Linear Tape Open (LTO)
Ultrium Tape Drives

STORAGETEK™

Highlights

- **Cost-effective capacity**
  With the ability to store up to 400 gigabytes of native data on a single cartridge, you can reduce your media costs and tape drive requirements while accommodating data growth.

- **Reduced backup windows**
  The throughput performance of Linear Tape Open (LTO) Ultrium technology enables you to accelerate backups by processing more information in less time. The LTO Ultrium 3 tape drive moves data at rates as high as 80 megabytes per second, uncompressed.

- **Exceptional performance**
  Capabilities such as speed matching and dual mode compression enhance tape drive performance and product life.

- **SAN-readiness and cross-platform compatibility**
  LTO drives provide a Fibre Channel interface that connects directly to new or existing SANs. Compatibility with leading backup and management software and hardware platforms simplifies storage management.

- **Enhanced data protection**
  Powerful correction and verification capabilities protect data integrity and help prevent data loss. Even if a full track is lost, or up to 32 millimeters of tape is unreadable, all data can be recovered.

- **WORM-capable media integration**
  Secure, manage, and archive critical data records using WORM-capable media and LTO 3 drives.

- **Investment protection**
  LTO 3 drives are backward read/write-compatible with LTO 2 media, as well as read-compatible with LTO 1 media.

> Today's continuous business environment requires that you back up more data in less time. Linear Tape Open (LTO) Ultrium tape drives offer an economical, high-performance option for midrange tape automation environments. LTO drives feature fast data transfer rates and huge capacity so you can handle more data in less time. The high-speed Fibre Channel interface further speeds data movement to shorten backup windows, reduce downtime, and speed recovery. Combined with Sun StorageTek L-Series™ tape libraries and Sun StorageTek Library Admin software, you can easily and affordably store, manage, and protect your growing data.

Sun offers LTO Ultrium tape drives in both full- and half-height platforms. You choose the model that makes the most sense for your operating environment and application. Sun's scalable tape automation solutions were designed to accommodate whatever drive you choose.

Protect your investment with a solid upgrade path

LTO drives feature a four-generation upgrade path so you can make the most of your technology investment. Their open format supports a wide variety of media and automation systems. And the LTO Compliance Verification Entity, an independent company, verifies interchange across LTO vendors and product generations.

Engage the storage experts

Sun StorageTek service professionals help you address storage challenges by delivering integrated services and solutions that optimize and manage storage performance over the life of your data. Our recognized, world-class service and customer care give you confidence that your technology investment is protected and that your business will be responsive to change. We can help you pinpoint opportunities to reduce costs, mitigate business risk, and better leverage information assets. Our consulting and managed services offer clear and simple choices in solutions that address your regulatory concerns, complex storage growth, resource management, and scalability challenges. Covering over 125 countries, more than 2100 dedicated storage service professionals can help you gain and sustain measurable results with the reliability and flexibility that you require.

Make your storage solution decisions even stronger with one of the largest selections of high performance tape media in the industry today. StorageTek tape media features a comprehensive warranty that puts a world class service organization behind your entire Sun storage solution. Quality tape media and reliable service are together in one place. For easy ordering or to speak with a Sun media sales representative, call 1-877-STK-TAPE.

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LTO Ultrium Tape Drives Specifications

Performance	LTO 2	LTO 2V	LTO 3
Tape load and thread	15–24 sec	<19 sec	19 sec
Average access time	64–75 sec	64 sec	72 sec
Maximum/average rewind time	98/49–104/52 sec	121/60 sec	98/49 sec
Unload time	13–19 sec	<19 sec	19 sec
Data transfer rate, native (uncompressed)	32–35 MB/sec[A, B, E]	24 MB/sec	80 MB/sec[A]
Data transfer rate, (compressed, 2:1)	60–70 MB/sec[A, B, E]		160 MB/sec[A]

Capacity			
Capacity, native (uncompressed)	200 GB	200 GB	400 GB

Availability			
Mean time between failures (MTBF)			
Power on	250,000 hr @ 100% duty cycle	250,0000 hr @ 100% duty cycle	250,000 hr @ 100% duty cycle
Uncorrected bit error rate	1×10^{-17}	1×10^{-17}	1×10^{-17}
Undetected bit error rate	1×10^{-27}		1×10^{-27}

Compatibility			
Interface (SCSI)	Single port Ultra 160 SCSI	Ultra 160 SCSI	Ultra 320 SCSI
Channel rate (Fibre Channel)	200 MB/sec (maximum instantaneous)[C, D]		200 MB/sec (maximum instantaneous)[F]
Interface (Fibre Channel)	Single[C], Dual[D], N_ and NL_Port, FC-PLDA (hard and soft AL_PA capability), FC-AL-2, FCP-2, FC-Tape[C, D]		FC-PI, FC-FS, FC-FLA, FC-GS-3, FC-AL-2, FCP-2, FC-Tape, FC-FLA[F]
Read/write compatibility interface	LTO 2, Ultrium proprietary format (read only)	LTO 1, LTO 2	LTO 3, LTO 2, LTO 1 (read only) proprietary format
Emulation modes	LTO 2, Ultrium proprietary format (read only)		LTO 3

Mechanical			
Height	3.25 (8.25 cm)	1.6 in (4.13 cm)	3.25 in (8.25 cm)
Depth	8.0 in (20.3 cm)	8.0 in (20.3 cm)	8.0 in (20.3 cm)

Environmental			
Temperature			
Operating	+50° to +104° F (+10° to +40° C)	+50° to +104° F (+10° to +40° C)	+50° to +104° F (+10° to +40° C)
Non-operating	-40° to +139° – +150° F (-40° to +66° C)	-40° to +139° – +150° F (-40° to +66° C)	-40° to +150° F (-40° to +66° C)
Relative humidity			
Operating	20% to 80%	20% to 80%	20% to 80%
Non-operating	10% to 95%	10% to 95%	10% to 95%

Power			
Voltage (L20, L40, L80)	Varies depending on library specifications	Varies depending on library specifications	varies depending on library specifications
Voltage (L180, L700e)	Varies depending on library specifications	Varies depending on library specifications	varies depending on library specifications
Voltage (L5500)	Varies depending on library specifications	Varies depending on library specifications	varies depending on library specifications

Platform			
	Automation, direct attach, desktop	Direct attach, desktop, 1u mount	Automation, direct attach, desktop, 2u rack mount

A. Continuously variable to 10 megabytes per second to match slower channels using HP Adaptive Tape Speed system (ATS).
B. Auto-adjustable to 17.5 megabytes per second to match slower channels.
C. Specifications are for the IBM StorageSmart T400F drive.
D. Specifications are for the Hewlett-Packard 460 Fibre Channel tape drive.
E. Auto-adjustable to 12 megabytes per second to match slower channels using Certance 13-speed transfer feature.
F. Specifications are for the Hewlett-Packard LTO Ultrium 3 Fibre Channel drive.

Learn more
To learn more about LTO drives,
talk with your Sun representative
or visit www.sun.com/storagetek.

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