

IBM TS2250 Tape Drive Model H5S and IBM TS2240 Tape Drive Model H4V offer high capacity and performance in midrange systems environments

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At a glance

IBM® TS2250 Tape Drive Model H5S is designed to deliver IBM tape reliability and performance at open systems prices. Features of the Ultrium™ 5 model include:

- Specification data transfer rate of up to 140 MBps native
- Support for Linear Tape-Open™ (LTO™) Generation 5 media specification tape cartridge compressed capacity of up to 3.0 TB with 2 to 1 compression
- The ability to read and write on Ultrium 5 and Ultrium 4 data cartridges, and read Ultrium 3 data cartridges
- 6 Gbps Serial Attached SCSI (SAS) attachment for Model H5S
- Encryption support in the tape drive to work with application-managed encryption
- 19-inch rack mount shelf option to accommodate two TS2250 tape drives side by side in the rack using just 2U of rack space
- Dual SAS ports per drive to improve availability
- IBM Long Term File System (LTFS) Single Drive Edition (SDE) for partitioning support
- Half-High drive form factor
- Integrated electronics using IBM-engineered copper technology

IBM TS2240 Tape Drive Model H4V is designed to deliver IBM tape reliability and performance at open systems prices. Features of the Ultrium 4 model include:

- Specification data transfer rate of up to 120 MBps native for LTO Ultrium 4
- Support for LTO Generation 4 media specification tape cartridge compressed capacity of up to 800 GB native physical capacity per cartridge (1600 GB with 2 to 1 compression)
- The ability to read and write on Ultrium 4 and Ultrium 3 data cartridges, and read Ultrium 2 data cartridges
- 6 Gbps SAS attachment
- Encryption support in the tape drive to work with application managed encryption
- 19-inch rack mount shelf option to accommodate two TS2240 tape drives side by side in the rack using just 2U of rack space
- Dual SAS ports per drive to improve availability
- Half-High drive form factor
- Integrated electronics using IBM-engineered copper technology

Overview

IBM TS2250 Tape Drive Model H5S (SEO 6160S5E) and IBM TS2240 Tape Drive Model H4V (SEO 6160S4V) external stand-alone or rack mountable units are designed to offer high capacity and performance for the midrange systems environment.

TS2250 Model H5S incorporates the IBM LTO Ultrium 5 Half-High SAS Tape Drive. The TS2250 is designed to support the LTO Generation 5 native data rate performance with up to 140 MBps compared to the IBM TS2240 LTO half-high tape drive (Ultrium 4) at up to 120 MBps native data transfer rate. The TS2250 tape drive supports the LTO Generation 5 media specifications with a compressed capacity of up to 3.0 TB with 2 to 1 compression (up to 1.5 TB native capacity) compared to previous LTO 4 compressed capacity of up to 1600 GB with 2 to 1 compression (up to 800 GB native capacity) per tape cartridge. The TS2250 can read and write to Ultrium 5 and Ultrium 4 cartridges, and is read compatible with Ultrium 3 cartridges. The Ultrium 5 tape drive is encryption capable and designed to support application-managed encryption.

The TS2250 Model H5S tape drive uses a 6 Gbps dual-port SAS interface for connection to a wide spectrum of system servers. TS2250 attaches to IBM System x® and PC servers.

The following IBM TS2250 Tape Drive Model H5S half-high LTO Ultrium 5 tape drive enhancements are designed to help improve performance, capacity, and reliability:

- Native LTO Generation 5 tape drive data transfer rate of up to 140 MBps
- Support for LTO Generation 5 media specification tape cartridge compressed capacity of up to 3.0 TB with 2 to 1 compression
- 6 Gbps SAS attachment support
- A 512 MB internal buffer
- Application managed encryption support for half-high LTO Generation 5 SAS tape drives
- 8 KB cartridge memory with Ultrium 5 media
- Half-high drive form factor
- Two SAS ports per drive to improve availability and attachability
- IBM LTFS partitioning support
- Better integrated electronics using IBM engineered copper technology

TS2240 Model H4V incorporates the IBM LTO Ultrium 4 Full-High SAS Tape Drive. The TS2240 is designed to support the LTO Generation 4 native data rate performance of up to 120 MBps. The TS2240 tape drive supports the LTO Generation 4 media specifications with a compressed capacity of up to 1600 GB with 2 to 1 compression (up to 800 GB native capacity). The TS2240 can read and write to Ultrium 4 and Ultrium 3 cartridges, and is read compatible with Ultrium 2 data cartridges. The Ultrium 4 tape drive is encryption capable and designed to support application-managed encryption.

TS2240 Model H4V tape drive uses a 6 Gbps dual-port SAS interface for connection to a wide spectrum of system servers. The TS2240 attaches to select IBM System x and PC servers.

The following IBM TS2240 Tape Drive Model H4V full-high LTO Ultrium 4 tape drive enhancements are designed to help improve performance, capacity, and reliability:

- Native LTO Generation 4 tape drive data transfer rate of up to 120 MBps
- Support for LTO Generation 4 media specification tape cartridge compressed capacity of up to 1600 GB with 2 to 1 compression
- 6 Gbps SAS attachment support

- A 256 MB internal buffer
- Application managed encryption support for full-high LTO Generation 4 SAS tape drives
- 8 KB cartridge memory with Ultrium 4 media
- Half-high drive form factor
- Two SAS ports per drive to improve availability and attachability

The enclosure width allows two TS2250 or two TS2240 storage units to be mounted side by side in a 19-inch IBM server Rack Mount Shelf Kit (Feature AS1C; SEO 00NV426), requiring four EIA units (4U) of rack space.

The TS2250 or TS2240 tape drive provides an excellent migration path from digital linear tape (DLT or SDLT), 1/4 in (QIC), 4 mm (DAT), 8 mm, or older LTO generation tape drives.

IBM LTFS SDE software is included with each TS2250 and leverages LTO5 tape partitioning. It is designed to enable a self-describing tape file format and to deliver an easy tape storage and distribution solution without the use of additional database applications. Customers of IBM LTFS software are those who require a standard tape cartridge format at a low cost and will use stand-alone IBM LTO5 tape drives. IBM LTFS is well-suited for those in the media and entertainment industry, and other fields that need massive data storage on tape for long retention periods, such as banking, scientific research, and government sectors. For further information and list of supported operating systems, refer to the following website

<http://www.ibm.com/tape/ltfs>

Key prerequisites

Appropriate levels of host software are required to attach IBM TS2250 and TS2240 tape drives to select IBM System x and PC servers.

Refer to the [Technical information](#) section for details.

Planned availability date

October 10, 2014

Description

IBM TS2250 Tape Drive Model H5S (SEO 6160S5E) is an external stand-alone or rack-mountable unit that contains an LTO Ultrium 5 tape drive designed for the heavy demands of backup tape storage. The TS2250 is supported for SAS attachment to IBM System x and PC servers.

TS2250 Model H5S incorporates fifth-generation IBM LTO Ultrium technology and offers the following improvements over the Ultrium 4 tape drive:

- **Increased performance:** Maximum tape drive throughput native data rate performance is up to 140 MBps. Data tracks are written 16 at a time. IBM LTO5 tape drives can read and write LTO Ultrium 4 Data Cartridges at Ultrium 4 capacities and rates, and read LTO Ultrium 3 Data Cartridges at Ultrium 3 capacities and rates.

Note: Although the Ultrium 5 Tape Drive provides the capability for excellent tape performance, other components of the system may limit the actual performance achieved. Although the compression technology used in the tape drive can typically double the amount of data that can be stored on the media, the actual degree of compression achieved is highly sensitive to the characteristics of the data being compressed.

- **Increased tape cartridge capacity:** The LTO Generation 5 media specification tape cartridge physical capacity is up to 3.0 TB compressed physical capacity, more than double that of the Ultrium 4 and 3 Data Cartridge. This is achieved by increasing the linear density, track density, and media length. The IBM Ultrium 5 tape itself is an advanced metal particle tape developed to help provide durability and increased capacity.
- **Encryption:** The LTO Ultrium 5 Tape Drive supports data encryption on the base drive with Ultrium 5 or Ultrium 4 media.
- **Attachment options:** The LTO Ultrium 5 Tape Drive comes with 6 Gbps Fibre Channel dual-ported attachment models for connection to a wide spectrum of open system servers. They are supported on a wide range of environments including select IBM System x servers, and other servers running Linux™, Oracle Solaris, and Microsoft™ Windows™ operating system environments.
- **WORM media support:** LTO Generation 5 with media specification provides up to 1.5 TB native capacity, up to 3.0 TB in compressed mode, and up to 140 Mbps native data rate. IBM 3589 Ultrium 5 WORM Tape Cartridges are designed for archiving and data retention applications, including those applications requiring an audit trail. These cartridges work with the IBM LTO Ultrium 5 Tape Drive to help prevent the alteration or deletion of user data. IBM LTO 5 WORM Tape Cartridges can be ordered through IBM with the following features:
 - Prelabeling with the ability to specify a starting volume serial and utilize color coding
 - Packaging in individual jewel cases or in bulk
 - Cartridge memory, built into every cartridge, enhances functionality and media reliability by storing access history and media performance information for use by the tape drive every time the cartridge is accessed
 - Half-inch particle tape with up to 3.0 TB WORM compressed capacity in a single cartridge
- **Larger internal data buffer:** There is a 256 MB internal buffer in the Ultrium 5 half-high tape drive.
- **Digital speed matching:** The Ultrium 5 Tape Drive is designed to perform dynamic speed matching at one of fourteen speeds, reducing the number of backhitch repositions and improves throughput performance by more closely matching the speed of the data to or from the host. Speed matching on Ultrium 5 ranges from fourteen speeds, 40 to 140 MBps, versus seven speeds, 30 to 120 MBps on Ultrium 4.
- **Giant Magneto Resistive (GMR) head design:** Use of flat lap head technology in GMR heads from Enterprise Tape Drives for Ultrium 5 helps minimize contact, edge damage, debris accumulation, and wear on the tape as it moves over the read/write heads.
- **Dual-stage 16-channel head skew actuator:** The actuator is designed to provide precision head alignment to help support higher track density and improved data integrity. Track following skew actuator supports flangeless tape guide rollers and dynamic skew to enable the head to follow skew tape motion and improve linear actuation.
- **IBM LTFS partitioning support:** The principal function of the media partitioning is to allow for faster data access by splitting the cartridge into two media partitions. LTFS media partitioning is supported in the TS2250 tape drive. WORM media cannot be partitioned.

IBM LTFS software leverages LTO tape partitioning. It is designed to enable a self-describing tape file format and to deliver an easy tape storage and distribution solution without the use of additional database applications. Clients of IBM LTFS software are those who require a standard tape cartridge format at a low cost and will use stand-alone IBM LTO tape drives. IBM LTFS is the perfect solution for those in the media and entertainment industry, and other fields that need massive data storage on tape for long retention periods, such as banking, scientific research, and government sectors. For further information and list of supported operating systems, refer to the following website

<http://www.ibm.com/tape/ltfs>

IBM maintains the latest levels of tape drive and library device drivers and documentation on the Internet. Utilize the Fix Central download portal by accessing the following website

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

There are several menus to navigate to the correct download as follows:

1. On the first menu item Click **Select Product** > **Product Group** > *System Storage®*
2. Expand **Select from System Storage** > *Tape Systems*
3. Expand **Select from Tape systems** > *Tape drivers and software*
4. Expand **Select from Tape drivers and software** > *user product*
5. Expand **Platform** > *user operating system*
6. Click **Continue** to view what drivers are 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>

Ultrium 5 Data Cartridge

The tape cartridge physical capacity of the IBM Ultrium 1.5 TB Data Cartridge is nearly double that of the IBM Ultrium 4 800 GB Data Cartridge (3.0 TB with 2:1 compression). IBM LTO Ultrium 5 tape drives can read and write Ultrium 5 and Ultrium 4 data cartridges, and read Ultrium 3 data cartridges. LTO Ultrium 1.5 TB data cartridges can be ordered using IBM media machine type 3589, LTO Ultrium 5 tape cartridges or feature number AS23 (SEO 00NA023) at the time of purchase.

These cartridges are designed to provide several enhancements over previous tape technologies. They are designed to work with tape drives that have increased tape speeds and high-density data recording. The case is specially designed for use in automated libraries, and for repeated, unattended handling. The tape itself is an advanced metal particle tape developed for durability and capacity.

IBM TS2250 Tape Drive Model H5S supports the IBM LTFS partitioning which enables data to be written individually on your media without affecting data on another partition.

With support for IBM LTO Ultrium-format tape data cartridges, the TS2250 Tape Drive provides an excellent migration path from digital linear tape (DLT or SDLT), 1/4-inch (QIC), 4 mm (DAT), or 8 mm tape drives. It can be a cost-effective solution for backup, save-and-restore, and archiving functions as the entry point for the family of IBM Ultrium tape products.

IBM TS2240 Tape Drive Model H4V (SEO 6160S4V) is an external stand-alone or rack-mountable unit that contains an LTO Ultrium 4 tape drive designed for the heavy demands of backup tape storage. TS2240 is supported for SAS (Serial-attached SCSI) attachment to select IBM System x and PC servers.

TS2240 Model H4V incorporates IBM LTO Ultrium technology and offers the following features:

- **Performance:** Maximum Ultrium 4 tape drive throughput native data rate performance is up to 120 MBps. IBM Ultrium 4 Tape Drive can read and write LTO Ultrium 4 and Ultrium 3 Data Cartridges, and can read LTO Ultrium 2 Data Cartridges.

Note: Although the Ultrium 4 Tape Drive provides the capability for excellent tape performance, other components of the system may limit the actual performance achieved. Also, although the compression technology used in the tape drive can typically double the amount of data that can be stored on the

media, the actual degree of compression achieved is highly sensitive to the characteristics of the data being compressed.

- **Tape cartridge capacity:** The tape cartridge physical capacity is up to 800 GB native (1600 GB with 2:1 compression) with the use of the IBM LTO Ultrium 4 800 GB Data Cartridge. The tape itself is an advanced metal particle tape developed to help provide durability and capacity.
- **Compatible with Ultrium 3 and Ultrium 2 cartridges:** The Ultrium 4 Tape Drive can read and write Ultrium 4 and Ultrium 3 cartridges, and read Ultrium 2 cartridges.
- **Media compatibility:** Media written on the TS2240 external stand-alone tape drive is read and write compatible with other vendor Ultrium 4 media.
- **Attachment options:** IBM TS2240 Tape Drive Model H4V comes with a 6 Gbps SAS interface for connection to a wide spectrum of open system servers. TS2240 is supported on select IBM System x and PC servers.
- **Digital speed matching:** The Ultrium 4 Tape Drive performs dynamic speed matching at one of fourteen speeds to reduce the number of backhitch repositions and improve throughput performance by more closely matching the speed of the data to or from the host. Ultrium 4 speed matching ranges from 30.5 to 120 MBps.
- **WORM media support:** IBM 3589 Ultrium 4 800 GB WORM Tape Cartridges are designed for applications such as archiving and data retention, including those applications requiring an audit trail. These cartridges work with the IBM LTO Ultrium 4 Tape Drive to help prevent the alteration or deletion of user data.
- **Encryption support:** The IBM System Storage TS2240 LTO Ultrium 4 Tape Drive will support data encryption on the base drive with Ultrium 4 media meeting LTO consortium specifications and Application Managed Encryption.
- **Large internal data buffer:** There is a 256 MB internal data buffer in the Ultrium 4 Half-High Tape Drive.

Ultrium 4 800 GB Data Cartridge

IBM LTO Ultrium 4 Tape Drives can read and write Ultrium 4 and Ultrium 3 data cartridges, and read Ultrium 2 data cartridges. LTO Ultrium 800 GB data cartridges can be ordered using IBM media machine type 3589, LTO Ultrium 4 tape cartridges, or feature number AS22 (SEO 00NA021) at the time of purchase.

These cartridges have been designed to provide several enhancements over previous tape technologies. They are designed to work with tape drives that have increased tape speeds and high-density data recording. The case is specially designed for use in automated libraries and is designed for repeated, unattended handling. The tape itself is an advanced metal particle tape developed for durability and capacity.

With support for IBM LTO Ultrium-format tape data cartridges, the IBM TS2240 Model H4V provides an excellent migration path from digital linear tape (DLT or SDLT), 1/4-inch (QIC), 4 mm (DAT), or 8 mm tape drives. It can be a cost-effective solution for backup, save-and-restore, and archiving functions as the entry point for the family of IBM Ultrium tape products.

Accessibility by people with disabilities

A US 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 you compare competitive tape solutions, consider:

- Capacity and performance requirements

- Data integrity, reliability, and availability
- Data security and encryption
- LTFs data partitioning and formatting (only TS2250)
- Storage usage and application requirements
- Affordability
- Loyalty to legacy or existing tape formats
- Work environment where space is limited

IBM TS2250 and TS2240 tape drives and software applications are designed to address these requirements and deliver a functionally rich tape storage solution incorporating LTO Ultrium 5 and Ultrium 4 tape drive technology.

IBM TS2250 Tape Drive Model H5S and IBM TS2240 Tape Drive Model H4V are excellent choices if you use tape drives that require larger-capacity or higher-performance tape backup. TS2250 and TS2240, entry offerings for the family of IBM Ultrium Tape products, are the answer to growing storage requirements and shrinking backup windows.

The TS2250 and TS2240 tape drives are excellent tape storage solutions if you use digital linear tape drives or require high-performance tape backup. In addition to reading and writing on IBM LTO Ultrium 5 or 4 tape cartridges, the TS2250 and TS2240 tape drives provide an excellent functional alternative to DLT/SDLT, 1/4-inch, 4 mm, 8 mm, or older LTO generation tape drives.

For capacity requirements greater than 3.0 TB (compressed) and for incorporating LTO Ultrium technology, the IBM TS2260 and TS2360 tape drives, IBM TS2900 Tape Autoloaders, or IBM TS3100 or TS3200 Tape Libraries should be considered.

Product number

The following are newly announced features on the specified models of the IBM TS2240 Tape Drive and IBM TS2250 Tape Drive 6160 machine type:

Description	MT	Model	Feature
IBM TS2240 Tape Drive Model H4V	6160	H4V	
IBM TS2250 Tape Drive Model H5S	6160	H5S	
2 m SAS/Mini-SAS 1x Cable (host SFF-8470 to target SFF-8088)	6160	H4V H5S	5402
2.5 Meter Mini-SAS/Mini-SAS Cable	6160	H4V H5S	AS0Z
HD-SAS Cable to Mini-SAS	6160	H4V H5S	AS10
Y SAS HD to Mini-SAS Cable	6160	H4V H5S	AS12
6160 Rack Mount Shelf Kit w/PDU Line Cord	6160	H4V H5S	AS1C
Ultrium Cleaning Cartridge L1 UCC	6160	H4V H5S	AS1E
Ultrium 4 Data Cartridges 5-Pack	6160	H4V H5S	AS22
Ultrium 5 Data Cartridges 5-Pack	6160	H5S	AS23
2.8m, 10A/120V, C13 to NEMA 5-15P (US) Line Cord	6160	H4V H5S	AS29
2.8m, 10A/230V, C13 to CEE7-VII (Europe) Line Cord	6160	H4V H5S	AS2A
2.8m, 10A/230V, C13 to DK2-5a (Denmark) Line Cord	6160	H4V H5S	AS2B
2.8m, 10A/230V, C13 to BS 1363/A (UK) Line Cord	6160	H4V H5S	AS2C
2.8m, 10A/230V, C13 to SI 32 (Israel) Line Cord	6160	H4V H5S	AS2D
2.8m, 10A/230V, C13 to SEV 1011-S24507 (Sws) Line Cord	6160	H4V	AS2E

		H5S	
2.8m, 10A/230V, C13 to SABS 164 (South Africa) Line Cord	6160	H4V H5S	AS2F
2.8m, 10A/230V, C13 to CEI 23-16 (Italy) Line Cord	6160	H4V H5S	AS2G
2.8m, 10A/230V, C13 to AS/NZS 3112 (Aus/NZ) Line Cord	6160	H4V H5S	AS2H
2.8m, 10A/208V, C13 to NEMA 6-15P (US) Line Cord	6160	H4V H5S	AS2J
2.8m, 10A/220V, C13 to IRAM 2073 (Argentina) Line Cord	6160	H4V H5S	AS2K
2.8m, 10A/220V, C13 to CNS 10917-3 (Taiwan) Line Cord	6160	H4V H5S	AS2L
2.8m, 10A/220V, C13 to GB 2099.1 (China) Line Cord	6160	H4V H5S	AS2M
2.8m, 10A/110V, C13 to CNS 10917-3 (Taiwan) Line Cord	6160	H4V H5S	AS2N
2.8m, 12A/100V, C13 to JIS C-8303 (Japan) Line Cord	6160	H4V H5S	AS2P
2.8m, 12A/220V, C13 to KSC 8305 (S. Korea) Line Cord	6160	H4V H5S	AS2Q
2.8m, 10A/240V, C13 to IS 6538 (India) Line Cord	6160	H4V H5S	AS2R
2.8m, 10A/220V, C13 to NBR 6147 (Brazil) Line Cord	6160	H4V H5S	AS2T
2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	6160	H4V H5S	AS2U
IBM TS2250 Tape Drive Model H5S	6160	H5S	AS5R
IBM TS2240 Tape Drive Model H4V	6160	H4V	AS5S
EMEA Long Leadtime Config	6160	H4V H5S	1763
Hungary CHW plant 9SH	6160	H4V H5S	1764
Guad CHW plant 9KQ	6160	H4V H5S	1765
ISTC CHW 9K2	6160	H4V H5S	1766
RTP CHW 9NR	6160	H4V H5S	1767
Offload Manufacturing to ISTC	6160	H4V H5S	1770
Capacity Scheduling Service	6160	H4V H5S	1772
Custom SLA Sched Service	6160	H4V H5S	1796
Consolidate Shipment	6160	H4V H5S	8031
TAA Compliant Order	6160	H4V H5S	8067
Request for a Classic RPQ	6160	H4V H5S	2248
Custom Unit Carton Label	6160	H4V H5S	2220
Vendor Logo Hardware	6160	H4V H5S	2247

Single Entity Offerings (SEO)

Description	SEO number
IBM TS2240 Tape Drive Model H4V	6160S4V

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=114-134>

Publications

The following publication is shipped with the product. Additional copies are available.

Title	Order number
IBM System Storage TS2250 Tape Drive Model H5S Setup, Operator, and Service Guide	GC27-2275

The following publication is shipped with the product. Additional copies are available.

Title	Order number
IBM System Storage TS2240 Tape Drive Model H4V Setup, Operator, and Service Guide	GC27-3902

The following publications are available. To order, contact your local Lenovo representative.

Title	Order number
IBM System Storage TS2250 Tape Drive Model H5S Setup, Operator, and Service Guide	GC27-2275
IBM System Storage TS2250 Tape Drive Model H5S Quick Reference (English)	GC27-2276
IBM Tape Device Driver Installation and User's Guide (English)	GC27-2130
IBM Tape Device Driver Programming Reference (English)	GC32-0566

The following publications are available immediately. To order, contact your local Lenovo representative.

Title	Order number
IBM System Storage TS2240 Tape Drive Model H4V Setup, Operator, and Service Guide	GC27-3902
IBM System Storage TS2240 Tape Drive Model H4V Quick Reference (English)	GC27-2276

These publications are also available at

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

Click on country, then enter publication number.

Note: All new IBM tape device drivers will only be posted to the web through the Fix Central download portal.

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 accessing the following website

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

There are several menus to navigate to the correct download as follows:

1. On the first menu item Click **Select Product** > **Product Group** > *System Storage*
2. Expand **Select from System Storage** > *Tape Systems*
3. Expand **Select from Tape systems** > *Tape drivers and software*
4. Expand **Select from Tape drivers and software** > *user product*
5. Expand **Platform** > *user operating system*
6. Click **Continue** to view what drivers are 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>

IBM Knowledge 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. IBM Knowledge Center is located at

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

Technical information

Specified operating environment

Physical specifications

6160-H5S

- Width: 213 mm (8.4 in.)
- Depth: 332 mm (13.1 in.)
- Height: 58 mm (2.3 in.)
- Weight: 4.3 kg (9.40 lb)

6160-H4V

- Width: 213 mm (8.4 in.)
- Depth: 332 mm (13.1 in.)
- Height: 58 mm (2.3 in.)
- Weight: 4.3 kg (9.40 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: 10°C to 38°C (50°F to 100°F)
- Relative humidity: 20 to 80 percent

- Wet bulb (caloric value): 26°C (78.8°F)
- Electrical power: 0.21 kVA 1.0 amps at 100 V ac, 0.5 amps at 240 V ac

Homologation

This product is not certified for direct connection by any means whatsoever to interfaces of public telecommunications networks. Certification may be required by law prior to making any such connection.

Hardware requirements

The TS2250 and TS2240 tape drives come with raven black covers. TS2250 Model H5S and TS2240 Model H4V use a SAS interface. The TS2250 and TS2240 tape drives can be attached to IBM System x and non-IBM servers that support those interface specifications. A current list of supported open system configurations is available from the following website

<http://www-1.ibm.com/storage/tape/lto>

1. On menu item Click **Select the model** > *Product details*
2. Click **Learn more** > *Interoperability matrix*
3. Click **Learn more** > *Independent Software Vendor (ISV) matrix for LTO*

A power cord option number, if applicable, should also be specified.

Cables: For IBM TS2250 Tape Drive Model H5S and IBM TS2240 Tape Drive Model H4V, a SAS cable is required to attach a TS2250 or TS2240 tape drive to host a SAS adapter.

- SAS/Mini-SAS cables provide attachment from HBA with SFF-8470 to the TS2250 Ultrium 5 SAS drive with SFF-8088
- Mini-SAS/Mini-SAS cables provide attachment from HBA with SFF-8088 SAS/Mini-SAS external cable to the TS2250 or TS2240 Ultrium 5 or Ultrium 4 SAS drive with SFF-8088.

At least one SAS cable should be specified on the initial plant order.

The following cable options are available for SAS attachment:

- Feature 5402 (SEO 00NA007) - 2.0 m SAS/Mini-SAS Cable (from HBA with SFF-8470 to drive with SFF-8088)
- Feature AS0Z (SEO 00NA009) - 2.0 m Mini-SAS/Mini-SAS Cable (from HBA with SFF-8088 to drive with SFF-8088)

Refer to the **Special Features** section of the tape drive sales manual for detailed descriptions of these features.

Software requirements

Security Storage Manager, BRMS, and other compatible software offerings provide storage and tape management software for the 6160, TS2250, or TS2240 family of products. 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/storage/tape/lto>

1. Click *Select model* > *Product details*
2. Click **Learn more** > *Interoperability matrix*
3. Click **Learn more** > *Independent Software Vendor (ISV) matrix*

IBM continues to work together with the ISVs to support the IBM LTO Ultrium tape drives, TS2250, and TS2240 family of products. Individual application vendors should be contacted for specific information and availability dates.

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2. Expand **Select from System Storage** > *Tape Systems*
3. Expand **Select from Tape systems** > *Tape drivers and software*
4. Expand **Select from Tape drivers and software** > *user product*
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<http://www-01.ibm.com/support/docview.wss?rs=577&uid=ssg1S7002972>

Compatibility

IBM LTO Ultrium 4 Tape Drive can read and write IBM LTO Ultrium 4 and 3 data cartridges, and read IBM LTO Ultrium 2 data cartridges. Ultrium 4 media written on the TS2240 External Stand-alone Tape Drive is read and write compatible with LTO Ultrium 5 Tape Drives.

IBM LTO Ultrium 5 Tape Drive can read and write IBM LTO Ultrium 5 and 4 data cartridges, and read IBM LTO Ultrium 3 data cartridges. Ultrium 5 media written on the TS2250 External Stand-alone Tape Drive is read and write compatible with LTO Ultrium 6 Tape Drives.

Limitations

SAS cable lengths are limited to 5.5 m (18 ft).

Installing more than one TS2250 or TS2240 tape drive on a SAS bus may impact tape drive or system performance. Intermixing of other SAS devices on the same bus as the TS2250 or TS2240 may also impact performance of those devices.

Although multiple systems may be attached to a tape drive, the systems cannot use the drive simultaneously.

While 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.

Planning information

Customer responsibilities

Physical planning is a customer responsibility. Detailed planning information is in the *IBM System Storage TS2250 Tape Drive Model H5S Setup, Operator, and Service Guide* (GC27-2275), and *IBM System Storage TS2240 Tape Drive Model H4V Setup, Operator, and Service Guide* (GC27-3902). The TS2250 and TS2240 tape drives are designated as a customer setup unit (CSU). It is the customers' responsibility to install the unit. Customers are responsible for obtaining the appropriate SAS adapters, cables, and interposers (if required) for system attachment. Customers are also responsible for ordering media. For optimum performance, the customer must obtain the latest level of firmware prior to installing the unit. Customers can download the latest level of firmware from the LTO website

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

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 website or from other electronic media, and following the instructions that IBM provides. You may request Lenovo to install Machine Code changes; however, you may be charged for that service.

Cable orders

For IBM TS2250 Tape Drive Model H5S or IBM TS2240 Tape Drive Model H4V, a SAS cable is required to attach a TS2250 or TS2240 tape drive to host a SAS adapter.

- SAS/Mini-SAS cables provide attachment from an HBA with SFF-8470 to the TS2250 or TS2240 Ultrium SAS drive with SFF-8088
- Mini-SAS/Mini-SAS cables provide attachment from an HBA with SFF-8088 SAS/Mini-SAS external cable to the TS2250 or TS2240 Ultrium SAS drive with SFF-8088

At least one SAS cable should be specified on the initial plant order.

The following cable options are available for SAS attachment:

- Feature 5402 (SEO 00NA007) - 2.0M SAS/Mini-SAS Cable (from HBA with SFF-8470 to drive with SFF-8088)
- Feature AS0Z (SEO 00NA009) - 2.0M Mini-SAS/Mini-SAS Cable (from HBA with SFF-8088 to drive with SFF-8088)

Refer to the **Specify or Special Features** section of the 6160 Sales Manual for a detailed description of the cables available.

Installability

Installation time for the TS2250 or TS2240 tape drive is approximately 0.5 to 0.7 hours.

Packaging

Product	Shipment group	Number of boxes
6160	TS2250 with Tape Drive (6160 Model H5S) One cleaning cartridge Documentation CD that includes: - IBM System Storage TS2250 Model H5S Tape Drive Setup, Operator, and Service Guide - IBM Translated Safety Notices Documentation kit that includes: - License Agreement - IBM System Storage TS2250 Model H5S Quick Reference - CD pointer document - Device Driver pointer document - Compliance document	1
Product	Shipment group	Number of boxes
6160	TS2240 with Tape Drive (6160 Model H4V) One cleaning cartridge Documentation CD that includes: - IBM System Storage TS2240 Model H4V Tape Drive Setup, Operator, and Service Guide - IBM Translated Safety Notices Documentation kit that includes: - License Agreement	1

- IBM System Storage TS2240
Model H4V Quick Reference
- CD pointer document
- Device Driver pointer document
- Compliance document

Security, auditability, and control

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

Lenovo Financial Services

We are dedicated to delivering a positive finance experience for customers like you who want to maximize your purchase power by obtaining the technology you need today, protect against technology obsolescence, and preserve your capital for other uses.

We work with businesses, nonprofit organizations, governments and educational institutions to finance their entire technology solution (e.g. hardware, software and services) from Lenovo and other leading manufacturers and resellers. We focus on making it easy to do business with us and providing customers with a positive experience. Contact your Lenovo sales representative or visit

<http://www.lenovoFS.com>

Products - terms and conditions

To obtain copies of the Lenovo Statement of Limited Warranty, contact your reseller or Lenovo.

In the United States write to:

Warranty Information
1009 Think Place B1/4B23
Morrisville, NC 27560
Attn: Lenovo Services

Warranty period

- Three years, IBM Ultrium media is warranted separately

A Lenovo part or feature installed during the initial installation of a Lenovo machine is subject to a full warranty effective on the date of installation of the machine. A Lenovo part or feature which replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. A Lenovo 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, Lenovo provides repair or exchange service, depending on the type of warranty service specified below for the machine. Lenovo will attempt to resolve your problem over the telephone or electronically. Certain machines contain remote

support capabilities for direct problem reporting, remote problem determination, and resolution with Lenovo. You must follow the problem determination and resolution procedures that Lenovo specifies. Scheduling of service will depend upon the time of your call, machine technology 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 Lenovo's normal service area. Contact your local Lenovo representative or your reseller for country- and location-specific information.

The type of service is Customer Replaceable Unit (for example, keyboard, mouse, speaker, memory, or hard disk drive) Service and On-site Service.

Customer Replaceable Unit (CRU) Service

Lenovo provides a replacement CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from Lenovo at any time on your request. A CRU is designated as being either a Tier 1 (mandatory) or a Tier 2 (optional) CRU. Installation of Tier 1 CRUs, as specified in this announcement, is your responsibility. If Lenovo installs a Tier 1 CRU at your request, you will be charged for the installation. You may install a Tier 2 CRU yourself or request Lenovo to install it, at no additional charge, under the type of warranty service designated for your Machine.

Based upon availability, a CRU will be shipped for next business day (NBD) delivery. Lenovo specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to Lenovo. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if Lenovo does not receive the defective CRU within 15 days of your receipt of the replacement.

The following parts or features have been designated as Tier 1 CRUs:

- The complete IBM TS2250 tape drive with enclosure
- The complete IBM TS2240 tape drive with enclosure
- External 2.0 m SAS Cables

On-site Service

At Lenovo's discretion you will receive CRU service or Lenovo or your reseller will repair the failing machine at your location and verify its operation. If required, On-site Repair is provided, 9 hours per day, Monday through Friday excluding holidays, NBD response. You must provide a suitable working area to allow disassembly and reassembly of the Lenovo machine. The area must be clean, well lit, and suitable for the purpose. On-site Service is not available in all countries, and some countries have kilometer or mileage limitations from an Lenovo service center. In those locations where On-site Service is not available, the normal in-country service delivery is used.

Call Lenovo to assist with problem isolation for hardware to determine if warranty service is required. Telephone support may be subject to additional charges, even during the limited warranty period.

Calls must be received by 5:00 p.m. local time in order to qualify for NBD service.

International Warranty Service

International Warranty Service (IWS) is available in selected countries or regions.

The warranty service type and service level provided in the servicing country may be different from that provided in the country in which the machine was purchased.

Under IWS, warranty service will be provided with the prevailing warranty service type and service level available for the IWS-eligible machine type in the servicing country, and the warranty period observed will be that of the country in which the machine was purchased.

To determine the eligibility of your machine and to view a list of countries where service is available, visit

<http://www-947.ibm.com/support/entry/portal/docdisplay?Indocid=GCOR-3FBJK2>

Licensing

Programs included with this product are licensed under the terms and conditions of the License Agreements that are shipped with the system.

Maintenance services

Lenovo Services

Lenovo Services provide hardware warranty service upgrades, maintenance, and selected support services in one agreement.

Warranty service upgrade

During the warranty period, a warranty service upgrade provides 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, Lenovo 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.

Lenovo will attempt to resolve your problem over the telephone or electronically by access to an Lenovo website. You must follow the problem determination and resolution procedures that Lenovo specifies. Following problem determination, if Lenovo 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.

CRUs will be provided as part of the machine's standard warranty CRU Service.

Maintenance service

If required, Lenovo provides repair or exchange service, depending on the type of maintenance service specified below for the machine. Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. You must follow the problem determination and resolution procedures that Lenovo specifies. Scheduling of service will depend upon the time of your call, machine technology and availability of parts. Service levels are response-time objectives and are not guaranteed.

CRU Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), Lenovo will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from Lenovo at any time on your request.

Lenovo specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to Lenovo. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if Lenovo does not receive the defective CRU within 15 days of your receipt of the replacement.

On-site Service

Lenovo 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 Lenovo machine. The area must be clean, well lit, and suitable for the purpose.

See the [Prices](#) section for specific offerings.

Maintenance service (ICA)

Maintenance services are available for ICA legacy contracts.

Alternative service (warranty service upgrades)

During the warranty period, a warranty service upgrade provides 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, Lenovo 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.

Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. You must follow the problem determination and resolution procedures that Lenovo specifies. Scheduling of service will depend upon the time of your call, machine technology and availability of parts.

A CRU will be provided as part of the machine's standard warranty CRU Service except that you may install a Tier 1 CRU yourself or request Lenovo to install it, at no additional charge, under the type of warranty service specified below, On-site Service.

Maintenance service

If required, Lenovo provides repair or exchange service, depending on the type of maintenance service specified below for the machine. Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. You must follow the problem determination and resolution procedures that Lenovo specifies. Scheduling of service will depend upon the time of your call, machine technology and availability of parts. Service levels are response-time objectives and are not guaranteed.

CRU Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), Lenovo will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from Lenovo at any time on your request.

Lenovo specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to Lenovo. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if Lenovo does not receive the defective CRU within 15 days of your receipt of the replacement.

Non-Lenovo parts support

Warranty service

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

Warranty service upgrades and maintenance services

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

Lenovo Service provides hardware problem determination on non-Lenovo parts (for example, adapter cards, PCMCIA cards, disk drives, or memory) installed within

Lenovo machines covered under warranty service upgrades or maintenance services and provides the labor to replace the failing parts at no additional charge.

If Lenovo 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 Lenovo FRU label), Lenovo may also source and replace the failing part at no additional charge. For all other non-Lenovo 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.

To obtain copies of the Lenovo Statement of Limited Warranty, contact your reseller or Lenovo.

In the United States write to:

Warranty Information
1009 Think Place
B1/4B23
Morrisville, NC 27560
Attn: Lenovo Services

Warranty period

- Three years, IBM Ultrium media is warranted separately

A Lenovo part or feature installed during the initial installation of a Lenovo machine is subject to a full warranty effective on the date of installation of the machine. A Lenovo part or feature which replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. A Lenovo 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, Lenovo provides repair or exchange service, depending on the type of warranty service specified below for the machine. Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. You must follow the problem determination and resolution procedures that Lenovo specifies. 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 Lenovo's normal service area. Contact your local Lenovo representative or your reseller for country- and location-specific information.

Customer Replaceable Unit (CRU) Service

Lenovo provides a replacement CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive) to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from Lenovo at any time on your request. Installation of Tier 1 CRUs, as specified in this announcement, is your responsibility. If Lenovo installs a Tier 1 CRU, at your request, you will be charged for the installation.

Based upon availability, a CRU will be shipped for next business day (NBD) delivery. Lenovo specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to Lenovo. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if Lenovo does not receive the defective CRU within 15 days of your receipt of the replacement.

The following parts have been designated as Tier 1 CRUs:

- The complete IBM TS2250 tape drive with enclosure
- The complete IBM TS2240 tape drive with enclosure
- External 2.0 m SAS Cables

Call Lenovo to assist with problem isolation for hardware to determine if warranty service is required.

Calls must be received by 5:00 p.m. local time in order to qualify for NBD service.

International Warranty Service

International Warranty Service (IWS) is available in selected countries or regions.

The warranty service type and service level provided in the servicing country may be different from that provided in the country in which the machine was purchased.

Under IWS, warranty service will be provided with the prevailing warranty service type and service level available for the IWS-eligible machine type in the servicing country, and the warranty period observed will be that of the country in which the machine was purchased.

To determine the eligibility of your machine and to view a list of countries where service is available, visit

<http://www-947.ibm.com/support/entry/portal/docdisplay?Indocid=GCOR-3FBJK2>

Licensing

Programs included with this product are licensed under the terms and conditions of the License Agreements that are shipped with the system.

Maintenance services

Lenovo Services

Lenovo Services provide hardware warranty service upgrades, maintenance, and selected support services in one agreement.

Warranty service upgrade

Not available.

Maintenance service

If required, Lenovo provides repair or exchange service, depending on the type of maintenance service specified below for the machine. Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. You must follow the problem determination and resolution procedures that Lenovo specifies. Scheduling of service will depend upon the time of your call, machine technology and availability of parts. Service levels are response-time objectives and are not guaranteed.

CRU Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), Lenovo will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from Lenovo at any time on your request.

Lenovo specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to Lenovo. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if Lenovo does not receive the defective CRU within 15 days of your receipt of the replacement.

On-site Service

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

See the [Prices](#) section for specific offerings.

Maintenance service (ICA)

Maintenance services are available for ICA legacy contracts.

Maintenance service

If required, Lenovo provides repair or exchange service, depending on the type of maintenance service specified below for the machine. Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. You must follow the problem determination and resolution procedures that Lenovo specifies. 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.

CRU Service

If your problem can be resolved with a CRU (for example, keyboard, mouse, speaker, memory, or hard disk drive), Lenovo will ship the CRU to you for you to install. CRU information and replacement instructions are shipped with your machine and are available from Lenovo at any time on your request.

Lenovo specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to Lenovo. When return is required, return instructions and a container are shipped with the replacement CRU, and you may be charged for the replacement CRU if Lenovo does not receive the defective CRU within 15 days of your receipt of the replacement.

On-site Service

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

See the [Prices](#) section for specific offerings.

Non-Lenovo parts support

Warranty service

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

Warranty service upgrades and maintenance services

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

Lenovo Service provides hardware problem determination on non-Lenovo parts (for example, adapter cards, PCMCIA cards, disk drives, or memory) installed within Lenovo machines covered under warranty service upgrades or maintenance services and provides the labor to replace the failing parts at no additional charge.

If Lenovo has a Technical Service Agreement with the manufacturer of the failing part, or if the failing part is an accommodations part (a part with a Lenovo FRU label), Lenovo may also source and replace the failing part at no additional charge. For all other non-Lenovo 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.

To obtain copies of the Lenovo Statement of Limited Warranty, contact your reseller or Lenovo.

In the United States write to:

Warranty Information
1009 Think Place
B1/4B23
Morrisville, NC 27560
Attn: Lenovo Services

Warranty period

- Three years, IBM Ultrium media is warranted separately

A Lenovo part or feature installed during the initial installation of a Lenovo machine is subject to a full warranty effective on the date of installation of the machine. A Lenovo part or feature which replaces a previously installed part or feature assumes the remainder of the warranty period for the replaced part or feature. A Lenovo 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, Lenovo provides exchange service for the machine. Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. You must follow the problem determination and resolution procedures that Lenovo specifies. 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 Lenovo's normal service area. Contact your local Lenovo representative or your reseller for country- and location-specific information.

CRU and Machine Exchange service

At Lenovo's discretion you will receive specified CRU service, or Lenovo will initiate shipment of a replacement machine to your location. You are responsible for its installation and verification of operation. You must pack the failed machine into the shipping container that contained the replacement machine and return the failed machine to Lenovo. Transportation charges, both ways, are paid by Lenovo. You may be charged for the replacement machine if Lenovo does not receive the failed machine within 15 days of your receipt of the replacement.

Call Lenovo to assist with problem isolation for hardware to determine if warranty service is required.

International Warranty Service

International Warranty Service (IWS) is available in selected countries or regions.

The warranty service type and service level provided in the servicing country may be different from that provided in the country in which the machine was purchased.

Under IWS, warranty service will be provided with the prevailing warranty service type and service level available for the IWS-eligible machine type in the servicing country, and the warranty period observed will be that of the country in which the machine was purchased.

To determine the eligibility of your machine and to view a list of countries where service is available, visit

<http://www-947.ibm.com/support/entry/portal/docdisplay?Indocid=GCOR-3FBJK2>

Licensing

Programs included with this product are licensed under the terms and conditions of the License Agreements that are shipped with the system.

Maintenance services

Lenovo Services

Lenovo Services provide hardware warranty service upgrades, maintenance, and selected support services in one agreement.

Warranty service upgrade

During the warranty period, a warranty service upgrade provides 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, Lenovo 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.

Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. You must follow the problem determination and resolution procedures that Lenovo specifies. Scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

On-site Service

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

See the [Prices](#) section for specific offerings.

Maintenance service

If required, Lenovo provides exchange service for the machine. Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. You must follow the problem determination and resolution procedures that Lenovo specifies. Scheduling of service will depend upon the time of your call, machine technology and availability of parts.

On-site Service

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

See the [Prices](#) section for specific offerings.

Maintenance service (ICA)

Maintenance services are available for ICA legacy contracts.

Alternative service (warranty service upgrades)

During the warranty period, a warranty service upgrade provides 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, Lenovo 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.

Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. You must follow the problem determination and resolution procedures that Lenovo specifies. Scheduling of service will depend upon the time of your call, machine technology and redundancy, and availability of parts.

On-site Service

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

See the [Prices](#) section for specific offerings.

Maintenance service

If required, Lenovo provides exchange service for the machine. Lenovo will attempt to resolve your problem over the telephone or electronically by access to a Lenovo website. You must follow the problem determination and resolution procedures that Lenovo specifies. Scheduling of service will depend upon the time of your call, machine technology and availability of parts. Service levels are response-time objectives and are not guaranteed.

On-site Service

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

See the [Prices](#) section for specific offerings.

Non-Lenovo parts support

Warranty service

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

Warranty service upgrades and maintenance services

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

Lenovo Service provides hardware problem determination on non-Lenovo parts (for example, adapter cards, PCMCIA cards, disk drives, or memory) installed within Lenovo machines covered under warranty service upgrades or maintenance services and provides the labor to replace the failing parts at no additional charge.

If Lenovo has a Technical Service Agreement with the manufacturer of the failing part, or if the failing part is an accommodations part (a part with a Lenovo FRU label), Lenovo may also source and replace the failing part at no additional charge. For all other non-Lenovo 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

Lenovo hourly service rate classification

Two

General terms and conditions

Field-installable features

No

Model conversions

No

Machine installation

Customer setup. Customers are responsible for installation according to the instructions Lenovo provides with the machine.

Graduated program license charges apply

No

Licensed machine code

IBM Machine Code is licensed for use by a customer on the IBM machine for which it was provided by IBM under the terms and conditions of the IBM License Agreement for Machine Code, to enable the machine to function in accordance with its specifications, and only for the capacity authorized by IBM and acquired by the customer. You can obtain the agreement by contacting your IBM representative or visiting

http://www-304.ibm.com/servers/support/machine_warranties/machine_code.html

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

<http://www-304.ibm.com/systems/support/>

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.

Machine Code License Acceptance Requirement

Acceptance-By-Use Machine: Yes, acceptance of the Machine Code license terms is conveyed through the user's initial use of the Machine.

Prices

For additional information and current prices, contact your local Lenovo representative.

The following are newly announced features on the specified models of the IBM TS2240 Tape Drive and IBM TS2250 Tape Drive 6160 machine type:

Description	Model number	Feature numbers	Initial/MES/Both/Support	RP	
				CSU	MES
IBM TS2240 Tape Drive Model	H4V				
	H4V			Yes	
IBM TS2250 Tape Drive Model	H5S				
	H5S			Yes	
2 m SAS/Mini-SAS 1x Cable (host SFF-8470 to target SFF-8088)	H4V	5402	Both		
	H5S		Both		
2.5 Meter Mini-SAS/Mini-SAS Cable	H4V	AS0Z	Both		
	H5S		Both		
HD-SAS Cable to Mini-SAS	H4V	AS10	Both		
	H5S		Both		
Y SAS HD to Mini-SAS Cable	H4V	AS12	Both		
	H5S		Both		
6160 Rack Mount Shelf Kit w/PDU Line Cord	H4V	AS1C	Both		
	H5S		Both		
Ultrium Cleaning Cartridge L1 UCC	H4V	AS1E	Both		
	H5S		Both		
Ultrium 4 Data Cartridges 5-Pack	H4V	AS22	Both		
	H5S		Both		
Ultrium 5 Data Cartridges 5-Pack	H5S	AS23	Both		
2.8m, 10A/120V, C13 to NEMA 5-15P (US) Line Cord	H4V	AS29	Both		
	H5S		Both		
2.8m, 10A/230V, C13 to CEE7-VII (Europe) Line Cord	H4V	AS2A	Both		
	H5S		Both		
2.8m, 10A/230V, C13 to DK2-5a (Denmark) Line Cord	H4V	AS2B	Both		
	H5S		Both		
2.8m, 10A/230V, C13 to BS 1363/A (UK) Line Cord	H4V	AS2C	Both		
	H5S		Both		
2.8m, 10A/230V, C13 to SI 32 (Israel) Line Cord	H4V	AS2D	Both		
	H5S		Both		
2.8m, 10A/230V, C13 to SEV 1011-S24507 (Sws) Line Cord	H4V	AS2E	Both		
	H5S		Both		
2.8m, 10A/230V, C13 to SABS 164 (South Africa) Line Cord	H4V	AS2F	Both		
	H5S		Both		
2.8m, 10A/230V, C13 to CEI 23-16 (Italy) Line Cord	H4V	AS2G	Both		
	H5S		Both		
2.8m, 10A/230V, C13 to AS/NZS 3112 (Aus/NZ) Line Cord	H4V	AS2H	Both		
	H5S		Both		
2.8m, 10A/208V, C13 to NEMA 6-15P (US) Line Cord	H4V	AS2J	Both		
	H5S		Both		
2.8m, 10A/220V, C13 to IRAM 2073 (Argentina) Line Cord	H4V	AS2K	Both		
	H5S		Both		

2.8m, 10A/220V, C13 to CNS 10917-3 (Taiwan) Line Cord	H4V H5S	AS2L	Both Both
2.8m, 10A/220V, C13 to GB 2099.1 (China) Line Cord	H4V H5S	AS2M	Both Both
2.8m, 10A/110V, C13 to CNS 10917-3 (Taiwan) Line Cord	H4V H5S	AS2N	Both Both
2.8m, 12A/100V, C13 to JIS C-8303 (Japan) Line Cord	H4V H5S	AS2P	Both Both
2.8m, 12A/220V, C13 to KSC 8305 (S. Korea) Line Cord	H4V H5S	AS2Q	Both Both
2.8m, 10A/240V, C13 to IS 6538 (India) Line Cord	H4V H5S	AS2R	Both Both
2.8m, 10A/220V, C13 to NBR 6147 (Brazil) Line Cord	H4V H5S	AS2T	Both Both
2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	H4V H5S	AS2U	Both Both
IBM TS2250 Tape Drive Model H5S	H5S	AS5R	Initial
IBM TS2240 Tape Drive Model H4V	H4V	AS5S	Initial
EMEA Long Leadtime Config	H4V H5S	1763	Initial Initial
Hungary CHW plant 9SH	H4V H5S	1764	Initial Initial
Guad CHW plant 9KQ	H4V H5S	1765	Initial Initial
ISTC CHW 9K2	H4V H5S	1766	Initial Initial
RTP CHW 9NR	H4V H5S	1767	Initial Initial
Offload Manufacturing to ISTC	H4V H5S	1770	Initial Initial
Capacity Scheduling Service	H4V H5S	1772	Initial Initial
Custom SLA Sched Service	H4V H5S	1796	Initial Initial
Consolidate Shipment	H4V H5S	8031	Initial Initial
TAA Compliant Order	H4V H5S	8067	Initial Initial
Custom Unit Carton Label	H4V H5S	2220	Initial Initial
Vendor Logo Hardware	H4V H5S	2247	Initial Initial
Request for a Classic RPQ	H4V H5S	2248	Initial Initial

SEO (Single Entity Offerings)

Description	SEO numbers	Initial/	RP
		MES/ Both/ Support	
IBM TS2240 Tape Drive Model H4V	6160S4V	Both	Yes
IBM TS2250 Tape Drive Model H5S	6160S5E	Both	Yes

CSU = Customer setup

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Warranty and maintenance - System X

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