StorageTek SL3000 Modular Library System

Release Notes

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StorageTek SL3000 Modular Library System Release Notes,

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Preface

This guide provides release information, updates, and enhancements to the original documentation for the StorageTek SL3000 Modular Tape Library.

When applicable, use the procedures and information in this guide in place of the original documentation. Any applicable references to the original documentation are provided.

Related Documentation

For additional SL3000 documentation, visit the Tape Storage section of the Oracle Help Center at: https://docs.oracle.com/en/storage/tape-storage/index.html.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

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Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers and partners we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

1

Release Notes for FRS_4.58

The following provides release information for Oracle's StorageTek SL3000 library firmware version FRS_4.58.

Enhancements

- Added support for LTO-9.
- Added support for media validation of LTO cartridges using IBM LTO-6+ drives with media L4 and higher.
- Implemented LTO media validation for IBM drives in ADI mode.
- Added a device watchdog on the drive controller.
- Increased the load and unload timeouts to 16.5 minutes to cover the extended timeouts for IBM LTO-7+ drives per IBM specification.
- For the CLI, *drive stateSave <drive address>* is now available for the user admin.
- The SNMP MIB version is now 2.21 which corrected OIDs slDriveHealthStatusEnum and slLibMibVer.

Fixes

- Corrected handing of health check and last communication setting to prevent 3997's (message queue size) with the HBT card.
- Serialized handling of multiple announces of the same drive to prevent drive initialization and robot issues.
- Corrected how the drive controller handles the watchdog when requests are received for multiple drives.
- Stopped sending duplicate announce IBM drive resets after a drive firmware update.
- The drive tray now sends fan2 presence and status to the library controller for all drive trays.
- Modified code to mitigate HBT2 cards clock drift.

Library Support of Tape Calibration

IMPORTANT: IBM has stated that the calibration of a new L9 cartridge can take anywhere from 20 minutes to 2 hours to complete.

With the FRS_4.58 code release, the library supports longer load times. However, tape calibration well exceeds these load times. Thus, library support has been modified to better handle tape calibration.

2
Release Notes for FRS_4.55

The following provides release information for Oracle's StorageTek SL3000 library firmware version FRS_4.55.

Enhancements

- Added the drive tray fan2 presence and status to the drive tray tab.
- Added the IP addresses of IBM LTO5+ drives to the drive folder and display tab for a specific drive.
- Implemented drive integration with SDP for IBM LTO5+ drives.
- Added a monitor and recovery mechanism for interrupted communication to the drive controller.
- The MIB version is now 2.20 with the following additions:
  - slCapSerialNumberStr OID added to the slCapTable in the MIB.
  - slDriveHealthStatusEnum OID added to the slDriveTable in the MIB.

Fixes

- Reduced the drive getState timeout from 60 to 30 seconds to help prevent queryDrives from bogging down the library when drives are slow to respond.
- Stopped sending an HLI queryDrive to drives known to be inop, not communicating, or not powered.
- Stopped adding media validation records with each load retry, causing a failure when returning the cartridge to source on the next media validation.
- Stopped sending duplicate announce IBM drive resets after a drive firmware update.
- The library now re-enables the drive ports for all MV load failures.
- The drive tray now sends the fan2 presence and status to the library controller.
- The library now correctly reports LtoGen8_M media in storage cells for a MIB walk.

3
Release Notes for FRS_4.51

The following provides release information for Oracle's StorageTek SL3000 library firmware version FRS_4.51.

Enhancements

- The library now supports M8 cartridges for LTO8 drives. This firmware implements setting the preferred density of an L7 cartridge to 6TB and an M8 cartridge to 9TB when loaded into an IBM LTO8 drive (requires ADI mode).
- SLC now correctly identifies the new drive tray card with FPGA version greater than 128 as LOD2 instead of LOD.

Fixes

- Corrected a problem with finding an empty system cell after a drive clean.
- Corrected the CAP mode when the CAP is unlocked.
- The library now reports a failure when setting an alternative default IP address or gateway using drive autoconfigIP if the first two octets are the same as those of the library. This prevents address conflicts.
- Corrected the AEM CAP address range reporting through the MIB.
- The drive lastCleanDate is now supplied to SLC.
- Corrected a problem with the CAP self-test not releasing a SCSI CAP reservation.
- Corrected a problem power cycling the library with the safety door engaged causing excessive robot initializers.

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Related Software Compatibility

The following lists compatible levels for related software components.

StorageTek Library Console (SLC)

- SLC FRS_6.71 is recommended for FRS_4.51+

Automated Cartridge System Library Software (ACSLS)

- ACSLS 8.5.1+ supports FRS_4.58+

Host Software Component (HSC)

- 7.3 L1H18SG PTF is required to support LTO 6, 7, and 8 drives and media

HLI Compatibility Level Support

- Compat 23 and lower

StorageTek Tape Analytics (STA)

- STA 2.4.0+ is required for FRS_4.58+

RoHS 2016

- SL3000 FRS_4.40+ is required for RoHS 2016 cards

SDP2

- Version 2.5.3+ is required for support of FRS_4.58+

5

LTO Drive Support

The SL3000 supports certain versions of LTO drives.

- HP LTO generations 3, 4, 5, and 6
- IBM LTO generations 3, 4, 5, 6, 7, 8 and 9

> **Note:**
>
> LTO-8 and above can read and write one generation back. LTO-7 and below can read two generations back and write one generation back. For best capacity and performance, always use cartridges of the same generation as your drives.

LTO Drive Firmware Versions

The following LTO drive firmware versions have been verified in the SL3000 library. For the drives to work correctly, ensure the LTO drives are at the minimum versions specified in the table below.

Drive Type	Drive Firmware Version
HP Generation 3 2G	L6HS
HP Generation 3 4G	M6BS
HP Generation 4	H58S
HP Generation 5	I3CS
HP Generation 6	J2DS
IBM Generation 3 2G and 4G	93G0
IBM Generation 4, non-encryption	94D7
IBM Generation 4, encryption	94D7 in LDI mode with Belisarius code 2.36.23 C7QH in ADI mode with Belisarius code 4.17.18.36 and VOP 2.1
IBM Generation 5	BBNH in LDI mode with Belisarius code 2.36.23 D2AC in ADI mode with Belisarius code 4.17.18.36 and VOP 2.1
IBM Generation 6	C9T4 in LDI mode with Belisarius code 2.38.24 D2DA in ADI mode with Belisarius code 4.17.18.36 and VOP 2.1
IBM Generation 7	F980 without Belisarius card FA14 in ADI & LDI mode with Belisarius code 4.10.10.40 and VOP 2.3.1 Encryption supported with HB82 and LKM code 6.02.103 (ADI mode only)

Drive Type	Drive Firmware Version
IBM Generation 8	H9E2 Encryption supported with HB82 and LKM code 6.02.103 (ADI mode only)
IBM Generation 9	N7N0 Encryption supported with N7N0 and LKM/D code 6.06.101 (ADI mode only)

Marketing Part Number Addition

The following part number has been added for PTO orders.

7602773 - 1 IBM LTO9 8 Gb FC with OKM compatibility for StorageTek SL3000

LTO SCSI Updates

The SL3000 includes SCSI updates for LTO drives.

Behavior During LTO-9 Cartridge Calibration

This update applies to the *SL3000 SCSI Reference*, Chapter 2, "SCSI Operation and Configuration".

The IBM LTO-9 drive performs a cartridge calibration process when a new LTO-9 tape is loaded in the drive. This calibration takes an extended length of time. In some cases, up to two hours.

In order to accommodate host time out constraints during calibration, special processing is added:

- The SCSI interface returns `GOOD` status to the host as soon as the library determines that the IBM LTO-9 drive is calibrating the tape.
  - Normally, the library waits until the tape drive indicates the tape is loaded and the drive is ready to accept SCSI commands on the data path.
  - During calibration, the drive interface returns Not Ready, Becoming Ready to SCSI commands on the data path: Sense Key = 02, ASC = 04h, ASCQ = 01h.
- If the host issues a `dismount` command while the drive is calibrating, the library returns a Check Condition, Illegal Request, Medium Not Present, Drive Not Unloaded: Sense Key = 05h, ASC = 3Ah, ASCQ = 00h.

Read Element Status LTO Additions

This update applies to the *SL3000 SCSI Reference*, Chapter 3, "SL4000 SCSI Commands".

The Element Descriptor for Read Element Status (B8h) includes new Media Type and Transport Type values:

- Media Type additions:
  If the Media Domain is 4Ch (L):

  - 9 = The element contains a 18 TB Generation 9 LTO cartridge.
  - *R = The element contains a 9 TB Generation LTO 7 cartridge with an M8 label. The cartridge is only compatible with an IBM LTO-8 tape drive. The SCSI interface returns LR for the domain and type rather than the M8 physically on the label.
  - Z = The element contains a 18 TB Generation 9 LTO WORM cartridge.
- Transport Type additions:
  If the Media Domain is 4Ch (L):
  - 46h = IBM Generation 9 LTO drive.

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Installing Library Firmware

The method for updating library firmware depends on the current version of firmware on the library.

- If your library has FRS_4.40 or above, you can upgrade to a higher level of library firmware using the instructions in the *SL3000 Library Guide* "Upgrading Library Firmware".
- If your library is currently running code below FRS_4.40, contact Oracle support to upgrade code.
- If you want to downgrade code, contact Oracle support.