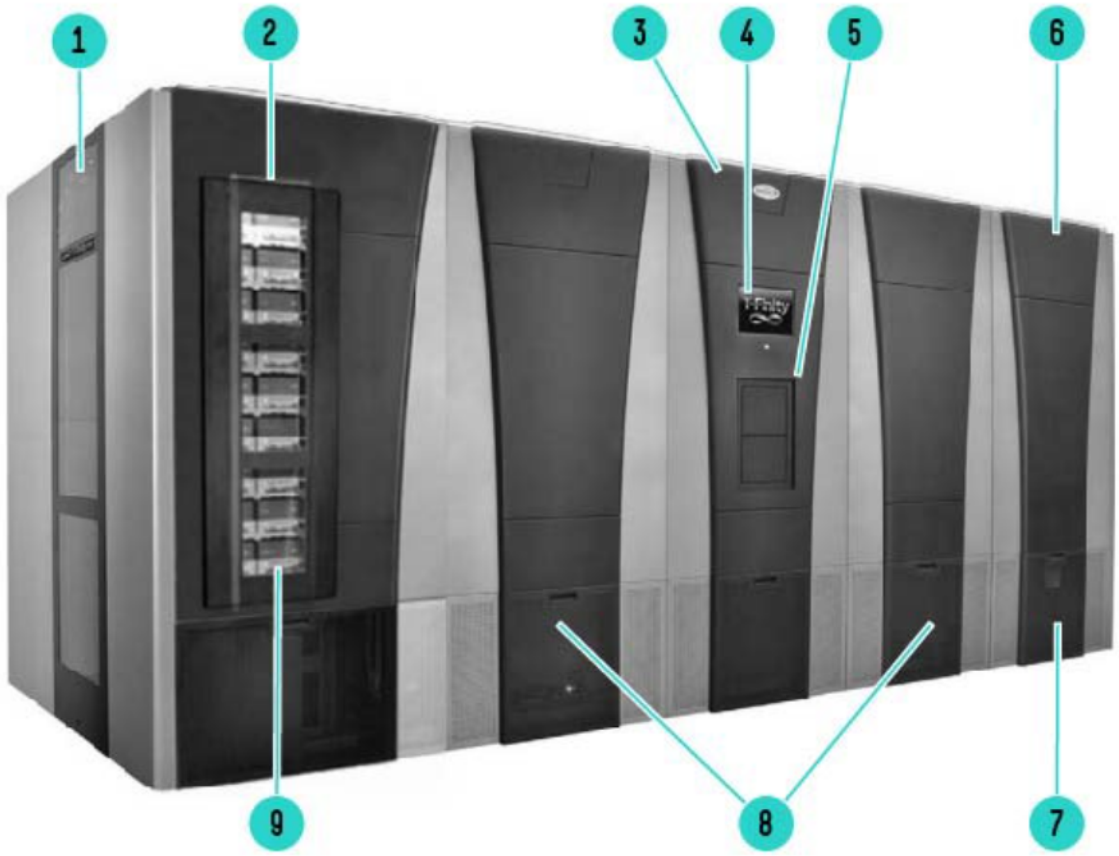
Overview

Spectra TFinity ExaScale Tape Library

Meeting enterprise data growth challenges head-on, Spectra TFinity ExaScale Tape Libraries deliver enormous scalability to keep pace with unpredictable data growth. Choose from a range of base configurations and scale up to 56,400 LTO tape cartridges or 42,930 TS11xx Technology cartridges in increments of 10 LTO or 9 TS11xx Technology slots for capacity on demand. Incorporating between 1 and 144 LTO-9 tape drives TS1160 tape drives you can consolidate and store up to 2.53 EB (compressed 2.5:1) using LTO-9 tape cartridges or 2.15 EB (compressed 2.5:1) using TS1160 Technology of enterprise data.



HPE TFinity® ExaScale Tape Library

1	Window Panel	6	Standard Service Bay
2	Bulk TAP Service Bay (Import/Export)	7	Air Filters and Fans (Behind cover panel)
3	Drive and Media Expansion Frames	8	Base Frame
4	Operator Panel Touch Screen	9	Bulk TAP Import
5	Center TAP (Import/Export)		

Standard Features

Standard Features

- **Scalability**
  - Capacity on Demand from 50 to 56,400 LTO Tape Cartridges (45 to 42,930 Enterprise Tape Cartridges) and 1 to 144 LTO tape drives or TS11xx tape drives
  - Scale capacity in 10 LTO or 9 Enterprise tape slot increments
  - Bulk import/export Service Bay Frames for faster cartridge load and unload
  - Library frames/expansion modules add 8.71 ft 2 per frame
  - The Spectra TFinity ExaScale Tape Library can be configured either for LTO-6, LTO-7, LTO-8 and LTO-9 or TS1150, TS1155 and TS1160 Technology Drives with mixed media support available. Mixed media supports LTO and TS11xx Technology combined in the same library and requires Enterprise Frames
- **High Availability**
  - Redundant power supplies
  - Dual Robotics
  - Global Spare Drive option
- **Manageability** - BlueScale®
  - Management access on front panel of library or remotely via web-browser
  - Easy to use web GUI
  - BlueScale management software provides proactive hardware health monitoring
  - BlueScale Library management provides advanced logs and reporting on media, drives, power consumption and performance
  - Auto Support Logs (ASL) provide automatic e-mail alerts on monitored thresholds
- **Security**
  - Built-in BlueScale Standard Encryption (LTO Only)
  - Built-in option for BlueScale Professional Encryption (LTO Only)
  - Hardware Based Encryption through Spectra SKLM
- **Cost-Effectiveness**
  - Ideal for archiving cold or active data with a media shelf-life of up to 30 years
  - Lowest cost per Gigabyte for longer term storage, no on-going power or energy requirement
  - Portable, high density storage, small footprint with up to 45 TB of compressed data on a single LTO-9 data cartridge and 50 TB of compressed data on a single TS1160 Technology JE data cartridge.
  - LTFS for ease of use and assured interchange
- **High Performance**
  - A unique Time-Based Access Ordering System (TAOS) which speeds up overall recall time on LTO tapes and reduces wear on tapes and drives by intelligently reordering individual recalls.
  - Improved performance achieved for LTO and TS11xx tapes when using either HPE DMF or IBM HPSS software. Zoning allocates a library territory for each robot. The tape library achieves greater performance without partitions as the two robots move media freely within the tape library. TeraPack Affinity loads up to 10 drives from a single TeraPack with intelligent move queues to optimize performance.

Standard Features

Customer Benefits

- **Capacity on demand**
  - Only buy what you need today and add storage capacity as you need it
  - Upgrade capacity in intervals of 10 LTO or 9 Enterprise tape slots at a time
  - More storage capacity in less floor space
  - Tape consolidation through capacity, performance, partitioning and reporting results in a lower total cost of ownership
  - The Spectra TFinity ExaScale Tape Library can be configured either for LTO-6, LTO-7 and LTO-8 or TS1150, TS1155 and TS1160 Technology Drives with mixed media support available. Mixed media supports LTO and TS11xx Technology combined in the same library and requires Enterprise Frames
- **Continuous data protection**
  - Data Integrity Verification examines media health before and after data writes, when enabled
  - Integrated BlueScale Encryption (LTO Only) provides automatic data protection
- **Reduced cost of ownership**
  - Most energy efficient tape library for its class
  - Enhanced manageability from any location
  - Proactive and predictive library maintenance supported by BlueScale management software
- **Enhanced data security**
  - Provides a high level of encryption security, with compression, for strong backup data privacy to secure confidential information and address compliance quickly
  - Supports WORM media (using LTO-6, 7, 8 or 9)
  - Providing a fail-safe method for permanently storing data records

Family Comparison

	Spectra TFinity ExaScale Tape Library Edition
Scalability	Scales horizontally with linear robot from 3 to 44 frames, 1-144 LTO or TS11xx drives, and 50 to 56,400 LTO slots or 45 to 42,930 TS11xx Technology slots.
Drive Technology*	LTO-6, 7, 8 and 9 Tape Drives, TS1150, TS1155, and TS1160 Technology Drives
Capacity range	50 LTO slots minimum in a single frame 56,400 LTO slots in a max configuration of 45 frames 45 TS11xx Technology slots minimum in a single frame 42,930 TS11xx Technology slots in a max configuration of 45 frames
Maximum Drive Count	1-24 in a base frame 1-24 in each Drive Expansion Frame 144 in maximum LTO configuration 144 in maximum TS1160 configuration
Maximum Capacity (compressed 2.5:1)	2.53 EB using LTO-9 media (max 56,400 slots, 45 frames) 2.14 EB using TS1160 Technology media (max 42,930 slots, 45 frames)
Maximum Throughput (LTO-9 Native)	400 MB/s native per LTO-9 drive (57,600 MB/s Maximum)
Maximum Throughput (TS1160 Native)	400 MB/s native per TS1160 drive (57,600 MB/s Maximum)
Standard Form-factor	Free Standing
Dual robotics	Standard
Data & library security	Encryption: BlueScale Standard Encryption (LTO Only) BlueScale Professional Encryption (LTO Only) Spectra SKLM

Standard Features

The Spectra TFinity ExaScale Tape Library can be configured with LTO-6, LTO-7, LTO-8, LTO-9, TS1150, TS155 and TS1160 Technology Drives with mixed media support available. Mixed media supports LTO and TS11xx Technology combined in the same library and requires Enterprise Frames. The option to upgrade to mixed media is available to existing LTO customers – contact HPE Sales for more information.

Scalability to meet uncertain data growth

Buy only what you need today for backup and archive, and then expand the library for higher capacity and performance as your data grows.

The Spectra TFinity ExaScale Tape Library provides a modular architecture allowing for capacity increases up to 16.5 PB / 8.71 ft^2. Capacity may be added to each frame in increments of 10 LTO tape slots (9 Enterprise tape slots) at a time, up to 56,400 LTO (40,680 Enterprise) tapes.

The library configuration can accommodate:

- 6 Robotic Interface Modules
- 0 to 41 expansion Frames – Max. 45 Frames (Add 42 Media Expansion and Drive Expansion Frames to Base Frame and 2 Service Bays)
- 50 to 56,400 possible LTO cartridges slots or 45 to 42,930 TS11xx Technology slots maximum 1 to 144 LTO-9, LTO-8, LTO-7, LTO-6, TS1150, TS1155 and TS1160 Technology Drives.

Spectra TFinity ExaScale Tape Library Enterprise Frames can support both TS11xx Technology or LTO Drives and media with mixed media support available. Mixed media supports LTO and TS11xx Technology combined in the same library and requires Enterprise Frames.
Spectra TFinity ExaScale Tape Library offers different expansion frames to best suit your data protection and/or archiving needs.

Frame Types	(Slots Max)	Drives (Max)	Max Throughput (Compressed)	Max Capacity (Compressed)
Minimum Base Configuration	Base, Right Service Bay, Left Service Bay	N/A	N/A	N/A
Base Frame 	**LTO Configuration**		**Includes Svc Bays**	**Includes Svc Bays**
	920 Slots	12 Drives	43.2 TB/hr	41.4 PB
	800 Slots	24 Drives	86.4 TB/hr	36.0 PB
	Enterprise Configuration		**Includes Svc Bays**	**Includes Svc Bays**
	594 Slots	24 Drives	77.8 TB/hr	29.7 PB
Standard Right Service Bay 	**LTO** 500 Slots **Enterprise** 378 Slots	N/A	N/A	Included with Base Frame

Standard Features

Frame Types	(Slots Max)	Drives (Max)	Max Throughput (Compressed)	Max Capacity (Compressed)
Standard Left Service Bay 	**LTO** 500 Slots	N/A	N/A	Included with Base Frame
	Enterprise 378 Slots			
Media Expansion 	**LTO** 1300 Slots			58.5 PB
	Enterprise 990 Slots			49.5 PB
Drive Expansion 	**LTO Configuration**		N/A	N/A
	1010 Slots	12 Drives	43 TB/hr	45.5 PB
	890 Slots	24 Drives	86.4 TB/hr	40.05 PB
	Enterprise		N/A	N/A
	675 Slots	24 Drives	77.8 TB/hr	33.75 PB
Bulk TAP Service Bay 	A Service Bay may optionally be configured as a Bulk TAP Service Bay. A Bulk TAP Service Bay adds 14 TeraPack Enter/Exit ports to the front of the frame.		N/A	N/A
	LTO 500 Slots	N/A	N/A	Included with Base Frame
	Enterprise 378 Slots	N/A	N/A	Included with Base Frame

Standard Features

Data Path Failover

With the addition of two Robotic Interface Modules (RIMs), the secondary RIM may be configured to serve as a data path failover.

Dual Robotics

To greatly increase Spectra TFinity ExaScale Tape Library high availability, active/active dual robots are included with each library. A Base Spectra TFinity ExaScale Tape Library configuration consists of a base frame and both a left and right service bay. The Service Bays serve as a maintenance and repair zone for a single robot and will allow for library operations to continue while either robot is in service.

When using either HPE DMF or IBM HPSS, software, zoning allocates a library territory for each robot. Zoning, similar to partitioning, allows a left and right zone to be created in the tape library allowing all moves in the tape library to be made in parallel. The software package can maintain two work queues, one for each zone. The tape library achieves greater performance without partitions as the two robots move media freely within the tape library. Testing has shown that when zoning and other optimizations focused on performance are enabled, the robotic mount performance can be doubled.

Media Handling

TeraPack® cases, are unique in how they are used in the library. TeraPacks increase library density beyond all competition. Multiple tape cartridges are grouped in a single container that is used throughout the library and beyond. Library robotics can transport a TeraPack within the library and select a requested tape from the TeraPack case. In this unique architecture, each TeraPack case equals 9 x Enterprise media or 10 x LTO media tape slots. A robot can move a bar-coded TeraPack case that contains 9 or 10 pieces of media in a single robotic move, while other tape libraries require 9 or 10 separate robotic moves to accomplish this task.

Traditional libraries organize tapes one-tape-deep along the library chassis wall. The Spectra TFinity ExaScale Tape Library uses TeraPack cases to store tapes, with each TeraPack case extending into the library's interior. This provides HPE Tape Libraries with very high density, allowing more tapes in a given area than competitors' libraries.

The library's two TeraPack Access Ports (TAPs) provide a practical and efficient method for inserting and removing media. To simplify use and reduce time spent on data protection, HPE Tape Libraries provides a configurable entry/exit pool, so all cases to be exported are identified before the operator unloads media. The TeraPack cases can be swiftly unloaded through the two TAPs, 18 Enterprise tapes or 20 LTO tapes at a time. Because tapes are loaded in multiple quantities, bulk loads and unloads save significant time.



Mixed media support in the Spectra TFinity ExaScale Tape Library allows the support of both LTO tape technology and IBM's TS11xx tape technology in a single tape library. This enables customers to deploy the most appropriate tape technology for the demands of their specific backup and archive needs and migrate between the two different media technologies within the same library.

When using HPE DMF or IBM HPS software, "TeraPack Affinity" loads up to 10 drives from a single TeraPack (9 drives from enterprise TeraPack) with intelligent move queues to optimize performance.

Customers can also access and optionally migrate data from legacy Oracle T10000 media to LTO and/or IBM TS11xx media within the same library. Users can actively write and restore data from both LTO and IBM TS11xx technologies while having the ability to access and migrate data from legacy Oracle T10000 media to them both.

Standard Features

Oracle T10000 Support

Support for Oracle T10000 drives and media in the Spectra TFinity ExaScale Tape Library differs from support of LTO or IBM TS11xx in that the tape library utilizes customers' existing Oracle T10000 drives and media. Spectra Logic provides drive sleds for each Oracle T10000 tape drive that the customer intends to migrate to the Spectra TFinity ExaScale Tape Library During installation, Spectra Logic Professional Services remove the customer's Oracle T10000 drives from the Oracle library, mounts them into Spectra-provided Oracle T10000 drive sleds, and installs the Oracle T10000 drives into the Spectra TFinity ExaScale Tape Library. Any additional Oracle T10000 drives that are not needed in the library at the time of installation are kept available as spare drives. Spectra Logic can optionally provide a drive sled for each Oracle T10000 tape drive kept as a spare.

The customer has two migration options for their Oracle T10000 media:

- **Option 1: Active Migration**
  With this option, the customer's backup or archive software reads each Oracle T10000 tape cartridge and moves the data to either LTO or IBM TS11xx media. The customer's backup or archive system writes all new data to LTO and/or IBM TS11xx media.
- **Option 2: On-Demand Migration**
  With this option, the customer's backup or archive system migrates Oracle T10000-based data to LTO and/or IBM TS11xx tape technology only when there is a need to read any data from a particular Oracle T10000 tape cartridge. The customer's backup or archive system writes all new data to LTO and/or IBM TS11xx media.

BlueScale Management

The Spectra TFinity ExaScale Tape Library provides a graphical interface that is extremely easy to use. You can monitor and manage the library from the tape library's front panel or remotely. Reporting is also straightforward - the library, drive and media status can be viewed in a glance with complete reporting available if needed at the touch of a button. BlueScale is included with the TFinity ExaScale as a standard feature.

Thin Provisioning

Thin provisioning provides a method for optimizing the available storage in the partitions of a tape library. The benefit of this feature is that thin provisioning allows an administrator to change the size of a partition in a tape library without having to reconfigure the entire tape library. Thin provisioning is an easy-to-use offering that provides virtual storage capacity for simplified administration, minimized downtime and reduced cost when adding storage.

Non-Isolation Service Bays

Non-Isolation Service Bays – The Spectra TFinity libraries have the option of being equipped with Non-Isolation service bays. In this configuration, when a robot has a failure it moves to the far right or left of the library. The other robot will take over any move operations requested by the host application. When it comes time to service the tape library, the power to the TFinity robots must be removed halting library robotic operations, but this can happen when it is convenient for the organization. This configuration is a low-cost option for starting out in a TFinity which can be upgraded in the field to full-isolation service bays if needed.

Library Lifecycle Management

BlueScale Library Lifecycle Management (LLM) tracks the library and its components across the library's lifecycle. Through Hardware Health Monitoring (HHM), BlueScale tracks maintenance thresholds for key library components and notifies you when maintenance tasks are required to keep your library in optimum operating condition. When a component reaches its maintenance threshold, the status bar displays a Maintenance Notification icon.

Library Lifecycle Management (LLM) collects or maintains the following information:

- Library serial number and name (if configured)
- Information about key library components monitored by HHM including maintenance thresholds
- Transporter moves including Drive-to-drive moves, drive-to-slot moves, slot-to-slot moves, slot-to-drive moves, and importing/exporting media

Standard Features

Drive Lifecycle Management (DLM)

DLM gathers data each time a tape is unloaded from a drive. The data stored by the library includes the following information about the last 50 tapes unloaded:

- Read/write errors, including soft and hard errors
- Tape alerts
- Flags generated while the tape was loaded in the drive
- Recent errors or recent information posted through the drive's single-character display

The library uses this data to generate a report on overall drive health as well as health reports for individual drives. These reports, along with BlueScale drive clean, test, and resets, help you determine whether a problem exists with a drive, a tape, or another library component.

Drive Performance Monitoring

The Drive Performance Monitor lets you get the most out of your library by ensuring that drives are performing at the highest possible throughput rate. Performance monitoring graphically displays the read/write performance of the drives in the library. Metrics can be tracked per individual drive or by tracking overall library throughput.



EnergyAudit Power Monitoring

EnergyAudit, the BlueScale power monitoring feature, tracks power use over time and by component. Customers can use this information to adjust and optimize power use. Tracking this data becomes increasingly important as energy prices continue to climb.Auto Drive Clean

Auto Drive Clean

Auto Drive Clean provides library-based cleaning of drives without user intervention. The Auto Drive Clean feature uses a dedicated cleaning partition with specially labeled Maintenance TeraPacks. The cleaning partition can be shared by multiple storage partitions and is used by the library to automatically clean drives whenever necessary.

Automated drive cleaning results in fewer failed tape read/write operations and is the recommended method for cleaning drives.

MediaIQ™

MediaIQ is a performance technology that enables the Spectra TFinity ExaScale Tape Library to queue multiple moves simultaneously and select the most efficient order in which to perform these moves. MediaIQ also greatly enhances the utilization of the robotics system, selecting the best robot for each move based on their proximity between media and drives.

SlotIQ™

SlotIQ is a performance technology that utilizes Spectra Logic's unique TeraPack® storage architecture to greatly reduce robotic movement for most move profiles. By virtualizing the tape cartridge inventory,

SlotIQ can take advantage of moving up to ten slots within a TeraPack to any location in the library, thus reducing by almost half the required time for an unload/load operation.

Time-Based Access Ordering System (TAOS)

Time-Based Access Ordering System (TAOS) is a unique feature for LTO media which speeds up overall recall time up to 3x and reduces wear on tapes and drives by intelligently reordering individual recalls. TAOS is designed to significantly reduce data read times on an LTO cartridge. In addition to reducing data access times, TAOS also reduces media and drive wear by optimizing data read efficiencies to require less time and less mechanical cycles. TAOS requires integration with HPE DMF or IBM HPSS backup software.

Standard Features

Advanced Reporting

Syslog

A Syslog server is used to easily monitor all system messages. Once configured, the library automatically sends all system messages to a designated Linux server that has been configured to support Syslog. Syslog is a standard for forwarding log messages over an Internet Protocol (IP) computer network. It provides separation of the software that generates log messages from the system that stores the messages.

AutoSupport Logs (ASL)

The Spectra TFinity ExaScale Tape libraries have a Phone Home feature, AutoSupport that can be configured to automatically create and send e-mail messages about issues or problems to designated e-mail users, including technical support. The data included in these e-mail messages includes trace information, log data, a system description, and information about any message or issue. You can also elect to copy this same data to a USB device, if security concerns prevent the use of automatic outbound email. You can set whether some or all messages are sent, per severity level of the message. This easy-to-use and easy-to-administer feature helps identify issues before they turn into problems, and speeds the resolution of problems. If the site is set up to use SSL, the Phone Home service uses the secure connection; otherwise, the service uses the network.

Best in class reliability

As data becomes more and more mission critical, and downtime becomes more costly to the enterprise, customers are requiring high availability consolidated storage solutions which offer hot-plug components and redundancies of key operating subsystems (tape drives, power supplies, control modules, robotics and filters).

Data Encryption for added security

ESKM: The Hewlett Packard Enterprise Secure Key Manager, using the industry-standard KMIP protocol, reduces your risk of a costly data breach and reputation damage while improving regulatory compliance with a secure centralized encryption key management solution for LTO-9, LTO-8, LTO-7 and LTO-6 as well as TS11xx Technology drives within the Spectra TFinity ExaScale Tape Library. In addition, the ESKM provides strong auditable security and reliable lifetime key archival. The ESKM with KMIP and LTO-9/LTO-8/LTO-7/LTO-6 or TS11xx Technology drive encryption in the Spectra TFinity ExaScale Tape Library provides a complete and secure privacy solution to protect customer's confidential data.

BlueScale Professional Encryption

BlueScale Professional Encryption offers LTO users integrated encryption key management provided through the library's user interface, and is the only true integrated encryption key management option for data on tape. Secure and easy to use, BlueScale Professional Encryption provides powerful key management features for encryption and decryption, and is suitable for customers who desire more than one encryption key for all data stored by a single tape library. BlueScale Professional Encryption has the capability to manage up to 30 individual encryption keys on the tape library. The BlueScale user interface manages the encryption keys without any need for an external server, reducing operational complexity.

Spectra SKLM Encryption

For organizations with more complex and extensive encryption requirements, Spectra SKLM Encryption Key Management is time tested and proven across enterprise-level customers requiring the highest standard of encryption security. With Spectra SKLM, customers can deploy a centralized and redundant key management solution that meets the most complex key management requirements. Spectra SKLM allows multiple tape libraries to connect to a centralized key manager, giving all of the libraries access to the same encryption key store. Optional redundancy provided by Spectra SKLM provides high availability of the encryption keys.

Bulk media import/export for significant time savings

The Center TAP (TeraPack Access Point) allows for up to 20 LTO or 18 Enterprise tape cartridges to be imported/exported into the library at one time. With the addition of a Bulk TAP Service Bay, up to 140 LTO or 126 Enterprise tape cartridges may be imported/exported in to the library at one time.

Standard Features

LTO Ultrium Technology

LTO (Linear Tape Open) Ultrium Tape Drives use best of breed technology. By taking the best features from other tape technologies and combining them into a single new technology, Ultrium tape drives are in a league of their own. LTO technology is an open industry standard format.

Data Rate Matching

Data Rate Matching combines sophisticated buffer management with variable tape drive motor speeds to match the tape drive transfer rate to the host output. This feature ensures that the tape drive continues to stream data regardless of the environment, and brings three big advantages:

- It optimizes performance and maximizes overall efficiency, allowing the drive to respond immediately to any data speed changes from the host.
- It minimizes rewinding and repositioning of the tape, significantly reducing physical wear and increasing reliability.

It minimizes the power requirements for the drive by reducing the number of repositions needed.

LTO Ultrium & TS Technology Tape Drives	**Data transfer rate range** (native)
• LTO-9 Ultrium	• 112 to 400 MB/s
• LTO-8 Ultrium	• 112 to 360 MB/s
• LTO-7 Ultrium	• 101 to 300 MB/s
• LTO-6 Ultrium	• 40 to 160 MB/s
• TS1160 Technology Drives	• 112 to 400 MB/s
• TS1155 Technology Drives	• 112 to 360 MB/s
• TS1150 Technology Drives	• 112 to 360 MB/s

WORM (Write-Once, Read-Many) Drive and Media Support

Critical to the success of data retention policies in highly regulated environments is the ability to store and manage data in an unalterable state. Following stringent guidelines set forth by regulatory agencies such as the SEC and HIPAA, IT organizations must now integrate new solutions and policies that can verify the integrity of stored data for periods that can extend well beyond seven years.

Every generation of LTO Ultrium since LTO-3 tape drives feature the ability to archive and store data in a read-only, non-rewriteable format that meets the most stringent regulatory guidelines. Using a combination of integrated fail-safe features in the drive firmware, cartridge memory, and tape formatting, LTO Ultrium provides the ability to archive large amounts of data for periods of up to 30 years in a secure, untampered state. Ultrium tape drives include support for both rewritable and WORM media providing for a secure, long-term archiving solution into any data protection strategy. LTO Ultrium WORM provides the following advantages:

- A single drive to support all backup and archiving needs
- Two distinctive tape cartridges to easily distinguish and manage both rewriteable and WORM data cartridges
- A specially designed WORM data cartridge with multiple integrated fail-safe features to prevent accidental or intentional overwriting of data
- Support from many backup and archiving software vendors, providing the most comprehensive and mainstream support in the industry

Standard Features

HPE TeraPack Media

HPE TeraPack Media is designed to ensure that customers have the most reliable and automated tape storage available. No other supplier places as much emphasis on continual enhancements and features that simplify all aspects of the media management process. From manufacturer selection to testing and customer shipment, every step of the certified media process is designed to ensure you have the most reliable and automated tape storage available.



Quality

Hewlett Packard Enterprise believes that the test program for HPE Ultrium storage supplies is the most thorough and comprehensive in the industry. In order to carry the HPE Brand, designated cartridges must satisfy an exhaustive battery of additional procedures that relate directly to how the product is used in real life situations when real data and real businesses are at stake. Some of these procedures - e.g. "five corner" environmental interchange, load/unload for automation, ageing simulation and drop testing are not found in the standard logo test. These exhaustive tests on media and both HPE and non HPE drives ensure that HPE storage supplies will always offer maximum reliability even in the most extreme conditions. Unique to TeraPack media, an additional CarbideClean® process gives further peace of mind for HPE T950 and Spectra TFinity ExaScale Tape Library customers.

Intelligence

Media Lifecycle Management (MLM) reduces the most common media-related failures. MLM allows you to proactively manage your tape inventory through simple monitoring of over 40 health statistics and automatically identifies at-risk tapes ready for retirement.

Verification

HPE TeraPack Media assures data integrity using an integrated, intelligent and comprehensive set of Data Integrity Verification (DIV) tools when integrated with your tape library. PreScan verifies your tapes are safe prior to usage and QuickScan and FullScan verify your data has been properly written to tape.

Protect

When combining HPE TeraPack Media and our tape library family's integrated BlueScale Encryption Key Management, your data is protected with a straightforward, easily installed solution.

Management

Media arrives on customer's doorsteps, individual tapes unwrapped with pre-applied barcode labels bundled in TeraPack containers and ready for bulk-loading into your tape library.

Warranty

Lifetime Guarantee warrants our tapes to be free from defects in materials and workmanship for the life of the media. All HPE storage media products are supported by a worldwide network of resellers and service providers as well as toll-free 24 X 7 technical phone support during the warranty period.

Standard Features

LTO-7 Type M media

The Spectra TFinity ExaScale Tape Library supports LTO-7 Type M media. This is the ability of an LTO-8 drive to write 9 TB (native) on a brand new LTO-7 cartridge instead of 6 TB (native) as specified by the LTO-7 format. LTO-7 Type M cartridges will be designated by an automation barcode label ending with the last 2 characters "M8". A standard 6TB LTO-7 cartridge is indicated with an automation barcode label ending in "L7". An LTO-8 cartridge has a capacity of 12 TB (native), and is indicated with an automation barcode label ending in "L8". Only unused LTO-7 cartridges may be initialized as LTO-7 Type M. Once a cartridge is initialized as Type M, it may not be changed back to a 6TB LTO-7 cartridge. Also, an LTO-7 Type M cartridge can only be written and read in an LTO-8 drive; LTO-7 drives are not capable of reading LTO-7 Type M cartridges. LTO-7 Type M media supports existing LTO format features including data compression, encryption and partitioning enabling LTFS. LTO-7 Type M media is not supported on WORM cartridges. LTO-9 drives will not be backward compatible with LTO-7 Type M media.

Data Integrity Verification

Spectra TFinity ExaScale Tape Libraries' data integrity verification features a set of background processes that provide multiple levels of integrity verification for LTO and TS11xx data cartridges. These features help ensure that data stored over any length of time, including archived data stored for years, can be retrieved as needed. These processes include PreScan and PostScan (QuickScan or Fullscan). PreScan checks newly imported tapes to make sure they are ready to use (for example, in good health and not write-protected.) FullScan verifies readability of all the data written on the tape. Quickscan verifies the readability of the data on a single pass of the tape.

PreScan

Once configured, the library automatically inserts each newly imported LTO or TS11xx cartridge into a tape drive in the partition and checks the drive to determine the following about the cartridge:

- Non-MLM-enabled tape
- Broken or dislodged leader
- Poor media health
- Write protected
- Encrypted tape with a moniker not currently stored in the library

PostScan

After data is written to tape, a PostScan can be conducted to verify that the data written to the tape has no errors. Using either **QuickScan** or **FullScan**, the drive will scan each LTO or TS11xx cartridge and confirm that there are no media errors on the tape by reading either a single length of one wrap of tape or the entire length of the tape, up to the end of the recorded data (EOD).

The PostScan process is performed by the library independently of the backup application normally used to read and write data to the tape. The results of the scan are stored in the library's media-health database. The user can set triggers to check the health of tapes over an interval of time, to ensure that the data is valid. You can also verify a specific tape's data integrity manually/by request.

QuickScan Using Global Spare

A Global Spare drive can be used to verify the integrity of all the data on a tape in a single wrap, from the beginning of the tape up to the end of first wrap or the end of recorded data (EOD), whichever comes first. Using a Global Spare drive avoids potential delays in normal operation while a QuickScan is being performed.

Industry-Unique Customization

The range of possibilities for customizing the TFinity ExaScale are almost boundless. Whether customizing a new TFinity ExaScale, or enhancing an existing Spectra TFinity ExaScale Tape Library, customers can graphically customize the panels on their tape library nearly any way they would like. Custom decorative skins enable customers to brand their data centers and the Spectra TFinity ExaScale Tape Library.

Standard Features

Compatibility

Software Support

The Spectra TFinity ExaScale Tape Libraries are supported on the following ISV's for LTO drives:

- Micro Focus
- ARCserve Backup
- Dell EMC Legato Networker
- IBM Spectrum Protect
- VERITAS Backup Exec
- VERITAS NetBackup
- Veeam Backup Software
- Zmanda Backup Software
- CommVault Simpana
- Oracle Diva Archive
- Quantum StorNext
- HPE DMF
- MassTech MassStore
- MastTech Flashnet
- Dell/Quest Software
- IBM HPSS
- Versity Storage Manager

Please contact sales for further details including current TS11xx Technology Compatibility.

Encryption Support

- BlueScale Standard Encryption (LTO Only): Included with Tape Library
- The Spectra TFinity ExaScale Tape Libraries are supported on the following Encryption Key Servers:
- BlueScale Professional Encryption (LTO Only)
- Spectra SKLM

Service and Support

Warranty Included with the Product

The Spectra TFinity ExaScale Tape Library has a standard warranty that extends one year from the date of shipment from the factory. This warranty includes a Next Business Day service contract. Additional years of warranty service can be purchased.

Service and Support

A comprehensive set of support options is offered by HPE via Spectra Logic directly. These options span a wide range of business requirements, from simple phone support and parts replacement, to custom add-ons and focused service account management. Professional Services are also available from Spectra Logic to enhance your service and support experience.

Recommended Support Services

Four-Hour On-Site Service

Four-Hour On-Site Service includes:

- Telephone access to a Technical Support representative, 24 hours a day, 7 days a week, 365 days a year (including evenings, weekends, and holidays).
- Upon verification that the unit has malfunctioned and a part replacement is required, a service visit from a field service representative will be dispatched to arrive on-site within four hours, including evenings, weekends, and holidays. The customer may specify an arrival time after the four-hour window. The customer may be requested to replace the part if appropriate.
- Remote troubleshooting 24 hours a day, 7 days a week, 365 days a year.
- 24 x 7 x 365 access to the Support Web Portal, knowledge base and online documentation.

Refer to **https://support.spectralogic.com/** for Spectra Logic country-specific coverage of service options

Four-Hour On-Site Library Hardware Service with Next Business Day On-Site Service for Tape Drives

Four-Hour On-Site Library Hardware Service with Next Business Day On-Site Service for Tape Drives includes:

- Telephone access to a Technical Support representative, 24 hours a day, 7 days a week, 365 days a year (including evenings, weekends, and holidays).
- Upon verification that the Library Hardware has malfunctioned, and a part replacement is required, a service visit from a field service representative will be dispatched to arrive on-site within four hours, including evenings, weekends, and holidays. The customer may specify an arrival time after the four-hour window. The customer may be requested to replace the part if appropriate.
- A service visit from a field service representative, upon verification that a tape drive has malfunctioned and a part replacement is required. If Technical Support is notified by 5:00 p.m. (customer local time), a field service representative will be dispatched for arrival on the following business day between 8:00 a.m. and 5:00 p.m.
- Remote troubleshooting 24 hours a day, 7 days a week, 365 days a year.
- 24 x 7 x 365 access to the Support Web Portal, knowledge base and online documentation.

Refer to **https://support.spectralogic.com/** for Spectra Logic country-specific coverage of service options.

Next Business Day On-Site Service

Next Business Day On-Site Service includes:

- Access to a Technical Support representative on any business day (not including evenings, weekends, or holidays) from 8:00 a.m. to 5:00 p.m. (customer local time).
- A service visit from a field service representative, upon verification that the unit has malfunctioned and a part replacement is required. If Technical Support is notified by 5:00 p.m. (customer local time), a field service representative will be dispatched for arrival on the following business day between 8:00 a.m. and 5:00 p.m.
- Remote troubleshooting between 8:00 a.m. and 5:00 p.m. (customer local time) during the standard business week, excluding nationally recognized holidays in the customer's location.
- 24 x 7 x 365 access to the Support Web Portal, knowledge base and online documentation.
- A supplemental support option can be added to provide remote troubleshooting 24 hours a day, 7 days a week, 365 days a year.

Service and Support

Refer to **https://support.spectralogic.com** / for Spectra Logic country-specific coverage of service options
For More Information **https://support.spectralogic.com/**

Parts and Materials

Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements.

Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product QuickSpecs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.

Configuration Information

LTO TFinity ExaScale Frames

Description	SKU
LTO TFinity ExaScale Base Frame Options	
Spectra TFinity LTO Robot 6 DBA Custom Skins 80 Chambers 2x 5/12V and 1x 24V PS Base Frame	R8S28A
Spectra TFinity LTO Robot 6 DBA Standard Skins 80 Chambers 2x 5/12V and 1x 24V PS Base Frame	R8S27A
Spectra TFinity LTO Robot 3 DBA Custom Skins 92 Chambers 2x 5/12V and 1x 24V PS Base Frame	R8S26A
Spectra TFinity LTO Robot 3 DBA Standard Skins 92 Chambers 2x 5/12V and 1x 24V PS Base Frame	R8S25A
Spectra TFinity ExaScale 3 Drive Bay Assembly Maximum 12 LTO Drives 920 Slots Tape Library	Q1G79A
Spectra TFinity ExaScale 6 Drive Bay Assembly Maximum 24 LTO Drives 800 Slots Tape Library	Q1G81A
Spectra TFinity Custom 3 DBA up to 12 LTO Drives 92 Chambers Base Frame	Q1J42A
Spectra TFinity Custom 6 DBA up to 24 LTO Drives 80 Chambers Base Frame	Q1J44A

Notes:

- Includes 20 Entry/Exit Slots, zero drives, and 50 slots enabled.
- Minimum TFinity ExaScale includes the Base Frame, Left and Right Service Bay. As drives and slots are added, additional Expansion Frames may be required. Please contact your local sales representative to ensure desired capacity is achieved.
- Custom skins require completion of the TFinity Custom Panel Order Form
- These products are TAA (Trade Agreements Act) compliant.

LTO TFinity ExaScale Service Bays – Minimum configuration includes Base Frame and 2 Service Bays	
Spectra TFinity 50 Chambers Power Pack+ Left Service Bay	Q1G83A
Spectra TFinity 50 Chambers Power Pack+ Right Service Bay	Q1G84A
Spectra TFinity Left Service Bay	Q1G86A
Spectra TFinity Right Service Bay	Q1G87A
Spectra TFinity Custom TS 14 Entry/Exit Chambers up to 42 Chambers Left Service Bay	Q1J46A
Spectra TFinity Custom LTO 14 Entry/Exit Chambers up to 50 Chambers Left Service Bay	Q1J47A
Spectra TFinity Custom LTO up to 50 Chambers Left Service Bay	Q1J49A
Spectra TFinity Custom LTO with Robot and up to 50 Chambers Right Service Bay	Q1J50A
Spectra TFinity LTO Robot Standard Skins 78 Chambers 1x 24V PS Right Service Frame	R7F62A
Spectra TFinity LTO Robot Custom Skins 78 Chambers 1x 24V PS Right Service Frame	R7F63A
Spectra TFinity LTO without Robot Standard Skins 78 Chambers 1x 24V PS Right Service Frame	R7F66A
Spectra TFinity LTO without Robot Custom Skins 78 Chambers 1x 24V PS Right Service Frame	R7F67A
Spectra TFinity LTO Standard Skins 78 Chambers Left Service Frame	R7F70A
Spectra TFinity LTO Custom Skins 78 Chambers Left Service Frame	R7F71A
LTO TFinity ExaScale Expansion Frames	
Spectra TFinity ExaScale 3 Drive Bay Assembly Maximum 12 LTO Drives 1350 Slots Tape Library	Q1G80A
Spectra TFinity ExaScale 6 Drive Bay Assembly Maximum 24 LTO Drives 1350 Slots Tape Library	Q1G82A
Spectra TFinity 130 Chambers Media Expansion Frame	Q1G85A
Spectra TFinity Custom 3 DBA up to 12 LTO Drives 101 Chambers Expansion Frame	Q1J43A
Spectra TFinity Custom 6 DBA up to 24 LTO Drives 89 Chambers Expansion Frame	Q1J45A
Spectra TFinity Custom LTO up to 130 Chambers Media Expansion Frame	Q1J48A
LTO TFinity ExaScale Transporter – selection required. Qty 2 will be included in configuration.	
Spectra Standard Transporter - LTO Tape Drive	Q0G87A
Spectra High Performance Transporter	Q0G95A
Spectra TeraPack Entry/Exit LTO 10-slot No Media	Q0H10A

Configuration Information

Enterprise TFinity ExaScale Transporter – selection required. Qty 2 will be included in configuration.

Description	SKU
Spectra Standard Transporter	Q0G96A
Spectra High Performance Transporter	Q0G95A
Spectra TeraPack Entry/Exit TS 9-slot No Media	Q0H14A
Spectra TeraPack Entry/Exit T10000 No Media	Q2P44A
Spectra TFinity T10000 Door Kit	Q2R39A

Notes: Qty 5 Entry/Exit TeraPacks will be added to a new TFinity ExaScale configurations.

Enterprise TFinity ExaScale Base Frame Configuration

Spectra TFinity Enterprise Robot 6 DBA Custom Skins 75 Chambers 2x 5/12V and 1x 24V PS Base Frame	R8S30A
Spectra TFinity Enterprise Robot 6 DBA Standard Skins 75 Chambers 2x 5/12V and 1x 24V PS Base Frame	R8S29A
Spectra TFinity ExaScale 6 Drive Bay Assembly Maximum 24 TS11xx Drives 594 Slots Tape Library	Q1G88A
Spectra TFinity Custom TS 6 DBA up to 24 Drives 66 Chambers Base Frame	Q1J51A

Notes:

- Includes 18 slot Entry/Exit slots, zero drives, and 45 slots enabled.
- Minimum TFinity ExaScale includes the Base Frame, Left and Right Service Bay. As drives and slots are added, additional Expansion Frames may be required. Please contact your local sales representative to ensure desired capacity is achieved.
- Custom skins require completion of the TFinity Custom Panel Order Form
- These products are TAA (Trade Agreements Act) compliant.

Enterprise TFinity ExaScale End Frames – (Minimum configuration includes Base Frame and 2 Service Bays)

Spectra TFinity 42 Chambers Power Pack+ Enterprise Left Service Bay	Q1G90A
Spectra TFinity 42 Chambers Power Pack+ Enterprise Right Service Bay	Q1G91A
Spectra TFinity Enterprise Left Service Bay	Q1G93A
Spectra TFinity Enterprise Right Service Bay	Q1G94A
Spectra TFinity Custom LTO 14 Entry/Exit Chambers Robot up to 50 Chambers Right Bulk Service Bay	Q1J53A
Spectra TFinity Custom TS 14 Entry/Exit Chambers Robot up to 50 Chambers Right Service Bay	Q1J54A
Spectra TFinity Custom TS up to 42 Chambers Left Service Bay	Q1J56A
Spectra TFinity Custom TS Robot and up to 42 Chambers Right Service Bay	Q1J57A
Spectra TFinity LTO Robot Standard Skins 78 Chambers 1x 24V PS Right Service Frame	R7F62A
Spectra TFinity LTO Robot Custom Skins 78 Chambers 1x 24V PS Right Service Frame	R7F63A
Spectra TFinity Custom TS up to 42 Chambers Left Service Bay	Q1J56A
Spectra TFinity Custom TS Robot and up to 42 Chambers Right Service Bay	Q1J57A
Spectra TFinity Enterprise Robot Standard Skins 66 Chambers 1x 24V PS Right Service Frame	R7F64A
Spectra TFinity Enterprise Robot Custom Skins 66 Chambers 1x 24V PS Right Service Frame	R7F65A
Spectra TFinity Enterprise without Robot Standard Skins 66 Chambers 1x 24V PS Right Service Frame	R7F68A
Spectra TFinity Enterprise without Robot Custom Skins 66 Chambers 1x 24V PS Right Service Frame	R7F69A
Spectra TFinity Enterprise Standard Skins 66 Chambers Left Service Frame	R7F72A
Spectra TFinity Enterprise Custom Skins 66 Chambers Left Service Frame	R7F73A

Enterprise TFinity ExaScale Expansion Frames

Spectra TFinity ExaScale 6 Drive Bay Assembly Maximum 24 TS1150 Drives 1350 Slots Tape Library	Q1G89A
Spectra TFinity Custom TS 6 DBA up to 24 Drives 75 Chambers Expansion Frame	Q1J52A
Spectra TFinity 110 Chambers Media Enterprise Expansion	Q1G92A
Spectra TFinity Custom TS up to 110 Chambers Media Expansion Frame	Q1J55A

Configuration Information

Enterprise TFinity ExaScale Transporter – selection required. Qty 1 or 2 will be included in configuration.

Description	SKU
Spectra Standard Transporter	Q0G96A
Spectra High Performance Transporter	Q0G95A
Spectra TeraPack Entry/Exit TS 9-slot No Media	Q0H14A

Notes:

- Qty 5 Entry/Exit TeraPacks will be added to new TFinity ExaScale configurations.
- Customers may also be required to also purchase the necessary number of drives, Fibre Channel cables, tape media, power cords and software licenses in order to complete the library solution.
- Installation and Support services will be quoted as a part of each library order.

Tape Drives, Slot/Capacity Licenses, and HPE TeraPack Media

LTO-9 Drive Options

Spectra T950/TFinity LTO-9 Ultrium Fibre Channel Full Height Drive EDBA Sled	R7E99A
Spectra T950/TFinity LTO-9 Ultrium Fibre Channel Full Height Drive Sled	R7F00A
Spectra T950/TFinity LTO-9 Ultrium SAS Full Height Drive EDBA Sled	R7F01A
Spectra T950/TFinity LTO-9 Ultrium SAS Full Height Drive Sled	R7F02A

Notes: Quantity: 1 to 24 drives per drive frame; up to 144 drives maximum.

LTO-8 Drive Options

Spectra T950/TFinity LTO-8 Ultrium Fibre Channel Full Height Drive EDBA Sled	Q2R67A
Spectra T950/TFinity LTO-8 Ultrium Fibre Channel Full Height Drive Sled	Q2R68A
Spectra T950/TFinity LTO-8 Ultrium Fibre Channel Half Height Drive EDBA Sled	R0Q19A
Spectra T950/TFinity LTO-8 Ultrium SAS Half Height Drive EDBA Sled	R0Q20A

Notes: Quantity: 1 to 24 drives per drive frame; up to 144 drives maximum.

LTO-7 Drive Options

Spectra T950/TFinity LTO-7 Ultrium Fibre Channel Full Height Drive EDBA Sled	Q0H09A
Spectra T950/TFinity LTO-7 Ultrium Fibre Channel Full Height Drive Sled	Q0H08A
Spectra T950/TFinity LTO-7 Ultrium Fibre Channel Half Height Drive EDBA Sled	R0Q17A
Spectra T950/TFinity LTO-7 Ultrium SAS Half Height Drive EDBA Sled	R0Q18A

Notes: Quantity: 1 to 24 drives per drive frame; up to 144 drives maximum.

LTO-6 Drive Options

Spectra T950/TFinity LTO-6 Ultrium Fibre Channel Full Height Drive EDBA Sled	Q0H02A
Spectra T950/TFinity LTO-6 Ultrium Fibre Channel Full Height Drive Sled	Q0H01A

Notes: Quantity: 1 to 24 drives per drive frame; up to 144 drives maximum.

TS1150 Technology Drive Options

Spectra TFinity ExaScale Tape Library TS1150 Technology Fibre Channel Drive EDBA Sled	Q0H18A

Notes: Quantity: 1 to 24 drives per drive frame; up to 114 drives maximum.

LTO Slots/Capacity Licenses

Spectra T950/TFinity BlueScale Storage Chamber 10-slot LTU	Q0G86A

Notes: LTO slots are purchased in 10 slot increments.

Configuration Information

Enterprise Slots/Capacity Licenses

Description	SKU
Spectra T950/TFinity BlueScale Storage Chamber 9-slot LTU	Q0H11A

Notes: Enterprise slots are purchased in 9 slot increments.

TS1160 Technology Drive Options

Spectra T950/TFinity TS1160 Fibre Channel Drive EDBA Sled	R0R26A
Spectra T950/TFinity TS1160 Fibre Channel Drive DBA Sled	R0R27A
Spectra T950/TFinity TS1160 SAS Full Height Drive EDBA Sled	R7F03A
Spectra T950/TFinity TS1160 SAS Full Height Drive Sled	R7F04A

Notes: Quantity: 1 to 24 drives per drive frame; up to 144 drives maximum.

T10000 Drive Sled

Spectra TFinity T10000 B Technology Full Height Drive Sled	Q2P40A
Spectra TFinity T10000 C Technology Full Height Drive Sled	Q2P41A
Spectra TFinity ExaScale Tape Library T10000 D Technology Full Height Drive Sled	R3B30A

Notes: Quantity: 1 to 24 drives per drive frame; up to 114 drives maximum.

HPE LTO Ultrium TeraPack Media

Non-Custom Labeled LTO Ultrium TeraPack Data Cartridges

Spectra TeraPack LTO-6 Ultrium 6.25TB BaFe RW Non Custom Labeled 10 Data Cartridges	Q1G95A
Spectra TeraPack LTO-7 Ultrium 15TB RW Non Custom Labeled 10 Data Cartridges	Q1H01A
Spectra TeraPack LTO-8 Ultrium 30TB RW Non Custom Labeled 10 Data Cartridges	Q2R69A
HPE LTO-7 Ultrium Type M 22.5TB RW Non Custom Labeled TeraPack 10 Data Cartridges	QS211A
Spectra TeraPack LTO-9 Ultrium 45TB RW Non Custom Labeled 10 Data Cartridges	R7C12A

Custom Labeled LTO Ultrium TeraPacks Data Cartridges

Notes: Custom labeled products allow customers to choose their own specific label sequence to be printed on their label order. A custom barcode label order form must be completed.

Spectra TeraPack LTO-6 Ultrium 6.25TB BaFe RW Custom Labeled 10 Data Cartridges	Q1G96A
Spectra TeraPack LTO-7 Ultrium 15TB RW Custom Labeled 10 Data Cartridges	Q1H02A
Spectra TeraPack LTO-8 Ultrium 30TB RW Custom Labeled 10 Data Cartridges	Q2R70A
HPE LTO-7 Ultrium Type M 22.5TB RW Custom Labeled TeraPack 10 Data Cartridges	QS212A
Spectra TeraPack LTO-9 Ultrium 45TB RW Custom Labeled 10 Data Cartridges	R7C13A

Non-Custom Labeled Cleaning LTO Ultrium TeraPacks

Spectra TeraPack LTO Ultrium Cleaning 10 Cartridges	Q1H03A

Empty TeraPack Trays and Dust Covers

Spectra TeraPack LTO Dust Cover	Q1H05A
Spectra TeraPack LTO Empty Tray No Cover or Media	Q1J40A
Spectra TeraPack TS Series Empty Tray No Cover or Media	Q1J41A
Spectra TeraPack T10000 Empty Tray No Cover or Media	Q2P43A

Configuration Information

HPE TS11xx Technology TeraPack Media

Non-Custom Labeled TS11xx Technology TeraPack Data Cartridges

Description	SKU
Spectra TeraPack TS1160 JE Non Custom Labeled 9 Data Cartridges	R0R28A
Spectra TeraPack TS1150/TS1155 JD Non Custom Labeled 9 Data Cartridges	Q1G99A

Custom Labeled TS11xx Technology TeraPack Data Cartridges

Notes: Custom labeled products allow customers to choose their own specific label sequence to be printed on their label order. A custom barcode label order form must be completed.

Spectra TeraPack TS1160 JE Custom Labeled 9 Data Cartridges	R0R29A
Spectra TeraPack TS1150/TS1155 JD Custom Labeled 9 Data Cartridges	Q1H00A

Non-Custom Labeled Cleaning TS11xx Technology TeraPacks

Spectra TeraPack TS Series Cleaning 9 Cartridges	Q1H04A

Additional Options

Additional Media Options

Description	SKU
Spectra TeraPack LTO Empty Tray No Cover or Media	Q1J40A
Spectra TeraPack TS Series Empty Tray No Cover or Media	Q1J41A

Spectra TFinity ExaScale Tape Library Licenses

HPE TFinity SKLM Encryption per Library LTU	Q1J62A
Spectra T950/TFinity BlueScale Professional Encryption LTU	Q1J70A
Spectra T950/TFinity Thin Provisioning LTU	Q1J73A
Spectra T950/TFinity Media Expansion Frame for BlueScale Vision Camera	Q1J38A
Spectra T950/TFinity Drive Expansion Frame for BlueScale Vision Camera	Q1J37A
Spectra Secure Site Accessory Kit	Q1J39A
Notes: Customer must complete the TFinity Custom Panel Order Form.	
Spectra T950/TFinity Leveling Plate	Q1J74A
Spectra T950 Tape Library RIM2 Robot Interface Module	Q0H07A
Notes: Requires addition of Qty 1 pn Q0H06A.	
Spectra TFinity ExaScale Tape Library BlueScale SD Card	Q0H05A
Spectra Library Server Upgrade	Q0G97A
Spectra T950/TFinity 5-12V 8Amp Power Pack	R0R72A
Spectra T950/TFinity Dual AC 2 Power Supply	R0R71A
Spectra T950/TFinity 24V 8Amp Power Pack	Q0G89A
Spectra T950/TFinity Adjustable Shipping Crate	Q0G85A
Spectra T950 Tape Library Ethernet Drive Bay Assembly	Q0H00A
Notes: Each Drive Bay Assembly can hold up to 4 LTO or TS11xx Technology Drives and 1 Robotic Interface Module.	

Fibre Channel and SAS Cables

Spectra 10m Duplex Multi-mode 50u LC/LC Optical Cable	Q0G67A
Spectra 20m Duplex Multi-mode 50u LC/LC Optical Cable	Q0G68A
Spectra 50m Duplex Multi-mode 50u LC/LC Optical Cable	Q0G69A
Spectra T950/TFinity Mini SAS 3m Cable	R7F74A
Spectra T950/TFinity Tape Library Mini SAS HD 3m Cable	R8S08A

SWARM

Spectra T950/TFinity Swarm Ethernet to SAS Bridge Controller	R7F09A
Spectra T950/TFinity Swarm Ethernet 50Gb PCIe Adapter	R7F08A
Spectra T950/TFinity Swarm QSFP Transceiver	R7F07A
Spectra T950/TFinity Multi-mode OM4 10m Trunk Cable	R7F06A
Spectra T950/TFinity Swarm Bracket	R7F05A

Additional Options

Power Cord

Description	SKU
Spectra 220-240V 2.5m AU Power Cord	Q0G56A
Spectra 220-240V 2.5m ZA/IN Power Cord	Q0G57A
Spectra 220-240V 2.5m UK Power Cord	Q0G58A
Spectra 220-240V 2.5m IL Power Cord	Q0G59A
Spectra 220-240V 2.5m JP Power Cord	Q0G60A
Spectra 220-240V 2.5m EU Power Cord	Q0G61A
Spectra NEMA L6-30P 220-240V 4.5m US Power Cord	Q0G62A
Spectra C19 IEC ZA Power Cord	Q0G63A
Spectra C19 IEC - NEMA 5-15P 110-120V 2.5m Power Cord	Q0G64A
Spectra C19 IEC309 220-240V 4.6m 12AWG Power Cord	Q0G66A
Spectra C19 L6-20P 220-240V 20Amp 4.5m US Locking Power Cord	Q0G70A

TFinity ExaScale Support Option

HPE TFinity 1 Unit Co-term Support	Q1G23A
Spectra TFinity ExaScale Tape Library 5-year 24x7 4-hour Onsite Support	R8S07A
Spectra TFinity ExaScale Tape Library 4-year 24x7 4-hour Onsite Support	R8S06A
Spectra TFinity ExaScale Tape Library 3-year 24x7 4-hour Onsite Support	R8S05A
Spectra TFinity ExaScale Tape Library 2-year 24x7 4-hour Onsite Support	R8S04A
Spectra TFinity ExaScale Tape Library 1-year 24x7 4-hour Onsite Support	R8S03A
Spectra TFinity ExaScale Tape Library 5-year Next Business Day Onsite Support	R8R97A
Spectra TFinity ExaScale Tape Library 4-year Next Business Day Onsite Support	R8R96A
Spectra TFinity ExaScale Tape Library 3-year Next Business Day Onsite Support	R8R95A
Spectra TFinity ExaScale Tape Library 2-year Next Business Day Onsite Support	R8R94A
Spectra TFinity ExaScale Tape Library 1-year Next Business Day Onsite Support	R8R93A
Spectra TFinity ExaScale Tape Library 5-year 24x7 4-hour Onsite and NBD Onsite Drive Support	R8R87A
Spectra TFinity ExaScale Tape Library 4-year 24x7 4-hour Onsite and NBD Onsite Drive Support	R8R86A
Spectra TFinity ExaScale Tape Library 3-year 24x7 4-hour Onsite and NBD Onsite Drive Support	R8R85A
Spectra TFinity ExaScale Tape Library 2-year 24x7 4-hour Onsite and NBD Onsite Drive Support	R8R84A
Spectra TFinity ExaScale Tape Library 1-year 24x7 4-hour Onsite and NBD Onsite Drive Support	R8R83A
Spectra TFinity ExaScale Tape Library 3-year 24x7 4-hour Onsite and NBD Onsite Drv Renewal Support	R8S24A
Spectra TFinity ExaScale Tape Library 1-year 24x7 4-hour Onsite and NBD Onsite Drv Renewal Support	R8S23A
Spectra TFinity ExaScale Tape Library 3-year Next Business Day Onsite Renewal Support	R8S20A
Spectra TFinity ExaScale Tape Library 1-year Next Business Day Onsite Renewal Support	R8S19A
Spectra TFinity ExaScale Tape Library 3-year 24x7 4-hour Onsite Renewal Support	R8S16A
Spectra TFinity ExaScale Tape Library 1-year 24x7 4-hour Onsite Renewal Support	R8S15A
HPE TFinity Tape Library 3-year 24x7 Phone Uplift Renewal Support	R8S12A
Spectra TFinity ExaScale Tape Library 1-year 24x7 Phone Uplift Renewal Support	R8S11A

Additional Options

Description	SKU
Spectra T950/TFinity Swarm 1-year 24x7 Phone Support	R7F10A
Spectra T950/TFinity Swarm 1-year 24x7 Zone 2 Phone Support	R7F11A
Spectra T950/TFinity Swarm 2-year Additional Uplift 24x7 Phone Support	R7F12A
Spectra T950/TFinity Swarm 2-year Additional Uplift 24x7 Zone 2 Phone Support	R7F13A
Spectra T950/TFinity Swarm 1-year 9x5 Phone Support	R7F14A
Spectra T950/TFinity Swarm 1-year 9x5 Zone 2 Phone Support	R7F15A
Spectra T950/TFinity Swarm 2-year Additional Uplift 9x5 Phone Support	R7F16A
Spectra T950/TFinity Swarm 2-year Additional Uplift 9x5 Zone 2 Phone Support	R7F17A

TFinity ExaScale Professional Services Offerings

Spectra TFinity ExaScale Tape Library Professional Services Onsite Installation Base	Q0G77A
Spectra TFinity ExaScale Tape Library Professional Services Expansion Frame Installation Base	Q0G78A
Spectra TFinity ExaScale Tape Library Professional Services Expansion Frame Installation Upgrade	Q0G79A
Spectra TFinity ExaScale Tape Library Professional Services Onsite (per Day) Consult and Training	Q0G80A
Spectra T950 Tape Library Professional Services Annual Preventive Maintenance	Q0G76A
Spectra TFinity ExaScale Tape Library Professional Services Individual Preventive Maintenance	Q0G84A
Spectra SKLM Basic Software Installation with up to 5-day Professional Service	Q1J60A
Notes: Up to 5 days of Professional Services advanced installation for Spectra SKLM encryption option.	
Spectra T950/TFinity Remote Consulting Professional Service	Q2R40A
Spectra TFinity T10000 Installation Drive Sled Professional Service	Q2P61A

Technical Specifications

Family Information

	LTO-6	LTO-7 and LTO-7 Type M	LTO-8	LTO-9	LTO
	Non Custom/Custom TeraPack	Non Custom/Custom TeraPack	Non Custom/Custom TeraPack	Non Custom/Custom TeraPack	Maintenance TeraPack
Part Number	Q1G95A/Q1G96A	Q1H01A/Q1H02A QS211A/QS212A	Q2R69A/Q2R70A	Spectra TeraPack LTO Ultrium Cleaning 10 Cartridges	Q1H03A
Format	LTO-6 BaFe	LTO-7 / LTO-7 Type M	LTO-8	LTO-8	LTO Cleaning Tapes
Media Format	Re-Writable	Re-Writable	Re-Writable	Re-Writable	
Quantity per Package	10	10	10	10	10
Capacity	2.5 TB Uncompressed	6.0 TB LTO-7 9 TB LTO-7 Type M Uncompressed	12 TB Uncompressed	18 TB Uncompressed	
	6.25 TB Compressed	15 TB LTO-7 22.5 TB LTO-7 Type M Compressed	30 TB Compressed	45 TB Compressed	
Tape Length	846 m	960 m	960 m	1035 m	319 m
Tape Width (Metric)	12.65 mm	12.65 mm	12.65 mm	12.65 mm	12.65 mm
Tape Thickness	6.1 um	5.6 um	5.6 um	4.9 to 5.5 um	8.9 um
Particle Type	BaFe	BaFe	BaFe	BaFe	MP
Bit Density	343 kbits/inch	485 kbits/inch	525 kbits/inch	545 kbits/inch	
Number of Data Tracks	2176	3584 LTO-7 5376 LTO-7 Type M	6,656	8960	
Magnetic Layer Coercivity	2280 Oe	2850 Oe	2,300 Oe	1,600 to 3,000 Oe	
Archival Storage Life	30 years	30 years	30 years	30 years	

Technical Specifications

Part Name	LTO-6	LTO-7 and LTO-7 Type M	LTO-8	LTO-9	LTO
Warranty	Limited Lifetime Warranty	Limited Lifetime Warranty	Limited Lifetime Warranty	Limited Lifetime Warranty	Limited Lifetime Warranty
Environmental Operating					
Temperature	10 to 45°C	10 to 45°C	10 to 45°C	15 to 35°C	10 to 45°C
	(50 to 113°F)	(50 to 113°F)	(50 to 113°F)	(68 to 95°F)	(50 to 113°F)
Relative Humidity	10-80%	10-80%	10-80%	20-80%	10-80%
Maximum wet bulb temperature	26°C (79°F)	26°C (79°F)	26°C	22°C	26°C
Environmental Storage Conditions					
Temperature	16 to 32°C	16 to 32°C	16 to 32°C	16 to 32°C	16 to 32°C
	(61 to 90°F)	(61 to 90°F)	(61 to 90°F)	(61 to 90°F)	(60 to 89°F)
Relative Humidity	20-80%	20-80%	20-80%	20-80%	20-60%
Maximum wet bulb temperature	26°C (79°F)	26°C (79°F)	26°C (79°F)	26°C (79°F)	26°C (79°F)

Technical Specifications

Part Name	TS1150 and TS1155 Non Custom TeraPack	TS1150 and TS1155 Custom TeraPack	TS1160 Custom / Non Custom TeraPack
Part Number	Q1G99A	Q1H00A	R0R29A/R0R28A
Format	TS1150 and TS1155	TS1150 and TS1155 Cust	TS1160 Cust
Media Format	Re-Writable	Re-Writable	Re-Writable
Quantity per Package	9	9	9
Capacity	TS1150 10TB Uncompressed TS1155 15 TB Uncompressed	TS1150 10 TB Uncompressed TS1155 15 TB Uncompressed	TS1155 15 TB Uncompressed TS1160 20 TB Uncompressed
	TS1150 25TB Compressed TS1155 37.5TB Compressed	TS1150 25TB Compressed TS1155 37.5 TB Compressed	TS1155 37.5TB Compressed TS1160 50 TB Compressed
Tape Length	1,072 m	1,072 m	1,072 m
Warranty	Limited Lifetime Warranty	Limited Lifetime Warranty	Limited Lifetime Warranty
Environmental Operating			
Temperature	16 to 32°C	16 to 32°C	16 to 32°C
	(61 to 90°F)	(61 to 90°F)	(61 to 90°F)
Relative Humidity	20-80%	20-80%	20-80%
Maximum wet bulb temperature	26°C (79°F)	26°C (79°F)	26°C (79°F)
Environmental Storage Conditions			
Temperature	16 to 25°C	16 to 25°C	16 to 25°C
	(61 to 77°F)	(61 to 77°F)	(61 to 77°F)
Relative Humidity	20-50%	20-50%	20-50%
Maximum wet bulb temperature	26°C (79°F)	26°C (79°F)	26°C (79°F)

Technical Specifications

Dimensions Weight	**Form Factor**	**Free standing**
	Frames each (Base, Drive Expansion, Media Expansion) Physical (HxWxD)	79.125-82 x 29.0 x 43.25 inches (201.0-208.3 x 73.7 x 109.9 cm)
	Service Frames - Physical (HxWxD)	79.125-82 x 29.8 x 43.25 inches (201.0-208.3 x 75.7 x 109.9 cm)
	Frames each (Base, Drive Expansion, Media Expansion, Service) - Shipping (HxWxD)	86.4 x 42.0 x 55.2 inches (220.0 x 110.0 x 140.0 cm)
Base Frame	**Out of box**	810-821 lb (367-372 kg)
Drive Expansion Frame	**Shipping**	1,200-1,300 lbs (544-590 kg)
	Out of box	750-763 lb (340-346 kg)
Media Expansion Frame	**Shipping**	1,155-1168 lbs (524-530 kg)
	Out of box	564 lb (256 kg)
Service Frame (standard/bulk TAP)	**Shipping**	888 lbs (403 kg)
	Out of box	737 lb/824 lb (334 kg/374 kg)
	Shipping	1,079 lb/1166 lb (489 kg/529 kg)
	Notes: These weights are with no drives or media installed.	
Robotic and Host Interface	Fibre Channel, 16Gb (TS1160 only) /8Gb/4Gb/2Gb Multi-mode optical, LC connector and optional Robotic Interface Module	

Library Management Interface One RJ-45 Ethernet port, 10/100Base-T.								
Drive Performance (1Kb = 1,000 bytes)		**LTO-9**	**LTO-8**	**LTO-7**	**LTO-6**	**TS1160**	**TS1155**	**TS1150**
	Native Data transfer rate	400 MB/s with LTO-9 media	360 MB/s with LTO-8 media	300 MB/s with LTO-7 media	160 MB/s with LTO-6 media	400 MB/s with TS1160 Technology	360 MB/s with TS1155 Technology	360 MB/s with TS1150 Technology
	Average load, thread, & initialize time	15 seconds with pre-initialized media	15 seconds	12 seconds	12 seconds	12seconds	12seconds	12seconds
	Average unload time	24 seconds	24 seconds	17 seconds	17 seconds	17 seconds	17 seconds	17 seconds
	Average First File Access Time	66 seconds	66 seconds	60 seconds	60 seconds	55 seconds	55 seconds	55 seconds
Notes: For LTO-9 non-pre-initialized media, the time to load, thread and initialize can be considerably longer than the time stated in this table for the first load of the media. Please consult your sales/pre-sales representative for more details.								
Bulk load unload	144 LTO and 126 Enterprise Slots					Maximum number of Entry/Exit Slots		
	Notes: Minimum of 20 LTO and 18 Enterprise slot Entry/Exit ports comes with each library. 140 LTO or 126 Enterprise tape cartridges may be imported/exported in to the library at one time if Bulk Service Bays are configured.							
Input Requirements	Auto-range to domestic and international AC voltages							

Technical Specifications

Input Requirements Power Consumption	Range Line Voltage	Nominal / Range Line Frequency 50 Hz / 60Hz
	Typical Input Current	200 VAC to 240 VAC
	VA max 960W 613W (N+1)	13A max
Connectors	FC	
Drives Supported	Native Fibre Drives; Native SAS Drives; Mini SAS Connector SAS and FC: LTO-9, LTO-8, LTO-7 ; LTO-6 TS1160, TS1155 and TS1150	LC Connector
Maximum Number of Drives	24 drives per Base Frame and 24 per Drive Expansion Frame up to maximum of 144 LTO or TS1160 drives per library with multiple expansion frames.	
Reliability (Library Only)	MTBF	6.3 Years
Reliability (Library Only)	MCBF	3.1 Million
	MTTR	3 minutes for hot-swap components. 30 minutes for non-hot-swap-components
Reliability (Tape Drive)	MTBF	250,000 power-on hours 100% duty cycle
Reliability (Tape Drive)	MSBF	100,000
Relative Humidity (non-condensing)	Shipping	Shipping & Storage: 10% to 95% non-condensing
	Operating	Operating: 20% to 80% non-condensing
Temperature Range	Operating Shipping	Dry Bulb: 10° to 40° C/50° to 104° F Wet Bulb: 25° C (77° F) maximum
Regulatory Compliance	Safety	Dry Bulb: -40° to 65° C/-40° to 149° F Wet Bulb: 46° C (115° F) maximum
	Safety EMC	UL 60950-1, 2nd ed. Including am1, am2 IEC 60950-1(ed.2); am1;am2
	Country Regulatory Compliance	CISPR 22/class A, CISPR 24, FCC/Class A
	Regulatory Model Number	For country specific compliance contact your local sales representative. TFinity

Summary of Changes

Date	Version History	Action	Description of Change
05-Dec-2022	Version 23	Changed	Technical Specifications section was updated Obsolete SKU Q9D41A was removed
18-Apr-2022	Version 22	Changed	QS name was updated.
04-Oct-2021	Version 21	Changed	Added LTO-9 support, SWARM support, SKUs for new support offerings and removed obsolete SKUs
17-Aug-2020	Version 20	Changed	QuickSpecs layout was updated, and Branding Refresh was applied.
03-Feb-2020	Version 19	Changed	New power supply allows max TS1160 drive count to be 24(Single frame) and 144 (Max drive count), HH drives compatibility, added T10000 Sled
04-Nov-2019	Version 18	Changed	Standard Features, and Configuration Information sections were updated
06-May-2019	Version 17	Changed	Addition of TS1160 tape technology Overview, Standard Features and Technical Specifications sections were updated.
04-Feb-2018	Version 16	Changed	Overview, Standard Features, Technical Specifications sections were updated
03-Dec-2018	Version 15	Changed	Standard Features, Service and Support and Technical Specifications sections were revised. SKU descriptions were updated.
06-Aug-2018	Version 14	Removed	SKU Q1J59A was removed.
02-Jul-2018	Version 13	Changed	Service and Support section was updated.
07-May-2018	Version 12	Changed	Technical Specifications section was revised. SKU descriptions were updated.
02-Apr-2018	Version 11	Changed	Technical Specifications section was revised. SKU descriptions were updated.
12-Feb-2018	Version 10	Changed	Features in more detail and Technical Specifications were revised.
05-Feb-2018	Version 9	Changed	Technical Specifications section was revised.
04-Dec-2017	Version 8	Changed	Overview, Features, Compatibility, and Technical Specifications were revised.
06-Nov-2017	Version 7	Changed	Changes made throughout the QuickSpecs.
12-Jun-2017	Version 6	Changed	Fixed typos.
05-Jun-2017	Version 5	Changed	Changes made throughout the QuickSpecs.
27-Mar-2017	Version 4	Changed	Changes made throughout the QuickSpecs.
17-Feb-2017	Version 3	Changed	Changes made throughout the QuickSpecs.
09-Dec-2016	Version 2	Changed	Changes made to the Overview Section.
28-Nov-2016	Version 1	New	New QuickSpecs

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