

# IBM LTO 9 Tape Drive Data Sheet

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## Highlights

- Store up to 1EB per 18-frame library with 2.5:1 compression
- Store up to 39PB compressed in 10-sq-ft library with LTO 9 tape drives
- Achieve 45TB compressed capacity per cartridge, 50% better than LTO 8
- Support for new and field merge LTO 9 drives into 3584 models L55 and D55
- Execute faster restores with 400MB/s transfer rate, 11% better than LTO 8
- Retrieve data 73% faster with Open Recommended Access Order (oRAO)
- Enable intuitive and graphical access to data with IBM Spectrum Archive
- Get better protection with Physical Air Gap adding a barrier to hackers
- Avoid data corruption with Data immutability with WORM capabilities
- Prevent data visibility with AES-256-bit data encryption at rest

## Ninth generation LTO Ultrium, full-height internal tape drive

Storage requirements have inevitably grown alongside rising data volumes in today's information-driven enterprises. Besides primary storage, backups have become increasingly important for disaster recovery and regulatory compliance. IBM LTO 9 Tape Drive answers those business needs by incorporating the latest generation of industry-leading LTO technology that will help organizations handle the growing data demands of modern tape use cases like big data, cloud computing, Internet of Things (IoT), media and entertainment, digital video surveillance, active file archiving and, of course, for backup.

IBM LTO 9 tape drive provides even higher capacity than the previous generation. For midsized and enterprise businesses requiring backup and low-cost archival storage of data, IBM LTO 9 tape drive is an excellent tape-storage solution, providing a physical storage capacity of up to 45 TB per cartridge (with 2.5:1 compression).



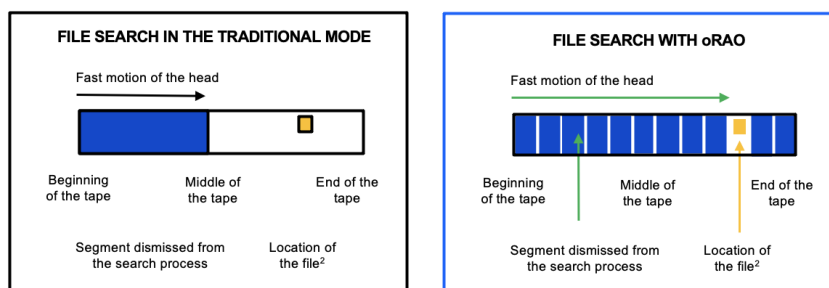
*IBM LTO 9 Tape Drive Full-height*

The drive boasts an uncompressed data transfer rate of up to 400 MBps with 12 Gbps SAS and 8 Gb FC interface connectivity. For flexible network integration, this compact external drive offers both two SAS ports and one Ethernet port, and can be rack mounted or used in stand-alone configuration. The dual SAS ports allow daisy-chaining a second SAS device.

**Introducing Open Recommended Access Order (oRAO) to LTO 9 technology**

A key challenge when proposing an infrastructure based on tape technology is the battle with disk drive performance. While accessing disk files seems instant from a user's point of view, access time to tape files is significantly higher, raising to several minutes for a series of files. If large volumes are being traded, this issue becomes a serious performance bottleneck and optimizations are queried in order to balance the numbers. The new LTO 9 tape drive technology is designed to optimize tape performance with the introduction of Open Recommended Access Order (oRAO). The new IBM LTO 9 Tape full height drives obtain up to 73% faster data retrieval access<sup>1</sup> to your LTO Ultrium 9 tape cartridges while reducing wasted movement of the tape media and tape robotics, reduction of tape drive and media wear without an extra cost to the existing library.

**Up to 73% faster data access retrieval with IBM LTO 9 tape drive when working larger volumes of data**



*Improve file access and recall times with IBM LTO 9 tape drive*

## Advanced features

The IBM LTO 9 tape drive 12 Gbps SAS interface enables it to connect to a wide spectrum of open-system servers. The LTO Ultrium 9 tape media provides partitioning support, which, in conjunction with IBM Spectrum Archive, provides users with file-level access to tape data. This support helps users quickly locate and update information on the tape media. LTO Ultrium 9 technology is also designed to natively support data encryption, with core hardware encryption and decryption capabilities resident in the LTO Ultrium 9 tape drive itself.

## Software support

Management solutions such as IBM Spectrum Protect or third-party storage management software can extend the power of IBM LTO 9 tape drive. IBM Spectrum Archive helps simplify access and management of IBM LTO 9 tape drive by enabling text-based file tagging, enabling more intuitive searches of drive content. This software creates an efficient “data footprint” to dynamically store every bit of data, helping maximize performance and ensure security.

Archiving enables storage of digital assets for the long term, so assets can be referenced and monetized for years to come. IBM Spectrum Archive supports the tape-oriented LTFS and helps reduce complexity by enabling a graphical user interface to the tape drive’s contents using the operating system file manager. These features together help make tape-based data as easy to find and access as disk- or flash-based data. In addition, LTFS-capable tape drives are designed to be interchangeable among compatible LTO tape drives and supported operating systems, so administrators do not have to worry about hardware or software compatibility. With LTFS, managers can quickly access, store or archive files on tape, and transport files to and from different locations in a very easy to use format. Anyone who needs fast and reliable access to inactive, ‘cold,’ data—like movie and music producers, post production editors, broadcasters, digital video surveillance managers, and cloud and storage managers—now has an affordable solution to access and more easily archive high-quality files. LTFS opens the door to new uses and applications for LTO Ultrium tape, making tape easy and intuitive.

## Media

IBM LTO 9 tape drive supports the LTO Consortium compressed specification for LTO Ultrium 9, offering up to 45 TB of data storage per cartridge (18 TB native), more compressed capacity of the previous LTO Ultrium 8 cartridges. In addition to reading and writing to LTO Ultrium 9 tape cartridges, IBM LTO 9 tape drive can read and write to LTO Ultrium 8 cartridges. IBM LTO 9 tape drive supports the self-describing features of LTO tape cartridges for operational simplicity.

**IBM LTO 9 Tape Drive at a glance**

Available configuration	Model 3588 Fibre Channel Drives F9C & F9S and SAS Drives S9C —One LTO Ultrium 9 full height internal tape drive
Interface	12 Gb SAS or 8 Gb FC
Tape drive type	LTO Ultrium 9
Physical capacity	18 TB native; 45 TB with 2.5:1 compression
Number of tape drives	1
Number of tape cartridges	1
Data transfer rate	Up to 400 MBps native SAS and 700MBps FC with 2.5:1 compression
Media Type	Read and Write LTO Ultrium 9 <ul style="list-style-type: none"> <li>• 18 TB data cartridge</li> <li>• 18 TB WORM cartridge</li> </ul> LTO Ultrium 8 <ul style="list-style-type: none"> <li>• 12 TB data cartridge</li> <li>• 12 TB WORM cartridge</li> </ul> LTO Ultrium cleaning cartridge
Weight	3.29 kg (7.25 lb)
Power Requirements	100 – 240 V ac, 50 – 60 Hz auto-ranging
Dimensions	Width: 156 mm (6.1 in) Depth: 366 mm (14.4 in) Height: 84.76 mm (3.3 in) Weight: 3.29 kg (7.25 lb)
Warranty	Three-year limited warranty, customer replaceable unit (CRU) and on-site service in most countries, next-business-day 9x5, service upgrades available

*IBM LTO 9 Tape Drive at a glance*

Operating systems support [See the IBM System Storage Interoperation Center](#)

<sup>1</sup>Based on IBM internal testing of like User Data Sets, not all users will see these levels of performance improvements as optimization varies according to the number of segments retrieved. Source: *Tsuyoshi Miyamura and Osamu Matsumiya, IBM LTO 9 Tape Drive RAO Performance Position Paper, May 2021.*