

IBM TotalStorage® Ultrium® Tape Family





Leverage the technology

The challenge of finding a way to safely store the massive quantities of generated data is not subsiding. Because information is piling up at an exponential rate, more data must be backed up and stored more quickly. Storage solutions must support multiple sources of media. They must enable data interchange among multiple vendors' products. And they must be able to evolve as quickly as storage needs evolve. A robust, reliable, affordable Linear Tape-Open™ (LTO®) format with excellent storage capacity and speed can help address today's demanding storage requirements.

LTO technology evolved as three of the world's leading storage providers—IBM, Hewlett Packard and Certance (formerly Seagate Removable Storage Solutions)—jointly initiated an open approach to tape format, cartridges and interchange.

By using open standards and being supported by multiple vendors, LTO offers customers not only more choices, but also a clear performance and capacity growth path intended to help protect customers' investments.

Designed for high capacity and data transfer rates, the LTO Ultrium format supports a technologically solid migration path that allows for great expandability. In fact, the Ultrium format roadmap defines four successive generations, doubling performance and capacity with every generation.¹

The Ultrium format is supported by the LTO Technical Provider Companies (www.ultrium.com) and is backed by a number of hardware and media licensees. These licensees must adhere to a stringent format verification process to determine that their Ultrium drive and media cartridge conform to these specifications. The ultimate goal? To offer a truly open standard that supports data interchange among multiple vendors' products, scalable growth and investment protection.

Ultrium tape solutions are designed from the ground up to offer performance, resiliency and reliability—add flexibility, ease of management and price/performance, and you get world-class products and low total cost of ownership (TCO) as well.

¹ The LTO roadmap represents plans and directions only. Products incorporating later generations in the roadmap may never become available.

Gain an edge—become on demand-ready

Becoming an on demand business is about finding new ways to grow, adapt and respond in a dynamic business environment while managing costs. IBM LTO tape systems are designed to provide outstanding levels of reliability that can help you better manage your computing resources. Designed to provide high-capacity and high-performance capabilities, IBM TotalStorage Ultrium tape solutions are well-suited for backup, restore and archive applications in midrange and enterprise-class environments. They are designed to offer the performance, resiliency and reliability needed to support operations in an e-business on demand™ environment.

Realize the IBM heritage

IBM has a long and successful history of revolutionizing data storage. In fact, IBM introduced the first tape drive in 1952 and the first disk drive in 1956. Since then, IBM has continued to invent much of today's most advanced storage technology. The IBM LTO Ultrium tape drive is simply one of the many IBM storage products to leverage this track record of innovation and experience.



Choose IBM LTO

IBM LTO Ultrium drives share advanced technologies. Advanced multi-track recording capabilities, state-of-the-art magneto-resistive (MR) flat lap heads and a surface control guiding system are designed to work together to support extremely high recording densities. The flat lap head is designed to help improve contact between the read/write recording elements and the tape, supporting high-quality recording and read-back of your data. The surface control guiding system guides tape across the read/write recording heads, using the surface of the tape and not the tape edges. This feature is intended to help improve the longevity of the tape while minimizing the chance of physical damage to the tape media. Error-correction code (ECC) helps support data integrity and a Statistical Analysis and Reporting System supports preventive diagnostic reporting, helps determine drive and media status and helps improve drive and system availability.

IBM Ultrium 2 drive enhancements, compared to Ultrium 1 and other tape drives, include 200GB native capacity (400GB at 2:1 compression) for double capacity and 512 data tracks to help achieve higher capacities and throughput. Digital speed matching (DSM) helps support higher throughput, especially for smaller and uncompressible files. Power management (sleep mode) helps lower power requirements and thus can help reduce operational costs, while channel calibration customizes read/write channels for optimum performance.

Select the right solution from diverse offerings

Regardless of your business size—small, medium or enterprise—an IBM Ultrium tape solution is available to help address your storage requirements. These solutions range from affordable, external stand-alone tape drives to a modular, highly scalable automated library that addresses the large, unattended storage requirements of today's midrange and enterprise open system environments.

Deliver storage networking value

Designed for long-term investment protection and growth, IBM Ultrium tape products are optimized for storage area networks (SANs) and engineered to deliver storage that can help improve the way your business uses data. With multiplatform support, the product family is SAN-ready and handles the basics well. One of the most common uses of LTO tape or tape libraries is for backup. By utilizing SAN-based tape for backups, the backup workload can be separated from application servers and the network, and distributed across the SAN. In addition, IBM Ultrium tape products can help address the demanding SAN backup requirements of capacity, speed and reliability.

A worldwide network of superior sales and technical support services backs every IBM TotalStorage product.



Tap into the power

As you build applications for customer service, operations, billing and so forth, you will need reliable storage products. To help address these demanding requirements, IBM Ultrium tape products can store your data and offer scalability, investment protection and reliability. They are also well suited for storage, backup and retrieval in the digital media and life sciences industries because of their high capacity and streaming data rates.

Match the power

	3580	3581	3582	3583	3584
Product	LTO Ultrium Tape Drive	LTO Ultrium Tape Autoloader	LTO Ultrium Tape Library	LTO Ultrium Scalable Library	LTO Ultrium UltraScalable Tape Library
Product strengths	Open systems attach, high capacity, fast data transfer, desktop footprint	Open systems attach, multiplatform, high capacity, optional barcode reader	Open systems attach, multiplatform, scalable, high capacity, direct-to-SAN attach	Open systems attach, multiplatform, scalable, high capacity, direct-to-SAN attach	Open systems attach, multiplatform, ultra-scalable, high capacity
Technology	Longitudinal Serpentine	Longitudinal Serpentine	Longitudinal Serpentine	Longitudinal Serpentine	Longitudinal Serpentine
Number of Heads/Tracks	Ultrium 2: 8/512 Ultrium 1: 8/384	Ultrium 2: 8/512 Ultrium 1: 8/384	Ultrium 2: 8/512	Ultrium 2: 8/512 Ultrium 1: 8/384	Ultrium 2: 8/512 Ultrium 1: 8/384
Number of Drives	1	1	1-2	1-6	1-192
Max Number of Cartridges	1	7	24	72	6,881*
Cartridge Capacity Native/compressed	Ultrium 2: 200/400GB Ultrium 1: 100/200GB	Ultrium 2: 100/400GB Ultrium 1: 100/200GB	Ultrium 2: 200/400GB	Ultrium 2: 200/400GB Ultrium 1: 100/200GB	Ultrium 2: 200/400GB Ultrium 1: 100/200GB
Max System Capacity Compressed	Ultrium 2: 400GB Ultrium 1: 200GB	Ultrium 2: 2.8TB Ultrium 1: 1.4TB	Ultrium 2: 9.6TB	Ultrium 2: 28.8TB Ultrium 1: 14.4TB	Ultrium 2: 2.75PB Ultrium 1: 496TB
Max Drive Data rate	Ultrium 2: 35/70MB/sec Ultrium 1: 15/30MB/sec	Ultrium 2: 35/70MB/sec Ultrium 1: 15/30MB/sec	Ultrium 2: 35/70MB/sec	Ultrium 2: 35/70MB/sec Ultrium 1: 15/30MB/sec	Ultrium 2: 35/70MB/sec Ultrium 1: 15/30MB/sec

*Max number of cartridges decreases as tape drives are added.



Pay as you grow with IBM @server xSeries LTO tape products

Designed for tape automation, the IBM 3607 Series 1.6TB/3.2TB LTO Tape Autoloader can help improve data protection by exploiting consolidated, shared and networked storage technologies, complementing IBM @server™ xSeries® enterprise-class server installations. The 3607 features lights-out backup, simplified restoration and disaster recovery capabilities. Its mailslot feature is designed for quick insertion or extraction of cartridges without interrupting operations, and is an excellent choice if you need high-speed tape backup for moderate to high-capacity storage requirements.

The IBM Modular Tape Library serves as the base unit of a modular tape library solution for your IBM @server xSeries system. Well-suited for companies with rapidly growing data environments, this library module can accommodate up to two LTO or SDLT tape drives, and can support up to 26 SDLT tape cartridges or up to 30 LTO tape cartridges. The base unit supports mixing LTO and SDLT tape drives in a single library. The IBM Modular Tape Library allows your company to start small with a single base library and “pay as you grow,” adding new capacity as needed.

Protect your data

Data is a key corporate asset. When you record your data to a storage medium, you want reliability. The linear tape format is time-tested. Its mechanical design and simplicity mean tape drives use few moving parts, providing durability and low maintenance costs. Enhanced servo positioning and head design allow data to be written to tape with precision for improved reliability. The ECC used in IBM Ultrium tape products is powerful enough to ensure reliable recovery of data—even with the loss of a track or head, in many cases.



Maximize the power

When you choose IBM, you choose a company that can provide end-to-end solutions. From PCs to complex networks and large systems, individual tape drives to ultrascaleable libraries, printers to software, IBM has a solution. In fact, given that most companies are experiencing explosive data growth, the ability to share large, robust solutions will become even more critical. You can maximize the power of IBM Ultrium tape products by managing them with industry-leading tape management solutions, such as IBM Tivoli® Storage Manager or other industry-recognized storage software.

Build for the future

A worldwide network of superior sales and technical support services backs every IBM TotalStorage product. These services provide a migration path that helps tie the past to the present and paves the road to the future. IBM Technical Service and Support leverages more than 40 years of data storage design and development knowledge to provide you with a global support network—one that offers focused local support capabilities to expedite system development at all stages, from conception to warranty repair. In addition to customer support, qualification and integration assistance, IBM offers a range of financing options, education and consulting services designed to provide complete data storage solutions to meet your evolving storage needs.

You also can visit an IBM TotalStorage Solution Center for a hands-on test drive of IBM storage solutions. IBM works with IBM Business Partners and other leading technology companies to deliver the right storage solutions for your business to succeed in today's dynamic marketplace.

With IBM as your technology provider, you can take advantage of the new and emerging technologies that have become critical to business success.



For more information

For more information about LTO or IBM Ultrium tape products, contact your IBM representative or IBM Business Partner, or visit **ibm.com/totalstorage/lto**.

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GB equals one billion bytes when referring to hard drive capacity; accessible capacity may be less.

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