

# StorageTek Tape Analytics

Requirements Guide

Release 2.0

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This document lists the requirements for StorageTek Tape Analytics (STA), Release 2.0, as of this document's publication. Review the following sections before installing and configuring STA.

- ["Library Requirements"](#) on page 1-1
- ["Tape Drive Requirements"](#) on page 1-3
- ["Server Requirements"](#) on page 1-5
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## 1 Library Requirements

- [Library Firmware Requirements](#)
- [Library Hardware Requirements](#)
- [Complex ID Requirements \(SL8500 Only\)](#)
- [Volume Label Formatting Requirements \(SL500 and SL150 Only\)](#)
- [SL500 FastLoad](#)

### 1.1 Library Firmware Requirements

For the best functionality and user experience, upgrade to the recommended or latest available firmware. To upgrade to the latest STA-supported firmware, open a service ticket with Oracle Support. Firmware versions are subject to change. To check your firmware version, see the *STA Installation and Configuration Guide*.

**Table 1 Library Firmware Requirements**

Firmware	SL150	SL500	SL3000	SL8500
Minimum	1.82	FRS 1485 FRS 1493 <sup>1</sup>	FRS 3.61	FRS 8.01 FRS 8.31 <sup>1</sup>
Recommended <sup>2</sup>	2.01	FRS 1493	FRS 4.00 FRS 4.30 <sup>3</sup>	FRS 8.07 FRS 8.35 <sup>3</sup>

<sup>1</sup> With IBM LTO 4 (with encryption), IBM LTO 5, and IBM LTO 6.

<sup>2</sup> At time of release. Newer firmware may be available.

<sup>3</sup> STA 2.0 full feature set, including media validation and richer component health data.

## 1.2 Library Hardware Requirements

**Table 2 Library Hardware Requirements**

Library	Component	Requirement
SL3000 SL8500	HBT card	<p><b>High-memory drive controller (HBT) card:</b> Required for media validation support and reporting of richer drive data. For libraries with LTO drives, a high-memory HBT card is required to enable ADI mode.</p> <p>To determine your HBT card's level of memory, see "Verify the Drive Controller Card Version (SL3000 and SL8500 Only)" in the <i>STA Installation and Configuration Guide</i>.</p> <p><b>Note:</b> All SL3000 libraries ship with the high-memory card. Since 2006, all SL8500 libraries ship with the high-memory card.</p>
All	Ethernet connection	<p><b>Separate connection from STA to each library:</b> each library must have an assigned IP address and be reachable by the STA server.</p> <p><b>Note:</b> Each library in an SL8500 complex has its own SNMP agent. Therefore, STA must be able to connect to each library separately.</p>

## 1.3 Complex ID Requirements (SL8500 Only)

For STA to roll up library complex data correctly, each library complex at your site must have a unique complex ID. On SL8500 libraries, complex IDs are set manually. [Table 3](#) lists valid SL8500 complex ID assignments.

- Each standalone SL8500 is considered to be a separate complex and therefore must have a unique complex ID.
- Valid complex ID values are 1-127.
- Each multi-library complex must have a unique complex ID, and all libraries within the complex must share the same ID.

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**Caution:** The Oracle Service Delivery Platform (SDP) also uses unique complex IDs for tracking library data. If your site uses SDP, contact Oracle Service before changing any complex ID. Changing the complex ID could cause SDP to fail. In most cases, complex IDs are set correctly when SDP is connected.

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Ensuring the correct library complex ID is a configuration task in the *STA Installation and Configuration Guide*.

**Table 3 Example Complex ID Assignments**

Complex Type	Libraries	Assigned Complex ID
Multi-library complex	SL8500-1	1
	SL8500-2	1
	SL8500-3	1
Standalone libraries	SL8500-4	2
	SL8500-5	3

## 1.4 Volume Label Formatting Requirements (SL500 and SL150 Only)

Setting the proper volume label format is a configuration step in the *STA Installation and Configuration Guide*. Volume serial numbers (volser) in SNMP data must be formatted properly for STA to correctly process library exchange data. The media volser includes a two-character suffix that indicates the media type. For example, if a cartridge volser is ABC123L4, "L4" indicates the media type is LTO4. For proper STA reporting, the volser suffix must be excluded.

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**Caution:** If these parameters are not set properly, volsers will be formatted incorrectly, causing exchanges processing to be blocked, superfluous attempts to get the latest media data, and irreversible, eight-character volser records to appear on the Media - Overview screen whenever the "Show Removed Media" preference is set.

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- For all SL500 libraries monitored by STA, the label orientation for the host must be set to "left6" and "STA mode" must be set to "on". ("STA mode" affects only the format of the volser sent to the STA server through SNMP, not the format used on the SL500 library itself.)
- For all SL150 libraries monitored by STA, "Volume Label Format" must be set to "Trim last two characters".

## 1.5 SL500 FastLoad

The FastLoad option should be disabled on SL500 libraries, as cartridge mount traps are not properly sent to STA when FastLoad is enabled. FastLoad is disabled by default. If you are unsure of the status of this option, contact Oracle Support.

## 2 Tape Drive Requirements

- [StorageTek Drive Firmware Requirements](#)
- [LTO Drive Firmware Requirements](#)
- [ADI Requirements](#)

### 2.1 StorageTek Drive Firmware Requirements

The quality of data provided to STA depends on the TTI level shown in [Table 4](#). As the TTI level increases, so does the quality of the data. Oracle recommends using the highest TTI level and corresponding firmware supported by your drive model. To upgrade to the latest drive firmware supported by STA, open a service ticket with Oracle Support. Firmware versions are subject to change.

**Table 4 StorageTek Tape Drive Firmware — Minimum Versions for STA**

StorageTek Drive	TTI 5.10	TTI 5.20	TTI 5.30	TTI 5.40	Media Validation Support <sup>1</sup> TTI 5.40
T10000A	1.44.108	1.46.109	1.48.112	NA	NA
T10000B	1.44.208	1.46.209	1.48.212	NA	NA
T10000C	NA	1.51.320	1.53.316	1.57.308	1.59.302

**Table 4 (Cont.) StorageTek Tape Drive Firmware — Minimum Versions for STA**

StorageTek Drive	TTI 5.10	TTI 5.20	TTI 5.30	TTI 5.40	Media Validation Support <sup>1</sup>
					TTI 5.40
T10000D	NA	NA	NA	4.07.104 (FC/FCoE) 4.07.106 (FICON)	4.07.106 (FC/FCoE) 4.07.106 (FICON)
9840C	1.44.510	1.45.503	NA	NA	NA
9840D	1.44.710	1.45.703	NA	NA	NA

<sup>1</sup> In a FICON environment, Complete Verify Plus StorageTek Data Integrity Validation is not supported.

## 2.2 LTO Drive Firmware Requirements

To upgrade to the latest drive firmware supported by STA, open a service ticket with Oracle Support. Firmware versions are subject to change.

**Table 5 HP LTO Tape Drive Firmware — Minimum Versions for STA**

HP LTO Drive	Supported Firmware	SL8500	SL3000	SL500	SL150
LTO 3 LVD SCSI	G69S			Yes	
LTO 3 FC 2Gb	L6HS	Yes	Yes	Yes	
LTO 3 FC 4Gb	M6BS	Yes	Yes	Yes	
LTO 4 LVD SCSI	B57S			Yes	
LTO 4 FC 4Gb	H58S	Yes	Yes	Yes	
LTO 5 Full-height FC 8Gb	I3CS	Yes	Yes	Yes	
LTO 5 Full-height SAS 6Gb	X3AS			Yes <sup>1</sup>	
LTO 5 Half-height FC 8Gb	Y5BS				Yes
LTO 5 Half-height SAS 6Gb	Z55S				Yes
LTO 6 Full-height FC 8Gb	J2DS	Yes	Yes	Yes	
LTO 6 Half-height FC 8Gb	22GS				Yes
LTO 6 Half-height SAS 6Gb	32DS				Yes

<sup>1</sup> Requires SL500 Bridged Base Unit

**Table 6 IBM LTO Tape Drive Firmware — Minimum Versions for STA**

IBM LTO Drive	Supported Firmware	SL8500	SL3000	SL500	SL150
LTO 3 FC 2Gb	93G0	Yes	Yes	Yes	
LTO 4 FC 2/4Gb	94D7	Yes	Yes	Yes	
LTO 4 FC 2/4Gb with Encryption <sup>1</sup>	C7QH	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>2</sup>	
LTO 5 FC 8Gb <sup>1</sup>	D2AC	Yes <sup>2</sup>	Yes <sup>3</sup>	Yes <sup>2</sup>	
LTO 6 FC 8Gb <sup>1</sup>	D8E4	Yes <sup>2</sup>	Yes <sup>3</sup>		

- <sup>1</sup> Belisarius card with 4.17.12.35 (minimum) firmware and concurrent drive firmware (as shown) required for ADI support.
- <sup>2</sup> See [Table 1](#) for minimum required library firmware version.
- <sup>3</sup> ADI mode not supported at time of publication.

## 2.3 ADI Requirements

LTO drives that support the Automation/Drive Interface (ADI) allow STA to provide high quality data (for example, drive performance and utilization), depending on configuration and firmware level. Drives that do not support ADI only provide basic data. ADI must be enabled on both the library and LTO drives.

### 2.3.1 Enabling ADI on the Library

By default, ADI is not enabled on SL500, SL3000, and SL8500 libraries, and you or Oracle Support must enable it manually. Because enabling ADI requires a reboot of the library, you should enable it in advance if you are planning to install LTO drives. For SL3000 and SL8500 libraries, you can only enable ADI if the library has a high-memory drive controller (HBT) card (see "[Library Hardware Requirements](#)" on page 1-2).

Enabling ADI on the library is a configuration task in the *STA Installation and Configuration Guide*.

### 2.3.2 Enabling ADI on LTO Drives

The method for enabling ADI depends on the drive manufacturer and model:

- **HP LTO-3, LTO-4, LTO-5, and LTO-6:** These drives switch automatically to ADI mode after ADI is enabled on the library, the library is rebooted, and the drives are rebooted. (Drives can be rebooted with SL Console.)
- **IBM LTO-3, LTO-4, LTO-5, and LTO-6:** These drives must be configured for ADI mode (see [Table 7](#)), and will not be recognized until ADI is enabled on the library and the library is rebooted.

**Table 7 How ADI is Enabled on IBM LTO Drives**

IBM LTO Drive	LTO-3	LTO-4	LTO-5, LTO-6
IBM without the Belisarius adapter card	Oracle Support configures the drive hardware for ADI mode.	Oracle Support configures the drive hardware for ADI mode.	NA
IBM with the Belisarius adapter card <sup>1</sup>	NA	Oracle Support configures the drive hardware for ADI mode.	The drive firmware must be configured for ADI mode with Virtual Operator Panel (VOP). Contact Oracle Support for assistance.

<sup>1</sup> Provides the interface to Oracle's Key Manager (OKM) tape encryption solution. Drive and Belisarius card firmware must meet the minimum requirements for STA.

## 3 Server Requirements

- [Hardware Requirements](#)
- [Operating System Requirements](#)
- [Network Requirements and Recommendations](#)

### 3.1 Hardware Requirements

Table 8 lists the minimum server hardware requirements. It is highly recommended that configurations be expandable in number of disk bays, CPU cores, and RAM slots to accommodate future database growth, additional library requirements, and STA upgrades.

**Table 8 STA Server Minimum Hardware Requirements**

Hardware	Configuration
Processor	Intel Xeon 5600 Series or equal AMD CPUs: <ul style="list-style-type: none"><li>Minimum two CPUs</li><li>Recommended three to four CPUs, or capability to expand to this configuration</li></ul>
Memory	Minimum 16GB RAM Recommended 24GB to 32GB RAM
Operating System Disk	Dual HDD drives: <ul style="list-style-type: none"><li>600 GB each (single library, typical)</li><li>1 TB each (multiple libraries, typical)</li></ul> <b>Note:</b> As the number of data exchanges increases, so does the size of the database. Consult your Oracle sales representative to best determine your storage needs.
Connection	Gigabit Ethernet
Platform	All disk storage residing on single platform

### 3.2 Operating System Requirements

Oracle tests, documents, and recommends Oracle Enterprise Linux.

**Table 9 Operating System Versions Supported for STA**

Operating System	Supported Versions
Oracle Enterprise Linux (OEL), 64-bit (Oracle kernel)	6.3 (minimum) 6.4 (recommended)
Red Hat Enterprise Linux (RHEL), 64-bit (Red Hat kernel)	6.3 (minimum) 6.4 (recommended)

### 3.3 Network Requirements and Recommendations

- The STA server must have a static IP address.
- Oracle recommends that you place the STA server on the same subnet as the library to improve SNMP UDP reliability.
- If you configure STA to support dual TCP/IP using two distinct subnets, configure the network to allow the delivery of SNMP packets on either subnet between the library and STA. Consult your network administrator and Oracle Support for more information.

## 4 User Interface Requirements

**Table 10 STA User Interface — Minimum Requirements**

Item	Minimum Requirements
Screen Resolution	<ul style="list-style-type: none"><li>1024 x 800 minimum, 1280 x 1024 (or better) recommended</li></ul>
Browsers <sup>1</sup>	<ul style="list-style-type: none"><li>Internet Explorer 9</li><li>Firefox 13+</li><li>Safari 5</li><li>Google Chrome 20+</li></ul>
Browser Settings, Plugins, and Add-ons	<ul style="list-style-type: none"><li>Enable JavaScript</li><li>Flash 11.2 (latest version is recommended)</li><li>Run all browsers in Native Mode</li><li>Disable or remove third-party add-ons</li></ul>
RTL Language Support	<ul style="list-style-type: none"><li>Support for right-to-left (RTL) languages is available only with Internet Explorer 8.0 or 9.0</li></ul>
Screen Reader Assistive Technology	<ul style="list-style-type: none"><li>JAWS 11 is recommended</li></ul> See the <i>STA Screen Basics Guide</i> for accessibility information.

<sup>1</sup> These are the officially-supported versions. Other versions are known to work with STA.

## 5 Media Validation Requirements

The minimum requirements for using STA for media validation are listed below. To configure media validation after configuring STA, see the *STA User's Guide*.

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**Note:** Use only one instance of STA to perform media validation activities. The use of multiple instances on the same library is not supported.

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### STA Requirements

- STA 2.0 (minimum)
- Connections to libraries using SNMP v3 protocol

### Library Requirements

- SL8500 or SL3000 library with compatible firmware (see "[Library Firmware Requirements](#)" on page 1-1)
- High-memory drive controller (HBT) card
- SL Console 6.25 (minimum for SL8500), 6.50 (minimum for SL3000)
- Dedicated pool of media validation drives defined with SL Console

### Drive Requirements

- StorageTek T10000C or T10000D drives using compatible firmware (see "[StorageTek Drive Firmware Requirements](#)" on page 1-3). STA does not initiate media validations on drives that do not have the minimum firmware levels.

- Drives used to validate encrypted media must be enabled for encryption and connected to an Oracle Key Manager (OKM) 2.5 (minimum).

#### Media Requirements

- T10000T1 or T10000T2 media

Media validation is not supported for media formatted with StorageTek Automatically Linked Partitioning (ALP) done with Oracle's StorageTek Virtual Storage Manager (VSM).

## 6 IBM RACF Mainframe Requirements

If you will be configuring STA for RACF authentication, the following requirements apply. Configuring STA for RACF is described in the *STA Installation and Configuration Guide*.

You must install two separate packages to configure RACF for STA:

- RACF service for STA, which is part of the SMC component of ELS 7.0 and 7.1. You must install the PTF to support this RACF service on the mainframe.
- WebLogic RACF Security Service Provider (or RACF SSP) that must be installed into WebLogic.

**Table 11 IBM RACF Software Required**

Software/Firmware	Version
ELS PTF versions for STA /RACF	ELS 7.0 - L1H16DH (MVS)
<b>Note:</b> STA/RACF is <i>not</i> supported in HSC 6.2	ELS 7.1 - L1H16DI (MVS)
	ELS 7.2 - in the base code (MVS)
IBM PTF versions <sup>1</sup> (for APAR PK69048) for AT-TLS encryption to NCS/ELS HTTP server connection	z/OS 1.10 - Release 1A0 : UK39417 available 08/10/07
	z/OS 1.9 <sup>2</sup> - Release 190 : UK39419 available 08/10/07

<sup>1</sup> For best performance

<sup>2</sup> Minimum level needed for the Communication Server

## 7 Documentation Accessibility

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