



IBM System Storage TS3500 Tape Library Connector and TS1140 Tape Drive support for the IBM TS3500 Tape Library

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At a glance

The TS3500 Tape Library family has been enhanced with the following:

- TS3500 Tape Library Connector shuttle for configuration flexibility and major expansion
- TS1140 Tape Drive integration and support for tape drive investment protection, improved performance, and capacity

Overview

IBM® System Storage® TS3500 Tape Library (Machine Type 3584) is designed to provide enhanced tape drive technology and support while helping to protect the investment of existing IBM 3584 Tape Library installations.

It is designed to be a highly scalable, automated tape library combining IBM automation technology for midrange to enterprise environments. The TS3500 Tape Library Models L23 and D23 frames now integrate and support the IBM System Storage TS1140 Tape Drive Model E07 with its enhanced native data rate of up to 250 MB/sec and 4 TB native 3592 E4 format advanced data cartridge physical capacity. Existing TS3500 Tape Libraries Models L22 and D22 also support the new TS1140 Tape Drive.

Additionally, the new TS3500 Tape Library Connector Model SC1 enables extreme scalability of over 300,000 LTO cartridges (or over 900 PB of uncompressed TS1140 data) in a single library image by supporting transport of cartridges from one TS3500 library string to another TS3500 library string. Application software supporting this new capability can move tape cartridges directly from its home logical library to the destination logical library. Shuttle connections will span High Density TS3500 S24 or S54 frames from different TS3500 library strings. The TS3500 Tape Library Connector Model SC1 supports new and existing TS3500 Tape Library installations and is particularly suited for High Performance Storage System (HPSS) environments.

These advancements in performance, increased capacity and growth, reliability, and function help enhance library management, provide configuration flexibility, and create a foundation for automation across an enterprise or business installation.

Key prerequisites

Appropriate levels of host software are required to attach the TS3500 Tape Library Connector and support the TS3500 Tape Library with the TS1140 Tape Drives Model E07 to selected IBM System i®, IBM System p®, IBM System x®, and other servers running HP-UX, Linux®, Sun Solaris SPARC, and Microsoft® Windows® operating systems. Refer to the [Software requirements](#) section for details. Support for all new features, including TS1140 tape drives and TS3500 Tape Library Connector, requires Advanced Library Management System (ALMS) and enhanced node cards.

Planned availability date

- May 13, 2011: Feature Code number 7703 OEM - NO IBM LOGO
- August 19, 2011: MTM 3584-SC1 and Feature Codes 1850, 1851, 1855, 9441, 9442, 9443 and Feature Code number 9070 on 3584 Models L22, L23, L32, L52, and L53
- June 3, 2011: All the other 3584 feature codes

Description



IBM System Storage TS3500 Tape Library (Machine Type 3584) is designed to provide enhanced tape drive technology and support while helping to protect the investment of existing IBM 3584 Tape Library installations.

It is designed to be a highly scalable, automated tape library combining IBM automation technology for midrange to enterprise environments. The TS3500 Tape Library Models L23 and D23 frames now integrate and support the IBM System Storage TS1140 Tape Drive Model E07 with its enhanced native data rate of up to 250 MB/sec and 4 TB native 3592 E4 format advanced data cartridge physical capacity. Existing TS3500 Tape Libraries Models L22 and D22 also support the new TS1140 Tape Drive.

IBM System Storage TS1140 Tape Drive Model E07 supports data encryption on the base drive with 3592 E4 format media and Application Managed Encryption. Additional System Managed and Library Managed Encryption, and associated IBM Tivoli® Key Library Manager support is also available.

Additionally, the new TS3500 Tape Library Connector Model SC1 enables the extreme scalability of over 300,000 LTO cartridges (or over 900 PB of uncompressed TS1140 data) in a single library image by supporting transport of cartridges from one TS3500 library string to another TS3500 library string. Application software supporting this new capability can move tape cartridges directly from its home logical library to the destination logical library. Shuttle connections will span high-

density TS3500 S24 or S54 frames from different TS3500 library strings. The TS3500 Tape Library Connector Model SC1 supports new and existing TS3500 Tape Library installations and is particularly suited for HPSS (High Performance Storage System) environments.

These advancements in performance, increased capacity and growth, reliability, and function help enhance library management, provide configuration flexibility, and create a foundation for automation across an enterprise or business installation, requiring ALMS and enhanced node cards.

TS3500 Tape Library means high performance

IBM TS1050 LTO Ultrium Tape Drives and TS1140 Tape Drives are designed for high performance in a streaming mode of operation. Automatic data caching, using an expanded cache memory and read/write buffering, helps enhance performance even further. The TS3500 Tape Library is designed for high data transfer performance.

Cartridge move time within the TS3500 Tape Library can be as short as 3.0 seconds or less in a single-frame library. The dual-gripper accessor is designed to retrieve the next cartridge to be mounted, unload the current cartridge, and load the next cartridge, helping provide the following potential benefits as compared to a single gripper:

- Save complete move operations
- Improve overall library performance
- Increase redundancy and reliability

TS3500 Tape Library defines high reliability

Innovative technology positions TS1140 Tape Drives and TS1050 LTO Ultrium Tape Drives as a leader in tape technology. Highly accurate recording is supported by an exclusive thin-film write module designed by IBM with read-after-write data verification. Data read is managed by IBM Magneto Resistive heads, designed for accuracy, high reliability, and durability. TS3500 drives and library robotics are TapeAlert-compatible, and are designed to provide tape drive and library error, and diagnostic reporting. Drive cleaning is an automatic function that can be performed by the library when required by the drive, without requiring operator intervention.

Advanced Library Management System (ALMS)

ALMS is the next generation of patented IBM Multi-Path Architecture. ALMS provides a license key to enable dynamic management of cartridges, cartridge storage slots, tape drives, and logical libraries. Tape drives can be assigned to any logical library using a web user interface. It is designed to allow logical libraries to be added, deleted, or easily changed non-disruptively. In addition, storage capacity can be added while avoiding impact to host applications in many instances.

ALMS is designed to avoid outages when adding Capacity on Demand storage, adding or removing logical libraries, or when changing logical library storage allocation. The use of ALMS may also help reduce outages when adding expansion frames, adding or removing tape drives, or changing logical drive allocation.

ALMS and enhanced node cards are required for the TS3500 Tape Library connector Model SC1 and TS1140 Tape Drive support in TS3500 Tape Libraries.

TS1140 Tape Drive Model E07

The new TS1140 Tape Drive Model E07 (machine type 3592) is designed for automation and uses a tape cartridge with a form factor similar to the 3590 tape cartridges, allowing it to be used in the TS3500 Tape Library. The TS1140 Tape Drive is designed to provide higher levels of performance, reliability, and cartridge capacity than the TS1130 Model E06 Tape Drive. The TS1140 has a high-technology Giant Magneto Resistive (GMR) head design and provides a native data rate performance of up to 250 MB/sec versus the 160 MB/sec data rate of the TS1130 Tape Drive Model E06. The TS1140 E07 Tape Drive has a dual-port 8-Gbps Fibre

Channel interface for Fibre Channel attachment to host systems or a switched fabric environment.

With the use of the IBM 3592 Advanced Data cartridge - Type C, TS1140 Model E07 can format a cartridge uncompressed up to 4 TB (12 TB with 3:1 compression).

Encryption

IBM System Storage TS1140 (3592) Tape Drives and IBM System Storage TS1050 (3588 F5A) Tape Drives support encryption of data on a tape cartridge. Three encryption management methods are supported: Application, System, or Library Managed. Encryption capability is supported when the TS1050 or TS1140 Tape Drive is integrated or attaches to IBM supported tape libraries, subsystems, or controllers. All 3592 and Ultrium 4 and 5 media, including WORM cartridges, can be encrypted.

Accessibility by people with disabilities

A U.S. Section 508 Voluntary Product Accessibility Template (VPAT) containing details on accessibility compliance can be requested at

http://www.ibm.com/able/product_accessibility/index.html

Product positioning

As competitive tape solutions are compared, consider:

- Library scalability with 1 to 16 frames and 1 to 192 tape drives in a simple TS3500 Library string
- Expansion frames with drive and cartridge slots
- Storage only cartridge slots to maximize cartridge capacity and density
- Tape Library Connector shuttle complex to provide growth and configuration flexibility
- 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 TS3500 Tape Library and related 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 and restore operations.

TS3500 Tape Library models are a smart choice for tape automation for IBM System p, IBM System i, IBM System x, and other open system servers. The TS3500 Tape Library 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.

TS3500 Tape Library Base Frame Model L53 offers 64 to 287 slots for LTO Ultrium tape cartridge media and up to 12 IBM LTO Ultrium Fibre Channel Tape Drives. TS3500 Model L53 is designed to provide excellent price and performance in the open systems environments where the tape automation requirements are satisfied with one to twelve drives.

TS3500 Tape Library Base Frame Model L23 offers 58 to 260 slots for 3592 tape cartridge media and up to 12 IBM TS1140 or TS1130 Tape Drives. The TS1140 and TS1130 Tape Drives combine high capacity, performance, and reliability in open

systems environments, with tape drive flexibility to accommodate capacity and provide fast access where these requirements are needed.

Up to fifteen TS3500 Tape Library Expansion Frame Models D22, D23, S24, D32, D52, D53, or S54 can be added as active frames to either Model L22, L23, L32, L52, or L53. Model D23 provides up to 400 cartridge slots for 3592 media and can contain up to 12 TS1140 or TS1130 Tape Drives. Model D53 provides up to 440 slots for LTO media, and can contain up to twelve Ultrium Fibre Channel Tape Drives.

The high-density frame Model S24 provides storage for up to 1,000 3592 cartridges, while the high-density frame for Model S54 provides storage for up to 1,320 LTO cartridges. This can provide a total TS3500 library capacity of up to 192 IBM LTO Ultrium, TS1140 or TS1130 Tape Drives.

The Shuttle Connection Model SC1 provides the capability for joining up to fifteen library strings with shuttle connections allowing cartridges to be passed between physical library strings creating a large single-library image. This can provide a library complex with over 300,000 cartridge slots.

For extended growth and flexibility the TS3500 Tape Library Connector Model SC1 enables transporting cartridges from one logical library in a TS3500 Library String to another logical library in a different TS3500 Library String.

The TS3500 is a part of a family of IBM System Storage tape products that can be the answer to growing storage requirements and shrinking backup windows. If you require high-performance automated tape backup, the TS3500 Tape Library constitutes an excellent tape storage solution.

Product number

Description	Machine type	Model	Feature number
TS3500 Tape Library Connector	3584	SC1	
Short Span, Gap 0.76 to 1.5m	3584	SC1	1850
Long Span, Gap 1.5 to 2.7m	3584	SC1	1851
Shuttle Complex Service & Install Kit	3584	SC1	1855
1st Span Installed	3584	SC1	9441
2nd Span Installed	3584	SC1	9442
3rd Span Installed	3584	SC1	9443
Drive Removal	3584	D22, L22, D23, L23	1663(1)
3592 Drive Field Install	3584	D22, L22, D23, L23	1674(1)
3592 E07 Drive Field Install	3584	D22, L22, D23, L23	1675
Power Distribution Units	3584	D53, L53	1950(2)
3592 Fibre Drive Mounting Kit	3584	D23, L23	1515(1)
Plant Install E05 in 3584	3584	D23, L23	9680(1)
Plant Install E06 in 3584	3584	D23, L23	9683(1)
Plant Install E07 in 3584	3584	D23, L23	9692
Web Camera Mounting Hardware	3584	L22, L52, D22, D52, L23, L53, D23, D53, S24, S54, HA1	1530

Shuttle Complex Library	3584	L22,L23, L32,L52, L53	9070
Power Cord to adjacent frame PDUs	3584	L23,L53, D23,D53	9989
OEM - No IBM Logo	3584	D23,D53, L23,L53, HA1,S24, S54	7703(2)
Nema L6-30 Power Cord	3584	L53,D53	9954(2)
RS 3750DP Power Cord	3584	L53,D53	9955(2)
IEC 309 Power Cord	3584	L53,D53	9956(2)
PDL 4.3m Power Cord	3584	L53,D53	9957(2)
Korean 4.3m Power Cord	3584	L53,D53	9958(2)
Unterminated Power Cord	3584	L53,D53	9959(2)
Unterminated Power Cord - China	3584	L53,D53	9966(2)

(1) This feature was previously announced on the designated model, but the description has changed.

(2) This feature has been previously announced on other models, but the description has changed.

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).

<https://www.ibm.com/partnerworld/mem/sla.jsp?num=111-086>

Publications

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

Title

IBM System Storage TS3500
3584 Maintenance Information:
IBM 3584 Tape Library

IBM System Storage TS3500
3584 Product Information CD

The following publications will be available at

<http://www-05.ibm.com/e-business/linkweb/publications/servlet/pbi.wss>

Title	Order number
IBM System Storage TS3500 Tape Library with ALMS: Introduction and Planning Guide	GA32-0593
IBM System Storage TS3500 Tape Library with ALMS: Operator's Guide	GA32-0594
IBM System Storage TS3500 Tape Library with ALMS: Tape System Reporter User's Guide	GA32-0589

The following device driver publication is also available at

<http://www.ibm.com/support/fixcentral>

Title	Order number
IBM Tape Device Drivers Installation and User's Guide	GC27-2130

IBM System Storage TS3500 Tape Library Customer Information Center

<http://publib.boulder.ibm.com/infocenter/ts3500tl/v1r0/index.jsp>

The IBM Systems Information Center provides you with a single information center where you can access product documentation for IBM systems hardware, operating systems, and server software. Through a consistent framework, you can efficiently find information and personalize your access. The IBM Systems Information Center is at

<http://publib14.boulder.ibm.com/infocenter/systems>

IBM Publications Center Portal

<http://www.ibm.com/shop/publications/order>

The Publications Center is a worldwide central repository for IBM product publications and marketing material with a catalog of 70,000 items. Extensive search facilities are provided, as well as payment options via credit card. A large number of publications are available online in various file formats, which can currently be downloaded free of charge.

Services

Global Technology Services

IBM services include business consulting, outsourcing, hosting services, applications, and other technology management.

These services help you learn about, plan, install, manage, or optimize your IT infrastructure to be an On Demand Business. They can help you integrate your high-speed networks, storage systems, application servers, wireless protocols, and an array of platforms, middleware, and communications software for IBM and many non-IBM offerings. IBM is your one-stop shop for IT support needs.

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

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

For details on available IBM Business Continuity and Recovery Services, contact your IBM representative or visit

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

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.

System x and BladeCenter support services

Recommended core technical support

When you buy IBM System x technology, include the support services you need -- to help keep both your hardware and software working for you, day after day, at peak performance. It's your first step toward helping to protect your investment and sustain high levels of system availability. We offer service-level and response-time options to fit your business needs. And we'll help you get started with a core support package that includes:

- **Continuous system monitoring**

Electronic monitoring that helps speed up problem-solving with automated, early detection of potential problems and system errors.

- **Hardware maintenance**

World-class remote and on-site hardware problem determination and repair services.

- **Software technical support**

Access to help line calls for fast, accurate answers to your questions during installation and throughout ongoing operations.

For more information, visit

<http://www.ibm.com/servers/eserver/xseries/services.html>

Technical information

Specified operating environment

Physical specifications

3584-SC1

The 3584-SC1 is installed on top of the high-density frames and acts as a connection between high-density frames in adjacent library strings.

- **Width:** The maximum width of the SC1 connection is 324 mm (12.76 in).
- **Depth:** The depth of the SC1 connection is variable dependent on configuration. The connection supports a minimum distance between connecting high density frames of 762 mm (30 in) and a maximum distance between connecting high density frames of 2,743.2 mm (108 in).
- **Height:** The maximum height of the SC1 when installed on top of a high density frame is 2375 mm (93.5 in).
- **Weight:** The weight of the SC1 connection is variable dependent on configuration. The maximum weight of a single span long connection is 60.4 kg (133.2 lb).

For more detailed information concerning physical specifications of the 3584 SC1, please consult the *TS3500 Installation and Planning Guide*.

Operating environment

3584-SC1, Zeros specify place holders for actual values.

- **Temperature:** 15° to 32° degrees C (59° to 90° degrees F)
- **Relative humidity:** 20% to 80% percent
- **Electrical power:** 20 watts per shuttle station (model SC1 uses internal power provided by the 3584 library)
- **Capacity of exhaust:** model SC1 does not include or require cooling fans
- **Noise level:** No additional noise is created by the model SC1

Hardware requirements

The TS3500 Tape Library can be attached to selected IBM Power Systems™, IBM System i, IBM System p, IBM System x, and other servers running AIX®, HP-UX,

Linux, Sun Solaris SPARC, and Microsoft Windows servers supporting Fibre Channel interfaces.

The TS3500 Tape Library family includes enhanced power architecture models that take less floor space than Model D32 or L32. The models include raven black covers, and have a look and feel consistent with other IBM System Storage products.

Up to 15 TS3500 Tape Library Expansion Frame Models D22, D23, S24, D32, D52, D53, or S54 can be added as active frames to either Model L22, L23, L32, L52, or L53. Model S24 is designed to provide up to 1,000 cartridge slots for 3592 media, while Model D23 provides up to 400 cartridge slots for 3592 media. Model S54 is designed to provide up to 1,320 cartridge slots for LTO media, while Model D53 provides up to 440 cartridge slots LTO media.

Model D53 and L53 can contain up to 12 IBM TS1040 or LTO Ultrium Fibre Channel Tape Drives per frame. Model D23 and L23 can contain up to 12 of the TS1140 or TS1130 Tape Drives per frame. The TS1140 Model E07 Tape Drives have a 8-Gbps dual-ported Fibre Channel interface.

The cartridge storage capacity of the TS3500 can be expanded with the high-density Capacity on Demand (CoD) features #1645 for Model S24 or #1646 for Model S54 for licensing additional library capacity or by attaching an optional expansion frame Models D22, D23, D32, D52, D53, S24, or S54.

TS3500 Tape Library Connector Model SC1

The new TS3500 Tape Library Connector Model SC1 enables transporting cartridges from one logical library in a TS3500 Library String to another logical library in a different TS3500 Library String. The tape cartridge is moved from its home logical library to the destination logical library via a shuttle car. The shuttle car will pass from the home logical library through a shuttle connection to the shuttle station of a destination logical library. Shuttle connections will span HD TS3500 S24 or S54 frames from different TS3500 Library strings. Each shuttle connection shall support exactly one shuttle car carrying one cartridge with a maximum of 15 parallel library strings. Use of the TS3500 Tape Library Connector Model SC1 require ALMS and enhanced node cards. The TS3500 Tape Library Connector Model SC1 supports new and existing TS3500 Tape Library installations and is particularly suited for HPSS environments.

Software requirements

LTO Ultrium or Enterprise Tape Drives in the TS3500 Tape Library

For the latest supported hardware interoperability configurations, refer to the System Storage Interoperation Center website

<http://www.ibm.com/systems/support/storage/config/ssic/>

The installation of a TS3500 or 3584 Tape Library 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 TS1140. A Solutions Assurance call is required at a minimum for the installation of the first TS1140 in an account.

Tivoli Storage Manager and other industry-leading compatible software offerings provide storage and tape management software for the TS3500 (machine type 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-03.ibm.com/systems/storage/tape/library.html#compatibility>

The TS3500 shuttle complex (using TS3500 Tape Library Connector Model SC1) is particularly suited for HPSS (High Performance Storage System) environments.

IBM continues to work together with ISVs to support the TS3500 Tape Library. 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.

IBM maintains the latest levels of System Storage tape drive and library device drivers and documentation on the Internet. Utilize the Fix Central download portal by visiting

<http://www.ibm.com/support/fixcentral>

There are a few pull down menus to navigate to the correct download as follows:

- In the first pull down menu labeled "Product Group" select "Storage Systems"
- In the next pull down menu that appears which is labeled "Product Family" select "Tape Systems"
- With the next pull down menu, "Product Type", select "Tape Device Drivers and Software"
- This will in turn bring up the "Product" menu, which provides selections for "Platform drivers, Tools, or Software"
- Under "Platform drivers", in order to download your driver, select the correct operating system
- Two more pull down menus will appear with information. Click "Continue"
- The next screen can be used to narrow the search, however just click "Continue" to view what is available

The IBM Tape Device Drivers Installation and User's Guide can be found at

<http://www-01.ibm.com/support/docview.wss?rs=577&uid=ssg1S7002972>

Compatibility

TS1140 or TS1130 Tape Drives (machine type 3592) cannot read cartridges written by the 3590 or 3490. Cartridges written by TS1140 or TS1130 Tape Drives cannot be read by the 3590 or 3490. Even though the cartridges are similar in size, they contain different media, and thus are not interchangeable.

IBM LTO Ultrium 5 Tape Drives can read and write IBM LTO Ultrium 5 or 4 Data Cartridges. LTO Ultrium 1.5 TB Data Cartridges can only be used on LTO Ultrium 5 Tape Drives.

Limitations

- TS3500 Tape Library Connector works only through high-density S24 or S54 frames between TS3500 Tape Library strings.
- ALMS and enhanced node cards and electronics required for most recently announced functions.
- A high-density frame (Model S24 or Model S54) model cannot be added to a 3584 library string with a Model D42 unless the D42 is first removed or converted to a Model D32.
- Manual cartridge assignment using Insert Notification is not supported on a high-density library. For any partitioned library, it is recommended that Cartridge Assignment Policy be configured to provide automated assignment of all inserted cartridges.
- 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 (1,650 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 System Storage TS3500 Tape Library with ALMS: Introduction and Planning Guide*, GA32-0593. Current levels of the open systems device drivers should be obtained to ensure that the TS1050 or TS1040 LTO Ultrium Tape Drives or TS1140 or TS1130 Tape Drive are 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 TS3500 Tape Library.

You are responsible for downloading or obtaining from IBM, and installing designated Machine Code (microcode, basic input/output system code (called BIOS), utility programs, device drivers, and diagnostics delivered with an IBM machine) and other software updates in a timely manner from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides. You may request IBM to install Machine Code changes; however, you may be charged for that service.

Cable orders

Cables are required to attach tape drives in the TS3500 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.

Installability

Installation time for each field-installed tape drive in the TS3500 Tape Library is approximately 0.4 hours.

Installation time for the TS3500 Tape Library Connector shuttle (3584 SC1) is approximately 3 hours. Installation time for the Spans (FC #1850 or FC #1851) is approximately 1 hour each and TSSC setup and configuration is approximately 2 hours.

Supplies

For users

IBM LTO 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.

Labeled, initialized, or bulk data media for the TS1140 Model E07 or TS1130 Model E06 Tape Drive can be ordered directly through AAS using machine type 3599. Refer to the 3599 Sales Manual.

Note: The 3592 data cartridge has servo tracks written on it. These tracks are designed to enable the tape drive to accurately position the read/write head with respect to the media while the tape is in motion. If these servo tracks are damaged or removed (such as by Degaussing), the cartridge is no longer usable.

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 website

<http://www.ibm.com/servers/storage/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

Yes

Warranty period

The TS3500 Tape Library and TS3500 Tape Library Connector: One year

IBM LTO Ultrium and 3592 media: Warranted separately

An IBM part or feature installed during the initial installation of an IBM machine is subject to a full warranty effective on the date of installation of the machine. An IBM part or feature which replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. An IBM part or feature added to a machine without replacing a previously installed part or feature is subject to a full warranty effective on its date of installation. Unless specified otherwise, the warranty period, type of warranty service, and service level of a part or feature is the same as the machine it is installed.

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. Certain Machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

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. This product is covered by the following types of service

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.

Service level is:

- 24 hours per day, 7 days a week, same day response, IBM On-site Repair

Non-IBM parts service

Warranty service

IBM is now shipping machines with selected non-IBM parts that contain an IBM field replaceable unit (FRU) part number label. These parts are to be serviced during the IBM machine warranty period. IBM is covering the service on these selected non-IBM parts as an accommodation to their customers, and normal warranty service procedures for the IBM machine apply.

Warranty service upgrades

During the warranty period, warranty service upgrades provide an enhanced level of On-site Service for an additional charge. Service levels are response-time objectives and are not guaranteed. See the Warranty services section for additional details.

IBM will attempt to resolve your problem over the telephone or electronically by access to an IBM Web site. Certain Machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

Maintenance service options

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 on-site response-time objectives are available as warranty service upgrades for your machine. Available offerings are:

- 24 hours per day, 7 days a week, 4 hour average response

Maintenance services

If required, IBM provides repair or exchange service depending on the types of maintenance service specified for the machine. IBM will attempt to resolve your problem over the telephone or electronically, via an IBM Web site. Certain Machines contain remote support capabilities for direct problem reporting, remote problem determination, and resolution with IBM. You must follow the problem determination and resolution procedures that IBM specifies. Following problem determination, if IBM determines on-site service is required, scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts. Service levels are response-time objectives and are not guaranteed. The specified level of maintenance 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. The following service selections are available as maintenance options for your machine type.

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.

Service levels are:

- 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 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

Non-IBM parts service

Under certain conditions, IBM provides services for selected non-IBM parts at no additional charge for machines that are covered under warranty service upgrades or maintenance services.

This service includes hardware problem determination (PD) on the non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, memory) installed within IBM machines and provides the labor to replace the failing parts at no additional charge.

If IBM has a Technical Service Agreement with the manufacturer of the failing part, or if the failing part is an accommodations part (a part with an IBM FRU label), IBM may also source and replace the failing part at no additional charge. For all other non-IBM parts, customers are responsible for sourcing the parts. Installation labor is provided at no additional charge, if the machine is covered under a warranty service upgrade or a maintenance service.

Warranty service upgrades

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

Yes

Machine installation

Installation is performed by IBM. IBM will install the TS3500 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

Licensed internal code and licensed machine code

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.

Pricing

Product charges

Description	Machine Type	Model	Feature number	Field Install only	Plant Install only
TS3500 Tape Library Connector	3584	SC1			
SHORT SPAN, GAP 0.76 to 1.5 m	3584	SC1	1850	N	N
LONG SPAN, GAP 1.5 to 2.7 m	3584	SC1	1851	N	N
SHUTTLE COMPLEX SERVICE & INSTALL KIT	3584	SC1	1855	N	N
1ST SPAN INSTALLED	3584	SC1	9441	N	Y
2ND SPAN INSTALLED	3584	SC1	9442	N	N
3RD SPAN INSTALLED	3584	SC1	9443	N	N
3592 E07 DRIVE FIELD INSTALL	3584	D22,D23 L22,L23	1675	N	N
Power Distribution Units	3584	D53,L53	1950(1)	N	N
Plant Install E07 in 3584	3584	D23,L23	9692	N	Y
Web Camera Mounting Hardware	3584	L22,L52 D22,D52 L23,L53 D23,D53 S24,S54 HA1	1530	N	N
Shuttle Complex Library	3584	L22,L23 L32,L52 L53	9070	N	N
Power Cord to adjacent frame PDUs	3584	L23,L53 D23,D53	9989	N	N
OEM - No IBM Logo	3584	D23,D53 L23,L53 HA1,S24 S54	7703(1)	N	Y
Nema L6-30 Power Cord		L53,D53	9954(1)	N	N
RS 3750DP Power Cord		L53,D53	9955(1)	N	N
IEC 309 Power Cord PDL 4.3m		L53,D53	9956(1)	N	N
Power Cord		L53,D53	9957(1)	N	N

Korean 4.3m Power Cord	L53,D53	9958(1)	N	N
Unterminated Power Cord	L53,D53	9959(1)	N	N
Unterminated Power Cord - China	L53,D53	9966(1)	N	N

Description	Machine type	Model	MES Feature number
Short Span, Gap 0.76 to 1.6m	3584	SC1	1850
Long Span, Gap 1.5 to 3.0m	3584	SC1	1851
Shuttle Complex Service & Install Kit	3584	SC1	1855
2nd Span Installed	3584	SC1	9442
3rd Span Installed	3584	SC1	9443
Drive Removal	3584	D22,L22, D23,L23	1663(2)
3592 Drive Field Install	3584	D22,L22, D23,L23	1674(2)
3592 E07 Drive Field Install	3584	D22,L22, D23,L23	1675
Power Distribution Units	3584	D53,L53	1950
Plant Install E05 in 3584	3584	D23,L23	9680(2)
Web Camera Mounting Hardware	3584	L22,L52, D22,D52, L23,L53, D23,D53, S24,S54, HA1	1530
Shuttle Complex Library	3584	L22,L23, L32,L52, L53	9070
Power Cord to adjacent frame PDUs	3584	L23,L53, D23,D53	9989
Nema L6-30 Power Cord	3584	L53,D53	9954(1)
RS 3750DP Power Cord	3584	L53,D53	9955(1)
IEC 309 Power Cord	3584	L53,D53	9956(1)
PDL 4.3m Power Cord	3584	L53,D53	9957(1)
Korean 4.3m Power Cord	3584	L53,D53	9958(1)
Unterminated Power Cord	3584	L53,D53	9959(1)
Unterminated Power Cord - China	3584	L53,D53	9966(1)

(1) This feature has been previously announced on other models, but the description has changed.

(2) This feature has been previously announced on other models.

If field installed on a purchased machine, parts removed or replaced become the property of IBM and must be returned.

Pricing terms

Prices in the following PDF prices link are suggested list prices on day of announcement for the U.S. only. They are provided for your information only. Dealer prices may vary, and prices may also vary by country. IBM list price does not include tax or shipping and is subject to change without notice.

[ENUS-111-086-List_prices_2011_05_09.PDF](#)

ServicePac prices

For ServiceElect (ESA) maintenance service charges, contact IBM Global Services at 888-IBM-4343 (426-4343).

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