

Sun StorageTek™ T10000

Tape Drive



Highlights

- Drive efficiencies. Store more data in the same footprint and shorten backup and recovery windows with capacity of 500 gigabytes uncompressed data and throughput of 120 megabytes per second.
- Reuse media. Use the same StorageTek T10000 tape cartridges for at least two generations by reformatting and reusing tape cartridges with next-generation drives.
- Mitigate risk. Implement device-based encryption with the crypto-ready T10000 tape drive and choose the T10000 tape drive with VolSafe secure media technology for WORM storage.
- Enhance reliability. Protect valuable information with the StorageTek SafeGuide system for tape guiding.
- Support demanding, high duty cycle environments. Optimize operations with dual-head, 32-channel technology, which reduces the number of tape passes and extends head and media life. Boost reliability further with speed matching and dual error correction.



Every organization is challenged by the onslaught of data that must be stored and protected. Around-the-clock operations, regulatory requirements, and evolving customer service needs are just a few of the factors that are driving standards ever higher for reliability and performance. In addition, as you add IT and storage hardware and software, you may incur greater administration and management overhead. New technology should relieve the pressure you're under, not increase it.

The Sun StorageTek™ T10000 tape drive is designed with three results in mind:

- Boost efficiency as a way to reduce cost
- Mitigate risk associated with data protection
- Reduce complexity to improve the use of business information

The StorageTek T10000 tape drive raises the bar on efficiency through advancements in capacity, throughput, and media reusability. It helps mitigate risk through multiple reliability enhancements as well as with encryption and Sun StorageTek VolSafe™ secure media technology. And it introduces simplicity in high duty cycle enterprise and open systems environments by integrating easily with other Sun solutions and third-

party solutions.

Drive efficiency and reduce total cost of ownership

Greater efficiency contributes to lower total cost of ownership. At 500 gigabytes and 120 megabytes per second, the T10000 more than doubles the capacity and highest native throughput of the previous generation, the Sun StorageTek T9940 tape drive. You can use fewer cartridges and optimize both space and cost. Shrink backup windows and/or use one drive to perform the work of two.

In addition, you can protect your investment in media. Reformat and reuse StorageTek T10000 tape cartridges with the next-generation tape drive to take advantage of higher capacity and faster throughput.

Boost reliability, data integrity — and your confidence

The StorageTek T10000 tape drive and the T10000 tape cartridge include advanced technology that minimizes wear on both drive and media. As a result, your backups, archiving, and recoveries should be more reliable and experience fewer failures.

- The 32-channel, dual-head design extends head and media life by reducing the number of tape passes.
- Speed-matching functionality supports high throughput rates and reduces media wear. The T10000 design includes two motor speeds and a 256-megabyte buffer that allows the drive to continuously and automatically adjust the buffer to match the speed of the data feed from the server.
- Dual error correction code reduces data errors, minimizes the chance of data loss, and improves data retrieval effectiveness.
- The Sun StorageTek SafeGuide™ system, which is the tape guiding system of the T10000, protects the media — and your data.
 - The buckler mechanism securely attaches the cartridge leader to the drive leader.
 - The long tape path guides the media more accurately and reduces tape tension, which can cause wear on the heads and media.
 - The tape guides contact only the back side of the media not the recording surface, minimizing lateral tape motion and protecting data integrity.
- A unique cartridge hub-lock design maintains media stability.
- The airflow design cools the electronics by pulling air under, not across, the tape path. This approach minimizes contamination.

Respond confidently to compliance requests

With StorageTekVolSafe secure media technology, you can support compliance initiatives confidently with an industry-leading write once, read many (WORM) solution. VolSafe technology works in all of the enterprise T-Series™ tape drives without requirements for special hardware, staff, or operating procedures. Designed to help meet the stringent electronic storage regulatory requirements, including those of the Securities and Exchange Commission, VolSafe technology offers a non-erasable and non-rewritable medium. To increase data protection for disaster recovery purposes, store tape cartridges offsite.

Enable encryption implementation

The 4 gigabit crypto-ready T10000 tape drive is designed to simplify data security and mitigate risk by providing device-level encryption, which requires no infrastructure changes or decryption software. The Sun encryption solution is easy to implement, and device-level encryption provides the easiest way to decrypt data over time. Data can be compressed prior to encryption so you can optimize storage capacity. With tape-based encryption, you add an extra measure of protection when tape cartridges are stored offsite or if they should be lost.

Reduce complexity

Enable a managed storage environment. The T10000 works seamlessly with the latest Sun StorageTek enterprise automation such as the StorageTek StreamLine™ SL8500 modular library system from Sun, with the StorageTek PowderHorn® 9310 tape library, and with most third-party solutions. Attach the drive using either Fibre Channel or FICON connectivity. Achieve proactive, call-home functionality via the optional StorageTek Service Delivery Platform

monitoring solution.

Add up the advantages of a total solution

The StreamLine SL8500 modular library system in combination with StorageTek Any Cartridge Any Slot™ technology for StreamLine library system allows you to support tiers of storage — both high capacity and fast access using the T10000 tape drive with the StorageTek T9840 tape drive or midrange drive technologies. To support near-zero unscheduled downtime, drives can be upgraded without disruption to normal operations and tape drives and other components are hot-swappable.

Finally, through the library management software of the SL8500, you can share drives and optimize multiple resources. This high-density solution does more than save floor space. It expands your ability to address nearline data storage and retrieval for large, data-intensive applications (such as imaging) within the same solution you use to back up users' data across the company.

Simplify media migration

StorageTek Data Center Services, within Sun's StorageTek Professional Services organization, offers comprehensive and customized media services and solutions that are designed to accomplish the following results:

- Optimizing media to reduce downtime, risk, and maintenance
- Helping you manage archived data to comply with federal regulations
- Improving management, accessibility, and availability of information stored on removable media
- Managing change with minimal disruption and costs

Media conversion services help you move data in optical, tape, and disk formats to new or different technology that offers higher capacity, lower cost, and/or lower risk. Convert WORM optical to WORM tape using VolSafe technology, for example, or consolidate large amounts of data stored offsite onto newer high-capacity tapes.

Tape relocation services streamline data center relocation, rack relocation, and rack pre-placement to expedite relocation. Tape degaussing and destruction services, which can be completed at secure onsite or offsite locations, include disposals that comply with local environmental regulations and certificates of destruction.

Select StorageTek tape media

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.

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.

Learn More

To learn more about T10000 tape drives, talk with your Sun representative or visit www.sun.com/storage

Sun StorageTek T10000 Tape Drive Specifications

Performance

Access time	(see footnote)*
Tape load and thread	16 sec
Average file access (includes load/thread)	62 sec (28 sec for Sport Cartridge)
Maximum rewind	91 sec (23 sec for Sport Cartridge)
Average rewind	48 sec (13 sec for Sport Cartridge)
Unload time	23 sec
Data transfer rate, native (uncompressed)	120 MB/sec
Data transfer rate, (compressed, maximum)	360 MB/sec (4 Gb Interface)

Capacity

Capacity, native (uncompressed)	500 GB (120 GB for Sport Cartridge)
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Availability

Archive life	30 years
Uncorrected bit error rate	1×10^{-19}
Loads/unloads	15,000

Compatibility

Interface	2/4 Gb Fibre, FICON
Burst transfer rate	400 MB/sec (4 Gb Interface)
Channel rate (Fibre Channel)	400 MB/sec (4 Gb Interface)
Interface specifications (Fibre Channel)	N and NL port, FC-AL-2, FCP-2, FC-tape, 4 Gb FC
Read/write compatibility interface	Proprietary format
Emulation modes	3592 (MVS) and 3490 (VSM)

Mechanical

Height	3.5 in. (8.89 cm)
Depth	16.75 in. (42.55 cm)
Width	5.75 in. (14.61 cm)

Environmental

Temperature	
Operating	+50° to +104° F (+10° to +40° C)
Non-operating (storage)	+50° to +104° F (+10° to +40° C)
Shipping	-40° to +140° F (-40° to +60° C)
Relative humidity	
Operating	20% to 80%
Non-operating	10% to 95%

Tape format

Recording format	Linear serpentine
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Power

Voltage	88-264 VAC @ 48-63 Hz
Power consumption/dissipation	58 W (drive only)
(operating maximum continuous — not peak)	90 W (including power supply)/420 BTU/hr

* The actions of the tape drive can be divided into four distinct phases:

Phase 1: Load time — the amount of time required to insert a cartridge in the drive, load the tape, and prepare to read, write, or search.

Phase 2: Average file access time — the amount of time required to search from the beginning of the tape to the midpoint; does not include load time.

Phase 3: Maximum rewind time — the amount of time required to rewind the tape from the end to the beginning of the tape. The average rewind time is the time to rewind a tape from the midpoint to the beginning, i.e. one-half of the maximum rewind time.

Phase 4: Unload time — the amount of time required to eject the cartridge from the drive.