

# Lenovo LTO Generation 7 (LTO7) Internal SAS Tape Drive

## Product Guide

The ThinkSystem Internal Half High LTO Generation 7 (LTO 7) 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 6 TB per cartridge (15 TB at 2.5:1 compression) and a maximum native data transfer rate of up to 300 Mbps (750 Mbps compressed). This enterprise data protection offering has a 5.25" half-height internal form factor for integration into ThinkSystem servers.

Figure 1 shows the ThinkSystem Internal Half High LTO7 SAS Tape Drive.



Figure 1. ThinkSystem Internal Half High LTO7 SAS Tape Drive

### Did you know?

LTO Generation 7 tape drives is compatible with the cartridges of its predecessor. The LTO7 drive can read and write LTO6 cartridges and read LTO5 cartridges.

## Part number information

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

Table 1. Ordering information

Part number	Feature code	Description
7T27A01503	AVF5	ThinkSystem Internal Half High LTO Gen7 SAS Tape Drive
7TP7A01606	AVF7	ThinkSystem LTO Gen7 6TB Tape (One 6 TB tape cartridge media)

The tape drive option part number 7T27A01503 includes these items:

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

## Features

The LTO Generation 7 Tape Drive is a high-performance, high-capacity tape drive. The drive records data using a linear serpentine recording format on half-inch tape housed within a cartridge. The data tracks are located using preformatted servo tracks.

Features of the LTO Generation 7 Internal SAS Tape Drives include:

- **Compatibility**  
LTO 7 can store 2.4 times as much data (6000 GB) to an LTO-type tape cartridge as the LTO6 drive (2500 GB), without compression. LTO7 can also read and write LTO6 cartridges, and read only Ultrium 5 cartridges, and thus can interchange data with LTO6 and LTO5 tape drives.  
  
Note, however, the LTO7 drive will only allow an LTO6 cartridge to be written at the LTO6 density (2500 GB). The LTO7 drive will not allow an LTO6 cartridge to be re-formatted to the LTO7 format.
- **Increased recording density**  
The Ultrium 7 drive uses a new data cartridge that externally has the same physical dimensions as previous LTO cartridges, however the linear recording density is higher at 19.09 kb/mm and the magnetic particle is now Barium Ferrite (BaFe) compared to Super Finavinx used in LTO6 and earlier cartridges. Such advances have resulted in higher storage capacity of cartridges.
- **Write once, read many (WORM) support**  
LTO7 tape drives 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. The WORM cartridge types are geometrically identical to the R/W cartridge, and use the same rewritable media, however, mechanical and electronic features of the cartridge are different for WORM cartridge types, preventing the cartridge from being re-recorded.
- **Encryption**  
The LTO7 drive features hardware-based AES-256 data encryption capabilities which can securely store data to help ensure compliancy with data security, information disclosure, and privacy regulations for data at rest.

- Operator panel

The LTO7 tape drive has a front operator panel comprised of a status LED indicator, an Encryption active LED indicator, an unload push button, and a single-character display. The single-character display indicates errors and communicates messages, such as requests for a cleaning tapes. The display is also used by the operator for diagnostic and maintenance functions.

- SAS connection

The tape drive supports a 6 Gb or 12 Gb SAS connection using a SFF-8482 connection.

## Specifications

Specifications for the LTO7 Internal SAS Tape Drives are as follows:

- 6 Gbps SAS host interface
- Native storage capacity of 6 TB per cartridge (15 TB at 2.5:1 compression)
- Maximum native data transfer rate of up to 300 MB/s, 750 MB/s compressed
- Burst data transfer rate of up to 750 MB/s
- 1024 MB read-and-write cache
- Support for encryption on Ultrium 7 and Ultrium 6 tape cartridges
- Single-character display (SCD) operator panel

## Server support

The following tables list the ThinkSystem servers that are compatible.

Table 2. Server support (Part 1 of 2)

Part Number	Description	Edge		1S Intel V2		2S Intel V2		AMD		Dense V2		4S V2	8S										
		SE350 (7Z46 / 7D1X)	SE450 (7D8T)	ST50 V2 (7D8K / 7D8J)	ST250 V2 (7D8G / 7D8F)	SR250 V2 (7D7R / 7D7Q)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)	SR670 V2 (7Z22 / 7Z23)	SR635 (7Y98 / 7Y99)	SR655 (7Y00 / 7Z01)	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)		
7T27A01503	ThinkSystem Internal Half High LTO Gen7 SAS Tape Drive	N	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 3. Server support (Part 2 of 2)

Part Number	Description	1S Intel V1		2S Intel V1						Dense V1		4S V1								
		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)	SR850 (7X18 / 7X19)	SR850P (7D2F / 2D2G)	SR860 (7X69 / 7X70)
7T27A01503	ThinkSystem Internal Half High LTO Gen7 SAS Tape Drive	Y	Y	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N

## Supported HBAs

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

Table 4. Supported HBAs

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

## Front panel

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

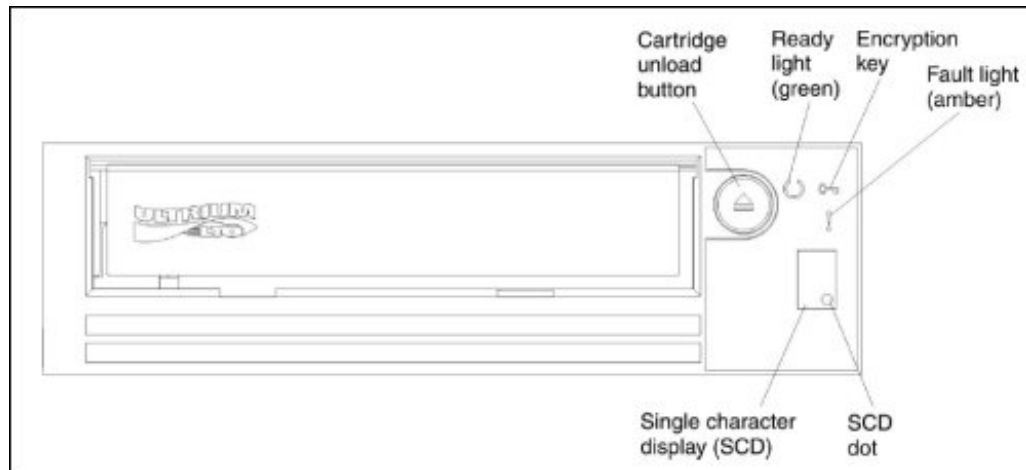


Figure 2. Front panel

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 table lists the supported operating systems for the drives:

**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 5. Operating system support for ThinkSystem Internal Half High LTO Gen7 SAS Tape Drive, 7T27A01503

Operating systems	ST250	ST50	ST650 V2	ST550 (Gen 2)	ST550 (Gen 1)
Microsoft Windows Server 2012 R2	N	N	N	N	Y
Microsoft Windows Server 2016	Y	Y	Y	Y	Y
Microsoft Windows Server 2019	Y	Y	Y	Y	Y
Microsoft Windows Server 2022	N	N	Y	Y	Y
Red Hat Enterprise Linux 6.10	N	N	N	N	Y
Red Hat Enterprise Linux 6.9	N	N	N	N	Y
Red Hat Enterprise Linux 7.3	N	N	N	N	Y
Red Hat Enterprise Linux 7.4	N	N	N	N	Y
Red Hat Enterprise Linux 7.5	Y	Y	N	N	Y
Red Hat Enterprise Linux 7.6	N	N	N	Y	Y
Red Hat Enterprise Linux 7.7	Y	Y	N	Y	Y
Red Hat Enterprise Linux 7.8	Y	Y	N	Y	Y
Red Hat Enterprise Linux 7.9	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.0	Y	Y	N	Y	Y
Red Hat Enterprise Linux 8.1	Y	Y	N	Y	Y
Red Hat Enterprise Linux 8.2	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.3	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.4	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.5	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.6	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.0	Y	Y	Y	Y	N
SUSE Linux Enterprise Server 11 SP4	N	N	N	N	Y
SUSE Linux Enterprise Server 11 SP4 with Xen	N	N	N	N	Y
SUSE Linux Enterprise Server 12 SP2	N	N	N	N	Y
SUSE Linux Enterprise Server 12 SP2 with Xen	N	N	N	N	Y
SUSE Linux Enterprise Server 12 SP3	Y	N	N	N	Y
SUSE Linux Enterprise Server 12 SP3 with Xen	Y	N	N	N	Y
SUSE Linux Enterprise Server 12 SP4	N	N	N	Y	Y
SUSE Linux Enterprise Server 12 SP4 with Xen	N	N	N	Y	Y
SUSE Linux Enterprise Server 12 SP5	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 SP5 with Xen	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15	Y	N	N	Y	Y
SUSE Linux Enterprise Server 15 SP1	Y	Y	N	Y	Y
SUSE Linux Enterprise Server 15 SP1 with Xen	Y	Y	N	Y	Y
SUSE Linux Enterprise Server 15 SP2	Y	Y	Y	Y	Y

	ST250	ST50	ST650 V2	ST550 (Gen 2)	ST550 (Gen 1)
<b>Operating systems</b>					
SUSE Linux Enterprise Server 15 SP2 with Xen	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP3	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 with Xen	Y	N	N	Y	Y
Ubuntu 18.04.5 LTS	N	N	Y	N	N
VMware vSphere Hypervisor (ESXi) 6.7 U3	N	N	Y	N	N
VMware vSphere Hypervisor (ESXi) 7.0 U1	Y	Y	N	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U2	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 7.0 U3	Y	Y	N	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 ThinkSystem Internal Half High LTO Gen7 SAS Tape Drive has 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:

- ServerProven pages for tape drives  
<http://static.lenovo.com/us/en/serverproven/xseries/storage/tmatrix.shtml>

## 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.

© Copyright Lenovo 2022. All rights reserved.

This document, LP0718, was created or updated on March 3, 2021.

Send us your comments in one of the following ways:

- Use the online Contact us review form found at:  
<https://lenovopress.com/LP0718>
- Send your comments in an e-mail to:  
[comments@lenovopress.com](mailto:comments@lenovopress.com)

This document is available online at <https://lenovopress.com/LP0718>.

## 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®

ThinkSystem

The following terms are trademarks of other companies:

Intel® is a trademark of Intel Corporation or its subsidiaries.

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

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

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