Spectra T950 Library

Release Notes and Documentation Updates

Part Number 90940002 Revision BY

Revision History

BlueScale Version	Document Revision	Date	Description
12.6.3-20131030F	BK	December 2013	BlueScale12.6.3 updates.
12.6.21-20140121F	BL	February 2014	BlueScale12.6.21 updates.
12.6.23-20140328F	BM	April 2014	BlueScale12.6.23 updates.
12.6.26-20140703F	BN	July 2014	BlueScale12.6.26 updates.
12.6.27-20140804F	BO	August 2014	BlueScale12.6.27 updates.
12.6.44-20150319F	BP	April 2015	BlueScale12.6.44 updates.
12.6.44.5-20150707F	BQ	July 2015	BlueScale12.6.44.5 updates.
12.6.45-20150910F	BR	September 2015	BlueScale12.6.45 updates.
12.6.45.2-20151027F	BS	October 2015	BlueScale12.6.45.2 updates.
12.6.45.3-20151121F	BT	December 2015	BlueScale12.6.45.3 updates.
12.7.01.00-20161221F	BU	January 2017	BlueScale12.7.01.00 updates.
12.7.02.00-20170629F	BV	June 2017	BlueScale12.7.02.00 updates.
	BW	September 2017	Updated to add BlueScale12.6.45.3 or earlier, to BlueScale 12.7.01.00 or later, upgrade information.
12.7.06-20180126F	BX	February 2018	BlueScale 12.7.06 updates.
12.7.06.01-20180713F	BY	July 2018	BlueScale 12.7.06.01 updates.

Note: To make sure you have the release notes for the most current version of the BlueScale software, log into the Spectra Logic Technical Support portal at support.spectralogic.com. The release notes also include updates to the product documentation.

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Introduction

These release notes give you the latest information available about the Spectra® T950 library, the BlueScale® software, and the library firmware. They also serve as an addendum to the published documentation for the library.

Topic	

> **Note:** To make sure you have the release notes for the most current version of the BlueScale software, log on to the Spectra Logic® Technical Support portal at support.spectralogic.com. The release notes also include updates to the product documentation.

RELATED INFORMATION

This section contains information about this document and other documents related to the T950 library.

BlueScale User Interface Screens

The BlueScale interface changes as new features are added or other modifications are made between software revisions. Therefore, the screens on your library may differ from those shown in the library documentation.

Additional Publications

For additional information about the Spectra T950 library and its drives, refer to the following publications.

Spectra T950 Library

The following documents related to the T950 library are available on the Spectra Logic website at support.spectralogic.com/documentation.

- The *Spectra T950 Library User Guide* provides detailed information about configuring, using, and maintaining your library.

- The *Spectra T950 Library Quick Reference Guide* provides a quick reference for the user interface and instructions for performing day-to-day library operations such as powering on and off, and preparing, importing, and exporting media.

- The *Spectra T950 Library BlueScale Toolbar Option Map* provides a quick reference for locating the options and commands available through the BlueScale user interface.

- The *Spectra T950 Library Site Preparation Guide* provides information about preparing your site for the installation of the T950 library.

- The *Spectra BlueScale Vision Camera User Guide* provides detailed information about installing and using the white BlueScale Vision Camera and software.

- The *Vivotek FD8361 Fixed Dome Network Camera User's Manual* provides detailed information about installing and using the black BlueScale Vision Camera and software.

- The *Spectra Encryption User Guide* provides detailed information about using BlueScale Encryption Standard and Professional Edition and the Spectra SKLM Encryption key management system. It also provides useful information about encryption best practices and recycling encrypted media.

- The *Spectra Tape Libraries SCSI Developer's Guide* provides detailed information about the SCSI and Fibre Channel commands used in the library.

- The *Spectra Tape Libraries XML Command Reference* provides detailed information about using the XML interface with the T950 library.

- The *Spectra Tape Libraries Warnings* document provides all of the warnings found in Spectra Tape Libraries documentation, in English and 27 other languages.

LTO Ultrium Tape Drives

The following documents provide information that is applicable to all IBM LTO tape drives.

- *IBM Tape Device Drivers Installation and User's Guide*

    Note: This guide also provides information about using the IBM Tape Diagnostic Tool (ITDT) to troubleshoot drive problems.

- *IBM TotalStorage LTO Ultrium Tape Drive: SCSI Reference* (LTO-1 through LTO-4)

- *IBM TotalStorage LTO Ultrium Tape Drive: SCSI Reference* (LTO-5 through LTO-7)

For drive-specific information, search for the product name (for example, LTO 5) on the documentation page on the IBM website. You can also search the IBM Support Portal at:
http://www-947.ibm.com/support/entry/portal/Documentation.

TS11*xx* Technology Drives

The following documents provide information that is applicable to TS11*xx* technology drives.

- *IBM System Storage Tape Drive 3592 SCSI Reference*

- *IBM Tape Device Drivers Installation and User's Guide*

    Note: This guide also provides information about using the IBM Tape Diagnostic Tool (ITDT) to troubleshoot drive problems.

Spectra SKLM Server

For additional information that can assist you during the installation and configuration of your server, see the following websites:

- IBM Security Key Lifecycle Manager welcome page

KMIP

See the documentation specific to your server.

Discontinued Components

Check the Spectra Logic Support portal for information about which products are currently supported and which are considered discontinued. For information about discontinued products, log on to the Support portal (at support.spectralogic.com), open the Knowledge Base, and search for the article type "discontinuance."

TYPOGRAPHICAL CONVENTIONS

These release notes use the following conventions to highlight important information:

Note: Read text marked by "Note" for additional information or suggestions about the current topic.

Important Read text marked by the "Important" icon for information that will help you complete a procedure or avoid extra steps.

Caution Read text marked by the "Caution" icon for information you must know to avoid damaging the library, the tape drives, or losing data.

WARNING Read text marked by the "Warning" icon for information you must know to avoid personal injury.

These release notes use an arrow (⋯⁑) to describe a series of menu selections. For example:

Select **Configuration** ⋯⁑ **Partitions** ⋯⁑ **New**.

— means —

Select **Configuration**, then select **Partitions**, and then select **New**.

Library BlueScale Updates

PACKAGE INFORMATION

⚠️ **Important**	Updating the library's BlueScale software and library firmware requires a current service contract with Spectra Logic Technical Support. The BlueScale Software Support key associated with your service contract must be stored in the library by entering it into the System Configuration screen. See the *Spectra T950 Library User Guide* for instructions. If you have questions about your service agreement, contact Spectra Logic Technical Support (see Contacting Spectra Logic on page 7).

Package Support

Spectra Logic recommends that you keep the BlueScale software and library component firmware up-to-date. Customers using a previously released version of BlueScale software are urged to update to the current release. If the BlueScale software version you are running is more than two releases behind, you may be required to update to the current release to resolve an issue or to verify that a problem still exists in the current release.

The currently released BlueScale package can be downloaded from the Spectra Logic Technical Support portal. Refer to the *Spectra T950 Library User Guide* for information about accessing the Technical Support portal. The *User Guide* provides detailed information about downloading a BlueScale package and updating your library, as well as information about downloading and installing tape drive device drivers. Contact Spectra Logic Technical Support at support.spectralogic.com if you have any questions.

To determine whether you have the most currently released version of the BlueScale software for your library, as well as the most current firmware for the library tape drives, do the following:

1. Check the library BlueScale software version on the BlueScale status bar.

2. Check the drive firmware version on the Drive Details screen for each drive.

3. Compare your software and firmware versions with the most current versions available on the Spectra Logic Technical Support portal (log on at support.spectralogic.com). The Spectra Logic Technical Support portal lists the currently recommended library software and drive firmware versions, as well as important notifications.

4. If a more current BlueScale package version is available, download the update package and install it.

5. If a more current tape drive firmware version is available, download the update and install it.

Update Procedure

The BlueScale package update procedure is described in the following documents:

- *Spectra T950 Library User Guide*

- *BlueScale Package Update Instructions: Updating from BlueScale12.4.x and Earlier Versions*

- BlueScale Package Update Instructions: Updating from BlueScale12.5.x and Later Versions

If you have any questions or concerns about updating, contact Spectra Logic Technical Support (see Contacting Spectra Logic on page 7).

Package Management

If you receive an error message stating that your disk is full when the library attempts to unzip an update package, you need to delete older packages to make room for the new package. Refer to the *Spectra T950 Library User Guide* for information about managing update packages.

FIRMWARE VERSION REQUIREMENTS

⚠️ **Caution**   Spectra Logic recommends updating the drive firmware to the most current version available. Log into your Support portal account at support.spectralogic.com and check the Drive Firmware page for the currently recommended firmware version. IBM LTO tape drives must be using the following minimum firmware versions:

- **LTO-8**: For use with BlueScale12.7.02 or later, use firmware version HB82 or later. **LTO-7:** For use with BlueScale12.6.45.3 or later, use firmware version FA10 or later.

- **LTO-6**: For use with BlueScale 12.4.0 or later, use firmware version C9T4, or later.

- **LTO-5**: For LTFS support with BlueScale12.0.3 or later, use firmware version B6W0, or later.

- **LTO-4:** To prevent a potential hardware failure, firmware version 97F9, or later, is required.

- **TS1155**: For use with BlueScale12.7.02 or later, use firmware version 47A2 or later

- **TS1150**: For use with BlueScale12.6.41 or later, use firmware version D3I4_470, or later.

- **TS1140**: For use with BlueScale12.6.21 or later, use firmware version D3I3_524, or later.

⚠️ **Important**   **EtherLib**   To use EtherLib to speed up library component communication, you must have BlueScale 12.3.1 or later.

After you update your library to BlueScale12.3.1or later, the right-most Ethernet port on each Spectra LS in the library becomes a dedicated EtherLib port. This port cannot be used for accessing the library using the BlueScale web interface.

⚠️ **Important**   **SKLM**   To use Spectra SKLM encryption key management with your library, all LTO-5 drives in the encrypted partition must use firmware version C7RC or later. LTO-6, LTO-7, LTO-8, and TS11*xx* technology drives can use any firmware supported by the library.

⚠️ **Important**   **KMIP**   To use KMIP encryption key management, the library must use BlueScale12.7.02 or later and the drives must have the following firmware:

- LTO-6 drives must use firmware version G352 or later
- LTO-7 drives must use firmware version G5S2 or later
- LTO-8 drives must use firmware version HB82 or later
- TS1140 technology drives must use firmware version 3B0E or later
- TS1150 technology drives must use firmware version 4718 or later
- TS1155 technology drives must use firmware version 47A2 or later

PACKAGE HISTORY

The following sections list the BlueScale update packages that have been released for the library and provide information about new features and updates that affect the library and its components. The packages are listed in reverse chronological order, with the most recent release listed first.

⚠ **Important** When updating from **BlueScale12.7.01 or earlier** to **BlueScale 12.7.02 or later**, the way that the library communicates with TS11xx technology drives changes. Before installing BlueScale12.7.02 or later, update TS11xx drives to the following firmware:

- TS1140 technology drives must use firmware version 3B0E or later
- TS1150 technology drives must use firmware version 4718 or later
- TS1155 technology drives must use firmware version 47A2 or later

⚠ **Important** When updating from **BlueScale12.6.45.3 or earlier** to **BlueScale 12.7.01.00 or later**, the WWNNs and WWPNs for RIM2s change to match those assigned to a RIM in the same location. This change allows a RIM to replace a RIM2, or a RIM2 to replace a RIM, if needed, but may require you to edit settings in your storage management software.

⚠ **Important** Unless otherwise stated, the known issues for a package remain active until moved to the resolved issues section. Always read the known issues section for each firmware release to make sure you are aware of any potential problems.

BlueScale 12.7.06.01

Enhancements

This release implements TLS version 1.2 and improves library error handling.

Resolved Issues

Issue	Resolution
Libraries using a Spectra PC for the LCM fail to connect to the network after a library upgrade.	This issue no longer occurs.
Spectra Certified Media is not indicated correctly on the Media Lifecycle Management Report screen.	Spectra Certified Media is now indicated correctly on the Media Lifecycle Management Report screen.
The DLM Test utility does not allow using M8 media to test an LTO-8 drive.	You can now use M8 media to perform a DLM test on an LTO-8 drive.
Partitions using SAS drives cannot be edited to add additional drives.	You can now edit a partition using SAS drives to add more drives.
If one of the center TAPs fails, the other center TAP is not used to complete an export.	An export now fails over to the second center TAP if one of the center TAPs is impaired.

Known Issues

Problem	Workaround
The **Load SSL Certificate and Key from USB** utility does not email or save utility results.	Although the utility results are not emailed or saved to USB, the utility does complete successfully.
After adding a new frame to the library, the library may not correctly identify library frames resulting in transporter problems.	There is no workaround for this issue. Contact Spectra Logic Technical Support for assistance. See Contacting Spectra Logic on page 7.
Network settings fail to update from a static IP address to dynamic.	After selecting **Dynamic** and clicking **Save** on the Network Settings screen, reset the LCM (see "Reset the LCM or RCM" in the *Spectra T950 Library User Guide* for instructions) to cause the new network settings take effect.

BlueScale 12.7.06

Enhancements

This release removes a delay processing a SCSI busy response when the library uses a RIM2 and adds the new features listed in the table below.

Feature	Description
LTO-8 support	The library now supports LTO-8 technology tape drives with both BlueScale12.7.06 and BlueScale12.7.02. LTO-8 technology drives provide 12 TB uncompressed cartridge capacity using LTO-8 media or 9 TB using LTO-8 type M media.
M8 support	Before loading an unused LTO-7 tape with a barcode label ending with M8 into an LTO-8 drive with firmware HB82 or later, the library sets the drive to initialize the tape for M8 density, increasing the density from 6 TB to 9 TB.
Half-height LTO-7 and LTO-8 drive support	The library now supports installing half-height LTO-7 and LTO-8 drives using full-height drive sleds.
Upload Import/ Export queue	The library now supports uploading a move queue to import a magazine into a specific chamber in a partition or export a specific magazine from a partition.
Time set on drives	The library now sets the time on drives to match the library, making it easier to correlate drive dumps with other library events.
Support for IPv6	The library now supports using IPv6 network addressing for most library connections. For details, see the *Spectra T950 Library User Guide*.

Feature	Description
Enhanced SNMP support	With this release and the new MIB file, the library now supports IPv6 traps and urgency unique traps (Informational, Warning, Error, Fatal). The SNMP Agent MIB also provides information about the library firmware, the system serial number, the number of frames in the library, the status of library doors, and robot status. **Note:** If your library uses SNMP, Spectra Logic recommends that you download the new MIB which can be found on the **Downloads ⋯⫶ Tools** page of the support portal.

Resolved Issues

Issue	Resolution
The library may auto stage an older software release after updating to the newest release.	This issue no longer occurs.
The library may unexpectedly stop logging kernel traces to the hard drive in the LCM.	This issue no longer occurs.
Under certain circumstances, the Fibre Channel interface to a tape drive is not enabled when the library initializes.	The Fibre Channel interface to tape drives is enabled as expected when the library initializes.
If the library date and time is changed while a move is in process, the move may fail.	Move time keeping now uses monotonic time which protects against manuel time changes within the system.
The `physInventory.xml` command causes webserver to crash when LCM is already busy.	The `physInventory.xml` command now checks to see if the LCM is already busy and if necessary responds to the XML request with a busy response.
KMIP Encryption fails with an EXTERNAL DATA ENCRYPTION KEY NOT FOUND error when a moniker includes non-ascii characters or is longer than 44 characters.	KMIP Encryption no longer fails when the moniker includes non-ASCII characters or is longer than 44 characters.
If a '0' is entered for either the day or month attribute in the `ECInformation.xml?action=set` command, the webserver restarts, disconnecting any active RLC, Front Panel, or XML sessions.	This issue no longer occurs.
The library imports tape cartridges with missing or corrupted barcodes.	The library now rejects the import of tapes with missing or corrupted barcodes. Any media in the library with missing or corrupted barcodes are unaffected.
Cleaning tapes are not included in the MLM Report generated from the **Maintenance ⋯⫶ Media Lifecycle Management** screen.	Cleaning tapes are now included in the MLM report generated from the **Maintenance ⋯⫶ Media Lifecycle Management** screen.

Issue	Resolution
An import operation may fail if the library fills the import target destination in response to a move failure prior to completing the import.	During an import, a destination is locked so that another move does not fill the destination.
It is possible to create a cleaning partition with an assigned chamber when all chambers are filled with data magazines.	When all chambers are full, it is no longer possible to create a cleaning partition.
In a library with empty chambers, over time the distribution of TeraPack magazines favors the front half of the library.	The library now places TeraPack magazines in the empty drawer closest to the drives, using drawers in both the front and the back of the library.
The DCM 12V threshold for TS11xx drives is incorrectly set too high, causing the DCM to power off drives that are within the actual valid threshold range.	The DCM 12V threshold is now set to the proper value.
Clicking **Details** for an LTO-3 drive on the DLM screen displays a blank page.	LTO-3 drives are not supported by DLM. The **Details** button was removed.
If a media error is detected on a tape cartridge during a READ operation, the library incorrectly indicates that a WRITE error occurred, and vice versa.	The library now reports the correct type of media error.
The SCSI command GetDriveStatus for TS11xx drives does not set the "tape present" bit when a tape is AJAR.	This issue no longer occurs.
The advanced utility Remove All Library Partitions incorrectly sets barcode reporting configuration back to the library default.	Running the advanced utility Remove All Library Partitions does not change the library's barcode reporting configuration.
The library may post Auto Drive Clean failure messages even though Auto Drive Cleaning is not configured.	This issue no longer occurs.
The Reset Library To Factory Default utility causes disruption of communication between the RCM and the LCM and the library fails to re-initialize.	This issue no longer occurs.
Gathering MLM reports using XML causes a memory leak.	This issue no longer occurs.
Drive Clean Alerting for TS1150 drives does not work correctly.	This issue no longer occurs.
When using KMIP encryption, the Application Specific Information attribute is incorrectly sent as an ASCII string of ASCII characters.	The Application Specific Information attribute is now sent as an ASCII string of hexadecimal characters.

Issue	Resolution
If you are updating a library running BlueScale 12.7.02, at the start of an update that includes RIM or RIM2 updates, but does not include LCM or RCM updates, exporters not needing an update unnecessarily stop accepting additional moves before starting the update.	If you are updating a library running BlueScale 12.7.06 or later, at the start of a package update that includes RIM or RIM2 updates, but does not include LCM or RCM updates, only the exporters needing an update stop accepting additional moves and wait for any moves in progress to complete before starting the update. At the start of a package update that includes RCM or LCM updates, all exporters still stop accepting moves. The exporters are re-enabled to accept moves when the package update completes.
After a DCM update for a drive assigned to an encrypted partition, you must reset the drive in order for it to read or write encrypted tapes.	Encryption keys are resent to a drive after a DCM update.
The XML command `robotUtilization.xml` does not return any information.	The XML command `robotUtilization.xml` now returns the expected information.
Remaining Capacity and Maximum Capacity are not calculated correctly for LTO-7 media.	Remaining Capacity and Maximum Capacity are now calculated correctly for LTO-7 media.
A drive fails to read a tape encrypted using BlueScale Encryption Pro if the encryption key is assigned to the partition for decryption only.	This issue no longer occurs.
Reseating a drive may cause the drive to disappear from the library inventory.	This issue no longer occurs
The XML command `traces.xml?traceType=Motion` returns a file named "_Hard".	The XML command `traces.xml?traceType=Motion` returns a file named "FullRCMTrace.zip""".

Known Issues

Problem	Workaround
After SKLM or KMIP encryption is disabled, the library unnecessarily checks for encryption servers, and displays errors if the server cannot be reached.	Delete SKLM or KMIP server configurations before disabling the encryption feature.
The advanced utility "Restore Library Configuration from USB" does not restore the static IP address configured on the library when the library generated the backup file.	Use the front panel or the DHCP-assigned address to access the library and then use the Network Settings screen and reconfigure the static IP address.

BlueScale 12.7.02

Enhancements

The release adds support for KMIP encryption key management using TS11*xx* technology drives, improves KMIP functionality when using LTO drives, improves error recovery and the content of error messages and logs, eliminates a memory leak, and adds the new features listed in the table below. Refer to the most current version of the *Spectra T950 Library User Guide* for detailed information about using these features.

Feature	Description
New XML command	A new XML command allows you to initiate package staging. See the *Spectra Tape Libraries XML Command Reference* for more information.
Improvements to package update	For any update installed on a library running BlueScale 12.7.02.00 or later, at the start of an update that includes RCM, RIM, RIM2, or LCM updates, the library shuts down all exporters (RIM, RIM2, and DCM) so that they will not accept additional moves, and then waits for any current moves to complete before updating the selected components. The exporters are re-enabled when the package update completes.
Digitally signed packages	When updating library software or drive firmware on a library running BlueScale12.7.02.00 or later, the library uses a digitally signed update package.
Thin provisioning	Thin Provisioning allows automatic library partition resizing as a partition requires increased capacity, without reconfiguring the library or host software.
TS1155 technology support	The library now supports TS1155 technology tape drives. TS1155 technology drives provide 15 TB uncompressed cartridge capacity.

Resolved Issues

Issue	Resolution
If a RIM2 fails to reboot after an update, a second update will fail.	This issue no longer occurs.
If **Enable Automatic Power-Up After Power Failure** is enabled, drive frames do not power down when the front panel power button is pressed.	Drive frames now power down correctly when the front panel power button is pressed even if **Enable Automatic Power-Up After Power Failure** is enabled.
When a partition name is edited, the name is not updated in the MLM database.	The MLM database partition name updates when a partition is edited.
Under certain circumstances, when editing a partition, the web server may crash, and changes are not saved.	This issue no longer occurs.
If the BlueScale software fails to send a test email to a previously configured mail recipient, the front panel may display a blank screen.	This issue no longer occurs.

Issue	Resolution
When MLM is enabled saving a partition can take a long time.	This issue no longer occurs.
The wrong drive is indicated in error messages about tapes with a broken leader pin.	The correct drive is indicated in error messages about tapes with a broken leader pin.
`libraryStatus.xml? action=refreshECInfo` does not refresh motor board EC information.	The motor board EC information is refreshed correctly when you run `libraryStatus.xml? action=refreshECInfo`.
If a library's ASL directory is full, when a new ASL is generated the newest ASL file is deleted instead of deleting the oldest ASL file.	The library now deletes the oldest ASL files when the ASL directory is full.
If a write protected tape is used for the DLM test, the test fails and does not display an error that the tape is write protected.	DLM test now displays an error message when a write-protected tape is used for the scratch tape.
The XML `?progress` response does not include `extraInformation` for actions that are complete (Status of OK or FAILED).	The XML `?progress` response now includes `extraInformation` for actions that completed.
The DLM drive test returns a sense code of 0, 0, 0 even when it fails.	DLM drive test now returns the correct sense code when it fails.
Replaced drives and global spare drives fail to decrypt BlueScale encrypted tapes.	A replaced drive or global spare drive used as a substitute in a partition now correctly decrypt BlueScale encrypted tapes.
If a partition uses BlueScale Encryption Pro with multiple decryption keys, you cannot edit it to use SKLM or KMIP encryption.	You can now edit a partition using BlueScale Encryption Pro with multiple decryption keys to instead use SKLM or KMIP encryption.
Host communications with a library using a drive exporter may timeout during an Import/Export operation.	This issue no longer occurs.
When a drive in a BlueScale Encryption partition is reset from the Drives Screen, the encryption key is not sent, preventing the drive from encrypting and decrypting data.	Drives in BlueScale Encryption partitions now correctly encrypt and decrypt data after a drive reset.
The MLM database does not show the number of tape reads from TS11xx technology drives.	Tape reads for TS11xx technology drives are now correctly recorded in the MLM database.
The bulk TAP becomes unresponsive when an import times out waiting for the door to be closed.	This issue no longer occurs.
When a drive is removed using the front panel, a System Message displays saying that the drive disappeared unexpectedly.	This issue no longer occurs.

Issue	Resolution
The front panel may lock up when using the front panel **Remove** drive feature while the library is processing moves.	This issue no longer occurs.
When a library has many drives/controllers, the LCM may incorrectly enter maintenance mode.	This issue no longer occurs.
If the LC server reboots while waiting for an updated library inventory, all robotic moves are halted until the library is rebooted.	This issue no longer occurs.
If an EtherLib connection to a component times out, the component displays as disconnected in the EtherLib Status screen, and the EtherLib connection can only be restored by rebooting the library.	After confirming that all EtherLib cables are correctly connected, use the **Refresh** button on the EtherLib Status screen to restore the connection.
There may be an unusual number of move failures to TS11xx technology drives.	This issue no longer occurs.
Importing a single cleaning tape using the Advanced Import/Export screen fails.	This issue no longer occurs.
Robotic moves may timeout when QuickScan is enabled.	This issue no longer occurs.
When updating from a BlueScale version prior to BlueScale12.7.00 to BlueScale12.7.00 or later, libraries with RIM2s display a system message that the RIM2 disappeared unexpectedly.	This issue no longer occurs.
If the Power Control Module (PCM) in a drive frame updates before the main frame PCM, the main frame PCM may not update correctly.	Now, the main frame PCM always updates first.

BlueScale 12.7.01

Enhancements

The release adds support for KMIP encryption key management, removes an XSS vulnerability, improves error recovery, improves the content of error messages and logs, eliminates a small memory leak, and adds the new features listed in the table below. Refer to the most current version of the *Spectra T950 Library User Guide* for detailed information about using these features.

Feature	Description
KMIP encryption key management	The library now supports KMIP (Key Management Interoperability Protocol) encryption key management using HP ESKM (Enterprise Secure Key Manager) servers. See the *Spectra Encryption User Guide* for details.
New and improved XML commands	New XML command options are available that allow you to resize partitions, and collect kernel logs. Several memory leaks associated with XML commands are also corrected. See the *Spectra Tape Libraries XML Command Reference* for more information.
Background moves	A move queue can be processed in the background, allowing some operations to be initiated from the front panel or RLC while the moves occur.
Package update firmware staging	Auto-staging of library component firmware can be enabled for package updates, decreasing the time required to complete a library update.
QuickScan and FullScan supported on TS11*xx* technology drives	The library now supports QuickScan, verifying the data in a single tape wrap, and FullScan, verifying all of the data on a tape, for TS11*xx* technology tapes.
Dual AC 2 power module support	The library now supports the dual AC 2 power module, which does not require the power sources for the AC inputs for a frame to be on the same phase.
TS11*xx* technology tapes treated as certified media	TS11*xx* technology cleaning tapes are now always treated as MLM-enabled by the BlueScale software.

Resolved Issues

Issue	Resolution
The SCSI command 0x25 (report capacity) may cause a RIM2 to crash and QIP or RIM to not respond to test unit ready in a timely manner.	This issue no longer occurs.
The XML command `traces.xml?action=getQIPLog &name=<Log Name>` causes a web server crash.	This issue no longer occurs.
If an export to a bulk TAP fails, the library displays an error message that a chamber is full when it is not.	This issue no longer occurs.

Issue	Resolution
Following a `resetRobot.xml` command, the command `utils.xml?progress` reports a status of OK before the library is ready to receive another SCSI command. If a subsequent SCSI command is sent too soon, the library returns an error.	This issue no longer occurs.
When a TeraPack magazine is inaccessible, the contents of the magazine do not display on the Inventory screen.	The barcode of tapes in an inaccessible magazine display on the Inventory screen
If a drive containing a tape cartridge is removed from or installed into a partition exported by a RIM2, the inventory for the drive may not update correctly.	This issue no longer occurs.
A RIM2 may crash when the library is both performing a move and updating its inventory.	This issue no longer occurs.
The XML command `utils.xml?action=resetRobot` causes inconsistent behavior.	This issue no longer occurs.
Adding more than seven decryption keys to a partition with BlueScale Encryption Professional Edition drive based encryption fails with a "Partition Configuration Error".	The partition wizard now allows the supported eight decryption keys.
Drives incorrectly display good health status after an Auto Drive Clean fails because the cleaning tape is expired.	The drive status remains the same if an Auto Drive Clean fails due to an expired cleaning tape.
A RIM2 may reboot when it receives an invalid allocation length in a Read Element Status request.	This issue no longer occurs.
An "Invalid public key length" error displays when creating a partition with BlueScale drive encryption.	This issue no longer occurs.
Loading an invalid SSL certificate crashes the web server.	An error message displays if you load an invalid SSL certificate.
When updating a library component without also updating the LCM, messages may display indicating that the component disappeared and then reappeared.	This issue no longer occurs.
Fibre Port B on LTO drives is not always enabled when the library initializes.	This issue no longer occurs.
Upgrading to a BlueScale package that includes updated firmware for both the RCM and a QIP/RIM may cause inventory corruption if the library is actively processing moves.	Inventory corruption is now less likely, however, Spectra Logic recommends stopping all host moves before performing a package update.

Issue	Resolution
Following a `resetRobot.xml` command, the command `utils.xml?progress` reports a status of OK before the library is ready to receive another SCSI command. If a subsequent SCSI command is sent too soon, the library returns an error.	This issue no longer occurs.
When a TeraPack magazine is inaccessible, the contents of the magazine do not display on the Inventory screen.	The barcode of tapes in an inaccessible magazine display on the Inventory screen
If a drive containing a tape cartridge is removed from or installed into a partition exported by a RIM2, the inventory for the drive may not update correctly.	This issue no longer occurs.
A RIM2 may crash when the library is both performing a move and updating its inventory.	This issue no longer occurs.
The XML command `utils.xml?action=resetRobot` causes inconsistent behavior.	This issue no longer occurs.
Adding more than seven decryption keys to a partition with BlueScale Encryption Professional Edition drive based encryption fails with a "Partition Configuration Error".	The partition wizard now allows the supported eight decryption keys.
Drives incorrectly display good health status after an Auto Drive Clean fails because the cleaning tape is expired.	The drive status remains the same if an Auto Drive Clean fails due to an expired cleaning tape.
A RIM2 may reboot when it receives an invalid allocation length in a Read Element Status request.	This issue no longer occurs.
An "Invalid public key length" error displays when creating a partition with BlueScale drive encryption.	This issue no longer occurs.
Loading an invalid SSL certificate crashes the web server.	An error message displays if you load an invalid SSL certificate.
When updating a library component without also updating the LCM, messages may display indicating that the component disappeared and then reappeared.	This issue no longer occurs.
Fibre Port B on LTO drives is not always enabled when the library initializes.	This issue no longer occurs.
Upgrading to a BlueScale package that includes updated firmware for both the RCM and a QIP/RIM may cause inventory corruption if the library is actively processing moves.	Inventory corruption is now less likely, however, Spectra Logic recommends stopping all host moves before performing a package update.

Issue	Resolution
The Webserver Port field displays when SSL is enabled.	The Webserver Port field no longer displays when SSL is enabled.
After a library power cycle, on rare occasions, the BlueScale version shown in the status bar, displays as "NONE".	The library now displays the correct BlueScale version.
The MLM Report screen only shows the remaining capacity of the first partition on an LTFS formatted tape.	The MLM Report screen now shows the remaining capacity for the entire LTFS tape.
QuickScan Verify After Write does not continue to process the QuickScan queue if a tape in the queue was exported.	QuickScan will skip the exported tape and continue with any other tapes that need to be scanned.
Changing the system time on a Spectra PC LCM may generate a system error.	This issue no longer occurs.
Exports to the center TAP could push the door open prematurely.	This issue no longer occurs
The library's BlueScale interface may auto logout during package update.	Auto logout is disabled during a package update until you click **Finish**.
The error message displayed when a drive fails to unload a tape cartridge incorrectly reads "failed to load".	The message is now correct.
A timing issue during initialization can cause inconsistent WWNs from drive expansion frames.	This issue no longer occurs.
WWNN/WWPN are not correct when a RIM is replaced by a RIM2, or a RIM2 is replaced by a RIM.	The WWNN/WWPN is now consistent when a RIM is replaced by a RIM2, or a RIM2 is replaced by a RIM.
The LCM appears to lock up when the host issues a move and a front panel or RLC command is issued that causes an "inventory update" to occur.	This issue no longer occurs.
The XML command `libraryStatus.xml? action= refreshEnvironment` allows other commands to obtain progress.	This issue no longer occurs.
If a DLM drive test fails on the first pass and then succeeds every other time, the library does not exit drive test.	This issue no longer occurs.
Discovery of positions within the library may fail if there are TeraPack magazines in the two top left-most shelf positions below a DBA.	This issue no longer occurs.
Discovery of library positions may fail if a library with a bulk TAP has TeraPack magazines in the top two chambers of the bulk TAP.	This issue no longer occurs.

Issue	Resolution
In some cases, the library is not able to move a tape to a newly installed LTO-7 drive.	The library can now consistently move a tape to a newly installed LTO-7 drive.
The webserver crashes if the robot is reset while the library is in maintenance mode.	This issue no longer occurs.
After clicking the front panel DLM **Replace** button to replace one generation of drive with another generation drive (for example, LTO-6 with LTO-7), the library displays a message indicating that the, "Replace operation was OK'd but drive was not replaced," and continues to identify the drive by the previous generation on the DLM screen.	There is no longer an error message after clicking the front panel DLM **Replace** button to replace one generation of drive with another generation drive, and the correct drive generation displays on the DLM screen.
An export from the center TAP may fail if one of the TAP chambers contains a magazine or is not functional.	An export using the center TAP succeeds even if one TAP is full or not working.
If a library has a Gen 2 Spectra LS and a USB storage device is connected to it at start up, the device may become corrupted.	A USB storage device is no longer corrupted if attached to a Gen 2 Spectra LS during library initialization. However, Spectra Logic recommends that USB devices be removed during library initialization.
Although a cleaning failed because of an expired non-MLM cleaning cartridge, the drive status indicator incorrectly returns to green.	This issue no longer occurs.
If the picker sensor cannot detect a cartridge due to ambient light, the cartridge in the picker may contact magazines when the transporter moves.	If a cartridge is not detected in the picker after a pick, the transporter goes to a safe position before moving.
An LTO-4 drive fails to read a tape encrypted using BlueScale Encryption Pro if the encryption key is assigned to the partition for decryption only.	Decryption only keys are used correctly to allow LTO-4 drives to read encrypted tapes.

Known Issues

Problem	Workaround
FullScan with encryption enabled on a partition does not send the encryption key to the global spare drive. The FullScan operation fails.	Use QuickScan, using a drive in the partition, in place of FullScan.
The `physInventory.xml` command does not correctly report the frameNumber, tapeBayNumber, and drawerNumber for TeraPack magazines.	None.
The BlueScale interface does not display the status of EtherLib after a library power cycle.	Click **Refresh** to see the EtherLib status.

Problem	Workaround
When a partition uses multiple exporting controllers and QuickScan, a tape may appear as available to the host when it is being scanned.	If a partition uses multiple exporting controllers, do not use QuickScan.

BlueScale 12.6.45.3

This release improves the support of LTO-7 drives.

Resolved Issues

Issue	Resolution
When a host sends a SCSI Read Element Status command asking for data to fill more than 64K, the RIM2 truncates the data and returns less than requested.	The RIM2 now returns the correct Read Element Status response.
The RIM2 cannot handle multiple simultaneous commands from multiple initiators.	The RIM2 can correctly handle commands from multiple initiators.
Periodically during normal operations, the QIP/RIM disappears.	This issue no longer occurs.

BlueScale 12.6.45.2

This release increases reliability.

BlueScale 12.6.45

Enhancements

This release provides support for LTO-7 drives and improves reliability. It also improves the content of error messages and logs , and adds the new features listed in the table below.

Feature	Description
New XML Commands	New XML commands and options are available that allow you to view and configure certain library settings, get information about commands currently running, and assist in troubleshooting. See the *Spectra Tape Libraries XML Command Reference* for more information.
EtherLib Status and Refresh	It is now possible to check the status and refresh EtherLib connections from the BlueScale user interface or XML interface.

Resolved Issues

Issue	Resolution
The library infrequently hangs during a cartridge import operation while host/ISV operations are occurring.	This issue no longer occurs.
The touchscreen occasionally does not respond to inputs during initial calibration.	The touchscreen driver was updated so that it correctly responds during touchscreen calibration.
Drive test occasionally returns the error message saying, "Lost Communication to Drive (04,89,01) Check cables within drive sled", when there is no problem with the drive sled cables.	This issue no longer occurs.
Drive test fails if you attempt to test a drive using a tape cartridge that is not in the MLM database.	This issue no longer occurs.
Moves to and from a chamber are tried even after the chamber is marked inaccessible.	The library no longer tries moves to or from a chamber that was previously marked inaccessible.
mediaExchange.xml?progress returns a syntax error.	This issue no longer occurs.
Invalid characters in system messages cause a blank screen.	This issue no longer occurs.
The library sometimes rejects valid TeraPack barcodes.	This issue no longer occurs.
The library occasionally issues an unload command to a tape drive when the tape is not at the mouth of the drive.	Communication between the library and the tape drives was improved to better understand the exact location and position of the tape in the drive.
A rare sequence of events could result in the power control module unexpectedly powering down the library.	This issue no longer occurs.
The main frame RCM may fail to initialize after a package update using a USB device.	This issue no longer occurs.

Known Issues

Problem	Workaround
Updating DCM firmware after installing a drive with DCM firmware earlier than what is included in BlueScale12.6.44 may cause an incorrect Read Element Status response.	If you install a drive using DCM firmware earlier than what is included in BlueScale12.6.44, you must reboot the RCM after upgrading the DCM.

Problem	Workaround
If DLM drive test fails on the first pass and then succeeds every other time, the library does not exit drive test.	Reboot the library.
Drive staging only stages four drives at a time. If there are additional drives needing a firmware update, the library displays the message, "Drive firmware did not copy properly for drive(s) [*Drive Identifier(s)*]. Drive staging will automatically retry sending the firmware. If the operation continues to fail, please contact technical support."	After the first four drives complete firmware staging, the library retries sending the firmware to the remaining drives. The staging should complete, four drives at a time.

BlueScale 12.6.44.5

Resolved Issues

Issue	Resolution
The library infrequently hangs during a cartridge import operation while host/ISV operations are occurring.	This issue no longer occurs.
DLM Drive test occasionally returns the error message saying, "Lost Communication to Drive (04,89,01) Check cables within drive sled", when there is no problem with the drive sled cables.	This issue no longer occurs.
DLM Drive test fails if you attempt to test a drive using a tape cartridge that is not in the MLM database.	This issue no longer occurs.
The touchscreen occasionally does not respond to inputs during initial calibration.	The touchscreen driver was updated so that it correctly responds during calibration.

BlueScale 12.6.44

Enhancements

This BlueScale release improves error handling. It also improves the content of on screen instructions and error messages, and adds the new features listed in the table below. Refer to the most current version of the *Spectra T950 Library User Guide* for detailed information about using these features.

⚠️ **Caution**   RXT (RAID eXchangeable TeraPack) is not supported by this release. Do not update to BlueScale12.6.41, or later, if your library uses RXT.

Feature	Description
TS1150 Technology Support	The library now supports TS1150 technology tape drives. TS1150 technology drives provides a 360 MB/second native data transfer rate, a 10 TB uncompressed capacity cartridge, and a 237,000 hour Mean Time Between Failures (MTBF). TS1150 technology tape drives cannot be used in the same library with LTO drives and do not support BlueScale Encryption or PostScan.
RIM2	The RIM2 is the next generation Robotics Interface Module. It provides an 8 Gb Fibre Channel interface and support for up to 16 library partitions.
Auto Download for Library Packages	If configured, the library checks the package server once a week for a library update package or drive firmware package newer than what the library is currently running. If a new package is available, the library downloads it, generates a system message, and displays an icon on the status bar to indicate the update is available.
Drive Clean Tracking Notification	If you ignore a cleaning request for too long, the library generates a warning system message. Using drives with dirty heads can reduce drive performance, decrease usable tape capacity, and result in read/write failures which can eventually interrupt data storage.
New XML Commands	New XML commands and options are available that provide more library status information, allow you to reset the LCM, and allow webserver access to functions usually only available on the front panel. See the *Spectra Tape Libraries XML Command Reference* for more information.
DLM Test Improvements	To correct the most common tape drive problems, the DLM Drive Test now cleans the drive twice.
New SCSI Read Buffer Command	The SCSI Read Buffer command can provides the IP address of the LCM, the library name, and the partition name. This is especially useful when using the library with a BlackPearl Deep Storage Gateway.

Resolved Issues

Issue	Resolution
A McAfee® Vulnerability Manager (MVM) scan may cause the library to hang.	This issue no longer occurs.
On libraries with partitions containing more than 1100 tapes and PostScan enabled, the library may hang during initialization.	This issue no longer occurs.
A failed move may leave both source and destination locations in incorrect state.	This issue no longer occurs.
Using the SCSI Read Buffer command to retrieve the library's serial number does not work with libraries using a tape drive to provide the control path for the library's robotics.	The SCSI Read Buffer command now works to retrieve the serial number for libraries using a tape drive to provide the control path for the library's robotics.
If you use the Advanced Import/Export screen to export magazines and then return to the Advanced Import/Export screen, the export operation may still appear in the move queue. Clicking **Go** again could cause inventory corruption.	This issue no longer occurs.
The partition creation screens allows you to select a Global Spare drive that does not match the generation of drives it would replace. For example, it allows you to select an LTO-4 drive to replace an LTO-5 drive.	The partition creation screens will only allow you to select a Global Spare that matches the generation of the drives it would replace.
Cancelling drive removal results in an 'error' level system message.	This issue no longer occurs.
It is possible to perform an XML package upload with a non-SSL connection when the library has SSL enabled.	It is no longer possible to perform an XML package upload with a non-SSL connection when the library has SSL enabled.
If the Robotics Control Module (RCM) fails to update during a Package Update, no error is presented to the user.	If the Robotics Control Module (RCM) fails to update during a Package Update, the RCM update is retried. If the update fails again an error message is displayed.
If you change the encryption type from BlueScale drive based encryption to Spectra SKLM encryption, in a library with multiple encryption keys installed, it is not possible to deselect the encryption key to use, which causes an error.	This issue no longer occurs.
If you attempt to change the netmask and/or gateway for a library that is already configured to use static IP addressing, without also changing the IP address, the save fails and the error message, "Failed to update IP Information", displays.	The change succeeds and you no longer receive an error message if you change the netmask and/or gateway for a library without also changing the IP address.

Issue	Resolution
Failing to pick a magazine from a TAP with the TAP door left ajar requires an LCM reset to recover.	This issue no longer occurs.
When enabling or updating the NTP server, the LCM reboots automatically without confirmation from the user and even if the NTP server entered is invalid.	Then an NTP server is enabled or updated, the library validates the NTP server and requires confirmation from the user before rebooting.
Trying to create a partition with a space character at the end of the partition name causes the partition creation to fail.	This issue no longer occurs.
If the library is busy it displays a generic, "Waiting for another action to complete" message.	The library now reports the specific action for which it is waiting.
It is sometimes not obvious that the library is in Maintenance Mode.	The first screen after an LCM reboot reports Maintenance Mode status.
Drives disappear from a partition without reason.	This issue no longer occurs.
The BlueScale interface only displays 10 characters of the 12 character TS11xx technology drive serial number causing host software to be unable to auto-configure the library.	The BlueScale user interface now displays all 12 characters of the TS11xx technology drive serial number.
Package update through XML does not complete correctly.	Package update through XML completes successfully.
The front panel and XML commands are locked out for long periods of time if a motion trace is requested through XML.	A full motion trace via XML requires EtherLib.
In an eight frame T950, the HAX limit can be incorrectly calculated on initialization, causing false warning messages and possibly causing problems with using magazines in the right most column.	This issue no longer occurs.
It is possible to set the "Scan after time" setting for QuickScan to 0 during partition creation.	The value for "Scan after time" for QuickScan must be 1 or larger during partition creation.
During a bulk import/export operation, XML commands may timeout.	This issue no longer occurs.
TS11xx technology drives occasionally power off during initialization.	This issue no longer occurs.
The library may experience problems updating and switching to the redundant library control module (LCM) partition.	The LCM redundant partition is no longer required and is disabled.

Issue	Resolution
When a TS11*xx* technology tape cartridge with a barcode longer than 8 characters is loaded into a drive, a system message is generated saying "Reported Barcode in drive xxx doesn't match known MLM Media Barcode" although the barcodes do, in fact, match.	The library can now correctly handle TS11*xx* technology tapes with barcodes up to 16 characters.

Known Issues

Problem	Workaround
If a tape is replaced with another tape with the same barcode, but different serial number, there will be two entries for the same barcode number in the MLM database. This may cause repeated scans.	Delete the MLM record for the original tape prior to importing a new tape with a previously used barcode.
The library can no longer connect to the Spectra Logic package server.	The IP address for the Spectra Logic package server has changed to 192.30.190.34. See "Configure a Package Server" in the User Guide for instruction on edition the configured IP address.
When replacing a RIM with a RIM2, using the "Replace" function, if the Fibre Channel cable is not connected or is connected to the wrong port, then the operation fails with the message, "Error: Replace operation for controller FR*x*/DBA*x*/F-QIP*x* was acknowledged, but original controller was never replaced".	Connect the Fibre Channel cable to the RIM2 before installing it to replace a RIM.
The MLM Report screen only shows the remaining capacity of the first partition on an LTFS formatted tape.	Use the host software that created the LTFS partitions (such as the BlackPearl Deep Storage Gateway) to determine the remaining capacity on all partitions on the LTFS formatted tape.
After a library power cycle, the BlueScale version will, on rare occasions, report as "NONE".	Navigate to the Package Update screen, and perform the update to the latest BlueScale package again.
Using PostScan with a Global Spare drive may cause an inventory mismatch if a move is requested for a tape in the process of being scanned.	None.
The front panel may reboot unexpectedly when Drive Performance Monitoring is enabled.	Disable Drive Performance Monitoring if the library is experiencing front panel reboots.

BlueScale 12.6.27

This release corrects an issue that may cause an inventory mismatch when TeraPack magazines are imported or exported from a partition using a QIP or RIM to provide the robotic control path.

Resolved Issues

Issue	Resolution
In rare circumstances the library will report a move failure, 5,3b,e or 5,3b,d, when the move was actually successful. This causes an inventory mismatch.	This issue no longer occurs.

BlueScale 12.6.26

This release corrects several memory leaks and improves error recovery.It also changes when and how data is written to the SD card to increase reliability.

Resolved Issues

Issue	Resolution
The SCSI command Read Element Status with VolTag=0 and DVCID=1 does not report drive serial numbers.	Drive serial numbers are now reported for Read Element Status with VolTag=0 and DVCID=1.
If a tape drive is removed from the library without using the **Remove** feature on the DLM (Drives) screen, an incomplete error message displays.	The full error message displays when a drive is removed from the library.
If a user selects **Delete Selected** on the Delete Exported MLM Records screen when no records are selected, the BlueScale navigation pane stops displaying.	This issue no longer occurs.
If the front panel is reset, the library does not remember the source slot for any tapes currently loaded in drives, which can result in move failures.	The library remembers the source slot of tapes currently in drives through a front panel reset.
In a multi-partition library, if a move is sent to the robotics through the QIP/RIM and then the robotics controller gets reset for some reason, the QIP/RIM controller inventory may be incorrect.	This issue no longer occurs.

Issue	Resolution
If a partition is added, deleted, or edited after a controller failover pair is configured, the partitions exported out of the master controller are not configured correctly.	This no longer occurs.
Using a bulk TAP, attempting an import from an empty source chamber or an export to a full destination chamber causes a 24V power cycle.	The attempted operation now correctly fails and informs the user that the request is invalid.
EtherLib fails to initialize when the library reboots following an upgrade to BlueScale12.6.21 or later.	This issue no longer occurs.
Libraries configured with many partitions and in heavy use may fail to display the Import/Export screen on the front panel.	This issue no longer occurs.
When updating drives using Package Update, the library occasionally reports that drive firmware is ready to be committed when the firmware has not staged correctly.	Drives no longer display on the Commit screen if the firmware did not stage correctly.
If the library is unable to import a TeraPack magazine from a TAP for any reason, the library front panel locks up.	This issue no longer occurs.
The exporting drive for a partition may lock-up after an import or export operation when the host has issued a PreventMediaRemoval or a ModeSense SCSI command with a very short timeout value.	This issue no longer occurs.
If the Robotics Control Module (RCM) fails to upgrade during a Package Update, no error is presented to the user.	An error message is generated informing the user that the RCM upgrade failed.
If the 12V power supply voltage goes out of range and then returns to an acceptable range, the message displayed erroneously includes the remedy "Determine why voltage is outside acceptable limits."	The message generated in this situation now indicates that no remedy action is required.
If a QIP/RIM fails to retrieve an updated inventory from the BlueScale software, the QIP/RIM fails to respond to any host commands while waiting for the inventory, causing host commands to timeout and be aborted.	This issue no longer occurs.
When a partition is configured to use controller failover, if a failover occurs from the primary controller to the secondary controller, and then failover is disabled, the secondary controller incorrectly reports the same WWN as the primary controller.	This issue no longer occurs.

Issue	Resolution
When using the soft power button to power on the library, the button occasionally starts to flash, indicating that the library is powering off. The button must be pressed again to power on the library.	This issue no longer occurs.
Upgrading from BlueScale12.0.1 or earlier, to a later revision can cause MLM data base issues.	This issue no longer occurs.

Known Issues

Problem	Workaround
The first time a library is powered on after being updated from BlueScale12.6.21, a library with EtherLib set up may report a message to the front panel that "DHCP was unable to obtain an IP address," although network communication is working correctly.	Ignore the message, EtherLib did obtain an IP address via DHCP.

BlueScale12.6.23

This BlueScale release adds support for a parallel AC power module and solves a memory leak when accessing the Drive Details screen.

Enhancements

Feature	Description
Parallel AC power control module support	An AC power module with parallel circuits for redundancy is now available as an option. The Parallel AC module eliminates the requirement that both incoming AC supply lines be in phase with each other. **Note:** Libraries must be ordered with the parallel AC module; it cannot be added as a field upgrade.

Resolved Issues

Issue	Resolution
After a package update, EtherLib fails to initialize.	EtherLib now initializes correctly after a package update.
In some library messages, incorrect information is displayed in place of a drive ID.	Drive IDs are now correctly displayed in library messages.

Issue	Resolution
The Read Element Status bytes for Media Domain and Media Type are not updated between moves to/from a drive.	The Read Element Status bytes for Media Domain and Media Type are now updated correctly.
The Read Element Status response for a single storage element with the VolTag bit set to 0, contains four erroneous bytes.	This no longer occurs.
The library attempts to unload a tape during tape drive power-on recovery, even if the drive is in mid-tape recovery. The move fails.	The library now displays a message informing you to try the move again after mid-tape recovery is complete.
QuickScan and PostScan stop at the end of the first filemark.	QuickScan and PostScan now continue to the end of the first track or the end of the data if it does not span a full track, as expected.
After replacing an SD/CF card or updating BlueScale software, the library may respond to SNMP queries when Enable SNMP Agent is set to disabled.	SNMP will work as configured after a firmware update or SD/CF card replacement.
The **Display Full Trace** check box on the System Traces screen only applies to selections made in the **LCM Trace** list, not selections made in the **Component Trace** list. If you select **Display Full Trace** when you generate a component trace, the trace might be corrupted.	The **Display Full Trace** check box has been renamed to **Display Full LCM Trace** and only works if an LCM trace is selected.
The timestamp in SMTP headers uses UTC (GMT) rather than local time.	If NTP is used for the library time, the header will report the correct local time. If the library time is set manually, the header will continue to report UTC (GMT).
DLM drive test fails if the drive is in Data Safe mode.	The DLM test temporarily takes the drive out of Data Safe mode. It restores Data Safe mode when the test completes.

Known Issues

Problem	Workaround
If the 12V power supply voltage goes out of range and then comes back into range, the message indicating that the voltage has returned to an acceptable range, erroneously includes the remedy "Determine why voltage is outside acceptable limits." **Note:** This issue is fixed in BlueScale 12.6.24.	Ignore the remedy.

BlueScale12.6.21

This BlueScale release adds support for TS1140 technology drives and improves front panel and web interface stability and reliability.

Enhancements

Feature	Description
TS1140 Technology Drive Support	The library now supports TS1140 technology tape drives. TS1140 technology tape drives cannot be used in the same library with LTO drives and do not support BlueScale Encryption or PostScan. **Note:** TS1140 technology drives are only available with new libraries. Existing libraries cannot be converted to use TS1140 technology drives.

Resolved Issues

Issue	Resolution
If a drive is selected as the robotic control path and subsequently unselected, the drives assigned to the partition may be incorrect.	The partition configuration wizard correctly keeps track of drives selected and unselected as the robotic control path and includes the selected drives in the partition.
The Ignore Magazine Seated Sensor utility is only available to an administrator or superuser from the front panel.	An administrator or superuser can now run the Ignore Magazine Seated Sensor Utility remotely, using the BlueScale web interface.
The MLM Load Count always reports 0 for TS1140 technology cartridges.	MLM now provides the correct Load Count for TS1140 technology drives.
The DLM Drive Test wizard fails for TS1140 technology drives with the error "---Error: Media generation does not match drive generation; cannot run FTest."	The DLM Drive Test wizard now works correctly for TS1140 technology drives.
The XML command `partition.xml?action=autoCreate` does not correctly create TS1140 technology partitions.	The `partition.xml?action=autoCreate` XML command can now be used to create a TS1140 technology partition.
After a transporter error recovery, the picker head may be positioned so that, on future moves, it is possible to hit the camera.	The error recovery now calibrates the position of the picker head so that it cannot hit the camera.
Library reports 'Auto Drive Clean successful' even though the cleaning failed because the cleaning cartridge was expired.	The library now correctly reports a failed Auto Drive Clean in the system messages.

Known Issues

Problem	Workaround
The Drive Performance metrics for TS1140 technology drives are incorrect.	None.
The number of cleans reported for a TS1140 technology cleaning tape in the MLM report is incorrect.	Use the value reported for Load Count on the MLM report to determine how many times a TS1140 technology cleaning tape was used.
Drives incorrectly display good health status after an Auto Drive Clean fails because the cleaning tape is expired.	If you receive a system message that a drive was not cleaned because the cleaning cartridge was expired, ignore the good health status shown, the drive has not been cleaned. Import a new cleaning tape and the drive will be cleaned the next time it requests cleaning.
If a partition is configured to use controller failover, a failover occurs from the primary controller to the secondary controller, and then failover is disabled, the secondary controller will incorrectly report the same WWN as the primary controller. **Note:** This issue is fixed in BlueScale 12.6.24.	Reset the secondary controller. The correct WWN for the secondary controller displays.
When viewing the current firmware versions installed on the library, the SCM indicates it's firmware file is missing. **Note:** This issue is resolved in BlueScale12.6.41.	Ignore the error. The SCM firmware file was added to the RCM firmware and is no longer a separate file.
After performing a BlueScale firmware update, EtherLib initialization fails. **Note:** This issue is fixed in BlueScale 12.6.24.	Power-cycle the library to restore EtherLib functionality.

BlueScale12.6.3

This BlueScale release improves the performance of the library.

Enhancements

Feature	Description
Increase maximum number of library partitions to 16	The number of partitions the library supports has increased from eight partitions to sixteen if all of the partitions use RIMs or QIPs as the exporting controller. **Note:** If one or more partitions in a library use a drive to provide the robotic control path, the maximum number of partitions in the library is six.

Feature	Description
LTO-5 or later generation drives used as exporting controllers	The library now supports using LTO-5 or later generation drives as exporting controllers to provide the robotic control path for a partition.
Multiple exporting drives in a partition	You can select multiple LTO-5 and later generation drives as controllers, and export the same changer interface over the drives to provide redundancy, as long as your backup software can support this. These multiple paths cannot be used at the same time.
Initialization screen	An Initialization screen is now available to provide the system's progress during library initialization.

Resolved Issues

Issue	Resolution
Occasionally, the library allows a tape to be moved from a drive, even though the prevent bit is set.	The backup software now needs to clear the prevent bit before the library can move a tape from a drive. If for some reason the prevent bit is set but the software is down, you can reset the drive using the **Reset** button on the DLM screen to clear this bit.
The `Prevent Media Removal` command doesn't prevent media removal from the library. Using the Inventory screen, media can be removed by selecting **Storage** as a source and **To TAP** as a destination.	The `Prevent Media Removal` command now prevents media removal from the library.
When issuing the `login.xml` command to a library that has SSL enabled without using `https://` in the command URL, the command response indicates that the command was successful when it was not.	The `login.xml` command now reports a failure to log in error when the **https://** prefix is not used to log in to a library with SSL enabled. Make sure that you use **https://** in the command URL when logging into a library that has SSL enabled.
If the Fan Control Module (FCM) resets, the fan speed parameter is set to 1 even if it was previously set to a different value. This can result in filter calibration, fan calibration, or fan not spinning error messages.	The default FCM fan speed is now set to 2.
If the host and front panel both start moves from different drives to the same slot, the one that completes first finishes correctly. The other move fails with the tape left in the drive, but the library reports a sense code of 2,3a,0 (drive empty).	The library now sends the correct sense code if a move fails.
When the library is unable to read the transporter's serial number, the library enters maintenance mode and is not able to capture an ASL.	The library is now able to capture an ASL when the transporter serial number is not available to the library.

Issue	Resolution
Staged drive firmware updates cannot be cancelled.	Delete the associated drive firmware package to cancel the staging process. **1.** Select **Maintenance ⋯⟩ Package Update**. **2.** Click **Manage Packages**. **3.** Click the check box next to the drive firmware that is currently staging. **4.** Click **Delete Selected**.
If MLM is disabled, the **Drive Reset** button on the Drives screen will be greyed out and inaccessible.	The **Drive Reset** button on the Drives screen is now available when MLM is disabled.
Emails sent from the library while it is initializing might report the wrong library type in the subject line.	Emails no longer report to an incorrect library type.
The library does not report incompatible media.	The library now reports incompatible media.
The Drive Firmware Staging Committed process may fail due to a memory management issue. After the LCM restarts, drive firmware staging restarts from the beginning.	The Drive Firmware Staging Committed process now completes as intended.
Partition data in the MLM database is not always accurate/up-to-date.	The partition data in MLM now reflects the current inventory of the library.
The Power Metrics screen only shows power usage for the last hour.	The power metrics screen correctly displays the power usage statics over a five day period.
A library performing a bulk import will crash if PreScan is running.	The library no longer crashes during a bulk import when PreScan is running.
The health of cleaning media is incorrectly calculated when unloaded from LTO-6 drives.	The health of LTO-6 cleaning media is now correctly calculated.
LTO-6 media is shown as Unknown in the MLM report.	LTO-6 media is now correctly identified in the MLM report.
The `driveList.xml` command reports information for a Global Spare after it released.	Information for drives not assigned to a partition is not reported by the `driveList.xml` command.
The `packageUpload.xml` command fails when the library has SSL enabled.	The `packageUpload.xml` command no longer fails when SSL is enabled.
The `resetRobot.xml` command can be executed by an operator.	The `resetRobot.xml` command can no longer be executed by an operator.
If the MLM server stops working and needs to be restarted, the MLM database no longer updates.	The MLM database continues to update after the MLM server stops working and is restarted.
Some drive sled status LEDs do not flash the correct color when a replace drive operation is initiated, making it difficult to locate the correct drive.	When a replace drive operation is initiated for an LTO-5 or later generation tape drive, the library will cause the status LED on the appropriate drive sled to alternate flashing green and red/orange.

Known Issues

Problem	Workaround
If you select the **Mail Results To** check box, a message indicating the success or failure of the utility is not sent to the selected mail user.	Use the BlueScale interface to see the results of the utility.
When adding a controller by selecting **Configuration ⋯⋮ Controllers** and clicking **ADD**, the library may generate a system message saying "QIP FR1/DBA1/F-QIP1 appeared unexpectedly. To avoid this message in the future, use the Controllers screen when adding a QIP to the library."	Ignore the message. The controller was added correctly.
The Staged Drive Firmware Update Results screen displays "Package Update Completed Successfully" when staging starts.	Ignore the message and follow the rest of the instructions on the screen.
When using NTP, the read/write time in the MLM database might not be correct.	None.
Adding more than seven decryption keys to a partition with drive based encryption fails with a "Partition Configuration Error".	Do not attempt to assign more than seven decryption keys to a single partition using drive based encryption.
If you replace a QIP with a RIM while the library is powered on, the drives in the DBA associated with the replacement may power off when the RIM is added to the library.	Wait approximately 5 minutes for the drives to power on.
If several partitions are receiving move commands from the host when an ASL is requested, the ASL generation may take a long time or not complete.	Pause host moves before generating an ASL.
If a partition is added, deleted, or edited after a QIP failover pair is configured, the failover does not occur in the event of a master QIP failure. **Note:** This issue is fixed in BlueScale12.6.24.	Disable failover before creating, editing, or deleting partitions. Once you are done changing the configuration of your library, re-enable the failover pair.

EARLIER BLUESCALE VERSIONS

Contact Spectra Logic Technical Support if you need information about earlier BlueScale versions.

Important Information

This section provides information that is essential for ensuring that your data is accessible at all times and ensuring optimal operation of your library.

> **Note:** To make sure you have the release notes for the most current version of the BlueScale software, log on to the Spectra Logic Technical Support portal at support.spectralogic.com.

Topic	
Protecting the Library Metadata	this page
Working with Hardware Components	page 51
Integration Tips	page 52

PROTECTING THE LIBRARY METADATA

Library metadata includes the library configuration data, the Media Lifecycle Management (MLM) database, the Drive Lifecycle Management (DLM) database, and all BlueScale encryption-key related data. Having backups of your library metadata is *very* important in the case of disaster recovery and other situations where you need to restore the library.

⚠️ **Caution**   Losing metadata can have catastrophic effects—as can losing keys in any encryption key management system, especially when related to encrypted data. If you lose all copies of all metadata:

- Your encrypted data is lost—you will be unable to decrypt encrypted data without the encryption keys.
- You will need to completely reconfigure your library.
- You will lose stored data about your media that will be time-consuming to recover.

To ensure the availability of your library and encrypted data, protect library metadata as described in this section.

Backup the Library Metadata

To ensure the availability of your library and encrypted data, protect library metadata as described in this section.

Back Up All BlueScale Encryption Keys

Use the BlueScale **Export Key** option to export BlueScale encryption keys to a USB device as soon as you create them. The exported keys are encrypted and password protected. See the *Spectra Encryption User Guide* for instructions.

⚠️ **Caution**   As a matter of best practice, Spectra Logic recommends exporting BlueScale encryption keys to a USB device instead of using email.

Although emailing BlueScale encryption keys is supported by the library, doing so presents security issues, including the following:

- Copies of encryption keys may be left on the email servers used for sending and receiving email and are thus subject to compromise.

- The difficulty in verifying where all the copies of emailed encryption keys may be located can make security audits more challenging.

Automatically Email the Auto Configuration Save File

Configure the **Auto Configuration Save** feature to automatically email a backup of the library configuration, the MLM database, and the DLM database to a preconfigured mail recipient once a week and whenever you create or modify a library partition. See the *Spectra T950 Library User Guide* for instructions.

Notes:
- The **Auto Configuration Save** feature creates a backup file once a week and every time you create or modify a partition. It does not automatically create a backup when you make other configuration changes to the library.

- If the MLM database contains a large number of MLM and DLM records, writing the Auto Configuration Save file can take several minutes.

- The backup configuration can only be restored to the library that saved the configuration. The configuration is tied to the Hardware ID of the library and cannot be transferred to another library.

Back Up the MLM and DLM Database Regularly

Use the **Save MLM Database** advanced utility to export the MLM database to a USB device and also email the exported database to a preconfigured mail recipient. See the *Spectra T950 Library User Guide* for instructions. The file created by the utility also includes the DLM database.

> **Note:** The Auto Configuration Save operation performed by the library also backs up the MLM and DLM databases. See the *Spectra T950 Library User Guide* for information.

Back Up the Library Configuration Regularly

Use the **Save Library Configuration** utility to save the updated library configuration data to a USB device or to email the updated library configuration data to a preconfigured mail recipient. See the *Spectra T950 Library User Guide* for instructions.

The partition wizard gives you the option to save the library configuration whenever you create or modify a partition. You can choose to save the updated library configuration data to a USB device or email it to a preconfigured mail recipient. See "Confirm and Save Partition Settings" in the *Spectra T950 Library User Guide* for detailed information about saving the library configuration when you create or modify a partition.

> **Note:** The backup configuration can only be restored to the library that saved the configuration. The configuration is tied to the Hardware ID of the library and cannot be transferred to another library.

Verify and Protect the Metadata Backup

To ensure that your metadata is protected and available when you need it:

1. As soon as you create and export the backup files, check the exported data to make sure the correct files are present and accessible. Refer to the table in Saved Configuration Files on page 49 for a list of the files to look for and to see examples of the file lists you might see.

   - Plug the USB device into a computer or laptop and check the data.

   - If you emailed the metadata (the data is sent as an attachment), save the data to a USB device, then check the data in the email attachment and the data on the USB device.

2. Store at least one USB device off-site. After you have several weeks of backups stored off-site, rotate back through them.

3. When you perform disaster recovery exercises, use metadata from both your USB devices and email attachments in the rebuild.
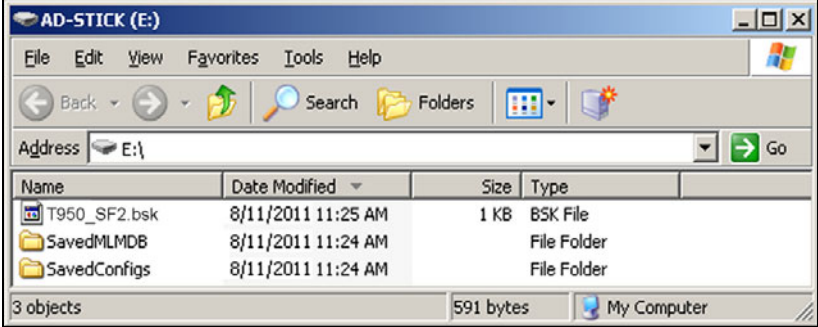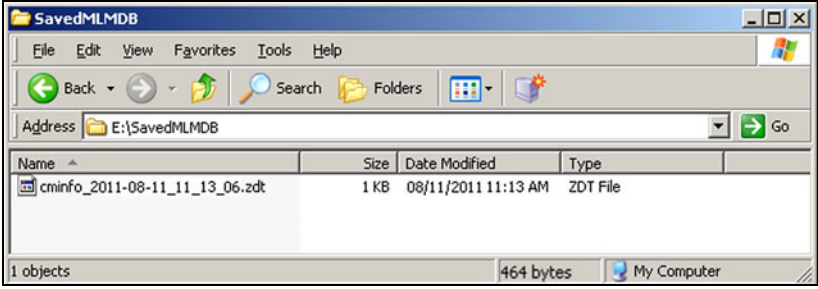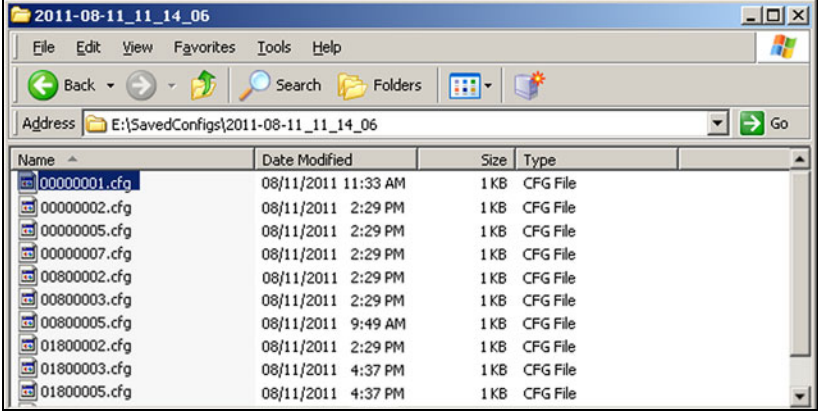
Saved Configuration Files

The following table summarizes the method for creating each type of backup and the file names and locations of the metadata saved during the backup operation. See the *Spectra T950 Library User Guide* for detailed instructions.

Saved data	Method	Files on USB device	Email
Exported BlueScale encryption keys	BlueScale interface: **Security ···⁝ Encryption ···⁝ Export Key**	A key file named `name.bsk` or `name.bss`, where `name` is the moniker you assigned to the key when you created it	An attachment containing a key file named `name.bsk` or `name.bss`
Auto-saved configuration	Automatic weekly backups saved to the LCM compact flash and emailed	A zip file named `<date-time>cfg.zip` in a folder called `\autocfgsave`, where `date-time` is the time stamp for the backup files	An attachment containing a zip file named `<date-time>cfg.zip`
Library configuration	BlueScale interface: **Maintenance ···⁝ Tools ···⁝ Utilities ···⁝ Save Library Configuration**	Multiple configuration (.cfg) files in the `SavedConfigs\<date-time>` folder	An attachment that is a zip file containing the entire set of configuration files
MLM and DLM databases	BlueScale interface: **Maintenance ···⁝ Tools ···⁝ Utilities ···⁝ Show Advanced ···⁝ Save MLM Database**	A time-stamped file containing the current MLM and DLM databases. The filename depends on whether the LCM is a Spectra PC or a Spectra LS and includes the time stamp `<date-time>` to indicate when the backup was created. If the backup file was saved to a USB device, it is located in a folder called `\SavedMLMDB`. ▪ **Spectra PC—** `cminfo_<date-time>.dat` —OR— ▪ **Spectra LS—** `xmlinfo<date-time>.db` —OR— ▪ **Zipped file—** `cminfo_<date-time>.zdt` (The zip filename is the same for both the Spectra PC and the Spectra LS)	An attachment that is a zip file named `cminfo_<date-time>.zdt`, which contains the entire media lifecycle management database

Examples of Saved Configuration Files

The following figures show examples of the files that display when you check your USB memory device/email.

Saved Data	Details
BlueScale encryption key (T950_SF2.bsk)	**Note:** The screen shown here also includes the SavedMLMDB and SavedConfigs folders.
MLM and DLM data	**Notes:** ▪ In this example the file has a .zdt extension. The file will have either a .dat or a .db extension if you did not choose to zip the file when you created it. ▪ The file also contains the DLM database.
Configuration data	**Note:** The files are located in the \SavedConfigs\<date-time> folder, where <date-time> in this example is 2011-08-11_11_14_06.

WORKING WITH HARDWARE COMPONENTS

This section provides information about hardware components associated with the T950 library.

LTO Tape Drives

Updating the Drive Firmware

⚠️ **Caution**   Before updating drive firmware, make sure that your library is idle and that the tape drive does not contain a tape (loaded or ejected). Attempting to update the firmware while the library is busy or while a tape is in the drive will result in the update failing and may result in failed backup jobs. It may also result in equipment being permanently damaged.

If you previously attempted to update the drive's firmware with media loaded, unload the tapes, and retry the operation.

⚠️ **Important**   The drive firmware files are only available on the Spectra Logic Technical Support Portal. You must first create an account on the portal by following the instructions at support.spectralogic.com.

After you update your library software and firmware, confirm that your LTO drives are using the correct firmware version and update the drive firmware if necessary (see the *Spectra T950 Library User Guide* for instructions).

Spectra Logic recommends that you:

- Use the IBM Tape Diagnostic Tool (ITDT) to update the LTO tape drive firmware. ITDT and its related documentation can be downloaded directly from IBM's website at http://www-933.ibm.com/support/fixcentral/. See the Knowledge Base article *Downloading and installing ITDT (IBM Tape Diagnostic Tool)* and "Download and Install ITDT" in the *Spectra T950 Library User Guide* for detailed instructions.

    Notes: - Make sure you install ITDT on a computer that has access to the library's tape drives.

    - If you cannot use ITDT, see "Updating Drive Firmware" in the *Spectra T950 Library User Guide* for more options.

- Use the correct firmware versions for your IBM LTO tape drives. See Firmware Version Requirements on page 16 for all drive firmware requirements.

    Check the Tape Drive Firmware page on the Spectra Logic Technical Support portal for the currently recommended firmware version. Refer to the *Spectra T950 Library User Guide* for detailed information about accessing the Technical Support Portal.

Drive Status Reporting for Fibre Channel LTO-4 and Later Generation Tape Drives

When LTO-4 Fibre Channel drives running firmware version 97F9 or later or LTO-5 and later generation Fibre Channel drives at any firmware level are installed in the library, the LED status information shown on the Drive Details screen always indicates that the LED is off.

If you need to determine the state of the LED, use the IBM Tape Diagnostic Tool (ITDT).

Using Drive Expansion Frames

You must have at least one RIM, QIP, or drive installed in each drive expansion frame. Removing all devices from a drive expansion frame renders the frame inaccessible. To make the frame accessible again, simply install a RIM, QIP, or drive in the frame.

Purchasing Additional Accessories and Media

To purchase additional accessories for your library, or to purchase additional TeraPack cases, media, and barcode labels, visit Spectra Logic's website at: www.spectralogic.com/shop.

For your convenience, MLM Media, like all Spectra Logic Certified Media, is available pre-labeled with sequential barcode labels. Optional custom barcode sequences can be ordered, if desired.

Recycling Your Library

For information on recycling your Spectra library, check the Spectra Logic website at: www.spectralogic.com/environment.

INTEGRATION TIPS

Refer to the websites for the individual manufacturers for product updates and drivers.

For the most up-to-date compatibility matrices, visit the Spectra Logic Technical Support portal at:
support.spectralogic.com/documentation/compatibility-matrices/.

User Guide Updates

The *Spectra T950 Library User Guide* is current as of the release of BlueScale12.7.06.01.

BlueScale Toolbar Option Map

The *Spectra T950 Library BlueScale Toolbar Option Map* is current as of the release of BlueScale12.7.02. No updates are required for BlueScale12.7.06.01.

SCSI Command Information

READ ELEMENT STATUS (B8H)

The following tables update the Media Type and Drive Type information returned in the Medium Transport Element Descriptor, Storage Element Descriptor, Data Transfer Element Descriptor.

Field Name	Value Returned	Meaning
Media Type [a] **Note:** This field is not valid if the Full bit is not set. ▪ Media Type with Media Domain 43h (cleaning)	55h	Indicates a universal LTO cleaning cartridge.
	FEh	Indicates a universal TS11x0 technology cleaning cartridge.
	FFh	Indicates the media type cannot be determined.
▪ Media Type with Media Domain 4Ch (LTO)	31h	Indicates an LTO Generation 1 cartridge.
	32h	Indicates an LTO Generation 2 cartridge.
	33h	Indicates an LTO Generation 3 cartridge.
	34h	Indicates an LTO Generation 4 cartridge.
	35h	Indicates an LTO Generation 5 cartridge.
	36h	Indicates an LTO Generation 6 cartridge.
	37h	Indicates an LTO Generation 7 cartridge.
	38h	Indicates an LTO Generation 8 cartridge.
	FFh	Indicates the media type cannot be determined.
▪ Media Type with Media Domain 4Ah (TS11*xx* technology)	43h	Indicates a TS1140 technology cartridge (JC).
	44h	Indicates a TS1150 or TS1155 technology cartridge (JD).
	FFh	Indicates the media type cannot be determined.

a. This field is omitted if **Include tape generation in Read Element Status** is not selected on the BlueScale Advanced Partition Setting screen.

Field Name	Value Returned	Meaning
Drive Type [a] **Note:** This field is not valid if the Full bit is not set. ▪ Drive Type with Drive Domain 4Ch (LTO)	31h	Indicates an IBM LTO Generation 1 drive.
	33h	Indicates an HP LTO Generation 2 drive.
	34h	Indicates an IBM LTO Generation 2 drive.
	36h	Indicates an HP LTO Generation 3 drive.
	37h	Indicates an IBM LTO Generation 3 drive.
	3Ah	Indicates an IBM LTO Generation 4 drive.
	3Ch	Indicates an IBM LTO Generation 5 drive.
	3Eh	Indicates an IBM LTO Generation 6 drive.
	40h	Indicates an IBM LTO Generation 7 drive.
	42h	Indicates an IBM LTO Generation 8 drive.
	FFh	Indicates the drive type cannot be determined.
▪ Drive Type with Drive Domain 4Ah (TS11x0 technology)	43h	Indicates a TS1140 technology drive.
	44h	Indicates a TS1150 or TS1155 technology drive.
	FFh	Indicates the drive type cannot be determined.

a. This field is omitted if **Include tape generation in Read Element Status** is not selected on the BlueScale Advanced Partition Setting screen.