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## Highlights

- Increase capacity and performance
  - Optimize data security
  - Protect your technology investment
  - Reduce operating costs
  - Enjoy support for IBM® Linear Tape File System™
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# IBM LTO Ultrium 6 Half High Tape Drive

*Increased capacity and performance for cost- and energy-efficient data protection and preservation*

Organizations have more data than ever before to manage, protect and preserve for longer periods of time. They must balance between mitigating risks and reducing costs when making data management investment decisions. The IBM Linear Tape-Open (LTO) Ultrium 6 Half High Tape Drive is designed to help organizations manage explosive data growth; sustain rapid, reliable access to data; and ensure business resilience.

## Increase capacity and performance

Rapid data growth compounds the need for increased storage capacity and speed. The sixth generation of LTO Ultrium tape drives delivers 2.5 TB native capacity and 576 GB/hour (160 MBps) native data transfer rate to provide fast data backup and recovery and reduce the disruption from a major data loss or outage. The LTO Ultrium 6 Half High Tape Drive offers up to 6.25 TB of compressed data cartridge capacity for even greater efficiency and performance.

## Optimize data security

Organizations must ensure data privacy and protect data from unauthorized access and unintentional loss. Tape cartridge portability facilitates remote, offline data storage, thus providing superior protection from natural or manmade threats that can impact online or onsite data. The LTO Ultrium 6 Half High Tape Drive features device-level data encryption for added security and data protection and supports write-once-read-many (WORM) media cartridges for reduced risk of data loss due to human error.





### Protect your technology investment

Users need to leverage advances in technology while maximizing the useful economic life of prior investments. The LTO Ultrium 6 Half High Tape Drive is read- and write-compatible with Ultrium 5 media and read-compatible with Ultrium 4 media. Users can integrate LTO Ultrium 6 drives with existing tape automation hardware and prior-generation media. Tape

cartridges offer the longest shelf life of any storage medium and reduce the number of hardware replacement cycles required to support long-term data retention.

### Reduce operating costs

By virtue of lower energy costs and lower acquisition cost per gigabyte, tape remains the most economical and environmentally friendly storage technology available. The substantially higher capacity of LTO Ultrium 6 reduces the number of cartridges required for data backup and archival, thereby reducing media storage space requirements.

### Enjoy support for IBM Linear Tape File System

LTO Ultrium 6 supports Linear Tape File System (LTFS), which makes tape storage an even more compelling solution for data protection and preservation. Data files are indexed to facilitate search and retrieval using disk-like directory tree structures and drag-and-drop techniques. Users and applications can directly retrieve files from tape rather than rely on proprietary, third-party applications.

#### IBM LTO Ultrium 6 Half High Tape Drive features and benefits

Feature	Benefits
<b>576 GB/hour (160 MBps) native data transfer rate</b>	<ul style="list-style-type: none"> <li>Faster data backup and retrieval</li> </ul>
<b>2.5 TB native cartridge capacity</b>	<ul style="list-style-type: none"> <li>Ability to store more data as data protection and retention needs grow</li> </ul>
<b>2.5:1 data compression</b>	<ul style="list-style-type: none"> <li>Provides up to 6.25 GB compressed cartridge capacity (more than double that of LTO Ultrium 5)</li> <li>Improves data throughput and reduces media storage space requirements</li> </ul>
<b>Skip sync</b>	<ul style="list-style-type: none"> <li>Reduces backhitching when writing to tape</li> <li>Improves tape cartridge reliability and read/write performance</li> </ul>
<b>Speed matching</b>	<ul style="list-style-type: none"> <li>Dynamically matches tape speed to host data transfer rate</li> <li>Improves tape cartridge reliability and longevity by preventing "shoe-shining"</li> </ul>
<b>Data safe mode</b>	<ul style="list-style-type: none"> <li>Provides device-level write protection; can be enabled/disabled<sup>§</sup></li> <li>Provides additional data security by preventing accidental overwriting of data already on the cartridge</li> </ul>
<b>Partitioning and Linear Tape File System</b>	<ul style="list-style-type: none"> <li>Significantly enhances data access and retrieval</li> <li>Potentially reduces or eliminates software licensing costs and dependencies for data retrieval from tape</li> </ul>

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## IBM LTO Ultrium 6 Half High Tape Drive at a glance

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### Characteristics

Tape drive type	IBM LTO Ultrium 6
Cartridge capacity	2.5 TB native; 6.25 TB with 2.5:1 data compression
Native data transfer rate	160 MBps; 576 GB/hour
Data cartridge	LTO Ultrium 6 (rewritable), LTO Ultrium 6 (Write Once Read Many [WORM])
Cleaning cartridge	Universal cleaning cartridge
Backward compatibility	Read/write-compatible with LTO Ultrium 5 media Read-compatible with LTO Ultrium 4 media
Interface	6 Gbps SAS
Library interface	LDI, ADI over RS422 or Ethernet
Data compression	SLDC (LTO data compression per ECMA-321) <sup>†</sup>
Encryption	AES-256
Buffer	512 MB
Rewind speed	Up to 6.33 meters/sec
Operating speed	Up to 6.33 meters/sec
Data rate matching	Digital speed matching 40–160 MBps

### Physical characteristics

Dimensions (internal drive) (W x H x D)	146 mm x 41 mm x 205 mm (5.74 in. x 1.61 in. x 8.09 in.)
Weight (internal drive)	1.6 kg (3.5 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>14</sup> bytes per permanent read error, 1 x 10 <sup>13</sup> bytes per permanent write error

### Operating environment

Operating temperature	10°C – 38°C (50°F – 100°F)
Relative humidity	10% – 80% (non-condensing)
Electrical power	T3000V (SAS): 5 V at 3.6 A, 12 V at 0.65 A (steady state)
Power dissipation	T3000V (SAS): 6.5 W (idle, with cartridge), 24.0 W (read/write)
Open systems support:	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; IBM AIX® Version 5.1, 5.2, 5.3; and Novell NetWare)
Warranty	Three-year mail-in exchange <sup>†</sup>

## For more information

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

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

To 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)

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Actual available storage capacity may be reported for both uncompressed and compressed data and will vary and may be less than stated.

§ May not meet regulatory requirements in some industries, states or countries.

† 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.

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