



IBM TotalStorage 3584 Tape Library now supports the 3584 High Availability Frame Model HA1 and the 3588 Tape Drive

Overview

The **IBM TotalStorage® 3584 Tape Library** is designed to be a highly scalable, automated tape library repository combining IBM automation technology and high-performance IBM tape drives for the midrange to enterprise open systems environment. The 3584 Tape Library now supports the IBM TotalStorage Ultrium 3 Tape Drive, which more than doubles tape drive performance over the generation 2 IBM LTO Ultrium Tape Drive (Ultrium 2), up to 80 MB/sec native data transfer rate. In addition, with the use of the new IBM TotalStorage LTO Ultrium 400 GB Data Cartridge, the Ultrium 3 Tape Drive doubles the tape cartridge capacity up to 400 GB native physical capacity (800 GB with 2:1 compression). IBM LTO Ultrium 3 Fibre Channel Tape Drive integration is with the **IBM TotalStorage 3588 Ultrium Tape Drive Model F3A**, through its own unique machine type and model, in new or installed 3584 Tape Library Models L52 and D52 and also in installed 3584 Tape Library Models L32 and D32.

Library availability, reliability, and performance enhancements are also being introduced for the 3584 Tape Library with the addition of the **3584 High Availability Frame Model HA1**. This model, in conjunction with service bay features on the 3584 Models D22 and D52, provides for the installation of a second library accessor that is designed to help improve library availability and cartridge mount performance of the 3584 Tape Library. Both accessors are designed to operate simultaneously and service mount requests in the 3584. Each active accessor is designed to pick up the activities of the other accessor, should it require servicing.

These enhancements continue IBM's dedication, engineering leadership, and investment protection for the 3584 Tape Library and its IBM TotalStorage family of product offerings.

Product preview

IBM intends to introduce and support Write Once, Read Many (WORM) functionality in products featuring IBM TotalStorage LTO Ultrium 3 Tape Drives. Earlier non-WORM generation 3 drives can be upgraded for WORM support via an update of the firmware to use the new generation 3 WORM Media cartridge as it is made available. Products will be fully compliant to the LTO generation 3 standard for WORM functionality.

Previews provide insight into IBM plans and direction. Specific availability dates, ordering information, and terms and conditions will be provided when the product functionality is announced.

Key prerequisites

Appropriate levels of host software are required to attach the 3584 Tape Library with the 3588 or 3592 Tape Drives to selected IBM @server® i5 or iSeries™, AS/400®, IBM @server® p5 or pSeries®, RS/6000®, RS/6000 SP™, IBM @server® xSeries®, Netfinity®, IBM @server® zSeries® Linux™, Sun, Microsoft™ Windows™ 2000 or Windows 2003, Linux, and other UNIX® and Intel™ servers. Refer to the **Technical information** section for details.

Planned availability date

March 4, 2005

At a glance

The IBM TotalStorage 3584 Tape Library is now enhanced with a new model and new capabilities including:

- Integration of the new IBM Ultrium 3 Tape Drive, the 3588 Tape Drive Model F3A with improved performance
- New IBM TotalStorage Ultrium 400 GB Data Cartridge with increased cartridge capacity
- New Model HA1 High Availability Frame (as a Service Bay A frame) including support for a second accessor to help improve library availability and performance
- Model D52 and D22 Service Bay B options which provide a second accessor and are designed to allow adding frames with minimal disruption

For ordering, contact:

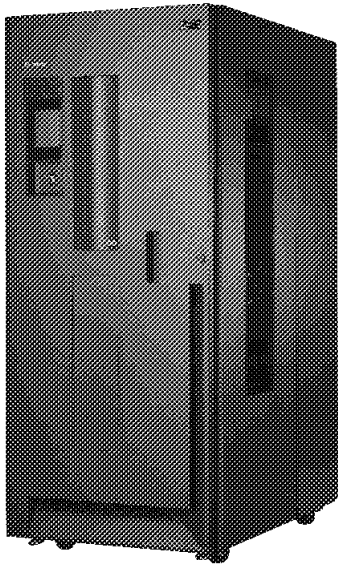
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Reference: YE001

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Description



The IBM TotalStorage 3584 Tape Library is part of a family of tape library storage solutions designed for the large, unattended storage requirements from today's midrange systems to high-end open systems. Each aspect of the subsystem is designed to optimize access to data and reliability. The 3584 Tape Library supports the IBM TotalStorage LTO Ultrium Tape Drives and the IBM TotalStorage 3592 Enterprise Tape Drive. IBM LTO Ultrium tape drives are compact storage devices designed to support the highly intensive read and write operations required by today's open system servers. The IBM Ultrium 3 Tape Drive is the third generation of LTO Ultrium tape drives in the IBM TotalStorage LTO Ultrium family of products. Ultrium 3 Tape Drives and data cartridges can be resident in the same 3584 Tape Library frame with Ultrium 2 or Ultrium 1 Tape Drives and data cartridges, and adjacent frames can have 3592 Tape Drives and data cartridges.

The 3592 Tape Drives are designed to provide high levels of performance, functionality, and cartridge capacity supporting the 3592 tape format, including Write Once Read Many (WORM) media support. The 3584 supports mixed media in the same library by supporting the intermix of Models D22, D52, and D32 within a 3584 library. Input/Output (I/O) stations are located on Models L22, L52, and L32 to facilitate tape loading and unloading.

The 3584 Tape Library is designed to provide an excellent network data backup/archive solution. With the granularity and scalability to follow your requirements from a few servers to hundreds of clients, from gigabytes to terabytes, this powerful pairing can grow with you, helping protect your investment.

3584 High Availability Frame Model HA1

The 3584 High Availability Frame Model HA1 is designed to improve the performance and availability of the 3584 Tape Library. The Model HA1, in conjunction with service bay features on the 3584 Models D22 and D52, provide for the installation of a second library accessor that is designed to operate simultaneously with the first accessor and service mount requests in the 3584 Tape Library at the same time. It is designed to non-disruptively failover to a redundant accessor when any component of either accessor fails, which helps maintain availability and reliability. Additionally, this

design includes the ability to add one or more Model D52 or D22 Frames to a 3584 Tape Library that has an attached Model HA1 with minimal disruption.

Dual active accessor support is provided in a mixed media library. This includes any combination of 3592 and LTO Ultrium media types. For example, a single library may have 3592, Ultrium 1, Ultrium 2, and Ultrium 3 media installed and configured. Advanced Library Management Systems (ALMS) will be required for support of dual accessors and two or more 3584 frames are required in a high availability configuration.

A dual accessor library will have two garage areas called service bays. Service Bay A (the 3584 High Availability Frame Model HA1) is to the left of and adjacent to the L-frame, when facing the front door. Service Bay B (a modified 3584 Model D22 or D52) is to the right of the last active frame in the library. The service bays will be regular library frames but they will not have any drives, power supplies, or node cards. Storage slots within the service bays will only be used to test service actions.

The actual performance of the 3584 Tape Library is determined by a number of factors, such as: accessor capacity, number of library frames, number of tape drives, location of tape drives and tape cartridges, and tape cartridge residency.

3588 Tape Drive Model F3A

The IBM TotalStorage 3588 Tape Drive Model F3A is a new machine type and model providing integration of IBM LTO Ultrium 3 Tape Drives in the 3584 Tape Library and offers enhancements in performance, capacity, and reliability over today's IBM Ultrium 2 Tape Drives. Continuing to build on the success and acceptance of IBM LTO Ultrium Tape technology, the 3588 Tape Drive incorporates the new Linear Tape-Open (LTO) IBM TotalStorage Ultrium 3 Tape Drive, which more than doubles maximum tape drive throughput data rate performance over the IBM LTO generation 2 Tape Drive (Ultrium 2), up to 80 MB/sec native data transfer rate (160 MB/sec with 2:1 compression). In addition, with the use of the new IBM TotalStorage LTO Ultrium 400 GB Data Cartridge, the 3588 doubles the tape cartridge capacity up to 400 GB native physical capacity (800 GB with 2:1 compression). IBM Ultrium 3 Tape Drives can read and write LTO Ultrium 2 Data Cartridges and read LTO Ultrium 1 Data Cartridges. The 3588 Model F3A comes with a single port 2-Gbps native Fibre Channel interface, for connection to a wide spectrum of open system servers.

The new Fibre Channel 3588 Tape Drives and LTO Ultrium 3 data cartridges are supported in both newly purchased 3584 Model L52 and D52 frames and installed 3584 Model L52, L32, D52, and D32 frames with the same capabilities as are provided for hot-swap Ultrium 2 drives today. In addition, the following capabilities are provided:

- Ability to configure Ultrium 1, Ultrium 2, and Ultrium 3 tape drives in the same frame and/or the same logical library
- Ability to distinguish between Ultrium 1, Ultrium 2, and Ultrium 3 Tape Drives on all user interfaces (using inquiry data), on the front of the drive, and at the rear of the drive canister
- Ability to maintain the Ultrium 3 drive serial number during a FRU replacement in the same manner that the 3592 drive serial number is maintained

Other Ultrium 3 Tape Drive enhancements include:

- New dual stage 16 channel head actuator — designed to provide precision head alignment to help support

higher track density and improved data integrity and backwards compatibility with previous LTO generations

- New independent tape loader and threader motors and positive pin retention — designed to help improve drive reliability
- Graceful dynamic braking — designed to maintain tension to help prevent stretching or breaking the tape and loose tape wraps
- Larger internal buffer — the internal buffer size has been doubled over Ultrium 2 to 128 MB
- Highly integrated electronics using IBM engineered copper technology — designed to provide a more reliable drive

For details on the 3588 Model F3A Tape Drive, refer to Hardware Announcement 105-063, dated February 15, 2005.

Fibre Channel connectivity

Tape drives in the 3584 Tape Library Models L22, L52, D22, and D52 are designed to connect to host systems using Fibre Channel interfaces. An LTO Ultrium Tape Drive with Fibre Channel interface or 3592 Tape Drive can be selected for attachment to host systems and servers utilizing Fibre Channel adapters. Fibre Channel connection distances up to 500 meters are possible. By utilizing selected Fibre Channel switches, distances exceeding 500 meters are possible.

Advanced 3584 Tape Library features

Features such as Multi-Path Architecture, ALMS, L-frame Capacity on Demand, Control Path Failover, and Data Path Failover and Load Balancing, are all supported with 3584 Tape Library announcements of 3588 Tape Drive (Ultrium 3) integration and 3584 High Availability Frame Model HA1.

IBM TotalStorage LTO Ultrium 400 GB Data Cartridge

The tape cartridge capacity of the IBM TotalStorage LTO Ultrium 400 GB Data Cartridge has doubled over the IBM TotalStorage LTO Ultrium 200 GB Data Cartridge to 400 GB native physical capacity (800 GB with 2:1 compression). IBM Ultrium 3 Tape Drives can read and write Ultrium 2 (200 GB) data cartridges and read Ultrium 1 (100 GB) data cartridges. Ultrium 1, Ultrium 2, and Ultrium 3 data cartridges can be resident in the same 3584 Tape Library frame.

The 400 GB physical capacity is designed to help reduce solution costs and improve space utilization. Up to 80 MB/sec native throughput on Ultrium 3 tape drives helps reduce backup windows and speed data recovery. The proven durability of the cartridge helps reduce worry. Cartridge Memory (LTO-CM) can help enable fast, simultaneous transfer of cartridge-dependent data with IBM Ultrium 3 Tape Drives during media load and unload cycles.

The IBM LTO Ultrium 400 GB Data Cartridge is a cost effective media offering that increases cartridge capacity over the IBM LTO Ultrium 200 GB Data Cartridge and can help reduce the amount of equipment, space, and human intervention required for daily tape operations. In addition, reducing the number of cartridges needed for backup and restore operations can help lower operational costs throughout the enterprise. The new blue-gray cartridge color helps distinguish it from previous generations of IBM LTO media.

Product positioning

As you compare competitive tape solutions, consider:

- Library scalability: 1 to 16 active frames, 1 to 192 tape drives, 58 to 6,887 cartridge slots
- Capacity, performance, and library management requirements
- Data integrity, reliability, and availability
- Storage usage and application requirements
- Affordability
- Loyalty to legacy or existing tape formats, including LTO and 3592 drive technology
- Server attachment and operating system support

The 3584 Tape Library and IBM software applications excel in addressing these requirements and can constitute a functionally rich tape storage solution incorporating LTO Ultrium and 3592 tape technology. You also gain flexibility of automated tape library management and unattended save/restore operations.

The 3584 Tape Library models are a smart choice for tape automation for IBM @server® p5 and pSeries, RS/6000, IBM @server® i5 and iSeries, AS/400, IBM @server® zSeries Linux, IBM @server® xSeries, and other popular open systems. The IBM 3584 utilizes the patented Multi-Path Architecture, designed to allow homogeneous or heterogeneous open systems applications to share the library robotics, with ALMS for storage slot pooling and flexible drive assignment. Additional 3584 features include: Capacity on demand entry library frames, LTO and 3592 drive technology choices and integration, dual active accessors, and 16-frame expansion.

The 3584 Tape Library with 3592 Model J1A Tape Drives should be considered when:

- Both LTO and 3592 tape drives are required in the same library.
- A lower capacity, lower price library than the IBM TotalStorage Enterprise Tape Library 3494 is needed.
- A smaller footprint, higher density library than the 3494 is desired.
- ESCON® or FICON™ connections are not required.

The 3584 Tape Library Base Frame Model L52 offers 64 to 287 slots for LTO Ultrium tape cartridge media and up to 12 IBM LTO Ultrium Fibre Channel Tape Drives. It is designed to provide excellent price/performance in the open systems environments.

The 3584 Tape Library Base Frame Model L22 offers 58 to 260 slots for 3592 tape cartridge media and up to 12 IBM 3592 Tape Drives. The 3592 Tape Drives are designed to provide high capacity, performance, and reliability in open systems environments with tape drive flexibility to accommodate capacity as well as fast access where these requirements are needed.

Up to 16 3584 Tape Library Expansion Frame Models D22, D32, or D52 can be added to either the Model L22, L32, or L52. The Model D22 provides up to 400 cartridge slots for 3592 media, and can contain up to 12 3592 Tape Drives. The Model D32 provides up to 440 slots for Ultrium media, and can contain up to 12 Ultrium 1 or 2 Tape Drives. The Model D52 provides up to 440 slots for LTO media, and can contain up to 12 Ultrium Fibre Channel Tape Drives. When a Model HA1 is attached, the

last Model D22 or D52 in the 3584 Tape Library functions as a Service Bay B for the second accessor.

The 3584, part of a family of IBM TotalStorage LTO Ultrium tape products, is the answer to growing storage requirements and shrinking backup windows.

If you have existing digital linear tape experience or require high-performance automated tape backup, the 3584 Tape Library constitutes an excellent tape storage solution. The IBM LTO Ultrium Tape Drives in the 3584 Tape Library provide an excellent functional alternative to DLT/SDLT, 1/4-inch, 4mm, 8mm, or IBM Magstar® MP 3570 tape drives.

For capacity requirements less than 25 TB (native), a wide spectrum of tape libraries are available from the IBM TotalStorage Ultrium Tape family of products, depending on your customer's storage usage and requirements. Tape automation products to choose from include the IBM TotalStorage 3582 and 3583 Tape Libraries and the IBM TotalStorage 3581 Tape Autoloader.

For mission-critical data protection needs, optimized for enterprise multimode and host attachment, high-cycle and start/stop intensive tape applications, consider the proven IBM TotalStorage 3592 Tape Drive with the IBM TotalStorage 3584 Tape Library or the IBM TotalStorage 3494 Tape Library.

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Reference information

- The 3588 Model F3A, Hardware Announcement 105-063, dated February 15, 2005
- The 3584 Models D22, D52, L22, and L52, Hardware Announcement 104-135, dated April 27, 2004
- The IBM TotalStorage Enterprise Tape Drive 3592 Model J1A, Hardware Announcement 103-235, dated September 9, 2003
- The improved functions and expanded attachment to 16 frames in the UltraScalable Tape Library 3584, Hardware Announcement 103-171, dated June 3, 2003
- The Ultrium 2 Tape Drive in the UltraScalable Tape Library 3584, Hardware Announcement 103-004, dated January 28, 2003
- Expanded I/O and remote library access features for the UltraScalable Tape Library 3584, Hardware Announcement 101-165, dated June 12, 2001
- Native Fibre Channel Support for the UltraScalable Tape Library 3584, Hardware Announcement 101-041, dated February 20, 2001
- The UltraScalable Tape Library 3584, Hardware Announcement 100-237, dated August 23, 2000

Business Partner information

If you are a Direct Reseller - System Reseller acquiring products from IBM, you may link directly to Business Partner information for this announcement. A PartnerWorld ID and password are required (use IBM ID).

BP Attachment for Announcement Letter 105-061

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=105-061>

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IBM US Announcement Supplemental Information

February 15, 2005

Publications

The following publications are shipped with the product. Additional copies are available. To order, contact your IBM representative:

Title	Order number
IBM TotalStorage® 3584 Tape Library Introduction and Planning Guide	GA32-0469
IBM TotalStorage 3584 Tape Library Operator Guide	GA32-0468
IBM Ultrium Device Driver Installation and User's Guide (English)	GA32-0430
IBM TotalStorage Tape Device Driver Installation and User's Guide (English)	GA35-0154
Translated Safety Notices for External Storage Devices	SA26-7197

The publications listed above and the following publications are also available at

<http://www.ibm.com/servers/storage/tape/ito>

- IBM TotalStorage 3584 Tape Library SCSI Reference (English) (GA32-0454)
- IBM Ultrium Device Driver Programming Reference (English) (GC35-0483)

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<http://www.elink.ibm.com/public/applications/publications/cgibin/pbi.cgi>

The publications listed on the notification can be ordered by calling the Pubs Support Group in Raleigh at 800-879-2755, option 1.

The IBM Publications Center Portal

<http://www.elink.ibm.com/public/applications/publications/cgibin/pbi.cgi>

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Note that PNS subscribers most often order their publications via the Publication Center.

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For details on available services, contact your IBM representative or visit

<http://www.ibm.com/services/>

For details on education offerings related to specific products, visit

<http://www.ibm.com/services/learning/index.html>

Select your country, and then select the product as the category.

Technical information

Specified operating environment

Physical specifications

- Width: 782 mm (30.8 in)
- Depth: 1212 mm (47.7 in)
- Height: 1800 mm (70.9 in)
- Weight: 261 kg (575 lb)

Operating environment

- Temperature: 16° to 32°C (61° to 90°F)
- Wet bulb (temperature): 23°C (73.4°F) operating
- Relative humidity: 20 to 80 percent
- Caloric value: None
- Electrical power: None
- Capacity of exhaust: None
- Leakage current: None
- Inrush current: None

The 3584 tape library is classified as a Category 1 product as defined in C-S 1-1710-006. The following table shows the maximum (operating/idle) Sound Power Level (in bels) and the average 1 meter bystander Sound Pressure Level (in dB) for Model L22 or L52:

- Sound power level (LwAd):
 - Idle: 7.2 bels

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- Operating: 7.5 bels
- Sound pressure level:
 - Idle: 54 dB(A)
 - Operating: 56 dB(A)

Hardware requirements

3584 Model HA1

The 3584 High Availability Frame Model HA1, in conjunction with a service bay feature on the 3584 Model D22 or D52, provide for the installation and operation of a second library accessor in a 3584 Tape Library. The 3584 Model HA1 itself provides only a frame, that serves as the Service Bay A for the original accessor that came with the 3584 Model Lxx. The second accessor is provided by ordering the Service Bay B Configuration and Dual Accessor feature (#1440) on a 3584 Expansion Frame Model D22 or D52. When this feature is ordered on Model D22 or D52, that Model D22 or D52 frame will now be reserved and function as Service Bay B for the second accessor. It will not be available for customer tape drives or cartridges. This feature should initially be installed on a new Model D22 or D52 frame that is added to the 3584 Tape Library with the order of the Model HA1. As subsequent frames are added to the 3584 Tape Library, the last frame in the library will function as the actual Service Bay B. The feature number 1440 does not need to be moved to the last frame in the library, but needs to be on one frame in the library with a Model HA1. If you order a second accessor (by ordering #1440 on a Model D22 or D52), you must also order a 3584 High Availability Frame Model HA1 (as the Service Bay A). If a Model HA1 is present in a 3584 Tape Library, there must also be a minimum of two Model Dxx frames attached to the library (one of which will function as the Service Bay B).

When a 3584 Model HA1 is installed in a 3584 Tape Library, the following feature numbers must be added to the 3584 Model L22, L32, or L52 in that library:

- 1690 — Advanced Library Management System (if not already present)
- 9003 — Additional Expansion Frame Attachment (at least one additional frame to serve as Service Bay B)
- 9040 — High Availability Library

Each 3584 Tape Library configuration containing a Model HA1 requires a different set of X-Track cables for the dual accessors in the library, depending on the total number of frames in that 3584 Tape Library. The following feature number must be ordered every time the number of attached frames is changed (either added or removed) in a 3584 Tape Library that has a Model HA1:

- 1840 — Change HA X-Track Cable

This feature number will enable the proper X-Track cables to be shipped based on the presence of feature number 9040 and the quantity of feature number 9003 on the Model Lxx Frame.

Note: Feature number 1840 is not required with the first installation of a Model HA1. It is only required when the number of attached frames is changed after the installation of the Model HA1.

3588 Tape Drive

The 3584 Tape Library family now supports installation of the IBM TotalStorage Ultrium 3 Tape Drive. IBM LTO Ultrium 3 drive integration is accomplished with the 3588 Ultrium Tape Drive Model F3A. For detailed information on the 3588 Tape Drive, refer to the 3588 Sales Manual.

The 3588 can be installed in 3584 Models D32, D52, L32, or L52. Up to 12 3588 Tape Drives can be installed in one of these frames (for a total of up to 192 Ultrium Tape Drives in a 16 frame library). The 3588 Tape Drives can be installed and intermixed within the same frame with other Ultrium 1 or 2 Tape Drives.

The 3588 Tape Drives have a 2-Gbps Fibre Channel interface for either point-to-point or Fibre Channel-Arbitrated Loop attachment. An LTO Fibre Drive Mounting Kit feature (#1504) is required on a 3584 Frame to install a 3588 Tape Drive. The 3588 Tape Drive Model F3A must be ordered separately, and is designed for customer setup in the 3584 Tape Library. One of the following features should be ordered on the 3584 frame into which a 3588 Model F3A Tape Drive will be installed:

- 9678 — 3588 Drive Plant Install — one feature should be specified on both the 3588 Tape Drive and the 3584 frame coming from the plant for each tape drive that will be installed in the 3584 frame by the plant
- 9679 — 3588 Drive Field Install — one feature should be specified on the 3584 frame coming from the plant or ordered for an installed 3584 frame for each tape drive that will be field installed in that 3584 frame

The 3588 Model F3A is designed for customer setup. However, if the customer desires assistance with the field installation, the following feature can be ordered on the 3584 frame (one feature for each drive that is needed):

- 1678 — 3588 Field Install Assist

Customer-owned 3588 Tape Drives or 3588 Tape Drives removed from a 3584 library frame can be installed in another 3584 frame. A LTO Fibre Drive Mounting Kit feature (#1504) is required for installing a 3588 Tape Drive in a drive slot in a 3584 Model D32, D52, L32, or L52 frame.

Labeled or bulk quantities of LTO Ultrium cartridges can be ordered using machine type 3589 or purchased through distributors. Refer to the **Supplies** section for additional information.

Note: The 3584 requires that cartridges have appropriate bar code labels.

A 3588 Tape Drive in the 3584 Tape Library can be attached to i5, iSeries™, p5, pSeries®, xSeries®, AS/400®, RS/6000®, RS/6000 SP™ systems, Netfinity®, and non-IBM servers, workstations, and personal computers that support Fibre Channel interfaces.

A current list of supported open system configurations for the 3588 Tape Drive is available from the following Web site

<http://www.ibm.com/servers/storage/tape/lto>

Select “LTO Support,” then the “Interoperability Matrix and Software ISVs,” and view the “Supported Servers and Operating Systems” for the product.

Cables: Cables are required to attach tape drives in the 3584 Tape Library to each server connection (up to the number of tape drive attachments installed). One or more of the following Fibre Channel cables should be specified on the frame.

Fibre Channel cables: A Fibre Channel cable is required to attach a 3588 Tape Drive, LTO Ultrium 2 Fibre Drive Canister (#1479), or 3592 Tape Drive in the 3584 Tape Library via the Fibre Channel patch panel feature (#1462), to host Fibre Channel adapters, the IBM 2109 SAN Fibre Switch, or other Fibre Channel components. The cable can be customer supplied or ordered with the 3584 Tape

Library in the lengths shown. The attaching Fibre Channel cable must be a 50.0/125 micrometer short wavelength fiber-optic cable for distances up to 500 meters. These tape drives come with LC Duplex connectors. One 2.0 meter LC-LC Fibre Channel drive-to-patch panel cable is included with each Fibre Mounting Kit (#1503 or #1504). If additional cables are required, for example, to attach the second interface on a 3592 Tape Drive, they can be ordered with the following feature number:

- 1461 — Additional LC/LC Patch Panel Cable

Features available for Fibre Channel cables, and their respective lengths, are available with the following feature numbers:

- 5907 — 7 m SC-LC Fibre Channel Cable
- 5913 — 13 m SC-LC Fibre Channel Cable
- 5922 — 22 m SC-LC Fibre Channel Cable
- 5961 — 61 m SC-LC Fibre Channel Cable
- 6005 — 5 m LC-LC Fibre Channel Cable
- 6013 — 13 m LC-LC Fibre Channel Cable
- 6025 — 25 m LC-LC Fibre Channel Cable
- 6061 — 61 m LC-LC Fibre Channel Cable

An interposer is available to connect a tape drive or server LC Duplex adapter to a SC Duplex cable with the following feature number:

- 5096 — Interposer SC-LC Fibre

Software requirements: The 3584 Model HA1 and 3588 Tape Drive in the 3584 Tape Library are supported on the following operating systems at the minimum levels indicated:

- OS/400® V5R1, V5R2, V5R3, or later
- AIX® 5L V5.1, V5.2, V5.3, or later
- Sun Solaris 8 or 9
- Microsoft™ Windows™ 2000 (build 2195, or greater)
- Microsoft Windows 2003 (build 3790, or greater)
- HP-UX 11.00 and 11i (64 bit)
- Linux™ distributions: Red Hat Enterprise Linux Version 3 and SUSE LINUX Enterprise Server 8 (SLES 8)

For a current list of host software versions and release levels that support the 3588 in the 3584, refer to the following Web site

<http://www.ibm.com/servers/storage/tape/compatibility/pdf/3584opn.pdf>

The installation of a 3588 Tape Drive may require code updates for supported open systems device drivers or storage management software. Per the *Solutions Assurance Product Review (SAPR) Guide*, the account team or Business Partner should ensure that the customer checks the support levels required for their particular software environment prior to the installation of the 3588 Model F3A. A Solutions Assurance call is required at a minimum for the installation of the first new 3588 in an account.

An update of the open systems device drivers can be obtained via anonymous FTP from

<ftp.software.ibm.com>

Look under the directory `storage/devdrv`.

Further information can be found in the *IBM TotalStorage Tape Device Driver Installation and User's Guide* (GC35-0154), also available at the above FTP site.

Tivoli® Storage Manager and other compatible software offerings provide storage and tape management software for the 3584. Supporting software and applications must be obtained separately from IBM, IBM Business Partners, or ISVs. A list of compatible software is available from your IBM representative or at

http://www.ibm.com/servers/storage/tape/compatibility/pdf/lto_isv_matrix.pdf

IBM continues to work together with ISVs to support the UltraScalable Tape Library 3584. Individual application vendors should be contacted for specific information and availability dates. Consult with ISV providers for their support of mixed drive types and media types in the same logical library.

Compatibility: The LTO Ultrium 400 GB Data Cartridges are physically the same size as all previous LTO Ultrium Data Cartridges, and can therefore reside in the same 3584 library frames as those cartridges.

The 3588 Tape Drives can read and write LTO Ultrium 2 Data Cartridges and can read original LTO Ultrium Data Cartridges. The LTO Ultrium 400 GB Data Cartridges can only be used on the 3588 Tape Drives.

The 3588 Tape Drive and LTO Ultrium 3 cartridges can be resident in the same 3584 Tape Library with IBM LTO Ultrium 2 Tape Drives and cartridges, IBM LTO Ultrium 1 Tape Drives and cartridges, or with 3592 Tape Drives and cartridges.

Limitations

- Although the compression technology can increase the amount of data stored on the media, the actual degree of compression achieved is highly sensitive to the characteristics of the data being compressed.
- Fibre Channel cable lengths are limited to 500 meters (1650 ft).
- Although multiple systems may be attached to a tape drive, the systems cannot use the drive simultaneously.
- LTO Ultrium data cartridges cannot reside in the same library frame with 3592 data cartridges.

Planning information

Customer responsibilities: Physical planning is a customer responsibility. Detailed planning information is in the *IBM TotalStorage 3584 Tape Library Introduction and Planning Guide* (GA32-0469). Current levels of the open systems device drivers should be obtained to ensure the 3588 Model F3A is supported.

Customers are responsible for obtaining the appropriate adapters, cables, and interposers (if required) for system attachment. Customers are also responsible for ordering media.

To utilize the remote support facility, phone lines need to be installed close to the 3584 Tape Library.

Cable orders: Cables are required to attach tape drives in the 3584 Tape Library to each server connection (up to the number of tape drive attachments installed). If no host attachment cables are required to be shipped with 3584 frame from the plant, then the No Host Cables From Plant feature (#9700) should be specified on the frame. Refer to **Cables** in the **Hardware requirements** section for a list of cables for the 3588 Tape Drive.

Installability: Installation time for each field-installed tape drive in the 3584 Tape Library is approximately 0.4 hours.

Direct customer support: Eligible customers can obtain installation and usage assistance through ASK Support using the search word 3584, 3588, or 3592.

Supplies

For end users:

IBM data media supplies including labeled, initialized, bulk data media, or cleaning cartridges can be purchased from IBM using machine type 3589. Refer to the 3589 Sales Manual.

The part numbers for additional supplies are:

IBM part number	Supply item
24R1922	IBM TotalStorage LTO Ultrium 400GB Data Cartridge
35L2087	IBM TotalStorage LTO Cleaning Cartridge (universal)

For information about IBM branded media, such as additional IBM LTO Ultrium data or cleaning cartridges, or 3592 data or cleaning cartridges, call 888-IBM-MEDIA (426-6334) in the U.S. or Canada or refer to the following Web site

<http://www.storage.ibm.com/media>

Security, auditability, and control

This product uses the security and auditability features of the host hardware, software, and application software.

The customer is responsible for evaluation, selection, and implementation of security features, administrative procedures, and appropriate controls in application systems and communications facilities.

Terms and conditions

Volume orders: Contact your IBM representative.

IBM Global Financing: No

Warranty period

The 3584 Model HA1: One year

IBM LTO Ultrium and 3592 media: Warranted separately

Warranty service

If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone, or electronically via an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. If applicable to your product, parts considered Customer Replaceable Units (CRUs) will be provided as part of the machine's standard warranty service. Service levels are response time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country and location-specific information.

CRU service and on-site service for other selected parts

CRU service

IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from IBM upon your request. CRUs are designated as being either a Tier 1 or a Tier 2 CRU.

Tier 1 CRU

Installation of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.

For machines with on-site same-day response service, IBM will replace a Tier 1 CRU part at your request, at no additional charge.

Tier 2 CRU

You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge.

Based upon availability, CRUs will be shipped for next-business-day delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, (1) return instructions and a container is shipped with the replacement CRU and (2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 30 days of your receipt of the replacement.

No parts have been designated as Tier 1 CRU parts.

On-site service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose.

- 24 hours per day, 7 days a week, same-day response

ServiceSuite™ and ServiceElect (formerly ESA) maintenance: For ServiceElect (Z125-5510) and ServiceSuite (Z125-5745) Statements of Work

Warranty service upgrades

On-site service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. The following service selections are available as warranty upgrades for your machine type.

For machines with on-site same-day response service, IBM will replace a Tier 1 CRU part at your request, at no additional charge. For additional information on the CRU service, refer to the warranty information.

- 24 hours per day, 7 days a week, 2-hour average response

Maintenance services

If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically, via an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will

depend upon the time of your call and is subject to parts availability. If applicable to your product, parts considered CRUs will be provided as part of the machine's standard maintenance service. Service levels are response time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country and location specific information.

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No parts have been designated as Tier 1 CRU parts.

On-site service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. The following service selections are available as maintenance options for your machine type.

- 9 hours per day, Monday through Friday, excluding holidays, next-business-day response
- 9 hours per day, Monday through Friday, excluding holidays, 4-hour average, same-business-day response
- 24 hours per day, 7 days a week, 4-hour average response
- 24 hours per day, 7 days a week, 2-hour average response

Maintenance service

The preferred go-to-market offerings are ServiceElect and ServiceSuite. However, ICA legacy contracts will still be available for current customers until they are withdrawn.

Warranty service upgrades

On-site service

IBM will repair the failing machine at your location and verify its operation. You must provide a suitable working area to allow disassembly and reassembly of the IBM machine. The area must be clean, well lit, and suitable for the purpose. The following service selections are available as warranty upgrades for your machine type.

For machines with on-site same-day response service, IBM will replace a Tier 1 CRU part at your request, at no additional charge. For additional information on the CRU service, refer to the warranty information.

- 24 hours per day, 7 days a week, 2-hour average response

Maintenance services

If required, IBM provides repair or exchange service depending on the types of warranty service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically, via an IBM Web site. You must follow the problem determination and resolution procedures that IBM specifies. Scheduling of service will depend upon the time of your call and is subject to parts availability. If applicable to your product, parts considered CRUs will be provided as part of the machine's standard maintenance service. Service levels are response time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations. Additional charges may apply outside IBM's normal service area. Contact your local IBM representative or your reseller for country and location specific information.

CRU service and on-site service for other selected parts

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Tier 2 CRUs

You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge.

Based upon availability, CRUs will be shipped for next-business-day delivery. IBM specifies, in the materials shipped with a replacement CRU, whether a defective CRU must be returned to IBM. When return is required, (1) return instructions and a container is shipped with the replacement CRU and (2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 30 days of your receipt of the replacement.

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- 9 hours per day, Monday through Friday, excluding holidays, next-business-day response
- 9 hours per day, Monday through Friday, excluding holidays, 4-hour average, same-business-day response
- 24 hours per day, 7 days a week, 4-hour average response
- 24 hours per day, 7 days a week, 2-hour average response

Usage plan machine: No

IBM hourly service rate classification: Two

When a type of service involves the exchange of a machine part, the replacement may not be new, but will be in good working order.

Field-installable features: Yes

Model conversions: No

Machine installation: Installation is performed by IBM. IBM will install the 3584 Model HA1 in accordance with the IBM installation procedures for the machine. In the United States, contact IBM at 800-IBM-SERV (426-7378), in other countries contact the local IBM office.

Some features are designated as Customer Setup, and customers are responsible for installation according to the instructions IBM provides with the machine.

Customer requests for installation of items not covered in the installation guide may be performed at IBM's hourly service rate designated for the machine.

Graduated Program License Charges apply: No. This product does not contain Licensed Internal Code or Licensed Machine Code.

Educational allowance: A reduced charge is available to qualified education customers. The educational allowance may not be added to any other discount or allowance.

Prices

Description	Machine type	Model	Feature number	Purchase price	MMMC	Field install only	Plant install only
High Availability Frame	3584	HA1		\$30,000	\$306		
Tape Library Expansion Frame Service Bay B Config/Accessor	3584	D22	1440	29,000	NC	N	Y
Tape Library Expansion Frame LTO Fibre Drive Mtg Kit	3584	D32	1504*	610	NC	Y	N
3588 Field Install Assist			1678	675	NC	Y	N
3588 Drive Field Install			9679	0	NC	Y	N
Tape Library Expansion Frame Service Bay B Config/Accessor	3584	D52	1440	29,000	NC	N	Y
3588 Field Install Assist			1678	675	NC	N	N
3588 Drive Plant Install			9678	NC	NC	N	Y
3588 Drive Field Install			9679	0	NC	N	N
Tape Library Base Frame Change HA X-Track Cable	3584	L22	1840	1,165	NC	Y	N
High Availability Library			9040	0	NC	N	N

Description	Machine type	Model	Feature number	Purchase price	MMMC	Field install only	Plant install only
Tape Library Base Frame	3584	L32					
LTO Fibre Drive Mtg Kit			1504*	\$ 610	NC	Y	N
3588 Field Install Assist			1678	675	NC	Y	N
Change HA X-Track Cable			1840	1,165	NC	Y	N
High Availability Library			9040	0	NC	Y	N
3588 Drive Field Install			9679	0	NC	Y	N
Tape Library Base Frame	3584	L52					
3588 Field Install Assist			1678	675	NC	N	N
Change HA X-Track Cable			1840	1,165	NC	Y	N
High Availability Library			9040	0	NC	N	N
3588 Drive Plant Install			9678	NC	NC	N	Y
3588 Drive Field Install			9679	0	NC	N	N

* This feature has been previously announced on other models.

MMMC = Monthly Minimum Maintenance Charge

NC = No charge

N = No

Y = Yes

Annual minimum maintenance charges: For ServiceElet (ESA) Maintenance Service Charges, contact IBM Global Services at 888-IBM-4343 (426-4343).

Note: Shipments will begin after the planned availability date.

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Specify feature number

The following charges apply to features ordered for field installation:

Description	Feature number	Charge
High Availability Library	9040	\$0
3588 Drive Field Install	9679	0

Order now

To order, contact the Americas Call Centers, your local IBM representative, or your IBM Business Partner.

To identify your local IBM representative or IBM Business Partner, call 800-IBM-4YOU (426-4968).

Phone: 800-IBM-CALL (426-2255)
 Fax: 800-2IBM-FAX (242-6329)
 Internet: ibm__direct@vnet.ibm.com
 Mail: IBM Americas Call Centers
 Dept: IBM CALL, 11th Floor
 105 Moatfield Drive
 North York, Ontario
 Canada M3B 3R1

Reference: YE001

The Americas Call Centers, our national direct marketing organization, can add your name to the mailing list for catalogs of IBM products.