - 90%
- Electrical power:
 - 100 V AC - 240 V AC (4.0 A to 2 A)
 - Frequency: 50 Hz - 60 Hz
 - Power consumption: 100 watts
- Acoustical noise emission:
 - 6.6 bels (idling)
 - 6.8 bels (operating)

Warranty

The TS3100 and TS3200 Tape Libraries have a three-year Customer Replaceable Unit (CRU) and onsite warranty with 9x5/next business day (NBD) terms. Lenovo offers the service upgrades through warranty maintenance 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; that is, each country might have its own service types, service levels, response times, and terms and conditions. Not all covered types of warranty service upgrades might be available in a particular country or area. For more information about Lenovo warranty service upgrade offerings that are available in your country, see the Lenovo Services Product Selector that is available at this website:

<https://www-304.ibm.com/sales/gss/download/spst/servicepac>

The warranty service definitions for the TS3100 and TS3200 Tape Libraries are listed in the following table.

Table 9. Warranty service definitions

Term	Description
On-site service	A service technician arrives at the client's location for equipment service.
24x7x4 hour	A service technician is scheduled to arrive at the client's location within four hours after remote problem determination is completed. Lenovo provides service around the clock, every day, including Lenovo holidays.
9x5 next business day	A service technician is scheduled to arrive at the client's location on the business day after remote problem determination is completed. Lenovo provides service 8:00 am - 5:00 pm in the client's local time zone, Monday - Friday, excluding Lenovo holidays. Calls received after 4:00 pm local time require an extra business day for service dispatch. Next business day service is not guaranteed.

In general, the following types of Lenovo warranty service upgrades for the TS3100 and TS3200 Tape Libraries are available:

- Warranty and maintenance service upgrades:
 - Up to five years of 9x5 or 24x7 service coverage
 - Onsite response from next business day to 4 hours
 - Up to five years of warranty extension for all service levels in one year increments
- Remote Technical Support Services (RTS) for up to five years
RTS provides comprehensive technical call center support. RTS can reduce problem resolution time, which decreases the cost to address technical problems and increasing uptime.

Regulatory compliance

The TS3100 and TS3200 Tape Libraries conform to the following regulations:

- FCC: Verified to comply with Part 15 of the FCC Rules, Class A
- Australia and New Zealand Class A statement
- Canada ICES-003, Class A
- European Union Council Directive 2004/108/EC
- EN 55022, Class A
- 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 TS3100 and TS3200 support attachment to Lenovo System x, ThinkServer, BladeCenter, and Flex System hosts by using SAS, Fibre Channel (FC), or Fibre Channel over Ethernet (FCoE) connectivity.

Note: Tables that are provided in this section are for ordering reference purposes only. End-to-end storage configuration support *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 System x and ThinkServer SAS adapters that are compatible with the TS3100 and TS3200 SAS tape drives (direct attach).

Table 10. SAS adapters

Description	Part number
System x SAS HBAs	
6Gb SAS HBA (1x Mini-SAS x4 SFF-8088 external port)	46M0907
N2125 SAS/SATA HBA (6 Gb SAS, 2x Mini-SAS x4 SFF-8088 external ports)	46C9010
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

FCoE connectivity

The TS3100 and TS3200 support FCoE connectivity via FCoE/FC gateways with native Fibre Channel ports.

Currently available converged FCoE adapters for BladeCenter and Flex System that are compatible with the TS3100 and TS3200 are listed in the following table. Other HBAs also might be supported (for more information, see the System Storage Interoperation Center).

Table 11. Converged FCoE adapters

Description	Part number
BladeCenter converged adapters	
10Gb Interposer Card for BladeCenter HS23 (LOM) (Requires 90Y9310)	94Y8550
Emulex 10GbE VFA II for BladeCenter HS23 (Requires 90Y9350)	81Y3120
Emulex 10GbE VFA Advanced II for BladeCenter HS23	90Y9332
BladeCenter FoD upgrades required for FCoE support	
Virtual Fabric Advanced Software Upgrade (LOM) (Required for 94Y8550)	90Y9310
Virtual Fabric Advanced FOD Upgrade for BladeCenter HS23 (Required for 81Y3120)	90Y9350
Flex System converged adapters	
LAN on Motherboard (x240, x440)	None
Flex System CN4054 10Gb Virtual Fabric Adapter (Requires 90Y3558)	90Y3554
Flex System FoD upgrades required for FCoE support	
Virtual Fabric Advanced Software Upgrade (LOM) (Required for LAN on Motherboard)	90Y9310
Flex System CN4054 Virtual Fabric Adapter Upgrade (FoD) (Required for 90Y3554)	90Y3558

Fibre Channel connectivity

The TS3100 and TS3200 support FC switch-based attachments. Brocade and QLogic SAN switches can be used to provide FC connectivity with the TS3100 and TS3200.

The System x, ThinkServer, BladeCenter, and Flex System FC adapters that are listed in the following table are compatible with the TS3100 and TS3200.

Table 12. FC adapters

Description	Part number
System x HBAs: 16 Gb FC	
Brocade 16Gb FC Dual-port HBA	81Y1675
Brocade 16Gb FC Single-port HBA	81Y1668
Emulex 16Gb FC Dual-port HBA	81Y1662
Emulex 16Gb FC Single-port HBA	81Y1655
QLogic 16Gb FC Single-port HBA	00Y3337
QLogic 16Gb FC Dual-port HBA	00Y3341
System x HBAs: 8 Gb FC	
Brocade 8Gb FC Dual-port HBA	46M6050
Brocade 8Gb FC Single-port HBA	46M6049
Emulex 8Gb FC Dual-port HBA	42D0494
Emulex 8Gb FC Single-port HBA	42D0485
QLogic 8Gb FC Dual-port HBA	42D0510
QLogic 8Gb FC Single-port HBA	42D0501
ThinkServer HBAs: 16 Gb FC	
ThinkServer LPe16000B Single Port 16Gb FC HBA by Emulex	4XB0F28653
ThinkServer LPe16002B Dual Port 16Gb Fiber Channel HBA by Emulex	4XB0F28650
ThinkServer LPe16002B-M6-L PCIe 16Gb 2 Port FC HBA by Emulex	4XB0F28705
ThinkServer LPm16002-M6-L AnyFabric 16Gb 2 Port FC HBA by Emulex	4XB0F28706
ThinkServer HBAs: 8 Gb FC	
ThinkServer QLE2562 Dual Port 8Gb Fibre Channel HBA by Qlogic	0C19482
ThinkServer LPe16002B-M8-L PCIe 8Gb 2 Port FC HBA by Emulex	4XB0F28704
Flex System HBAs: 8 Gb FC	
Flex System FC3052 2-port 8Gb FC Adapter	95Y2375
Flex System FC3172 2-port 8Gb FC Adapter	69Y1938
Flex System HBAs: 16 Gb FC	
Flex System FC5052 2-port 16Gb FC Adapter	95Y2386
Flex System FC5054 4-port 16Gb FC Adapter	95Y2391
Flex System FC5172 2-port 16Gb FC Adapter	69Y1942
BladeCenter HBAs: 8 Gb FC	
Qlogic 8Gb Fibre Channel Expansion Card (CIOv) for BladeCenter	44X1945
Emulex 8Gb Fibre Channel Expansion Card (CIOv) for BladeCenter	46M6140

Networking switches

The following table lists currently available Ethernet and FC rack-mount switches that are offered by Lenovo that can be used in TS3100 and TS3200 solutions.

Table 13. Ethernet and FC rack-mount switches

Description	Part number
Converged 10 GbE and 8 Gb FC (FCoE gateway)	
Lenovo RackSwitch G8264CS (Rear to Front)	7159DRX
8 Gb FC	
Brocade 300 FC SAN Switch	3873AR1
Lenovo B300, 8 ports activated w/ 8Gb SWL SFPs, 1 PS, Rail Kit	3873AR3
Lenovo B6505, 12 ports activated w/ 8Gb SWL SFPs, 1 PS, Rail Kit	3873AR4
Lenovo B6510, 24 ports activated w/ 8Gb SWL SFPs, 2 PS, Rail Kit	3873BR2
16 Gb FC	
Brocade 6505 FC SAN Switch	3873AR2
Brocade 6510 FC SAN Switch	3873BR1
Lenovo B6505, 12 ports activated w/ 16Gb SWL SFPs, 1 PS, Rail Kit	3873AR5
Lenovo B6510, 24 ports activated w/ 16Gb SWL SFPs, 2 PS, Rail Kit	3873BR3

For more information, see the list of Product Guides in the following categories:

- Top-of-rack Switches: <http://lenovopress.com/servers/options/switches?rt=product-guide>
- Rack SAN Switches: <http://lenovopress.com/storage/switches/rack?rt=product-guide>

The following table lists currently available Ethernet and FC embedded switches and pass-thru modules for Flex System that can be used in TS3100 and TS3200 solutions.

Table 14. Ethernet and FC embedded switches for Flex System

Description	Part number
10 Gb Ethernet (FCoE transit switch)	
Lenovo Flex System Fabric EN4093R 10Gb Scalable Switch	00FM514
Lenovo Flex System Fabric SI4093 System Interconnect Module	00FM518
Converged 10 GbE and 8 Gb FC (FCoE gateway)	
Lenovo Flex System Fabric CN4093 10Gb Converged Scalable Switch	00FM510
8 Gb FC	
Lenovo Flex System FC3171 8Gb SAN Switch	69Y1930
16 Gb FC	
Lenovo Flex System FC5022 16Gb SAN Scalable Switch	88Y6374
Lenovo Flex System FC5022 24-port 16Gb SAN Scalable Switch (includes two 16 Gb SFPs)	00Y3324
Lenovo Flex System FC5022 24-port 16Gb ESB SAN Scalable Switch	90Y9356
Pass-thru modules (require a compatible external switch)	
Lenovo Flex System EN4091 10Gb Ethernet Pass-thru	88Y6043
Lenovo Flex System FC3171 8Gb SAN Pass-thru	69Y1934

The following table lists currently available Ethernet and FC embedded switches and pass-thru modules for BladeCenter that can be used in TS3100 and TS3200 solutions.

Table 15. Ethernet and FC switches and pass-thru modules for BladeCenter

Description	Part number
10 Gb Ethernet (FCoE transit switch)	
BladeCenter Virtual Fabric 10Gb Switch Module	46C7191
8 Gb FC	
Brocade 10-port 8Gb SAN Switch Module for BladeCenter	44X1921
Brocade 20-port 8Gb SAN Switch Module for BladeCenter	44X1920
Brocade Enterprise 20-port 8Gb SAN Switch Module for BladeCenter	42C1828
QLogic 20-port 8Gb SAN Switch Module for BladeCenter	44X1905
Pass-thru modules (require a compatible external switch)	
10Gb Ethernet Pass-Thru Module for BladeCenter	46M6181
QLogic 8Gb Intelligent Pass-thru Module for BladeCenter	44X1907

For more information, see the list of Product Guides in the following categories:

- Blade Network Modules: <http://lenovopress.com/servers/blades/networkmodule>
- Blade Storage Modules: <http://lenovopress.com/servers/blades/storagemodule>

Operating systems

The TS3100 and TS3200 support host attachments to the System x, ThinkServer, and BladeCenter servers and Flex System compute nodes with the following operating systems:

- Microsoft:
 - Microsoft Windows Server 2012 R2
 - Microsoft Windows Server 2012
 - Microsoft Windows Server 2008 R2
 - Microsoft Windows Server 2008
- Red Hat:
 - Red Hat Enterprise Linux 7
 - Red Hat Enterprise Linux 6
 - Red Hat Enterprise Linux 5
- SUSE:
 - SUSE Linux Enterprise Server 11
 - SUSE Linux Enterprise Server 10

ISV backup software compatibility

The Independent Software Vendors (ISVs) indicate support for the TS3100 and TS3200 Tape Libraries for the following ISV backup software:

- Arcserve Backup
- ASG Time Navigator
- Barracuda Yosemite Backup
- CommVault Simpana
- Dell NetVault Backup
- EMC NetWorker
- HP OpenView Storage Data Protector
- IBM Spectrum Protect
- Microsoft System Center Data Protection Manager
- Symantec Backup Exec
- Symantec NetBackup

For more information, see the ISV matrix for IBM LTO that is available at this website:
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 in TS3100 and TS3200 Tape Libraries solutions.

Table 16. Rack cabinets

Description	Part number
11U Rack Office Enablement Kit	201886X
25U S2 Standard Rack	93072RX
25U Static S2 Standard Rack	93072PX
42U S2 Standard Rack	93074RX
42U 1100mm Enterprise V2 Dynamic Rack	93634PX
42U 1100mm Enterprise V2 Dynamic Expansion Rack	93634EX
42U 1200mm Deep Dynamic Rack	93604PX
42U 1200mm Deep Static Rack	93614PX
42U Enterprise Rack	93084PX
42U Enterprise Expansion Rack	93084EX

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

Power distribution units

The following table lists the the power distribution units (PDUs) that are offered by Lenovo that can be used in TS3100 and TS3200 Tape Libraries solutions.

Table 17. Power distribution units

Description	Part number
0U Basic PDUs	
0U 24 C13 16A 3 Phase PDU with IEC 309 P+N+Gnd line cord	46M4122
0U 24 C13 30A 3 Phase PDU with NEMA L21-30P line cord	46M4125
0U 24 C13 30A PDU with NEMA L6-30P line cord	46M4128
0U 24 C13 32A PDU with IEC 309 P+N+Gnd line cord	46M4131
0U 12 C19/12 C13 32A 3 Phase PDU with IEC 309 3P+N+Gnd line cord	46M4143
0U 12 C19/12 C13 60A 3 Phase PDU with CS8365L 3P+Gnd line cord	46M4140
Switched and Monitored PDUs	
1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord)	46M4002
1U 9 C19/3 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line 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
0U 24 C13 Switched and Monitored 30A PDU with NEMA L6-30P line cord	46M4116
0U 24 C13 Switched and Monitored 32A PDU with IEC 309 P+N+Gnd line cord	46M4119
0U 12 C19/12 C13 Switched and Monitored 32A 3 Phase PDU with IEC 309 3P+N+Gnd cord	46M4137
0U 12 C19/12 C13 Switched and Monitored 50A 3 Phase PDU with CS8365L 3P+Gnd cord	46M4134
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 Rack PDU with US LV and HV line cords	39Y8951
DPI Universal Rack PDU with CEE7-VII Europe line cord	39Y8952
DPI Universal Rack PDU with Denmark line cord	39Y8953
DPI Universal Rack PDU with Israel line cord	39Y8954
DPI Universal Rack PDU with Italy line cord	39Y8955

Description	Part number
DPI Universal Rack PDU with South Africa line cord	39Y8956
DPI Universal Rack PDU with UK line cord	39Y8957
DPI Universal Rack PDU with AS/NZ line cord	39Y8958
DPI Universal Rack PDU with China line cord	39Y8959
DPI Universal Rack PDU (Argentina)	39Y8962
DPI Universal Rack PDU (Brazil)	39Y8960
DPI Universal Rack PDU (India)	39Y8961
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 32a Line Cord (IEC 309 3P+N+G)	40K9611
DPI 32a Line Cord (IEC 309 P+N+G)	40K9612
DPI 63a Cord (IEC 309 P+N+G)	40K9613
DPI 30a Line Cord (NEMA L6-30P)	40K9614
DPI 60a Cord (IEC 309 2P+G)	40K9615
DPI Australian/NZ 3112 Line Cord	40K9617

For more information, see the list of Product Guides in the Power Distribution Units category:
<http://lenovopress.com/servers/options/pdu>

Uninterruptible power supply units

The following table list the uninterruptible power supply (UPS) units that are offered by Lenovo that can be used in TS3100 and TS3200 Tape Libraries solutions.

Table 18. Uninterruptible power supply units

Description	Part number
RT1.5kVA 2U Rack or Tower UPS (100-125VAC)	55941AX
RT1.5kVA 2U Rack or Tower UPS (200-240VAC)	55941KX
RT2.2kVA 2U Rack or Tower UPS (100-125VAC)	55942AX
RT2.2kVA 2U Rack or Tower UPS (200-240VAC)	55942KX
RT3kVA 2U Rack or Tower UPS (100-125VAC)	55943AX
RT3kVA 2U Rack or Tower UPS (200-240VAC)	55943KX
RT5kVA 3U Rack or Tower UPS (200-240VAC)	55945KX
RT6kVA 3U Rack or Tower UPS (200-240VAC)	55946KX
RT8kVA 6U Rack or Tower UPS (200-240VAC)	55948KX
RT11kVA 6U Rack or Tower UPS (200-240VAC)	55949KX
RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)	55948PX
RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)	55949PX

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

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Related publications and links

For more information, see the following resources:

- Lenovo Storage product page:
<http://www.lenovo.com/systems/storage>
- US Announcement Letter - LTO Ultrium 7 Drives for IBM TS2900 Tape Autoloader for Lenovo:
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS115-155>
- US Announcement Letter - IBM TS3100 and TS3200 Tape Libraries for Lenovo:
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS114-127>
- Lenovo Hardware Configurator:
<http://lesc.lenovo.com/products/hardware/configurator/bhui/launchNI.wss>
- 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 Autoloaders and Libraries](#)
- [Backup Units](#)

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