



IBM TotalStorage Ultrium Tape 2U Autoloader 3581 Models L28 and F28 stores more data

Overview

The new IBM TotalStorage® Ultrium Tape 2U Autoloader 3581

Models L28 and F28 offer high capacity, performance, and technology designed for the midrange open systems environment. These models incorporate a single Linear Tape-Open (LTO) IBM TotalStorage Ultrium 2 Tape Drive, which more than doubles tape drive performance over the previous generation LTO Ultrium 1 Tape Drives (Ultrium 1), up to 35 MB/sec native data transfer rate (70 MB/sec with 2:1 compression). In addition, with the use of the new IBM TotalStorage LTO Ultrium 200 GB Data Cartridge, the Ultrium 2 Tape Drive has the capability of writing twice as much data, up to 200 GB native capacity (400 GB with 2:1 compression). IBM Ultrium 2 Tape Drives can read and write original LTO Ultrium Data Cartridges at original Ultrium 1 capacities and with an improved performance of up to 20 MB/sec native data transfer rate (40 MB/sec with 2:1 compression). The Model L28 comes with a LVD Ultra160 SCSI attachment, while the Model F28 comes with a Native Switched Fabric Fibre Channel attachment, for connection to a wide spectrum of open systems servers.

The Ultrium Tape 2U Autoloader 3581 is an external 2U stand-alone or rack-mountable unit that incorporates a single IBM LTO Ultrium 2 tape drive. The Ultrium Tape 2U Autoloader 3581 capacity is eight tape cartridges, providing a media capacity of up to 1.6 TB (3.2 TB with 2:1 compression) data storage per unit.

Other Ultrium 2 Tape Drive functions include:

- Digital speed matching — to adjust the drive data rate with the host, which reduces backhitching and improves throughput performance
- Power management — to reduce power consumption
- Channel calibration — to customize each read/write data channel for optimum performance
- Separate writing of multiple filemarks — to improve performance when writing multiple files
- Larger internal buffer — the internal buffer size is 64 MB, double the buffer size of the Ultrium 1 drives
- Faster drive speeds — faster data access time, reduced rewind time, reduced cartridge load time, and faster cartridge fill time compared to the Ultrium 1 drives

Key Prerequisites

Appropriate levels of host software are required to attach the Ultrium Tape 2U Autoloader 3581 with IBM LTO Ultrium 2 Tape Drives to selected IBM @server iSeries™, AS/400®, IBM @server pSeries®, RS/6000®, RS/6000 SP™, IBM @server xSeries®, Netfinity®, HP, Sun, Windows™ 2000, Windows 2003, Linux, and other UNIX® and PC servers. Refer to the Technical information section for details.

Planned availability date

May 7, 2004

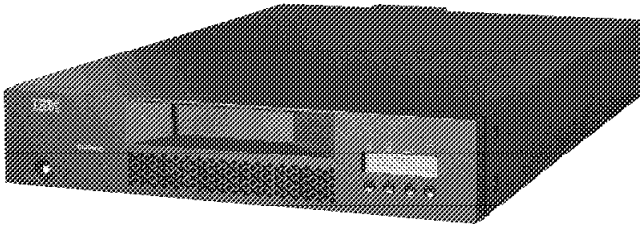
At a Glance

The Ultrium Tape 2U Autoloader 3581 combines IBM tape and automation reliability at open systems prices. The new Models L28 and F28 support entry level unattended backup, open systems attachment flexibility, enhanced capacity and performance, and include:

- LVD (Model L28) and HVD (Model L28 with HVD Converter Kit #3104), Native Switched Fabric 2 Gbps Fibre Channel (Model F28)
- LTO Ultrium 2 native data capacities up to 1.6 TB (up to 3.2 TB using 2:1 compression) with eight cartridge slots
- Use of LTO Ultrium 2 Tape Drive with a drive data rate of 70 MB/second (2:1 data compression)
- Optional bar code reader and/or remote management unit
- Sequential or random access
- Stand-alone or rack-mount option

This announcement is provided for your information only. For additional information, contact your IBM representative.

Description



The Ultrium Tape 2U Autoloader 3581 is an external stand-alone or rack-mountable unit and contains a Linear Tape-Open (LTO) Ultrium tape drive designed for the heavy demands of backup tape storage. The Ultrium Tape 2U Autoloader 3581 capacity is eight tape cartridges, providing a media capacity of up to 1.6 TB (3.2 TB with 2:1 compression) data storage per unit. It is supported for Small Computer Systems Interface (SCSI) for Fibre channel attachment to iSeries, AS/400, pSeries, RS/6000, xSeries, Netfinity, HP, Sun, Linux, UNIX, and PC servers.

The new Ultrium Tape 2U Autoloader 3581 Models L28 and F28 incorporate the IBM LTO Ultrium 2 Tape Drive. The IBM LTO Ultrium 2 Tape Drive is the second generation LTO Ultrium Tape Drive in the IBM TotalStorage LTO Ultrium family of products. The Ultrium 2 Tape Drive offers the following significant improvements over the Ultrium 1 Tape Drive:

- Tape drive performance is more than doubled, up to 35 MB/sec native data transfer rate (70 MB/sec with 2:1 compression). IBM Ultrium 2 Tape Drives can read and write original LTO Ultrium Data Cartridges at original Ultrium 1 capacities and with improved performance up to 20 MB/sec native data transfer rate (40 MB/sec with 2:1 compression).

Note: Although the Ultrium Tape 2U Autoloader 3581 provides the capability for high tape performance, the actual throughput is a function of many components, such as system processor, disk data rate, data block size, data compressibility, I/O attachments, and the system or application software used. For example, the HVD Ultra SCSI converter interface has a maximum data transfer rate of 40 MB/sec, so Ultrium Tape Drives on that SCSI interface will have a lower data transfer rate. The compression technology used in the tape drive can typically double the amount of data that can be stored on the media; however, the actual degree of compression achieved is highly sensitive to the characteristics of the data being compressed.

- The tape cartridge capacity is doubled over the original Ultrium Data Cartridge up to 200 GB native capacity (400 GB with 2:1 compression), with the use of the new IBM TotalStorage LTO Ultrium 200 GB Data Cartridge. Both cartridges have been designed to provide several enhancements over previous tape technologies. They are designed to work with tape drives that have increased tape speeds and high-density data recording. The tape itself is an advanced metal particle tape developed for durability and capacity.
- Digital speed matching —The Ultrium 2 Tape Drive will perform dynamic speed matching to adjust the drive's native data rate as closely as possible to the net host data rate (after data compressibility has been factored out). This offers the dual benefit of reducing the number of backhitch repositions and improving throughput performance.

- Power management —The Ultrium 2 Tape Drive power management function controls the drive's electronics to be either completely turned off or to be in a low-power mode. These power modes occur only when the circuit functions are not needed for drive operation.
- Channel calibration — The Ultrium 2 Tape Drive channel calibration feature allows for customization of each read/write data channel for optimum performance. The customization enables compensation for variations in the recording channel transfer function, media characteristics, and read/write head characteristics.
- Separate writing of multiple filemarks — Separate writing of multiple filemarks causes any write command of two or more filemarks to cause a separate data set to be written containing all filemarks after the first. This feature has two advantages. First, it can improve performance if a subsequent append overwrites somewhere after the first filemark. Second, write of multiple filemarks typically indicates a point where an append operation might occur after the first of these filemarks. This change prevents having to rewrite datasets containing customer data and the first filemark in cases if such an append occurs.
- Ultrium 1 cartridge compatibility —The Ultrium 2 Tape Drive can read and write on Ultrium 1 cartridges with improved transfer rates.
- LVD Ultra160 SCSI and HVD Ultra SCSI attachment — The Model L28 comes with an LVD Ultra160 SCSI attachment, while the HVD Converter Kit (#3104) provides an HVD Ultra SCSI attachment, for connection to a wide spectrum of open system servers. The Model F28 comes with native switched fabric 2 Gbps Fibre Channel attachment. They are supported on AIX®, OS/400®, Sun Solaris, HP-UX, Microsoft™ Windows 2000, Windows 2003, Linux, and other open systems.
- Larger internal data buffer —There is a 64 MB internal data buffer in the Ultrium 2 Tape Drive as compared to a 32 MB internal data buffer in the Ultrium 1 Tape Drive.
- Faster cartridge fill times (for both Ultrium 1 and Ultrium 2 data cartridges) —The Ultrium 2 Tape Drive can fill an Ultrium 200 GB data cartridge 12% faster, with a sustained data rate 128% better when compared to the Ultrium 1 Tape Drive filling an Ultrium 100 GB data cartridge. The Ultrium 2 Tape Drive can fill an Ultrium 100 GB data cartridge 25% faster, with a sustained data rate 33% better, when compared to the Ultrium 1 Tape Drive. The Ultrium 2 Tape Drive can fill an Ultrium 200 GB data cartridge in 1 hour 44 minutes with a sustained data rate of 122.8 GB per hour. The Ultrium 2 Tape Drive can fill an Ultrium 1 100 GB data cartridge in 1 hour 29 minutes with a sustained data rate of 71.9 GB per hour. The Ultrium 1 Tape Drive can fill an Ultrium 1 100 GB data cartridge in 2 hours with a sustained data rate of 53.8 GB per hour.
- Faster data access, rewind, and load times — The Ultrium 2 Tape Drive has the following improvements:

	Ultrium 2	Ultrium 1
Cartridge Load Time	15 seconds	18 seconds
Maximum Rewind Time	80 seconds	110 seconds
Average File Access Time	49 seconds	73 seconds

IBM LTO Ultrium 1 features enhanced in IBM LTO Ultrium 2 Tape Drive include:

- Servo and track layout technology — There are 512 data tracks in Ultrium 2 versus 384 data tracks in Ultrium 1.
- Surface Control Guiding Mechanism — IBM's patented Surface Control Guiding Mechanism guides the tape along the tape path in the Ultrium Tape 2U Autoloader 3581. This method uses the surface of the tape, rather than the edges, to control tape motion. This results in less tape damage (especially to the edges of the tape) and less tape debris, which comes from the damaged edges and can accumulate in the head area.
- Magneto Resistive (MR) head design — Use of flat lap head technology in MR heads for Ultrium 2 minimize contact and wear on the tape as it moves over the read/write heads.
- LTO Data Compression (LTO-DC) — The Ultrium 2 uses LTO-DC which is an implementation of a Lempel-Ziv class 1 (LZ-1) data compression algorithm. LTO-DC is an extension of Adaptive Lossless Data Compression (ALDC) and an improvement over previous lossless compression algorithms. As users of LTO-DC, you can expect to achieve better data compression.
- LTO Cartridge Memory (LTO-CM) — Contained within the LTO Ultrium data cartridge is the LTO-CM, which is a passive, contactless silicon storage device that is physically a part of the cartridge. The LTO-CM is used to hold information about that specific cartridge, the media in the cartridge, and the data on the media. The storage capacity of the LTO-CM is 4,096 bytes. Communication between the drive and the LTO-CM is via a low-level RF field transmitted by the drive to the cartridge.
- Statistical Analysis and Reporting System (SARS) — The Ultrium 2 Tape Drive uses SARS to assist in isolating failures between media and hardware. SARS uses the cartridge performance history saved in the CM module and the drive performance history kept in the drive flash EEPROM to determine the cause of failure. SARS can cause the drive to mark the media as degraded, and to indicate that the hardware has degraded.

With support for IBM LTO Ultrium-format tape data cartridges, the Ultrium Tape 2U Autoloader 3581 provides an excellent migration path from digital linear tape (DLT or SDLT) 1/4-inch, 4mm, or 8mm/AIT tape drives. It is a cost-effective solution for backup, save and restore, and archiving functions.

Additional information

All offers are subject to availability. IBM reserves the right to alter product offerings and specifications at any time without notice. IBM is not responsible for photographic or typographic errors.

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Product Positioning

As you compare competitive tape solutions, consider:

- Capacity and performance requirements
- Data protection, reliability, and availability
- Storage usage and application requirements
- Affordability
- Loyalty to legacy or existing tape formats

The Ultrium Tape 2U Autoloader 3581 and storage management applications address these requirements

and constitute a functionally rich tape storage solution incorporating LTO Ultrium tape technology. You also gain flexibility of tape library management and unattended save and restore operations. The IBM TotalStorage Ultrium Tape 2U Autoloader 3581 is an excellent solution if you use tape or require a larger-capacity or higher-performance tape backup with or without random access. The 3581 models are an excellent choice for tape automation for pSeries, RS/6000, iSeries, AS/400, xSeries, and other popular open systems.

The Ultrium Tape 2U Autoloader 3581 offers one IBM TotalStorage LTO Ultrium 2 Tape Drive and eight cartridge slots with an autoloader capacity of 3.2 TB (with 2:1 compression) or 1.6 TB native.

The 3581 can be the answer to growing storage requirements and shrinking backup windows, and is part of a family of IBM TotalStorage LTO Ultrium tape products. The Ultrium Tape 2U Autoloader 3581 constitutes an excellent tape storage solution if you have an existing digital linear tape experience or require high-performance automated tape backup. In addition to reading and writing on IBM LTO Ultrium-format tape cartridges, the Ultrium Tape 2U Autoloader 3581 provides an enhanced functional alternative to DLT/SDLT 1/4-inch, 4mm, 8mm/AIT, or IBM Magstar® MP 3570 tape drives.

For capacity requirements less than 400 GB (compressed), the external IBM TotalStorage Ultrium Tape Drive 3580 should be considered.

For capacity requirements greater than 3.2 TB (compressed), the new IBM TotalStorage Ultrium Tape Library 3582 should be considered with its one or two IBM Ultrium 2 tape drives and 23 cartridge slots, with a capacity of 4.8 TB native to 9.6 TB (compressed) in an entry-level automation library.

For capacity requirements greater than 7.2 TB (compressed) and scalable drives and numbers of cartridges, the IBM TotalStorage Ultrium Scalable Tape Library 3583 and IBM TotalStorage UltraScalable Tape Library 3584 should be considered. You can tailor the TotalStorage Ultrium Scalable Tape Library 3583 to address system capacity and performance needs of 7.2 TB, 14.4 TB, and 28.8 TB (with 2:1 compression), on 3583 Models L18, L36, and L72 respectively, using up to six IBM LTO Ultrium tape drives. The IBM TotalStorage UltraScalable Tape Library 3584 can address system capacity and performance requirement from 28 TB to 496 TB (56 TB to 992 TB with 2:1 compression) using up to 192 IBM Ultrium tape drive in up to sixteen 3584 library frames.

For protection of mission-critical data and hardware, optimized for enterprise multi-mode and host attachment, high-cycle and start/stop intensive tape applications, consider the IBM TotalStorage Enterprise Tape Drive 3590 or 3592 or the IBM TotalStorage Enterprise Automated Tape Library 3494.

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