Storage Solutions Overview

Introducing...

STORCYCLE™

Storage Management Software

Running out of Primary Tier storage?

Backups taking too long? StorCycle solves these challenges with its ability to identify inactive data based on user-defined policies, and then migrate this data to a protected and less expensive Perpetual Tier of storage. StorCycle is capable of managing trillions of files in its database which is backed up daily. StorCycle works flawlessly with all Spectra disk and tape products or can be integrated as a stand-alone into a customer's current storage environment.

StorCycle is designed to address four vital storage management necessities:

1 Identify Storing growing amounts of inactive data on expensive primary disk is a financial drain on an organization's bottom line. StorCycle can identify any and all data that can and should be moved to less expensive disk space, tape archives or even the cloud.

2 Migrate StorCycle software provides two basic methods of migrating data – Project Archive and Auto Migrate. The Project Archive method is for completed data sets which will change minimally, if at all, but cannot be deleted. The Auto Migrate method identifies inactive files based on user-defined age and size policies, and moves those files to the Perpetual Tier. StorCycle can be a stand-alone software product utilizing the cloud and user NAS, or paired with Spectra hardware to create a secure storage environment.

3 Protect Cyberattack, ransomware, natural disaster or simple human error – any of these can destroy an organization's most valuable asset – its digital data. StorCycle software protects data through end-to-end checksums, encryption on all storage targets, and storage of multiple copies on multiple storage mediums. StorCycle is fully ADFS compliant meaning file permission will remain intact regardless of where data is stored.
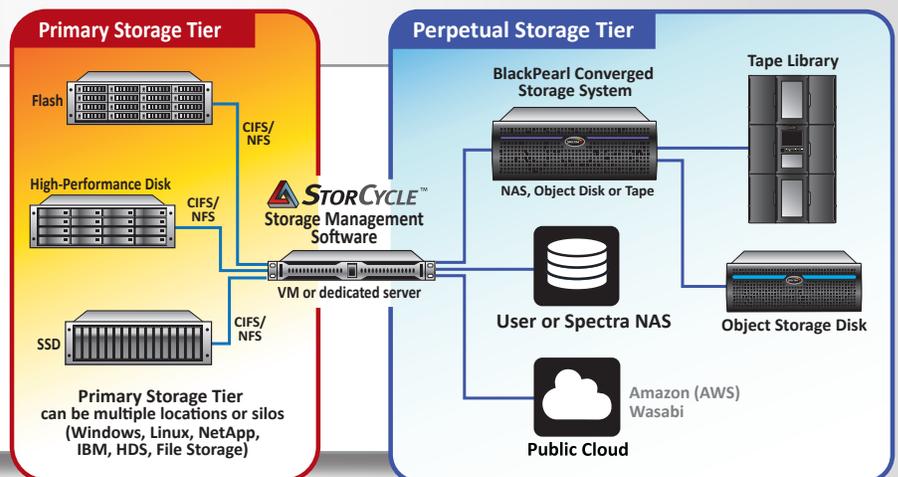
4 Access StorCycle's unique ability to use HTML Links or Symbolic Links* assures quick and easy user access to data even after it has been migrated. StorCycle removes the file from primary storage leaving a link behind for access. The user-friendly StorCycle web interface also includes a robust search interface to easily find and retrieve files. StorCycle stores data in open formats such as CIFS or NFS file systems, LTFS recorded tape, or native cloud formats.

Available in a future release.

StorCycle Activates Storage Lifecycle Management

Data value and access requirements vary greatly and usually change over the lifecycle of the data. Some data sets are actively accessed; some become inactive soon after creation; and others are rarely accessed once stored. StorCycle organizes the storage of data based on its frequency of access and value to an organization.

Primary Storage Tier

Flash

CIFS/NFS

High-Performance Disk

CIFS/NFS

STORCYCLE™
Storage Management Software

VM or dedicated server

SSD

CIFS/NFS

Primary Storage Tier
can be multiple locations or silos
(Windows, Linux, NetApp, IBM, HDS, File Storage)

Perpetual Storage Tier

BlackPearl Converged Storage System

Tape Library

NAS, Object Disk or Tape

User or Spectra NAS

Object Storage Disk

Public Cloud

Amazon (AWS) Wasabi

Spectra's BlackPearl Family:
Simply and Affordably Preserving Your Data Forever

Storing data affordably – with longer retention times, in a more secure fashion, while navigating a myriad of new technology options – may be an organization's single greatest challenge.

Spectra® BlackPearl® Converged Storage System

- Solving the problem of costly and complex approaches to digital preservation by combining NAS and S3-based interfaces with multiple storage targets

- Reducing the need for expensive third-party data movers by integrating the Spectra S3 interface with a range of certified clients and simple file movers

- Delivering complete control of organizations' data via local copies, offsite replicated copies, and offsite cloud storage

- Ranging from the affordable BlackPearl V Series that can transfer data at 300 MB/s to the BlackPearl P Series that can transfer data at more than 3000 MB/s, there is a BlackPearl option perfectly sized for every organization

BlackPearl® Streamlines any workflow environment

Data can be transferred to a BlackPearl converged storage system, and all of its supported storage targets, via four different paths or workflows: Manual data movement, semi-automated data movement, fully-automated data movement, and purpose-built integrations. Any organization has the ability to instantly leverage any, or all, of these workflows to solve the ongoing challenges with data storage and management. Whether an organization seamlessly offloads its Tier 1 primary storage or implements a reliable and genetically diverse storage system by balancing the number of copies, locations and storage mediums (tape, disk or cloud) with cost, all this can be accomplished seamlessly in a single system.

BlackPearl's Advanced Bucket Management

BlackPearl uses internal management policies for different storage devices, enabling the system to combine multiple storage targets, such as different tape libraries, tape partitions, disk storage systems and cloud. This allows BlackPearl to control where and how data is being written. The primary feature of Advanced Bucket Management is the object storage data policies, where BlackPearl can make multiple copies of data on tape, disk, cloud, or can be replicated to another BlackPearl. This provides a very flexible platform and storage management system, while protecting an organization's data with genetic diversity of media and storage devices. With Advanced Bucket Management, it's possible to have redundant copies of a file on IBM® TS11XX tape, LTO tape, SAS HDD and SATA HDD.

Remote Replication and Public Cloud – Replication enables offsite storage providing multi-site geographic separation from the primary storage location. Built-in replication delivers protection through multiple copies in multiple locations on multiple BlackPearls, all while providing peace of mind that data will be available when needed. BlackPearl has the ability to copy data to multiple public cloud offerings for a hybrid cloud storage approach. Keeping a local copy ensures cloud is used in the most economical way, avoiding the hit of unexpected cloud retrieval costs.

BlackPearl Performance and Capacity Options

From the affordable BlackPearl V Series that can transfer data at 300 MB/s to the BlackPearl P Series that can transfer data at more than 3000 MB/s, there is a BlackPearl option perfectly sized for every organization.

	BlackPearl V Series			BlackPearl S Series			BlackPearl P Series		
Interface	Disk Expansion	Tape Connect	Network	Disk Expansion	Tape Connect	Network	Disk Expansion	Tape Connect	Network
	Up to 2 Object Storage Disk Chassis	One FC/SAS HBA	10 GigE Standard, 40GigE optional	Up to 9 Object Storage Disk Chassis	Up to 3 FC HBA, Up to 1 SAS HBA	10 GigE Standard, 40GigE optional	Up to 9 Object Storage Disk Chassis	Up to 3 FC HBA	40 GigE Standard
Cache	4 x 4 TB SAS HDD's			10 x 4 TB SAS HDD's			10 x 1.6 TB SSD		
	(Upgrade) 9 x 4 TB SAS HDD's, (Upgrade) 9 x 8 TB SAS HDD's, (Upgrade) 9 x 12 TB SAS HDD's			(Upgrade) 20 x 4 TB SAS HDD's, (Upgrade) 20 x 8 TB SAS HDD's (Upgrade) 20 x 12 TB SAS HDD's					
Database	2 SSD's = Up to 300 Million Objects			2 SSD's = Up to 300 Million Objects (Upgrade) 4 SSD's = Up to 650 Million Objects (Upgrade) 6 SSD's = Up to 1 Billion Objects			2 SSD's = Up to 300 Million Objects (Upgrade) 4 SSD's = Up to 650 Million Objects (Upgrade) 6 SSD's = Up to 1 Billion Objects		
Throughput	200 - 300 MBps sustained write			Up to 600 – 800 MBps sustained write			Up to 3000 MBps sustained write		

For complete specifications, please contact your Spectra Representative or visit www.spectralogic.com/BlackPearl.

Spectra BlackPearl Object Storage Disk

Part of the BlackPearl family, this simple, object-based storage system scales into petabytes for maximum TCO

BlackPearl Object Storage Disk leverages BlackPearl's hybrid storage architecture and high-density drives, creating an object storage-based disk platform that delivers maximum longevity, efficiency and cost effectiveness with the performance of nearline disk.

Drive Lifecycle Management, Spectra's power management technology, extends the life of your disk drives while delivering fast access to archive storage. Engineered for data reliability and integrity, Spectra's unique software implementation brings new life to long-term disk storage. BlackPearl creates an on-premise cloud with a RESTful interface to make storage more accessible.

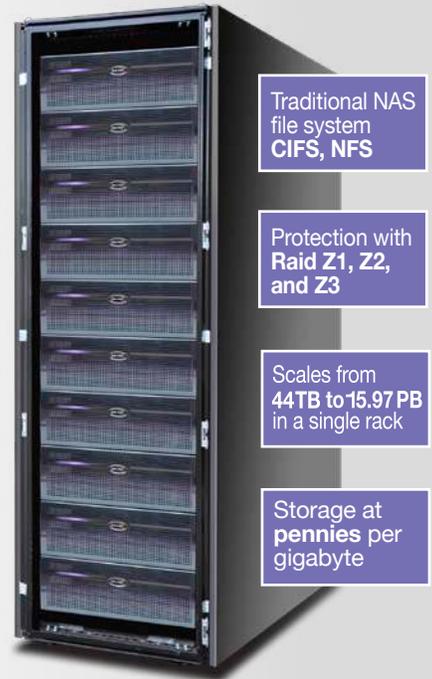- **Continuous Data Checksum and End-to-End Checksum**
  Statistically eliminates bit-rot and undetected bit error rate through continuous data checking while in storage

- **Built-In Disaster Recovery**
  Allows for seamless tape copy, enables cloud-out copy, provides for multi-site replication to a second BlackPearl

- **Global Spare**
  Ensures reliability with built-in hot spare drives

- **Double or Triple Parity**
  Minimizes data loss through redundancy and automatic rebuilds when properly monitored and maintained

BlackPearl Object Storage Disk Nodes	Up to 9 nodes per BlackPearl master node
RAW Capacity	1.7 PB per Object Storage Disk node
Throughput	1 GB per Second
Power Consumption	750W (R/W), 210W Idle per Node
Drive Type	16 TB Enterprise Drives

BlackPearl Network Attached Storage

Easily and affordably manage data while planning for the future with BlackPearl Network Attached Storage (NAS) traditional file system (CIFS/NFS). The multi-functional BlackPearl NAS works in a myriad of workflow environments serving as:

- **Storage for mid-tier data**
- **Primary storage offload**
- **Data staging**
- **Backup and archive**

Affordable – BlackPearl NAS is the most affordable enterprise storage on the market. BlackPearl NAS's expansion node architecture allows you to scale seamlessly and affordably without increasing your data center footprint.

Flexible – Spectra's BlackPearl NAS delivers a complete mix and match of storage and interface options – all supported simultaneously. BlackPearl NAS data can be pushed to a BlackPearl Converged Storage System via Spectra NFI to send content to tape, cloud or other storage tiers.

Reliable – With three levels of protection RAID Z1, Z2 and Z3, global spare drives, redundant power, HotPair, and intelligent drive rebuild, BlackPearl NAS is a dependable part of your storage strategy. BlackPearl NAS can also replicate itself using asynchronous replication to another BlackPearl NAS, creating a second copy of an organization's stored data.

Simple – For straightforward setup and management, BlackPearl NAS provides an easy-to-navigate GUI. For environments requiring lights-out monitoring, the AutoSupport function lets BlackPearl NAS "phone home" with messages and automatically generate AutoSupport Logs (ASL) for use by the user and SpectraGuard® Support.

Traditional NAS file system **CIFS, NFS**

Protection with **Raid Z1, Z2, and Z3**

Scales from **44TB to 15.97 PB** in a single rack

Storage at **pennies** per gigabyte

BlackPearl Upgrade Path

TranScale Architecture

Upgradable to BlackPearl Converged Storage System

Spectra can help to protect your investment with Spectra's TranScale upgrade path and unlock limitless storage possibilities and multiple storage targets by upgrading the BlackPearl NAS to a BlackPearl Converged Storage System. You can also leverage FLASH-ONLY disk pools for increased speed.

BlackPearl NAS for Secondary Storage

The Spectra NAS Solution is the optimal disk platform for primary storage offload, data staging, backup and archive. Flexible, simple and affordable, the Spectra BlackPearl NAS delivers file storage for as low as 6 cents per gigabyte. The expandable BlackPearl NAS solution provides raw storage capacities from 44 TB to 15.97 PB.

4U

2U

BlackPearl NAS Disk Specifications			
	Size	2U	4U
Master Node	Capacity	44 TB - 176 TB	48 TB - 560 TB
	# of Drives	11	12 to 35
Drive Type	Enterprise[1]	4 TB, 8 TB, 12 TB*, 16 TB	
	SSD	1.6 TB	
Expansion Chassis Max Capacity	Enterprise	107 Drives (1,712 TB)	
Max System Capacity	Enterprise	225 Drives (3.6 PB)	998 Drives (15.97 PB)

[1]Enterprise = Performance Nearline SAS or SATA   *Self-Encrypting 12TB SAS Drive Available

Spectra NAS is available in a 4U chassis designed for enterprise drive speed and performance. A 2U NAS unit is another option for entry-level performance and greater cost savings when budgets are tight.

Spectra's Tape Library Family

TFinity ExaScale

Can hold up to
2.03 EB
in a 44-frame TFinity ExaScale Tape Library

The TFinity ExaScale library shown at left is an example of the optional front panel graphic customization avaialble.

TFinity® ExaScale Tape Library
The World's Highest Capacity Storage System

Proven by the largest data users in the world, TFinity ExaScale offers a highly flexible hardware architecture and a revolutionary management interface, helping you achieve the ultimate in data preservation. The TFinity ExaScale can expand up to 44 frames in a single library.

Built upon Spectra's history as the undisputed leader in tape technology innovation, TFinity ExaScale offers many advantages: component redundancy, high-performance dual robotics, industry-leading storage density, extreme scalability, energy efficiency, ease of management, integrated encryption and enduring reliability and service.

Sample image: 9-frame TFinity

In addition to LTO drives and media, TFinity ExaScale can use the fastest and highest capacity IBM® TS1160 Technology. This library can also incorporate Oracle T10000 proprietary drives and tape. (see below)

Product Specifications

Minimum 3-frame Library Configuration				
Drive/Media	Max Slots	Max Drives	Capacity Native/Compressed[1]	Throughput Per Hour Native/Compressed
IBM® TS1160 Technology	1,350 slots	24 drives	27 PB / 67.5 PB	34.5 TB / 77.7 TB/hr
LTO-7	1,800 slots	24 drives	10.8 PB / 27 PB	26 TB / 64.8 TB/hr
LTO-7 Type M**	1,800 slots	24 drives	16.2 PB / 40.5 PB	25.92 TB / 64.8 TB/hr
LTO-8	1,800 slots	24 drives	21.6 PB / 54 PB	31 TB / 64.8 TB/hr

1. Compressed at 2.5:1 for IBM® TS1155 Technology, LTO-7, LTO-7 Type M and LTO-8

As large as a 44-frame Library Configuration			
Drive/Media	Max Frames	Max Slots	Max Capacity[1]
IBM® TS1160 Technology	44	40,680	2.03 EB
LTO-7	44	53,460	801.6 PB
LTO-7 Type M**	44	53,460	1.2 EB
LTO-8	44	53,460	1.6 EB

1. Compressed at 2.5:1 for IBM® TS1160 Technology, LTO-7, LTO-7 Type M and LTO-8

The TFinity ExaScale 44-frame library
Max Capacity: Over 2 Exabytes
- 120 drives
- 40,680 IBM® TS1160 slots: 2.03 EB
- 53,460 LTO-8 slots: 1.6 EB

Spectra Exclusive!

Now available with Oracle® T10000 Technology

We now offer the ultra-functionality of tri-media. LTO, IBM® TS11XX, and Oracle® T10000 all in the same tape library. This provides for maximum flexibility in any environment and makes migration of data easier from one media to another.

Operational Reliability: TFinity has been tested to 3 million MCBF and to 6.33 years MTBF.

**LTO-7 Type M media is a new, unused LTO-7 tape formatted using an LTO-8 drive to create an increased capacity of 9TB native and 22.5TB compressed

The Spectra T950 and T950v
Enterprise Storage Without Compromise

Product Specifications for T950 and T950v

CAPACITY				
Media	Base frame max slots[2]	Base frame max capacity[2]	8 frame max slots	8 frame max capacity
IBM® TS1160 Technology	738	14.7 PB 36.9 PB*	7,614	152 PB 380 PB*
LTO-7	920	5.5 PB 13.8 PB*	10,020	60.1 PB 150.3 PB*
LTO-7 Type M	920	8.3 PB 20.7 PB*	10,020	90.2 PB 225.4 PB*
LTO-8	920	11 PB 27.6 PB*	10,020	120 PB 300.6 PB*

[2] With four drives installed

THROUGHPUT				
Drive	Base frame max drives	Base frame max throughput	8 frame max drives	8 frame max throughput
IBM® TS1160 Technology	24	34.5 TB/hr 77.7 TB/hr*	120	172.8 TB/hr 388.8 TB/hr**
LTO-7	24	26 TB/hr 64.8 TB/hr*	120	130 TB/hr 324 TB/hr**
LTO-8	24	31 TB/hr 64.8 TB/hr*	120	155.6 TB/hr 324 TB/hr**

T950 Physical Characteristics (Base Frame)

H x W x D: 79.2" x 29" x 43.25" / 201 x 73.6 x 109.9 cm
Weight (loaded): 1850 lbs (LTO) / 839.2 kg
Min/Max Slots: 100 (expandable to 10,020 LTO slots)
Drives Supported: LTO-5, LTO-6, LTO-7, LTO-8,
    IBM's TS1140, TS1150, TS1155, TS1160
Interfaces: Fibre Channel – 4 Gb/s, 8Gb/s or 16Gb/s

*Capacity values calculated using compression: LTO-7, LTO-7 Type M, LTO-8 and IBM® TS1160 (2.5:1)
**Throughput rate calculated using maximum compression achievable

8-Frame Spectra T950 With Bulk Entry/Exit Frame

Base Frame Spectra T950

T950

The award-winning Spectra T950 library leads the field with the lowest TCO of any tape solution—from the greatest storage density and feature set to integrated encryption with key management – in an automated library. T950 also offers comprehensive media and hardware health monitoring inside our easy-to-use, single management BlueScale® interface, giving you a simple and secure system that eliminates the element of surprise. The T950 can also configure with IBM® TS1160 Technology drives & media for even greater performance.

Maximum Density, Performance & Availability

The T950 brings an elegant, straightforward solution to managing large quantities of tapes: TeraPack® cases, each holding up to ten LTO or nine IBM® TS11XX tape cartridges. The TeraPack architecture reduces floor space requirements allowing the T950 to use as little as 20% of the floor area that competitors require.

IBM® TS11XX TeraPack

LTO TeraPack

T950 Interior View

The T950 also offers a unique bulk load/unload system that provides superior import and export performance. This optional frame at the left end of a multi-frame library allows for the import or export of 14 TeraPacks within minutes.

T950v

Spectra T950v: Same capacities and most features as T950 but at a reduced price point.

Enterprise tape storage is now more affordable. Spectra is offering a reduced-cost version of its award-winning T950 Tape Library. This full-featured library model has all of the capabilities of the original but with a few bells and whistles left off to achieve some significant cost savings. It still has the ability to use LTO-7, LTO-7 Type M and LTO-8 drives and media, or the extra high performance of IBM® TS1160 technology. T950v can also expand to a maximum of 8 frames like the original T950.

The T950v uses a single TAP (TeraPack Access Port) and features simplified wall panels and a reduction in drive bays. It retains all of the full functionality of the BlueScale management interface in common with the T950. (See T950 library features on spectralogic.com)

Shown here, the T950v in its 8-frame maximum configuration.

SPECTRA Stack

Spectra's New Stackable Tape Library with scalability and reliability built in.

Built with maximum flexibility at its core, the Spectra® Stack Tape Library will meet your backup, archive, and perpetual storage requirements. Designed to be easily installed, expanded and managed, the Spectra Stack is rated at a 100% duty cycle – meaning it is one of the only stackable libraries built to perform in a 24/7 environment. Spectra Stack starts as a 6U library with 1 to 6 LTO tape drives and 10 to 80 LTO tape slots. Each module of the Spectra Stack holds an additional 10 to 80 tape slots and 1 to 6 tape drives. Scalable from 10 to 560 tape slots and 1 to 42 tape drives, users can store more than 6.7PB (16.7PB compressed*) of data in a fully expanded Spectra Stack library.

Full Rack: Controller Module plus 6 expansion modules

No. of Modules	Form Factor	Max Slots	Maximum Capacity					
			LTO-7		LTO-7 Type M***		LTO-8	
			Native	Compressed†	Native	Compressed†	Native	Compressed†
1 (1 CM*)	6U	80	480 TB	1.2 PB	720 TB	1.8 PB	960 TB	2.4 PB
2 (1 CM, 1 EM**)	12U	160	960 TB	2.4 PB	1.4 PB	3.6 PB	1.9 PB	4.8 PB
3 (1 CM, 2 EM)	18U	240	1.4 PB	3.6 PB	2.1 PB	5.4 PB	2.8 PB	7.2 PB
4 (1 CM, 3 EM)	24U	320	1.9 PB	4.8 PB	2.8 PB	7.2 PB	3.8 PB	9.6 PB
5 (1 CM, 4 EM)	30U	400	2.4 PB	6.0 PB	3.6 PB	9.0 PB	4.8 PB	12.0 PB
6 (1 CM, 5 EM)	36U	480	2.8 PB	7.2 PB	4.3 PB	10.8 PB	5.7 PB	14.4 PB
7 (1 CM, 6 EM)	42U	560	3.3 PB	8.4 PB	5.0 PB	12.6 PB	6.7 PB	16.8 PB

No. of Modules	Form Factor	Max Drives	Maximum Performance – TB/Hr			
			LTO-8			
			Full Height Drive		Half Height Drive	
			Native	Compressed†	Native	Compressed†
1 (1 CM*)	6U	6 HH, 3 FH	3.89	8.10	6.48	15.12
2 (1 CM, 1 EM**)	12U	12 HH, 6 FH	7.78	16.20	12.96	30.24
3 (1 CM, 2 EM)	18U	18 HH, 9 FH	11.66	24.30	19.44	45.36
4 (1 CM, 3 EM)	24U	24 HH, 12 FH	15.55	32.40	25.92	60.48
5 (1 CM, 4 EM)	30U	30 HH, 15 FH	19.44	40.50	32.40	75.60
6 (1 CM, 5 EM)	36U	36 HH, 18 FH	23.33	48.60	38.88	90.72
7 (1 CM, 6 EM)	42U	42 HH, 21 FH	27.22	56.70	45.36	105.84

Controller Module

*Controller Module
**Expansion Module
***LTO-7 Type M media is a new, unused LTO-7 tape formatted using an LTO-8 drive to create an increased capacity of 9TB native and 22.5TB compressed
†Assumes 2.5:1 compression

Efficient data migration capabilities

Both Spectra and the Spectra Stack library make any migration plan seamless. Tape is designed for long-term data storage, but too often users are required to sacrifice their existing investment in tape drives when they move to a new tape library. Spectra Stack's MigrationPass eliminates the need to make that costly decision. MigrationPass starts with the unique ability to migrate your existing LTO tape drives into the Spectra Stack library. This unprecedented offering protects user investment while providing a truly open approach to working with a technology designed for multi-generation use. Let our experts guide you through the process.

Spectra Stack management suite

Easy to use and manage, the library's management software provides a similar feature set as the rest of the Spectra tape library family, including an intuitive color touchscreen, remote web interface, ability to create partitions (up to 20), built-in diagnostics, Media Lifecycle Management, Drive Lifecycle Management, encryption, and encryption key management. An optional SpectraVision web camera can be mounted inside the rack to provide an immediate visual assessment of all robotics.

Convenient front panel color touchscreen

View of robotics from optional internal web cam

Remote web interface for computer

Spectra T380 & T680 Enterprise Libraries
Enterprise Storage in a Standard Rack Footprint

Designed for enterprise growth and scalability, these Spectra libraries are engineered to preserve your initial investment in storage. Investment protection is realized by utilizing components which are interchangeable among the T380, T680, T950 and TFinity ExaScale libraries, allowing you to seamlessly transfer and scale (TranScale) library components between libraries as your organization grows. Spectra's industry-first TranScalable architecture is designed with your growth in mind and can meet your future capacity, management and data protection needs. Currently our T380 library can be configured with LTO drives or IBM® TS11XX tape drive technology.

IBM® TS1160 drive and media

The Spectra T380 can use LTO drives and technology or the fastest and highest capacity IBM® TS1160 Technology.

T680

T380

Product Specifications

Model	Max. Slots	Media	Max. Drives	Maximum Capacity Native / Compressed	Maximum Throughput Native / Compressed	Dimensions	Weight	Interfaces
T680[1]	680	LTO-8	12	8 PB / 20.1 PB*	15.6 TB/hr / 32.4 TB/hr*	80.5" x 24" x 48" 186.7 x 44.5 x 102.8 cm 42U	765 lbs 347 kg	
		LTO-7 Type M**		6.03 PB / 15.07 PB*	13 TB/hr / 32.4 TB/hr*			
		LTO-7		4 PB / 10.2 PB*	12.9 TB/hr / 32.4 TB/hr*			
T380	261	IBM® TS1160	12	5.2 PB / 13.05 PB*	17.3 TB/hr / 38.9 TB/hr*	49" x 17.5" x 41" 124.6 x 44.5 x 102.8 cm 28U	305 lbs 138 kg	Fibre Channel - 4 Gb/s and 8Gb/s
	380	LTO-8		4.5 PB / 11.4 PB*	15.6 TB/hr / 32.4 TB/hr+			
		LTO-7 Type M**		3.42 PB / 8.55 PB*	13 TB/hr / 32.4 TB/hr*			
		LTO-7		2.2 PB / 5.7 PB*	12.9 TB/hr / 32.4 TB/hr*			

*Compressed capacity values calculated at a ratio of 2.5:1 Compressed throughput calculated at maximum achievable rate.
(Maximum capacity and throughput may change according to configuration.)

** LTO-7 Type M media is a new, unused LTO-7 tape formatted using an LTO-8 drive to create an increased capacity of 9TB native and 22.5TB compressed

Drive support includes LTO-7, LTO-M7, LTO-8 and IBM® TS11XX in the T380 library.

1) T680 ships with a standard 19" rack. †Additional weights: Drive/Sled: 12 lbs / 5.4 kg; TeraPack® Case (With Media): 6 lbs / 2.7 kg.

Tape Library Product Features

BlueScale: Simple, yet powerful library management

BlueScale is the common software management interface for all Spectra libraries (except the Spectra Stack which uses its own software). BlueScale is available through each library's onboard LCD color touchscreen and also through remote web access. BlueScale is an easy-to-navigate, browser-based library management tool that enables our storage solutions to work easily, flexibly and safely with your data.

- Manage from anywhere using a secure web browser
- Monitor the library's interior with a web-based camera
- Monitor power usage with EnergyAudit™
- Secure your data through integrated encryption with key management
- Support multiple partitions in a single library with Shared Library Services (SLS)

Complete Lifecycle Management

For highly reliable tape archive and backup, Spectra libraries track and report the expected lifetime utilization thresholds for tape media, drives and library components. With advance notification, you can address any potential concerns before they become an operational issue.

MLM   **DLM**   **LLM**   **DIV**

To ensure the viability of your data, **Media Lifecycle Management** (MLM) tracks and reports on over 40 health and security related statistics for Spectra Certified Media. Detailed reporting can warn you to copy and move your data onto new media when necessary. Like MLM, **Drive Lifecycle Management** (DLM) extends the same proactive approach to drives by integrating tape drive analysis and reporting within the library. Using easy-to-manage, color-coded icons, you can quickly identify the health status of a drive. Managing the health of your library's critical components is made easy with **Library Lifecycle Management** (LLM). By delivering utilization metrics relative to the expected useful life of library robotics, filters and other critical components; you are able to service your library before issues occur.

Data Integrity Verification (DIV) is built into BlueScale's management suite that allows you to proactively check each tape before and after data is written. **PreScan** ensures that tapes are usable and can accept data. **QuickScan** scans a tape uni-directionally by reading the length of one track of the tape to provide a rapid indicator of integrity of data written. **FullScan** checks an entire tape to ensure that all sectors can be read. The library stores all of the **DIV** information into a database. Users can set triggers to check the health of tapes over an interval of time to ensure that the data is valid.
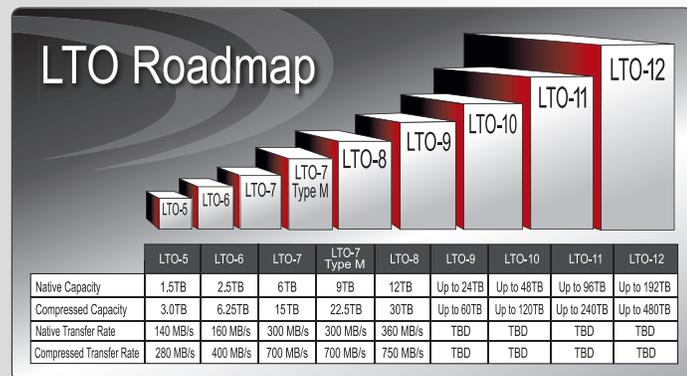
Spectra Encryption and Key Management

All Spectra Tape Libraries allow you to add AES-256 bit encryption through encryption-capable tape drives. This lets you compress, encrypt and backup data in a single step. To help you secure data on tape, Spectra SKLM and BlueScale Encryption deliver tailored, customer-centric encryption solutions.

Spectra Certified Media: Efficient Management and Data Assurance

Spectra Certified Media is ready to use when you receive it: cleaned with CarbideClean®, pre-labeled, pre-loaded into TeraPacks, and covered by Spectra's Lifetime Media Guarantee. Our Certified Media offers a wide range of media options: bulk or individual cartridges, cleaning cartridges, and custom and standard bar-code labels. We also offer custom-fit Iron Mountain cases for secure offsite handling.

The unique TeraPack design gives Spectra's libraries unrivaled storage density, offers secure stacking for storage and provides you with highly efficient media handling. The 8-, 9- and 10-tape TeraPack containers allow for bulk media loading which can reduce the time you spend handling tapes up to 90%.

LTO Roadmap

	LTO-5	LTO-6	LTO-7	LTO-7 Type M	LTO-8	LTO-9	LTO-10	LTO-11	LTO-12
Native Capacity	1.5TB	2.5TB	6TB	9TB	12TB	Up to 24TB	Up to 48TB	Up to 96TB	Up to 192TB
Compressed Capacity	3.0TB	6.25TB	15TB	22.5TB	30TB	Up to 60TB	Up to 120TB	Up to 240TB	Up to 480TB
Native Transfer Rate	140 MB/s	160 MB/s	300 MB/s	300 MB/s	360 MB/s	TBD	TBD	TBD	TBD
Compressed Transfer Rate	280 MB/s	400 MB/s	700 MB/s	700 MB/s	750 MB/s	TBD	TBD	TBD	TBD

LTO Technology

LTO (Linear Tape-Open) Ultrium Technology is optimized for high capacity and performance with exceptional reliability in either a stand-alone or an automated environment. Ideally suited for backup, deep storage and archive applications, the LTO tape format establishes a new benchmark for large volume data protection and archive. LTO technology will meet the needs of the enterprise with a roadmap that extends into the next decade.

World-Class Support

The SpectraGuard Difference – Customer Focused. Results Driven.

Spectra Logic's SpectraGuard support takes a personal and attentive approach to every support interaction regardless of customer size or severity level. It's what sets Spectra apart and will earn your highest satisfaction. We provide the correct tools, expertise and resources to drive your issues to resolution. We offer a comprehensive set of support options spanning a wide range of business requirements, from simple phone support and parts replacement, to custom add-ons such as stocked parts at customer sites and focused service account management.

A Better Approach to Support

24x7 Global Support – Our technical experts and management teams are available around the clock to ensure you are receiving the support you can rely on. With an industry-leading time-to-answer average of 30 seconds, and an unprecedented 98% incident resolution rate at Tier 1, you can count on Spectra support to assist you. Our centralized location at our corporate headquarters in Boulder, Colorado is complemented by our European and Asian support teams to provide global time-zone coverage.

Unparalleled Customer Satisfaction – As customer satisfaction is one of our core values, we are dedicated to ensuring you receive the best support out there. Our customers validate their positive experience by consistently providing us with near-perfect ratings on routine satisfaction surveys.

Professional Services – Quickly implemented and according to specification, these services allow a rapid return on your storage investment from the time of first contact to the end of the product lifecycle. Services include: Installation and Integration, Media Migration, Preventative Maintenance, Customized Training, Data Center Services, and many more.

Assisted Self Maintenance – For those organizations that require immediate parts availability, this industry-first support option provides faster resolution time with onsite, customer replaceable parts. Secure sites, remote locations, and companies with hands-on oriented technical staff will find this supplemental support ideal to meet their unique requirements.

AutoSupport Phone Home – When a critical error on the library occurs, BlueScale AutoSupport notifies our support team, sends error logs via email, and automatically opens an incident on your behalf. The support process is initiated without you even making a phone call, and because we understand the importance of response and recovery times, this benefit is part of every support contract – at no additional cost.

Technical Account Management – This personalized support service provides a single point of contact at Spectra. Familiar with the intricacies of your data storage environment, your personal advocate is accountable for managing and overseeing all technical support activities for your organization. This premium service saves you effort, involvement and time, allowing you to focus on achieving your core business objectives.

Storage Crisis Lifeline – A disaster recovery program, Storage Crisis Lifeline provides customers with a complimentary loaner library and installation services in the event a disaster situation damages or destroys the original library to the point that data cannot be restored.

Training – Those responsible for administering, operating or maintaining a Spectra product will benefit from our hands-on training courses. Customers will walk away with the expertise to skillfully manage their tape library, and the added proficiency to replace parts and perform preventive maintenance procedures without having to engage Spectra Logic.

Price Lock – A first of its kind price protection plan on all of our tape product support offerings that guarantees the list price of your annual support agreement will never go up more than the rate of inflation year-over-year.

> **"** Spectra's fast support response means that we can always rely on Spectra to find a solution or quickly send replacement parts. **"**
>
> *Post-Production Manager*
> *AMC Networks*

The Spectra Story

For 40 years, Spectra Logic has been focused on designing innovative and reliable data storage and data management solutions. In addition to disk and tape solutions, Spectra offers a converged storage system – Spectra® BlackPearl® – to bring both NAS and object storage into a single storage interface, addressing backup, archive, disaster recovery, public cloud and private cloud applications.

Spectra Customers