Lenovo LTO Generation 6 (LTO6) Internal SAS Tape Drive
Product Guide (withdrawn product)

The Half-High LTO Generation 6 (LTO6) SAS Tape Drive is a high-performance, high-capacity data-storage device that is designed to back up and restore open-systems applications. It offers native storage capacity of 2.5 TB per cartridge (6.2 TB at 2.5:1 compression) and a maximum native data transfer rate of up to 160 Mbps (400 Mbps compressed). This enterprise data protection offering has a 5.25" half-height internal form factor for integration into Lenovo tower servers.

Figure 1 shows the internal Half High LTO Ultrium Gen 6 Internal SAS Tape Drive.

Figure 1. Half High LTO Ultrium Gen 6 Internal SAS Tape Drive

Did you know?

LTO Generation 6 tape drives feature hardware-based data encryption capabilities and support write once, read many (WORM) cartridges to help protect your data. With WORM cartridges you can store vital data in a non-erasable, non-rewritable format, while AES256 hardware encryption can securely store data to help ensure compliancy with data security, information disclosure, and privacy regulations for data at rest.

This drive is compatible with the cartridges of its predecessor, the Half-High LTO Ultrium 5 Tape Drive. It can also read generation 4 cartridges.

Part number information

The following table lists the ordering part numbers and feature codes for ThinkSystem servers.

Table 1. Ordering information - ThinkSystem

Part number	Feature code	Description
Tape drives - ThinkSystem		
4T27A10726	B3YK	ThinkSystem Internal Half High LTO Gen6 SAS Tape Drive
7T27A01502	AVF2	ThinkSystem Internal Half High LTO Gen6 SAS Tape Drive
Media options - ThinkSystem		
7TP7A01604	AVF4	ThinkSystem LTO Gen6 2.5TB Tape

The ThinkSystem tape drive option part number includes these items:

- 5.25-inch tape drive
- 12Gb SAS cable for internal tape connectivity
- Power cable
- Cleaning cartridge
- Documentation

The following table lists the ordering part numbers and feature codes for System x servers.

Table 2. Ordering information - System x

Part number	Feature code	Description
Tape drives - System x		
00MW711	AUBQ	Half High LTO Gen 6 Internal SAS Tape Drive
00D8924	A3S3	Half High LTO Ultrium Gen 6 Internal SAS Tape Drive
Media options - System x		
00MW719	AUBR	LTO 6 Media 2.5TB
00D8933	A3S4	LTO 6 Media 5 Pack
46W6589	A3S6	LTO Ultrium Gen 6 Single Media
49Y9893	5347	LTO Cleaning Cartridge Option

The System x tape drive option part numbers includes these items:

- 5.25-inch tape drive
- Tape mount kit (drive rails)
- 6Gb SAS cable for internal tape connectivity
- 12Gb SAS cable for internal tape connectivity
- Power cable
- Cleaning cartridge
- Documentation

Note: The 12Gb SAS cable was not originally included in the option part number, 00D8924. If needed, the cable can be obtained from the service organization using FRU part number 00MW108.

Features

Features of the LTO Gen 6 Internal SAS Tape Drives are as follows:

- Compatibility with LTO 5 (read and write) and LTO 4 (read) media
- Speed matching and channel calibration for improved performance
- Media partitioning for faster access to stored data
- Support for host Application Managed Encryption (AME)
- Support for 6 Gbps SAS adapters for improved performance and reliability
- Support for leading operating systems and popular backup software

Specifications

Specifications for the LTO Gen 6 Internal SAS Tape Drives are as follows:

- 6 Gbps SAS host interface
- Native storage capacity of 2.5 TB per cartridge (6.2 TB at 2.5:1 compression)
- Maximum native data transfer rate of up to 160 Mbps, 400 Mbps compressed
- Burst data transfer rate of up to 600 MB per second
- 512 MB read-and-write cache
- Support for encryption on Ultrium 6 and Ultrium 5 tape cartridges
- Single-character display (SCD) operator panel

Key prerequisites

The LTO Gen 6 Internal SAS Tape Drives have the following prerequisites:

- 6Gb or 12Gb SAS controller
- One or more LTO Generation 6 or LTO Generation 5 data cartridges (not supplied with drive option)
- An available half-height drive bay in the server

Server support - ThinkSystem

The following tables list the ThinkSystem servers that are compatible.

Table 3. Server support - ThinkSystem (Part 1 of 4)

Part Number	Description	AMD V3				2S Intel V3/V4						4S 8S Intel V3			Multi Node V3/V4			1S V3			
		SR635 V3 (7D9H / 7D9G)	SR655 V3 (7D9F / 7D9E)	SR645 V3 (7D9D / 7D9C)	SR665 V3 (7D9B / 7D9A)	ST650 V3 (7D7B / 7D7A)	SR630 V3 (7D72 / 7D73)	SR650 V3 (7D75 / 7D76)	SR630 V4 (7DG8 / 7DG9)	SR650 V4 (7DGC / 7DGD)	SR650a V4 (7DGC / 7DGD)	SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SR950 V3 (7DC5 / 7DC4)	SD535 V3 (7DD8 / 7DD1)	SD530 V3 (7DDA / 7DD3)	SD550 V3 (7DD9 / 7DD2)	ST45 V3 (7DH4 / 7DH5)	ST50 V3 (7DF4 / 7DF3)	ST250 V3 (7DCF / 7DCE)	SR250 V3 (7DCM / 7DCL)
4T27A10726	ThinkSystem Internal Half High LTO Gen6 SAS Tape Drive	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
7T27A01502	Tandberg LTO G6 HH Internal	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 4. Server support - ThinkSystem (Part 2 of 4)

Part Number	Description	GPU Rich					Edge						Super Computing						
		SR670 V2 (7Z22 / 7Z23)	SR675 V3 (7D9Q / 7D9R)	SR680a V3 (7DHE)	SR685a V3 (7DHC)	SR780a V3 (7DJ5)	SE100 (7DGR)	SE350 (7Z46 / 7D1X)	SE350 V2 (7DA9)	SE360 V2 (7DAM)	SE450 (7D8T)	SE455 V3 (7DBY)	SC750 V4 (7DDJ)	SC777 V4 (7DKA)	SD665 V3 (7D9P)	SD665-N V3 (7DAZ)	SD650 V3 (7D7M)	SD650-I V3 (7D7L)	SD650-N V3 (7D7N)
4T27A10726	ThinkSystem Internal Half High LTO Gen6 SAS Tape Drive	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
7T27A01502	Tandberg LTO G6 HH Internal	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 5. Server support - ThinkSystem (Part 3 of 4)

Part Number	Description	ST50 V2 (7D8K / 7D8J)	ST250 V2 (7D8G / 7D8F)	SR250 V2 (7D7R / 7D7Q)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)	SR635 (7Y98 / 7Y99)	SR655 (7Y00 / 7Z01)	SR655 Client OS	SR645 (7D2Y / 7D2X)	SR665 (7D2W / 7D2V)	SD630 V2 (7D1K)	SD650 V2 (7D1M)	SD650-N V2 (7D1N)	SN550 V2 (7Z69)	SR850 V2 (7D31 / 7D32)	SR860 V2 (7Z59 / 7Z60)	SR950 (7X11 / 7X12)
		1S Intel V2			**2S Intel V2**			**AMD V1**					**Dense V2**				**4S V2**		**8S**
4T27A10726	ThinkSystem Internal Half High LTO Gen6 SAS Tape Drive	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
7T27A01502	Tandberg LTO G6 HH Internal	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 6. Server support - ThinkSystem (Part 4 of 4)

Part Number	Description	SR850 (7X18 / 7X19)	SR850P (7D2F / 2D2G)	SR860 (7X69 / 7X70)	ST50 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)	SR250 (7Y52 / 7Y51)	ST550 (7X09 / 7X10)	SR530 (7X07 / 7X08)	SR550 (7X03 / 7X04)	SR570 (7Y02 / 7Y03)	SR590 (7X98 / 7X99)	SR630 (7X01 / 7X02)	SR650 (7X05 / 7X06)	SR670 (7Y36 / 7Y37)	SD530 (7X21)	SD650 (7X58)	SN550 (7X16)	SN850 (7X15)
		4S V1			**1S Intel V1**				**2S Intel V1**								**Dense V1**			
4T27A10726	ThinkSystem Internal Half High LTO Gen6 SAS Tape Drive	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N
7T27A01502	Tandberg LTO G6 HH Internal	N	N	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N

Supported HBAs

The following table lists the ThinkSystem host bus adapters that are supported with the tape drives

Table 7. Supported ThinkSystem HBAs

Part number	Feature code	Description
7Y37A01088	AUNL	ThinkSystem 430-8i SAS/SATA 12Gb HBA
7Y37A01089	AUNM	ThinkSystem 430-16i SAS/SATA 12Gb HBA

The following table lists the System x host bus adapters that are supported with the tape drives.

Table 8. Supported System x HBAs

Part number	Feature code	Description
47C8675	A3YY	N2215 SAS/SATA HBA
46M0907	3875	6Gb SAS HBA
44E8700*	3583	3Gb SAS HBA v2

* Withdrawn from marketing

Front panel

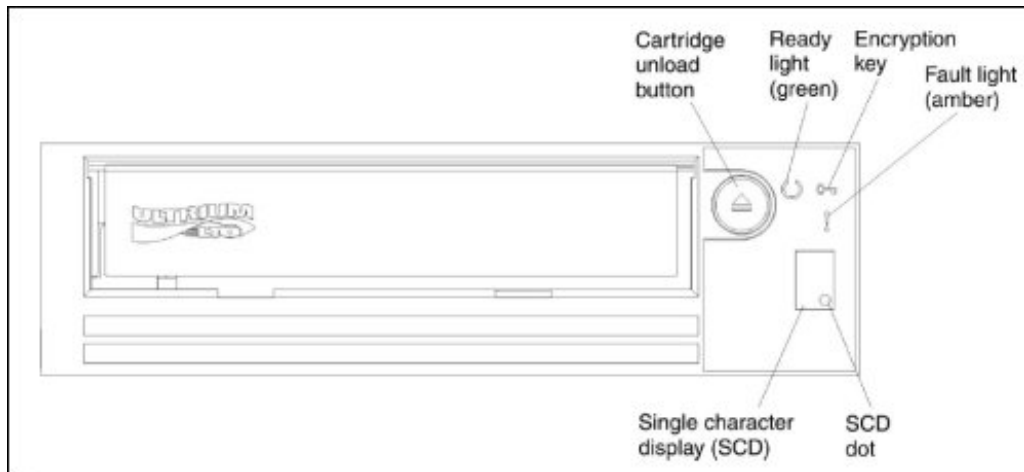The following figure shows the front panel of the tape drive.

Figure 2. Front panel

The single-character display presents a single-character code for error conditions and informational messages. When the drive is in maintenance mode, the display shows diagnostic or maintenance functions. The SCD dot is off during normal operations; it is used only while the drive is in maintenance mode.

Supported software products

The tape drive supports the following software products:

- NetVault Backup
- ARCServe Backup
- Networker Backup and Recovery (Does not support removable disk)
- Backup Exec
- Tivoli Storage Manager
- Yosemite Server Backup
- Built-in backup functionality of supported operating system (native backup)

Supported operating systems

The following tables list the supported operating systems for the drives:

- ThinkSystem Internal Half High LTO Gen6 SAS Tape Drive, 4T27A10726
- ThinkSystem Internal Half High LTO Gen6 SAS Tape Drive, 7T27A01502

Tip: These tables are automatically generated based on data from Lenovo ServerProven.

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

Table 9. Operating system support for ThinkSystem Internal Half High LTO Gen6 SAS Tape Drive, 4T27A10726

Operating systems	ST550 (Xeon Gen 2)	ST550 (Xeon Gen 1)
Microsoft Windows Server 2012 R2	N	Y
Microsoft Windows Server 2016	Y	Y
Microsoft Windows Server 2019	Y	Y
Microsoft Windows Server 2022	Y	Y
Microsoft Windows Server version 1709	N	Y
Red Hat Enterprise Linux 6.10	N	Y
Red Hat Enterprise Linux 6.9	N	Y
Red Hat Enterprise Linux 7.3	N	Y
Red Hat Enterprise Linux 7.4	N	Y
Red Hat Enterprise Linux 7.5	N	Y
Red Hat Enterprise Linux 7.6	Y	Y
Red Hat Enterprise Linux 7.7	Y	Y
Red Hat Enterprise Linux 7.8	Y	Y
Red Hat Enterprise Linux 7.9	Y	Y
Red Hat Enterprise Linux 8.0	Y	Y

Operating systems	ST550 (Xeon Gen 2)	ST550 (Xeon Gen 1)
Red Hat Enterprise Linux 8.1	Y	Y
Red Hat Enterprise Linux 8.10	Y	N
Red Hat Enterprise Linux 8.2	Y	Y
Red Hat Enterprise Linux 8.3	Y	Y
Red Hat Enterprise Linux 8.4	Y	Y
Red Hat Enterprise Linux 8.5	Y	Y
Red Hat Enterprise Linux 8.6	Y	Y
Red Hat Enterprise Linux 8.7	Y	Y
Red Hat Enterprise Linux 8.8	Y	Y
Red Hat Enterprise Linux 8.9	Y	N
Red Hat Enterprise Linux 9.0	Y	Y
Red Hat Enterprise Linux 9.1	Y	Y
Red Hat Enterprise Linux 9.2	Y	Y
Red Hat Enterprise Linux 9.3	Y	N
Red Hat Enterprise Linux 9.4	Y	N
Red Hat Enterprise Linux 9.5	Y	N
SUSE Linux Enterprise Server 11 SP4	N	Y
SUSE Linux Enterprise Server 11 SP4 with Xen	N	Y
SUSE Linux Enterprise Server 12 SP2	N	Y
SUSE Linux Enterprise Server 12 SP2 with Xen	N	Y
SUSE Linux Enterprise Server 12 SP3	N	Y
SUSE Linux Enterprise Server 12 SP4	Y	Y
SUSE Linux Enterprise Server 12 SP4 with Xen	Y	Y
SUSE Linux Enterprise Server 12 SP5	Y	Y
SUSE Linux Enterprise Server 12 SP5 with Xen	Y	Y
SUSE Linux Enterprise Server 15	Y	Y
SUSE Linux Enterprise Server 15 SP1	Y	Y
SUSE Linux Enterprise Server 15 SP1 with Xen	Y	Y
SUSE Linux Enterprise Server 15 SP2	Y	Y
SUSE Linux Enterprise Server 15 SP2 with Xen	Y	Y
SUSE Linux Enterprise Server 15 SP3	Y	Y
SUSE Linux Enterprise Server 15 SP3 with Xen	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	Y
SUSE Linux Enterprise Server 15 SP4 with Xen	Y	Y
SUSE Linux Enterprise Server 15 SP5	Y	Y
SUSE Linux Enterprise Server 15 SP5 with Xen	Y	Y

Operating systems	ST550 (Xeon Gen 2)	ST550 (Xeon Gen 1)
SUSE Linux Enterprise Server 15 with Xen	Y	Y
Ubuntu 22.04 LTS	Y	Y

Table 10. Operating system support for LTO 6 Internal Tape Drive, 7T27A01502

Operating systems	ST550 (Xeon Gen 2)	ST550 (Xeon Gen 1)
Microsoft Windows Server 2012 R2	N	Y
Red Hat Enterprise Linux 6.10	N	Y
Red Hat Enterprise Linux 6.9	N	Y
Red Hat Enterprise Linux 7.3	N	Y
Red Hat Enterprise Linux 7.4	N	Y
Red Hat Enterprise Linux 7.9	Y	Y
Red Hat Enterprise Linux 8.10	Y	N
Red Hat Enterprise Linux 8.3	Y	Y
Red Hat Enterprise Linux 8.4	Y	Y
Red Hat Enterprise Linux 8.5	Y	Y
Red Hat Enterprise Linux 8.6	Y	Y
Red Hat Enterprise Linux 8.7	Y	Y
Red Hat Enterprise Linux 8.8	Y	Y
Red Hat Enterprise Linux 8.9	Y	N
Red Hat Enterprise Linux 9.0	Y	Y
Red Hat Enterprise Linux 9.1	Y	Y
Red Hat Enterprise Linux 9.2	Y	Y
Red Hat Enterprise Linux 9.3	Y	N
Red Hat Enterprise Linux 9.4	Y	N
Red Hat Enterprise Linux 9.5	Y	N
SUSE Linux Enterprise Server 11 SP4	N	Y
SUSE Linux Enterprise Server 11 SP4 with Xen	N	Y
SUSE Linux Enterprise Server 12 SP2	N	Y
SUSE Linux Enterprise Server 12 SP2 with Xen	N	Y
SUSE Linux Enterprise Server 12 SP3	N	Y
SUSE Linux Enterprise Server 12 SP3 with Xen	N	Y

Operating systems	ST550 (Xeon Gen 2)	ST550 (Xeon Gen 1)
SUSE Linux Enterprise Server 15	Y	Y
SUSE Linux Enterprise Server 15 SP1	Y	Y
SUSE Linux Enterprise Server 15 SP1 with Xen	Y	Y
SUSE Linux Enterprise Server 15 SP2	Y	Y
SUSE Linux Enterprise Server 15 SP2 with Xen	Y	Y
SUSE Linux Enterprise Server 15 SP3	Y	Y
SUSE Linux Enterprise Server 15 SP3 with Xen	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	Y
SUSE Linux Enterprise Server 15 SP4 with Xen	Y	Y
SUSE Linux Enterprise Server 15 SP5	Y	Y
SUSE Linux Enterprise Server 15 SP5 with Xen	Y	Y
SUSE Linux Enterprise Server 15 with Xen	Y	Y

Physical specifications

Physical specifications of the tape drive are as follows:

- Height: 39 mm (1.5 in.)
- Width: 146 mm (5.8 in.)
- Depth: 210 mm (8.3 in.)
- Weight: 3.2 kg (7.0 lb)

Shipping dimensions (approximate) are as follows:

- Height: 69 mm (2.7 in)
- Width: 176 mm (6.9 in)
- Depth: 240 mm (9.5 in)
- Weight: 3.8 kg (8.3 lb)

Operating environment

The tape drive is supported in the following environment:

- Temperature:
  - 10° to 40°C (50° to 104°F) at 0 to 914 m (0 to 3,000 ft)
  - 10° to 40°C (50° to 104°F) at 3048 m (10,000 ft)

- Relative humidity: 20% to 80% (noncondensing)

- Maximum altitude: 12,192 m (40,000 ft)

Warranty

The LTO Gen 6 Internal SAS Tape Drives have a one-year limited warranty. When installed in a supported server, the tape drive inherits the server's base warranty and any warranty upgrade.

The LTO cartridges are considered consumable media and are not covered by the product warranty.

Related publications

For more information, see the following resources:

- Storage Options for ThinkSystem Servers:
  https://lenovopress.com/lp0761-storage-options-for-thinksystem-servers
- ServerProven pages for the Half High LTO Ultrium Gen 6 Internal SAS Tape Drive
  http://static.lenovo.com/us/en/serverproven/xseries/storage/tmatrix.shtml
- Half High LTO Ultrium Gen 6 Internal SAS Tape Drive Installation and User Guide
  https://support.lenovo.com/docs/UM103464

Related product families

Product families related to this document are the following:

- Backup Units

Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area. Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any other product, program, or service. Lenovo may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

Lenovo (United States), Inc.
8001 Development Drive
Morrisville, NC 27560
U.S.A.
Attention: Lenovo Director of Licensing

LENOVO PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. Lenovo may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

The products described in this document are not intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. The information contained in this document does not affect or change Lenovo product specifications or warranties. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Lenovo or third parties. All information contained in this document was obtained in specific environments and is presented as an illustration. The result obtained in other operating environments may vary. Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk. Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

This document, TIPS0978, was created or updated on October 25, 2023.

Send us your comments in one of the following ways:

- Use the online Contact us review form found at:
  https://lenovopress.lenovo.com/TIPS0978
- Send your comments in an e-mail to:
  comments@lenovopress.com

This document is available online at https://lenovopress.lenovo.com/TIPS0978.

Trademarks

Lenovo and the Lenovo logo are trademarks or registered trademarks of Lenovo in the United States, other countries, or both. A current list of Lenovo trademarks is available on the Web at https://www.lenovo.com/us/en/legal/copytrade/.

The following terms are trademarks of Lenovo in the United States, other countries, or both:
Lenovo®
ServerProven®
System x®
ThinkSystem®

The following terms are trademarks of other companies:

AMD is a trademark of Advanced Micro Devices, Inc.

Intel® and Xeon® are trademarks of Intel Corporation or its subsidiaries.

Linux® is the trademark of Linus Torvalds in the U.S. and other countries.

Microsoft®, Hyper-V®, Windows Server®, and Windows® are trademarks of Microsoft Corporation in the United States, other countries, or both.

IBM® and Tivoli® are trademarks of IBM in the United States, other countries, or both.

Other company, product, or service names may be trademarks or service marks of others.