The IBM System Storage TS3400 Tape Library offers high performance technology

At a glance

The IBM System Storage TS3400 Tape Library combines IBM tape drive and automation reliability with competitive entry pricing. The new model supports high performance drives, unattended backup and archive, open system attachment flexibility, and high capacity and performance, and includes:

- Support for up to 2 IBM System Storage TS1120 Tape Drives Model E05 with 4-Gbps dual-ported switched fabric Fibre Channel attachment, ordered separately
- Support for the 3592 Tape Cartridge media
- 18 cartridge slots physical capacity in two removable magazines (additional magazines can be ordered)
- Encryption capabilities designed to work with the IBM Encryption Key Manager component supporting System Managed and Library Managed encryption, as well as support for Application Managed encryption
- Control path and data path failover, bar code reader, dual power supplies, remote management as standard features
- Sequential and random access mode automation
- Optional rack mount kit

For ordering, contact:

Your IBM representative, an IBM Business Partner, or the Americas Call Centers at

800-IBM-CALL Reference: YE001

Overview

The IBM System Storage™ TS3400 Tape Library Model L5U (machine type 3577, Model L5U) is designed to offer high performance drive technology and automation for open system environments. The TS3400 Tape Library is an addition to the IBM System Storage tape library family of offerings. The TS3400 Tape Library is an external 5U stand-alone or rack-mountable unit that incorporates up to two IBM System Storage TS1120 Tape Drives Model E05 (machine type 3592, Model E05), which are ordered separately. It comes with 4-Gbps dual-ported switched fabric Fibre Channel attachment. The TS1120 Tape Drive has a native data transfer rate of up to 100 MB/sec per drive.

The TS3400 Tape Library has two removable cartridge magazines, providing 18 data cartridge slots, including a 0 or 3-slot I/O station. Tape media cartridges, supported in the TS3400 Tape Library and the TS1120 tape drive, include the 700 GB physical native capacity IBM Tape Cartridge Extended Data (JB) and WORM (JX), the 500 GB...
physical native capacity IBM Tape Cartridge Data (JA) and WORM (JW), and the 100 GB native physical capacity IBM Tape Cartridge Economy Data (JJ) and WORM (JR). The TS3400 supports the TS1120 Tape Drive's built-in encryption capabilities and associated IBM Encryption Key Manager component, in a wide variety of operating system environments including IBM System i™, IBM System p™, IBM System x™, IBM System z™, Linux™, HP-UX, Sun Solaris, Linux, and Microsoft™ Windows™. Encryption management methods supported are Application Managed, System Managed, and Library Managed.

The TS3400 Tape Library incorporates IBM's Multi-Path Architecture with one or two logical libraries. Control path and data path failover, bar code reader, dual power supplies, remote management — ability to run in sequential or random access mode — are standard in the library. Encryption management is available through the Encryption Configuration feature. An optional rack mount kit, for space-saving rack installation, is also available.

**Key prerequisites**

Appropriate levels of host software are required to attach the TS3400 Tape Library with the TS1120 Tape Drive to selected IBM System i, IBM System p, IBM System z Linux, or IBM System x servers, and Hewlett Packard, Sun, UNIX®, Linux, and Windows servers. Refer to Technical information for details.

**Planned availability date**

March 9, 2007

**Description**

The TS3400 Tape Library is an external stand-alone or rack-mountable unit and contains an IBM TS1120 Tape Drive Model E05 that is designed for the heavy demands of backup and archive tape storage. The TS3400 Tape Library capacity is 18 tape data cartridges. It is supported for 4 Gbps switched fabric Fibre Channel attachment to IBM System p, IBM System i, IBM System z Linux, IBM System x, HP, Sun, UNIX, Linux, and Windows servers.

The TS3400 Tape Library offers the following functions and features:

- Support for up to two TS1120 Model E05 Tape Drives.
- High cartridge capacity — Holds two removable magazines, providing 18 data cartridges, including a 0 or 3-slot I/O station.
- Bar code reader standard, so you will be able to operate the TS3400 as a random access tape library with labeled media.
- 700 GB tape cartridge 3592 Extended Data (JB) and WORM (JX), 500 GB tape cartridge 3592 Data (JA) and WORM (JW), and 100 GB tape cartridge Data (JJ) and WORM (JR) support.
- Removable cartridge magazines — Has two removable magazines, which help allow for quick population of the tape library, as well as ease of storage for media. You may order additional magazines as an optional feature number.
- Encryption capabilities designed to work with the IBM Encryption Key Manager component supporting System Managed and Library Managed encryption, as well as support for Application Managed encryption.
- Dual power supplies for redundancy.
- Fibre Channel attachment — The TS3400 Tape Library with TS1120 Tape Drives is designed to provide native switched fabric 4-Gbps Fibre Channel attachment. They are supported on IBM System p, IBM System i, IBM System z Linux, Sun Solaris, HP-UX, Microsoft Windows 2003, Linux, and other open systems.
- IBM's Multi-Path Architecture for single or multi-server attachment of homogeneous or heterogeneous systems or applications.
- Path failover function for both control paths and data paths.
- Stand-alone free-standing library or with optional rack mounting in an industry-standard 19-inch rack.

The TS3400 Tape Library is suitable for use in network attached storage implementations, such as backups and mass storage archives where multiterabyte capacities are required.
tape management for the TS3400 is provided by software such as Tivoli® Storage Manager and other compatible software offerings.

Multi-Path support

The Multi-Path feature of the TS3400 Tape Library supports sharing of the library robotics. The library can be partitioned into one or two logical libraries, and can provide each logical library its own separate and distinct drive, storage slots, and control paths. Each logical library must contain at least one drive.

Note: This type of partitioning is designed to allow heterogeneous applications to share the library robotics independent of each other. Cartridges under library control are not shared between logical libraries, nor allowed to be moved between logical libraries. An example of heterogeneous sharing is a Microsoft Windows 2003 application using the drive and storage slots of one logical library while a UNIX application uses the drive and slots of another logical library.

Path failover

The TS3400 Tape Library may use path failover to help enhance availability. This feature is designed to provide automatic control path failover to a preconfigured redundant control path, without aborting the current job in progress, in the event that a host adapter, fibre cable, fibre port, or control path drive is lost. Support is provided under various operating systems, such as AIX®, Linux, Solaris, HP-UX, and Windows, for Fibre Channel attachments when the IBM tape device driver is used.

Data path failover and load balancing supports native Fibre Channel TS1120 Tape Drives in the Tape Library using the IBM tape device driver for AIX, Linux, Solaris, HP-UX, and Windows. Data path failover is designed to provide a failover mechanism in the IBM device driver, which can enable you to configure multiple redundant paths in a SAN environment. In the event of a path or component failure, the failover mechanism is designed to automatically provide error recovery to retry the current operation using an alternate, preconfigured path without aborting the current job in progress. This helps provide flexibility in SAN configuration, availability, and management.

When accessing a tape drive device that has been configured with alternate pathing across multiple host ports, the IBM device driver is designed to automatically select a path through the host bus adapter (HBA) that has the fewest open tape devices, and assign that path to the application. This autonomic self-optimizing capability is called load balancing. The dynamic load balancing support is designed to optimize resources for devices that have physical connections to multiple HBAs in the same machine. The device driver is designed to dynamically track the usage on each HBA as applications open and close devices, and balance the number of applications using each HBA in the machine. This may help optimize HBA resources and improve overall performance. Further, data path failover is designed to provide autonomic self-healing capabilities similar to control path failover, and is designed to failover to an alternate data path in the event of a failure in the primary host-side path.

Fibre Channel connectivity

Tape drives in the TS3400 Tape Library are designed to connect to host systems using Fibre Channel interfaces. A TS1120 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.

TS1120 Tape Drive

The TS1120 Model E05 Tape Drive supports data transfer rate of up to 100 MB/sec. The use of the IBM Tape Cartridge 3592 Extended Data (JB) and WORM (JX) cartridges are designed to provide a native cartridge physical capacity of up to 700 GB (2.1 TB with 3:1 compression). The IBM Enterprise Tape Cartridge 3592 Data (JA) and WORM (JW) cartridges are designed to provide a native physical capacity of up to 500 GB (1.5 TB with 3:1 compression). The IBM Enterprise Tape Cartridge 3592 Data (JJ) and WORM (JR) cartridges are also available with a 100 GB native physical capacity. The drive uses an optimal dynamic compression method called byte level compression scheme swapping. The TS1120 Model E05 Tape Drive is designed for automation and uses a tape cartridge with a form factor similar to the 3480, 3490, and 3590 tape cartridges. The TS1120 Tape Drives and cartridges are supported in the TS3400 Tape Library Model L5U.

The TS1120 Model E05 Tape Drive has dual-ported 4-Gbps native switched fabric Fibre Channel interfaces. This offers attachment flexibility in an open systems environment. The drives can be directly attached to open systems servers with Fibre Channel attachments. The TS1120 Model E05 uses SARS to assist in isolating failures between media and hardware. It is designed
to use the cartridge performance history saved in the cartridge and drive performance history saved in the drive, to determine the likely cause in case of failure. It is designed to cause the drive to mark the media as degraded, and to indicate that the hardware has degraded.

The TS1120 Model E05 is designed to support capacity scaling of JB tape cartridges to 120 GB and JA tape cartridges to 100 GB. Capacity scaling allows the utilized length of tape to be logically shortened, helping to improve data access times in exchange for reduced capacity. The tapes can subsequently be scaled back to full capacity, as needed. Multiple scale settings are supported on the Model E05 Tape Drive including a 120 GB 20% scaled JB cartridge and a 100 GB 20% scaled JA cartridge.

The TS1120 E05 Tape Drive allows an application to issue a command to scale the IBM Tape Data Cartridge 3592 Extended to 120 GB and the IBM Tape Data Cartridge 3592 to 100 GB. Economy cartridges, with 100 GB physical capacity, are also available for order with the 3599 Models E11 and E21. The economy capacity cartridges can be ordered (and labeled) for a specific VOLSER range. For information on which Independent Software Vendors (ISV) support capacity scaling by command or with the pre-scaled cartridges, refer to the TS1120 or 3592 ISV Web site that can be accessed at

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

The TS1120 Model E05 incorporates tape enhancements introduced with the 3592 Model J1A Tape Drive, which are designed to help improve performance, capacity, and availability, including:

- 2N power supplies: The TS1120 Model E05 incorporates 2N power supplies when it is installed in an automation frame. This is designed to help increase drive availability in the event of a power supply failure.

- Digital speed matching: The TS1120 Model E05 is designed to dynamically perform digital speed matching to adjust the drive's native data rate to the net host data rate (after data compressibility has been factored out). This is designed to help allow slower hosts to stream the tape drive.

- Channel calibration: The channel calibration feature is designed to allow for customization of each read/write data channel for optimum performance. The customization can help enable compensation for variations in the recording channel transfer function, media characteristics, and read/write head characteristics. The TS1120 Model E05 is designed to automatically perform recalibration in the field if it detects degraded performance.

- High resolution tape directory plus enhanced search speed: The TS1120 Model E05 Tape Drive maintains a tape directory structure with a high granularity of information about the physical position of data blocks on the media. This feature, plus the increased search speed, allows the TS1120 Model E05 to have improved nominal and average access times for locate operations versus previous IBM tape drives.

- Streaming Lossless Data Compression (SLDC) algorithm: SLDC is an implementation of a Lempel-Ziv class 1 (LZ-1) data compression algorithm. It is an extension to Adaptive Lossless Data Compression (ALDC) and is designed to offer an improvement over previous IBM lossless compression algorithms.

In addition, the TS1120 Model E05 offers the following enhancements over the 3592 Model J1A Tape Drive:

- New dual-stage 16-head actuator designed to provide precision head alignment to help support higher track density and improved data integrity.

- Physical load and ready time of over 20% improvement versus 3592 Model J1A.

- Large internal data buffer: The TS1120 Model E05 Tape Drive has a 512 MB internal data buffer versus a 128 MB maximum in the 3592 Model J1A and a 16 MB maximum in the 3590 Tape Drive. Along with enabling higher performance characteristics, the data buffer is designed to support read ahead of approximately 500 MB of compressed data from tape and provide high performance random skip forward sequential (short hop) locates, common in database search and tape software recycle operations.

- Error correction capabilities (ECC) have been increased over the previous design offered with the 3592 Model J1A format, which is designed to offer increased data reliability.

- Offboard data string searching can search the data content of host records for string matches offboard from the host server. The tape drive is designed to perform this search at up to maximum data rate (100 MB/sec native) while it would take much longer for a host server to
read the data, buffer the data to disk, and then parse the actual data stream with host software routines.

- Enhanced logic to report Logical End-of-Tape (LEOT) based on a combination of capacity-based and position-based LEOT indicators. The TS1120 Model E05 is designed to monitor the total accumulated number of physical tape datasets written to the volume and report LEOT based on this capacity-based LEOT value. This is designed to allow tape copies to complete without overflow a higher percentage of the time.

- Native search speed increased to up to 10 MB per second.

Refer to the TS1120 Model E05 Sales Manual for more information.

**Tape Cartridge 3592**

The TS1120 Model E05 uses the IBM Tape Cartridge 3592 Extended or the IBM TotalStorage® Enterprise Tape Cartridge 3592, which contains an advanced metal particle tape specifically optimized for the enterprise tape environment, providing a native cartridge physical capacity of up to 700 GB (or up to 2.1 TB with 3:1 compression) or 500 GB (or up to 1.5 TB with 3:1 compression). This can be beneficial in space savings and economy of data storage since it can help lower the cost of storage per megabyte. For applications that fill current data cartridges, this can help reduce the number of tape cartridges required. The reduced number of cartridges may also help free up floor space for other requirements.

The robust 3590-style cartridge shell is designed to sustain a one-meter drop. The cartridge has a similar form factor as the 3590, 3480, and 3490 tape cartridges. It contains cartridge memory that is a passive, contactless silicon storage device. It is designed to hold information about the specific cartridge, including the VOLSER, the media in the cartridge or WORM cartridge, and the drive.

Economy cartridges with a native cartridge physical capacity of up to 100 GB (or up to 300 GB with 3:1 compression) are available for the IBM TotalStorage Enterprise Tape Cartridge 3592. In addition, WORM cartridges for both the Enterprise Tape Cartridge 3592 and the Tape Cartridge 3592 Extended are available.

Each Enterprise Tape Cartridge 3592 must have a label that includes both human and machine-readable form, and one of the following media identifiers:

- JA for a standard capacity, rewritable Enterprise Tape Cartridge 3592
- JB for a rewritable Data Tape Cartridge 3592 Extended
- JJ for a rewritable Economy Enterprise Tape Cartridge 3592
- JR for an Enterprise Economy Write Once Read Many (WORM) Tape Cartridge 3592
- JW for a standard capacity Enterprise WORM Tape Cartridge 3592
- JX for a WORM Tape Cartridge 3592 Extended

**IBM part number**  **Supply item**  
18P7534 IBM Tape Cartridge 3592 (Data — JA)  
18P7535 IBM Tape Cartridge 3592 (Cleaning)  
18P7538 IBM Tape Cartridge 3592 (WORM — JW)  
23R9830 IBM Tape Cartridge 3592 (Extended Data — JB)  
23R9831 IBM Tape Cartridge 3592 (Extended WORM — JX)  
24R0316 IBM Tape Cartridge 3592 (Economy — JJ)  
24R0317 IBM Tape Cartridge 3592 (Economy WORM — JR)  

**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
• Work environment with limited space

The TS3400 Tape Library and storage management applications can help address these requirements and constitutes a functionally rich tape storage solution incorporating IBM TS1120 Tape Drive technology. It is designed to give you flexibility of tape library management, and unattended save and restore operations. The TS3400 Tape Library is an excellent solution if you use tape or require a larger-capacity or higher-performance tape backup with or without random access. The TS3400 Tape Library is an excellent choice for tape automation for IBM System p, IBM System i, IBM System z Linux, IBM System x, HP, Sun, UNIX, Linux, and Windows servers.

The TS3400 Tape Library offers up to two IBM System Storage TS1120 Tape Drives, 18 cartridge slots, including a 0 or 3-slot cartridge I/O station.

The TS3400 Tape Library can be the answer to growing storage requirements and shrinking backup windows, and is part of a family of IBM System Storage tape products. The TS3400 Tape Library constitutes an excellent tape storage solution if you have existing digital linear tape experience or require high-performance automated tape backup.

For physical capacity requirements greater than 18 cartridges, the IBM System Storage TS3500 Tape Library (machine type 3584) should be considered. The IBM System Storage TS3500 Tape Library can match system physical capacity and performance requirements from 58 tape cartridges to up to 16 3584 or TS3500 library frames with over 6,200 tape cartridges.

The TS3400 Tape Library is especially suited for mission-critical data and hardware needs, and high-cycle and start/stop intensive tape applications.

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 107-116


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Linux is a trademark of Linus Torvalds in the United States, other countries or both.

Other company, product, and service names may be trademarks or service marks of others.

Publications

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

<table>
<thead>
<tr>
<th>Title</th>
<th>Order number</th>
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<tbody>
<tr>
<td>IBM System Storage™ TS3400 Tape Library Maintenance Information</td>
<td>GA32-0572</td>
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<tr>
<td>IBM System Storage TS3400 Tape Library Planning and Operator’s Guide (included on a CD)</td>
<td>GC27-2107</td>
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IBM System Storage TS3400 Tape Library Installation Quick Reference GA32-0573

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

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

- IBM System Storage TS3400 Tape Library SCSI Reference (GC27-2108)
- IBM Device Driver Programming Reference (English) (GC35-0483)

The IBM Publications Center Portal


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.

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Global Technology Services

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

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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


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

Technical information

Specified operating environment

Physical specifications

- Width: 437 mm (17.218 in)
- Depth: 895 mm (35.263 in)
- Height: 221 mm (8.707 in)
- Weight: 36.9 kg (81.351 lb)
To assure installability and serviceability in non-IBM industry-standard racks, review the installation planning information for any product-specific installation requirements.

**Operating environment**

- Temperature: 16 to 32 degrees C (60.8 to 89.6 degrees)
- Relative humidity: 20% to 80%
- Wet bulb (caloric value): 26 degrees (78.8 F)
- Electrical power: 100-240 Volt (2.4 A — 1.2 A)
- Noise level: 63 dB

**Hardware requirements:** The TS3400 comes with raven black covers. The TS3400 Model L5U houses 3592 tape drives, which have a Fibre Channel interface. The TS3400 can be attached to IBM System p™, IBM System i™, IBM System z™ Linux™, IBM System x™, HP, Sun, UNIX®, Linux, and Windows™ servers, and non-IBM servers, workstations, and personal computers that support those interface specifications. A current list of supported open system configurations is available from the following Web site

http://www-1.ibm.com/servers/storage/tape

Select the model, then "Interoperability matrix" for the product.

A power cord feature number must also be specified.

Each model comes with two power supplies.

**Cables:** A fibre cable is required to attach the 3592 tape drives in the TS3400 to the server host bus adapter. A fibre cable should be specified for each TS1120 Tape Drive ordered. An interposer or interposers may be required for attachment to various server adapters. Customers are responsible for selecting and ordering the correct cables and interposers.

**Fibre Channel cables:** A Fibre Channel cable is required to attach a TS1120 tape drive in the TS3400 to host Fibre Channel adapters, Fibre Channel switches, or other Fibre Channel components. The IBM TS1120 Tape Drive comes with an LC Duplex connector.

Features available for Fibre Channel cables, and their respective lengths, are as follows:

- Feature number 6005 — 5 m LC-LC Fibre Channel cable
- Feature number 6013 — 13 m LC-LC Fibre Channel cable
- Feature number 6025 — 25 m LC-LC Fibre Channel cable

An interposer may be required to connect a fibre cable with LC Duplex connectors to another SC Duplex connector. The following interposer is available:

- Feature number 5096 — Interposer SC-LC Fibre

Refer to the **Special Features** section of the TS3400 Sales Manual for detailed descriptions of these features.

**Software requirements:** The TS3400 is supported on the following operating systems at the minimum levels indicated:

- i5/OS™ V5R3, or later
- AIX 5L™ V5.1, V5.2, V5.3
- Sun Solaris 8, 9, and 10
- Microsoft™ Windows 2003 (build 3790, or later)
- 64-bit HP-UX 11iv1 and 11iv2
- Linux distributions: Red Hat Enterprise Linux Version 4, SUSE Linux Enterprise Server 9, Asianux 2.0, and SUSE Linux Enterprise Server 10 (SLES 10)

For a current list of host software versions and release levels that support the TS3400, refer to the following Web site
http://www-1.ibm.com/servers/storage/tape
Select the model and then "Interoperability Matrix" for the product.

Tivoli® Storage Manager and other compatible software offerings can provide storage and tape management software for the TS3400. Supporting software and applications must be obtained separately from IBM, IBM Business Partners, or independent software vendors (ISVs). A list of compatible software is available from your IBM representative or at

http://www-1.ibm.com/servers/storage/tape
Select the model, then "Independent Software Vendor (ISV) matrix" for the product.

IBM continues to work together with the ISVs to support the TS3400. Individual application vendors should be contacted for specific information and availability dates.

Compatibility: The TS1120 or 3592 Tape Drives cannot read cartridges written by the 3590 or 3490. Cartridges written by the TS1120 or 3592 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.

Planning information

Customer responsibilities: Physical planning is a customer responsibility. Detailed planning information is in the IBM System Storage TS3400 Tape Library Planning and Operator's Guide (GC27-2107).

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

Customers 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. Customers may request IBM to install Machine Code changes; however, you may be charged for that service.

Cable orders: Fibre Channel cables are required to attach a TS1120 Tape Drive in a TS3400 to host Fibre Channel adapters, Fibre Channel Switches, or other Fibre Channel components. Refer to Cables in the Hardware requirements section for a list of cables for the tape drives in the TS3400.

Installability: Installation time for each field-installed tape drive in the TS3400 Tape Library is approximately 1.0 hour. Installation for the TS3400 Tape Library is approximately 2.3 hours.

Supplies: For end users
Labeled only, labeled and initialized, or bulk data media for the TS1120 Model E05 Tape Drive can be ordered directly through AAS using machine type 3599. Refer to the 3599 Sales Manual.

The part numbers for additional supplies are:

<table>
<thead>
<tr>
<th>IBM part number</th>
<th>Supply item</th>
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<tbody>
<tr>
<td>18P7534</td>
<td>IBM Tape Cartridge 3592 (Data — JA)</td>
</tr>
<tr>
<td>18P7535</td>
<td>IBM Tape Cartridge 3592 (Cleaning)</td>
</tr>
<tr>
<td>18P7538</td>
<td>IBM Tape Cartridge 3592 (WORM — JW)</td>
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<tr>
<td>23R9830</td>
<td>IBM Tape Cartridge 3592 (Extended Data — JB)</td>
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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 Degausing), the cartridge is no longer useable.

For information about IBM branded media, such as additional IBM 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.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.

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**Terms and conditions**

**Volume orders:** Contact your IBM representative.

**IBM Global Financing:** No

**Warranty period:** TS3400: One year

IBM TS1120 Tape Drive and 3592 media: Refer to the IBM System Storage TS3400 Tape Library Planning and Operator's Guide (GC27-2107).

**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.

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-specific 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 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, IBM on-site repair.

**Non-IBM parts support**

**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 and maintenance service options:** Warranty service upgrades

During the warranty period, warranty service upgrades provide an enhanced level of On-site Service for an additional charge. A warranty service upgrade must be purchased during the warranty period and is for a fixed term (duration). It is not refundable or transferable and may not be prorated. If required, IBM will provide the warranty service upgrade enhanced level of On-site Service acquired by the customer. Service levels are response-time objectives and are not guaranteed.

IBM will attempt to resolve your problem over the telephone or electronically by access to 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.

**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.

- 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 maintenance 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. 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.

**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.

- 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 support**

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

IBM Service provides hardware problem determination on non-IBM parts (for example, adapter cards, PCMCIA cards, disk drives, memory) installed within IBM machines covered under warranty service upgrades or maintenance services 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.

**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 TS3400 Tape Library and the TS1120 Tape Drive 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.

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

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This license Machine Code pertains to a machine using LMC type model 3577-L5U.

IBM may release changes to the Machine Code. IBM plans to make the Machine Code changes available for download from the IBM technical support Web site

http://www-03.ibm.com/systems/storage/index.html

If the machine does not function as warranted and your problem can be resolved through your application of downloadable Machine Code, you are responsible for downloading and installing these designated Machine Code changes as IBM specifies. If you would prefer, you may request IBM to install downloadable Machine Code changes; however, you may be charged for that service.

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

The educational allowance is 15% for the products in this announcement.

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**Prices**

<table>
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<tr>
<th>Description</th>
<th>Machine type</th>
<th>Model</th>
<th>Feature number</th>
<th>Purchase price</th>
<th>MMC</th>
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