

# IBM LTO generation 5 half-high tape drives, T3000V for OEM

*Competitively priced to deliver the highest performance and capacity in a small to midrange open-systems environment.*



---

## Highlights

- Supports the latest generation and highest capacity LTO® media cartridges with a capacity of up to 3.0 TB to help control massive storage growth and demanding costs associated with backup and archiving.
  - Provides data transfer rates of up to 280 MBps<sup>1</sup>, and supports slower speeds through Digital Speed Matching (DSM) to help reduce read/write times.
  - Utilizes AES 256 data encryption<sup>4</sup> in the drive with no impact to drive performance to help prevent unauthorized access to sensitive data at no additional cost.
  - Adaptive data compression, DSM and 256 MB buffer improves drive performance and storage capacity.
- 

Today's enormous growth in data is being fueled by business continuity requirements, regulatory compliance, and information lifecycle management initiatives. Whether your business uses a high-performance network server or individual workstations, archiving and retrieving data in a fast, dependable and consistent manner is mission critical to your business. The IBM System Storage® T3000V Tape Drive is the fifth-generation and highest capacity LTO Ultrium tape drive introduced to address the storage challenges faced by today's IT organizations.

## Greater capacity and speed

IBM's fifth generation of LTO tape drives offer almost twice the capacity and significantly faster throughput than the preceding Ultrium LTO 4 generation of drives. The T3000V Tape Drive is designed for integration into servers, desktop enclosures, autoloaders, and scalable automated tape libraries.

To further increase capacity, Digital Speed Matching (DSM) will adjust the drive's native data rate to better match the data rate of the server. Speed matching has been increased from 7 speeds in LTO4 to 14 speeds in LTO5. This feature, along with a 256 MB buffer, will improve data throughput and reduce tape repositions and wear for times when the host data rate is less than optimal.



In addition, the T3000V Tape Drive uses an IBM-patented compression algorithm to optimize compression speed. The compression algorithm synchronously swaps the data compression scheme dynamically between ALDC (adaptive lossless data compression) and a pass-thru mode. While data compression is being performed, a separate circuit—that performs simultaneous decompression—helps provide data integrity.

### Securing your data

Businesses are proactively focusing on securing sensitive customer and business data. With increasing regulatory and compliance requirements, the need to secure data for audit and compliance purposes has become critical. The T3000V Tape Drive utilizes AES256 encryption and supports write once, read many (WORM) cartridges to help protect your data.

### Compatibility with prior-generation Ultrium media

Compatibility with Ultrium LTO4 and LTO3 tape drives (excluding encryption) and media eases the introduction of these high-performance tape drives into your environment and protects your prior investments in media and tape automation systems. The T3000V Tape Drive is backward read and write compatible with Ultrium 4 media and read compatible with Ultrium 3 media. However by using Ultrium 5 media, which provides almost double the capacity of Ultrium 4 media, you will shorten read/write times, reduce the number of tapes required, and improve the backup window.



The IBM System Storage T3000V Tape Drive is an excellent tape storage solution for businesses requiring backup or low-cost real-time archival of their data within a small window of time. With 2:1 compression, the new T3000V has a storage capacity of up to 3.0 TB. Along with higher capacity, the performance of the T3000V Tape Drive is faster than previous generations of half-high LTO drives achieving a native data transfer rate of up to 140 MB per second, which is 133 percent faster than LTO3 Half High drives. The T3000V Tape Drive provides an excellent alternative to slower and smaller capacity 1/4-inch, 4 mm and 8 mm and DLT/SDLT tape drives as well as older LTO Generation tape drives.

### Flexible attachment

The IBM LTO Ultrium 5 tape drive offers the greatest level of attachment flexibility and the highest attachment speeds of any IBM LTO drive introduced to date. With its 6 Gbps SAS, 8 Gbps Fibre Channel, Ethernet, and RS-422 interfaces, the drives are engineered to perform in numerous environments. This means that when natively attached, the drives' speed and capabilities can be exploited by the server. It also means that the IBM T3000V can be integrated into SANs and libraries (LDI or ADI) through its RS-422 connector or a new Ethernet connector—which allows the drive to respond quickly to library commands and helps avoid contention on the attachment bus.

### Greater data protection with reliability and serviceability

With a focus on overall reliability, the T3000V Tape Drive utilizes advanced independent tape loader and threader motors. This, combined with positive pin retention improvements, increases tape handling reliability while loading tapes, recovering tapes, and extracting tapes after a sudden power down. In addition, the Partial Response Maximum Likelihood (PRML) channel includes an adaptive channel calibration feature. This feature enables the drive to compensate for variations in the media, recording function, and read/write head to optimize interchangeability between LTO drives from other vendors.

For enhanced serviceability, the T3000V Tape Drive captures its error information. These errors are stored in the drive's flash memory so that it can be recalled when needed to minimize troubleshooting time for IT staff and system manufacturers.

Despite the increases in performance, the T3000V tape drive consumes less energy than previous generations of IBM LTO tape drives. Highly integrated electronics use IBM copper-based technology to help reduce energy consumption. These lower energy requirements are particularly important for systems in which heat dissipation must be limited.

### “Green” storage with lower total cost of ownership

Even with the increased speed and capacity of the T3000V Tape Drive, it consumes 48 percent less power than previous generations of IBM LTO tape drives—which is ideal for “green” storage environments and reduced operating costs.

Tape drives are inherently environmentally and economically more friendly than any other storage source. With lower power requirements, lower cooling requirements, and lower costs per gigabyte.

The high performance of the T3000V Tape Drive combined with the high capacity of the Ultrium 5 tape cartridge can reduce the number of tape cartridges, tape drives, and tape libraries required in a storage or archive environment. Together, these all serve to reduce your overall total cost of ownership.

### Features of fifth-generation drives

Building upon the highly successful line of IBM LTO tape drives, the T3000V Tape Drive introduces new features that increase throughput, capacity, and reliability over previous generations of LTO drives, while also providing capabilities to secure critical data.

## Advanced features

Partitioning and Long Term File System—The IBM LTO Ultrium Generation 5 Half-High Tape Drives with LTO Ultrium 5 Tape Media provides partitioning support, which, in conjunction with IBM's unique Long Term File System technology, provides customers the ability to have file-level access to tape data. This unique support helps quickly locate and update information on the tape media.

In addition it provides some of the following benefits:

- Helps provide greater flexibility and access with a self-contained tape data cartridge
- Enables process improvement with sharing of data between different platforms
- Reduces tape, file management, and archive costs by eliminating the middleware layer
- Opens new use cases and business opportunities with entertainment, medical, and manufacturing industries
- Knowledge of what is stored on a tape media cartridge by viewing a directory tree

**Skip sync** - Allows writing to tape with reduced backhitch. This helps increase read/write speed and reliability of tape cartridges.

**LDI/ADI auto detect** - Automatically detects library interface protocol for ease of use.

**LED encryption indicator** - Indicates when data is being encrypted or an encrypted tape cartridge is mounted. It provides visual confirmation for additional security.

**Data safe mode** - Provides R/W protection and prevents accidental overwrite of data. It is similar to WORM and managed at the drive. Has the capability to be enabled/disabled.

**Constant capacity** - Drive media is limited to a maximum of 1.5TB and enables easier tape to tape copy or dual backups.

## Media

You can order media for all your IBM LTO Ultrium tape products from your IBM Representative, or visit:

[ibm.com/systems/storage/media](http://ibm.com/systems/storage/media)

---

**IBM System Storage T3000V Tape Drive at a glance**

---

**Characteristics**

Tape drive type	IBM LTO Ultrium 5
Capacity per cartridge <sup>1</sup>	3.0 TB compressed <sup>1</sup> ; 1.5 TB native
Sustained data transfer rate <sup>1</sup>	Up to 280 MBps compressed <sup>1</sup> ; 140 MBps native
Media type	LTO Ultrium 5, 4 and 3
Data cartridge	LTO Ultrium 5 (rewritable), LTO Ultrium 5 (WORM)
Cleaning cartridge	Universal Cleaning cartridge
Backward compatibility	Read/write compatible with Ultrium LTO4 media Read compatible with Ultrium LTO3 media
Interface	FC-8 or 6 Gbps SAS
Library interface	LDI, ADI over RS422 or Ethernet
Data compression	SLDC (LTO data compression per ECMA-321) <sup>2</sup>
Encryption	AES256
Buffer	256 MB
Rewind speed	Up to 6.33 meters/sec
Operating speed	Up to 6.33 meters/sec
Data rate matching	Digital Speed Matching 40 – 140 MBps

**Physical Characteristics**

Dimensions (with Bezel)	148 mm W x 42.7 mm H x 210 mm D (6 in W x 2 in H x 8 in D)
Weight	1.6 kg (4 lb)
Reliability	
Mean time between failures (MTBF)	250,000 power on hours at 100% duty cycle
Error rate (calculated)	1 x 10 <sup>-17</sup> bytes per permanent read error
Error rate (validated)	1 x 10 <sup>-13</sup> bytes per permanent write error

**Operating environment**

Operating temperature	10° to 45° C (50° to 100° F)
Relative humidity	10% to 80% (non-condensing)
Electrical power (XXX)	T3000V (SAS): 5 V at 3.6 A, 12 V at 0.65 A (steady state)
Power dissipation (XXX)	T3000V (SAS): 6.5 W (idle, with cartridge), 24.0 W (read/write)
Open systems support: (XXX)	Microsoft® Windows® 2000; Microsoft Windows Server® 2003; Sun Solaris 10; HP-UX 11.0, 11i; Linux® (Red Hat Enterprise Server 4, SUSE Linux Enterprise Server 9; AIX® Version 5.1, 5.2, 5.3; and Novell NetWare)
Warranty	Three year mail-in exchange <sup>3</sup>

## For more information

To learn more about IBM LTO Ultrium tape drives, please contact your IBM OEM representative, or visit:

[ibm.com/systems/storage/tape/oem](http://ibm.com/systems/storage/tape/oem)



---

© International Business Machines Corporation 2010

IBM Systems and Technology Group  
Route 100  
Somers, NY 10589

Produced in the United States of America  
April 2010  
All Rights Reserved

IBM, the IBM logo, [ibm.com](http://ibm.com) and System Storage are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at “Copyright and trademark information” at [ibm.com/legal/copytrade.shtml](http://ibm.com/legal/copytrade.shtml).

Linux is a registered trademark of Linus Torvalds in the United States, other countries or both.

LTO and Ultrium are trademarks of Hewlett Packard, IBM and Certance in the United States, other countries or both.

Microsoft and Windows are trademarks or registered trademarks of Microsoft Corporation in the United States, other countries or both.

Other company, product and service names may be trademarks or registered trademarks of their respective companies.

This document could include technical inaccuracies or typographical errors. IBM may make changes, improvements or alterations to the products, programs and services described in this document, including termination of such products, programs and services, at any time and without notice. Any statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only. The information contained in this document is current as of the initial date of publication only and is subject to change without notice. IBM shall have no responsibility to update such information.

IBM is not responsible for the performance or interoperability of any non-IBM products discussed herein. Performance data for IBM and non-IBM products and services contained in this document was derived under specific operating and environmental conditions. The actual results obtained by any party implementing such products or services will depend on a large number of factors specific to such party's operating environment and may vary significantly. IBM makes no representation that these results can be expected or obtained in any implementation of any such products or services.

<sup>1</sup> Based on 2:1 compression.

<sup>2</sup> Prior to the release of ECMA-321, SLDC (streaming lossless data compression) was known as “LTO-DC.” SLDC uses ALDC as its primary data compression scheme, but also has a pass-thru scheme to avoid the expansion of incompressible data—a problem ALDC and most other compression algorithms encounter.

<sup>3</sup> All performance and reliability values are provided “AS IS” and no warranties or guarantees are expressed or implied by IBM. Actual values may vary and depend upon many factors including system hardware configuration and software design and configuration.

<sup>4</sup> Encrypted files cannot be written to prior-generation media.



Please Recycle