

# IBM System Storage TS3100 and TS3200 Tape Libraries

## IBM Storage at-a-glance guide

The IBM® System Storage® TS3100 and TS3200 Tape Libraries are well-suited for handling the backup, restore, and archive data-storage needs for small-to-medium environments.

The TS3100 and TS3200 Tape Libraries are shown in Figure 1.



Figure 1. TS3100 (3573 L2U) Tape Library and TS3200 (3573 L4U) Tape Library

The TS3100 library with its use of one Ultrium LTO-5 Full-High tape drive or up to two Ultrium LTO-5 Half-High tape drives and 24 tape cartridge capacity can store up to 72 TB compressed (36 TB native). The TS3200 48 tape cartridge capacity and use of up to two Ultrium LTO-5 Full-High tape drives or up to four Ultrium LTO-5 Half-High tape drives scales to 144 TB compressed (72 TB native). The IBM Ultrium LTO-5 tape drive supports up to 140 MBps native data-transfer.

Both libraries come standard with a bar-code reader, supporting the libraries operation in sequential or random access mode. The design of the remote library management through a standard web interface offers flexibility and greater administrative control of storage operations. Path Failover, a new optional feature for the libraries, is designed to provide automatic control path failover to a preconfigured redundant control path in the event that a host adapter or control path drive is lost, without aborting the current job in process.

### Did you know?

The TS3100 and TS3200 Tape Libraries are designed for storage management, capacity, performance, data protection, reliability, affordability, and application requirements. They are functionally rich, high-capacity, entry-level tape-storage solutions that incorporate the latest generation of LTO IBM Ultrium 5 tape technology.

Both IBM TS3100 and TS3200 Models are excellent solutions for large-capacity or high-performance tape backup with or without random access. They are also excellent choices for tape automation for IBM Power Systems™, IBM System x®, and other open systems.

## Highlights

The IBM TS3100 and TS3200 are designed to take advantage of Linear Tape-Open (LTO) technology to cost effectively handle growing storage requirements:

- The TS3100 uses one LTO Full-High tape drive or up to two LTO Half-High tape drives and 24-tape cartridge capacity. The library is configured with two removable cartridge magazines, one on the left side (12 data cartridge slots) and one on the right (12 data cartridge slots). Additionally, the left magazine includes a single mail slot to help support continuous library operation while importing and exporting media.
- The TS3200 scales with the use of up to two LTO Full-High tape drives or up to four LTO Half-High tape drives and 48 tape cartridge capacity. The library is configured with four removable cartridge magazines, two on the left side (24 data cartridge slots) and two on the right (24 data cartridge slots). Additionally, the lower left magazine includes a three-slot I/O station to help support continuous library operation while importing and exporting media.

## LTO Technology

The IBM Ultrium LTO-5 tape drive supports up to 140 MBps native data-transfer. IBM LTO standards leadership continues with the LTO-4 tape drive doubling the storage capacity of its predecessor and the LTO-5 tape drive doubling the storage capacity of the LTO-4 tape drive with 3.0 TB compressed (1.5 TB native) on LTO-5 media. Both drives are backward compatible (read and write) with their predecessor LTO media and have read capability of LTO media two generations back. They both have speed matching and channel calibration for improved performance. They support the leading operating systems and popular backup software.

## Security

Data is one of the most highly valued resources in a competitive business environment. Protecting that data, controlling access to it, and verifying its authenticity while maintaining its availability are priorities in our security-conscious world. Increasing regulatory requirements are also helping to drive the need for the adequate security of data. Ultrium LTO-4 and LTO-5 drive technology helps address security and compliance requirements with its continued Write Once Read Many (WORM) and Application Managed Encryption (AME) capability.

Advanced encryption through Library Managed Encryption (LME) and System Managed Encryption (SME) are available as optional Transparent LTO Encryption feature 5900. For key management for encryption, IBM Tivoli® Key Lifecycle Manager (TKLM) V2 is required. Whether encryption is application- or hardware-based, vital data can securely be stored to help ensure compliancy with data security, information disclosure, and privacy regulations for data at rest.

## IBM Linear Tape File System (LTFS)

LTFS is the first file system that works in conjunction with LTO generation 5 tape technology to set a new standard for ease-of-use and portability for open systems tape storage. This drive is the first LTO generation to introduce media partitioning, which allows LTO-5 media to be divided into segments, improving accessibility by providing the ability to quickly locate data to retrieve or update.

With LTFS, accessing data stored on an IBM tape cartridge became as easy and intuitive as using a USB flash drive. With LTFS file manager, reading data on a tape cartridge is as easy as dragging and dropping. Users can run any application designed for disk files against tape data without being concerned that the data is physically stored on tape. Built on the LTO Ultrium 5 format standard, IBM Linear Tape File System Library Edition provides a direct, intuitive, graphical access to data stored in IBM tape drives and libraries using LTO generation 5 tape cartridges.

Benefits of LTFS Library Edition (LE) are as follows:

- The graphical user interface helps reduce complexity by enabling an icon-based view of an LTO-5 library, including tape cartridges and files using the operating system's file manager.
- LE helps reduce costs because it does not require any additional tape management software or utilities.
- The file system API of the operating system is used to provide a basic read/write interface to the tape library for applications without any additional operating system enhancements such as “plug-ins” or service packs.
- “Mount-less” cartridge inquiry for fast access is achieved after the tape library is inventoried. Tape cartridges do not have to be remounted to retrieve content index data, and basic cartridge information like volume name, serial number, etc.
- LTFS LE software can be ordered concurrently with hardware, or as software only for installed supported tape libraries. LTFS LE for LTO-5 drives can be ordered as PID software base order number 5639-LT1. The feature number is 5806.

## Part number information

Table 1 lists part numbers and feature codes for the TS3100 and TS3200.

Table 1. TS3100 and TS3200 ordering information

TS3100	TS3200	Description	HVEC	MTM	
Yes	No	Tape Library Model L2U Driveless	35732UL	3573 L2U	
No	Yes	Tape Library Model L4U Driveless	35734UL	3573 L4U	
Drive options			Part number	Feature code	
Yes	Yes	Ultrium 5 Full-High	6 Gbps SAS	46X2683	8245
Yes	Yes		8 Gbps Fibre Channel	46X2682	8244
Yes	Yes	Ultrium 5 Half-High	6 Gbps SAS	46X2685	8247
Yes	Yes		8 Gbps Fibre Channel	46X2684	8248
Yes	Yes	Ultrium 4 Full-High	LVD SCSI	95P5002	8143
Yes	Yes		3 Gbps SAS	95P5006	8145
Yes	Yes		4 Gbps Fibre Channel	95P5004	8144
Yes	Yes	Ultrium 4 Half-High	6 Gbps SAS	46X7117	8149
Yes	Yes		8 Gbps Fibre Channel	46X6912	8148
Yes	Yes	Ultrium 3 Half-High	6 Gbps SAS	46X7122	8049
Optional feature codes					
Yes	Yes	Path Failover (at least 2 drives required)	45E9503	1682	
Yes	Yes	Transparent LTO Encryption	45E3081	5900	
Yes	Yes	Rack mount	23R6998	7002	
Yes	Yes	Right-side magazine set	23R6999	8106	
Yes	No	Left-side magazine	45E2237	8109	
No	Yes	Left-side magazine, upper	45E2225	8107	
No	Yes	Left-side magazine, lower	45E2231	8108	
Yes	Yes	Ultrium tape cartridges WORM media*	Ultrium 5 media 5-packs	46C2084	8505
Yes	Yes		Ultrium 4 media 5-packs	95P4278	8405
Yes	Yes		Ultrium 3 media 5-packs	95P2020	8305
Yes	Yes	Ultrium Cleaning Cartridge	23R7008	8002	
No	Yes	Additional Power Supply	23R7263	1901	

\* Ultrium 3, 4, and 5 WORM media and tape cartridge options can be ordered at <http://www.ibm.com/systems/storage/media/tapemediacenter/>

The IBM Ultrium WORM cartridges (Machine Type 3589) were designed for applications, such as archiving and data retention, and for applications that require an audit trail. IBM Ultrium 3, 4, and 5 Tape Drive WORM support allows vital data to be stored in a non-erasable, non-rewritable format provided for

these types of applications. The IBM Ultrium WORM cartridges work with the IBM System Storage LTO Ultrium Tape Drives to help prevent the alteration or deletion of user data. In addition, IBM has taken several steps to reduce the possibility of tampering with the information:

- The bottom of the cartridge is molded in a different color than rewritable cartridges.
- The special cartridge memory helps protect the WORM nature of the media.
- A unique format is factory-written on each WORM cartridge.

Table 2 lists the cabling ordering information for the TS3100 and TS3200.

Table 2. TS3100 and TS3200 cabling ordering information

Cables	Part number
4.5 m VHDCI/HD68 SCSI Cable	23R7134
10.0 m VHDCI/HD68 SCSI Cable	23R7135
13.0 m LC/LC Fibre Cable	23R7137
25.0 m LC/LC Fibre Cable	23R7138
LC-SC Fibre Cable Interposer	23R7140
2M SAS/Mini-SAS 1x Cable	95P4711
2M Mini-SAS/Mini-SAS 1x Cable	95P4713
SAS/Mini-SAS 4x Interposer	95P4994
Mini-SAS/Mini-SAS 4x Interposer	95P4996

Table 3 lists the common specifications for the TS3100 and TS3200.

Table 3. TS3100 and TS3200 specifications

Specifications	
Tape drive type	<ul style="list-style-type: none"> <li>• IBM Ultrium LTO-5 Full-High and Half-High</li> <li>• IBM Ultrium LTO-4 Full-High and Half-High</li> <li>• IBM Ultrium LTO-3 Half-High</li> </ul>
Tape drive physical capacity	<ul style="list-style-type: none"> <li>• Up to 3.0 TB per cartridge compressed; 1.5 TB native with LTO-5 media</li> <li>• Up to 1.6 TB per cartridge compressed; 800 GB native with LTO-4 media</li> <li>• Up to 800 GB per cartridge compressed; 400 GB native with LTO-3 media</li> </ul>
Data transfer rate (per drive)	<ul style="list-style-type: none"> <li>• Up to 140 MBps native with LTO-5 tape drive</li> <li>• Up to 120 MBps native with LTO-4 tape drive</li> <li>• Up to 80 MBps native with LTO-3 tape drive</li> </ul>
Attachment support	<ul style="list-style-type: none"> <li>• 8 Gbps fibre channel and 6 Gbps SAS interfaces</li> <li>• LVD SCSI (LTO-4 Full-High)</li> <li>• 4 Gbps fibre channel and 3 Gbps SAS interfaces (LTO-4 Full-High)</li> </ul>
Warranty	Three-year, customer-replaceable unit (CRU) service in most countries
Operating environment	
Temperature	50 to 113 degrees F (10 to 45 degrees C)
Relative humidity	10% RH to 80% RH (non-condensing)
Electrical power	4.0 amps at 100 V ac; 2.0 amps at 240 V ac 0.1 KVA

Table 4 lists the unique specifications of the TS3100.

Table 4. TS3100 unique specifications

<b>TS3100 specifications</b>	
Number of drives	1 Full-High or up to 2 Half-Highs
Number of tape cartridges	24
Number of mail slots	1
Library physical capacity	<ul style="list-style-type: none"> <li>● Up to 72 TB per tape library compressed; 36 TB native with Ultrium LTO-5 media</li> <li>● Up to 38.4 TB per tape library compressed; 19.2 TB native with Ultrium LTO-4 media</li> <li>● Up to 19.2 TB per tape Library compressed; 9.6 TB native with Ultrium LTO-3 media</li> </ul>
<b>Dimensions (W x H x D)</b>	
Stand-alone	17.6 in (447.5 mm) x 3.84 in (97.6 mm) x 31.9 in (810 mm)
Rack-mount	17.6 in (447.5 mm) x 3.44 in (87.6 mm) x 29.13 in (740 mm)
Weight	33 lb. (15 kg) without rack mount

## What's in the TS3100 shipment group box?

The box contains the following items:

- Tape Library Model L2U Driveless
- 12 data cartridge left magazine
- 12 data cartridge right magazine
- IBM Ultrium Drives (ordered separately)
- Power Cord (must be selected)
- One IBM Ultrium Cleaning Cartridge (universal)
- *IBM System Storage TS3100/TS3200 Tape Setup, Operator and Service Guide*
- *IBM System Storage TS3100/TS3200 Tape Library Installation Quick Reference*
- Quality Hotline Card
- Device Driver readme sheet
- Safety pointer multi-language readme sheet
- License Agreement for Machine Code
- NLS Translated Safety CD
- Misc Documents CD

Table 5 lists the unique specifications for the TS3200.

Table 5. TS3200 unique specifications

<b>TS3200 specifications</b>	
Number of drives	Up to 2 Full-Highs or up to 4 Half-Highs
Number of tape cartridges	48
Number of mail slots	3
Library physical capacity	<ul style="list-style-type: none"> <li>● Up to 144 TB per tape library compressed; 72 TB native with Ultrium LTO-5 media</li> <li>● Up to 76.8 TB per tape library compressed; 38.4 TB native with Ultrium LTO-4 media</li> <li>● Up to 38.4 TB per tape Library compressed; 19.2 TB native with Ultrium LTO-3 media</li> </ul>
<b>Dimensions (W x H x D)</b>	
Stand-alone	17.6 in (447.5 mm) x 7.29 in (185.2 mm) x 31.9 in (810 mm)
Rack-mount	17.6 in (447.5 mm) x 6.89 in (175.2 mm) x 29.13 in (740 mm)
Weight	47 lb. (21.3 kg) without rack mount

## What's in the TS3200 shipping box?

The box contains the following items:

- Tape Library Model L4U Driveless
- 12 data cartridge left upper magazine
- 12 data cartridge left lower magazine
- Two 12 data cartridge right magazines
- IBM Ultrium Drives (ordered separately)
- Power Cord (must be selected)
- One IBM Ultrium Cleaning Cartridge (universal)
- *IBM System Storage TS3100/TS3200 Tape Setup, Operator and Service Guide*
- *IBM System Storage TS3100/TS3200 Tape Library Installation Quick Reference*
- Quality Hotline Card
- Device Driver readme sheet
- Safety pointer multi-language readme sheet
- License Agreement for Machine Code
- NLS Translated Safety CD
- Misc Documents CD

## Supported hardware platforms

Supported hardware platforms for the TS3100 and the TS3200 are:

- IBM BladeCenter®
- IBM Power Systems™
- IBM System p®
- IBM System i®
- IBM System x®
- IBM System z® and S/390®
- Advanced Micro Devices (AMD)
- Hewlett Packard
- Intel (x86 and x86\_64)
- Sun

## Supported operating systems

Supported operation systems for the TS3100 and the TS3200 are:

- IBM AIX® 7.1 or later
- IBM i 7.1 or later
- IBM VIOS 2.2.0 or later with client IBM i
- HP HP-UX 11iv3 or later
- Microsoft Windows Server 2003 SP2 or later
- Microsoft Windows Server 2008 SP2 or later
- Microsoft Windows Server 2008 R2 or later
- Novell SUSE Linux Enterprise 11 SP1 or later
- Red Hat Linux Enterprise 5.5 or later
- Oracle Solaris 10 or later

Check the latest support levels and configuration information for LTO drives, platforms, operating systems, and attachments at the Systems Storage Interoperation Center (SSIC):

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



## Supported software products

The TS3100 and TS3200 supported software products are:

- IBM: Backup Recovery and Media Services (BRMS)
- IBM: High Performance Storage System (HPSS)
- IBM: Linear Tape File System Library Edition
- IBM: Tivoli Storage Manager
- IBM: Tivoli Key Lifecycle Manager (TKLM)
- Atempo: Time Navigator 4.1/4.2
- BakBone Software: NetVault
- CommVault Systems: Galaxy
- CA: ARCserve Backup
- EMC: NetWorker
- Front Porch Digital: DIVArchive
- HP: OpenView Storage Data Protector 5.5/6.0/6.1
- Microsoft System Center Data Protection Manager 2007
- Symantec: Backup Exec 12.5 and 2010
- Symantec: NetBackup
- Thales Encryption Manager for Storage: TEMS
- Yosemite: Backup

For current IBM software products and independent software vendor products supporting TS3100 and the TS3200, see the Independent Software Vendor (ISV) matrix for 3592 and LTO drives:

[ftp://public.dhe.ibm.com/storage/tape/lto\\_isv\\_matrix.pdf](ftp://public.dhe.ibm.com/storage/tape/lto_isv_matrix.pdf)

## Warranty period and warranty service

Every TS3100 and TS3200 is covered by the following warranty:

- System three-year, customer-replaceable unit (CRU) service in most countries

Optional IBM features initially installed in an IBM system carry the same warranty and warranty service support category as the system. If installed after the initial system installation, they carry the balance of the system warranty or the optional feature warranty, whichever is greater.

### Customer-replaceable unit (CRU) service

IBM provides replacement CRUs for you to install. CRU information and replacement instructions are included with your machine and are available from IBM upon your request.

Table 6 lists the various warranty options for the TS3100 and TS3200 tape libraries.

Table 6. Warranties and maintenance

IBM ServicePac®	TS3100 L2U	TS3200 L4U
<b>Warranty and maintenance option</b>		
3 Year Onsite Repair 24x7 4 Hour Response	42V1346	42V1541
3 Year Onsite Repair 9x5 Next Business Day	42V1345	42V1540
5 Year Onsite Repair 24x7 4 Hour Response	42V1347	42V1542
<b>Maintenance agreement</b>		
1 Year Onsite Repair 24x7 4 Hour Response	42V1349	42V1544
1 Year Onsite Repair 9x5 Next Business Day	42V1348	42V1543
2 Year Onsite Repair 24x7 4 Hour Response	42V1351	42V1546
2 Year Onsite Repair 9x5 Next Business Day	42V1350	42V1545
<b>Remote technical support</b>		
RTS for Tape Devices- 1yr	91Y8855	91Y8855
RTS for Tape Devices- 3yr	91Y8856	91Y8856

**Note:** Each ServicePac is country-specific and is valid only when purchased and registered in the country in which IBM service will be provided. Refer to the IBM ServicePac Worldwide Product Matrix at the following location for a complete list of the ServicePac part numbers specific to your country:

<https://www-304.ibm.com/sales/gss/download/spst/servicepac/extProductSelectorWWW.do>

## Related publications

For more information, refer to the following resources:

- *IBM System Storage Product Guide*  
<http://public.dhe.ibm.com/common/ssi/ecm/en/tso00364usen/TSO00364USEN.PDF>
- *IBM System Storage TS3100 Tape Library and TS3200 Tape Library Setup, Operator, and Service Guide*, GA32-0545  
<http://publibfp.dhe.ibm.com/epubs/pdf/32054510.pdf>
- IBM Linear Tape-Open: LTO Ultrium tape drives, libraries, and autoloaders  
<http://www.ibm.com/systems/storage/tape/lto/>
- *IBM System Storage Tape Library Guide for Open Systems*, SG24-5946  
<http://www.redbooks.ibm.com/redbooks/pdfs/sg245946.pdf>
- IBM TS3100 Tape Library Express Model  
<http://www.ibm.com/systems/storage/tape/ts3100/>
- IBM TS3200 Tape Library Express Model  
<http://www.ibm.com/systems/storage/tape/ts3200/>
- IBM LTO Ultrium 5 1.5 TB Data Cartridge  
[http://www.ibm.com/systems/storage/media/lto\\_5/index.html](http://www.ibm.com/systems/storage/media/lto_5/index.html)
- IBM Linear Tape File System  
<http://www.ibm.com/systems/storage/tape/ltfs/index.html>
- *IBM Systems and Technology data sheet: IBM Linear Tape File System*  
<http://public.dhe.ibm.com/common/ssi/ecm/en/tsd03128usen/TSD03128USEN.PDF>

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