



StorageTek™ SL500

Modular Library System

User's Guide

Part Number 96116

Revision: KA



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Summary of Changes

EC	Date	Revision	Description
132072	September 2004	A	Initial release
111939	October 2004	B	Refer to this edition for a description of the changes.
111956	January 2005	C	Refer to this edition for a description of the changes.
128083	May 2005	D	Refer to this edition for a description of the changes.
114112	December 2005	E	Refer to this edition for a description of the changes.
142254	April 2006	F	Refer to this edition for a description of the changes.
114158	July 2006	G	Refer to this edition for a description of the changes.
114183	October 2006	H	Refer to this edition for a description of the changes.
114192	May 2007	J	Chapters 1 and 6: Added information regarding Quantum DLT-S4 drives/media and LTO Gen 4 drives/media. Library firmware must be version 1126 or later for support of these drives. Appendix A (see "Customer-initiated Maintenance" on page 335): <ul style="list-style-type: none">■ Revised Sun Support telephone numbers for U.S. and Canada.■ Added Web link to obtain telephone numbers for international Sun Support locations.

Added information regarding the Library Partitioning feature:

- Chapter 1, “General Information”—Summary of library partitioning.
- Chapter 6, “Library Partitioning”—Detailed descriptions of the concepts, tasks, and SL Console screens involved in library partitioning.

Added information regarding the Web-launched SL Console feature:

- Chapter 2, “StorageTek Library Console”—Detailed instructions for installing and using the Web-launched SL Console client.
- [Appendix C](#), “Web-launched SL Console Server”—Detailed instructions for installing and managing the Web-launched SL Console server.

Updated the following chapters for new License Management and Capacity on Demand features.

- [Chapter 4](#), “Licensing” (new chapter)
- [Chapter 5](#), “Capacity on Demand” (new chapter)
- [Chapter 6](#), “Library Partitioning”

Major reorganization and enhancement of remaining chapters. Changes detailed below:

Previous Organization

- Notices—Deleted. Updated information is now included in the *Sun StorageTek Regulatory and Safety Compliance Manual*, p/n 3161956xx.
- Safety—Deleted. Updated information is now included in the *Sun StorageTek Regulatory and Safety Compliance Manual*, p/n 3161956xx.
- Preface—Updated.
- Chapter 1, “General Information”—Renamed and updated.
- Chapter 2, “Controls and Indicators”—Deleted. Information now in Chapter 1.
- Chapter 3, “Library Operation”—Renamed and updated.
- Chapter 4, “SL500 StorageTek Library Console”—Moved to Chapter 2. No substantive changes.
- Chapter 5, “Troubleshooting”—Deleted. Information now in new Chapter 7.
- Chapter 6, “Cartridge Information”—Moved to Appendix B.
- Chapter 7. “Library Partitioning”—Moved to Chapter 6, and updated for new License Management feature.
- Appendix A, “Customer Contacts”—Deleted. Updated information now in “Preface”.

New Organization

- “Preface”—Information previously included in Appendix A, “Customer Contacts” has been updated and moved to this section.
- [Chapter 1](#), “SL500 Introduction”—Wall diagrams and specifications previously included in this chapter have been moved to [Appendix A](#), “SL500 Wall Diagrams and Specifications”.
- Information previously included in Chapter 2, “Controls and Indicators” has been moved to this chapter.
- [Chapter 2](#), “StorageTek Library Console” (previously Chapter 4)—No substantive changes.
- [Chapter 3](#), “SL500 Automated Library Operations”—Added detailed procedures in the following sections:
 - [Library Management Tasks](#)
 - [CAP Management Tasks](#)
 - [Cartridge Management Tasks](#)
 - [Drive Management Tasks](#)
 - [Drive Cleaning Tasks](#)
 - [Robot Monitoring Tasks](#)
- [Chapter 4](#), “Licensing”—New chapter describing the new License Management feature.
 - [License Key File](#)
 - [Licensing Tasks](#)
 - [Licensing Screen Reference](#)

- Appendix B, “Web-based SL Console Server”—Moved to Appendix C. No substantive changes.
 - Glossary—Updated.
 - Index—Updated.
 - Chapter 5, “Capacity on Demand”—New chapter describing the new Capacity on Demand feature.
 - Capacity on Demand Features and Restrictions
 - Implementing Changes to Licensed Capacity
 - Chapter 6, “Library Partitioning” (previously Chapter 7)—Updated for the new License Management feature.
 - Deleting the Partitioning Feature
 - Chapter 7, “SL Console Diagnostics and Utilities”—New chapter describing the following:
 - Library Events
 - Library Self-Tests
 - Library Firmware Upgrades
 - Audits
 - Robot Diagnostic Moves
 - Troubleshooting—Information included in previous Chapter 5.
 - Event Monitor Tasks
 - Library Utility Tasks
 - Audit Tasks
 - Drive Utility Tasks
 - HandBot Utility Tasks
 - Chapter 8, “SNMP Support”—New chapter describing the following:
 - Trap Levels
 - Port Control
 - Access Control
 - SNMP Configuration and Usage Tasks
 - Chapter 9, “Manual Operations”—New chapter describing the following:
 - Library Safety
 - General Library Operation Tasks
 - Cartridge Handling Tasks
 - Appendix A, “SL500 Wall Diagrams and Specifications”—Wall diagrams and library specifications previously included in Chapter 1, “General Information” have been moved to this appendix.
 - Appendix B, “Cartridge Information”—Moved from previous Chapter 6.
 - Appendix C, “Web-launched SL Console Server” (previously Appendix B)—No substantive changes.
 - Glossary—Updated.
 - Index—Updated.
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Preface

This guide is intended primarily for SL500 library system administrators and operators. It can also be used by Sun StorageTek partners and support representatives.

Most of the information pertains to the library hardware, the StorageTek Library Console, and related operations. For specific drive information or for client application software commands, see the appropriate drive or software documentation.

Organization

Chapter 1	SL500 Introduction. Overview of the major hardware components and specifications of the library.
Chapter 2	StorageTek Library Console. Topics and procedures for installing and using the SL Console graphical user interface.
Chapter 3	SL500 Automated Library Operations. Topics and procedures for using the SL Console to configure, manage, and monitor the SL500 library in automated mode.
Chapter 4	Licensing. Topics, procedures, and screen reference for installing and managing SL500 feature licenses.
Chapter 5	Capacity on Demand. Topics, and procedures for installing and managing SL500 licensed capacity.
Chapter 6	Library Partitioning. Topics, procedures, and screen reference for installing and managing SL500 library partitions.
Chapter 7	SL Console Diagnostics and Utilities. Topics and procedures for using the SL Console to perform diagnostic and utility functions on the SL500 library.
Chapter 8	SNMP Support. Topics and procedures for configuring and using the SL500 SNMP interface.
Chapter 9	Manual Operations. Topics and procedures for safely using the SL500 library in manual mode.
Appendix A	Wall Diagrams. Detailed diagrams of storage cell, CAP, and drive layouts.
Appendix B	Cartridge Handling. Reference information on labeling and using cartridges in the SL500 library.

Appendix C	Web-launched SL Console Server. Topics and procedures for installing and configuring the Web-launched SL Console server.
Glossary	Definitions of new or special terms and abbreviations used in this guide.
Index	Alphabetical list of topics in this manual.

Alert Messages

Alert messages call your attention to information that is especially important or that has a unique relationship to the main text or graphic.

Note – A note provides additional information that is of special interest. A note might point out exceptions to rules or procedures.

Caution – A caution informs the reader of conditions that might result in damage to hardware, corruption of data, corruption of application software, or long-term health problems in people. A caution always precedes the information to which it pertains.

Warning – Possible Physical Injury. A warning alerts the reader to conditions that might result in injury or death. A warning always precedes the information to which it pertains.

Conventions

Typographical conventions highlight special words, phrases, and actions in this publication.

Item	Example	Description of Convention
Buttons	MENU	Font and capitalization follows label on product
Commands	Mode Select	Initial cap
Document titles	<i>System Assurance Guide</i>	Italic font
Emphasis	<i>not or must</i>	Italic font
File names	fsc.txt	Monospace font
Hypertext links	Figure 2-1 on page 2-5	Blue (prints black in hardcopy publications)
Indicators	Open	Font and capitalization follows label on product
Jumper names	TERMPWR	All uppercase
Keyboard keys	<Y> <Enter> or <Ctrl+Alt+Delete>	Font and capitalization follows label on product; enclosed within angle brackets
Menu names	Configuration Menu	Capitalization follows label on product
Parameters and variables	Device = <i>xx</i>	Italic font
Path names	c:/mydirectory	Monospace font
Port or connector names	SER1	Font and capitalization follows label on product; otherwise, all uppercase
Positions for circuit breakers, jumpers, and switches	ON	Font and capitalization follows label on product; otherwise, all uppercase
Screen text (including screen captures, screen messages, and user input)	downloading	Monospace font
Switch names	Power	Font and capitalization follows label on product
URLs	http://www.sun.com	Blue (prints black in hardcopy publications)

Related Documentation

SL500 Library Documentation

SL500 Local Operator Panel Guide

SL500 System Assurance Guide

SL500 SNMP Reference Guide

Part Number

96258

MT9212

3161946xx

Tape Drive Documentation

Hewlett Packard Ultrium Tape Drive Manual

International Business Machines (IBM) Ultrium Tape Drive Manual

Part Number

CD included with drive

CD included with drive

Tape Management Software Publications

Automated Cartridge System Library Software (ACSLs)

ACSLs System Administrator's Guide

ACSLs Messages

ACSLs Quick Reference

Part Number

3134648xx

3134649xx

3134650xx

Host Software Component (HSC) MVS Publications

HSC Operator's Guide

HSC Messages and Codes Guide

3125311xx

3125313xx

Other Publications

Sun StorageTek Regulatory and Safety Compliance Manual

American National Standard Dictionary for Information Processing Systems

American National Standard Magnetic Tape and Cartridge for Information Interchange

Magnetic Tape Labels and File Structure for Information Interchange

SCSI-3 Parallel Interface (SPI)

Small Computer System Interface

Fibre Optics User's Guide

Part Number

3161956xx

ANSI X3/TR-1-82

ANSI X3B5/87-009

ANSI X3.27-1978

ANSI X3T9.2/91-010R7

ISO 9316:1989

9433

Publications Link

SunSolve or docs.sun.com

Additional Information

Sun Microsystems, Inc. (Sun) offers several methods for you to obtain additional information.

Sun's external Web Site

Sun's external Web site provides marketing, product, event, corporate, and service information. The external Web site is accessible to anyone with a Web browser and an Internet connection.

The URL is: <http://www.sun.com>

The URL for Sun StorageTek brand-specific information is:

<http://www.sun.com/storagetek>

SunSolve and Helpful Links

SunSolve and the Sun links below are Web sites that enable members to search from technical documentation, downloads, patches, features, articles, and the Sun Systems Handbook.

- Library firmware and SL Console code downloads:
<http://http://www.sun.com/download/index.jsp>
- Drivers: <http://www.sun.com/download/index.jsp>
- Documentation (customer): <http://docs.sun.com/app/docs>
- General product information:
<http://www.sun.com/storagetek/products.jsp>
- SunSolve External site: <http://sunsolve.sun.com>
- Sun System Handbook (customer):
http://sunsolve.sun.com/handbook_pub/validateUser.do?target=index
- Sun Learning Services—Training: <http://www.sun.com/training>

Partners Site

The Sun StorageTek Partners site is for partners with a StorageTek Partner Agreement. This site provides information about products, services, customer support, upcoming events, training programs, and sales tools to support StorageTek Partners. Access to this site is restricted. On the Partners Login page, Sun employees and current partners who do not have access can request a login ID and password, and prospective partners can apply to become StorageTek resellers.

<http://www.sun.com/partners>

SL500 Introduction

This chapter provides an overview of the major hardware components of the SL500 library and library specifications.

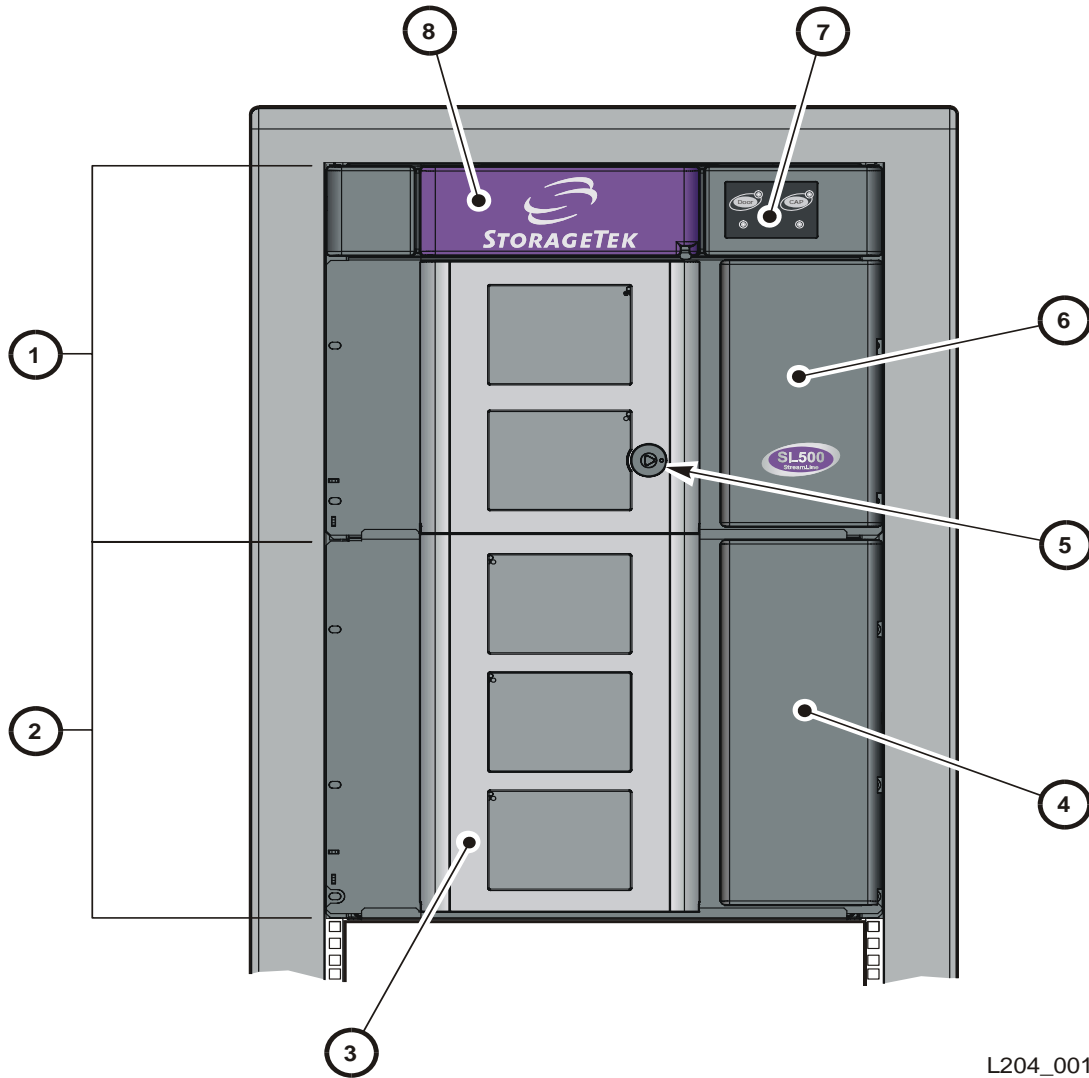
The library continues Sun StorageTek's approach to Information Lifecycle Management by providing a highly adaptable storage platform made to specifically consolidate, protect and retain customer information. The SL500 library protects a customer's investments by providing a cost-effective entry point and makes it easy to grow the library with expansion modules. Whether customers have a small remote site or a corporate data center, they can feel secure that the SL500 library can accommodate all of their current and future data storage needs

The library is a self-contained, fully automated tape cartridge storage system. It is scalable and mounts into a standard 483 mm (19 in.) rack. The SL500 is also available as a desk-top unit.

Views and Locations

The following figures show library views and the locations of components.

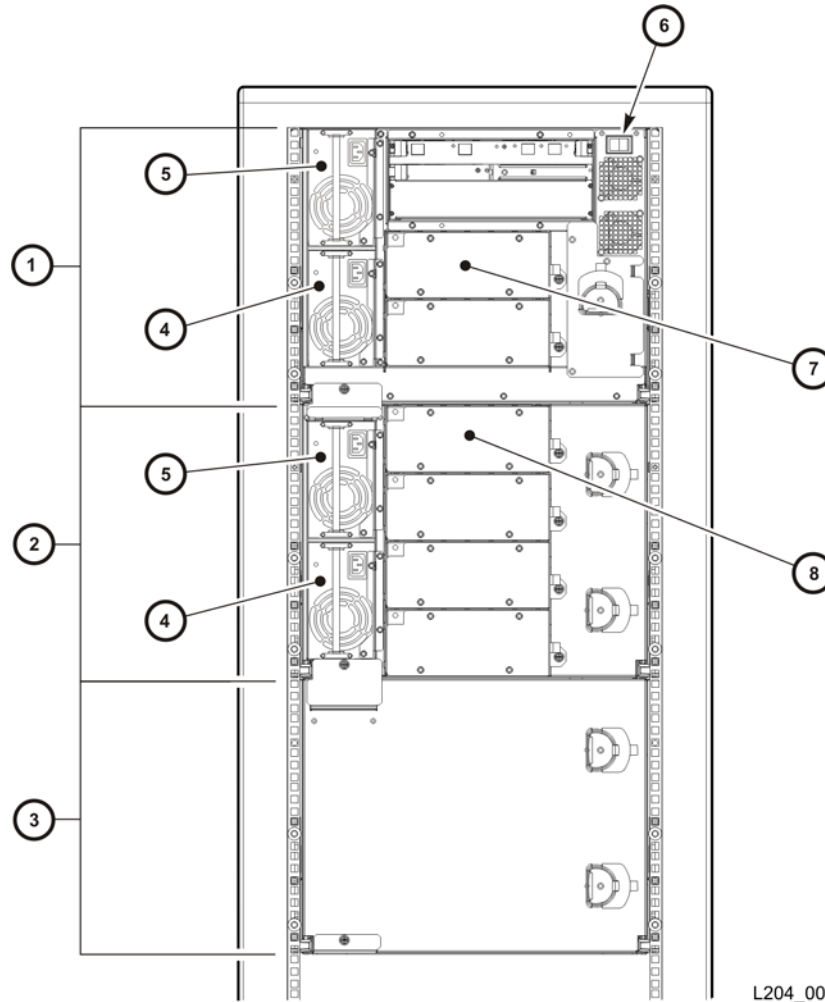
FIGURE 1-1 Front View of Library Components



L204_001

1. Base module
2. Drive expansion module
3. Library door
4. Drive expansion module cartridge access port (CAP)
5. Library door lock
6. Base unit cartridge access port (CAP)
7. Keypad assembly
8. Robotics unit

FIGURE 1-2 Back View of Library Components



L204_002

- | | |
|--|--|
| 1. Base module | 4. Standard power supply (see note 1) |
| 2. Drive expansion module | 5. Library power switch |
| 3. Cartridge expansion module | 6. Tape drive 1 in base unit (see note 2) |
| 4. Redundant power supply (see note 1) | 7. Tape drive 1 in expansion module (see note 3) |

Notes

1. If you are ordered only one power supply in a module, it should be installed in the top location.
2. The host firmware sees tape drive 1; the SCSI firmware sees tape drive 0119.
3. The host firmware sees tape drive 1; the SCSI firmware sees tape drive 0219.

Library with LTO Storage Cells

LTO Library Configurations

Caution – Firmware problems: You can not mix LTO and mixed-media arrays and arrays within the same library. If you add expansion modules, the new modules must have the same type arrays as the existing modules.

For each library:

- The Base Module contains the robotics unit and the base unit:
 - The robotics unit has the robotic components and the keypad
 - The base unit has up to 50 storage cells (see note), one or two tape drives, and a five-cell cartridge access port (CAP).

Note – Only 30 of those storage cells can be used unless the cartridge upgrade conversion bill has been installed, allowing the other 20 storage cells to be used. With no upgrade, the first 30 storage cells after the reserved cells can be used for cartridge storage. If the reserved storage cells are configured for storage, the numbering starts there. The CAP cells also can be configured as storage cells.

- Drive expansion modules and Cartridge Expansion Modules can be added to a standard rack to accommodate various storage cell and tape drive configurations.

Note – You must have a 50-cartridge capacity base unit, either from the initial order or with the upgrade conversion bill, before you can order an expansion module.

See [Appendix A, “SL500 Wall Diagrams and Specifications”](#) for detailed diagrams and dimensions.

LTO Library Internal Addressing

The numbering scheme uses the library, module, row and column scheme. Four integers are used to represent the cartridge and tape drive slots, as viewed from the front of the library.

1. Library number (always 0)
2. Library module number 1 (top of rack) through 5 (bottom of rack)
3. Row number 1 through 9 (Base Module) or 1 through 12 (expansion module)
4. Column number 1 through 9 for Base Module and Drive Expansion Module, 1 through 11 for Cartridge Expansion Module See [“LTO Storage Cell and Drive Capacities” on page 5](#) for more information.

LTO Storage Cell and Drive Capacities

Note – Your software might conflict with the following information. Refer to your software publication for unique information.

TABLE 1-1 shows the number of cartridge and tape drive slots available depending on the type and number of modules installed. The table assumes that, when DEMs and CEMs are installed in the same library, the DEMs are above all of the CEMs, as preferred.

Note – Do not install an EZ DEM below an original CEM. This is not physically allowed.

The following notes are factors that influence capacity:

- When you add an expansion module below an existing module, you increase the capacity of the module **directly above it** by:
 - Base module: +16 storage cells
 - CEM (when another CEM is below it): +10 storage cells
 - DEM: +7 storage cells
- When a CEM is installed below a Base Module or DEM, the top two rows on columns 9, 10, and 11 of the CEM are not accessible (-6 storage cells because the tape drives prevent the hand from reaching the cells).
- The lowest module in the rack requires installation of the floor. The floor limits the distance the robot can travel, which makes the bottom row(s) in the lowest module inaccessible:
 - Base module: -16 storage cells
 - DEM: -7 storage cells
 - CEM (below another CEM): -16 storage cells (-10 storage cells on the lowest CEM, -6 storage cells on the CEM above it)
 - CEM (below Base Module or DEM): -16 storage cells
- Cartridge access ports:
 - Base module: 5 storage cells (one magazine)
 - Each DEM: 10 storage cells (two magazines)
 - Each CEM: 10 storage cells (two magazines)

TABLE 1-1 LTO Storage Cell and Tape Drive Capacities

Modules	Maximum Number of Tape Drives					CAP Cells	Total # of Storage Cells
	2	6	10	14	18		
Base module	30					5	35
20-cartridge upgrade key	50					5	55
Adding 1 expansion module							
Base module plus 1 limited DEM		100				15	115

TABLE 1-1 LTO Storage Cell and Tape Drive Capacities

Modules	Maximum Number of Tape Drives					CAP Cells	Total # of Storage Cells
	2	6	10	14	18		
Base module plus 1 full DEM (with 50-cartridge upgrade key)		143				15	158
Base module plus 1 CEM	170					15	185
Adding 2 expansion modules							
Base module plus 2 DEMs			227			25	252
Base module plus 1 DEM, 1 CEM		254				25	279
Base module plus 2 CEMs	290					25	315
Adding 3 expansion modules							
Base module plus 3 DEMs				311		35	346
Base module plus 2 DEMs, 1 CEM			338			35	373
Base module plus 1 DEM, 2 CEMs		374				35	409
Base module plus 3 CEM	410					35	445
Adding 4 expansion modules							
Base module plus 4 DEMs					395	45	440
Base module plus 3 DEMs, 1 CEM				422		45	467
Base module plus 2 DEMs, 2 CEMs			458			45	503
Base module plus 1 DEM, 3 CEMs		494				45	539
Base module plus 4 CEMs	530					45	575

Adding LTO Storage Cell Capacity

If your needs have increased, you can increase the storage cell capacity and the number of tape drives in the library. [TABLE 1-1](#) lists how many storage cells and tape drives can be gained by adding each Drive Expansion Module. The expansion modules are installed into the same rack as the existing modules.

You can also add a redundant power supply. Contact your marketing representative.

Library with Mixed-Media Storage Cells

Mixed-Media Library Configurations

Caution – *Firmware problems:* You can not mix LTO and mixed-media arrays and magazines within the same library. If you add expansion modules, the new modules must have the same type arrays as the existing modules.

Note – Your robotics unit must be part number 314558705 or higher to read SDLT cartridge labels.

For each library:

- The Base Module contains the robotics unit and the base unit:
 - The robotics unit has the robotic components and the keypad
 - The base unit has up to 42 storage cells (see note), one or two tape drives, and a four-cell cartridge access port (CAP).
-

Note – The base unit can be ordered originally as a 24- or 42-cell unit. If you received the 24-cell version, only 24 of those storage cells can be used unless the upgrade conversion bill has been installed. Without a conversion bill, the first 24 cells after the reserved cells can be used for cartridge storage. If the reserved cells are configured for storage, the numbering starts with the first physical cell on the left.

An upgrade conversion bill allows the other 18 storage cells in the base unit to be used, for a total of 42. This conversion bill is for customers who want only the base unit and do not expect to order an expansion module.

The CAP cells can also be configured as storage cells.

- Drive expansion modules (DEMs) and Cartridge Expansion Modules (CEMs) can be added to a standard rack to accommodate various storage cell and tape drive configurations.
-

Note – You must have a 42-cartridge capacity base unit before you can order an expansion module.

See [Appendix A, “SL500 Wall Diagrams and Specifications”](#) for detailed diagrams and dimensions.

Mixed-Media Library Internal Addressing

The numbering scheme uses the library, module, row and column scheme. Four integers are used to represent the cartridge and tape drive slots, as viewed from the front of the library.

1. Library number (always 0)
2. Library module number 1 (top of rack) through 5 (bottom of rack)
3. Row number 1 through 8 (Base Module) or 1 through 10 (expansion module)
4. Column number 1 through 9 for Base Module and Drive Expansion Module, 1 through 11 for Cartridge Expansion Module

See [“Mixed-Media Storage Cell and Drive Capacities” on page 8](#) for more information.

Mixed-Media Storage Cell and Drive Capacities

Note – Your software might conflict with the following information. Refer to your software publication for unique information.

[TABLE 1-2](#) shows the number of cartridge and tape drive slots available depending on the type and number of modules installed. The table assumes that, when DEMs and CEMs are installed in the same library, the DEMs are above all of the CEMs, as preferred.

Note – Do not install an EZ DEM below an original CEM. This is not physically allowed.

Note – The following notes are factors that influence capacity:

1. When you add an expansion module below an existing module, you increase the capacity of the module **directly above it** by:
 - Base module: +14 storage cells
 - CEM (when another CEM is below it): +10 storage cells
 - DEM: +7 storage cells
2. When a CEM is installed below a Base Module or DEM, the top two rows on columns 9, 10, and 11 of the CEM are not accessible (-6 storage cells because the tape drives prevent the hand from reaching the storage cells).
3. The lowest module in the rack requires installation of the floor. The floor limits the distance the robot can travel, which makes the bottom row(s) in the lowest module inaccessible:
 - Base module: -14 storage cells
 - DEM: -7 storage cells
 - CEM (below another CEM): -16 storage cells (-10 storage cells on the lowest CEM, -6 storage cells on the CEM above it)
 - CEM (below Base Module or DEM): -16 storage cells
4. Cartridge access ports:
 - Base module: 4 storage cells (one magazine)
 - Each DEM: 8 storage cells (two magazines)
 - Each CEM: 8 storage cells (two magazines)

TABLE 1-2 Mixed-Media Storage Cell and Tape Drive Capacities

Modules	Maximum Number of Tape Drives					CAP Cells	Total # of Storage Cells
	2	6	10	14	18		
Base module	24					4	28
18-cartridge upgrade	42					4	46
Adding 1 expansion module							
Base module plus 1 limited DEM		86				12	98
Base module plus 1 full DEM (with 33-cartridge upgrade)		119				12	131
Base module plus 1 CEM	140					12	152
Adding 2 expansion modules							
Base module plus 2 DEMs			189			20	209
Base module plus 1 DEM, 1 CEM		210				20	230
Base module plus 2 CEMs	240					20	260
Adding 3 expansion modules							
Base module plus 3 DEMs				259		28	287
Base module plus 2 DEMs, 1 CEM			280			28	308
Base module plus 1 DEM, 2 CEMs		310				28	338
Base module plus 3 CEM	340					28	368
Adding 4 expansion modules							
Base module plus 4 DEMs					329	36	365
Base module plus 3 DEMs, 1 CEM				350		36	386
Base module plus 2 DEMs, 2 CEMs			380			36	416
Base module plus 1 DEM, 3 CEMs		410				36	446
Base module plus 4 CEMs	440					36	476

Adding Mixed-Media Storage Cell Capacity

If your needs have increased, you can increase the storage cell capacity and the number of tape drives in the library. [TABLE 1-2](#) lists how many storage cells and tape drives can be gained by adding each Drive Expansion Module. The expansion modules are installed into the same rack as the existing modules.

You can also add a redundant power supply. Contact your marketing representative.

Controls and Indicators

Note – This section describes the controls and indicators that you can use to monitor and troubleshoot the library. For tape drive controls and indicators, refer to the vendor publications and Web sites. For details on the Local Operator Panel, see the *SL500 Local Operator Panel Guide*, p/n 96258.

Power Switch

When the switch (see [FIGURE 1-2](#)) is in the On position (1) the library and tape drives are powered-on. When the switch is in the Off position (0), the library and tape drives are powered-off.

Note – Earlier built libraries had power supplies that had individual power switches. Later libraries have one power switch that controls all power supplies in the rack.

Power Supply LED

The following table describes the power supply LED.

TABLE 1-3 Power Supply LED

Activity	Meaning	Action
On	Power supply is active.	Nothing, this is normal.
Off	The power supply failed.	The service representative might need to replace the power supply.
	The power supply is not receiving power.	The service representative might need to check the connections and voltages.

Drive Tray LED

The following table describes the drive tray LED.

TABLE 1-4 Drive Tray LED

Activity	Meaning	Action
On solid	The drive fan failed, the temperature is too high.	The service representative might need to replace the fan.

Keypad

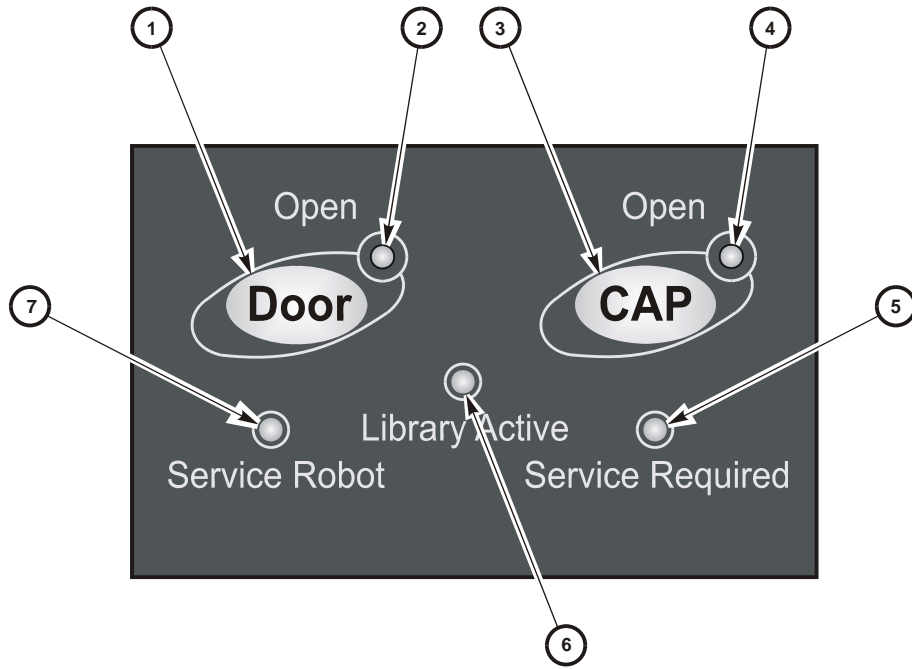
The keypad is used to:

- Open the door
- Open all CAPs
- Notify you if service is required

Under normal conditions, at power-on, all keypad LEDs are solidly lit. Once library applications begin:

1. All keypad LEDs turn off.
2. The Library Active LED flashes until the audit is complete, then turns off.
3. The Library Active LED turns on at the start of each command, then turns off when each command is completed.
4. The Library Active LED flashes when the library is active.

FIGURE 1-3 Buttons and Indicators



L204_014

- | | |
|---------------------|-------------------------|
| 1. Door Open button | 5. Service Required LED |
| 2. Door Open LED | 6. Library Active LED |
| 3. CAP Open button | 7. Service Robot LED |
| 4. CAP Open LED | |

TABLE 1-5 Keypad Buttons and Indicators

Buttons/Indicator	Description
Service Robot	Indicator LED is lit when the robot is not functioning. The service representative might need to check the <code>log_error</code> file for the result code and perform the appropriate action.
Library Active	Indicator LED is active when the library is active.

TABLE 1-5 Keypad Buttons and Indicators (Continued)

Buttons/Indicator	Description
Service Required See TABLE 1-6 for details.	<p>Indicator</p> <ul style="list-style-type: none"> ■ LED is normally not lit. ■ LED is lit when the library experiences a failure or is in a non-ready state.
Open Door	<p>Indicator</p> <ul style="list-style-type: none"> ■ LED flashes amber when the Open Door button is pressed. ■ LED is solid amber when the robot is parked in the robotics unit. ■ LED flashes during initialization and audit. ■ LED is not lit when the library is ready for customer use. <p>Button</p> <p>When pressed:</p> <ol style="list-style-type: none"> 1. Software allows the current job to complete. This could take a while. 2. Software retracts the robot into the robotics unit so that it will not be damaged when you open the door with the key.
Open CAP	<p>Indicator</p> <ul style="list-style-type: none"> ■ LED is amber when any CAP doors are open. ■ LED is not lit when all CAP doors are shut. <p>Button</p> <p>Button is used to open all CAP doors in a rack.</p>

TABLE 1-6 Keypad Service Required LED

Activity	Meaning	Action
Flashing	The redundant component failed.	The service representative might need to replace the failed redundant component, such as power supply, tape drive, or fan.
	Diagnostics are running.	Nothing, this is normal.
	Diagnostics failed.	The service representative might need to check the <code>log_error</code> file for the result code and perform the appropriate action.
	Door is open.	Close and lock the door.
On solid	The non-redundant component failed. This includes the last working component of a redundant set of components, such as tape drives.	The service representative might need to check the <code>log_error</code> and <code>log_warning</code> files to determine which component failed, and replace the failed component.
	The library has stopped operating.	The service representative might need to check the <code>log_error</code> file for the result code and perform the appropriate action.

RLC Card Indicators

The following table describes the RLC card indicators.

TABLE 1-7 RLC Card Indicators

Indicator	Description
EJECT OK	Indicator LED is solid blue when the RLC card can be removed (Currently, only one RLC card is available.).
FAULT	Indicator LED flashes red when the controller has detected a problem.
STANDBY	Indicator LED is yellow when the RLC card is not the active card (Currently, only one RLC card is available.).
ACTIVE	Indicator LED is solid green when the RLC card is the active card (Currently, only one RLC card is available.).

Tape Drives and Cartridges

The library supports:

- Linear Tape-Open (LTO) Ultrium tape drives:
 - Hewlett-Packard LTO Gen 2, 3 and 4 (check availability for Gen 4) SCSI low voltage differential (LVD) and Fibre Channel (FC)
 - IBM LTO Gen 2, 3 and 4 (check availability for Gen 4) SCSI LVD and FC
- Quantum SDLT tape drives:
 - SDLT 320 SCSI LVD
 - SDLT 600 SCSI LVD and FC
 - DLT-S4 SCSI and FC

Tape drives are hot-swappable. This means they can be replaced without removing power from the library, as long as the following actions are done:

- Back up the server before removing the tape drive.
- If the tape drives are daisy-chained, stop all data processing on the channel to which the tape drives are connected before disconnecting the tape drives.
- Make sure that there is no activity on the SCSI bus before disconnecting the external SCSI cables. Stop all processes on the host.
- Make sure that all signals are terminated at each end of the SCSI bus.
- If your external SCSI cables are long enough that they do not interfere with removing and replacing the tape drives, you can swap tape drives without disconnecting the external SCSI cables. If so, disregard the steps to remove those cables.

Caution – *Possible data loss or system problem:* If you must disconnect the external SCSI cables, make sure that you quiesce the system first (stop all processes on the tape drives on the SCSI bus with the tape drive you are replacing).

All tape drives are mounted on SL500-unique tray assemblies. Each assembly contains the:

- Tape drive
- +5 VDC fan
- RLD tape drive interface card

Drive tray assemblies are installed in slots (also called bays), accessible from the back of the library. When a tape drive is inserted into the assigned slot, it connects to the RLD card by way of a cable. The RLD card connects directly to the RLM or RLE (Drive Expansion Module) backplane through a blind-mate connector.

Note – If a slot does not contain a tape drive, a vacancy plate must be installed over the slot.

LTO Tape Drives and Cartridges

Note – LTO technology was developed by IBM, Hewlett-Packard, and Seagate. LTO is an “open format” technology, which means that users have multiple sources of product and media.

This section discusses media compatibility and cartridge labels. For all other tape drive and media information, such as specifications, refer to:

- The specific vendor Web site
- <http://www.sun.com/storagetek/index.jsp>

For best results, match the cartridges with the specific drive type (for example, use LTO 2 cartridges in Gen 2 drives):

The following table lists the compatibility issues among the various LTO cartridges and tape drives. Although SL500 does not support Gen 1 drives, the column is listed for you to consider if you need to migrate your data from older types of cartridges to newer ones.

TABLE 1-8 LTO Media/Tape Drive Compatibility

Media	Label	Gen 1 Drive	Gen 2 Drive	Gen 3 Drive	Gen 4* Drive
LTO 1	L1	Read and write	Read and write	Read only	Non applicable
LTO 2	L2	Non applicable	Read and write	Read and write	Read only
LTO 3	L3	Non applicable	Non applicable	Read and write	Read and write
LTO 4	L4	Non applicable	Non applicable	Non applicable	Read and write
WORM (400 GB)	LT	Non applicable	Non applicable	Read and write	Read and write
WORM (800 GB)	LU	Non applicable	Non applicable	Non applicable	Read and write

Note: When available, LTO 4 drives are supported with library firmware 1126 and later.

Note – LTO 3 drives can accept 400 GB WORM (Write Once Read Many) cartridges. LTO 4 drives can also accept these plus the 800 GB WORM cartridges.

SDLT/DLT-S4 Tape Drives and Cartridges

Note – Your robotics unit must be part number 314558705 or higher to read SDLT/DLT-S4 cartridge labels.

This section discusses media compatibility and cartridge labels. For all other tape drive and media information, such as specifications, refer to:

- The specific vender Web site
- <http://www.sun.com/storagetek/index.jsp>

For best results:

- Use Super DLT tape 1 cartridges in SDLT 320 tape drives
- Use Super DLT tape 2 cartridges in SDLT 600 tape drives
- Use DLT tape S4 cartridges in DLT-S4 tape drives

The following table lists the compatibility issues among the various SDLT cartridges and tape drives. Consider the information if you need to migrate your data from older types of cartridges to newer ones.

TABLE 1-9 SDLT/DLT-S4 Media/Tape Drive Compatibility

Media	SDLT 320 Drive	SDLT 600 Drive	DLT-S4* Drive
SDLT 1 media	Read and write	Read only	Read only
SDLT 2 media	No action	Read and write	Read only
DLTIV media	Read only	No action	No action
DLT tape S4	No action	No action	Read and write

Note: DLT-S4 drives are supported with library firmware 1126 and later.

Note – SDLT600 and DLT-S4 tape drives with appropriate firmware can accept cartridges with the WORM feature.

The WORM (write once read many times) feature prevents the user from altering or erasing information from the tape. For more information, go to the Quantum Web site and do a search on DLTICE™.

Note – The WORM feature cartridge must be:

- unformatted native
- blank native
- native with one filemark and an EOD

See “[Cartridge Information](#)” on page 347 for more specific information about cartridges.

Cartridge Access Ports

The cartridge access ports (CAPs) can be used to add cartridges to the library, or remove cartridges from the library without interrupting normal robotic operation.

- The CAP in the Base Module has one five-cell magazine.
- The CAP in the Drive Expansion Module has two five-cell magazines.

Although the CAPs are not physically connected, they are logically connected. If any of the CAPs are open, the CAP LED on the keypad will be on, alerting the operator to take action to close the CAP. If all of the CAPs are closed, the CAP LED will be off.

You can use the keypad on the robotics unit to issue a command for the robot to unlock the CAP.

The CAP has two settings, ALLOW and PREVENT. ALLOW is the default setting after you power-on or reset the library. The following table shows how these settings affect the CAPs. For CAP LED indicator information see [“Controls and Indicators” on page 35](#).

CAP Condition	ALLOW	PREVENT
All of the CAPs are closed	When you press the CAP button all of the CAPs in the rack will open. The library firmware turns on the CAP LED.	When you press the CAP button, the action is ignored and all of the CAPs remain closed.
Any of the CAPs are open	When you press the CAP button, any CAP that is not open in the rack will open.	When you press the CAP button, the action is ignored and all of the CAPs remain in their individual current state of open or closed.

Robotics Unit

The robotics unit provides movement of cartridges among the storage cells, tape drives, and cartridge access ports (CAPs). The three main robotic components are, as shown in [FIGURE 1-4](#):

- Z drive assembly
- X table assembly
- Hand assembly

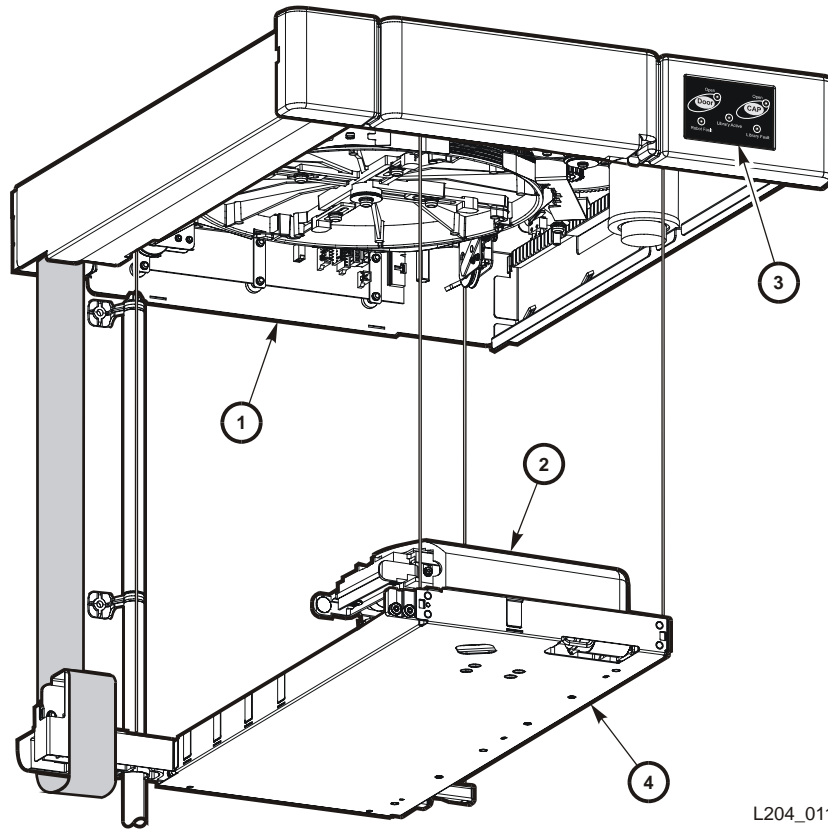
The Z drive assembly uses the Z drive pulley to move the X table up and down to the desired storage cell or tape drive. At the same time, the X carriage assembly (containing the hand) moves the hand forward and backward; the wrist motor rotates the hand right and left.

The hand assembly contains the wrist hub assembly, gripper assembly, and bar-code scanner. The gripper assembly has fingers that grasp the sides of the cartridge. If the library loses power while a cartridge is between the fingers, the manual release screw is used to remove the cartridge. A worm gear can be used to rotate the hand to the correct position to access the manual release screw.

For safety purposes, the robotics will be “parked” in the robotics unit when the front door is opened or when the Open Door button is pressed on the keypad. Parked means that the robotics components are fully retracted into the robotics unit at the top of the library. To verify the robot is parked, look at the lever in the cutout beneath the facade and to the bottom left of the keypad, the lever should be to the left.

The robotics unit is accessible from the front of the rack.

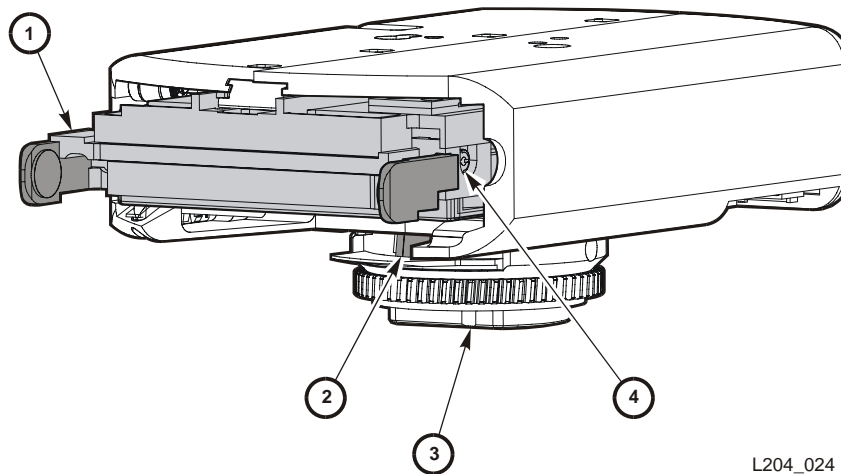
FIGURE 1-4 Robotics Components



L204_011

- 1. Z drive assembly
- 2. Hand assembly
- 3. Keypad assembly
- 4. X table assembly

FIGURE 1-5 Hand Assembly



L204_024

1. Gripper
2. Bar-code scanner
3. Wrist hub
4. Finger release screw

Power System

The base unit has one standard power supply. A second supply can be ordered and installed to provide redundant power to the module components. Each supply should be plugged into a separate circuit and powered-on to provide redundant power. If one supply fails, the second supply automatically provides power.

A single power switch on the back of the library is used to power-on or power-off all the power supplies in the rack:

- The ON position is 1.
- The OFF position is 0.

Cooling

The fans provide cooling for the library electronics. The tape drives and power supplies contain their own fans.

Electronics

The electronics consist of the control path and robotic cards in the base unit.

Communications include:

- Command line interface (CLI) over an RS232 port
- Public Ethernet port (The private port is for future use)
- Point to point library/tape drive RS423 interface
- Control path card for LVD SCSI or SCSI over Fibre Channel

Sensors include:

- Card temperature
- Fan operational
- Power safe
- Tape drive present
- Tape drive fault LED

RLC Card

The RLC card is the processor card. It contains all the necessary hardware to maintain the robotics, interfaces, servo and vision control, and the door/CAP sensor status.

The card stores the library capacity information and the volume serial numbers (also called VOLID) of the cartridges in the library storage cells.

Interface Cards

The RLW card is the LVD SCSI interface card. The MPU2 card is the Fibre Channel interface card.

Safety Features

The following subsections describe the safety features that are incorporated into the library.

Cards and Power Supply

The RLC card, SCSI (MPW/RLW) or Fibre Channel (MPU2) interface card, and the power supply are housed inside protective modules to prevent you from coming into contact with hazardous voltages and sensitive electronics.

Robotics

The software parks the robot by retracting it into the robotics unit module before the front door can be opened to prevent the robot from being damaged.

When the front door is opened, power is removed from the robot.

Front Door

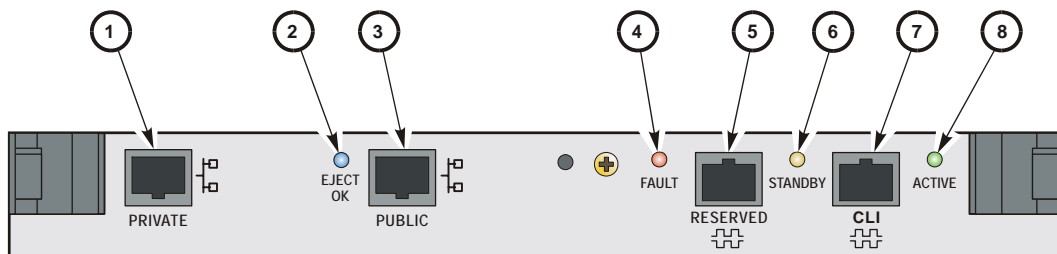
The front door must be opened with a key to ensure that the data is secure. If the door is not fully closed, a sensor relays the condition to the software and the robot remains disabled.

Interfaces

The major interfaces are:

- Library control path support for LVD SCSI or SCSI over Fibre Channel
- Data path for a single-port SCSI or dual-port Fibre Channel tape drive
- Cartridge access ports and sensors for indicating a door open or closed condition
- Front door opened button (on keypad), key for opening door, sensor LED that indicates door is closed and latched.
- Public 100BaseT Ethernet Port for the StorageTek Library Console (SL Console) and remote service access (see [FIGURE 1-6](#) and [“StorageTek Library Console”](#) on page 27).

FIGURE 1-6 Library Interfaces Locations



L204_008

1. Private Ethernet port is for future use.
2. Eject OK (hot-swappable) LED, when on, indicates that the RLC card can be removed. (See note below.)
3. Public Ethernet port is for remote service access, SL Console, and SNMP (future)
4. Fault LED indicates that the controller has detected a problem.
5. Reserved for future use.
6. Standby LED, when lit, indicates the RLC card (when two RLC cards are installed) is in standby mode. (See note below.)
7. CLI port is an RJ-45 serial port for service representatives.
8. Active LED, when lit, indicates this RLC card is active if two RLC cards are installed. If only one card is installed, the LED is always on. (See note below.)

Note – Currently, only one RLC card is available.

Tape Management Software

The tape management software provides the instructions to perform tape read and write operations and robotic move operations. When the library is in automated mode, these operations occur without manual intervention. The software determines where the cartridge is located by accessing audit data uploaded from the library. The software then allocates the tape drive to receive the cartridge.

For command descriptions and instructions, refer to your software publications.

StorageTek Library Console

Introduction

The StorageTek Library Console (SL Console) is a Java-based software application that provides a graphical user interface (GUI) for monitoring and managing the StorageTek library.

Following are some of the activities you can perform with the SL Console:

- Manage available library storage capacity
- Manage and configure library partitions (optional feature)
- View and modify status and properties of the library and associated devices (drives, CAP, robots, and elevators)
- Perform an audit on all or part of the library
- Perform a self-test on the library or an associated device
- Perform a diagnostic move (exercise a robot)
- Locate a cartridge
- Move a cartridge from one location to another
- Display library event logs
- Display error explanations
- Download new library firmware while the library is in operation
- Display context-sensitive help

SL Console Modes

Depending on your needs, you can run the SL Console in any of the following modes. For details and procedures, see:

- [“Local Operator Panel” on page 33](#)
- [“Standalone SL Console” on page 35](#)
- [“Web-launched SL Console” on page 42](#)

SL Console Security

Security features built into the SL Console control both user authentication and user authorization. The security features include:

- User IDs – User IDs control user authentication. Each user must have a valid, active user ID and password to log in to the SL Console.
- Access permissions – Access permissions control user authorization. Each user ID is assigned a set of access permissions, which determine the types of requests the user can submit through the SL Console. For example, in order to modify the system properties of a drive, a user must log in with a user ID that has the proper access permissions.

When you log in to the SL Console with a valid user ID, password, and library name, the system authenticates your identity and then authorizes your access to the various SL Console functions.

User IDs

To log in to the SL Console, you must have a valid, active user ID. Each user ID must be assigned a password.

There are a fixed set of user IDs at a site. The user IDs include `admin` (customer administrator), `service` (Sun Customer Services Engineer), and `oem` (third-party field service technician). When you log in successfully, the SL Console displays your user ID in the status bar of the screen.

Only one user at a time can be logged in to the local operator panel, but any number of users can connect to a library through the standalone SL Console or Web-launched SL Console.

Activation Password

Before any users at your site can use the SL Console for the first time, your library administrator must activate the “admin” userid with a special activation password. Your Sun support representative provides your administrator with the activation password, which is valid for one-time use only.

After logging in with the activation password, the administrator must change the admin user ID password to ensure system security.

For details about this process, see the appropriate library *Installation Guide*.

SL Console Usage Tasks

- [Log in to the SL Console](#)
- [Log Off the SL Console](#)
- [Change a User Password](#)

▼ Log in to the SL Console

Login procedures depend on the SL Console mode being used. For detailed instructions, see the following topics:

- [“Log in to the Local Operator Panel” on page 34](#)
- [“Log in to the Standalone SL Console” on page 41](#)
- [“Log in to the Web-launched SL Console Using a Browser or Command Line” on page 43](#)
- [“Log in to the Web-launched SL Console Using an Icon” on page 49](#)

▼ Log Off the SL Console

Note – Before you log off, make sure all operations for the current SL Console session have completed (for example, code loads, audits, diagnostic moves).

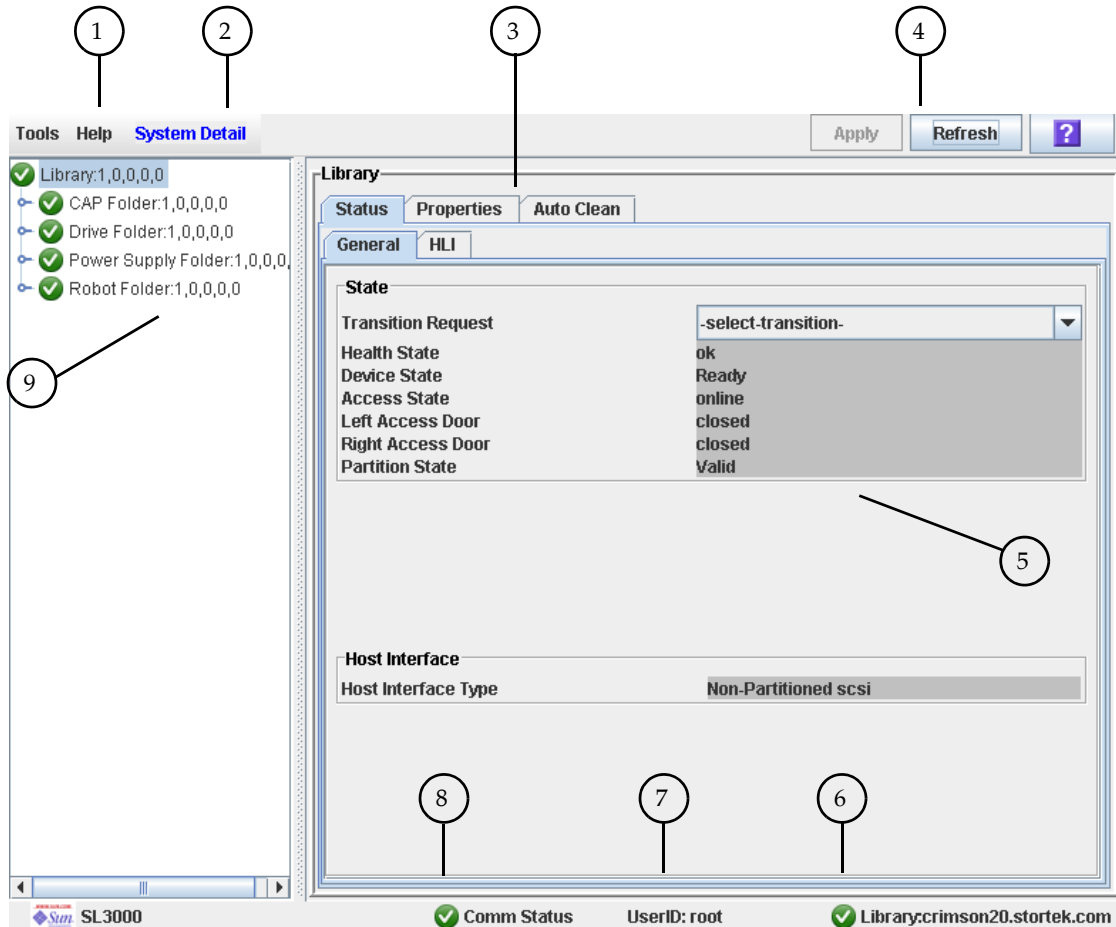
1. **From any SL Console screen, select Tools > Log Off.**
2. **In the Confirm popup, do one of the following:**
 - Click **Cancel** to remain logged in to the SL Console.
 - Click **OK** to terminate the current SL Console session.The **Login** screen appears.
3. **Click Exit to close the SL Console.**

▼ Change a User Password

1. **Select Tools > User Mgmt.**
2. **On the User tree, expand the Permanent folder.**
3. **Click the user account you want to modify.**
4. **Complete the following fields: Current Password, New Password, and Retype Password.**
5. **Click Modify.**

SL Console Screen Display

The following figure and table explain the components of the SL Console screen.



Component Name	Description
1	Menu bar—includes the Tools Menu and the Help Menu Tools menu provides access to System Detail, Reports, Monitors, Utilities, Partitioning, User Management, and Log off functions. Help menu provides access to the table of contents of the help system. It also identifies the version of the SL Console in use.
2	Title bar Displays the title of the current screen.
3	Function tabs Identifies the available functions for a screen.
4	Options bar Location of buttons related to the screen (for example, Apply , Refresh , Print). Always includes the SL Console Help button (?). See “Synchronizing the Display With the Controller Database” on page 31 for details on using the Apply and Refresh buttons.

	Component Name	Description
5	Work area	Location of the screen data.
6	Library health indicator	Identifies the library to which the SL Console is connected, and displays a graphical representation of the library health.
7	UserID indicator	Displays the user ID currently logged in to the SL Console.
8	Server communication health indicator	Displays a graphical heartbeat monitor indicating the state of server communication health.
9	Device tree	Lists the devices included in the library.

Synchronizing the Display With the Controller Database

When you first bring up an SL Console screen, the display reflects the most recently saved data from the library controller database. If you use the screen to modify the library contents or configuration, your changes do not update the controller database until you commit your changes by clicking the **Apply** button. Multiple users can access the library at the same time, using the SL Console, command line interface, and various host applications to make their own changes to the library contents and configuration. If other users make changes and apply them to the controller database, you will not see these changes until you click **Apply** or **Refresh** on your screen. Therefore, the display you see on the SL Console may not reflect the actual saved library configuration at a given point in time.

For these reasons, if you are making major modifications to the library configuration—adding modules, defining partitions, etc.—it is important that you coordinate these changes with other library users. Failure to do so could result in conflicts within the controller database.

Modifying the Screen Layout

Note – This feature is available starting with SL Console version FRS_3.30. It is available on selected screens only.

You can modify the layout and display of selected SL Console screens as follows.

TABLE 2-1 Screen Display Modifications

Display Option	Instructions
Sort the display by any column	Click the heading of the column you want to sort by. Initially the sort will be in ascending order. Click the heading again to switch between ascending and descending order.
Arrange the columns in any order	Click and drag a column heading horizontally to any position in the heading row.
Resize the columns	Click the border of the column heading and drag it left or right to change the column width.

Local Operator Panel

The local operator panel is an optional feature of the library, which is built in to the Base Module on the SL500. It enables you to run most of the SL Console application directly at the library from a flat-screen display with a touch-screen interface.

The local operator panel has the following features:

- Flat-panel display, resident within the library (8-inch on the SL500)
- Touch-screen interface, allowing alphanumeric data entry; pen and stylus available
- No keyboard or mouse option

LEDs located directly below the local operator panel provide the following status information:

- LIB ACTIVE—Library processor is working.
- WAIT—Library firmware is loading.
- SVC REQ—Library is rebooting.

▼ Enter Data Using the Keypad

1. **Click on the keyboard icon associated with the desired field.**

A popup containing a graphical keyboard and display area appears.

2. **Click the graphical keys necessary to enter the desired data.**
3. **Click Enter to save your entry.**

The popup is closed and the data is displayed in the associated field.

▼ Modify Data Using the Keypad

1. **Use the navigational keys to position the cursor next to the characters to be modified.**

The existing text remains on the display, but is changed to normal text.

2. **Click the navigational, editing, and text keys to make the desired changes.**
3. **Click Enter to save the changes or Cancel to restore the original text to the field.**

▼ Log in to the Local Operator Panel

Note – Only one user at a time can log in to the local operator panel.

Note – If the touch-screen panel is blank, touch the screen anywhere to activate the **Login** screen.

1. **Use the keypad to enter your login information** (see [“Enter Data Using the Keypad” on page 33](#) for detailed instructions).

User ID: *SLC_login*

Password: *password*

where:

- *SLC_login* is the SL Console user ID.
- *password* is the password assigned to this user ID.

Note – The user ID you use determines the screens you can access. See [“SL Console Security” on page 28](#).

2. **Click Log on.**

Standalone SL Console

The standalone SL Console is a standard feature of the StorageTek library. It enables you to run the SL Console application remotely from a PC or workstation that has a network connection to the library. Using the standalone SL Console you can connect to any library for which you have a valid user ID.

Security Considerations

The SL Console application interfaces with the primary library interface (PLI) over a security software layer (SSL). The SSL provides a secure communication path between the library and the customer's operator panel; this prevents an unauthorized network user from monitoring library activity.

Installation Requirements

You can install the standalone SL Console on a computer meeting the following requirements:

Platform	Solaris 9—SPARC Solaris 10—SPARC Windows 2003 Server—32 bit Windows XP Client—32 bit Windows Vista—32 bit
Other	Ethernet connection to the library

The standalone SL Console software is available for download at the following Sun Microsystems, Inc. sites:

User	Location Name	URL
Sun Customers	Sun Download Center	http://www.sun.com/download/index.jsp
Sun Partners and OEMs	Sun Partner Exchange	https://spe.sun.com/spx/control/Login

Note – You must have a valid login ID and password for the download site you are using. Contact your Sun support representative for assistance.

Standalone SL Console Installation

Note – Your StorageTek CSE may have performed these procedures for you during library installation.

To install the standalone SL Console on your PC or workstation, you must use the following procedures:

1. [“Download and Initiate the Standalone SL Console Installer from the Sun Download Site” on page 36.](#)
2. [“Install the Standalone SL Console” on page 36.](#)

▼ Download and Initiate the Standalone SL Console Installer from the Sun Download Site

Use this procedure to download the standalone SL Console installer program and initiate it on your PC or workstation.

Note – You must have a valid login ID and password for the download site you are using. Contact your Sun support representative for assistance.

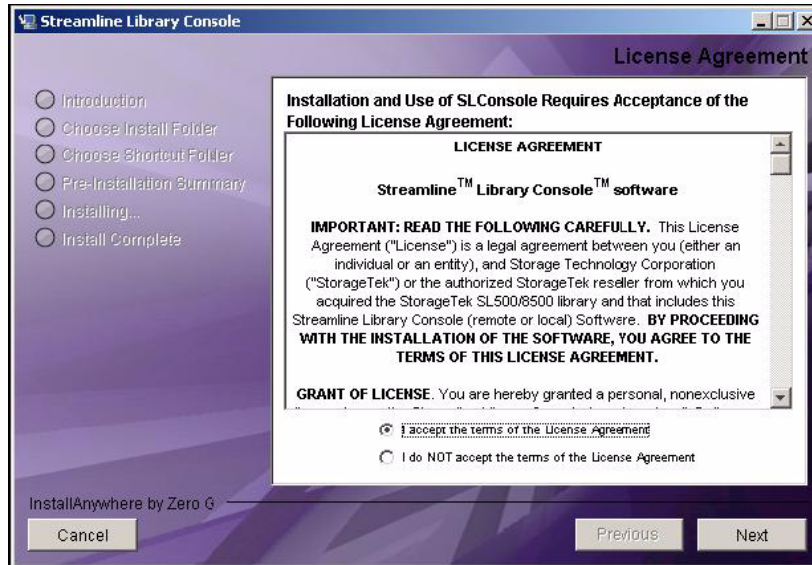
1. **Start a Web browser on your PC or workstation.**
2. **In the Address or Location Bar, enter the URL of the appropriate Sun download site. See [“Installation Requirements” on page 35](#) for details.**
3. **Log in to the Sun download site using your assigned login ID and password.**
4. **Navigate to the standalone SL Console installer file.**
5. **Select the SL Console code level you want.**
6. **Select the appropriate installer file for your platform:**
 - Microsoft Windows: SLConsoleWindowsSTK.exe
 - Sun Solaris: SLConsoleSolarisSTK.bin
7. **Save the file to your PC or workstation.**
8. **Double-click the SL Console installer file icon on your PC or workstation to start the installation.**
9. **To complete the installation, see [“Install the Standalone SL Console” on page 36.](#)**

▼ Install the Standalone SL Console

Use this procedure to install the standalone SL Console on your PC or workstation.

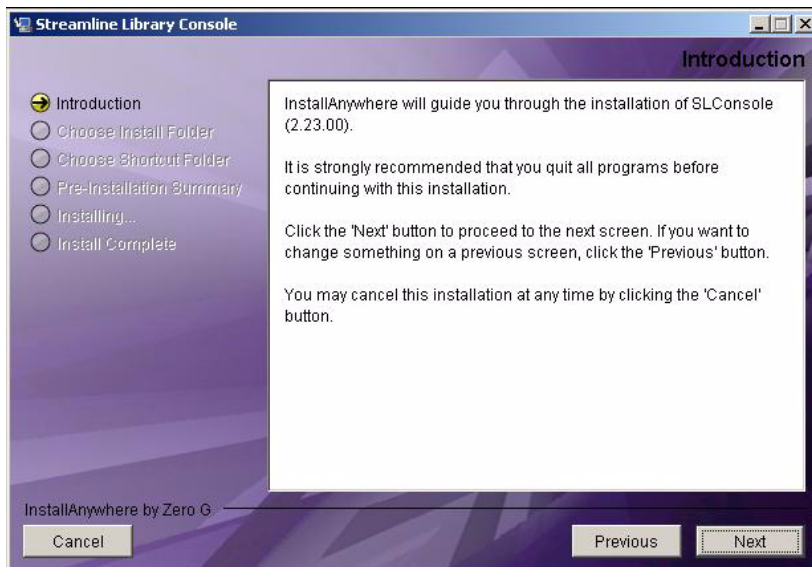
1. Start the installer program according to the instructions in [“Download and Initiate the Standalone SL Console Installer from the Sun Download Site”](#) on page 36.

The **License Agreement** screen appears.



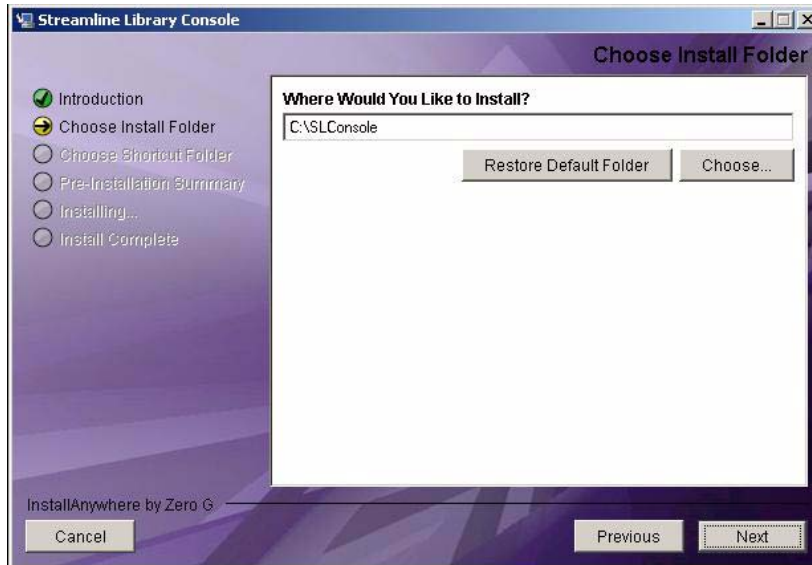
2. Review the information, and click **I accept**.

The **Introduction** screen appears.



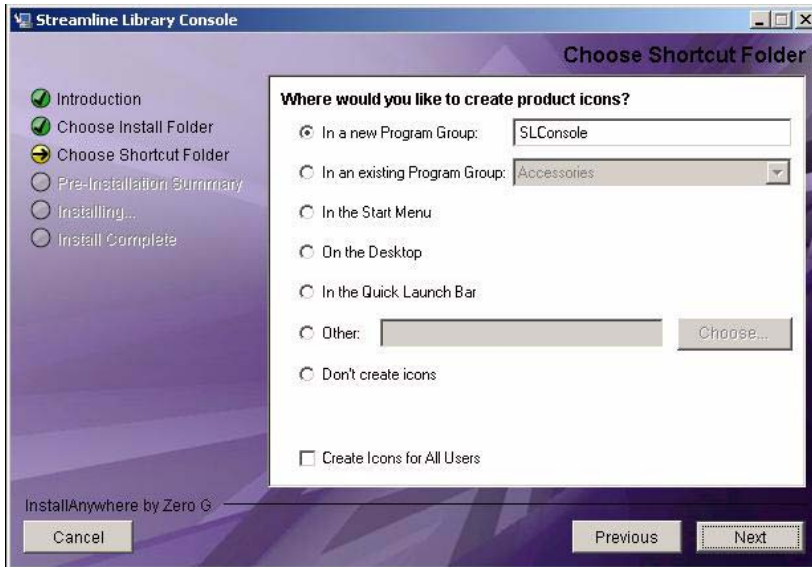
3. Review the information, and click Next.

The **Choose Install Folder** screen appears.



4. Enter the location where you want to install the file, and click Next.

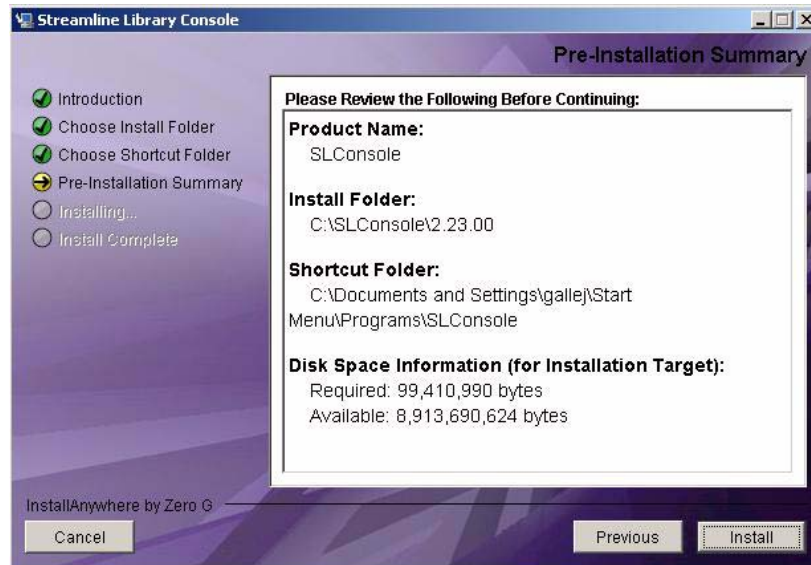
The **Choose Shortcut Folder** screen appears.



5. Enter the location where you want to create the shortcut icon, and click Next.

Note – On Solaris, the default location for shortcuts is the user’s home directory. However, shortcuts cannot be created in /, which is the root user’s home, so if you are installing on a Solaris platform as root you must choose something other than the default location. In this case, it is recommended that you choose /usr/bin or a similar location.

The **Pre-Installation Summary** screen appears.

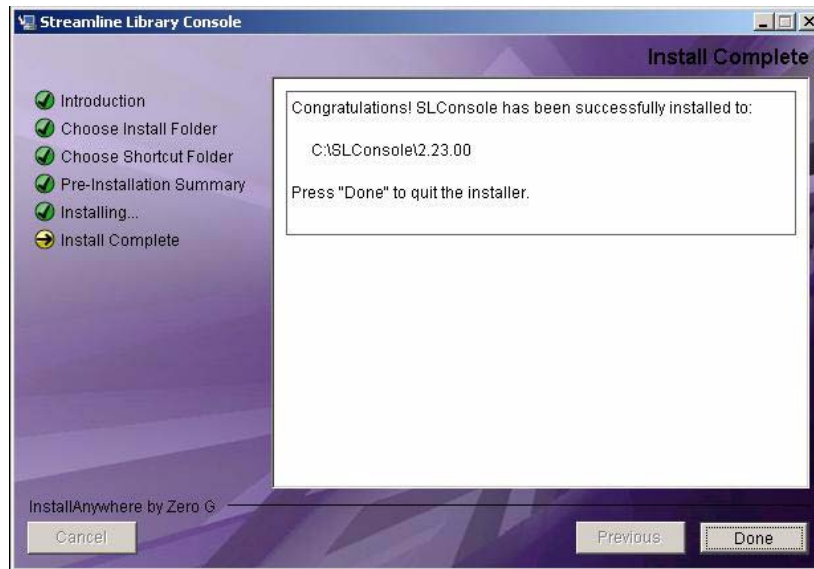


6. Review the information, and click Install.

The installation begins, and the **Installing SL Console** screen appears.



7. When the installation finishes, the Install Complete screen appears.



8. Review the information and click Done to exit the installation program.

▼ Log in to the Standalone SL Console

Note – Using the standalone SL Console you can connect to any library for which you have a valid user ID.

1. Start the SL Console application on your PC or workstation by doing either of the following:

- Double-click the **SL Console** icon on the desktop.
- Select **Start > RunSLConsole** or **Launch > RunSLConsole**

The SL Console starts and the **Login** screen appears.

2. Enter your login information.

User ID: *SLC_login*

Password: *password*

Library: *library_ID*

where:

- *SLC_login* is the SL Console user ID.
- *password* is the password assigned to this user ID.
- *library_ID* is the library to which you want to connect, expressed in either of the following ways:
 - IP address of the library, in dotted decimal notation (*nnn.nnn.nnn.nnn*)
 - DNS alias of the library

Note – The user ID you use determines the screens you can access. See [“SL Console Security” on page 28](#).

3. Click Log on.

Standalone SL Console Updates

Note – Before you can install a new version of the standalone SL Console, you must uninstall the previous version. See your PC or workstation documentation for detailed instructions. Running multiple versions of the SL Console on the same PC or workstation can cause problems such as inconsistent data on reports.

Once you have uninstalled the previous version of the SL Console, see [“Standalone SL Console Installation” on page 36](#) for detailed instructions on upgrading the software.

Web-launched SL Console

The Web-launched SL Console is a standard feature of the library. It enables the SL Console to be installed on a centralized Web server. Individual clients can then use a supported Web browser to download the Web-launched SL Console. Using the Web-launched SL Console you can connect to any library for which you have a valid user ID.

The Web-launched SL Console is delivered to clients as a Java Web Start process, which executes outside the browser.

Security Considerations

The Web-launched SL Console software is digitally signed, which guarantees that it has been issued by Sun Microsystems, Inc. and has not been altered or corrupted since it was created. As a Java Web Start process, the Web-launched SL Console includes the security features provided by the Java 2 platform.

The customer is responsible for implementing all appropriate additional security systems, including firewalls, user access, etc.

Client Requirements

You can download the Web-launched SL Console to clients meeting the following requirements:

Platform	Solaris 9—SPARC (Firefox 2.x) Solaris 10—SPARC (Firefox 2.x) Windows 2000—32 bit (IE 5, IE 5.5, Firefox 2.x) Windows XP—32 bit (IE 6, IE 7, Firefox 2.x) Windows Vista—32 bit (IE 7, Firefox 2.x)
Other	<ul style="list-style-type: none">■ Java 1.5 Plug-in (the browser will install this automatically if it is not present already)■ Ethernet connection to the library■ Ethernet connection to the Web-launched SL Console server

Web-launched SL Console Updates

Updates to the Web-launched SL Console only need to be installed on the centralized Web server. Once the updates are installed on the server, they are downloaded automatically to all clients whenever the application is started on the client.

Starting the Web-launched SL Console on a Client

You can use either of the following methods to start and log in to the Web-launched SL Console on a client:

- From a command line (Solaris only) or supported browser. See “[Log in to the Web-launched SL Console Using a Browser or Command Line](#)” on page 43.
- By double-clicking the `slc.jnlp` icon on your client. In order to use this method from a client, you must use the browser method at least once and save the `slc.jnlp` file locally. See “[Log in to the Web-launched SL Console Using an Icon](#)” on page 49.

▼ Log in to the Web-launched SL Console Using a Browser or Command Line

Note – Before you perform this activity, you must obtain the DNS alias or IP address of the SL Console server. Depending on how your Web-launched SL Console server has been set up, it may be accessible only by IP address. See your library administrator for assistance.

Note – The command line option is available on Solaris platforms only.

On Windows 2000, you may need to install a Java plugin for your Web browser before performing this procedure. You can download the plugin from the following location: http://java.sun.com/products/archive/j2se/5.0_04/index.html

On Solaris platforms, it is easier to log in to the Web-launched SL Console using the command line. If you prefer to log in using a Web browser, however, you need to download a recent version of the Firefox Web browser from the following location: http://releases.mozilla.org/pub/mozilla.org/firefox/releases/2.0.0.9/contrib/solaris_tarball/firefox-2.0.0.9.en-US.solaris8-sparc-gtk1.tar.bz2

1. Choose your login method:

- Command line—available on Solaris only. Proceed to [Step 2](#).
- Web browser—available on either Windows or Solaris. Proceed to [Step 3](#).

2. Open a terminal window, and type the following command:

```
javaws http://server_ID/opel/slc.jnlp
```

where:

- `server_ID` is either of the following:
 - IP address of the SL Console server (in `nnn.nnn.nnn.nnn` format)
 - DNS alias of the SL Console server
- `opel` is the name (context root) of the Web-launched SL Console application on the server.

Proceed to [Step 4](#).

3. Start a supported Web browser on your client PC or workstation (see “Client Requirements” on page 42 for a list of supported browsers), and in the Location Bar or Address field, enter the URL of the SL Console Web Start application:

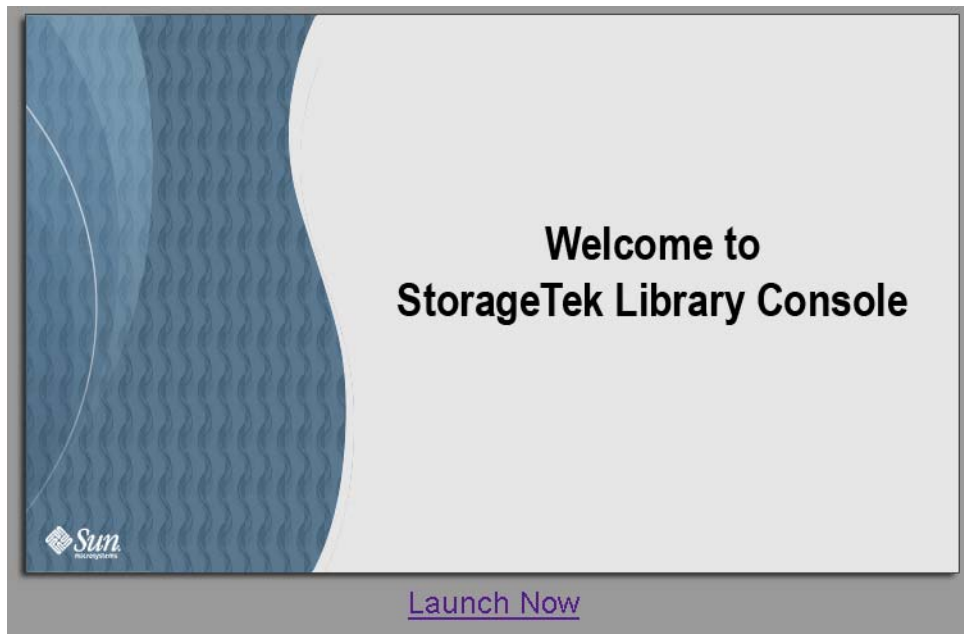
`http://server_ID/opel`

where:

- *server_ID* is either of the following:
 - IP address of the SL Console server (in *nnn.nnn.nnn.nnn* format)
 - DNS alias of the SL Console server
- *opel* is the name (context root) of the Web-launched SL Console application on the server.

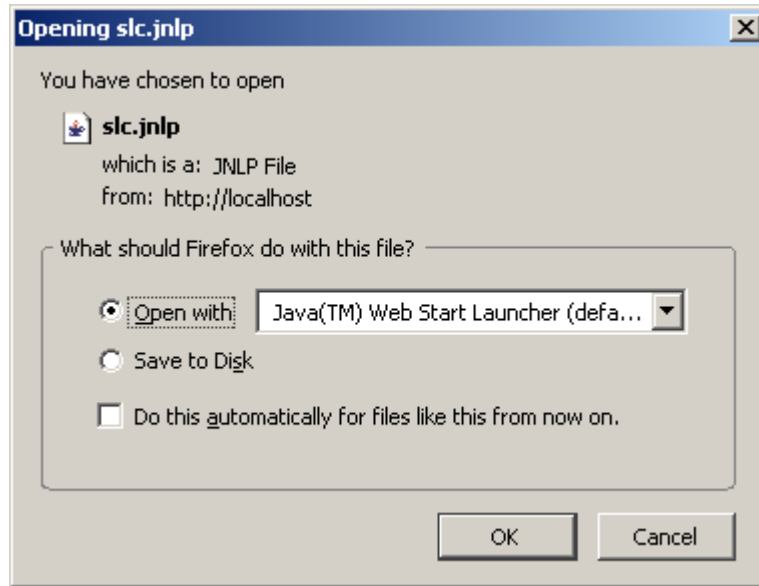
Note – You can bookmark this URL for future logins.

4. The SL Console Launch screen appears. Click Launch Now.



The Web Start process retrieves the Web-launched SL Console application from the server. Any updates are downloaded automatically.

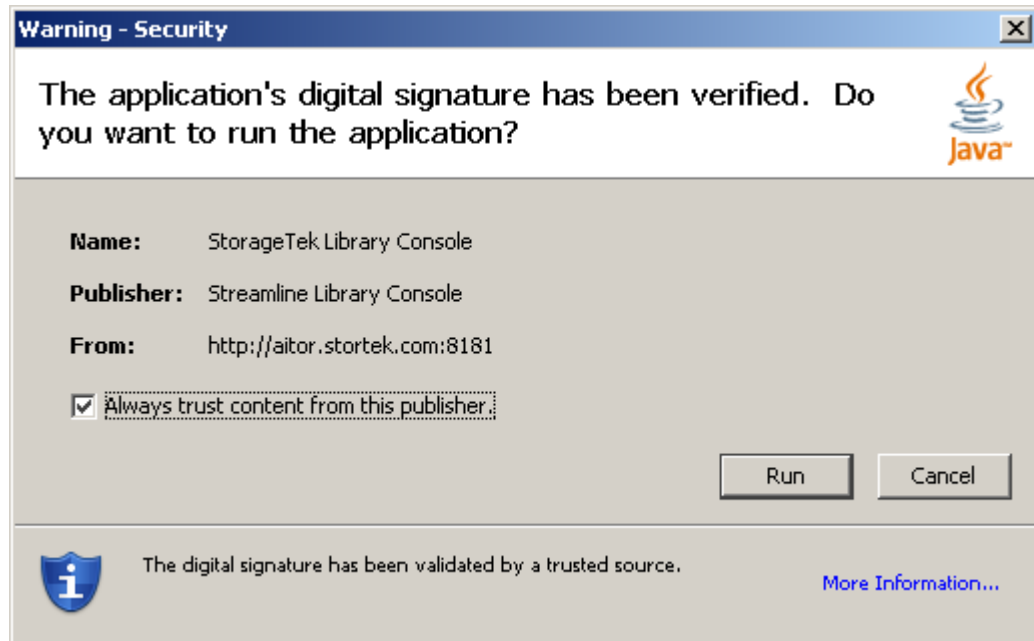
5. The Opening slc.jnlp popup appears.



Complete the popup as follows:

- a. **Specify the action you want to take with the slc.jnlp file:**
 - Click the **Open with Java(TM) Web Start Launcher** radio button if you want to start the SL Console directly.
 - Click the **Save to Disk** radio button if you want to save the slc.jnlp file to your client and log in to the SL Console later. See [“Log in to the Web-launched SL Console Using an Icon” on page 49](#) for login instructions.
- b. **Optionally click the “Do this automatically for files like this from now on” checkbox. If you make this selection, this popup will not appear during future logins.**
- c. **Click OK.**

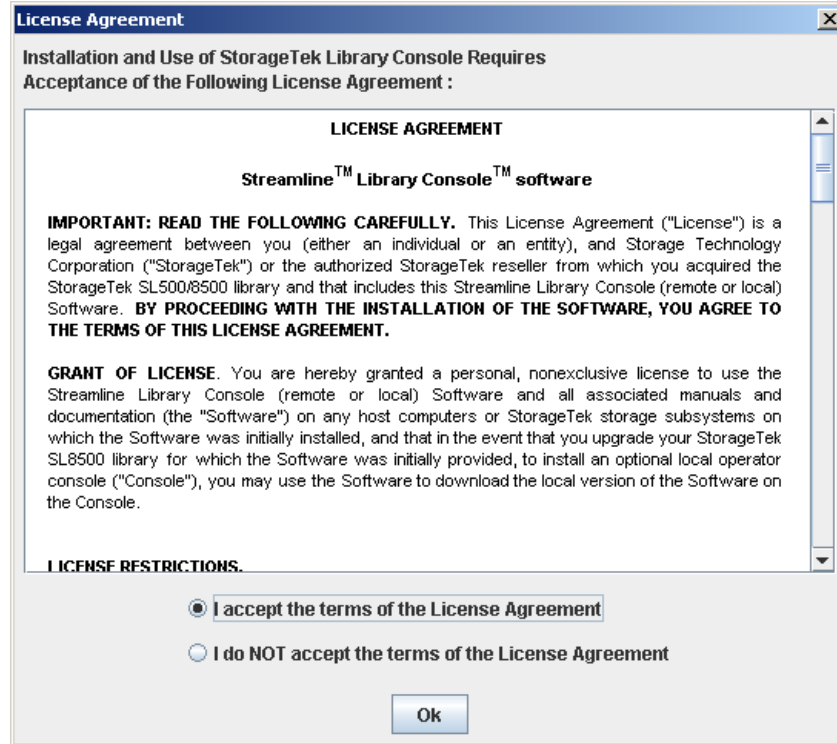
6. If this is the first time you are running the Web-launched SL Console, a digital signature warning popup appears.



Complete the popup as follows:

- a. **Verify the Publisher.**
- b. **Optionally click the "Always trust content from the publisher" checkbox. If you make this selection, this popup will not appear during future logins.**
- c. **Click Run.**

7. If this is the first time you are running the Web-launched SL Console, the License Agreement popup appears.



Scroll down to read the complete license agreement. Click, "I accept the terms of the License Agreement", and then click OK.

8. The SL Console Login screen appears.



Enter your login information, and click Log on.

User ID: *SLC_login*

Password: *password*

Library: *library_ID*

where:

- *SLC_login* is the SL Console user ID.
- *password* is the password assigned to this user ID.
- *library_ID* is the library to which you want to connect, expressed in either of the following ways:
 - IP address of the library, in dotted decimal notation (*nnn . nnn . nnn . nnn*)
 - DNS alias of the library

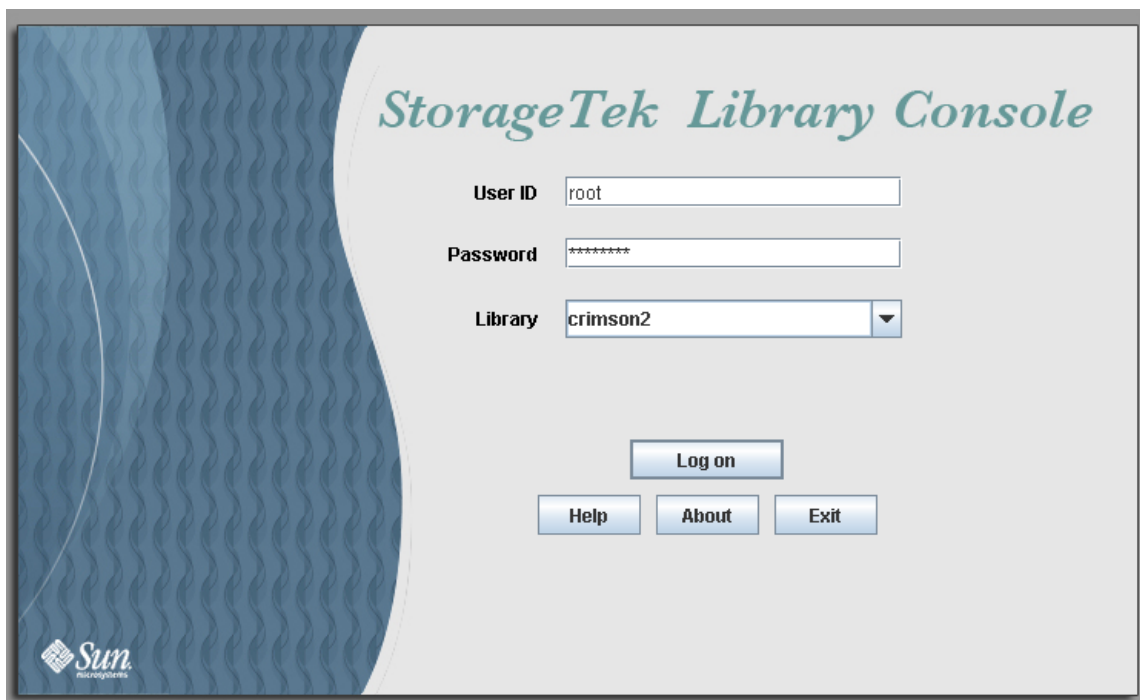
▼ Log in to the Web-launched SL Console Using an Icon

Note – In order to perform this activity, you must first save the Web-launched SL Console `slc.jnlp` file to your client. See [“Log in to the Web-launched SL Console Using a Browser or Command Line”](#) on page 43 for details.

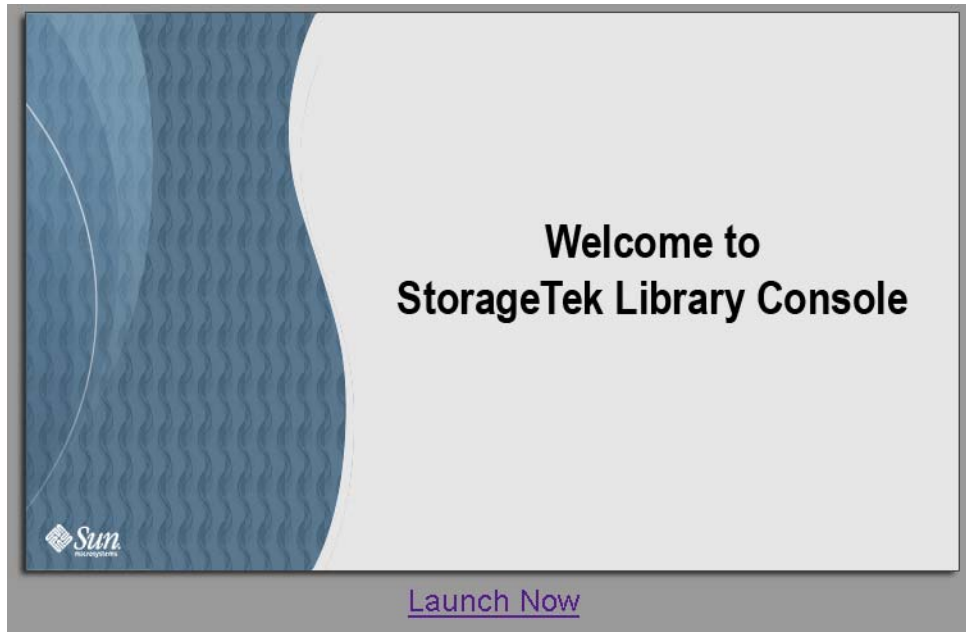
1. Double-click the `slc.jnlp` desktop icon on your client.

The Web Start process retrieves the Web-launched SL Console application from the server. Any updates are downloaded automatically.

- IP address of the library, in dotted decimal notation (*nnn.nnn.nnn.nnn*)
- DNS alias of the library

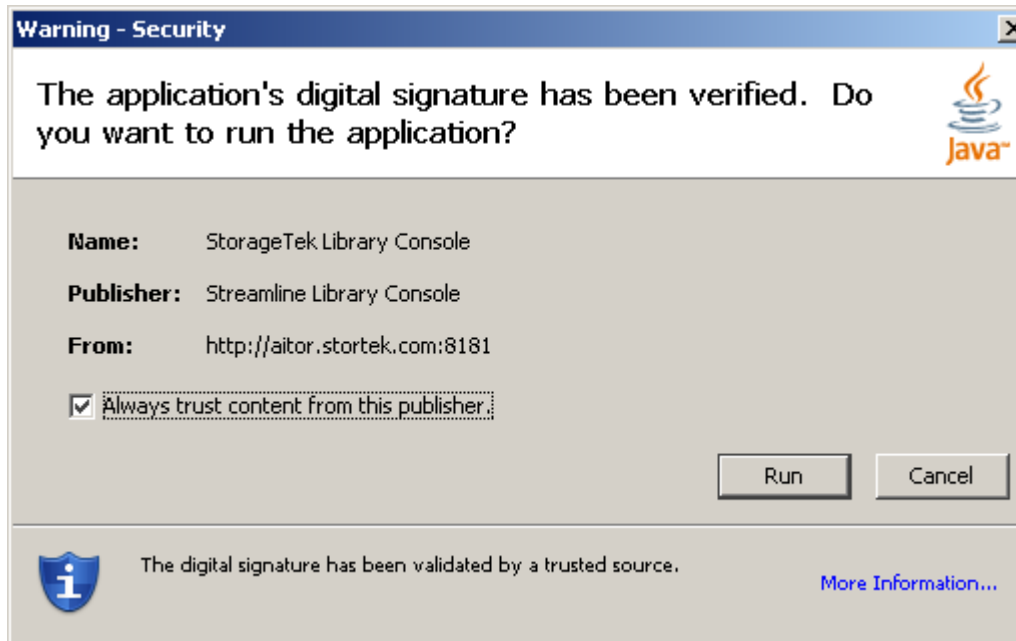


2. The SL Console Launch screen appears. Click Launch Now.



The Web Start process retrieves the Web-launched SL Console application from the server. Any updates are downloaded automatically.

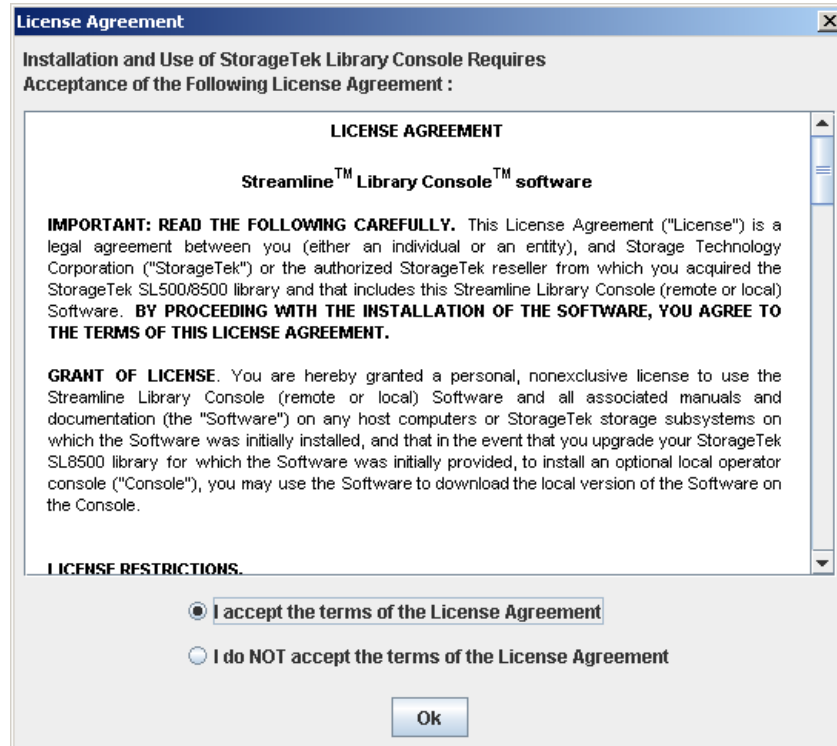
3. If this is the first time you are running the Web-launched SL Console, a security warning popup appears.



Complete the popup as follows:

- a. Verify that the Publisher is Sun Microsystems, Inc.

- b. Optionally click the “Always trust content from the publisher” checkbox. If you make this selection, this popup will not appear during future logins.
 - c. Click Yes.
4. If this is the first time you are running the Web-launched SL Console, the License Agreement popup appears.



Scroll down to read the complete license agreement. Click, “I accept the terms of the License Agreement”, and then click OK.

5. The SL Console Login screen appears.



Enter your login information, and click Log on.

User ID: *SLC_login*

Password: *password*

Library: *library_ID*

where:

- *SLC_login* is the SL Console user ID.
- *password* is the password assigned to this user ID.
- *library_ID* is the library to which you want to connect, expressed in either of the following ways:
 - IP address of the library, in dotted decimal notation (*nnn.nnn.nnn.nnn*)
 - DNS alias of the library

SL Console Reports

The SL Console reports provide information on the library and its associated devices (for example, drives, robots, and CAPs), events, and tape cartridges. You can use the library reports to monitor library activity and identify potential problems. In addition to displaying the reports on-screen, you can save the report data to a file, which you can then print or include in e-mail.

All report output is a static display of information sent from the library controller at the time the report is generated. The SL Console does not update the information dynamically unless you explicitly select the **Update** button on the Options bar.

Note – Running multiple instances of the standalone SL Console or Web-launched SL Console on the same PC or workstation can cause problems such as inconsistent data on reports. It is recommended that only one user at a time produce SL Console reports on a PC or workstation, unless all instances of the SL Console are the same version.

Report Types

The SL Console provides the following types of reports:

- Log—detailed system event logs
- Statistics—statistical information on library operations
- Status Detail—details on the status of the library and associated devices, such as CAPs, drives, and robots
- Status Summary—summary information on the status of the library and associated devices
- Version—details about library hardware and software versions

▼ Generate a Report

1. Select **Tools > Reports**.
2. On the report tree, expand the folder containing the report you want to generate (**Log, Statistics, Status Detail, Status Summary, or Version**).
3. Click the name of the report you want to generate.
4. The current report data is displayed.

Report Options Bar

The Options bar on each report allows you to perform the following functions:

- [Search the report for a specified text string](#)
- [Update the report with current data](#)
- [Save the data to a file](#)

▼ Search the report for a specified text string

1. **Click Search.**
2. **In the Search Text box, enter the text string you want to search for. The entry is case-sensitive. Wildcards are not supported.**
3. **Click Search.**

All occurrences of the string are highlighted.

▼ Update the report with current data

1. **Click Update.**

The screen display is refreshed with current data from the library controller.

▼ Save the data to a file

1. **Click Save.**
2. **In the Save In pull-down menu, select a folder.**
3. **In the File Name box, enter the file name to which you want to save the data.**
4. **In the Files of Type pull-down menu, select the format in which you want to save the data (HTML, Text, or XML).**
5. **Click Save.**

Note – If the file exists already, the system prompts you to verify that you want to replace it.

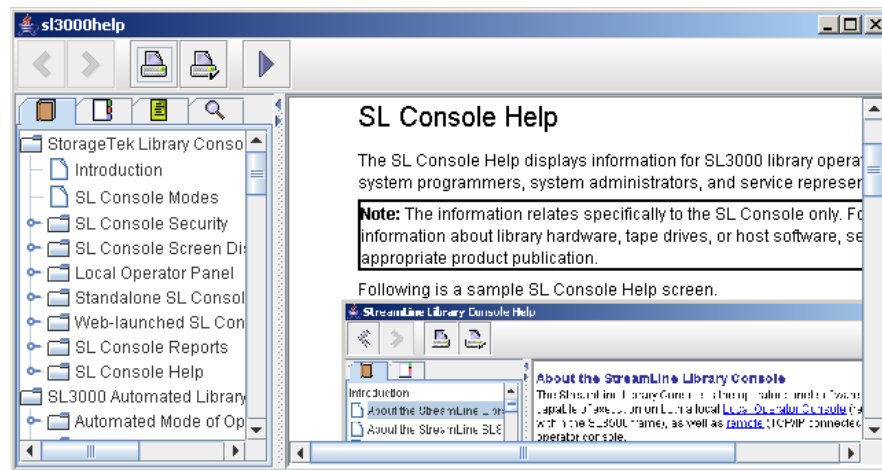
Once saved, you can print the file or include it in e-mail. This may be useful for communicating about issues with your Sun service representative.

SL Console Help

The SL Console Help displays information for library operators, system programmers, system administrators, and service representatives.

Note – The information relates specifically to the SL Console only. For information about library hardware, tape drives, or host software, see the appropriate product publication.

Following is a sample SL Console Help screen.



▼ Access the SL Console Help

You can display the SL Console Help from any SL Console screen. Use either of the following methods:

- To display context-sensitive help for the current SL Console screen, click the ? button in the Options bar.
- To display general help information, click **Help > Contents** in the Menu bar.







Help Navigation

The left panel of the SL Console Help screen displays either of the following:

- Table of contents (TOC)—An outline of topics and subtopics
- Index—A list of terms and topics, in alphabetical order

The right panel displays the Help topic itself.

The top of the SL Console Help screen includes the following navigation buttons.

Button	Action
 Back	Retraces your steps, going backward one topic at a time.
 Forward	Retraces your steps, going forward one topic at a time.
 Print	Displays the Print popup, which allows you to print one or more topics: <ul style="list-style-type: none"> ■ To print the current topic, click the Print button. ■ To print a different topic, click the topic title in the SL Console Help table of contents, and click the Print button. ■ To print more than one topic, highlight the topics in the SL Console Help table of contents by pressing Shift-Click or Ctrl-Click, and then click the Print button.
 Print Setup	Displays the Page Setup popup, which allows you to modify your print page layout.
 TOC	Displays the SL Console Help table of contents.
 Index	Displays the SL Console Help index.

Tips for Using the SL Console Help

- You can minimize, maximize, or resize the Help screen to accommodate your needs.
- You can resize the left and right panels of the Help screen by clicking the border between them and dragging it left or right.
- Most topics include a **Related Topics** button at the bottom of the page. Click on this button to display and navigate to help topics containing related information.

SL500 Automated Library Operations

Automated Mode of Operation

When in automated mode of operation, the library automatically mounts and dismounts cartridges without physical intervention by a person.

Automated operations include the following activities:

- Mounting and dismounting cartridges
- Entering and ejecting cartridges through the CAP
- Logging library events
- Drive cleaning

Cartridge Mount and Dismount Activities

The primary function of the library is the automated mounting and dismounting of cartridges. Host mount and dismount commands are accepted by the library controller and translated into robotic commands that are performed by the HandBot.

Mount Sequence

A simplified mount sequence involves the following steps:

1. A host requests that a specific volume serial number (VOLID) be mounted in a drive.
2. The library controller transmits to the host that the VOLID is located within the library and a drive is available to satisfy the mount request.
3. The library assumes responsibility for the mount.
4. The host command is translated by the library controller into motion commands for the HandBot.
5. The cartridge is taken from its storage cell and placed in the drive.
6. The library returns status to the host that the mount operation is completed.
7. The drive performs the read/write activity directed by the host.

Dismount Sequence

A simplified dismount sequence involves the following steps:

1. A host requests that a specific VOLID be dismounted from a drive.
2. The library controller transmits to the host that the VOLID is located in the drive and the library is available to satisfy the dismount request.
3. The library assumes responsibility for the dismount.
4. The host command is translated by the library controller into mechanical commands for the HandBot.
5. The cartridge is taken from the drive and placed into its home cell.
6. The library returns status to the host that the dismount operation is completed.

Determining When the Library is Not in Automated Mode

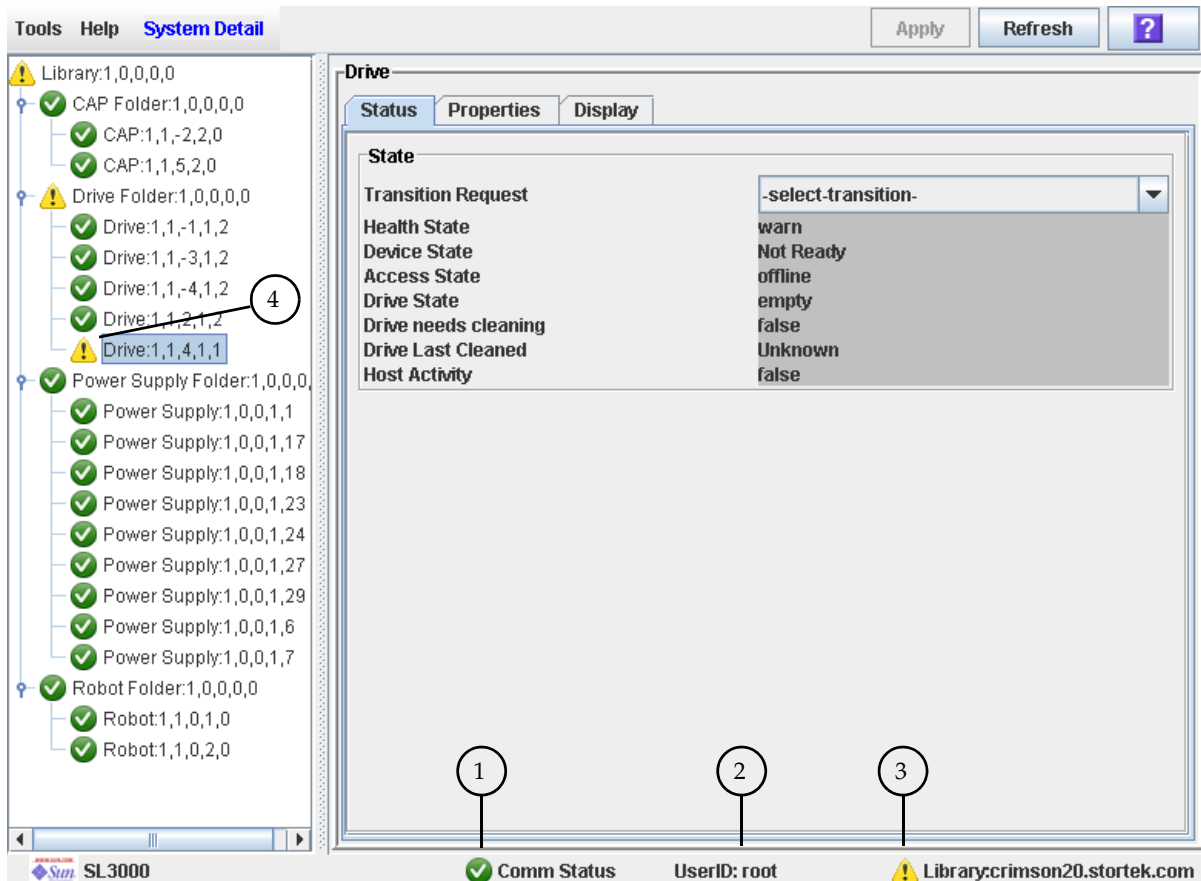
The library is not in automated mode when it is not able to accept host requests. The following conditions indicate that the library is not in automated mode:

- A library access door is open.
- The HandBot does not automatically mount and dismount cartridges.
- The device tree in the SL Console indicates that there is a problem with the library.



Library and Device Status





The SL Console screen displays health indicators for each of the following devices:

- Library
- Drives
- CAPs
- Power supplies
- Robots (HandBot)



The following table describes the health monitor indicators.

Indicator	Description
1	<p>Comm Status</p> <p>Current status of the communication channel between the SL Console and the library controller. Possible icons are:</p> <ul style="list-style-type: none">  Normal communications. The heartbeat monitor flashes periodically when the SL Console is communicating normally with the library controller.  A warning. This icon appears when the server response takes longer than 10 seconds.

	Indicator	Description
		An error. This icon appears when the server response takes longer than 30 seconds.
2	Userid	Userid currently logged in to the SL Console.
3	Library	Library to which the SL Console is connected, and a graphical representation of the current health of the library and its devices. Possible icons are: <ul style="list-style-type: none">  All library devices are functioning normally.  A warning. One or more devices in the library is offline or operating in a degraded state.  An error. One or more devices in the library has experienced a failure.
4	Device health icon	Current status of the indicator device. When the library indicator shows a warning or error, use this indicator to determine which devices are experiencing abnormal conditions.

Communications Failures

If the SL Console loses communication with the library controller, after about 30–60 seconds, the heartbeat monitor turns gray, then red, and the following error message appears:

Heartbeat message not received from the library controller.

You must log off from the SL Console and then log on again to restore communication.

Viewing Library Information

The **System Details > Library** menu provides options for viewing and modifying library information, such as library configuration and status and drive auto cleaning configuration. For complete details, see the following topics:

- [“Library Management Tasks” on page 66](#)
- [“Drive Cleaning Tasks” on page 105](#)

CAP Operations

Note – This section describes general CAP activities applying to all libraries. For specific information on CAP activities in partitioned libraries, see [“Partitions and CAPs” on page 151](#).

CAPs (cartridge access ports) allow a library operator to enter or eject cartridges to or from the library. You can use the CAPs only when the library is in automated mode.

The CAP in the Base Module has one five-cell magazine; the CAP in the Drive Expansion Module has two five-cell magazines. Optionally, the CAP can be configured for five (in Base Module) or ten (in expansion module) additional storage cells instead of enter and eject operations.

Cartridge Management

Recovery Moves

Note – This feature is available starting with SL500 firmware version 1026 and SL Console version 2.40.

Using the recovery move diagnostic function, you can move a cartridge from one location to another. For example:

- You can return a cartridge to its original location from a CAP cell, drive, or another storage cell location.
- You might decide to group cartridges by data type or to move them closer to their assigned drives.
- You can eject a cleaning or diagnostic cartridge that has expired.
- You can enter a new cleaning or diagnostic cartridge and move it to a reserved storage cell.

A cartridge currently in a storage cell can be moved only to a CAP, a reserved cell, or another storage cell, not to a drive. A cartridge currently in a drive, CAP, or reserved cell can be moved to any other unoccupied location in the library. See the following procedures for complete details:

- [“Move a Specified Cartridge by VOLID” on page 89](#)
- [“Move a Cartridge From a Specified Location” on page 93](#)

Before moving any cartridge, it is helpful to generate a Cartridge Summary Report, which lists the contents of library storage cells. See [“List Library Cartridges” on page 88](#) for details. This report helps you determine where cartridges are currently located and which storage cells are unoccupied.

Drive Cleaning

The library tape drives require periodic cleaning to prevent read and write errors. The library supports two methods of drive cleaning:

- [Automatic Cleaning](#)
- [Manual Cleaning](#)

Cleaning Cartridges

Note – You must use cleaning cartridges whose media types are compatible with the drive types in the library.

Cleaning cartridges have a limited life span. Refer to your tape drive publications to determine the maximum usage count, or threshold, for each type of cleaning cartridge.

When you enter a cleaning cartridge into the library, the library controller considers the cartridge to be new and sets the usage count to zero. It is therefore important to enter only new cleaning cartridges into the library.

Whenever a cleaning cartridge is used to clean a drive, its usage count is incremented. When a cleaning cartridge's usage count exceeds its threshold, the cartridge must be replaced.

You can use the SL Console to display the status of a cleaning cartridge at any time. The following statuses are possible:

- OK—The cartridge is still within the threshold.
- Warning—The cartridge has reached the threshold.
- Expired—The cartridge has exceeded the threshold.

Ejecting Expired Cleaning Cartridges

You must use care when ejecting expired cleaning cartridges from the library. If you move an expired cleaning cartridge to a CAP and open the CAP, you must remove the cartridge. If you close the CAP without removing the cleaning cartridge first, the HandBot will re-enter the expired cartridge into the library, and the library controller will reset the usage count to zero.

Automatic Cleaning

When auto clean is enabled, the library controller automatically initiates a cleaning operation whenever a drive requires cleaning. The HandBot retrieves an appropriate cleaning cartridge (based on drive type) from the reserved cells, mounts the cartridge onto the drive, and returns the cartridge to its assigned storage cell after cleaning is complete.

Manual Cleaning

If auto clean is disabled, you must initiate drive clean operations manually. To verify whether a drive needs cleaning, you can use the SL Console to display a drive's cleaning status and the date when it was last cleaned.

Even if auto clean is enabled, you may want to clean a drive before it is due. Therefore, you can initiate a manual clean at any time.

To locate the correct type of cleaning cartridge for a particular drive, you can use the SL Console to generate a cartridge summary and drive details report.

Automated Operation Tasks

Library automated operation tasks are divided into the following categories:

- “Library Management Tasks” on page 66
- “CAP Management Tasks” on page 80
- “Cartridge Management Tasks” on page 84
- “Drive Management Tasks” on page 98
- “Drive Cleaning Tasks” on page 105
- “Robot Monitoring Tasks” on page 115

Library Management Tasks

Task	Page
Display Library Status	67
Display Library Configuration Information	68
Set the Library Fibre Channel Port Address	69
Display Library Controller Properties	71
Display Library Physical Configuration	72
Display Library Statistics	73
Display a Library Report	74
Search a Library Report	76
Save Library Report Data to a File	78

▼ Display Library Status

View the current operational state of the library. These values are updated whenever there is host activity, background operations, or operator activity.

Note – This information is also available through **Reports > Library Details**. See [“Display a Library Report”](#) on page 74 for detailed instructions.

1. Select **Tools > System Detail**.
2. Click the **Library** folder on the device tree.
3. Click the **Status** tab.

The screen displays the current status of the library.

The screenshot shows the SL500 System Detail interface. The left navigation pane shows a tree structure with the following items:

- Library:1,0,0,0 (checked)
- CAP Folder:1,0,0,0 (checked)
- Drive Folder:1,0,0,0 (checked)
 - Drive:0,1,2,9 (checked)
 - Drive:0,2,1,9 (checked)
 - Drive:0,2,3,9 (checked)
 - Drive:0,2,4,9 (checked)
- Robot Folder:1,0,0,0 (checked)

The main content area is titled "Library" and has tabs for "Status", "Properties", "Statistics", "Auto Clean", and "SNMP". The "Status" tab is active, showing the following information:

State

Operational State	Operational
Access Door	Closed

Power Supply

Module	Position	Working	Status
1	1	True	Inoperative
2	1	True	Operative

Fan

Module	Position	Working	Status
1	1	True	Operative
1	2	True	Operative

The status bar at the bottom shows:

- SL500
- Comm Status (checked)
- UserID: advsv
- Library:green11.stortek.com (checked)

▼ Display Library Configuration Information

Use this procedure to display the physical, mechanical, and logical configuration of the library. Some of the information can be set up automatically during library initialization, while other information can be defined by the user.

Note – This information is also available through **Reports > Library Information**. See [“Display a Library Report” on page 74](#) for detailed instructions.

1. Select **Tools > System Detail**.
2. Click the **Library** folder on the device tree.
3. Click the **Properties** tab, and then the **General** tab.

The screen displays detailed information about the library.

The screenshot shows the 'System Detail' window for a library. On the left is a tree view with the following items:

- Library:1,0,0,0 (checked)
- CAP Folder:1,0,0,0 (checked)
- Drive Folder:1,0,0,0 (checked)
 - Drive:0,1,2,9 (checked)
 - Drive:0,2,1,9 (checked)
 - Drive:0,2,3,9 (checked)
 - Drive:0,2,4,9 (checked)
- Robot Folder:1,0,0,0 (checked)

The main window displays the 'Library' configuration under the 'Properties' tab. The 'General' sub-tab is active, showing the following information:

Physical	
Vendor	STK
Serial Number	522000000383
Module Count	2
Total Cell Count	118
Empty Cell Count	106
Drive Count	4
CAP Cell Count	15

Library Interface TCP/IP	
DNS Domain Name	
IP Address	129.80.81.101
IP Subnet Mask	255.255.254.0
MAC Address	00.10.4F.02.BD.2D

Library Host Interface *** REBOOT LIBRARY FOR CHANGES TO TAKE AFFECT ***	
Interface Type	Fibre
LVD Target ID	n/a
World Wide Name Node	500104f00079eb93
Port A World Wide Name	500104f00079eb94
Port A Enabled	true
Port A Loop ID (use 126 for soft addressing)	Not Acquired
Port A Speed (GB)	Not Acquired
Port A Topology	Unknown

At the bottom of the window, the status bar shows: **SL500**, **Comm Status** (checked), **UserID: advsrv**, and **Library:green11.stortek.com** (checked).

▼ Set the Library Fibre Channel Port Address

If the control path for the library is Fibre Channel, you must enable the Library's Fibre Channel Port (port A). The Fibre Channel Port A address locates the library's Port A on the Fibre Channel loop.

1. Select **Tools > System Detail**, and select the **Library** folder from the device tree.
2. Select **Properties > General**.

The screen displays detailed information about the library.

The screenshot shows the Sun SL500 System Detail window. The left pane shows a tree view with 'Library:1,0,0,0' selected. The right pane shows the 'Library' properties under the 'General' tab. The 'Physical' section includes Vendor (STK), Serial Number (522000000383), Module Count (2), Total Cell Count (118), Empty Cell Count (106), Drive Count (4), and CAP Cell Count (15). The 'Library Interface TCP/IP' section includes DNS Domain Name, IP Address (129.80.81.101), IP Subnet Mask (255.255.254.0), and MAC Address (00.10.4F.02.BD.2D). The 'Library Host Interface' section includes Interface Type (Fibre), LVD Target ID (n/a), World Wide Name Node (500104f00079eb93), Port A World Wide Name (500104f00079eb94), Port A Enabled (true), Port A Loop ID (use 126 for soft addressing) (Not Acquired), Port A Speed (GB) (Not Acquired), and Port A Topology (Unknown). The status bar at the bottom shows 'Comm Status' (green), 'UserID: advsrv', and 'Library:green11.stortek.com' (green).

Note – The screen includes the library's world wide ID (the node ID) and the Port A world wide name ID (the port ID). These two IDs are set at the factory and cannot be changed. Each ID is 64 bits and uses the IEEE registered format.

- To enable soft addressing:
 - a. Select **True** from the **Port A Enabled** drop-down list to enable Port A.
 - b. Set the **Port A Loop Id** to 126.
- To enable hard addressing:
 - a. Select **False** from the **Port A Enabled** drop-down list to disable Port A.
 - b. Set the **Port A Loop ID** to value between 1-125.

- c. **Select Apply to save the changes.**
- 3. Reboot the library for the changes to take effect.**

▼ Display Library Controller Properties

View details of the library controller, including the serial number and firmware versions.

Note – This information is also available through **Reports > Library Information**. See [“Display a Library Report”](#) on page 74 for detailed instructions.

1. Select **Tools > System Detail**.
2. Click the **Library** folder on the device tree.
3. Click the **Properties** tab, and then the **Library Controller** tab.

The screenshot displays the Sun SL500 interface. On the left, a navigation tree shows the following structure:

- Library:1,0,0,0
 - CAP Folder:1,0,0,0
 - Drive Folder:1,0,0,0
 - Drive:0,1,2,9
 - Drive:0,2,1,9
 - Drive:0,2,3,9
 - Drive:0,2,4,9
 - Robot Folder:1,0,0,0

The main content area is titled "Library" and has tabs for Status, Properties, Statistics, Auto Clean, and SNMP. The Properties tab is active, and the Library Controller sub-tab is selected. The main content area displays the following information:

Library Controller

Model	SL500
Serial Number	n/a

Code Version

Name	Version	Date
Firmware Version	1250 (6.32.10)	n/a

The bottom status bar shows the following information:

- Comm Status: ✔
- UserID: advsrv
- Library: green11.stortek.com: ✔

▼ Display Library Physical Configuration

View the current physical configuration of the library.

1. Select **Tools > System Detail**.
2. Click the **Library** folder on the device tree.
3. Click the **Properties** tab, and then the **Module** tab.

The screenshot displays the Sun SL500 library management software interface. The main window is titled "Library" and has tabs for "Status", "Properties", "Statistics", "Auto Clean", and "SNMP". The "Properties" tab is active, and within it, the "Module" sub-tab is selected. The "Module Information" section contains a table with the following data:

L,M,R,C Address	Type	Description
1,1,0,0	43	Base multi media drive CAP
1,2,0,0	38	8U multi media storage CAP between drives
1,3,0,0	34	8U multi media drive CAP last

The interface also shows a left-hand navigation pane with a tree view containing "Library:1,0,0,0", "CAP Folder:1,0,0,0", "Drive Folder:1,0,0,0", and "Robot Folder:1,0,0,0". At the bottom of the window, there is a status bar with "Comm Status" (checked), "UserID: advsrv", and "Library:green7.central.sun.com" (checked).

▼ Display Library Statistics

Use this procedure to view library statistics, such as the request, retry, and failure count of the robot and the library uptime.

Note – This information is also available through **Reports > Statistics**. See [“Display a Library Report” on page 74](#) for detailed instructions.

1. Select **Tools > System Detail**.
2. Click the **Library** folder on the device tree.
3. Click the **Statistics** tab.

The screenshot displays the Sun SL500 interface. The top menu bar includes 'Tools', 'Help', and 'System Detail'. Below the menu is a toolbar with 'Apply', 'Refresh', and a help icon. The left sidebar shows a tree view with 'Library:1,0,0,0' selected, and sub-items: 'CAP Folder:1,0,0,0', 'Drive Folder:1,0,0,0', and 'Robot Folder:1,0,0,0'. The main window is titled 'Library' and has tabs for 'Status', 'Properties', 'Statistics', 'Auto Clean', and 'SNMP'. The 'Statistics' tab is active, showing a table of library statistics.

Library Statistics	
Motion Request Count	40991
Motion Retry Count	46
Motion Failure Count	11
Cumulative Machine Uptime	106 day(s), 7 hour(s)

At the bottom of the interface, there is a status bar with the Sun logo and 'SL500' on the left, and three status indicators on the right: 'Comm Status' (green checkmark), 'UserID: advsrv', and 'Library:green7.central.sun.com' (green checkmark).

▼ Display a Library Report

Use this procedure to display library reports available from the **Tools > Reports** menu. Additionally, if you want to search the report data or save it to a file, see the following procedures:

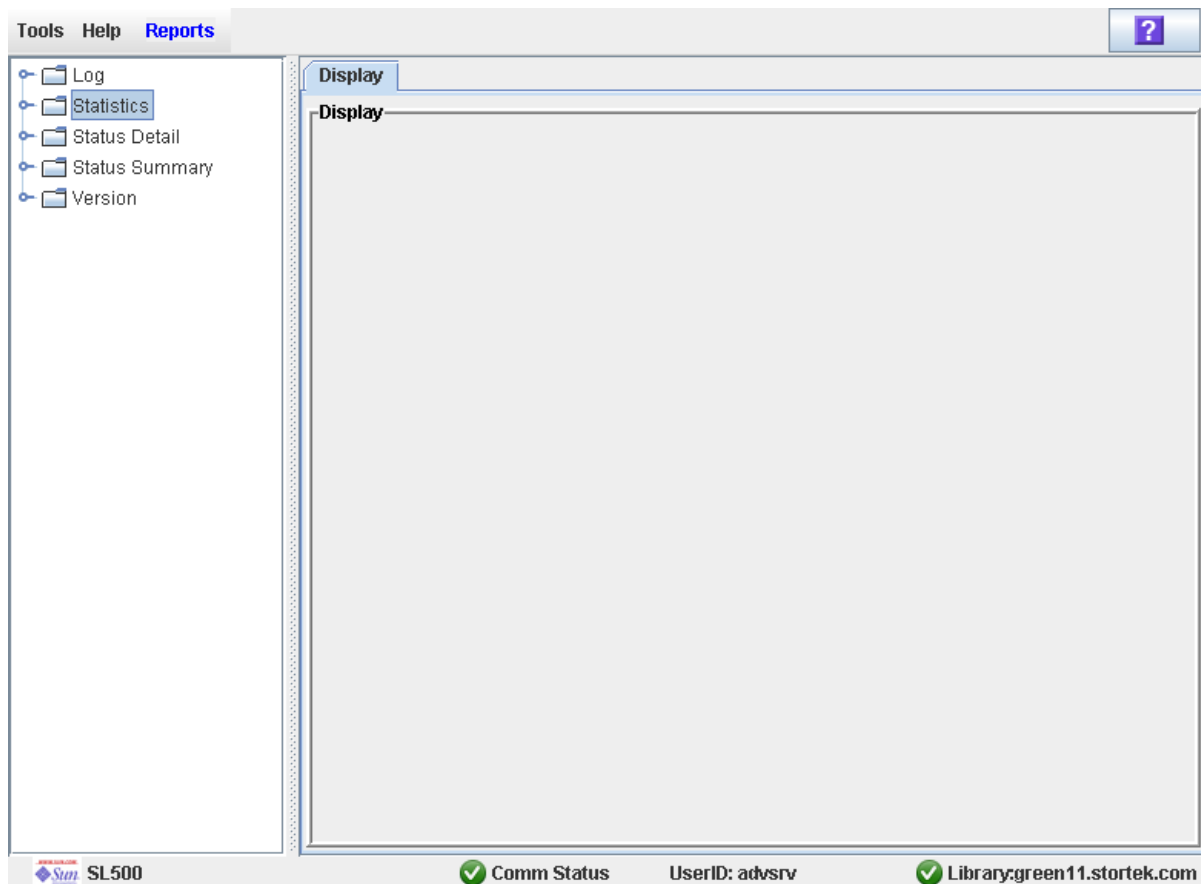
- [“Search a Library Report” on page 76](#)
- [“Save Library Report Data to a File” on page 78](#)

Additional reports are available from the following menus:

- **Tools > Partitions**

1. Select **Tools > Reports**.

The reports **Display** screen appears. All library report options are listed in the navigation bar.



2. In the navigation bar, expand a report category to see the report options.

3. Click the report you want to display.

The specified report is displayed.

The screenshot displays the SL500 software interface. At the top, there is a menu bar with 'Tools', 'Help', and 'Reports'. To the right of the menu bar are buttons for 'Search', 'Update', 'Save', and a help icon. A tree view on the left shows the following structure:

- Log
- Statistics
- Status Detail
 - CAP Details (highlighted)
 - Drive Details
 - Library Details
 - Robot Details
- Status Summary
- Version

The main display area, titled 'Display', shows the 'CAP Details' report with the following content:

CAP Details

Generated on : Thu May 01 15:37:18 MDT 2008

Device CAP Properties

Device Id : *

CAP Properties

Size : 15

Device CAP Status

Device Id : *

CAP Status

Locked : False

CAP State : Open

Status : ok

At the bottom of the interface, there is a status bar with the following information:

- SL500 (with Sun logo)
- Comm Status (with a green checkmark icon)
- UserID: actvsrv
- Library:green11.stortek.com (with a green checkmark icon)

▼ Search a Library Report

Use this procedure to search a library report for a specified text string. This procedure can be performed on any of the library report screens.

1. Select Tools > Reports.

The reports **Display** screen appears. All library report options are listed in the navigation bar.

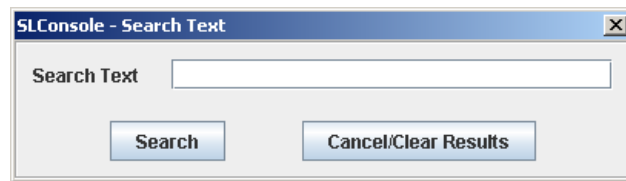
2. In the navigation bar, expand a report category to see the report options.

3. Click the report you want to display.

The specified report is displayed. All report screens include the **Search** button on the Options Bar.

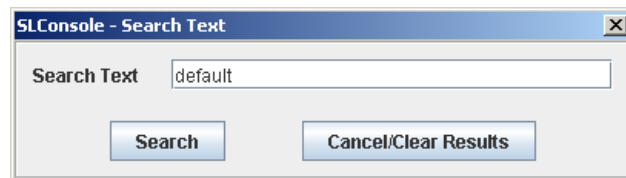
4. Click Search.

The **Search Text** popup appears.

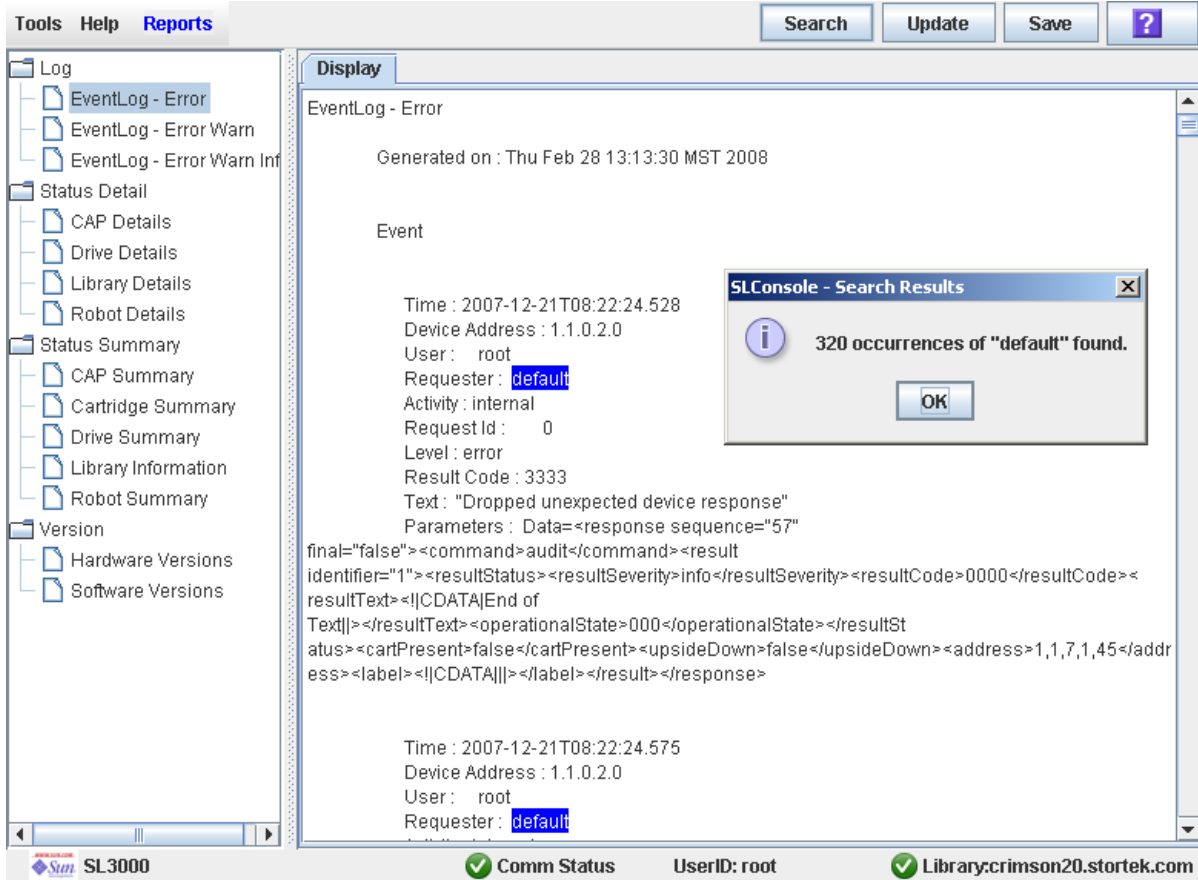


5. Enter the text string you want to search for, and click Search.

Note – The search is case-sensitive, and wildcards are not supported.



6. The Search Results popup appears, displaying the number of occurrences of the text string. All instances of the text string in the report are highlighted.



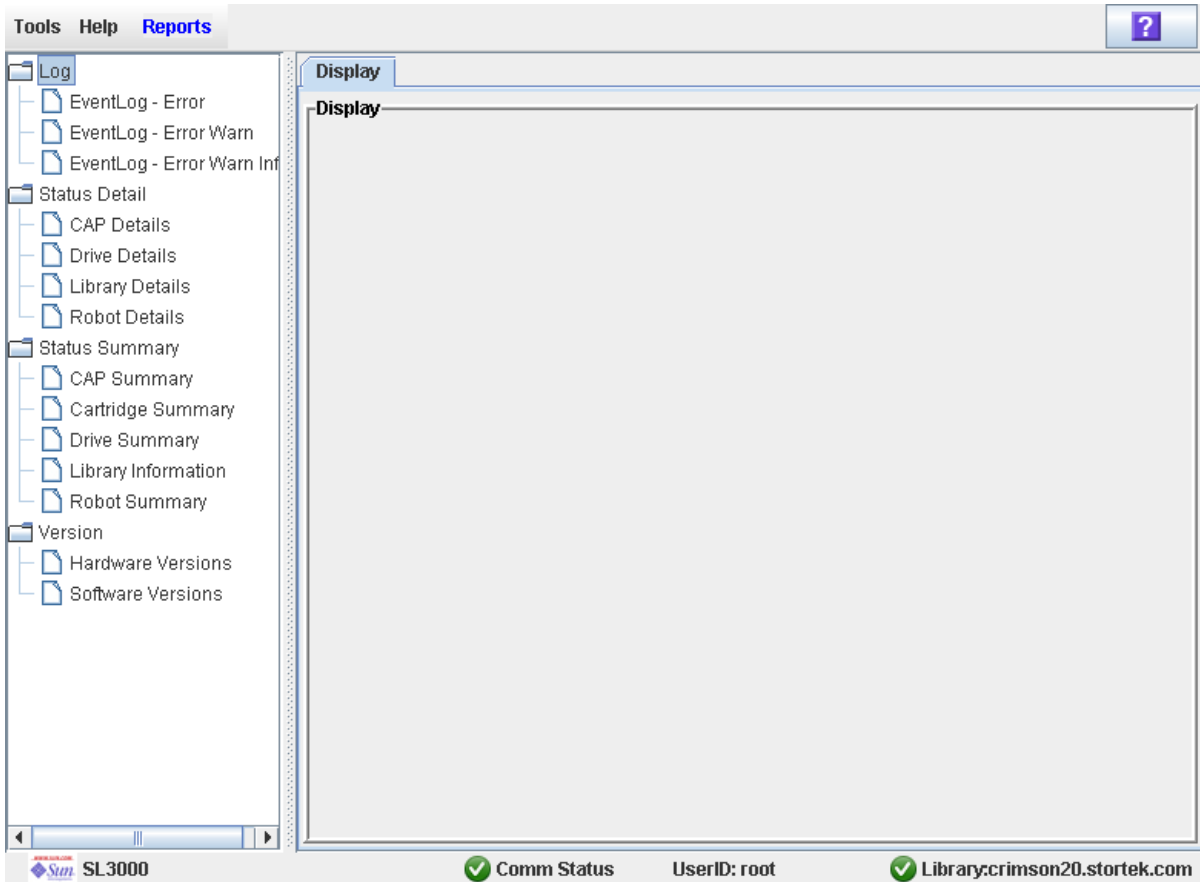
7. Click OK to dismiss the popup.

▼ Save Library Report Data to a File

Use this procedure to display a library report and save the data to a text (.txt) file. This procedure can be performed from any of the library report screens.

1. Select Tools > Reports.

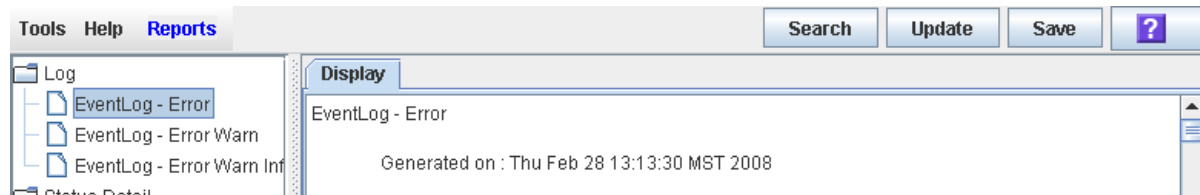
The reports **Display** screen appears. All library report options are listed in the navigation bar.



2. In the navigation bar, expand a report category to see the report options.

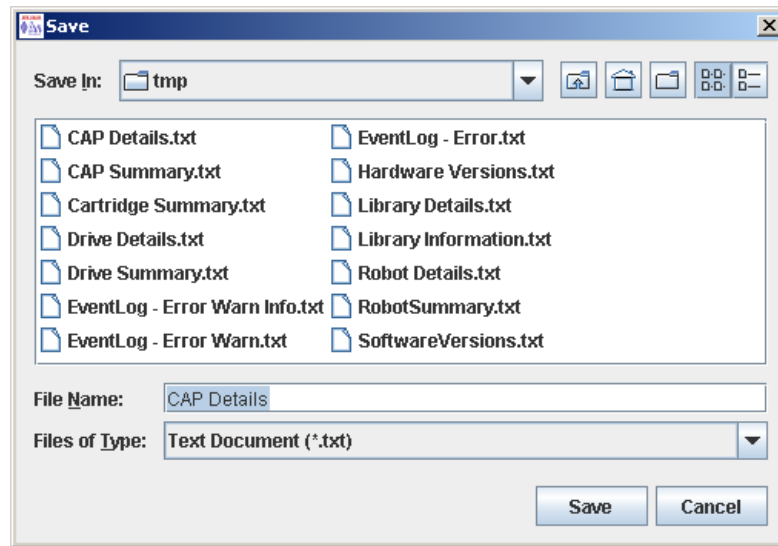
3. Click the report you want to display.

The specified report is displayed. All report screens include the **Save** button on the Options Bar.



4. Click Save.

The **Save** popup appears.



5. Browse to the directory where you want to save the file. In the File Name field, you can accept the default entry or enter a different file name.
6. Click Save.

The data is saved to the specified file.

CAP Management Tasks

Task	Page
Display CAP Summary Information	81
Display Current CAP Status	82
Display CAP Properties	83

▼ Display CAP Summary Information

Use this procedure to display summary information for all CAPs in the library.

Note – This information is also available through **Reports > CAP Summary**. See [“Display a Library Report”](#) on page 74 for detailed instructions.

1. Select **Tools > System Detail. S**
2. Click the **CAP folder** on the device tree.

The screen lists the library CAPs and their locations.

The screenshot shows the 'System Detail' window with a tree view on the left and a 'CAP Data' table on the right. The tree view shows a hierarchy: Library:1,0,0,0 (checked), CAP Folder:1,0,0,0 (checked and selected), Drive Folder:1,0,0,0 (checked), and Robot Folder:1,0,0,0 (checked). The 'CAP Data' table has two columns: 'SL500 L,M,R,C Addr' and 'CAP State'. The table contains one row with the address '0,1,0,8' and the state 'Open'. The window title bar includes 'Tools Help System Detail', 'Apply', 'Refresh', and a help icon. The status bar at the bottom shows 'SL500', 'Comm Status' (checked), 'UserID: advsvr', and 'Library:green11.stortek.com' (checked).

SL500 L,M,R,C Addr	CAP State
0,1,0,8	Open

▼ Display Current CAP Status

Use this procedure to display the current operational state of a CAP.

Note – This information is also available through **Reports > CAP Details**. See [“Display a Library Report” on page 74](#) for detailed instructions.

1. Select **Tools > System Detail**.
2. Expand the **CAP Folder**, and click the **CAP** you want to display.
3. Click **Status**.

The screen displays the current status of the selected CAP.

The screenshot shows the 'System Detail' window for a CAP. The left sidebar shows a tree view with 'Library:1,0,0,0' expanded to 'CAP Folder:1,0,0,0', and 'CAP:0,1,0,8' selected. The main area has 'Status' and 'Properties' tabs. The 'Status' tab shows 'CAP Status' with 'Locked' (False), 'CAP State' (Open), and 'Status' (ok). Below is a 'CAP Cartridges' table with two rows: (0,1,3,8, EN1005) and (0,1,4,8, EN0619). The bottom status bar shows 'Comm Status', 'UserID: advsvr', and 'Library:green11.stortek.com'.

CAP Status	
Locked	False
CAP State	Open
Status	ok

CAP Cartridges	
Location	Cartridge
0,1,3,8	EN1005
0,1,4,8	EN0619

▼ Display CAP Properties

Use this procedure to display static CAP information, including the serial number and number of cells.

Note – This information is also available through **Reports > CAP Details**. See [“Display a Library Report”](#) on page 74 for detailed instructions.

1. Select **Tools > System Detail**.
2. Expand the **CAP Folder**, and click the **CAP** you want to display.
3. Click **Properties**.

The **CAP Properties** screen appears.

The screenshot displays the 'CAP Properties' window within the 'System Detail' view. The left-hand tree view shows the following structure:

- Library:1,0,0,0
 - CAP Folder:1,0,0,0
 - CAP:0,1,0,8 (selected)
 - Drive Folder:1,0,0,0
 - Robot Folder:1,0,0,0

The main content area is titled 'CAP' and has two tabs: 'Status' and 'Properties'. The 'Properties' tab is active, showing the following information:

CAP Properties

Size: 15

CAP Configuration

	Module	I/O or Storage
1		I/O
2		I/O

The bottom status bar of the application shows: SL500, Comm Status (checked), UserID: advsv, and Library:green11.stortek.com (checked).

Cartridge Management Tasks

Task	Page
Enter Cartridges Through the CAP	85
Eject Cartridges Through the CAP	87
List Library Cartridges	88
Move a Specified Cartridge by VOLID	89
Move a Cartridge From a Specified Location	93

▼ Enter Cartridges Through the CAP

The Base Module CAP contains a standard four- or five-cell magazine. See [FIGURE 3-1](#). The expansion module CAP has two magazines.

Use this procedure to enter a cartridge into the library through a CAP.

Note – Before using this procedure, verify that the library CAP Prevent/Allow state is set to Allow. See your SCSI reference manual for syntax.

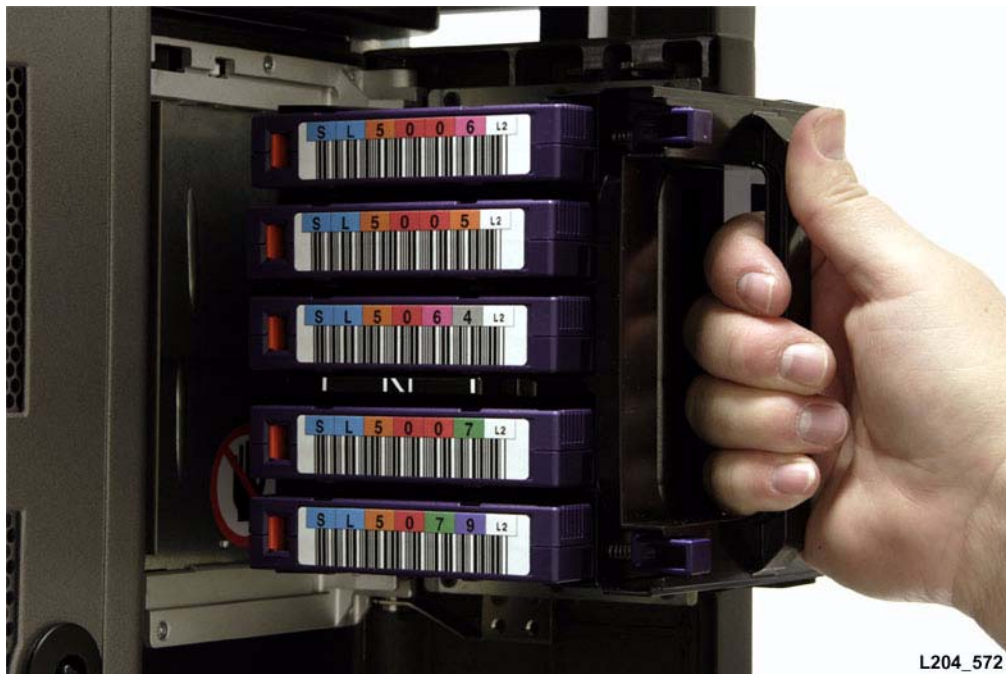
1. Press the CAP Open button on the keypad.

The robot opens the CAP door and the CAP Open LED is turned on.

2. Grip the handle of the magazine and slide it out of the CAP and onto the door.

Note – Do not remove the magazine from the door. Leaving the magazine on the door rails will allow the magazine to slide easier into the CAP.

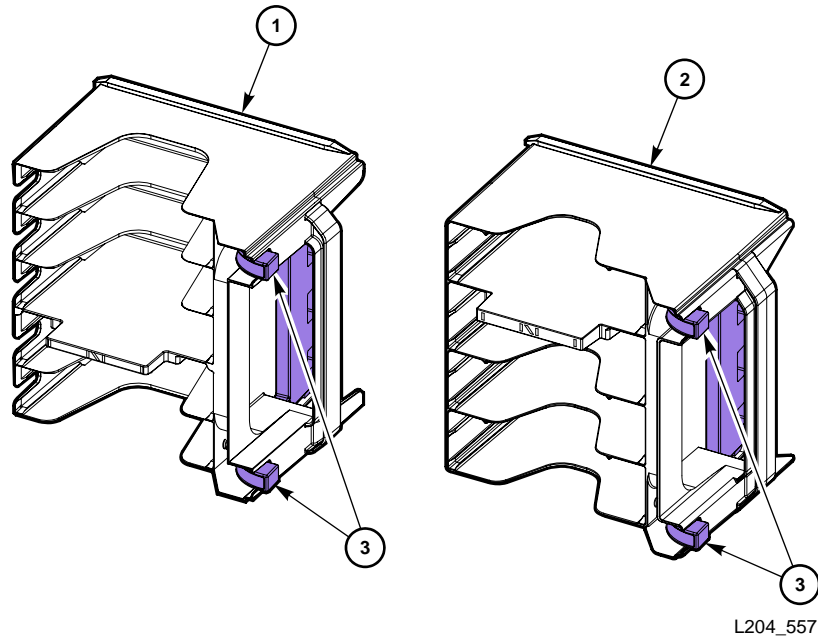
3. Place the cartridge into one of the magazine cells, making sure that the VOLID label is visible and the hub of the cartridge is down.
4. Grip the handle and slide the magazine back into the CAP.



5. Close the CAP door making sure that the door is securely latched.

6. Refer to your tape management software manual for syntax on how to move the cartridges from the CAP to the storage cells.

FIGURE 3-1 Base Module Magazine Comparison



1. Five-cell LTO magazine
 2. Four-cell mixed-media magazine
 3. Cartridge release buttons
-

▼ Eject Cartridges Through the CAP

Use this procedure to eject a cartridge from the library through a CAP.

1. **Type the eject command at the host console. Refer to your tape management software publication for the command syntax.**

The robot places cartridges into the CAP cells until all the specified cartridges are in the CAP.

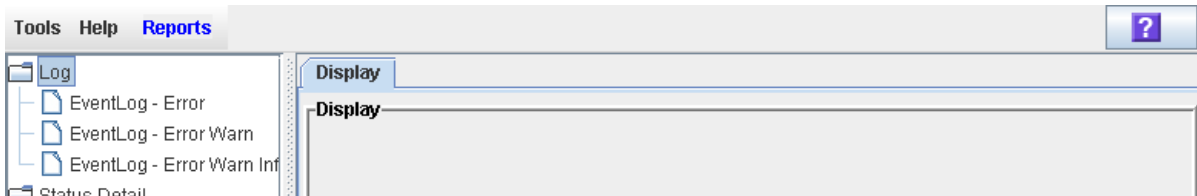
2. **Press the CAP Open button on the keypad.**
3. **The CAP is opened, and the CAP Open LED turns on.**
4. **Remove the ejected cartridges using either of the following methods:**
 - Leave the magazine in the CAP and remove the cartridges from it directly.
 - Remove the magazine from the CAP and press the red cartridge release buttons to remove the cartridges from the magazine.
5. **If you removed the magazine from the CAP, place the magazine onto the door rails and slide it back inside the CAP.**
6. **Close the CAP doors.**

▼ List Library Cartridges

Use this procedure to display information about all library cartridges, including their VOLIDs, locations, and media types.

1. Select Tools > Reports.

All library report options are listed in the navigation bar.

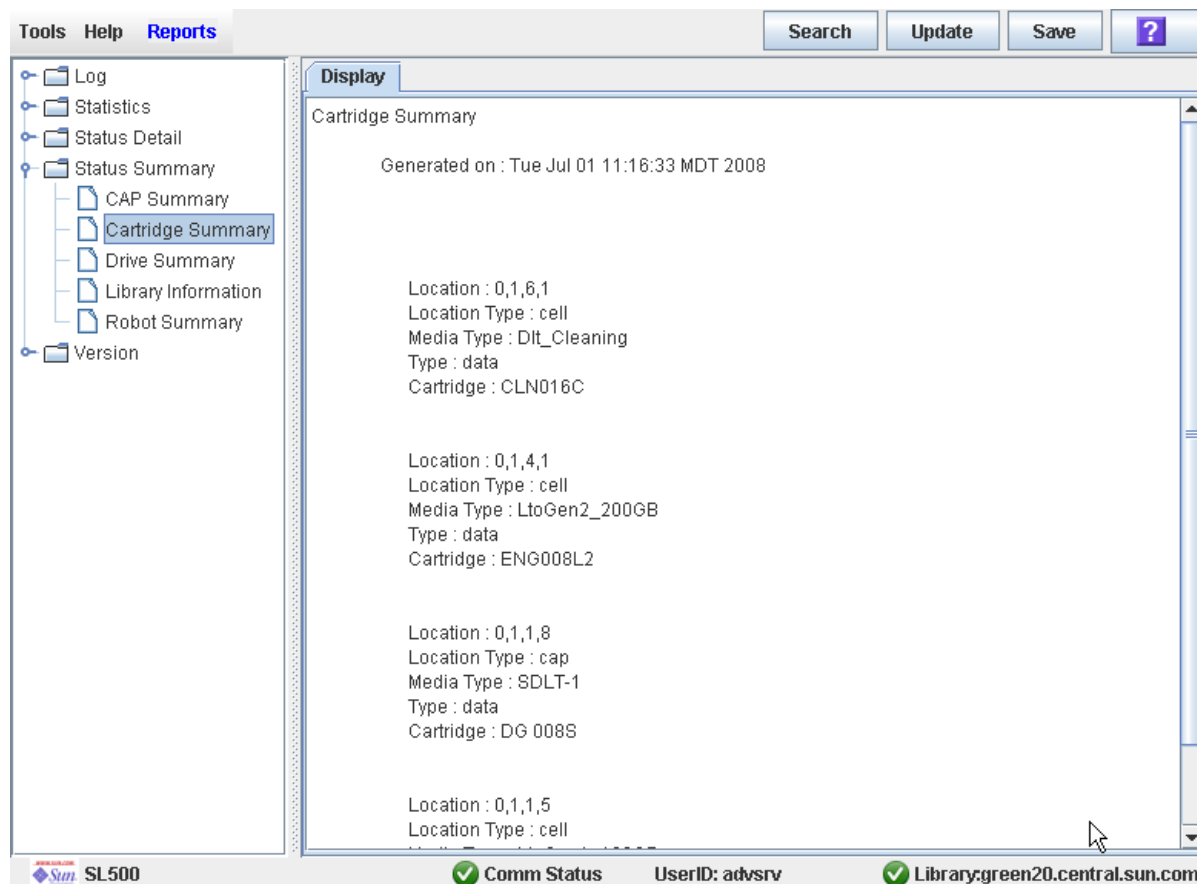


2. Expand the Status Summary folder.

All Status Summary reports are listed.

3. Click Cartridge Summary.

The Cartridge Summary Report is displayed.



4. If you want to search the report data or save it to a file, see the following procedures:

- [“Search a Library Report” on page 76](#)
- [“Save Library Report Data to a File” on page 78](#)

▼ Move a Specified Cartridge by VOLID

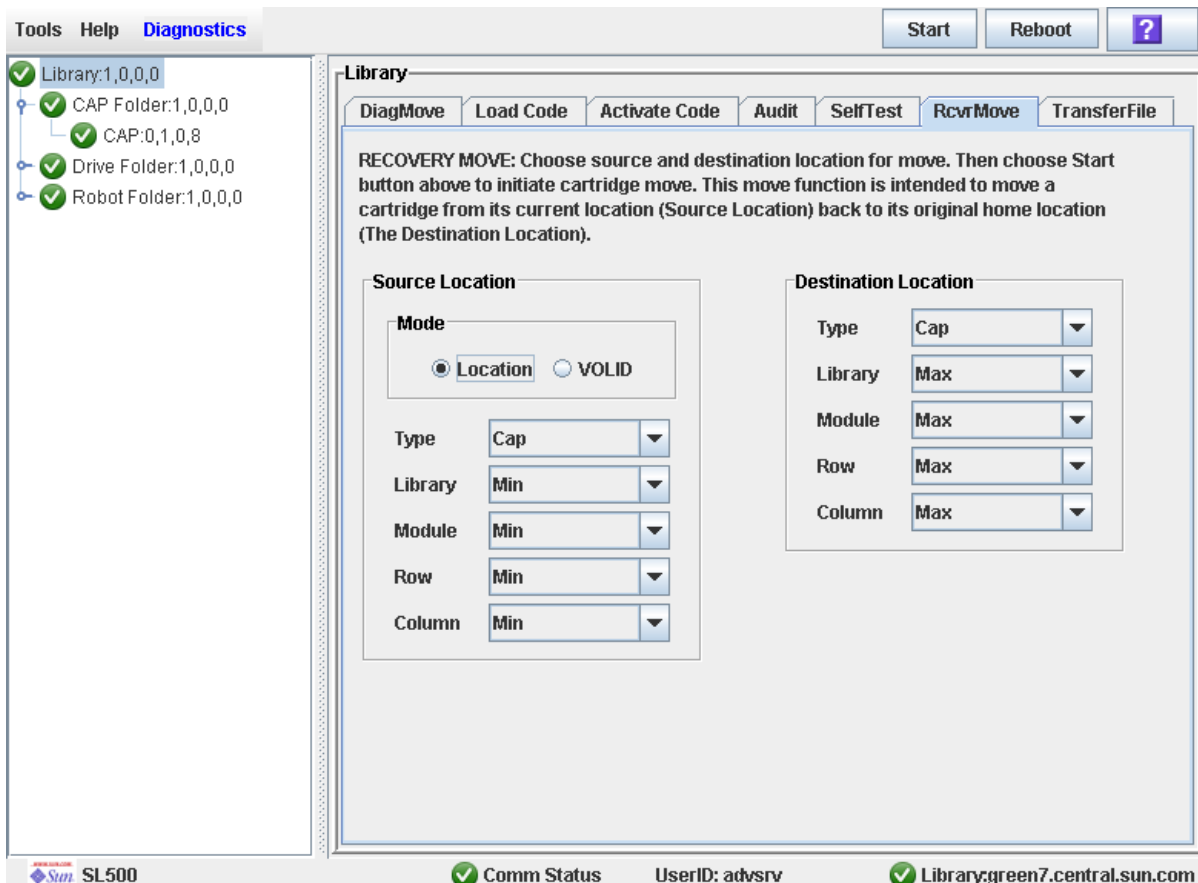
Use this procedure to move a cartridge with a specified VOLID to a specified location within the library.

Note – This procedure updates the cartridge’s location in the library controller database, but not in the host database. Therefore after performing this procedure, you must perform an audit from the host software to update the host database. Failure to do so will cause future mount requests from the host software to fail.

Caution – Use caution when performing this procedure in partitioned libraries. You could inadvertently move a cartridge from one partition to another, allowing the new partition to overwrite data on the cartridge.

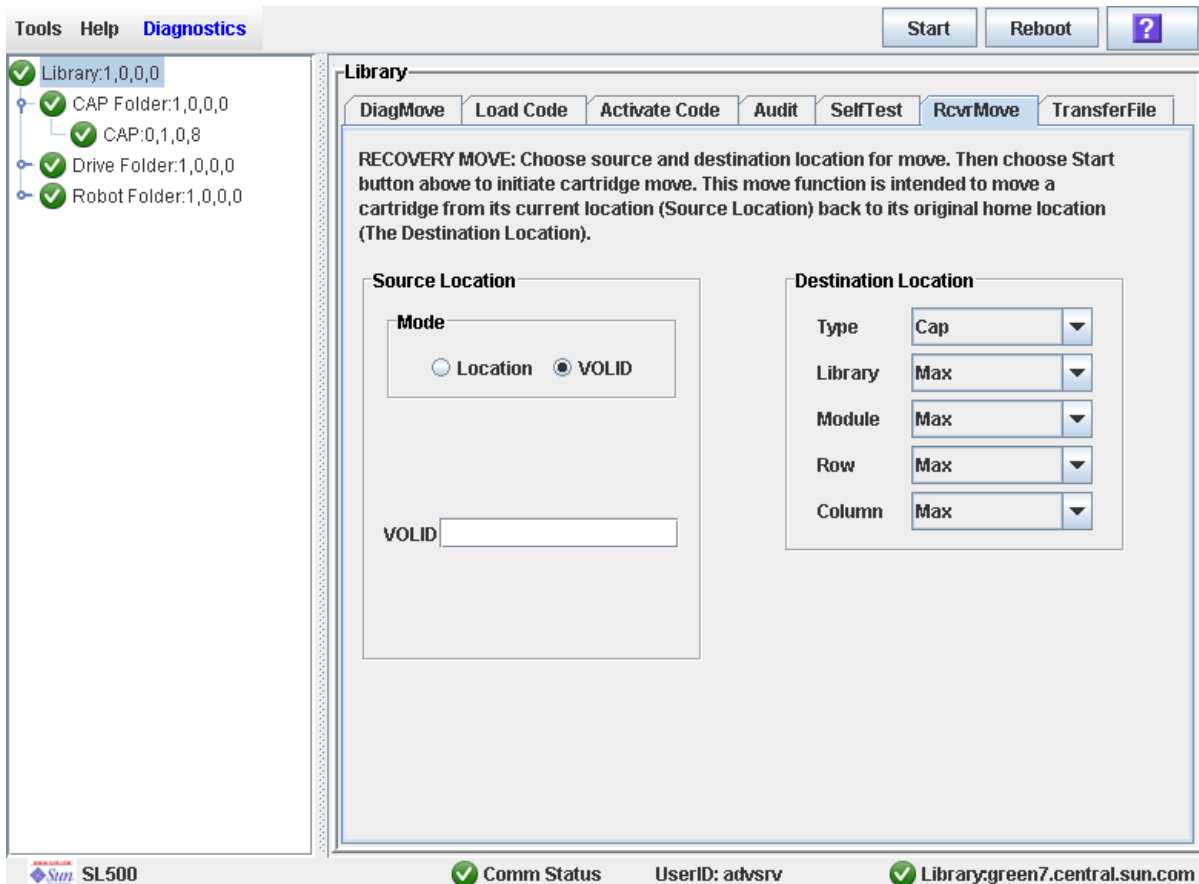
1. Select Tools > Diagnostics, and click the Library folder.
2. Click the RcvrMove tab.

The Recovery Move screen appears.



3. In the Source Location Mode field, click VOLID.

The screen is updated with the appropriate **Source Location** fields.



4. In the **VOLID** field, specify the **VOLID** of the cartridge you want to move.
5. In the **Destination Location Type** pull-down menu, select the type of location where you want to move the cartridge to. Options are:

- CAP
- Storage Slots
- Drive
- Reserved Slots

The following restrictions apply:

- The destination can be a drive only if the source is a CAP or reserved slot.
- For you to move a cartridge to a drive, the cartridge media type must be compatible with the drive type.
- You cannot move a cartridge to a location that is already occupied.
- Although not strictly enforced, it is recommended that only diagnostic or cleaning cartridges be moved to reserved slots.

6. In the **Destination Location** table, specify the library internal address of the destination location by making the appropriate selections in the following pull-down menus:

- Library
- Module

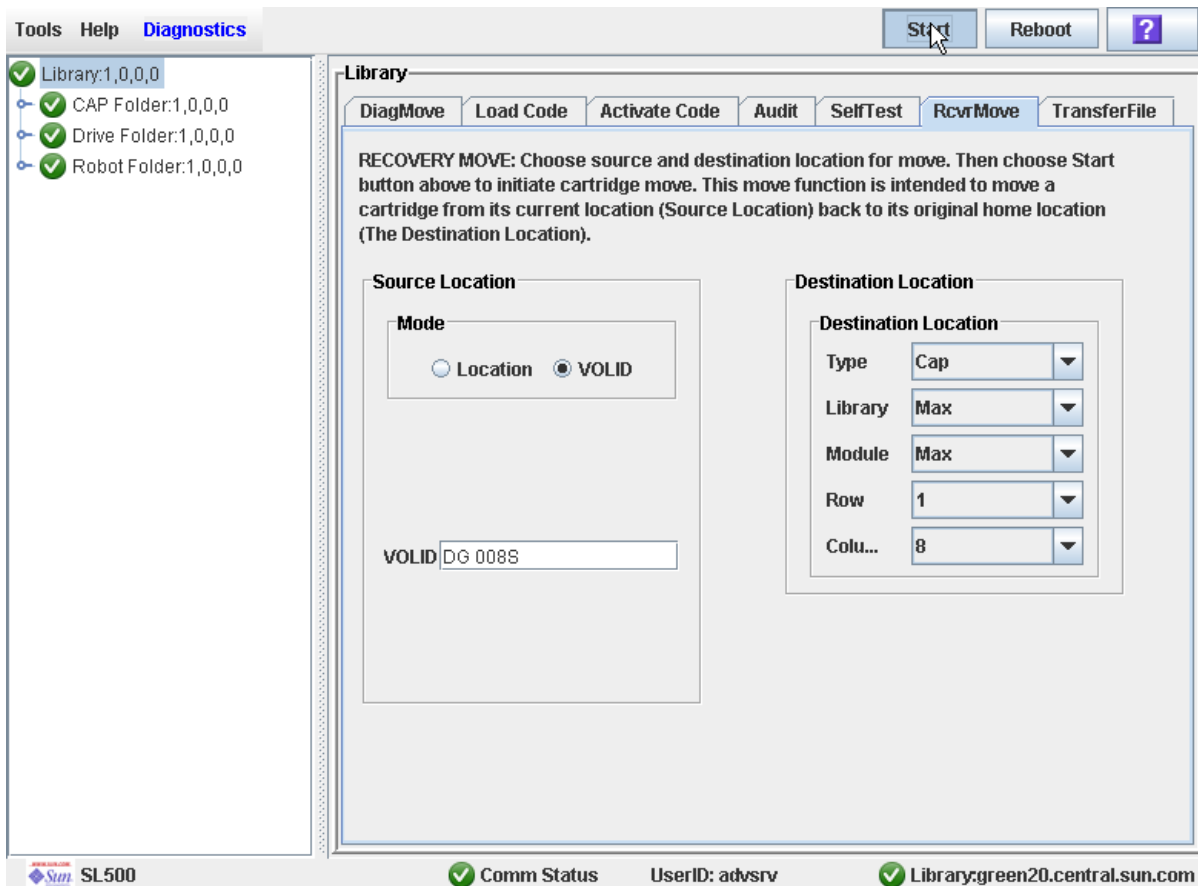
- Row
- Column

The following special selections are available on the pull-down menus:

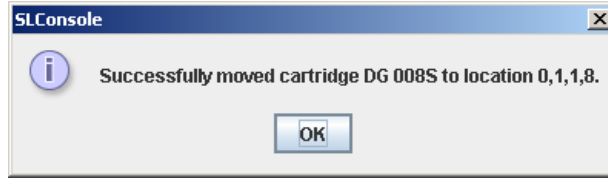
- Min—First element of that location type—library, module, row, or column— in the library
- Max—Last element of that location type—library, module, row, or column— in the library

Caution – If the library is partitioned, make sure to keep the cartridge in the same partition it is currently allocated to. Moving a cartridge to a cell allocated to a different partition could result in a host treating the cartridge as scratch and overwriting the data. Moving the cartridge to an unallocated cell will result in the cartridge being inaccessible to all hosts.

7. Click the Start button in the Options Bar.

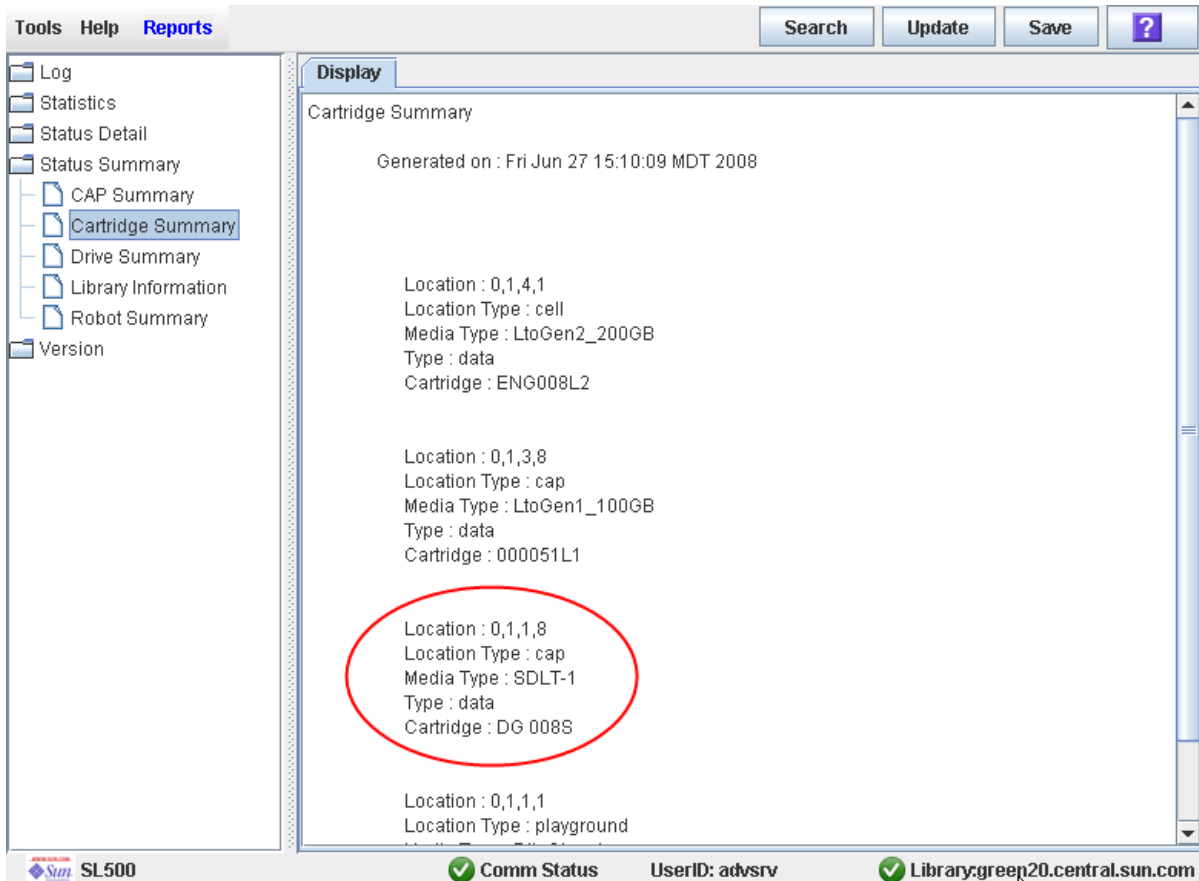


The robot moves the cartridge. A success message popup appears when the operation is complete.



8. Click OK.

9. To verify the new location, you can display a Cartridge Summary Report. See ["List Library Cartridges"](#) on page 88 for details. For example:



10. To update the new cartridge location in the host database, initiate a library audit from the host software. See the appropriate tape management software documentation for the procedures and commands.

▼ Move a Cartridge From a Specified Location

Use this procedure to move a cartridge from one specified location to another within the library.

Note – This procedure updates the cartridge’s location in the library controller database, but not in the host database. Therefore after performing this procedure, you must perform an audit from the host software to update the host database. Failure to do so will cause future mount requests from the host software to fail.

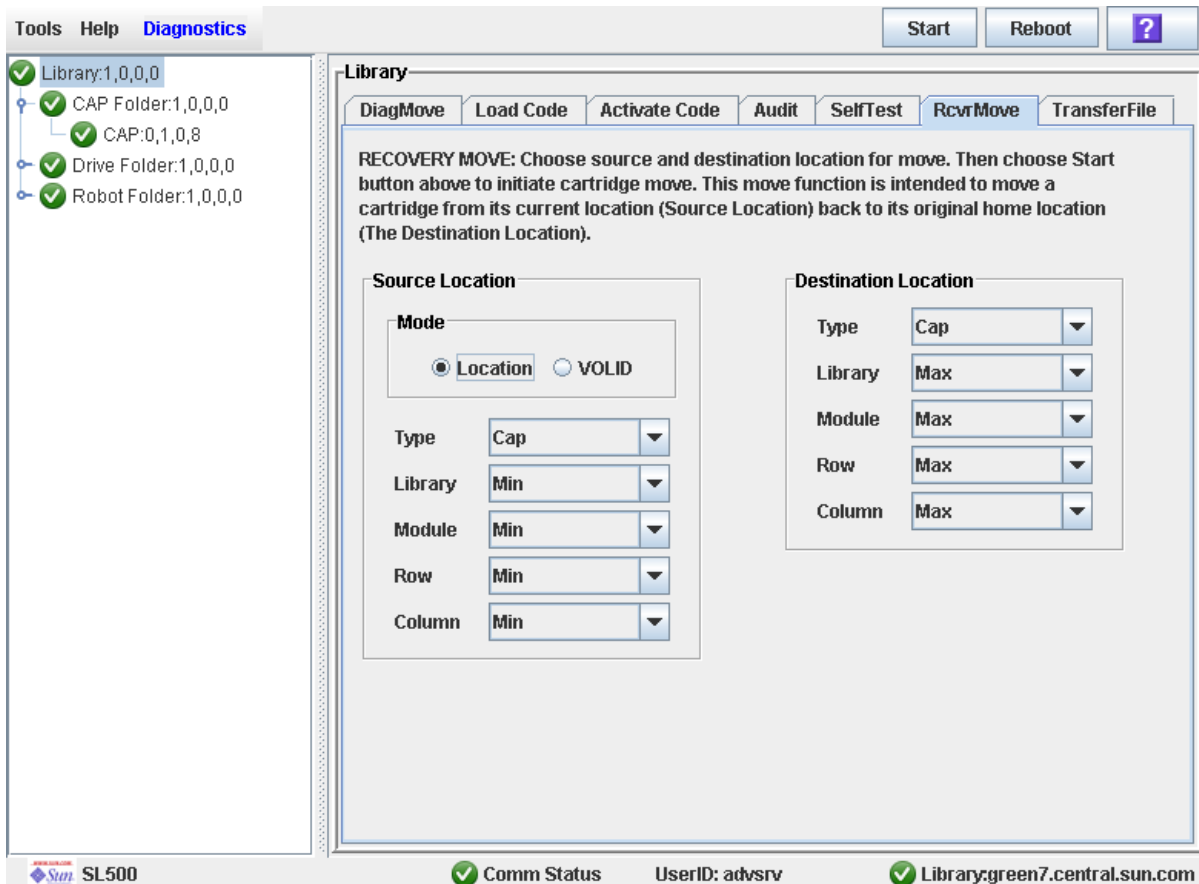
Caution – Use caution when performing this procedure in partitioned libraries. You could inadvertently move a cartridge from one partition to another, allowing the new partition to overwrite data on the cartridge.

1. Select Tools > Diagnostics, and click the Library folder.
2. Click the RcvrMove tab.

The Recovery Move screen appears.

3. In the Source Location Mode field, click Location.

The screen is updated with the appropriate **Source Location** fields.



4. In the **Source Location Type** pull-down menu, select the cartridge's current location type. Options are:
 - CAP
 - Slot
 - Drive
 - Reserved Slots
5. In the **Source Location** table, specify the library internal address of the source location by making the appropriate selections in the following pull-down menus:
 - Library
 - Module
 - Row
 - Column

The following special selections are available on the pull-down menus:

 - Min—First element (library, module, row, or column) in the library
 - Max—Last element (library, module, row, or column) in the library
6. In the **Destination Location Type** pull-down menu, select the type of location where you want to move the cartridge to. Options are:
 - CAP
 - Storage Slots

- Drive
- Reserved Slots

The following restrictions apply:

- The destination location can be a drive only if the source is a CAP or reserved slot.
- For you to move a cartridge to a drive, the cartridge media type must be compatible with the drive type.
- You cannot move a cartridge to a location that is already occupied.
- Although not strictly enforced, it is recommended that only diagnostic or cleaning cartridges be moved to reserved slots.

7. In the Destination Location table, specify the library internal address of the destination location by making the appropriate selections in the following pull-down menus:

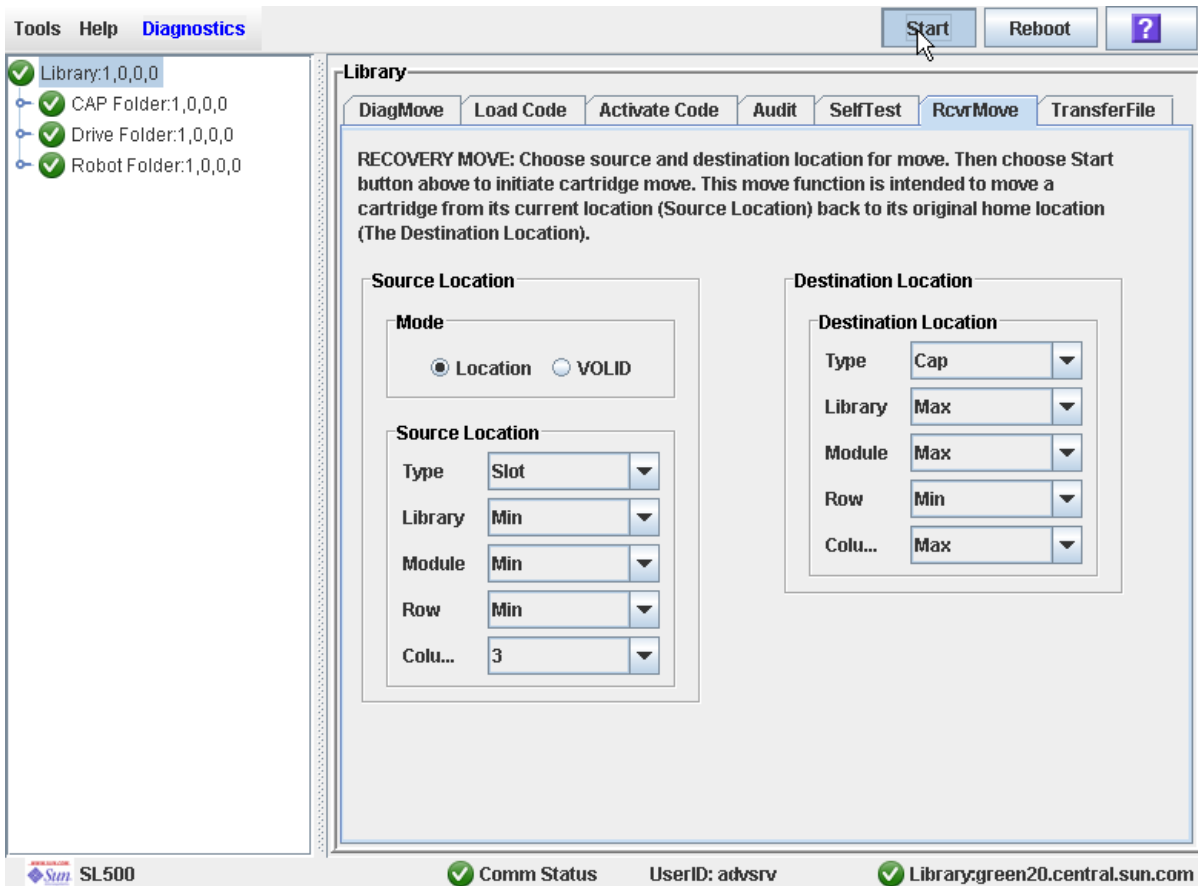
- Library
- Module
- Row
- Column

The following special selections are available on the pull-down menus:

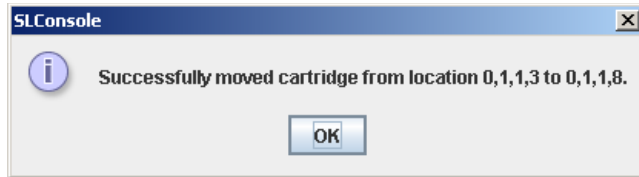
- Min—First element type—library, module, row, or column— in the library
- Max—Last element type—library, module, row, or column— in the library

Caution – If the library is partitioned, make sure to keep the cartridge in the same partition it is currently allocated to. Moving a cartridge to a cell allocated to a different partition could result in a host treating the cartridge as scratch and overwriting the data. Moving the cartridge to an unallocated cell will result in the cartridge being inaccessible to all hosts.

8. Click the Start button in the Options Bar.



The robot moves the cartridge, and then a success message popup appears.



9. Click OK.

10. To verify the new location, you can display a Cartridge Summary Report. See [“List Library Cartridges” on page 88](#) for details. For example:

The screenshot shows a software interface with a menu on the left and a main display area. The menu includes 'Log', 'Statistics', 'Status Detail', 'Status Summary', 'CAP Summary', 'Cartridge Summary', 'Drive Summary', 'Library Information', 'Robot Summary', and 'Version'. The 'Cartridge Summary' option is selected. The main display area shows the following report:

```

Cartridge Summary
Generated on : Fri Jun 27 15:10:09 MDT 2008

Location : 0,1,4,1
Location Type : cell
Media Type : LtoGen2_200GB
Type : data
Cartridge : ENG008L2

Location : 0,1,3,8
Location Type : cap
Media Type : LtoGen1_100GB
Type : data
Cartridge : 000051L1

Location : 0,1,1,8
Location Type : cap
Media Type : SDLT-1
Type : data
Cartridge : DG 008S

Location : 0,1,1,1
Location Type : playground
  
```

The entry for 'Location : 0,1,1,8' is circled in red. The interface also shows a status bar at the bottom with 'SL500', 'Comm Status', 'UserID: advsrv', and 'Library:greep20.central.sun.com'.

11. To update the new cartridge location in the host database, initiate a library audit from the host software. See the appropriate tape management software documentation for the procedures and commands.

Drive Management Tasks

Task	Page
Display Drive Summary Information	99
Display Drive Status	100
Display Drive Properties	101
Enable or Disable a Drive Port	102
Display the Media Drive Events Report	103

▼ Display Drive Summary Information

Use this procedure to display summary information for all drives in the library.

If you need to perform a manual mount to a drive, this procedure displays a mapping of all addresses for each library drive:

Note – This information is also available through **Reports > Drive Summary**. See [“Display a Library Report” on page 74](#) for detailed instructions.

1. Select **Tools > System Detail**.
2. Click the **Drive folder** on the device tree.

The screen lists the library drives and displays their locations.

The screenshot shows the Sun SL500 drive management interface. The left pane displays a tree view with the following items: Library:1,0,0,0 (checked), CAP Folder:1,0,0,0 (checked), CAP:0,1,0,8 (checked), Drive Folder:1,0,0,0 (checked and selected), and Robot Folder:1,0,0,0 (checked). The main pane is titled "Drive Folder" and contains a "Drive Data" table. The table has five columns: L,M,R,C Address, State, Type, Serial Number, and Code Ver. The data rows are as follows:

L,M,R,C Address	State	Type	Serial Number	Code Ver
0,1,1,9	Empty	QuantSDLT320	RBF15Y5693	87
0,1,2,9	Empty	HpUltrium3	HU10608PPH	M63S/010.669
0,3,1,9	Empty	QuantDLTS4	QD0618AMD00037	31
0,3,2,9	Empty	QuantSDLT600	RB0527AMC05196	51
0,3,4,9	Empty	lbnUltrium3	1210009115	73P5

The interface also includes a menu bar with "Tools", "Help", and "System Detail" (selected). On the right, there are "Apply", "Refresh", and "?" buttons. The status bar at the bottom shows "Sun SL500", "Comm Status" (checked), "UserID: advsrv", and "Library:green7.central.sun.com" (checked).

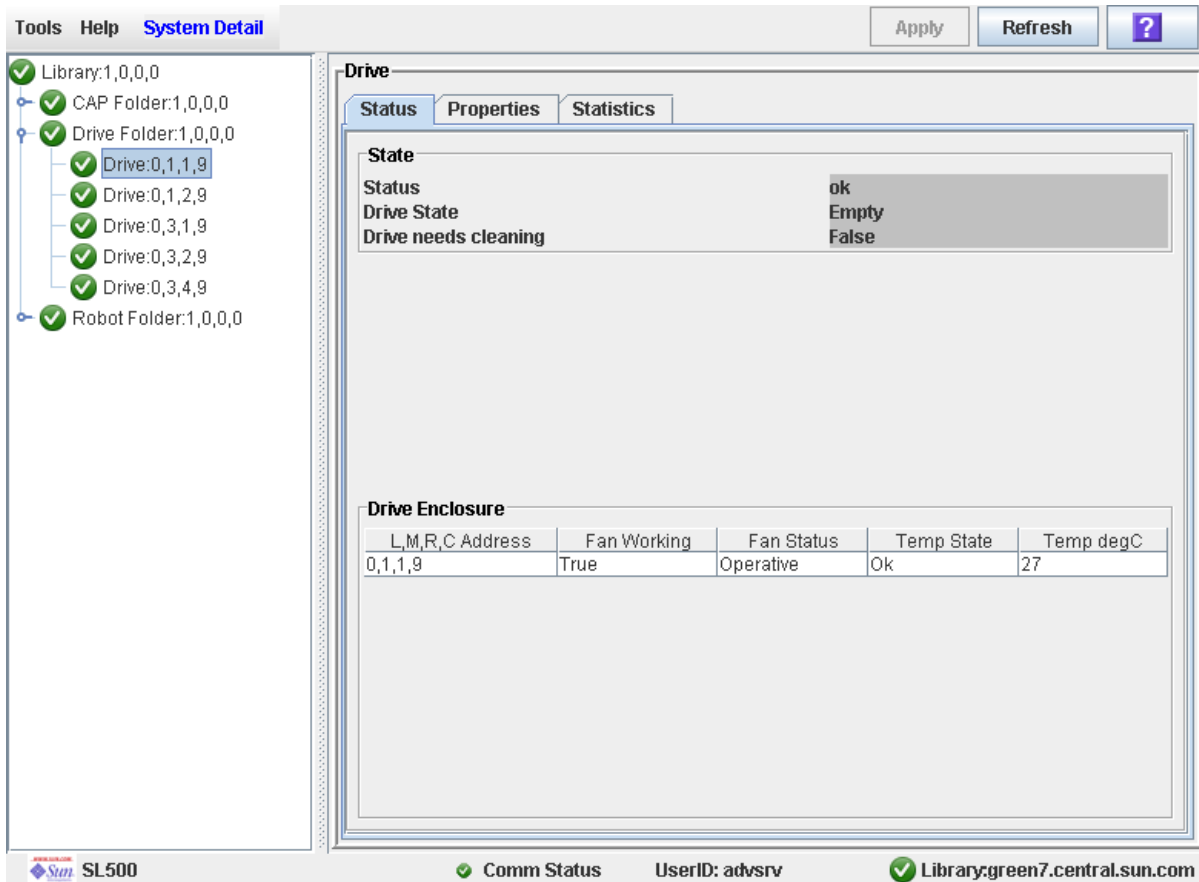
▼ Display Drive Status

Use this procedure to display the current operational state of a drive.

Note – This information is also available through **Reports > Drive Details**. See [“Display a Library Report” on page 74](#) for detailed instructions.

1. Select **Tools > System Detail**.
2. Expand the **Drive Folder**, and click the drive you want to display.
3. Click **Status**.

The screen displays the current status of the selected drive.



▼ Display Drive Properties

View detailed drive configuration information, including the drive type and serial number and port configuration.

Note – This information is also available through **Reports > Drive Details**. See [“Display a Library Report” on page 74](#) for detailed instructions.

1. Select **Tools > System Detail**.
2. Expand the **Drive Folder**, and click the drive you want to display.
3. Click **Properties**.

The screenshot shows the Sun SL500 drive management software interface. The 'System Detail' window is open, displaying the 'Properties' tab for a selected drive. The left sidebar shows a tree view of the system hierarchy, with 'Drive:0,1,1,9' selected. The main window displays the following information:

General	
Drive Type	QuantSDLT320
Code Version	87
Vendor	Quantum
Serial Number	RBF15Y5693
Interface Type	SCSI

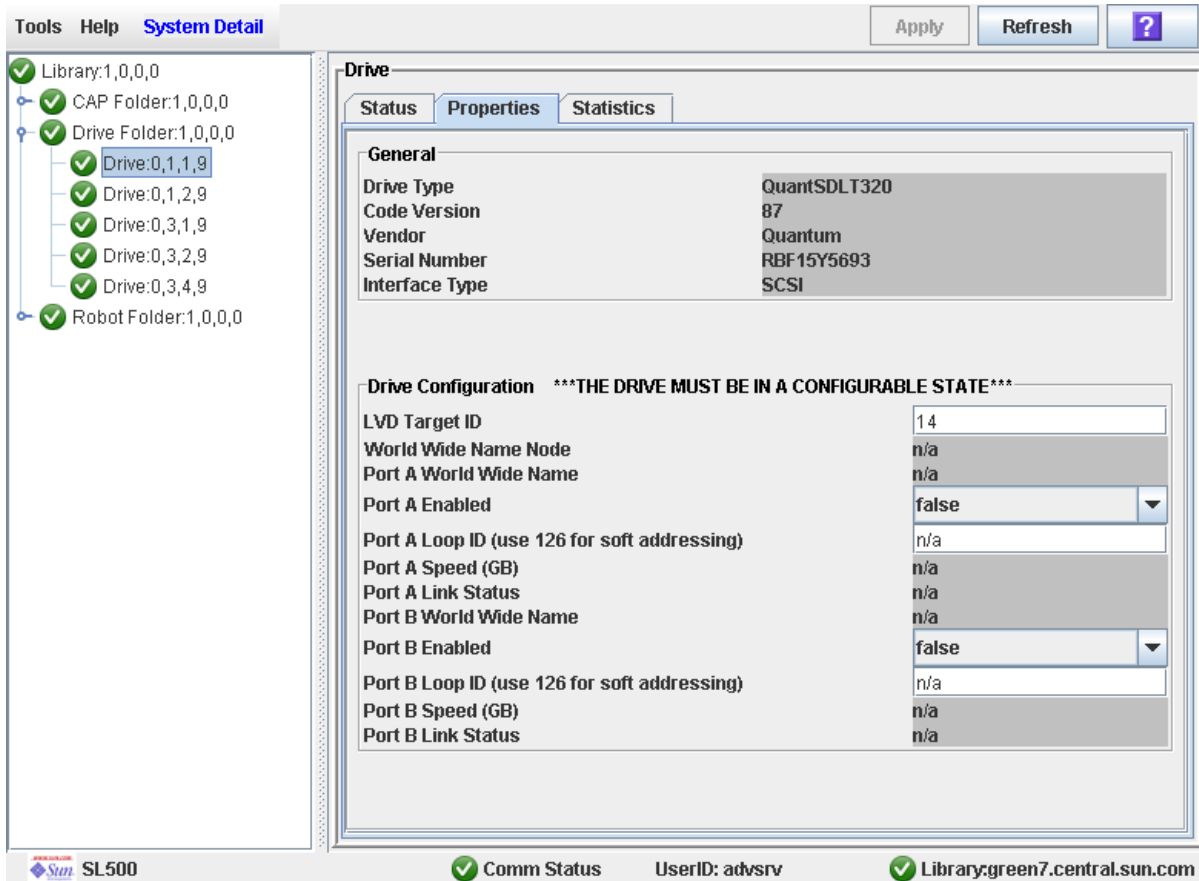
Drive Configuration ***THE DRIVE MUST BE IN A CONFIGURABLE STATE***	
LVD Target ID	14
World Wide Name Node	n/a
Port A World Wide Name	n/a
Port A Enabled	false
Port A Loop ID (use 126 for soft addressing)	n/a
Port A Speed (GB)	n/a
Port A Link Status	n/a
Port B World Wide Name	n/a
Port B Enabled	false
Port B Loop ID (use 126 for soft addressing)	n/a
Port B Speed (GB)	n/a
Port B Link Status	n/a

The interface also shows the Sun logo and 'SL500' in the bottom left, and status indicators for 'Comm Status', 'UserID: advsrv', and 'Library:green7.central.sun.com' in the bottom right.

▼ Enable or Disable a Drive Port

Use this procedure to enable or disable a physical port on a drive.

1. Select Tools > System Detail.
2. Expand the Drive Folder, and click the drive you want to modify.
3. Click Properties.



4. Set the Port A Enabled or Port B Enabled status as follows:
 - True—Turns on the port.
 - False—Turns off the port; the communication channel between the host software and the drive is disabled.
5. The network software automatically configures the Port (A or B) address. This is called soft mode addressing.

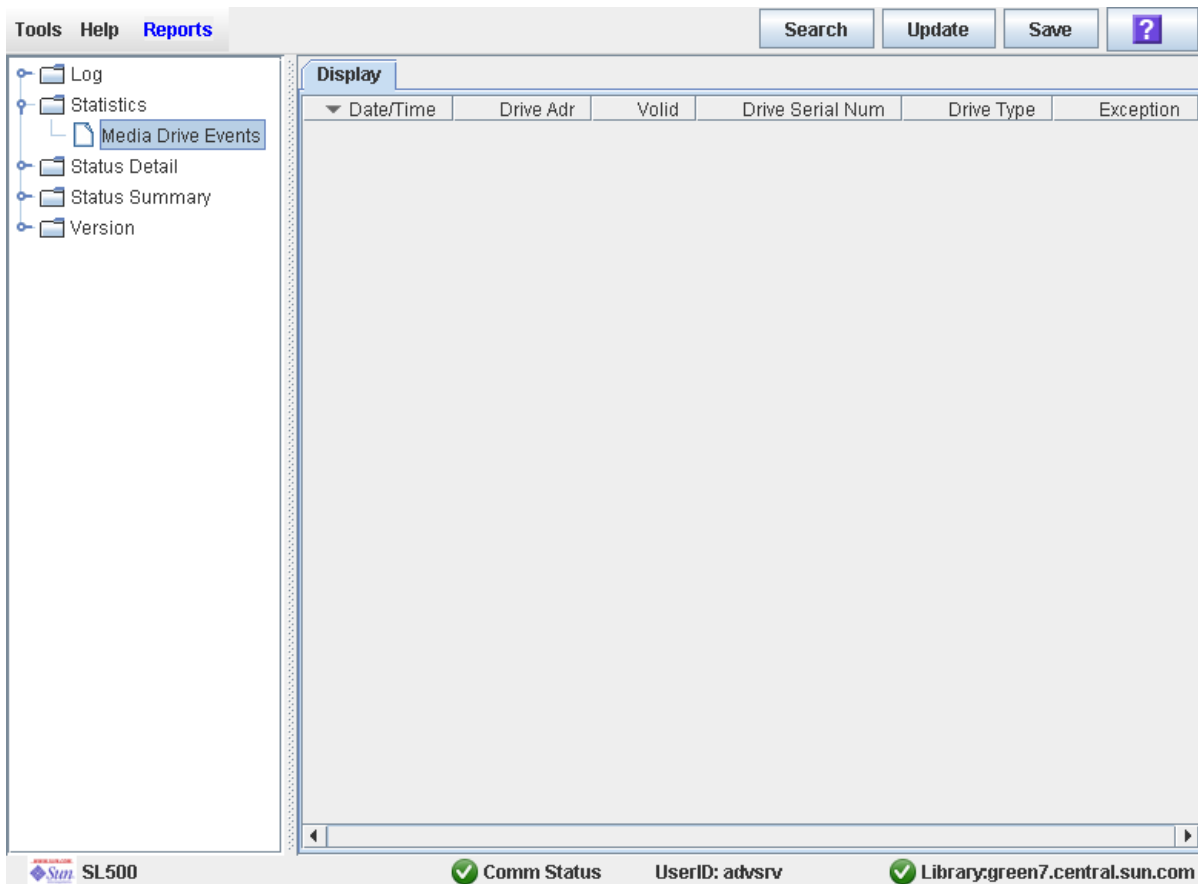
▼ Display the Media Drive Events Report

Note – This feature is available starting with SL500 firmware version 1200 and SL Console version 3.30.

The Media Drive Events Report lists the 100 most recent library media access errors. The report is updated whenever a drive is not able to perform a load, unload, read, or write operation on a cartridge. You can use the report to help determine whether a particular drive or cartridge is in need of maintenance or replacement.

By default, the report is sorted in reverse chronological order (that is, by Date/Time, with the most recent entry at the top). Optionally, you can change the sort order, and rearrange and resize the columns. See [“Modifying the Screen Layout” on page 32](#).

1. Select **Tools > Reports**.
2. Expand the **Statistics** folder, and click **Media Drive Events**.



Screen Fields

Date/Time

Date and time the error occurred.

Drive Adr

Location of the drive involved in the error. Format is l.m.r.c, where:

- l = library ID
- m = module ID
- r = row ID
- c = column ID

Valid

VOLID of the cartridge involved in the error.

Drive Serial Num

Serial number of the drive involved in the error.

Drive Type

Type of drive. For example, Hewlett-Packard LTO Ultrium 2 or Quantum SDLT 320.

Exception

Type of error. Options are:

- LoadError—The drive load failed after all retries were attempted. See LoadRetry for an explanation of the retry conditions.
- LoadRetry—The drive load was successful, but required one or more retries, which involve removing and reinserting the cartridge and reissuing a load command to the drive. A retry is initiated if either the cartridge is not detected as sensed from the drive (except DLT drives), or the load command to the drive fails.
- MediaError—The drive signaled a media error during drive load or unload. IBM drives allow cartridges with media errors to be loaded, while Hewlett-Packard drives do not.
- UnloadError—The library could not successfully unload and remove the cartridge from the drive.

Drive Cleaning Tasks

Task	Page
Configure Drive Auto Clean	106
Enter Cleaning or Diagnostic Cartridges	107
Eject Cleaning or Diagnostic Cartridges	109
Display Cleaning Cartridges	111
Display Drive Cleaning Status	112
Clean a Drive Manually	113

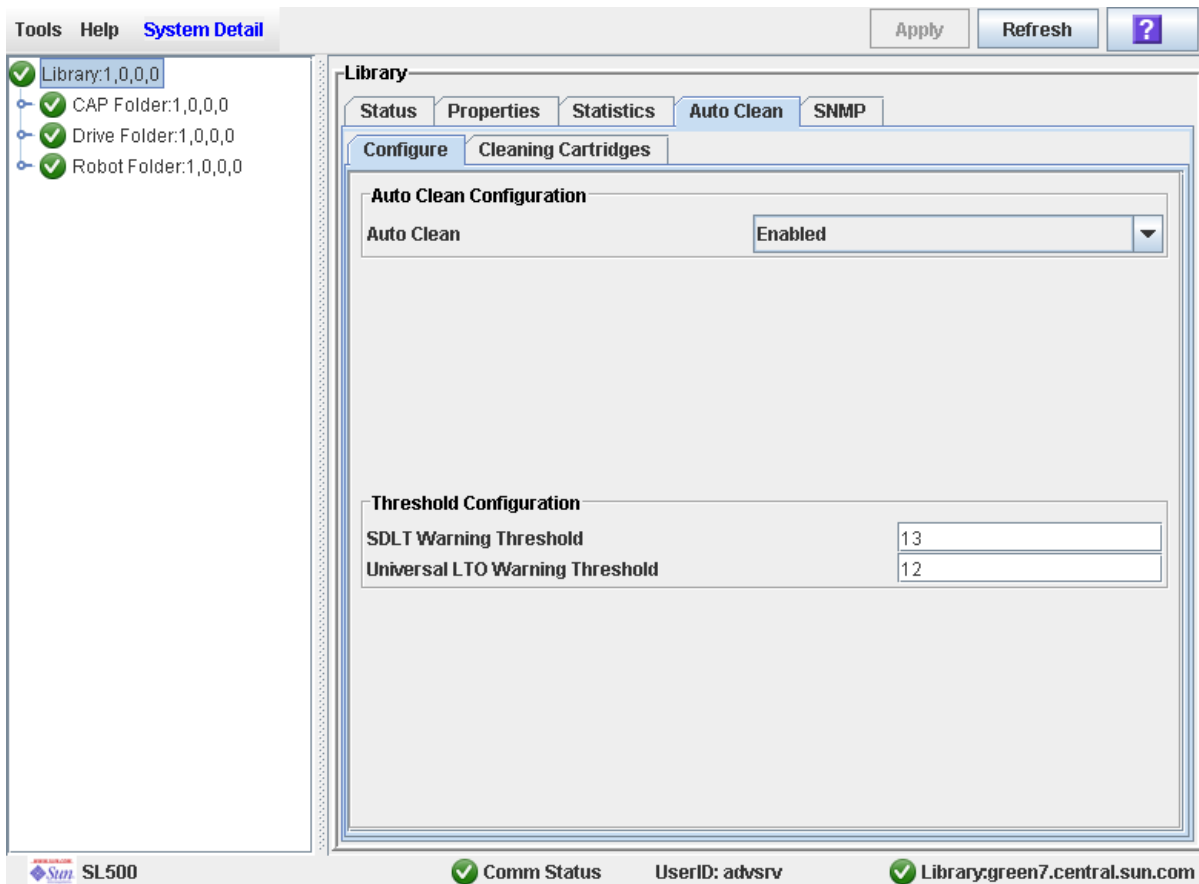
▼ Configure Drive Auto Clean

Use this procedure to enable or disable the drive auto clean feature. If the library is partitioned, auto clean can be enabled or disabled for individual partitions.

Note – This procedure applies only to drives that are not managed by HSC or ACSLS. See the HSC and ACSLS documentation for details about how they manage automatic cleaning operations.

1. Select Tools > System Detail, and select the library folder on the device tree.
2. Click Auto Clean and then Configure.

The **Configure Auto Clean** screen appears.



3. Set the Auto Clean field to Enabled.
4. In the Threshold Configuration section, specify the warning thresholds for each cartridge type.
5. Click Apply.

▼ Enter Cleaning or Diagnostic Cartridges

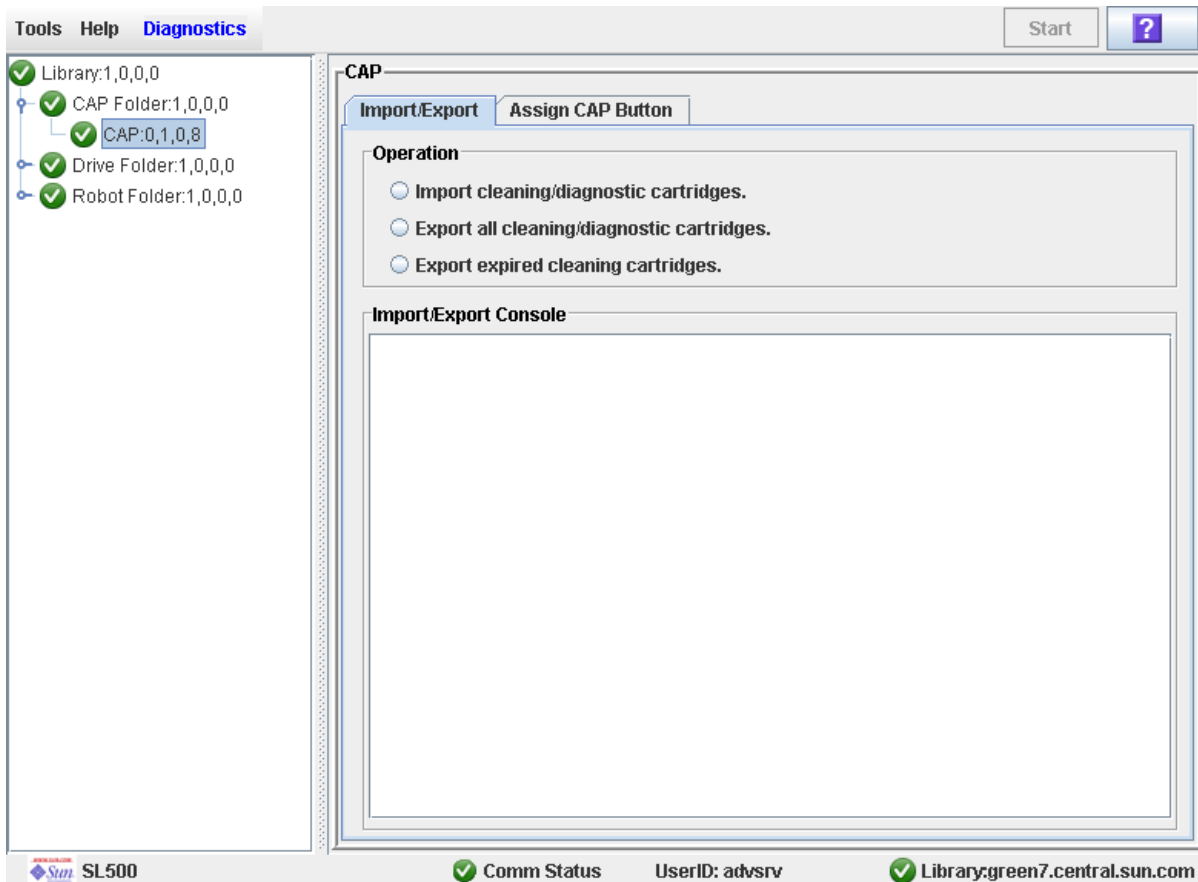
Use this procedure to enter new cleaning or diagnostic cartridges to the library through a CAP. The cartridges will be inserted into system cells.

Before beginning this procedure, verify that all the following conditions are met:

- The required number of reserved cells are empty.
- The CAP Prevent/Allow state is set to Allow (see your *SCSI Reference Manual* for syntax).
- The CAP does not contain any data cartridges.

1. Select **Tools > Diagnostics**.

2. Expand the CAP Folder, highlight the CAP and then select the **Import/Export** tab.



3. Select **“Import Cleaning/Diagnostic cartridges”** and then select the **Start** button from the Options Bar.

4. The library controller opens the CAP door and the CAP Open LED is turned on.

5. Grip the handle of the magazine and slide it out of the CAP and onto the door.

Note – To help slide the magazine back into the CAP, do not remove the magazine from the door. Instead, leave the magazine on the CAP door rails.

6. **Place the cartridges into the empty magazine cells, making sure that the VOLID label is visible and the hub of the cartridge is down.**

Caution – Possible damage to components. You must enter the cartridges properly, or else you might damage the HandBot or the drive or cause the library to stop operating. Use only cartridges designed for the drives in your library.

7. **Grip the handle and slide the magazine back into the CAP.**
8. **Close the CAP door making sure that the door is securely latched.**

The HandBot systematically moves each cleaning and diagnostic cartridge from the CAP to an empty reserved cell.

9. **Monitor the Import/Export Console to verify the status of the import operation.**

The “Operation completed” status indicates that the import cartridge operation is completed.

10. **After the import operation is complete, the HandBot audits the CAP.**

To view a list of cleaning and diagnostic cartridges in the reserved cells, see [“Display Cleaning Cartridges” on page 111](#).

Note – If you want to import cleaning and diagnostic cartridges into reserved cells one cartridge at a time, use the Recovery Move diagnostic utility. See [“Move a Cartridge From a Specified Location” on page 93](#).

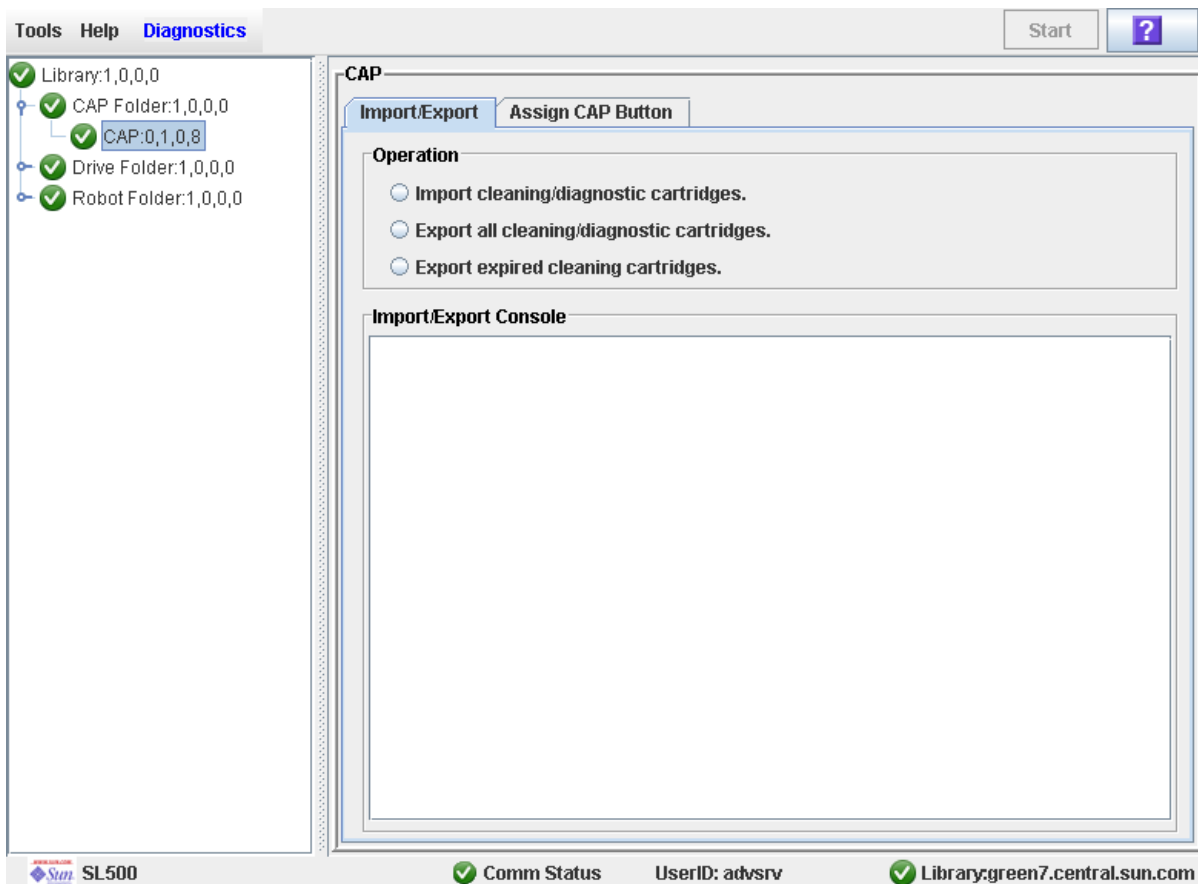
▼ Eject Cleaning or Diagnostic Cartridges

Use this procedure to eject expired cleaning or diagnostic cartridges through the CAP.

Note – Before beginning this procedure, verify that the CAP cells are empty.

You must use care when ejecting expired cleaning cartridges from the library. If you move an expired cleaning cartridge to a CAP and open the CAP, you must remove the cartridge. If you close the CAP without removing the cleaning cartridge first, the HandBot will re-enter the expired cartridge into the library, and the library controller will reset the usage count to zero.

1. Select **Tools > Diagnostics**.
2. Expand the **CAP Folder**, highlight the **CAP** and then select the **Import/Export** tab.



3. Do one of the following:
 - To export only the expired cleaning or diagnostic cartridges, select the “Export expired cleaning/diagnostic cartridges” option.
 - To export all cartridges from the reserved cells that include the cleaning and diagnostic cartridges select the “Export all cleaning/diagnostic cartridges” option.
4. Select the **Start** button from the upper right corner of the screen.

If you selected the “Export expired cleaning/diagnostic cartridges” option, the HandBot systematically moves all expired cleaning and diagnostic cartridges from the reserved cells into empty CAP cells.

If you selected the “Export all cleaning/diagnostic cartridges” option, the HandBot moves all cleaning and diagnostic cartridges from the reserved cells into empty CAP cells.

5. **The library controller opens the CAP and the CAP Open LED turns on.**
6. **Grip the handle of the magazine and slide it out of the CAP and onto the door.**

Note – To help slide the magazine back into the CAP, do not remove the magazine from the door. Instead, leave the magazine on the CAP door rails.

7. **Remove the cartridges from the magazine.**
8. **Grip the handle and slide the magazine back into the CAP.**
9. **Close the CAP door making sure that the door is securely latched.**
10. **Monitor the Import/Export Console to verify the status of the export operation.**

The “Operation completed” status indicates that the export cartridge operation is completed.

Note – If you want to export cleaning or diagnostic cartridges in reserved cells one at a time use the Recovery Move diagnostic utility. See [“Move a Cartridge From a Specified Location” on page 93](#).

▼ Display Cleaning Cartridges

1. Select Tools > System Detail, and select the library folder on the device tree.
2. Click Auto Clean and then Cleaning Cartridges.

The screenshot shows the Sun SL500 interface. The left pane displays a device tree with 'Library:1,0,0,0' selected. The main pane shows the 'Library' configuration page, with the 'Auto Clean' tab active and the 'Cleaning Cartridges' sub-tab selected. A table titled 'Library Cleaning Cartridges' displays the following data:

Tape Location	VOLID	Usage Count	Status	Cart Type
0,1,6,1	CLN016C	0	Warning	DLT

The interface also shows a status bar at the bottom with 'Comm Status' (checked), 'UserID: advsrv', and 'Library:green20.central.sun.com' (checked).

The list displays the following details for each cleaning cartridge:

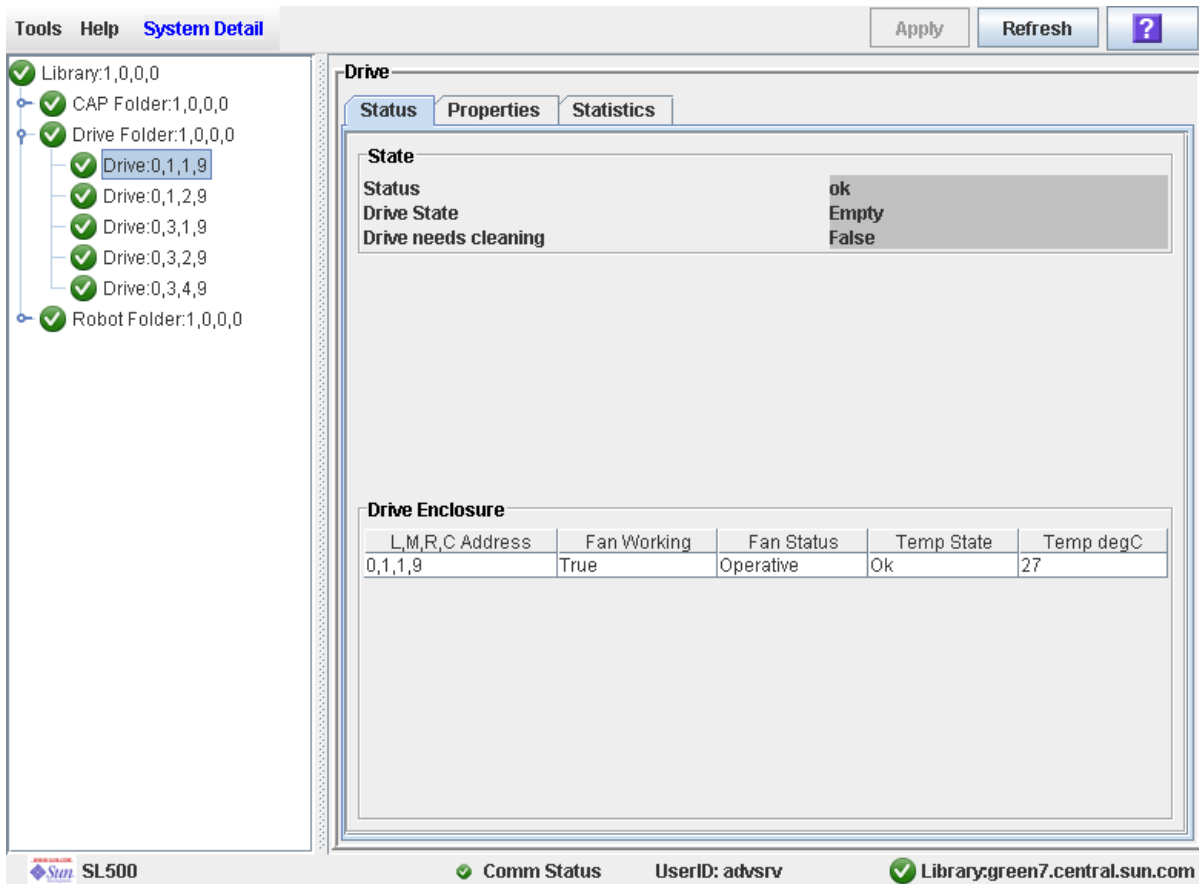
- Cartridge location (reserved cells)
- VOLID
- Usage Count
- Status (OK, warning, expired)
- Cartridge Type (for example, LTO, SDLT)

▼ Display Drive Cleaning Status

Use this procedure to display the current cleaning status of a drive.

1. Select **Tools > System Detail**.
2. Expand the **Drive Folder**, and select the drive you want to display.
3. Click **Status**.

Note – You can schedule manual drive cleaning by monitoring the “Drive needs cleaning” status.



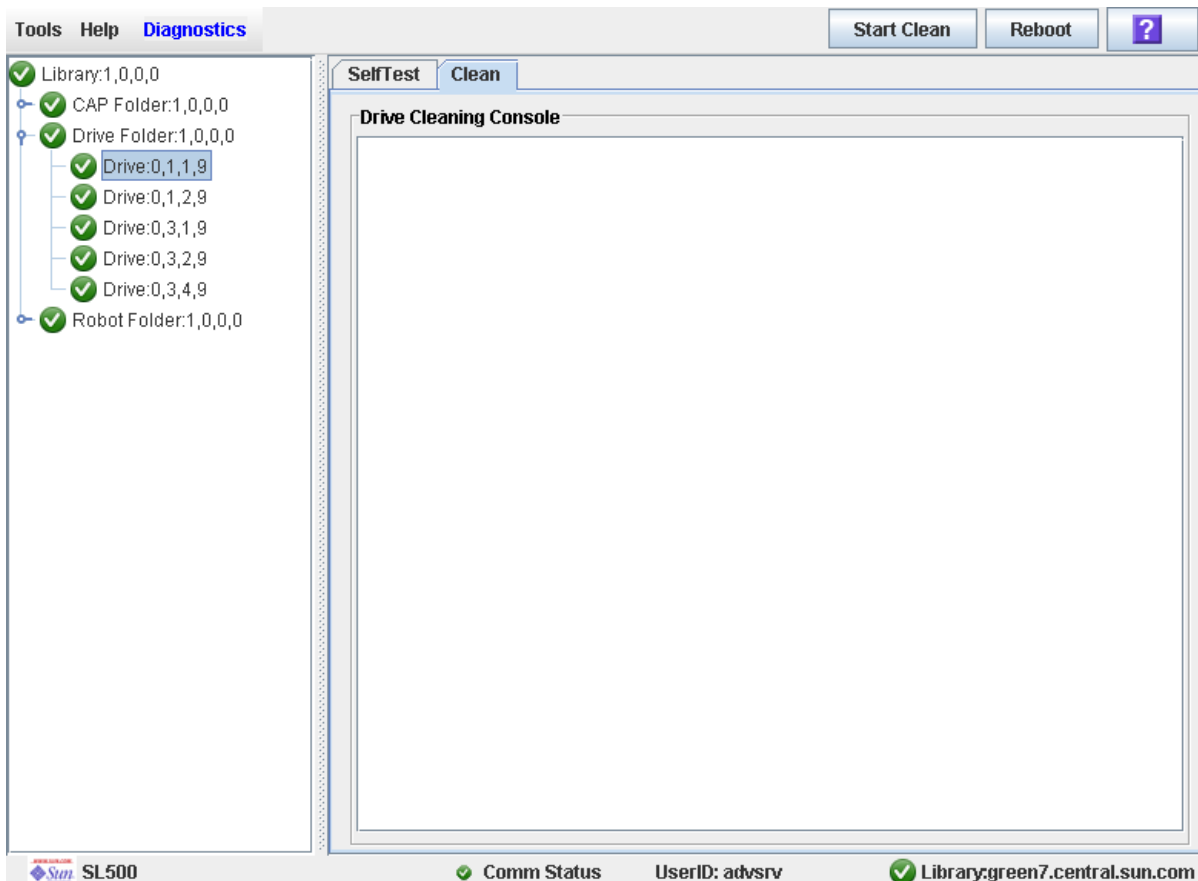
▼ Clean a Drive Manually

Your library could contain more than one type of drive. So, before initiating a clean job, make sure that the system cells have the appropriate cleaning cartridges for the drives being cleaned. Generate a cartridge summary and drive details report to verify the cleaning cartridges present in the library.

Note – To display a list of cleaning cartridges, see [“Display Cleaning Cartridges”](#) on page 111.

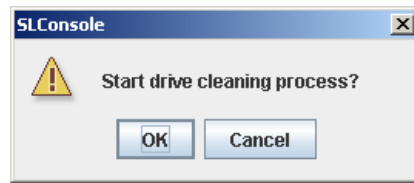
Note – You can initiate a manual clean even if the “drive needs cleaning” status is “false.”

1. Select Tools > Diagnostics.
2. Expand the Drive Folder.
3. Select the drive that requires cleaning and then select the Clean tab.



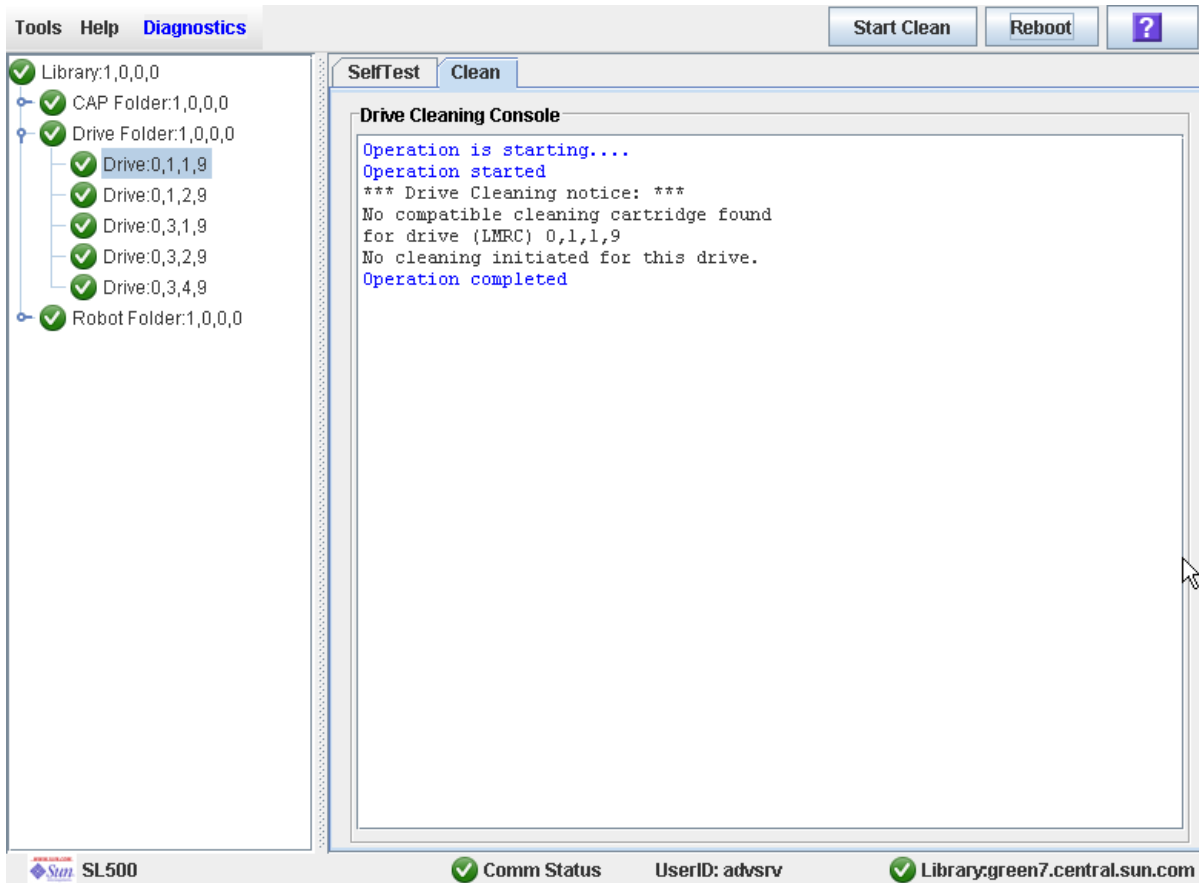
4. Click the Start Clean button in the Options Bar.

A confirmation popup appears.



5. Click OK.

6. The Drive Clean Status Console displays the status of the cleaning operation.



Robot Monitoring Tasks

Task	Page
Display Robot Summary Information	116
Display Robot Status	117
Display Robot Statistics	118

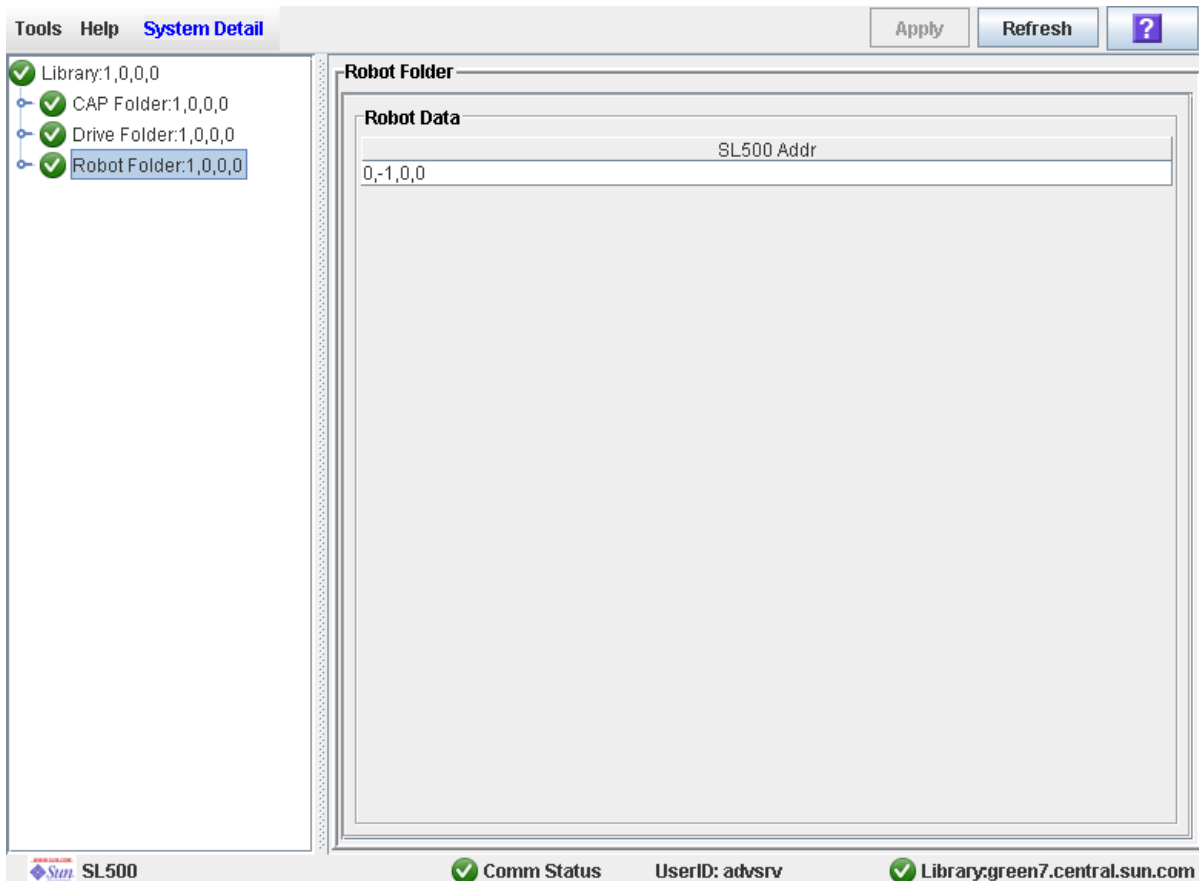
▼ Display Robot Summary Information

Use this procedure to display summary information for the library HandBot.

Note – This information is also available through **Reports > Robot Summary**. See [“Display a Library Report”](#) on page 74 for detailed instructions.

1. Select **Tools > System Detail**.
2. Click the **Robot** folder on the device tree.

The **Robot Data** screen appears.



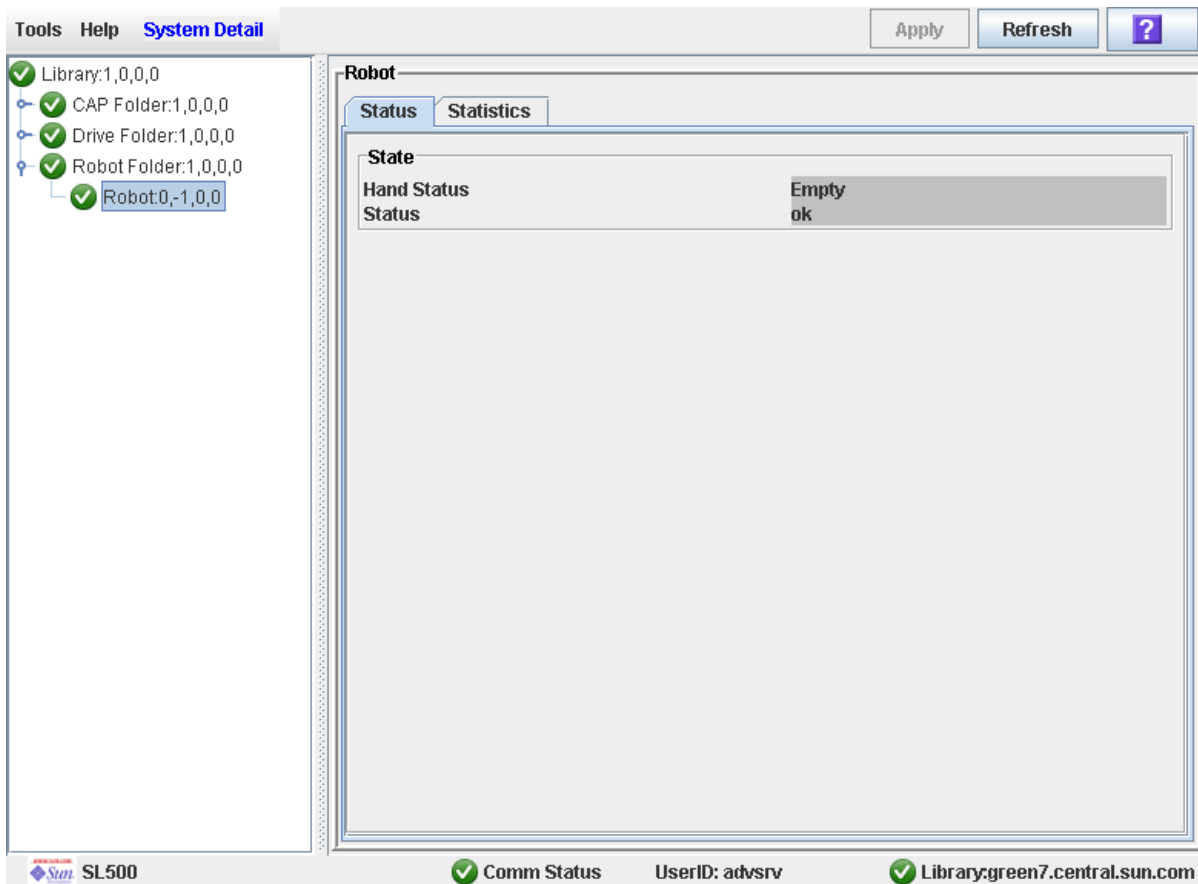
▼ Display Robot Status

Use this procedure to display the current operational state of a HandBot.

Note – This information is also available through **Reports > Robot Details**. See [“Display a Library Report” on page 74](#) for detailed instructions.

1. Select **Tools > System Detail**.
2. Expand the **Robot Folder**, and click the robot.
3. Click **Status**.

The screen displays the current status of the HandBot.

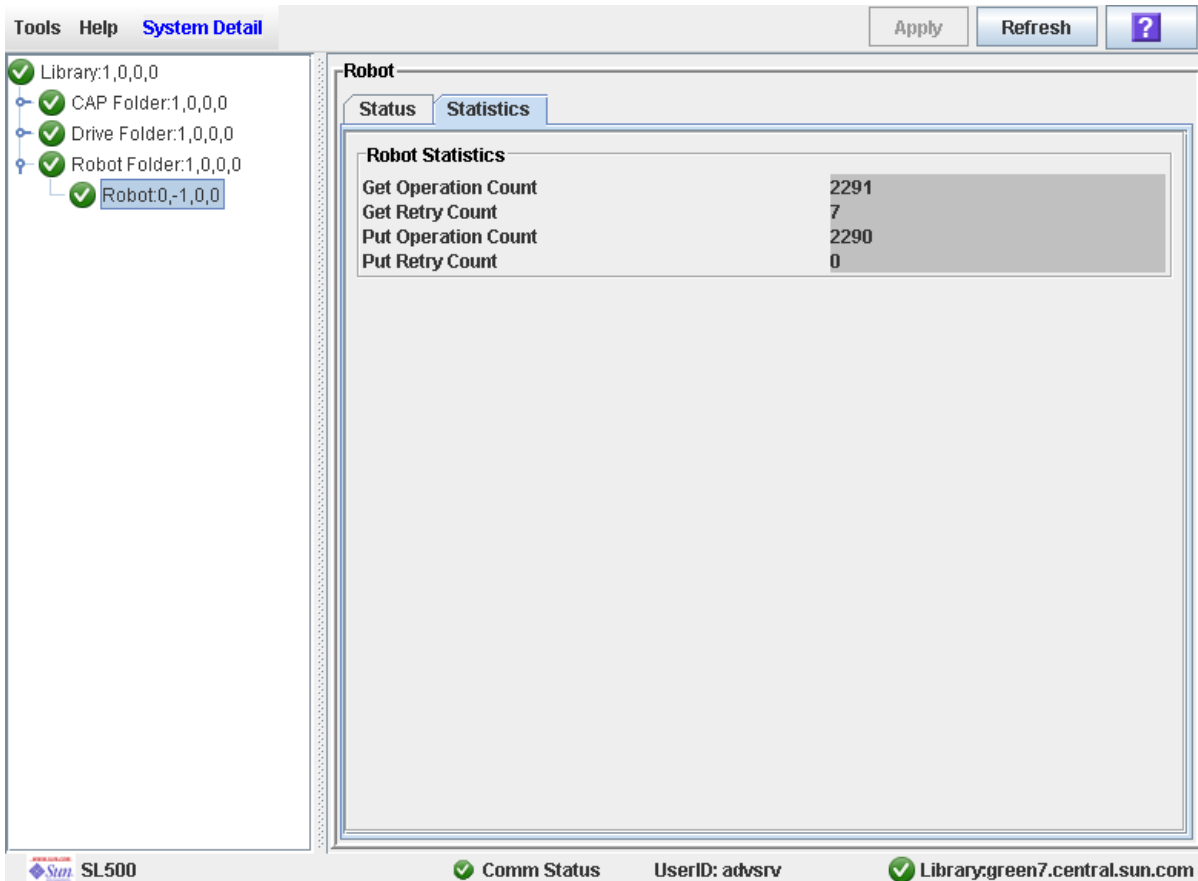


▼ Display Robot Statistics

Use this procedure to display HandBot statistics, including Get, Put, and Retry counts.

1. Select **Tools > System Detail**.
2. Expand the **Robot Folder**, and click the robot.
3. Click **Statistics**.

The **Robot Statistics** screen appears.



Licensing

The licensing utility allows you to install selected optional features on the SL500 library.

Note – The Licensing utility is available starting with SL500 firmware version 1300 and SL Console version FRS_4.00.

License Key File

A license key file can be delivered to you in the following ways:

- Via e-mail from Sun Microsystems, Inc.
- Installed by your Sun support representative

The license key file is a digitally signed image (.img) file containing one or more license keys for features you have purchased. In order to ensure that features are installed on the correct library, the license key file includes the serial number of the target library and can only be installed on that library.

Each license key file is assigned a unique sequence number. The sequence number ensures that only one instance of a license key file can be installed on a library at a time.

SL500 licenses are cumulative. When you install a new license key file, the included features are added to the features already installed on the library.

SL500 licenses currently do not expire.

Licensing Tasks

This section provides detailed instructions for all tasks involved in installing and managing library feature licenses.

License Installation Process

Following is a summary of the license installation process. Optionally, you can choose to have this process done by your Sun support representative.

1. You purchase one or more features for a specific Sun StorageTek library from Sun Microsystems, Inc.
2. Sun sends you an e-mail with an attached license key file.
3. You download the license key file to a system accessible to the SL Console session.
4. You use the SL Console to verify and install the license key file on the target library.
5. You reboot the library in order to activate the new features.
6. See the following topics for detailed information about implementing specific licensed features:
 - [“Capacity on Demand” on page 147](#)
 - [“Library Partitioning” on page 143](#)

Licensing Task Summary

Task	Page
Receive a New License Key File	122
Install a New License on the Target Library	123
Display Current Library Licenses	125
Delete a License Key File	126

▼ Receive a New License Key File

Use this procedure to receive a license key file, which licenses features for a specific Sun StorageTek library.

Note – This procedure is not performed at the SL Console.

1. Purchase one or more features from Sun Microsystems, Inc.

See your Sun support representative for assistance.

2. Receive the license key file from Sun, via e-mail.

Following is a sample of the e-mail header:

```
Subject:      SL500 License Key CR6636975
Date:        Wed, 23 Apr 2008 19:24:41 -0700 (MST)
From:        Do_Not_Reply_SILKS@sun.com
```

3. Download the license key file to a system accessible to the SL Console session.

Use the standard method for saving e-mail attachments.

▼ Install a New License on the Target Library

Use this procedure to install a new license key file on the target library.

Prior to performing this procedure, you must download a new license key file to a system accessible to the SL Console session. See [“Receive a New License Key File” on page 122](#).

1. **Use the SL Console to log in to the target library.**
See [“Log in to the SL Console” on page 29](#) for details.
2. **Select Tools > License Management, and click the Install License tab.**
The **Install License** screen appears.

The screenshot shows the 'License Management' window with the 'Install License' tab selected. The 'File Name' field is empty, and the 'Browse...' button is visible to the right of the field.

3. **In the File Name field, enter the full path of the license key file you want to install, and press Enter. Optionally, you can click Browse and navigate to the file location.**

The License File details appear in the lower part of the screen.

The screenshot shows the 'License Management' window with the 'Install License' tab selected. The 'File Name' field contains the path 'D:\Documents and Settings\SL500_license_config_145.img'. The license details are displayed below the field:

Product: SL500
Serial Number: 522000000383
Sequence Number: 145
Comment Line 1: Partitioning License
Comment Line 2: Created by Erik with LFG

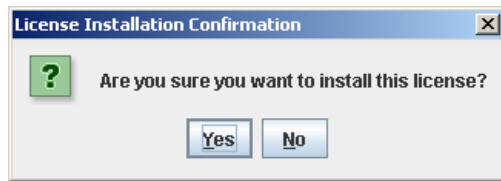
License File Details

Feature	Expiration	Value
Partitioning	N/A	

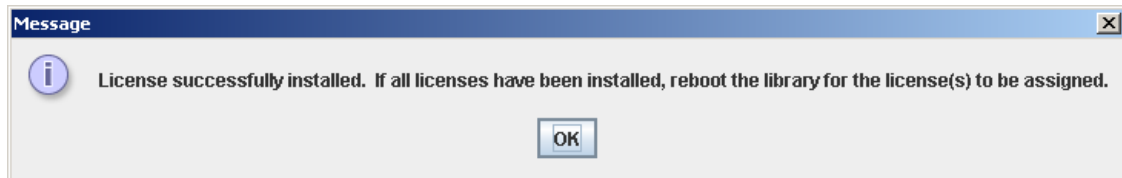
Note – If the library serial number in the specified license key file does not match the serial number of the library you are logged in to, a warning appears and the license key file detail is not displayed.

4. Review the license key file details, and then click **Install** in the Options Bar.

The **License Installation Confirmation** popup appears.



5. Click **Yes** to begin installing the license on the target library.
6. The library controller verifies the license key file and proceeds as follows:
 - If there are no problems, the features included in the file are installed.
 - A confirmation popup appears. Click **OK** to dismiss the popup.



7. You must reboot the library in order for the new license features to be activated. Click the **Reboot** button in the Options Bar. See ["Reboot the Library"](#) on page 268 for detailed instructions.
8. You can verify that the license has been installed and activated successfully by displaying the current licenses. See ["Display Current Library Licenses"](#) on page 125 for details.
9. Depending on the features included in the license key file, you may need to perform additional tasks in order to use the new features.
 - See ["Increasing Licensed Capacity"](#) on page 150 for special considerations that apply when you install a license key file that adds licensed capacity to the library.
 - See ["Installing the Partitioning Feature"](#) on page 145 for special considerations that apply when you install a license key file with the Partitioning feature.

▼ Display Current Library Licenses

Use this procedure to display the features currently installed on the library you are logged in to.

1. Select **Tools > License Management**, and click the **Current License** tab.

The **Current License** screen appears, listing the currently installed features. See [“License Management > Current License”](#) on page 130 for detailed information about the screen fields.

The screenshot shows the 'Current License' screen with the following data:

Feature	Sequence Number	Value	Assigned
Capacity	99001	FullBase	Yes
Capacity	99002	ThirdDEM	Yes
Capacity	99003	ThirdDEM	Yes
Partitioning	145	None	No

Module Number	Capacity	Sequence Number
1	Full Capacity	99001
2	2/3 DEM Capacity	99002, 99003
3	None	000
4	None	000
5	None	000

118 Cells Licensed
25 Cells Unlicensed
143 Cells Total are Possible

SL500 Comm Status UserID: advsrv Library:green11.stortek.com

Note – If a feature has been installed, but the library has not yet been rebooted, the **Assigned** column will indicate “No”. The library must be rebooted in order for the feature to be activated.

▼ Delete a License Key File

Use this procedure to delete a license key file from an SL500 library.

You may need to delete a license key file if there is an error in an installed file. Sun will issue a new license key file with the same sequence number as the original, and you must delete the original license key file before installing the new one.

Caution – Deleting a license key file is an exceptional situation. Be sure it is what you really want to do before you begin this procedure. Having extra license key files installed on a library does not present any problems (for example, Capacity licenses that exceed the physical capacity of the library); the extra licenses are simply not used.

Caution – Deleting a Capacity license key file reduces the licensed capacity of the affected library module. This can result in orphaned cartridges and data that could be lost. See [“Decreasing Licensed Capacity” on page 141](#) and [“Orphaned Cartridges in Non-Partitioned Libraries” on page 140](#) for details.

Caution – Deleting a Partitioning license key file deletes the Partitioning feature from the library. See [“Deleting the Partitioning Feature” on page 148](#) for details about the effects on the library configuration.

1. Use the SL Console to log in to the target library.

See [“Log in to the SL Console” on page 29](#) for details.

2. Select **Tools > License Management**, and click the **Current License** tab.

The **Current License** screen appears, listing the currently installed features.

The screenshot shows the 'Current License' tab in the 'License Management' window. At the top, there are buttons for 'Reboot...', 'Delete...', 'Refresh', and a help icon. Below the tabs, the 'Current License Summary' table is displayed:

Feature	Sequence Number	Value	Assigned
Capacity	99001	FullBase	Yes
Capacity	99002	ThirdDEM	Yes
Capacity	99003	ThirdDEM	Yes
Partitioning	145	None	Yes

Below this is the 'Associated Module Capacity License Detail' table:

Module Number	Capacity	Sequence Number
1	Full Capacity	99001
2	2/3 DEM Capacity	99002, 99003
3	None	000
4	None	000
5	None	000

At the bottom left, the following license status is shown:

143 Cells Licensed
0 Cells Unlicensed
143 Cells Total are Possible

The bottom status bar shows: SL500, Comm Status (checked), UserID: advsrv, and Library: green11.stortek.com (checked).

3. Click the license you want to delete.

Note – Sequence numbers 99000 and above are permanently retained and cannot be deleted from the library.

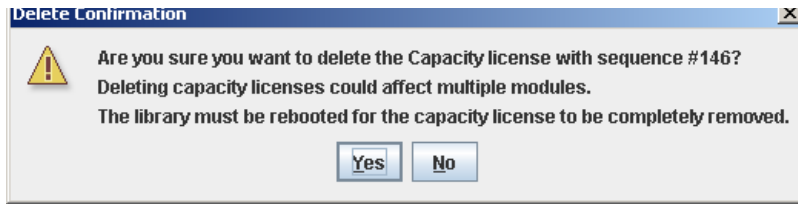
The **Delete** button in the Options Bar is activated.

This screenshot is similar to the previous one, but the 'Delete...' button in the top options bar is now highlighted in blue, indicating it is active. The 'Current License Summary' table is the same, but the row for 'Partitioning' with sequence number 145 is highlighted in blue, indicating it is the selected license for deletion.

4. Click the **Delete** button.

Depending on the type of license you are deleting, one of the following **Delete Confirmation** popups appears.

- For Capacity licenses:

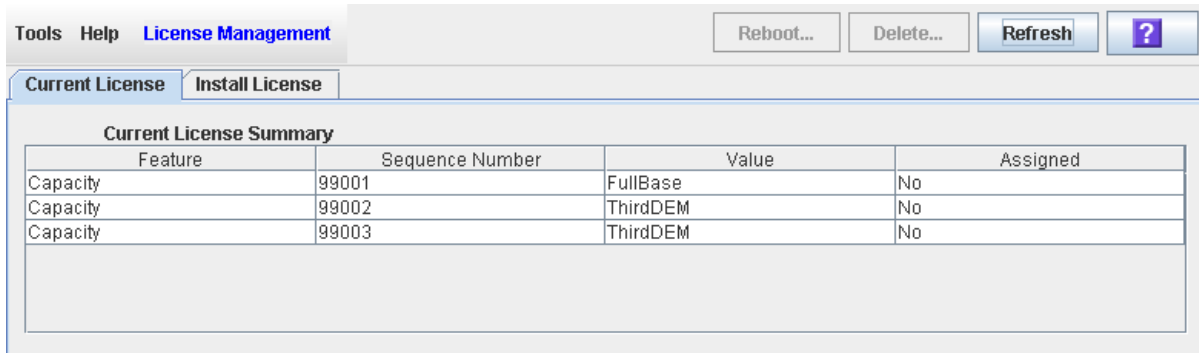


- For Partitioning licenses:



5. Click Yes to begin the deletion.

The license key file is deleted from the library, and the **Current License Summary** is updated.



6. You must reboot the library in order for the license deletion to take effect. See ["Reboot the Library"](#) on page 268 for detailed instructions.
7. Depending on the feature included in the license key file, you may need to perform additional tasks after deleting the file.
 - See ["Decreasing Licensed Capacity"](#) on page 151 for special considerations that apply when you delete a Capacity license key file.
 - See ["Deleting the Partitioning Feature"](#) on page 148 for special considerations that apply when you delete a Partitioning license key file.

Licensing Screen Reference

This section includes detailed descriptions of all SL Console licensing screens, arranged by screen navigation path. For example, **License Management > Install License** indicates the screen accessed by clicking **Tools** and then **License Management** from the Menu Bar, and then clicking the **Install License** tab.

Note – You can access the licensing screens only from the standalone SL Console or the Web-launched SL Console. They are not available on the local operator panel.

Screen	Page
License Management > Current License	130
License Management > Install License	133

License Management > Current License

Sample Screen

The screenshot shows a software interface for License Management. At the top, there is a menu bar with 'Tools', 'Help', and 'License Management'. To the right are buttons for 'Reboot...', 'Delete...', 'Refresh', and a help icon. Below the menu bar are two tabs: 'Current License' (selected) and 'Install License'. The main content area is divided into two sections:

Current License Summary

Feature	Sequence Number	Value	Assigned
Capacity	99001	FullBase	Yes
Capacity	99002	ThirdDEM	Yes
Capacity	99003	ThirdDEM	Yes
Partitioning	145	None	No

Associated Module Capacity License Detail

Module Number	Capacity	Sequence Number
1	Full Capacity	99001
2	2/3 DEM Capacity	99002, 99003
3	None	000
4	None	000
5	None	000

Below the tables, the following summary is displayed:

118 Cells Licensed
25 Cells Unlicensed
143 Cells Total are Possible

The bottom status bar includes the following information:

- SL500
- Comm Status (with a green checkmark icon)
- UserID: actvsrv
- Library:green11.stortek.com (with a green checkmark icon)

Description

Displays the contents of all license key files currently installed on the library you are logged in to.

You can modify the layout and display of this screen. See [“Modifying the Screen Layout” on page 32](#) for details.

Screen Fields

Current License Summary

Feature

Display only.

Name of the feature installed on the library.

Sequence Number

Display only.

Unique sequence number assigned to the license key file by Sun Microsystems, Inc.

Note – Sequence numbers 99000 and above are permanently retained and cannot be deleted from the library.

Value

Display only.

Qualification for the feature, if applicable. For example, for the Capacity feature, this field displays the capacity the license provides, such as "FullBase", "ThirdDEM", etc. Depending on the feature, the field may be blank or indicate "None".

Assigned

Display only.

Indicates whether the feature is currently activated on the library. Options are:

- Yes—Feature has been activated
- No—Feature has been installed, but not activated; the library must be rebooted in order for the feature to be activated.

*Associated Module Capacity License Detail***Module Number**

Display only.

Numeric module ID. Possible values are 1–5.

Capacity

Display only.

Total module capacity that has been licensed for use. Possible values are:

- Full Capacity—All storage cells in the module are licensed for use.
- None—No storage cells in the module have been licensed for use. May also indicate that the module is not installed in the library.
- 1/3 Capacity—One-third of the storage cells in the module have been licensed. Applies only to the DEM.
- 2/3 Capacity—Two-thirds of the storage cells in the module have been licensed. Applies only to the DEM.

Sequence Number

Display only.

License key file sequence numbers used in providing the indicated capacity. If more than one license key file is involved, the sequence numbers are separated by commas.

000 indicates no license key file has been installed for the module.

nnn **Cells Licensed**

Display only.

Total number of storage cells in the library that have been licensed for use. This cannot be greater than the physical capacity of the library.

nnn **Cells Unlicensed**

Display only.

Total number of storage cells in the library that have not been licensed for use.

nnn **Cells Total are Possible**

Display only.

Total physical capacity of the library.

Buttons

Reboot

Click to reboot the library.

Delete

Click to delete the selected license key file from the library.

Refresh

Click to refresh the display with current data from the library controller database.

? (Help)

Click to display online help for the screen.

See Also

- [License Management > Install License](#)

License Management > Install License

Sample Screen

Tools Help **License Management** Reboot... Install... ?

Current License **Install License**

Choose Install button above to initiate license installation

File Name Browse...

Product: SL500
 Serial Number: 522000000383
 Sequence Number: 145
 Comment Line 1: Partitioning License
 Comment Line 2: Created by Erik with LFG

License File Details

Feature	Expiration	Value
Partitioning	N/A	

SL500 ✓ Comm Status UserID: actvsrv ✓ Library:green11.stortek.com

Description

Allows you to display the contents of a new license key file and install it on the library.

You can modify the layout and display of this screen. See [“Modifying the Screen Layout” on page 32](#) for details.

Screen Fields

File Name

Required.

Enter the full path of the license key file you want to install on the library.

Optionally, you can click **Browse** and navigate to the file location. The file must be located on a system accessible to the SL Console session, and the serial number specified in the file must match the serial number of the library you are logged in to.

Product

Display only.

Type of library the license key file is for. For example, SL3000, SL8500, SL500.

Serial Number

Display only.

Serial number of the library the license key file is for. This entry must match the serial number of the library you are logged in to in order for the license key file to be valid for this library.

Sequence #

Display only.

Unique sequence number assigned to the license key file by Sun Microsystems, Inc.

Note – Sequence numbers 99000 and above are permanently retained and cannot be deleted from the library.

Comment Line 1

Display only.

Optional comment concerning the license key file, from Sun Microsystems, Inc.

Comment Line 2

Display only.

Optional comment concerning the license key file, from Sun Microsystems, Inc.

License File Details

Feature

Display only.

Name of a feature included in the license key file.

Expiration

Display only.

Number of days until the feature is due to expire. Because SL500 library features do not expire, the value for this field is always "N/A".

Value

Display only.

Qualification for the feature, if applicable. For example, for the Capacity feature, this field displays the total amount of storage capacity the license provides. Depending on the feature, the field may be blank.

Buttons

Install

Click to install the displayed license key file on the library you are logged in to.

Browse

Click to navigate to the license key file you want to display and install.

Note – If the library serial number in the specified license key file does not match the serial number of the library you are logged in to, a warning appears and the license key file detail is not displayed.

? (Help)

Click to display online help for the screen.

See Also

- [License Management > Current License](#)

Capacity on Demand

The SL500 library includes the Capacity on Demand feature. Capacity on Demand separates physical capacity from licensed capacity, and allows you to pay only for the capacity you need. Then as your needs grow, you can add modules and license the portion that you need. To expand capacity within a module, you need only purchase and install a license key file for the new capacity, and then reboot the library.

Note – Starting with SL500 firmware version 1300 and SL Console version FRS_4.00, storage capacity upgrades must be installed through the SL500 licensing utility. See [Chapter 4, “Licensing”](#) for details.

Note – This feature controls cartridge storage cells only. All installed tape drives are available by default. All cells in CAPs configured for enter and eject operations are available if the module containing the CAP has any licensed storage cells

Capacity on Demand Features and Restrictions

This section describes important features and restrictions of Capacity on Demand that will help you to plan for and use the feature in your SL500 library.

- Only licensed storage cells can be used for tape cartridge storage. Unlicensed storage cells cannot be used for cartridge storage, nor can they be accessed by any hosts.
- The minimum licensed capacity is 30 storage cells for LTO-only libraries, and 24 storage cells for mixed-media libraries. This is identified as a LimitedBase license.
- You can purchase additional licensed capacity in the following increments:
 - FullBase—Licenses all storage cells in the Base Module.
 - FullDEM—Licenses all storage cells in a Drive Expansion Module (DEM).
 - ThirdDEM—Licenses one-third of the storage cells in a DEM. To license two-thirds of a DEM, you would install two ThirdDEM licenses. To license all of a DEM, you could install three ThirdDEM licenses or one FullDEM license.
 - FullCEM—Licenses all storage cells in a Cartridge Expansion Module (CEM).
- After installing additional licensed capacity, you need to reboot the library. Once verified by the library controller, the additional storage cells are available for use.

- Storage capacity is incremental. Total licensed capacity is equal to the sum of the capacities specified in each license key file installed and activated on the library.
- The order that capacity licenses are installed is not significant (that is, it does not need to match the order of the modules in the SL500 frame).

Terminology

The following terms are used to describe library capacity management:

- Physical or installed capacity—The number of storage cells physically present in the library.
- Licensed capacity—The number of storage cells the library is licensed to use. This cannot exceed the installed capacity.

Planning Library Capacity

The SL500 does not support gaps in licensed capacity; all storage cells must be contiguous. This has the following effects on capacity planning.

You can begin adding licensed capacity to a module only if the module directly above it is licensed at full capacity.

Example: Base Module + DEM

The Base Module must be licensed at full capacity before you can begin adding licensed capacity to the DEM.

Deleting a Capacity license for a module in the middle of a library will cause the modules below it to be unavailable.

Example: Base Module + DEM + CEM + CEM

Removing any portion of the DEM capacity will make both CEMs unavailable.

Note – CEMs must be at the bottom of any SL500 configuration. A CEM cannot be installed between a Base Module and a DEM.

LTO Licensed Capacity by Module

Module	License Value	Module Licensed Capacity *	Library Total Count
Base Module			
Shipped standard	LimitedBase	30	
As last module	FullBase	50	
With any module underneath	FullBase	66	
Drive Expansion Module (DEM)			
As last module	ThirdDEM (increments of 26, 26, 25)	77	
With any module underneath	ThirdDEM (increments of 28, 28, 28)	84	
Cartridge Expansion Module (CEM) after Base Module or DEM			
As last module	FullCEM	104	
With any module underneath	FullCEM	114	
Cartridge Expansion Module (CEM) after CEM			
As last module	FullCEM	110	
With any module underneath	FullCEM	120	
* All capacities assume no reserved cells and all CAPs are configured for enter and eject operations.			

Mixed Media Licensed Capacity by Module

Module	License Value	Module Licensed Capacity *	Library Total Count
Base Module			
Shipped standard	LimitedBase	24	
As last module	FullBase	42	
With any module underneath	FullBase	56	
Drive Expansion Module (DEM)			
As last module	ThirdDEM (increments of 21, 21, 21)	63	
With any module underneath	ThirdDEM (increments of 24, 23, 23)	70	

Module	License Value	Module Licensed Capacity *	Library Total Count
Cartridge Expansion Module (CEM) after Base Module or DEM			
As last module	FullCEM	84	
With any module underneath	FullCEM	94	
Cartridge Expansion Module (CEM) after CEM			
As last module	FullCEM	90	
With any module underneath	FullCEM	100	
* All capacities assume no reserved cells and all CAPs are configured for enter and eject operations.			

Cell Assignment Rules

The library controller uses the following rules when filling licensed storage cells with cartridges:

- All cells in column 1 are filled first, then the cells in column 2, then 3, and so on.
- Cells within each column are filled from top to bottom, starting with the first row after any reserved cells. For example, if the top three cells in a column are reserved, cell assignment within the column starts with row 4.
- Once all cells within a module are filled, cell assignment moves to the next module, using the same top-to-bottom, column by column approach.

In partitioned libraries, the library controller applies these rules separately to each partition.

Orphaned Cartridges in Non-Partitioned Libraries

Note – For a discussion of orphaned cartridges in partitioned libraries, see [“Orphaned Cartridges in Partitioned Libraries” on page 152](#).

In non-partitioned libraries, an orphaned cartridge is a cartridge located in an unlicensed storage cell. Orphaned cartridges are inaccessible to all hosts.

A cartridge can become orphaned for a variety of reasons. Following are some possible causes:

- Licensed storage capacity has been reduced.
- The cartridge has been moved to an unlicensed or inaccessible cell through manual intervention.

Implementing Changes to Licensed Capacity

Increasing Licensed Capacity

Following are special considerations for installing new licensed storage capacity.

- See [“License Installation Process” on page 120](#) for details on purchasing and installing a Capacity license.
- If the new licensed capacity exceeds the physical capacity, no corrective action is necessary. Physical cells that cannot be activated due to licensed capacity limits will be activated later whenever additional licensed capacity is installed.
- You must configure all affected library host applications to recognize the new licensed storage cells. See [“Host Notification of Capacity Changes” on page 142](#) for details.
- In non-partitioned libraries, all newly licensed cells are immediately available for use.
- In partitioned libraries, all newly licensed cells are added as “unallocated,” and are therefore not available for use. You must manually allocate the new cells to partitions before the cells can be used for cartridge storage. See [“Partition Configuration Tasks” on page 156](#) for detailed instructions.

Decreasing Licensed Capacity

Following are special considerations for deleting licensed storage capacity.

Caution – Deleting licensed capacity is an exceptional situation; use caution when doing so.

- See [“Delete a License Key File” on page 126](#) for details on deleting licensed capacity.
- Storage cells corresponding to the reduced capacity will become inaccessible, and any cartridges within those cells will be orphaned. No checks are made to identify cartridges that will be orphaned. See [“Orphaned Cartridges in Non-Partitioned Libraries” on page 140](#) for details.
- You must configure all affected library host applications to recognize the licensed storage cell changes. See [“Host Notification of Capacity Changes” on page 142](#) for details.
- For partitioned libraries:
 - The total number of storage cells allocated to all library partitions cannot exceed the licensed capacity of the library.

Caution – You must manually de-allocate cells from partitions so the total allocation does not exceed the new licensed capacity.

- If, after capacity has been decreased, the total number of cells allocated to all partitions is still less than the new licensed capacity, you do not need to reconfigure the partitions.

Host Notification of Capacity Changes

When storage capacity is added or removed, the library controller notifies all affected hosts according to their interface requirements. SCSI hosts are notified by a “Mode Parameters Changed” unit attention. The host must re-audit the library to determine the specific configuration changes. See the appropriate tape management software documentation for detailed procedures and commands.

6

Library Partitioning

Note – Starting with SL500 firmware version 1300 and SL Console version FRS_4.00, library partitioning upgrades must be installed through the SL500 licensing utility. Partitioning established on a library prior to version 1300 is retained permanently. See [Chapter 4, “Licensing”](#) for details.

Library partitioning allows sections of the SL500 library to be assigned for exclusive use by specified hosts. For example, you can configure one group of storage cells and drives to be used only for Veritas operations, and another group only for Tivoli operations. This allows you to configure an SL500 library for applications running on multiple hosts and operating systems.

Partitioning Features and Restrictions

This section describes important features and restrictions of library partitioning that will help you to configure and use partitioning in your SL500 library.

- You can configure up to eight partitions within an SL500 library.
- A partition can be as small as a single storage cell, CAP cell, or tape drive. Cells and drives within a partition do not need to be adjacent.
- Storage cells and tape drives allocated to a partition can be used only by the hosts assigned to that partition. Hosts assigned to other partitions cannot access the contents of these cells and drives. See “Storage Cells and Drives” on page 150 for details.
- Storage cells and drives not allocated to any partition cannot be accessed by any hosts. For example, you might leave an area of cells unallocated, in preparation for future partitioning.
- CAP cells can be allocated for exclusive use by a partition, or they can be left unallocated for common use by all hosts. See “Partitions and CAPs” on page 151 for details.

System Requirements for Library Partitioning

Note – Starting with SL500 firmware version 1300 and SL Console version FRS_4.00, library partitioning upgrades must be installed through the SL500 licensing utility. Partitioning established on a library prior to version 1300 is retained permanently. See [Chapter 4, “Licensing”](#) for details.

Note – ACSLS does not support partitioning on the SL500 library.

Enabling and Disabling Partitioning

In order for you to use partitions in a library, the partitioning feature must be enabled by your StorageTek CSE. Contact your StorageTek CSE for assistance.

A library with partitioning enabled can be in either of the following states:

- Partitioned—The library has at least one user-defined partition with a valid partition ID.
- Non-partitioned—The library has no user-defined partitions. A non-partitioned library behaves in the same manner as a library that does not have partitioning enabled; that is all storage cells, drives, and CAPs are accessible to all hosts.

To disable partitioning on a library, you must first delete all partitions. The library state will then change to “non-partitioned.”

Partition Planning

The partitioning feature offers great flexibility in the use of your library. It also requires careful planning, a thorough knowledge of library wall and storage cell mapping, and expertise in configuring and administering host software applications. There must be clear communication among all parties involved, including system programmers and administrators, library operators, and your Sun service representative.

Before creating partitions, you must plan the storage area that is needed for resident tape cartridges and anticipate the number of required free cells. You must understand the boundaries of each partition and the host ownership relationships. You must verify that all tape drives and cartridges have been moved to the proper locations, according to the planned host/storage cell and host/tape drive assignments.

Installing the Partitioning Feature

The following special considerations apply after you successfully install the Partitioning feature on a previously non-partitioned library.

- You must reboot the library after installing the Partitioning license.
- Until you create at least one partition, the library remains in a non-partitioned state; that is all licensed storage cells, drives, and CAPs are accessible to all hosts.

Allocated Storage Capacity

In partitioned libraries, the total number of storage cells allocated to all library partitions cannot exceed the licensed capacity of the library.

In partitioned libraries, there is no default active storage region. You must explicitly assign storage cells to partitions, thereby configuring the active storage regions for each partition. See [“Partitioning Process” on page 153](#) for details.

Partition Configurations

You must use the standalone SL Console or Web-launched SL Console to configure library partitions; the partitioning screens are not available on the local operator panel.

To configure a partition, you must define the following information:

- [Partition Summary Information](#)
- [Host-Partition Connections](#)
- [Partition Boundaries](#)

For detailed instructions on defining library partitions, see [“Partitioning Process” on page 153](#).

Partition Summary Information

Partition summary information includes the partition ID and name, and the barcode format to be used on cartridge labels. Partition IDs must be unique and can range from 1–8.

Host-Partition Connections

Host-partition connections identify the hosts that are able to access a partition. Each partition appears to the host as a separate library module. A host can control one or more partitions. In addition, it is possible for more than one host to control a single SCSI partition, but it is recommended that you exercise caution in implementing this configuration, as some host applications may not allow for resource sharing.

A partition can have one or more host-partition connections. The host-partition connection configuration is user-defined and consists of the following information:

- World Wide Port Name of the host bus adapter
- Port number of the library Fibre Channel card

- Logical unit number (LUN) of the partition on the host

See [“Configure a Host-Partition Connection” on page 160](#) for detailed instructions on defining this information.

Partition Boundaries

Partition boundaries identify the storage cells, drives, and CAP cells that are part of each partition. Only unallocated cells can be added to a partition, and only allocated cells can be removed.

You can define partition boundaries in any of the following ways:

- Select individual cells or rectangular groups of cells to add or remove from a partition. Cells or cell groups do not have to be contiguous.
- Select an entire module side to add or remove from a partition. Sides do not have to be contiguous.
- Select an entire module to add or remove from a partition. Modules do not have to be contiguous.

Sample Partition Configuration

[FIGURE 6-1 on page 147](#) shows a sample SL500 library partition configuration. In this example, there are three defined partitions:

- Partition 1
- Partition 2
- Partition 6

Tools Help **Partitions** Verify Refresh ?

Instructions (Step 1) Summary (Step 2) **Design (Step 3)** Commit (Step 4) Reports

Partition : 1

Select by: Cell

Add Remove

--- Totals For Partition 1 ---

Allocated Storage Cells	27
Allocated Drives	1
Allocated CAP Cells	2

--- Available Totals ---

Unallocated Storage Cells	19
Unallocated Drives	0
Unallocated CAP Cells	1

Legend

- Not Accessible
- Unallocated
- Partition 1
- Other Partitions
- Cartridge

Left Side Wall Rear Side Wall Right Side Wall

Base Module1 (LTO)

Drives

CAP

HP Drive Module2 (LTO)

Drives

Partition : 6
Module(2) row (2) col(9)
Cartridge : Empty

Comm Status UserID: root Library:green27

FIGURE 6-1 Library Partition Example

The screen display is from the perspective of Partition 1, therefore the resources allocated to Partition 1 are shown in gold, and the resources allocated to Partition 2 and Partition 6 are shown in red. [TABLE 6-1 on page 148](#) describes the resource allocation in detail.

TABLE 6-1 Partition Example—Resource Description

Resource Group	Included Resources
Partition 1	All resources are shown in gold. Includes the following: <ul style="list-style-type: none"> ■ Tape drive in the Base Module ■ Storage cells in the left side of the Base Module ■ Top two CAP cells in the Base Module
Partition 2	All resources are shown in red. Includes the following: <ul style="list-style-type: none"> ■ Top tape drive in the Drive Module ■ Storage cells in the right side of the Base Module ■ No allocated CAP cells
Partition 6	All resources are shown in red. Includes the following: <ul style="list-style-type: none"> ■ Bottom tape drive in the Drive Module ■ Storage cells in the Drive Module ■ Bottom two CAP cells in the Base Module
Common CAP cell	Middle CAP cell in the Base Module
Unassigned	All resources shown in white
Not Accessible	All resources shown x'ed out
Orphaned cartridge	Cartridge in unallocated (white) storage cell in the Base Module

Deleting the Partitioning Feature

You can delete the Partitioning feature by deleting the Partitioning license key file from the library. See [“Delete a License Key File” on page 126](#) for detailed instructions. You must reboot the library after deleting the Partitioning license in order for the deletion to take effect.

Note – Deleting the Partitioning feature is an exceptional situation; be sure this is what you really want to do.

Deleting the Partitioning feature has the following effects on the library configuration:

- Changes the library state to “non-partitioned.”
- Makes all licensed storage cells, drives, and CAPs accessible to all hosts.
- All existing partition summary information and resource allocations are retained, but not usable. If the Partitioning license is later re-installed, the partition allocations are restored.

Partitions and Library Resources

Library Resource Addresses

Resource addresses uniquely identify each resource (storage cells, drives, and CAP cells) within the library. The SL500 library and attached hosts use the following addressing schemes:

- [Library Internal Address](#)
- [Host SCSI Element Address](#)

Each partition appears to a host as a separate library; this is reflected in the partition address.

Library Internal Address

The library internal address is used by the SL500 library controller and the SL Console device tree to identify the physical location of each resource. The addressing scheme used by the SL500 is a four-digit, comma-separated value, specifying the library, module, row, and column, as viewed from inside the library, facing the drive bays. This addressing scheme is commonly referred to as the LMRC address.

The format of the SL500 LMRC address is l,m,r,c where:

- l = library or partition number. In partitioned libraries, l is the partition ID (1–8). In non-partitioned libraries, l is always “0”.
- m = module number (1–5). The Base Module is 1, additional drive expansion and storage expansion modules are 2–5.
- r = row number. Numbered consecutively from the top, down, with row 1 at the top.
- c = column number, as follows:
 - Base module, left side of library = 1–4
 - Base module, right side of library = 5–8
 - DEM (Drive Expansion Module) drive column, rear of library = 9
 - CEM (Cartridge Expansion Module) columns, rear of library = 9–11

Internal Address Examples

- If the entire Base Module is allocated to Partition 1, the internal address for a cartridge in row 8, column 1 in the Base Module is: 1, 1, 8, 1.
- If the entire CEM is allocated to Partition 2, the internal address for a cartridge in row 10, column 1 is: 2, 2, 10, 1.

Host SCSI Element Address

The element address is used by hosts to uniquely identify each library resource available to the host.

SCSI element numbering uses a single integer to identify each library resource. SCSI element numbering within partitioned libraries is continuous for each partition, even if cell locations for the partition are not adjacent. SCSI element addresses for a partition start at the lowest module, row, and column within the partition, then proceed by row until the end of the column, then increment by column until the end of the module.

When additional resources are allocated to an existing SCSI partition, the original resources are not renumbered. This helps to minimize disruption to the SCSI host.

SCSI Element Address Examples

If a library's base and storage expansion modules are allocated to Partition 1 and the drive module is allocated to Partition 2, SCSI element numbering is as follows:

- Numbering for Partition 1 begins at the first available storage cell in the Base Module and continues through the last available cell in the storage module cell.
- Numbering for Partition 2 begins with the first available storage cell in the drive module PRC Address and ends with the last available cell in that module.

Storage Cells and Drives

All storage cells, tape drives, and cartridges allocated to a partition are owned exclusively by the assigned host and cannot be accessed by other hosts. For example, if a group of tape drives is allocated to a partition, only the host assigned to that partition can use those drives.

Storage cells and drives that are not allocated to any partition cannot be accessed at all. For example, you can leave an area of cells unallocated in preparation for a planned future partition.

On the SL Console screens and reports, storage cells and drives appear in any of the following states:

- Allocated—Assigned to the current partition.
- Unallocated (or Unassigned)—Not assigned to any partition; available to be assigned to any current partition.
- Unavailable—Assigned to another partition.
- Not accessible—Not available for host operations; for example, cells reserved for diagnostic cartridges, cells that are physically blocked.

Note – HandBots are shared resources and cannot be allocated exclusively to a partition.

To display partition assignments for storage cells and drives, see [“Partitions—Reports—Cartridge Cell and Media Summary” on page 229](#).

Partitions and CAPs

The cells within each CAP can be allocated or unallocated individually to partitions. This allows for the following possible CAP configurations:

- [Common CAP](#)
- [Split CAP](#)

Note – Split CAPs are available to the SL500 only.

Common CAP

In a common, or unassigned, CAP, all cells in the CAP are left unallocated and can be used by any partition that does not have any CAP cells allocated to it. CAP cells are common by default—any CAP cells that are not explicitly allocated to a partition are treated as common.

A common CAP is a shared library resource. Each host must select a common CAP to use it and must release the CAP when done, to make it available to other hosts. No other host can access the CAP until the first host has completed the operation and released the CAP. For additional details, see [“CAP Operations” on page 151](#).

Split CAP

In a split CAP, the cells in the CAP are allocated to one or more partitions. Each individual CAP cell can be allocated to one partition only. Cells in a split CAP can be allocated in any of the following ways:

- All cells can be allocated to one partition.
- All cells can be distributed among multiple partitions. For example, in an eight-cell CAP, two cells could be allocated to Partition 1, one cell to Partition 2, and the remaining cells to Partition 3.
- Some cells can be allocated to one partition and the remainder left unallocated, or common. For example, in an eight-cell CAP, five cells could be allocated to Partition 3, and the remaining cells left common.

When configuring a split CAP, you must plan carefully for anticipated CAP usage. A partition with allocated CAP cells can use the cells allocated to it only. It cannot use CAP cells allocated to other partitions, nor can it use common CAP cells.

CAP Operations

In a partitioned library, it is recommended that you assign partitions to the **CAP Open** button on the library control panel prior to pressing the button to open the CAPs.

Once you have assigned partitions to the **CAP Open** button, only CAPs containing cells that are accessible to those partitions will open. Depending on how your library's CAPs are configured, this operation may expose CAP cells that are not accessible to the selected partitions. As a safeguard, however, CAPs that contain only inaccessible cells and CAPs with cartridges in inaccessible cells do not open.

For detailed instructions, see ["Enter Cartridges Into a Partitioned Library"](#) on page 187 and ["Eject Cartridges From a Partitioned Library"](#) on page 190.

Orphaned Cartridges in Partitioned Libraries

Note – For a discussion of orphaned cartridges in non-partitioned libraries, see ["Orphaned Cartridges in Non-Partitioned Libraries"](#) on page 150.

In partitioned libraries, an orphaned cartridge is a cartridge located in an unallocated cell or drive (that is, a cell or drive not allocated to any defined partition).

Caution – If a host encounters an orphaned cartridge it might treat the cartridge as scratch and overwrite the data. Therefore, it is very important to disposition orphaned cartridges properly.

A cartridge can become orphaned for a variety of reasons. Following are some possible causes:

- Partition boundaries have changed.
- A partition has been deleted.
- The cartridge has been moved to an unallocated or inaccessible cell through manual intervention.

If the SL Console identifies an orphaned cartridge, it displays a warning message. You can then use the following tools to help you resolve and disposition the orphaned cartridge:

- Generate a report of orphaned cartridges.
- Perform an audit of the library.
- Perform a recovery move on a cartridge.

For detailed instructions on checking for and resolving orphaned cartridges, see the following procedures:

- ["Verify Partition Configurations"](#) on page 164
- ["Resolve Orphaned Cartridges"](#) on page 166
- ["Commit Partition Configuration Changes"](#) on page 167

Partitioning Process

Note – Starting with SL500 firmware version 1300 and SL Console version FRS_4.00, library partitioning upgrades must be installed through the SL500 licensing utility. Partitioning established on a library prior to version 1300 is retained permanently. See [Chapter 4, “Licensing”](#) for details.

Partition Configuration Process

When configuring library partitions for the first time, it is recommended that you use the library partition screens in the following sequence:

1. **Instructions (Step 1)**—Review summary instructions for the partition configuration process.
2. **Summary (Step 2)**—Display summary partition configuration and host-partition connection information. Optionally access other screens to perform the following tasks:
 - Add Partition
 - Modify Partition
 - Delete Partition
 - Add Connection
 - Modify Connection
 - Delete Connection
3. **Design (Step 3)**—Display and optionally modify detailed partition boundary information. Optionally access other screens to perform the following tasks:
 - Verify Partition Configurations
 - Refresh the display with current data from the library controller database
4. **Commit (Step 4)**—Commit all changes made in the **Summary(2)** and **Design (3)** screens, and all associated popups, to the library controller database. Optionally access other screens to perform the following task:
 - Refresh the display with current data from the library controller database

You can use the **Reports** screen at any time to display, and optionally save or print, partition configuration information from the library controller database.

SL Console Partition Workspace

The partition **Summary (Step 2)** and **Design (Step 3)** screens, and all associated popups, give you a dynamic workspace to design your library partitions. All partition configuration information is automatically saved to the partition workspace in SL Console memory and retained for the duration of your SL Console session. This allows you to switch among partition views and leave and return to the partition screens any number of times without losing your configuration changes.

Information in the SL Console partition workspace is committed to the library controller database only through the **Commit (Step 4)** screen. The information is lost if any one of the following occurs before you have committed your updates:

- You actively log off the SL Console session.
- The SL Console session times out or the connection to the library is lost.
- You actively refresh the SL Console workspace from the current library controller database. This is done through the **Refresh** button on the **Summary (Step 2)** and **Design (Step 3)** screens.

Caution – For the following reasons, it is recommended that you make the library unavailable to other users before committing your partition workspace changes.

There is no real-time validation of partition boundaries against the library controller database; therefore if you do not make the library unavailable and other users are performing cartridge movements or library configuration changes, configuration conflicts may arise. See [“Synchronizing the Display With the Controller Database” on page 31](#) for details.

The library temporarily drops all connections to HSC or ACSLS hosts when partition configurations changes are committed. The hosts will automatically reconnect, but multiple error messages will be displayed, and cartridge management tasks in progress may fail.

Partitioning Task Summary

Partitioning tasks are divided into the following categories:

- [“Partition Configuration Tasks” on page 156](#)
- [“Partition Management Tasks” on page 170](#)
- [“Partition Report Tasks” on page 181](#)
- [“CAP Operation Tasks” on page 186](#)

Partition Configuration Tasks

Task	Page
Review Partitioning Instructions	157
Create a Partition	158
Configure a Host-Partition Connection	160
Design a Partition	162
Verify Partition Configurations	164
Resolve Orphaned Cartridges	166
Commit Partition Configuration Changes	167

▼ Review Partitioning Instructions

Use this procedure to review the partitioning process.

1. Select Tools > Partitions.

The first time you make this selection during an SL Console login session, the **Instructions (Step 1)** screen appears automatically.

Instructions for Adding, Modifying, or Deleting Partitions and their Host Connections

To create, modify or delete partitions first go to the **Summary** tab (Step 2). This tab will allow you to view all current partitions on the library, as well as their current connections. This tab has buttons to add, delete or modify the partitions. If the **Add** button is selected, a dialog box will allow you to name the partition and select a barcode option, and then you can select the **Design** tab (Step 3). The **Design** tab allows you to add or remove resources, such as cells, drives, or CAPs to the partition using a graphical cell map. The **Modify** button will also direct you to a dialog box to modify the name and barcode presentation of the partition, and then you can choose the **Design** tab to to modify resources for a selected partition. To delete an existing partition, simply select a partition from the Partition Summary table in the **Summary** tab, and then click the **Delete Partition** button.

Note that making changes in the **Design** tab does not apply or commit the partition definitions/changes to the library. If you have completed defining or modifying your partitions you will need to go to the **Commit** tab (Step 4) to apply changes to the library by using the **Apply** button. This operation may be disruptive to the library. It is not necessary to do this separately for for each partition; you can add or modify multiple partitions and then use the **Commit** tab to apply all of these changes as a single transaction.

For more detailed information about the operation of each of the tabs, please refer to the **Help** for the selected tab.

Comm Status UserID: root Library:green27

2. Review the instructions on the screen before proceeding with other partitioning tasks.

▼ Create a Partition

Use this procedure to create a new library partition and assign its storage capacity. You can create up to eight partitions, with IDs from 1–8.

1. Select **Tools > Partitions**, and click the **Summary (Step 2)** tab.

The **Summary (Step 2)** screen appears.

Partition Number	Allocated Storage Cells	Allocated Drives	Allocated CAP
1	27	1	2
2	18	1	0
3	0	0	0
4	0	0	0
6	28	1	2
7	0	0	0
8	0	0	0

2. Click **Add Partition**.

The **Add Partition** popup appears.

3. Select the **Partition ID** you want to add, and enter the **Name**, and **Barcode Presentation**.

Note – Partition IDs do not need to be contiguous. For example, you can create partition 2 and partition 4, with no partitions 1 or 3.

4. Click OK.

Your partition configuration changes are saved to the SL Console partition workspace for the duration of this login session.

To update the library controller database with all changes from this SL Console login session, see [“Verify Partition Configurations” on page 164](#) and [“Commit Partition Configuration Changes” on page 167](#).

▼ Configure a Host-Partition Connection

Use this procedure to configure the connection between a host and a selected partition. You must perform this procedure in order for the partition to be accessible by the host.

Each partition can have up to nine host connections, each with a unique LUN. Also, each host can connect to multiple partitions.

Note – The SL500 supports only SCSI connections between the host and library.

1. Select **Tools > Partitions**, and click the **Summary (Step 2)** tab.

The **Summary (Step 2)** screen appears.

The screenshot displays the 'Summary (Step 2)' tab of the Partition configuration interface. It includes a navigation bar with 'Tools', 'Help', and 'Partitions', along with 'Refresh' and a help icon. The main content area is divided into several sections:

- TOTAL LIBRARY RESOURCES:** Storage Cells in Library : 92, Drives in library : 3, Total CAP cells: 5.
- RESOURCES ALLOCATED:** Storage Cells in Library : 73, Drives in library : 3, Total CAP cells: 4.
- RESOURCES AVAILABLE:** Storage Cells in Library : 19, Drives in library : 0, Total CAP cells: 1.
- Partition Summary Table:**

Partition Number	Allocated Storage Cells	Allocated Drives	Allocated CAP
1	27	1	2
2	18	1	0
3	0	0	0
4	0	0	0
6	28	1	2
7	0	0	0
8	0	0	0
- Details For Partition 1:**
 - Name: PARTITION-1
 - Barcode Presentation: Left 7 label characters
 - Connections Table:**

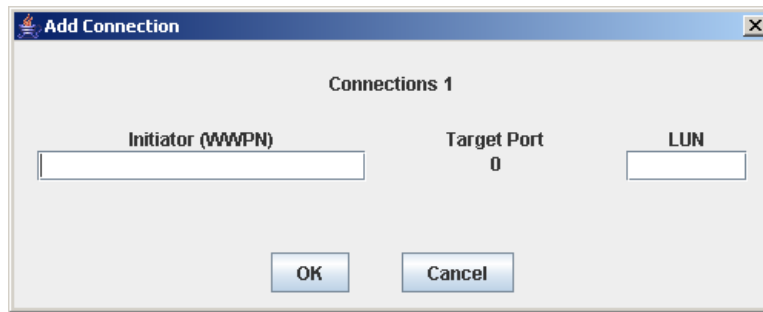
Initiator (WWPN)	Target Port	LUN
20:00:00:A0:BD:08:0A:00	0	2

Buttons for 'Add Partition', 'Delete Partition', and 'Modify Partition' are located below the Partition Summary table. Similarly, 'Add Connection', 'Delete Connection', and 'Modify Connection' buttons are located below the Connections table. The bottom status bar shows 'Comm Status' (green checkmark), 'UserID: root', and 'Library:green27' (green checkmark).

2. Click the partition to which you want to add a host connection

3. Click **Add Connection**.

The **Add Connection** popup appears.



The screenshot shows a dialog box titled "Add Connection" with a close button in the top right corner. The main content area is titled "Connections 1". It contains three input fields: "Initiator (WWPN)" which is empty, "Target Port" which has the value "0", and "LUN" which is empty. At the bottom of the dialog are two buttons: "OK" and "Cancel".

4. Enter the Initiator (WWPN) and LUN.

Note – Each initiator connected to the library must have one library partition assigned to LUN 0. When you verify or commit partition configuration changes, the SL Console will notify you if an initiator does not meet this requirement.

5. Click **OK**.

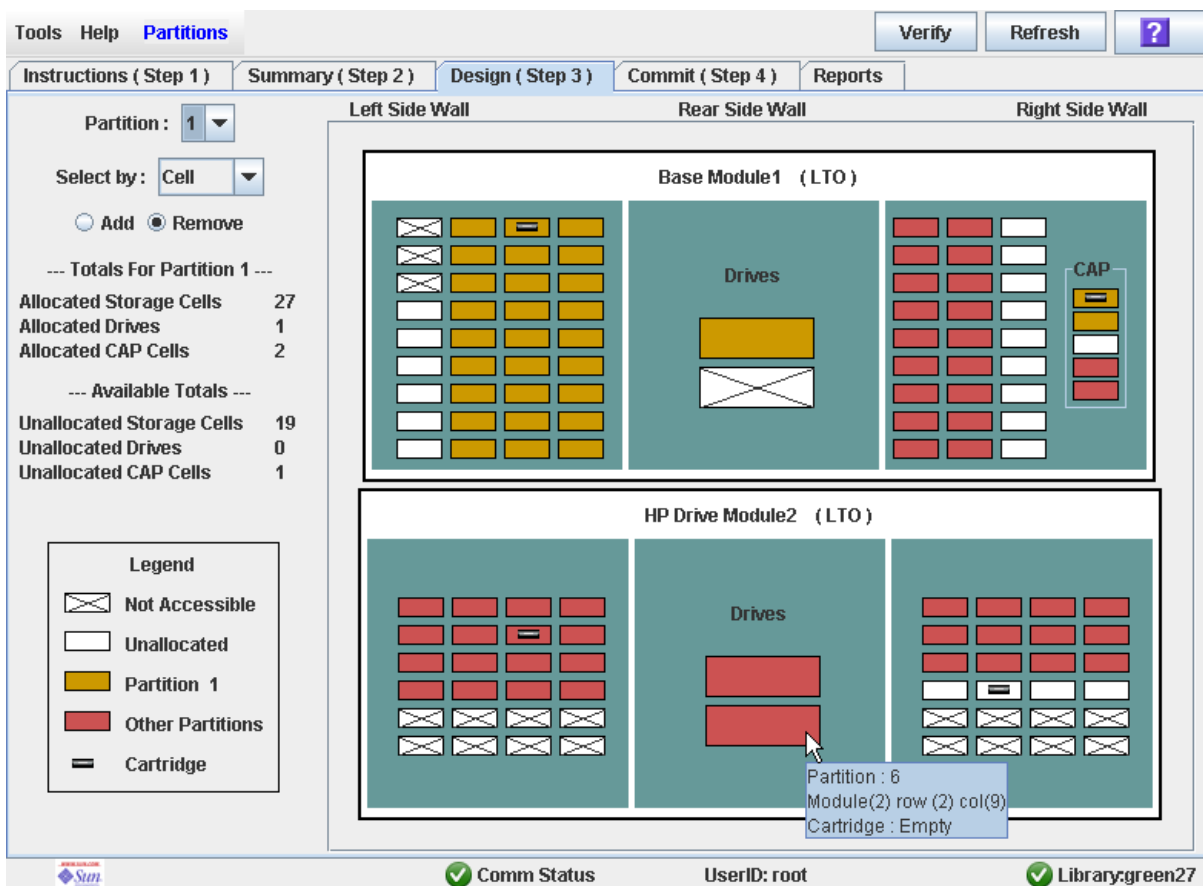
▼ Design a Partition

Use this procedure to add or remove library resources (storage cells, tape drives, and CAP cells) from a partition.

Note – Library resources can be allocated to only one partition at a time. If you want to add resources to a partition but the resources are already allocated to another partition, you must first remove the resources from the assigned partition, and then add them to the new partition.

1. Select **Tools > Partitions**.
2. Click the **Design (Step 3)** tab.

The **Design (Step 3)** screen appears, displaying the current configuration of the library.



3. In the **Partition** pull-down menu, select the partition you want to configure.
All screen fields are updated to reflect the current configuration for the selected partition.
4. Choose the **Select by** method, and click either the **Add** or **Remove** radio button.
5. Use the library map to select the resources you want to add or remove.

Note – See [“Partitions—Design \(Step 3\)” on page 212](#) for detailed instructions on using the library map.

Your partition configuration changes are saved to the SL Console partition workspace for the duration of this login session.

To update the library controller database with all changes from this SL Console login session, see [“Verify Partition Configurations” on page 164](#) and [“Commit Partition Configuration Changes” on page 167](#).

▼ Verify Partition Configurations

Use this procedure to verify partition configuration changes you have made during this SL Console login session. This procedure warns you of the following possible errors:

- A partition has orphaned cartridges. See [“Orphaned Cartridges in Partitioned Libraries” on page 152](#) for details.
- Library resources have been removed from a partition.
- A host connected to the library does not have a partition assigned to LUN 0.

Note – This procedure verifies only one partition at a time. If you need to verify multiple partitions, you must repeat this procedure separately for each partition.

1. Select **Tools > Partitions**.
2. Click the **Design (Step 3)** tab.

The **Design (Step 3)** screen appears, displaying the current configuration of the library.



3. In the **Partition** pull-down menu, select the partition you want to verify.

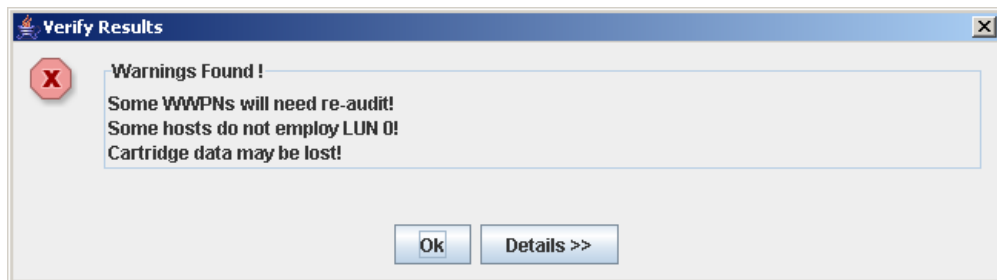
All screen fields are updated to reflect the current configuration for the selected partition.

4. In the **Options Bar**, click **Verify**.

The boundaries of the selected partition are verified, including the locations of all tape cartridges.

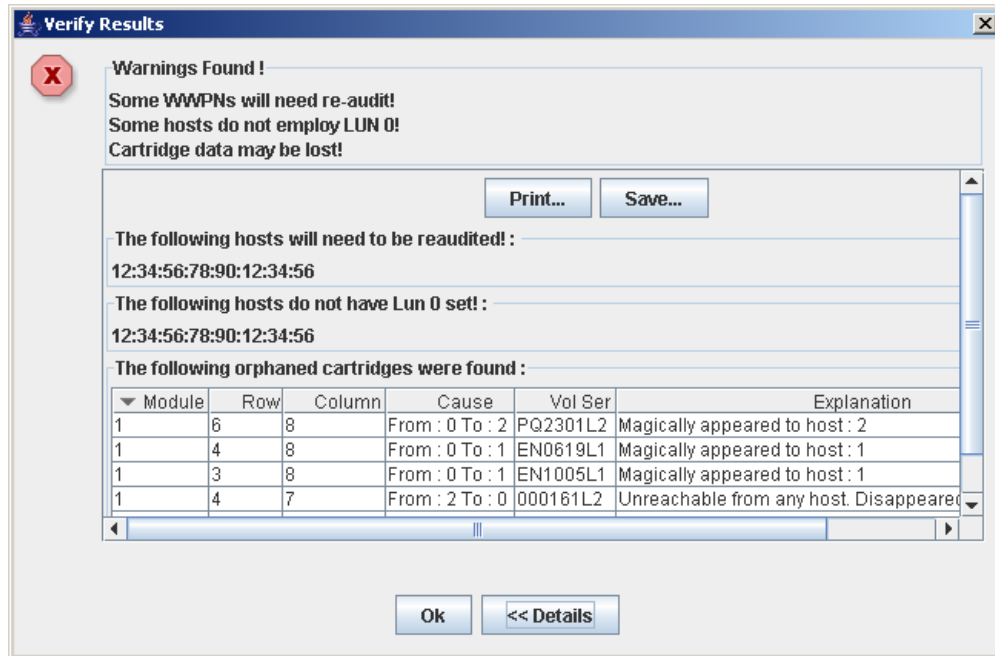
Note – This verification is performed on the current partition configuration in the SL Console partition workspace only. It does not verify current partition boundaries against the library controller database; therefore it cannot identify configuration conflicts that may arise due to other users performing cartridge movements or library configuration changes—through the command line interface, other SL Console sessions, or host applications—at the same time you have made partition changes.

The **Verify Results** popup appears, indicating whether there are any orphaned cartridges or other errors in the current partition configuration.



5. To display detailed warning messages explaining the reasons for any orphaned cartridges, click **Details**.

You can use the **Details** button to toggle between the expanded and collapsed views of the warning messages.



6. Optionally, in the expanded view of the warning messages you can do the following:
- Click **Print** to print the detailed message data.
 - Click **Save** to save the detailed message data to a comma-separated file.
7. Click **OK** to dismiss the **Verify Results** popup and return to the **Design (Step 3)** screen.

Note – It is recommended that you follow the [“Resolve Orphaned Cartridges”](#) on [page 166](#) procedure before committing your changes to the library controller database.

▼ Resolve Orphaned Cartridges

If the SL Console identifies an orphaned cartridge, it displays a warning message. You should resolve and disposition all orphaned cartridges before proceeding to [“Commit Partition Configuration Changes” on page 167](#).

You can performing any of the following actions to resolve orphaned cartridges:

- Print a report of orphaned cartridges.
- Perform an audit of the library.
- Perform a recovery move on an orphaned cartridge.

▼ Commit Partition Configuration Changes

Caution – This procedure updates the library controller database with all partition configuration changes you have made during this SL Console session. Failure to use this procedure before logging out of the current SL Console session will cause all your library configuration changes to be lost.

Caution – For the following reasons, it is recommended that you make the library unavailable to other users before committing your partition workspace changes.

There is no real-time validation of partition boundaries against the library controller database; therefore if you do not make the library unavailable and other users are performing cartridge movements or library configuration changes, configuration conflicts may arise. See [“Synchronizing the Display With the Controller Database”](#) on page 31 for details.

The library temporarily drops all connections to HSC or ACSLS hosts when partition configurations changes are committed. The hosts will automatically reconnect, but multiple error messages will be displayed, and cartridge management tasks in progress may fail.

Note – It is recommended that you follow the [Resolve Orphaned Cartridges](#) procedure before performing this procedure.

1. Vary the library offline to ACSLS and HSC.

See the appropriate tape management software documentation for the procedures and commands.

2. Select Tools > Partitions, and click the Commit (Step 4) tab.

The **Commit (Step 4)** screen appears.

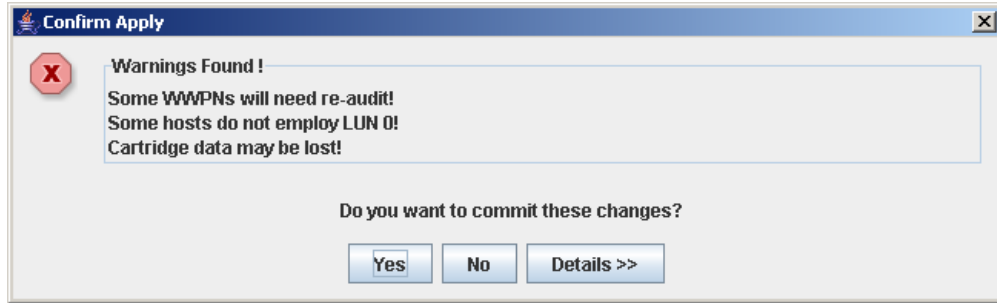


3. In the Options Bar, click Apply.

The boundaries of the selected partition are verified, including the locations of all tape cartridges.

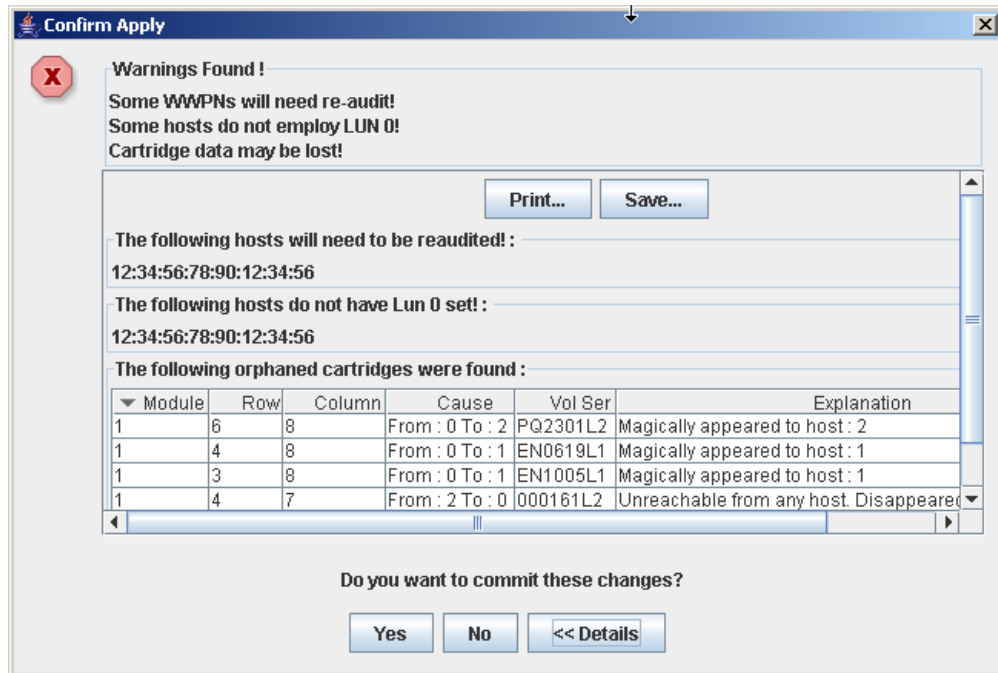
Note – This verification is performed on the current partition configuration in the SL Console partition workspace only. It does not verify current partition boundaries against the library controller database; therefore it cannot identify configuration conflicts that may arise due to other users performing cartridge movements or library configuration changes—through the command line interface, other SL Console sessions, or host applications—at the same time you have made partition changes.

The **Confirm Apply** popup appears, indicating whether there are any orphaned cartridges or other problems in the current partition configuration.



4. To display detailed warning messages explaining the reasons for any orphaned cartridges, click **Details**.

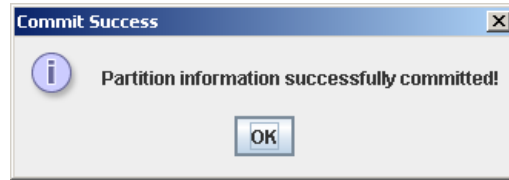
You can use the **Details** button to toggle between the expanded and collapsed views of the warning messages.



5. Optionally, in the expanded view of the warning messages you can do the following:
 - Click **Print** to print the detailed message data.
 - Click **Save** to save the detailed message data to a comma-separated file.
6. Proceed as follows:

- Click **No** to cancel the update. The library controller database is not updated, but all partition changes from this login session are retained in the SL Console partition workspace.
- Click **Yes** to update the library controller database.

The **Commit Success** popup appears.



Click **OK** to return to the **Commit (Step 4)** screen.

7. All affected library host applications must now be configured to recognize these updates. See the appropriate tape management software documentation for the procedures and commands.

Partition Management Tasks

Task	Page
Modify Partition Summary Information	171
Delete a Partition	172
Modify Host-Partition Connection Detail	174
Delete a Host-Partition Connection	176
Refresh the SL Console Partition Workspace	178
Reallocate Library Resources	179
Make a Hardware Change to a Partitioned Library	180

▼ Modify Partition Summary Information

Use this procedure to change the name or barcode presentation format of an existing partition.

Note – You cannot change the partition ID. To assign a different Partition ID, you must delete the old partition and create a new one with the new ID.

1. Select **Tools > Partitions**, and click the **Summary (Step 2)** tab.

The **Summary (Step 2)** screen appears.

Partition Number	Allocated Storage Cells	Allocated Drives	Allocated CAP
1	27	1	2
2	18	1	0
3	0	0	0
4	0	0	0
6	28	1	2
7	0	0	0
8	0	0	0

2. In the **Partition Summary** section, select the partition you want to modify.
3. Click **Modify Partition**.

The **Modify a Partition** popup appears.

4. Enter the changes you want to make.
5. Click **OK** to confirm the changes.

▼ Delete a Partition

Use this procedure to delete a partition from the library. The following changes are made to the library partition configuration:

- All resources allocated to the partition are marked available.
- All host connections for the partition are deleted.
- The partition ID is deleted.

Caution – Deleting partitions can result in orphaned cartridges and data that could be lost. See [“Orphaned Cartridges in Partitioned Libraries”](#) on page 152 for details.

Note – Deleting all partitions from the library causes the library state to change to “non-partitioned.” All storage cells, drives, and CAPs will be accessible to all hosts.

1. Select **Tools > Partitions**, and click the **Summary (Step 2)** tab.

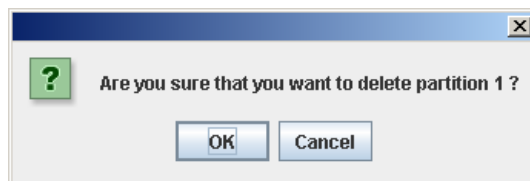
The **Summary (Step 2)** screen appears.

The screenshot shows the 'Partitions' section of a software interface. The 'Summary (Step 2)' tab is selected. On the left, there are two sections: 'TOTAL LIBRARY RESOURCES' and 'RESOURCES ALLOCATED'. The 'Partition Summary' table is in the center, and there are three buttons at the bottom: 'Add Partition', 'Delete Partition', and 'Modify Partition'.

Partition Number	Allocated Storage Cells	Allocated Drives	Allocated CAP
1	27	1	2
2	18	1	0
3	0	0	0
4	0	0	0
6	28	1	2
7	0	0	0
8	0	0	0

2. In the **Partition Summary** section, click the partition you want to remove.
3. Click **Delete Partition**.

A confirmation popup appears.



4. Click **OK** to confirm the deletion.

5. The updates are made as follows:

Your partition configuration changes are saved to the SL Console partition workspace for the duration of this login session.

To update the library controller database with all changes from this SL Console login session, see [“Verify Partition Configurations” on page 164](#) and [“Commit Partition Configuration Changes” on page 167](#).

If there are no partitions remaining in the library, when you commit the updates the library state will change to “non-partitioned”.

▼ Modify Host-Partition Connection Detail

Use this procedure to modify the host World Wide Port Name or LUN number of the library for a host-partition connection.

Note – You cannot modify the target port number for the library; it is always “0”.

1. Select **Tools > Partitions**, and click the **Summary (Step 2)** tab.

The **Summary (Step 2)** screen appears.

The screenshot displays the 'Summary (Step 2)' interface for partition management. It includes a navigation bar with 'Tools', 'Help', and 'Partitions', along with a 'Refresh' button and a help icon. The main content is divided into several sections:

- TOTAL LIBRARY RESOURCES:** Storage Cells in Library : 92, Drives in library : 3, Total CAP cells: 5.
- RESOURCES ALLOCATED:** Storage Cells in Library : 73, Drives in library : 3, Total CAP cells: 4.
- RESOURCES AVAILABLE:** Storage Cells in Library : 19, Drives in library : 0, Total CAP cells: 1.
- Partition Summary Table:**

Partition Number	Allocated Storage Cells	Allocated Drives	Allocated CAP
1	27	1	2
2	18	1	0
3	0	0	0
4	0	0	0
6	28	1	2
7	0	0	0
8	0	0	0
- Details For Partition 1:**
 - Name: PARTITION-1
 - Barcode Presentation: Left 7 label characters
 - Connections Table:**

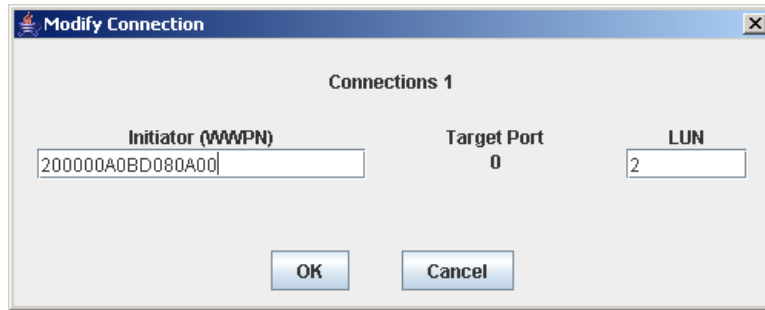
Initiator (WWPN)	Target Port	LUN
20:00:00:A0:BD:08:0A:00	0	2

At the bottom of the screen, there are status indicators: 'Comm Status' (green checkmark), 'UserID: root', and 'Library:green27' (green checkmark).

2. In the **Summary** section of the screen, click the partition for which you want to modify a connection.
3. In the **Connections** section, click the host-partition connection you want to modify.

4. Click Modify Connection.

The **Modify a Connection** popup appears.



The screenshot shows a dialog box titled "Modify Connection" with a close button in the top right corner. The main content area is titled "Connections 1". It contains three input fields: "Initiator (WWPN)" with the value "200000A0BD080A00", "Target Port" with the value "0", and "LUN" with the value "2". At the bottom of the dialog are two buttons: "OK" and "Cancel".

5. Enter the changes you want to make.**6. Click OK to confirm the changes.**

Your partition configuration changes are saved to the SL Console partition workspace for the duration of this login session.

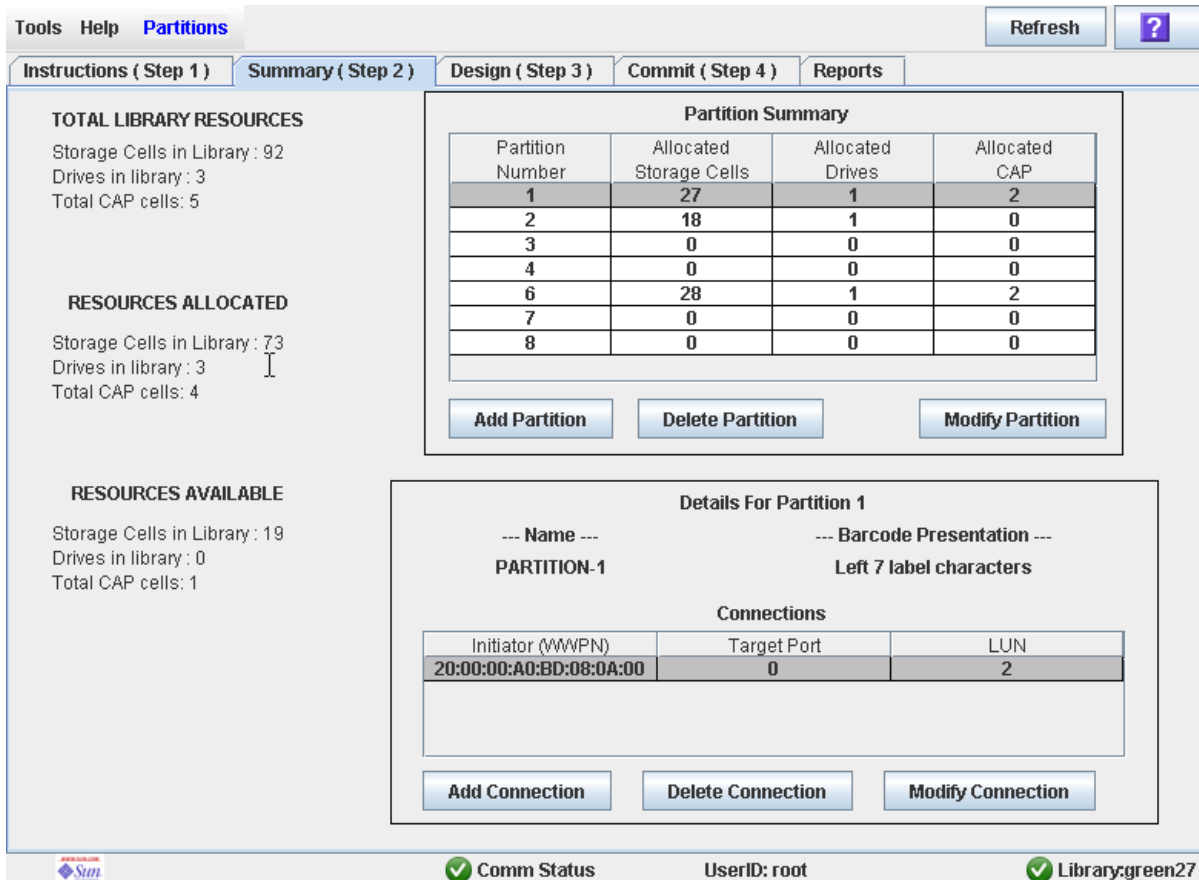
To update the library controller database with all changes from this SL Console login session, see [“Verify Partition Configurations” on page 164](#) and [“Commit Partition Configuration Changes” on page 167](#).

▼ Delete a Host-Partition Connection

Use this procedure to delete a host-partition connection. After you perform this procedure, the host will no longer be able to access the partition.

1. Select **Tools > Partitions**, and click the **Summary (Step 2)** tab.

The **Summary (Step 2)** screen appears.



TOTAL LIBRARY RESOURCES
Storage Cells in Library : 92
Drives in library : 3
Total CAP cells: 5

RESOURCES ALLOCATED
Storage Cells in Library : 73
Drives in library : 3
Total CAP cells: 4

RESOURCES AVAILABLE
Storage Cells in Library : 19
Drives in library : 0
Total CAP cells: 1

Partition Number	Allocated Storage Cells	Allocated Drives	Allocated CAP
1	27	1	2
2	18	1	0
3	0	0	0
4	0	0	0
6	28	1	2
7	0	0	0
8	0	0	0

Details For Partition 1

--- Name ---
PARTITION-1

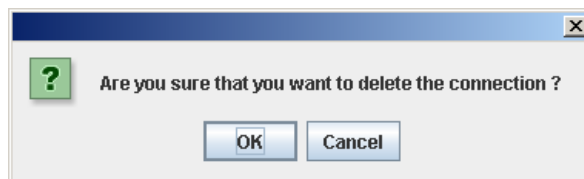
--- Barcode Presentation ---
Left 7 label characters

Initiator (WWPN)	Target Port	LUN
20:00:00:A0:BD:08:0A:00	0	2

Comm Status ✔ UserID: root Library:green27 ✔

2. In the Summary section of the screen, click the partition for which you want to delete a connection.
3. In the Connections section, click the host-partition connection you want to delete.
4. Click **Delete Connection**.

A confirmation popup appears.



5. Click OK to confirm the deletion.

Your partition configuration changes are saved to the SL Console partition workspace for the duration of this login session.

To update the library controller database with all changes from this SL Console login session, see [“Verify Partition Configurations” on page 164](#) and [“Commit Partition Configuration Changes” on page 167](#).

▼ Refresh the SL Console Partition Workspace

Use this procedure to refresh the SL Console partition workspace with current data from the library controller database. The current data includes all updates that other users have made to the library controller database during your login session, through the command line interface, other SL Console sessions, or host applications.

Note – After you complete this procedure, all uncommitted partition changes you have made during this SL Console login session are discarded.

1. Select **Tools > Partitions**.
2. Click one of the following tabs:
 - **Summary (Step 2)**
 - **Design (Step 3)**

The selected screen appears.



3. In the Options Bar, click **Refresh**.

The **Partition Refresh** popup appears.



4. Click **Yes** to confirm the refresh.

All partition screen data is updated with current data from the library controller database.

▼ Reallocate Library Resources

Reallocating library resources (storage cells, tape drives, CAP cells, or cartridges) from one partition to another is done through the **Design (Step 3)** screen. You must use the following two-step process:

1. Remove the resource from the partition it is currently allocated to.
2. Allocate the resource to a different partition.

See [“Design a Partition” on page 162](#) for detailed instructions.

Caution – Reallocating resources can result in orphaned cartridges and data that could be lost. See [“Orphaned Cartridges in Partitioned Libraries” on page 152](#) for details.

▼ Make a Hardware Change to a Partitioned Library

Some library hardware changes, such as adding expansion modules, or adding CAP cells, may require the removal of all or part of an existing partitioned module. Use the following process to make such hardware changes without losing partitioning information for the sections of the library that are unchanged.

Caution – Failure to follow this procedure could result in the loss of library partition configuration information after a hardware change.

1. De-allocate all library resources (storage cells, CAPs, and drives) that will be removed as part of the hardware change from the partitions they are currently allocated to.
See [“Design a Partition” on page 162](#) for detailed instructions.
2. Power down the library.
See [“Power Down the Library” on page 353](#) for detailed instructions.
3. Install the hardware change.
4. Power up the library.
See [“Power Up the Library” on page 354](#) for detailed instructions.
All partition allocations for the unchanged parts of the library remain in effect.
5. Allocate the library resources that have been added due to the hardware change.
See [“Design a Partition” on page 162](#) for detailed instructions.

Caution – Reallocating resources can result in orphaned cartridges and data that could be lost. See [“Orphaned Cartridges in Partitioned Libraries” on page 152](#) for details.

Partition Report Tasks

Task	Page
Display a Partition Report	182
Print Partition Report Data	184
Save Partition Report Data	185

▼ Display a Partition Report

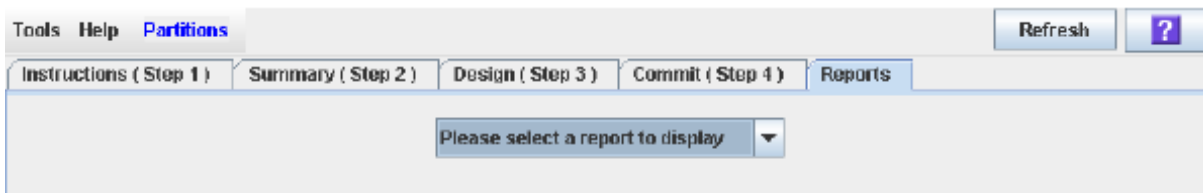
Use this procedure to display any of the following partition reports:

- Cartridge Cell and Media Summary—Displays a detailed list of all resource partition assignments.
- Host Connections Summary—Displays detailed host-partition connection information for all partitions.
- Orphaned Cartridge Report—Displays a detailed list of all orphaned cartridges.
- Partition Details—Displays detailed information for a selected partition.
- Partition Summary—Displays summary information for all partitions.

Note – The partition reports display data saved to the library controller database. If you have made partition configuration changes without committing the changes to the library controller through the **Commit (Step 4)** screen, the data in these reports will differ from data shown on the partition **Summary (Step 2)** and **Design (Step 3)** screens.

1. Select **Tools > Partitions**, and click the **Reports** tab.

The **Reports** screen appears.



2. In the pull-down menu, select the report you want to display.

The screen is updated with current data from the library controller database.

Tools Help **Partitions** ?

Instructions (Step 1) Summary (Step 2) Design (Step 3) Commit (Step 4) **Reports**

NOTE: The reports in this menu reflect only the current partition definitions stored on the library. Any changes to the partition definitions made in the Design tab will be reflected in the reports only after they are committed.

Partition Summary ▼

Partitions as of 4/30/08 3:16 PM

Partition ID	Partition Name	Storage Cells	Media in Storage Cells	%Storage Cells w/ Media	Drives	CAPs	* Total Media
1	Part 1	36	7	19.44%	0	0	7
2	Part 2	35	1	2.86%	0	0	1

*The Total Media column includes media currently found in CAPs, drives and storage cells

Print... Save To File...

SL500 ✓ Comm Status UserID: advsrv ✓ Library:green11.stortek.com

3. If you want to print the report data or save it to a file, see the following procedures:

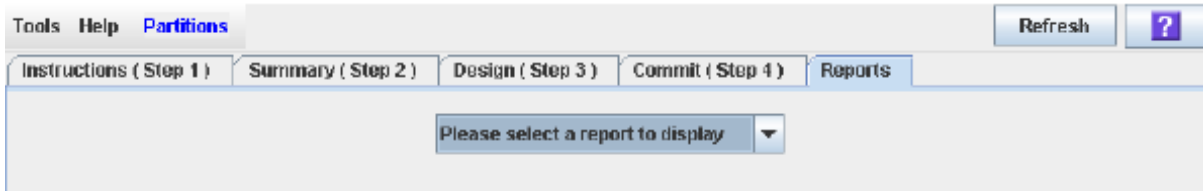
- ["Print Partition Report Data" on page 184](#)
- ["Save Partition Report Data" on page 185](#)

▼ Print Partition Report Data

Use this procedure to print a partition report. This procedure can be performed from any of the partition report screens.

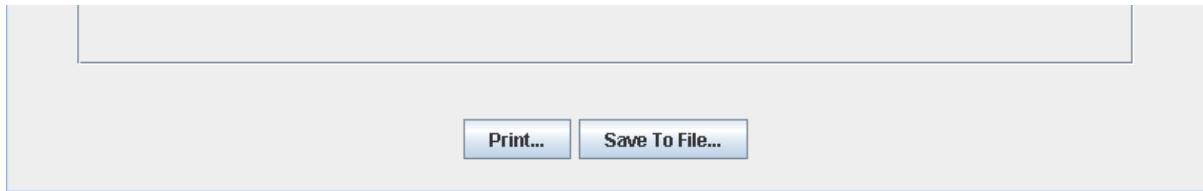
1. **Select Tools > Partitions, and click the Reports tab.**

The **Reports** screen appears.



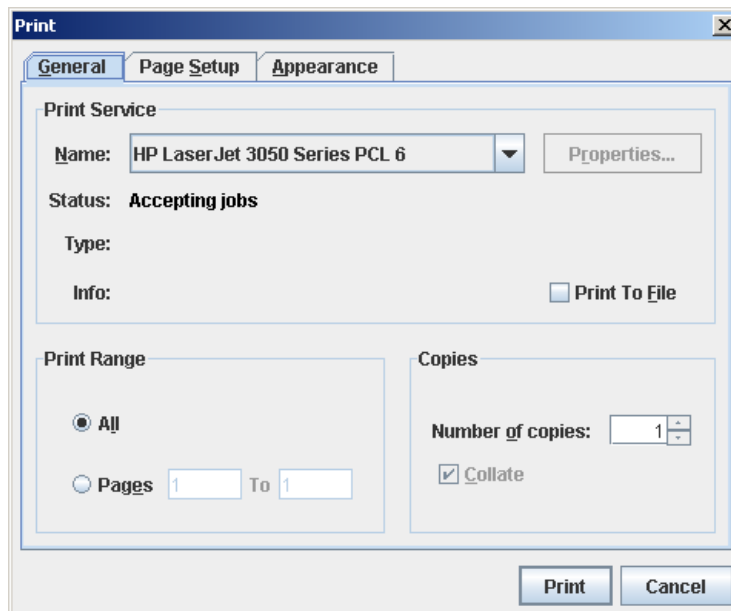
2. **In the pull-down menu, select any report.**

The specified report is displayed. All report screens include the **Print** and **Save to File** buttons.



3. **Click Print.**

The **Print** popup appears.



4. **Complete the print popup, and click Print.**

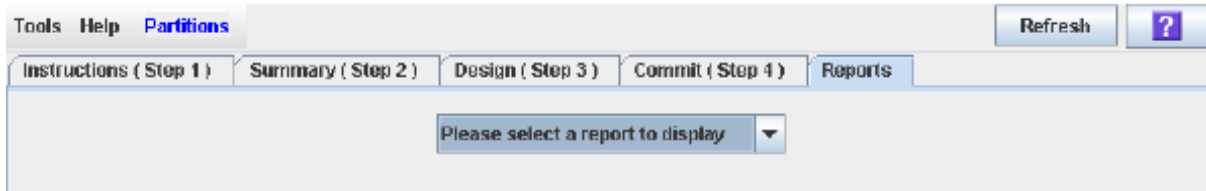
The report is printed to the selected printer.

▼ Save Partition Report Data

Use this procedure to save partition report data to a comma-separated file (.csv format). You can use a variety of spreadsheet applications to view the file. This procedure can be performed from any of the partition report screens.

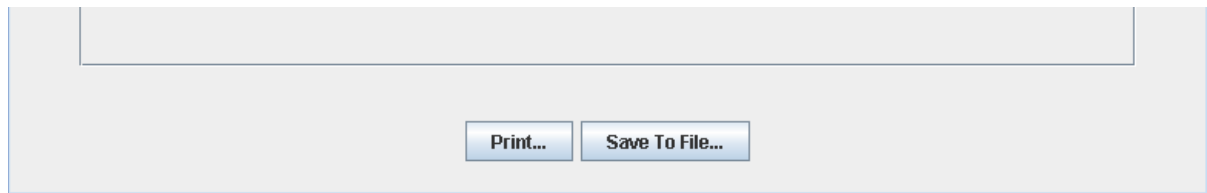
1. **Select Tools > Partitions, and click the Reports tab.**

The **Reports** screen appears.



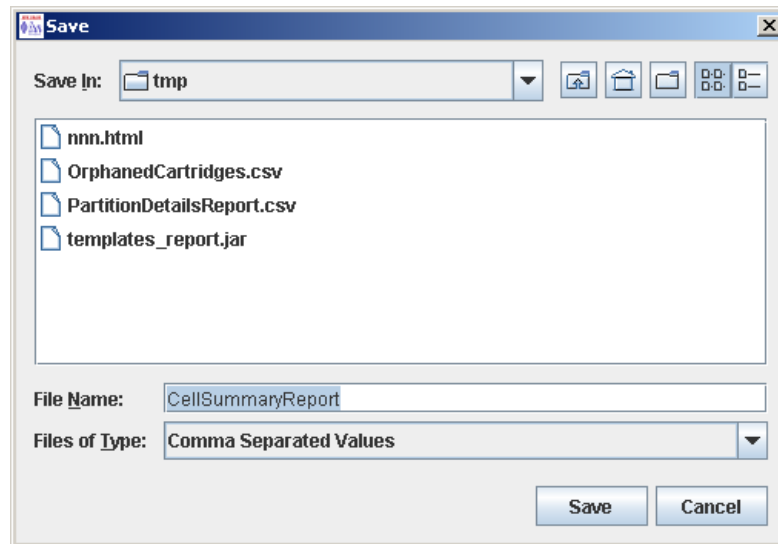
2. **In the pull-down menu, select any report.**

The specified report is displayed. All report screens include the **Print** and **Save to File** buttons.



3. **Click Save to File.**

The **Save** popup appears.



4. **Browse to the directory where you want to save the file, and enter the file name.**

5. **Click Save.**

The data is saved to the specified file.

CAP Operation Tasks

Task	Page
Enter Cartridges Into a Partitioned Library	187
Eject Cartridges From a Partitioned Library	190

▼ Enter Cartridges Into a Partitioned Library

Use this procedure to enter cartridges into a partitioned library. Partitions with no allocated CAP cells must use common CAP cells. Partitions with allocated CAP cells must use the cells allocated to them.

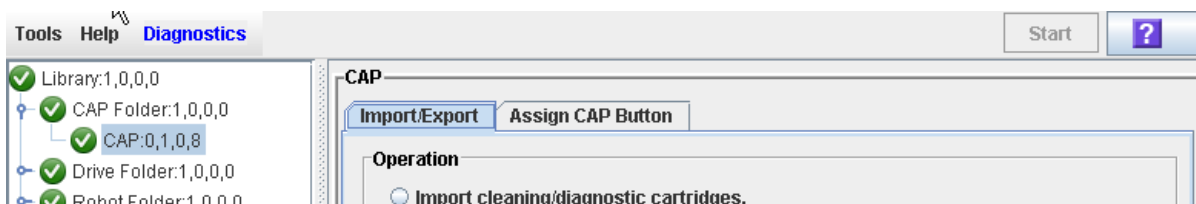
Note – This procedure highlights aspects of CAP operations that are unique to partitioned libraries. For general enter and eject procedures, see “Chapter 3, Library Operation.”

Note – Although it is possible to enter cartridges through a CAP without using the **Assign CAP Button** screen, it is recommended that you access the screen first to verify the partition settings. This will help to prevent cartridges from being entered inadvertently into the wrong partition.

1. Initiate the enter operation at the host. See the appropriate tape management software documentation for the procedures and commands.
2. Select Tools > Diagnostics.
3. Expand the CAP Folder, and click the CAP you want to use.

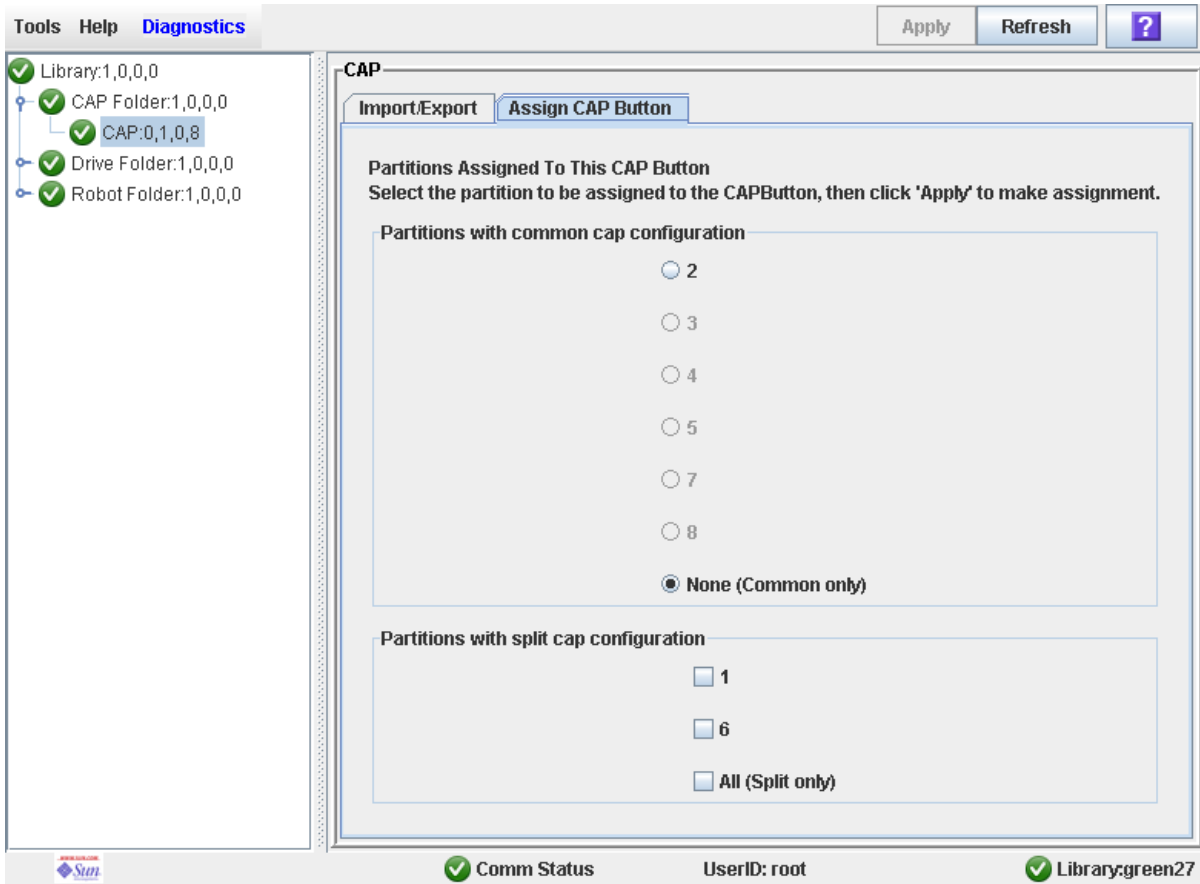
Note – In a partitioned library, only one CAP is listed in the Diagnostics CAP Folder.

The **Import/Export** screen appears.



4. Click the Assign CAP Button tab.

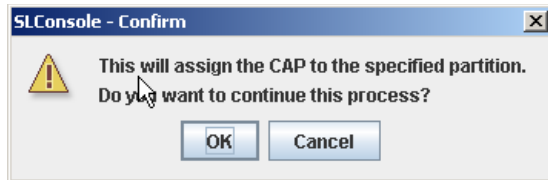
The Assign CAP Button screen appears.



5. In the Common CAP and Split CAP tables, click the partitions into which you want to enter cartridges. See [“Diagnostics > CAP—Assign CAP Button”](#) on page 245 for details on these screen fields.

6. Click Apply.

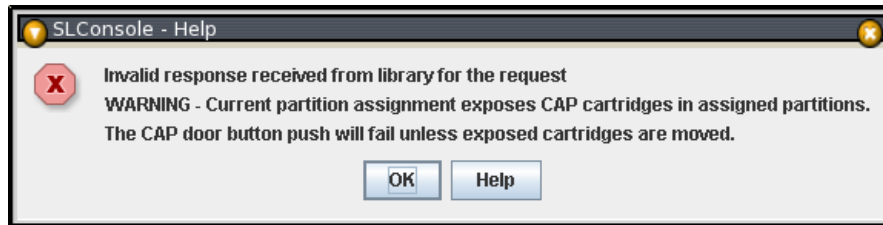
The CAP Confirm popup appears.



7. Click OK.

8. Depending on how your library’s CAPs are configured, this operation may expose CAP cells that are not accessible to the requesting host’s partition. For example, because a split CAP can contain common cells or cells allocated to multiple

partitions, opening the CAP door may expose cells not allocated to the selected partition. If any of the inaccessible cells contain cartridges, the CAP door will not open, and a warning popup appears.



Click **OK** to return to the **Assign CAP Button** screen. Before you can continue with this procedure, you must remove the inaccessible cartridges from the CAP.

9. On the library control panel, push the **CAP Open** button.
10. The library opens the doors of all CAPs with cells accessible to the selected partition. **Doors to CAPs that contain only inaccessible cells do not open.**
The library also sends CAP status messages to all hosts with access to the exposed cells. Following are examples:
 - If the library opens common CAPs only, messages are sent to all hosts with access to common CAP cells.
 - If the library opens a split CAP containing both allocated and common cells, messages are sent to all hosts in the assigned partitions, as well as all hosts with access to common CAP cells.
11. Place the cartridges in any CAP cells that are accessible to the selected partition.

Note – If you place cartridges in cells that are not accessible to the selected partition, the CAP door will not lock. You must move the cartridges to the appropriate CAP cells.

12. Close the CAP. It locks automatically.
13. Move the cartridges from the CAP to storage cells within the selected partition. See the appropriate tape management software documentation for the procedures and commands.
14. Once the selected partitions are finished with the CAP, it is recommended that you restore the **Assign CAP Button** screen to the following settings. This will help to prevent cartridges from being entered inadvertently into the wrong partition in the next CAP operation.
 - In the Common CAP table, click **None**.
 - In the Split CAP table, clear all the checkboxes.

▼ Eject Cartridges From a Partitioned Library

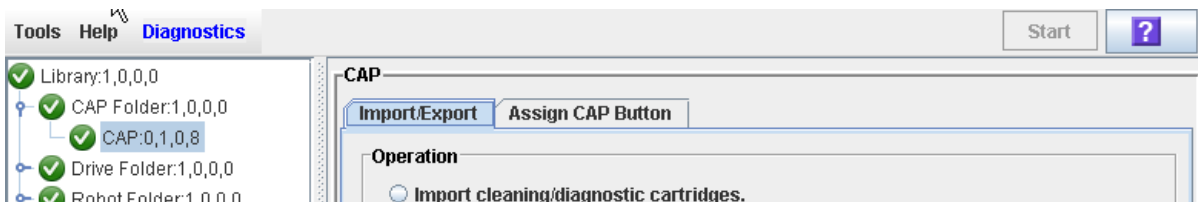
Use this procedure to eject cartridges from a partitioned library. Partitions with no allocated CAP cells must use common CAP cells. Partitions with allocated CAP cells must use the cells allocated to them.

Note – This procedure highlights aspects of CAP operations that are unique to partitioned libraries. For general enter and eject procedures, see “Chapter 3, Library Operation.”

1. **Initiate the eject operation at the host. See the appropriate tape management software documentation for the procedures and commands.**
2. **The HandBot places the cartridges into CAP cells accessible to the host.**
3. **Select Tools > Diagnostics.**
4. **Expand the CAP Folder, and click the CAP you want to use.**

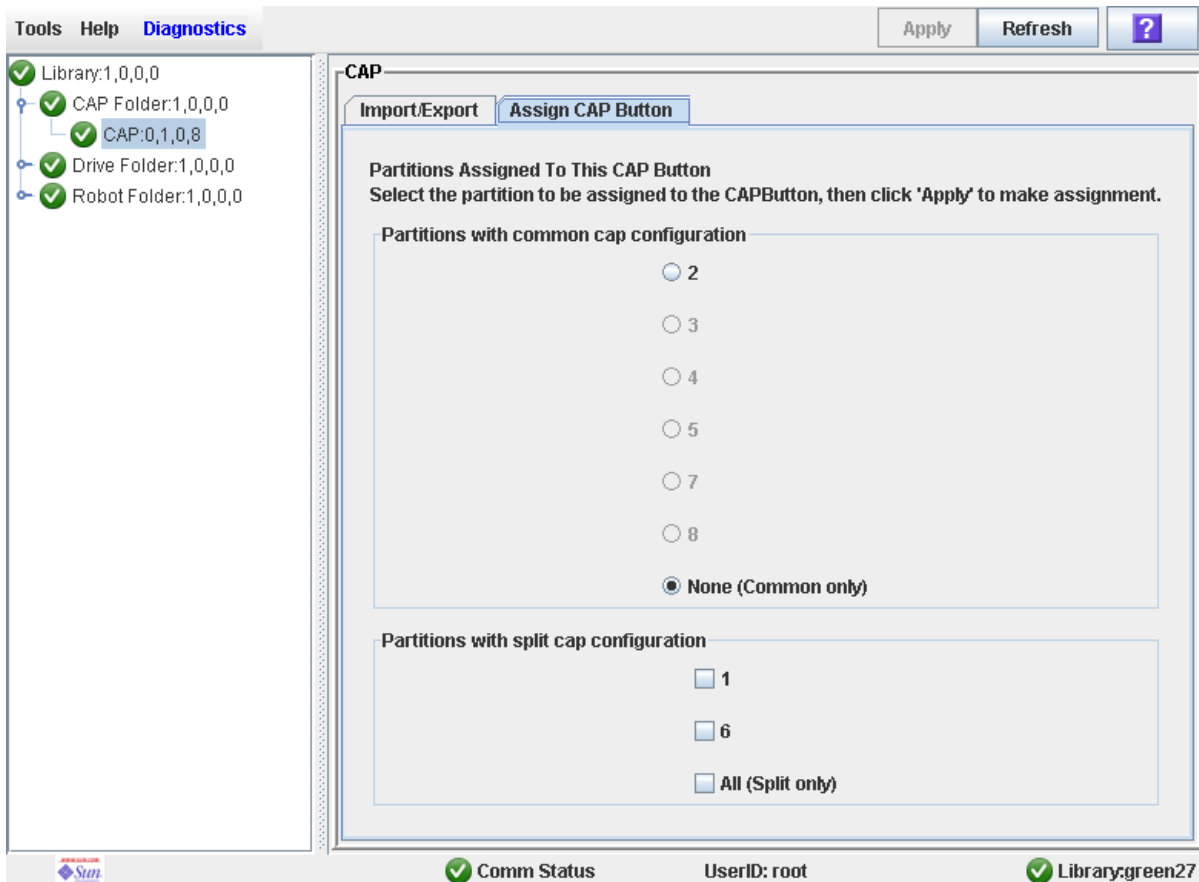
Note – In a partitioned library, only one CAP is listed in the Diagnostics CAP Folder.

The **Import/Export** screen appears.



5. Click the Assign CAP Button tab.

The Assign CAP Button screen appears.



6. In the Common CAP and Split CAP tables, click the partitions from which you are ejecting cartridges. See [“Diagnostics > CAP—Assign CAP Button”](#) on page 245 for details on these screen fields.

7. Click Apply.

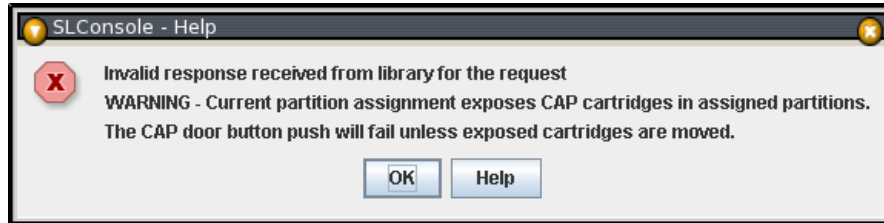
The CAP Confirm popup appears.



8. Click OK.

9. Depending on how your library's CAPs are configured, this operation may expose CAP cells that are not accessible to the requesting host's partition. For example, because a split CAP can contain common cells or cells allocated to multiple

partitions, opening the CAP door may expose cells not allocated to the selected partition. If any of the inaccessible cells contain cartridges, the CAP door will not open and a warning popup appears.



Click **OK** to return to the **Assign CAP Button** screen. Before you can continue with this procedure, you must remove the inaccessible cartridges from the CAP.

10. On the library control panel, push the CAP Open button.

11. The library opens the doors of all CAPs with cells accessible to the selected partition. Doors to CAPs that contain only inaccessible cells do not open.

The library also sends CAP status messages to all hosts with access to the exposed cells. Following are examples:

- If the library opens common CAPs only, messages are sent to all hosts with access to common CAP cells.
- If the library opens a split CAP containing both allocated and common cells, messages are sent to all hosts in the assigned partitions, as well as all hosts with access to common CAP cells.

12. Remove the cartridges from the CAP cells.

13. Close the CAP. It locks automatically.

14. Once the selected partitions are finished with the CAP, it is recommended that you restore the Assign CAP Button screen to the following settings. This will help to prevent cartridges from being entered inadvertently into the wrong partition in the next CAP operation.

- In the Common CAP table, click **None**.
- In the Split CAP table, clear all the checkboxes.

Partition Screen Reference

This section includes detailed descriptions of all SL Console partition screens, arranged by screen navigation path. For example,

Partitions—Summary (Step 2)—Add Connection indicates the screen accessed by clicking **Tools** and then **Partitions** from the Menu Bar, and then clicking the **Summary (Step 2)** tab, and then the **Add Connection** button.

Note – The Partitions screens can be accessed only from the standalone SL Console or the Web-launched SL Console. They are not available on the local operator panel.

Partition Screens are organized into the following categories:

- [“Partition Summary Screens” on page 194](#)
- [“Partition Design and Commit Screens” on page 211](#)
- [“Partition Report Screens” on page 226](#)
- [“Partition CAP Operation Screens” on page 244](#)

Note – The partition **Summary (Step 2)** and **Design (Step 3b)** screens, and all associated popups, give you a dynamic workspace to design your library partitions. All partition configuration information is automatically saved to the partition workspace in SL Console memory and retained for the duration of your SL Console session. This allows you to switch among partition views and leave and return to the partition screens any number of times without losing your configuration changes.

Caution – Information in the SL Console partition workspace is saved to the library controller database only through the **Commit (Step 4)** screen. If your SL Console session ends or you refresh the workspace data before you have committed your updates through the **Commit (Step 4)** screen, you will lose any partition changes you have made through the **Summary (Step 2)** and **Design (Step 3b)** screens and all associated popups.

Partition Summary Screens

[Partitions—Instructions \(Step 1\)](#)

[Partitions—Summary \(Step 2\)](#)

[Partitions—Summary \(Step 2\)—Add Connection](#)

[Partitions—Summary \(Step 2\)—Delete Connection](#)

[Partitions—Summary \(Step 2\)—Modify Connection](#)

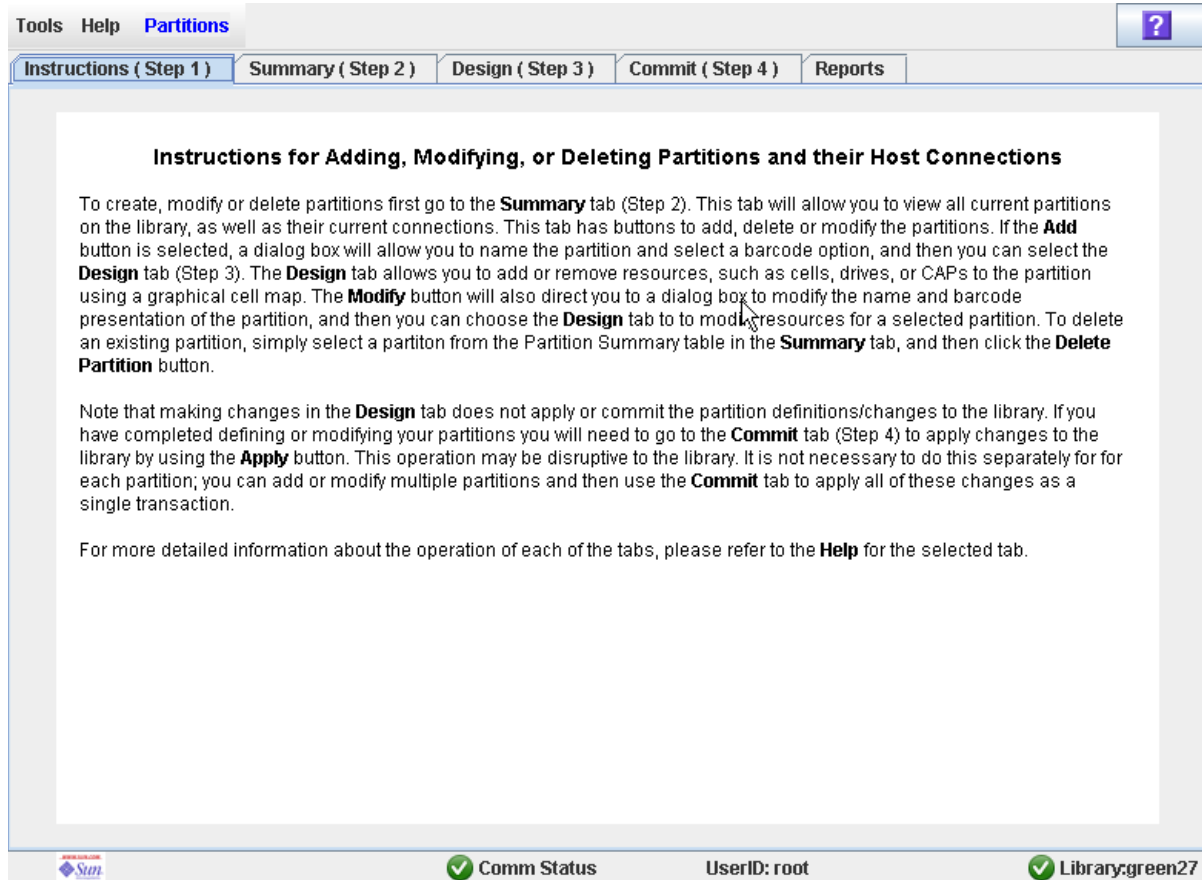
[Partitions—Summary \(Step 2\)—Add Partition](#)

[Partitions—Summary \(Step 2\)—Delete Partition](#)

[Partitions—Summary \(Step 2\)—Modify Partition](#)

Partitions—Instructions (Step 1)

Sample Screen



Description

Displays instructions for using the partition screens.

Note – This screen appears automatically the first time you select **Tools > Partitions** during an SL Console login session.

Screen Fields

None

Buttons

? (Help)

Click to display online help for the screen.

See Also

- [Partitions—Summary \(Step 2\)](#)
- [Partitions—Design \(Step 3\)](#)
- [Partitions—Commit \(Step 4\)](#)
- [Partitions—Reports](#)

Partitions—Summary (Step 2)

Sample Screen

Tools Help **Partitions** Refresh ?

Instructions (Step 1) **Summary (Step 2)** Design (Step 3) Commit (Step 4) Reports

TOTAL LIBRARY RESOURCES

Storage Cells in Library : 92
Drives in library : 3
Total CAP cells: 5

RESOURCES ALLOCATED

Storage Cells in Library : 73
Drives in library : 3
Total CAP cells: 4

RESOURCES AVAILABLE

Storage Cells in Library : 19
Drives in library : 0
Total CAP cells: 1

Partition Summary

Partition Number	Allocated Storage Cells	Allocated Drives	Allocated CAP
1	27	1	2
2	18	1	0
3	0	0	0
4	0	0	0
6	28	1	2
7	0	0	0
8	0	0	0

Details For Partition 1

--- Name --- --- Barcode Presentation ---
PARTITION-1 **Left 7 label characters**

Connections

Initiator (WWPN)	Target Port	LUN
20:00:00:A0:BD:08:0A:00	0	2

✔ Comm Status
UserID: root
✔ Library:green27

Description

Displays summary information for the library and, optionally, a selected partition.

Also includes buttons that allow you to initiate any of the following activities:

- Add a new partition
- Delete a partition from the library
- Modify partition summary information
- Add a new host-partition connection
- Delete a host-partition connection
- Modify the configuration of a host-partition connection

Screen Fields

Partition Summary

Partition Number

Display only.

ID assigned to the partition. IDs can range from 1–8.

Allocated Storage Cells

Display only.

Total number of storage cells allocated to this partition.

Allocated Drive Bays

Display only.

Total number of tape drives allocated to this partition.

Allocated CAP Cells

Display only.

Total number of individual CAP cells allocated to this partition.

Host-Partition Connection Summary

Note – The following fields display host-partition connection information for the partition currently selected in the Partition Summary table.

Name

Display only.

Name assigned to the selected partition.

Library controller bar code presentation

Display only.

Tape cartridge bar code format assigned to the selected partition.

Initiator (WWPN)

Display only.

World Wide Port Name of the host bus adapter (HBA).

Target Port

Display only.

Port number of the SL500 library controller. This entry is always "0".

LUN

Display only.

Logical unit number of the library partition on the host. This entry must be unique on the host.

TOTAL LIBRARY RESOURCES

Storage Cells in Library

Display only.

Total physical capacity of the library.

Drive Bays in Library

Display only.

Total number of tape drives in the library.

Total CAP cells

Display only.

Total number of CAP cells in the library.

TOTAL RESOURCES ALLOCATED

Storage Cells in Library

Display only.

Total number of storage cells allocated to all library partitions

Drive Bays in Library

Display only.

Total number of tape drives allocated to all library partitions.

Total CAP cells

Display only.

Total number of CAP cells allocated to all library partitions.

TOTAL RESOURCES AVAILABLE

Storage Cells in Library

Display only.

Total number of storage cells in the library that are not allocated to any partition.

Drive Bays in Library

Display only.

Total number of tape drives in the library that are not allocated to any partition.

Total CAP cells

Display only.

Total number of CAP cells in the library that are not allocated to any partition.

Buttons

Refresh

Click to refresh the SL Console partition workspace with current data from the library controller database. All uncommitted partition changes you have made during this SL Console login session will be discarded. The **Partition Refresh** popup appears, prompting you to confirm the refresh.

? (Help)

Click to display online help for the screen.

Add Partition

Click to add a new partition. The [Partitions—Summary \(Step 2\)—Add Partition](#) popup appears.

Delete Partition

Click to delete the currently selected partition. The [Partitions—Summary \(Step 2\)—Delete Partition](#) popup appears.

Modify Partition

Click to modify summary information for the currently selected partition. The [Partitions—Summary \(Step 2\)—Modify Partition](#) popup appears.

Add Connection

Click to add a new host connection to the currently selected partition. The [Partitions—Summary \(Step 2\)—Add Connection](#) popup appears.

Delete Connection

Click to delete the currently selected host-partition connection. The [Partitions—Summary \(Step 2\)—Delete Connection](#) popup appears.

Modify Connection

Click to modify the configuration of the currently selected host-partition connection. The [Partitions—Summary \(Step 2\)—Modify Connection](#) popup appears.

See Also

- [Partitions—Summary \(Step 2\)](#)
- [Partitions—Summary \(Step 2\)—Add Partition](#)
- [Partitions—Summary \(Step 2\)—Delete Partition](#)
- [Partitions—Summary \(Step 2\)—Modify Partition](#)
- [Partitions—Summary \(Step 2\)—Add Connection](#)
- [Partitions—Summary \(Step 2\)—Delete Connection](#)
- [Partitions—Summary \(Step 2\)—Modify Connection](#)
- [Partitions—Design \(Step 3\)](#)
- [Partitions—Commit \(Step 4\)](#)
- [Partitions—Reports](#)

Partitions—Summary (Step 2)—Add Connection

Sample Screen

The screenshot shows a dialog box titled "Add Connection". Inside the dialog, the text "Connections 1" is centered. Below this, there are three input fields: "Initiator (WWPN)" which is empty, "Target Port" which contains the value "0", and "LUN" which is empty. At the bottom of the dialog, there are two buttons: "OK" and "Cancel".

Description

Allows you to configure the connection between a host and the selected partition. Each partition can have up to nine host-partition connections, each one having a unique LUN.

This screen is a popup that appears when you click **Add Connection** on the [Partitions—Summary \(Step 2\)](#) screen.

Caution – Information in the SL Console partition workspace is saved to the library controller database only through the **Commit (Step 4)** screen. If your SL Console session ends or you refresh the workspace data before you have committed your updates through the **Commit (Step 4)** screen, you will lose any partition changes you have made through the **Summary (Step 2)** and **Design (Step 3)** screens and all associated popups.

Screen Fields

Connections *n*

Display only.

Partition ID of the selected partition.

Initiator (WWPN)

Required.

World Wide Port Name of the host bus adapter (HBA).

Sixteen hexadecimal digits. You can enter upper- or lower-case hex digits, but the display is always shown in all upper-case.

Target Port

Display only.

Port number of the SL500 library controller. This entry is always "0".

LUN

Required.

Logical unit number of the library partition on the host. This entry must be unique on the host. You can create up to nine unique LUNs per partition.

Note – Each initiator connected to the library must have one library partition assigned to LUN 0. When you verify or commit partition configuration changes, the SL Console will notify you if an initiator does not meet this requirement.

Buttons

OK

Click to update the SL Console partition workspace with the current screen settings and return to the previous screen.

Note – Clicking this button does not update the library controller database.

Cancel

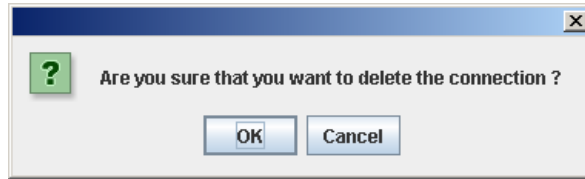
Click to discard the current screen settings and return to the previous screen.

See Also

- [Partitions—Summary \(Step 2\)](#)

Partitions—Summary (Step 2)—Delete Connection

Sample Screen



Description

Allows you to delete the selected host-partition connection.

This screen is a popup that appears when you click **Delete Connection** on the [Partitions—Summary \(Step 2\)](#) screen.

Caution – Information in the SL Console partition workspace is saved to the library controller database only through the **Commit (Step 4)** screen. If your SL Console session ends or you refresh the workspace data before you have committed your updates through the **Commit (Step 4)** screen, you will lose any partition changes you have made through the **Summary (Step 2)** and **Design (Step 3)** screens and all associated popups.

Screen Fields

None

Buttons

OK

Click to update the SL Console partition workspace with the current screen settings and return to the previous screen.

Note – Clicking this button does not update the library controller database.

Cancel

Click to discard the current screen settings and return to the previous screen.

See Also

- [Partitions—Summary \(Step 2\)](#)

Partitions—Summary (Step 2)—Modify Connection

Sample Screen

The screenshot shows a 'Modify Connection' dialog box. The title bar reads 'Modify Connection'. The main content area is titled 'Connections 1'. It features three input fields: 'Initiator (WWPN)' containing '200000A0BD080A00', 'Target Port' containing '0', and 'LUN' containing '2'. Below these fields are 'OK' and 'Cancel' buttons.

Description

Allows you to modify the configuration of the selected host-partition connection.

This screen is a popup that appears when you click **Modify Connection** on the [Partitions—Summary \(Step 2\)](#) screen.

Caution – Information in the SL Console partition workspace is saved to the library controller database only through the **Commit (Step 4)** screen. If your SL Console session ends or you refresh the workspace data before you have committed your updates through the **Commit (Step 4)** screen, you will lose any partition changes you have made through the **Summary (Step 2)** and **Design (Step 3)** screens and all associated popups.

Screen Fields

Connections *n*

Display only.

Partition ID of the selected partition.

Initiator (WWPN)

World Wide Port Name of the host bus adapter (HBA).

Sixteen hexadecimal digits. You can enter upper- or lower-case hex digits, but the display is always shown in all upper-case.

The screen displays the value assigned previously. You can leave it as is or make changes.

Target Port

Display only.

Port number of the SL500 library controller. This entry is always "0".

LUN

Required.

Logical unit number of the library partition on the host. This entry must be unique on the host.

Note – Each initiator connected to the library must have one library partition assigned to LUN 0. When you verify or commit partition configuration changes, the SL Console will notify you if an initiator does not meet this requirement.

Buttons

OK

Click to update the SL Console partition workspace with the current screen settings and return to the previous screen.

Note – Clicking this button does not update the library controller database.

Cancel

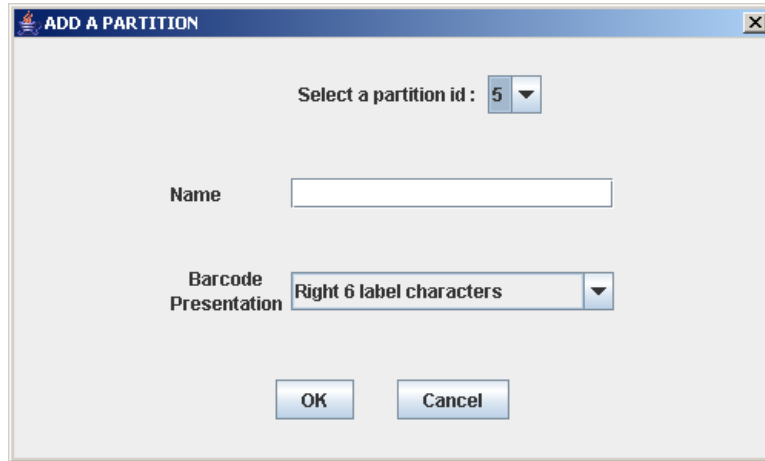
Click to discard the current screen settings and return to the previous screen.

See Also

- [Partitions—Summary \(Step 2\)](#)

Partitions—Summary (Step 2)—Add Partition

Sample Screen



The screenshot shows a dialog box titled "ADD A PARTITION". At the top, there is a label "Select a partition id:" followed by a dropdown menu showing the number "5". Below this is a text input field labeled "Name". Underneath the name field is another dropdown menu labeled "Barcode Presentation" with the text "Right 6 label characters" selected. At the bottom of the dialog are two buttons: "OK" and "Cancel".

Description

Allows you to add a new partition. You can create up to eight partitions, with IDs ranging from 1–8.

This screen is a popup that appears when you click **Add Partition** on the [Partitions—Summary \(Step 2\)](#) screen.

Caution – Information in the SL Console partition workspace is saved to the library controller database only through the **Commit (Step 4)** screen. If your SL Console session ends or you refresh the workspace data before you have committed your updates through the **Commit (Step 4)** screen, you will lose any partition changes you have made through the **Summary (Step 2)** and **Design (Step 3)** screens and all associated popups.

Screen Fields

Select a Partition ID

Required.

Partition ID you want to add. Options are 1–8.

The drop-down menu displays all available IDs; the default is the next available ID in numerical order.

Name

Optional.

Name you want to assign to the partition.

0–60 ASCII characters.

Barcode Presentation

Required.

Tape cartridge bar code format to be used for the partition.

The drop-down menu displays all available formats previously defined by your Sun support representative; the default is "Left 6 label characters".

Buttons**OK**

Click to update the SL Console partition workspace with the current screen settings and return to the previous screen.

Note – Clicking this button does not update the library controller database.

Cancel

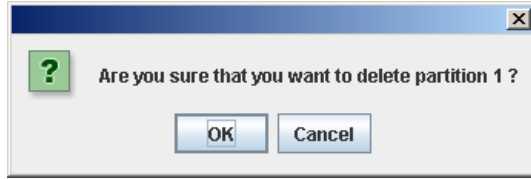
Click to discard the current screen settings and return to the previous screen.

See Also

- [Partitions—Summary \(Step 2\)](#)

Partitions—Summary (Step 2)—Delete Partition

Sample Screen



Description

Allows you to confirm that you want to delete the specified partition. All information for the partition—including host-partition connections, partition boundaries, and partition ID—are deleted from the SL Console partition workspace.

This screen is a popup that appears when you click **Delete Partition** on the [Partitions—Summary \(Step 2\)](#).

Caution – Information in the SL Console partition workspace is saved to the library controller database only through the **Commit (Step 4)** screen. If your SL Console session ends or you refresh the workspace data before you have committed your updates through the **Commit (Step 4)** screen, you will lose any partition changes you have made through the **Summary (Step 2)** and **Design (Step 3)** screens and all associated popups.

Screen Fields

None

Buttons

OK

Click to update the SL Console partition workspace with the current screen settings and return to the previous screen.

Note – Clicking this button does not update the library controller database.

Cancel

Click to discard the current screen settings and return to the previous screen.

See Also

- [Partitions—Summary \(Step 2\)](#)

Partitions—Summary (Step 2)—Modify Partition

Sample Screen

Description

Allows you to modify the name or barcode format of the selected partition.

This screen is a popup that appears when you click **Modify Partition** on the [Partitions—Summary \(Step 2\)](#) screen.

Caution – Information in the SL Console partition workspace is saved to the library controller database only through the **Commit (Step 4)** screen. If your SL Console session ends or you refresh the workspace data before you have committed your updates through the **Commit (Step 4)** screen, you will lose any partition changes you have made through the **Summary (Step 2)** and **Design (Step 3)** screens and all associated popups.

Screen Fields

Modify Partition *n*

Display only.

ID of the partition you want to modify.

Name

Name you want to assign to the partition.

0–60 ASCII characters.

The screen displays the value assigned previously. You can leave it as is or make changes.

Barcode Presentation

Tape cartridge bar code format to be used for the partition.

The drop-down menu displays all available formats previously defined by your Sun support representative; the default is "Left 6 label characters".

The screen displays the value assigned previously. You can leave it as is or make changes.

Buttons

OK

Click to update the SL Console partition workspace with the current screen settings and return to the previous screen.

Note – Clicking this button does not update the library controller database.

Cancel

Click to discard the current screen settings and return to the previous screen.

See Also

- [Partitions—Summary \(Step 2\)](#)

Partition Design and Commit Screens

[Partitions—Design \(Step 3\)](#)

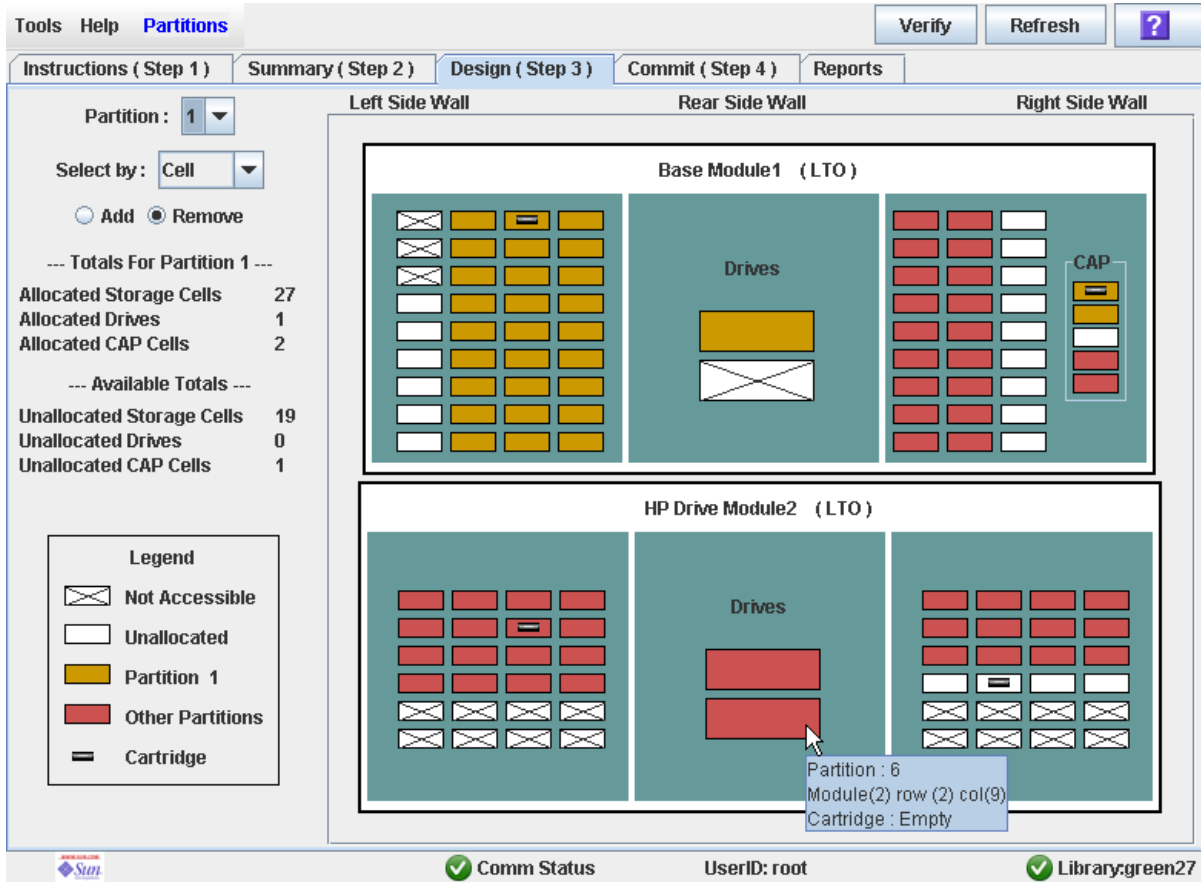
[Partitions—Design \(Step 3\)—Verify Results](#)

[Partitions—Commit \(Step 4\)](#)

[Partitions—Commit \(Step 4\)—Confirm Apply](#)

Partitions—Design (Step 3)

Sample Screen



Description

Allows you to define partition boundaries by selecting the resources (storage cells, tape drives, or CAP cells) you want to include in the partition. You can use any of the following methods to add or remove resources from a partition (see [“Library Map” on page 215](#) for detailed instructions):

- Select individual cells or groups of cells
- Select a side within a library module
- Select an entire library module

Caution – Changing partition boundaries can result in orphaned cartridges and data that could be lost. See [“Orphaned Cartridges in Partitioned Libraries” on page 152](#) for details.

Note – The partition **Summary (Step 2)** and **Design (Step 3)** screens, and all associated popups, give you a dynamic workspace to design your library partitions. All partition configuration information is automatically saved to the partition workspace in SL Console memory and retained for the duration of your SL Console session. This allows you to switch among partition views and leave and return to the partition screens any number of times without losing your configuration changes.

Caution – Information in the SL Console partition workspace is saved to the library controller database only through the **Commit (Step 4)** screen. If your SL Console session ends or you refresh the workspace data before you have committed your updates through the **Commit (Step 4)** screen, you will lose any partition changes you have made through the **Summary (Step 2)** and **Design (Step 3)** screens and all associated popups.

Screen Fields

Partition

Required.

Partition to which you want to add or remove resources (storage cells, tape drives, or CAP cells).

The drop-down menu displays all valid partition IDs for the library. If no partition IDs have been defined, the menu is blank.

Note – When you select a partition, the screen is automatically updated to display data for that partition from the SL Console partition workspace.

Select by

Required.

Indicates the method you want to use for defining partition boundaries. Options are:

- Cell—Select individual or rectangular groups of resources.
- Side—Select all resources, except the CAP, within one side of a library module.
- Module—Select all resources, except the CAP, within a library module.

Note – You must select either **Add** or **Remove**.

Add

Required.

Indicates you want to add resources to the partition. You will only be able to click unallocated resources on the library map.

Remove

Required.

Indicates you want to remove resources from the partition. You will only be able to click allocated resources on the library map.

Library Totals

Note – The data in these fields is automatically updated from the SL Console partition workspace when you select a partition.

Allocated Storage Cells

Display only.

Total number of storage cells allocated to the selected partition, based on the currently defined partition boundaries.

Allocated Drive Bays

Display only.

Total number of tape drives allocated to the selected partition, based on the currently defined partition boundaries.

Allocated CAP Cells

Display only.

Total number of CAP cells allocated to the selected partition, based on the currently defined partition boundaries.

Library Totals

Note – The data in these fields is automatically updated from the SL Console partition workspace when you select a partition.

Unallocated Storage

Display only.

Total number of storage cells in the library that are not allocated to any partition.

Unallocated Drive Bays

Display only.

Total number of tape drives in the library that are not allocated to any partition.

Unallocated CAPs

Display only.

Total number of CAP cells in the library that are not allocated to any partition.

Legend

Legend for the library map. The state of each library resource (storage cell, tape drive, or CAP cell) is indicated as follows:

- Not Accessible (white and x-ed out). Resource is not accessible to any partition. Following are some possible reasons:
 - Storage cells have been configured for diagnostic cartridges.
- Available (white). Resource is currently not allocated to any partition and therefore available to the selected partition.
- Partition *n* (gold). Resource is allocated to the selected partition, partition *n*.

- Other Partitions (red). Resource is allocated to another partition and therefore NOT available to the selected partition.
- Cartridge (cartridge icon). Resource contains a tape cartridge.

Library Map

Graphical representation of the current library configuration. Initial display for the current SL Console login session is from the library controller database, then the display reflects data from the SL Console partition workspace as you modify partition configurations. The display includes the following information:

- Types of modules installed in the library (Base Module, drive module, storage module)
- Numeric module ID (1-5)
- Media configuration for each module (mixed media or LTO only)
- Location of all resources (storage cells, tape drives, CAP cells) within the library

Note – Move the cursor over any resource to display a tooltip of detailed information about the cell or drive, its partition assignment, and the identity of any resident cartridge.

Note – If no partition IDs have been defined, the library map is display only.

Use the library map to modify the boundaries of the selected partition. Depending on whether you have clicked the **Add** or **Remove** radio button, all selected resources are either added to or removed from the partition.

Depending on your choice in the **Select by** field, you can perform any of the following actions.

- Select by cell—Select individual or groups of resources. Resources in a partition do not need to be adjacent to one another.
 - To select an individual resource, double-click it.
 - To select a rectangular group of resources, click the cell or drive at one corner of the rectangle, and then click the cell or drive diagonally opposite.
- Select by side—Select an entire side within a module, except the CAP. Sides in a partition do not need to be adjacent to one another. To select one side of a library module, click any resource in that side.
- Select by module—Select an entire module, except the CAP. Modules in a partition do not have to be adjacent to one another. To select a library module, click any resource in that module.

Buttons

Verify Results

Click to verify partition configuration changes you have made during this SL Console login session. The **Tools > Partitions—Design (Step 3)—Verify Results** popup appears, indicating whether there are any orphaned cartridges or other errors in the current partition configuration.

Note – This procedure verifies only one partition at a time. If you need to verify multiple partitions, you must repeat this procedure separately for each partition.

Note – This verification is performed on the current partition configuration in the SL Console partition workspace only. It does not verify current partition boundaries against the library controller database; therefore it cannot identify configuration conflicts that may arise due to other users performing cartridge movements or library configuration changes—through the command line interface, other SL Console sessions, or host applications—at the same time you have made partition changes.

Refresh

Click to refresh the SL Console partition workspace with current data from the library controller database. All uncommitted partition changes you have made during this SL Console login session will be discarded. The **Partition Refresh** popup appears, prompting you to confirm the refresh.

? (Help)

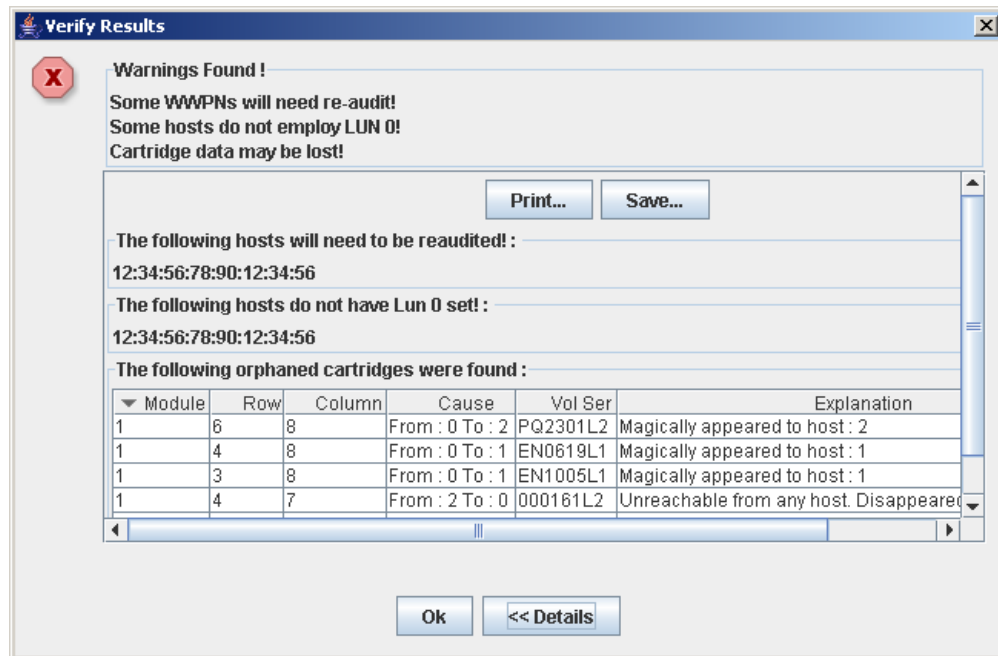
Click to display online help for the screen.

See Also

- [Partitions—Summary \(Step 2\)](#)
- [Partitions—Design \(Step 3\)—Verify Results](#)
- [Partitions—Commit \(Step 4\)](#)
- [Partitions—Reports](#)

Partitions—Design (Step 3)—Verify Results

Sample Screen



Description

Displays a list of configuration errors in the current SL Console partition workspace.

This screen is a popup that appears when you click **Verify Results** on the [Partitions—Design \(Step 3\)](#) screen.

Possible errors include:

- A partition has orphaned cartridges. See [“Orphaned Cartridges in Partitioned Libraries”](#) for details.
- Library resources have been removed from a partition.
- A host-partition connection does not have a partition assigned to LUN 0 (applies to FC-SCSI connections only).

If any of these error conditions are present, the screen initially displays summary warning messages. You can view detailed messages by clicking the **Details** button.

It is recommended that you resolve all errors before committing the data to the library controller database.

Optionally, you can print the screen data or save it to a comma-separated file.

Note – The partition **Summary (Step 2)** and **Design (Step 3)** screens, and all associated popups, give you a dynamic workspace to design your library partitions. All partition configuration information is automatically saved to the partition workspace in SL Console memory and retained for the duration of your SL Console session. This allows you to switch among partition views and leave and return to the partition screens any number of times without losing your configuration changes.

Caution – Information in the SL Console partition workspace is saved to the library controller database only through the **Commit (Step 4)** screen. If your SL Console session ends or you refresh the workspace data before you have committed your updates through the **Commit (Step 4)** screen, you will lose any partition changes you have made through the **Summary (Step 2)** and **Design (Step 3)** screens and all associated popups.

Screen Fields

Note – The screen fields are the same as those displayed in the [Partitions—Commit \(Step 4\)—Confirm Apply](#) popup.

Warnings found

Display only.

Summary error messages regarding the partition configuration.

The following hosts will need re-audited

Display only.

World Wide Port Names (WWPNs) of any hosts that should re-audit their library partition. This may be because library resources have been deleted from the partition.

The following hosts do not have Lun 0 set

Display only.

World Wide Port Names (WWPNs) of any hosts that have not defined any library partitions as LUN 0 on the host.

The following orphaned cartridges were found

Display only.

Detailed information regarding all orphaned cartridges in the current partition configuration. Includes module, row, and column location of the cartridge, cartridge volume serial number (volid), and probable causes and explanations why the cartridge is orphaned.

Buttons

Print

Click to print the report on a selected printer.

Save

Click to save the report to a designated comma-separated text file (.csv extension). Comma-separated files can be opened by a variety of spreadsheet and database programs.

OK

Click to cancel the update. The library controller database is not updated, but all partition changes from this login session are retained in the SL Console partition workspace.

Details

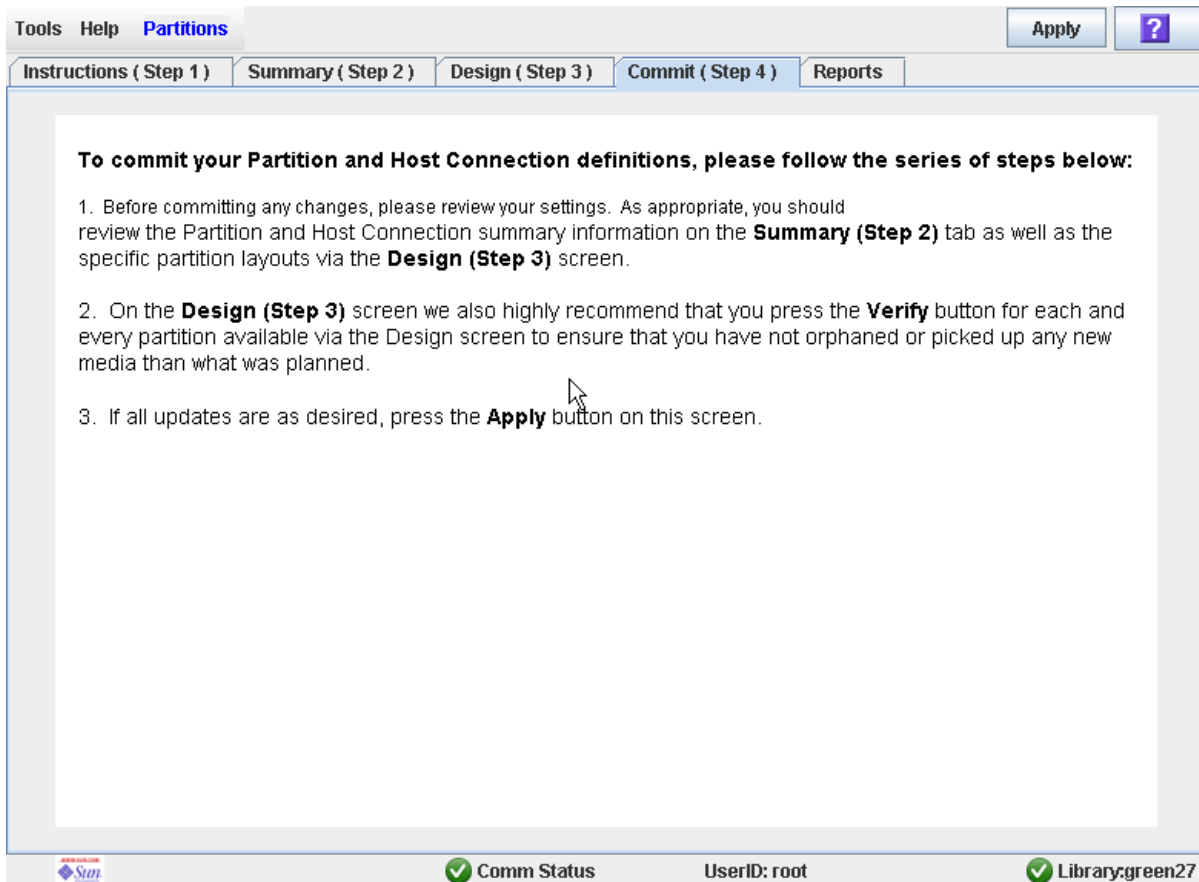
Click to toggle between the expanded and collapsed views of the warning message display.

See Also

- [Partitions—Design \(Step 3\)](#)
- [Partitions—Commit \(Step 4\)—Confirm Apply](#)

Partitions—Commit (Step 4)

Sample Screen



Description

Allows you to commit all data from the current SL Console partition workspace to the library controller database. The following data will be committed for all partitions:

- Partition summary information
- Host-partition connection configuration information
- Partition boundary details

Caution – For the following reasons, it is recommended that you make the library unavailable to other users before committing your partition workspace changes.

There is no real-time validation of partition boundaries against the library controller database; therefore if you do not make the library unavailable and other users are performing cartridge movements or library configuration changes, configuration conflicts may arise. See [“Synchronizing the Display With the Controller Database” on page 31](#) for details.

The library temporarily drops all connections to HSC or ACSLS hosts when partition configurations changes are committed. The hosts will automatically reconnect, but multiple error messages will be displayed, and cartridge management tasks in progress may fail.

Caution – Information in the SL Console partition workspace is saved to the library controller database only through the **Commit (Step 4)** screen. If your SL Console session ends or you refresh the workspace data before you have committed your updates through the **Commit (Step 4)** screen, you will lose any partition changes you have made through the **Summary (Step 2)** and **Design (Step 3)** screens and all associated popups.

Caution – It is recommended that you follow the [Resolve Orphaned Cartridges](#) procedure before using this screen.

Caution – This screen updates the library controller database with all partition configuration changes you have made during this SL Console session. Failure to use this screen before logging out of the current SL Console session will cause all your library configuration changes to be lost.

Screen Fields

None

Buttons

Apply

Click to update the library controller database with the current settings from the SL Console partition workspace. The **Tools > Partitions—Commit (Step 4)—Confirm Apply** popup appears, indicating whether there are any orphaned cartridges or other errors in the current partition configuration.

Note – This button is grayed out if you have not made any changes to the SL Console partition workspace since the last commit.

? (Help)

Click to display online help for the screen.

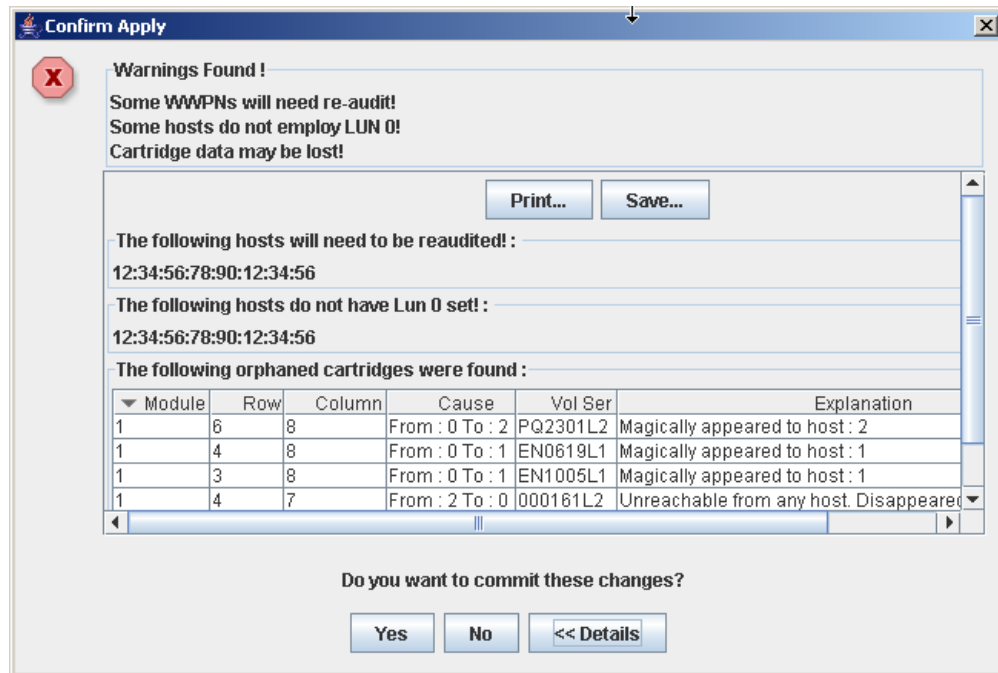
See Also

- [Partitions—Summary \(Step 2\)](#)
- [Partitions—Design \(Step 3\)](#)
- [Partitions—Design \(Step 3\)—Verify Results](#)
- [Partitions—Commit \(Step 4\)—Confirm Apply](#)

- [Partitions—Reports](#)

Partitions—Commit (Step 4)—Confirm Apply

Sample Screen



Description

Displays a list of configuration errors in the current SL Console partition workspace. This screen is a popup that appears when you click **Apply** on the [Partitions—Commit \(Step 4\)](#) screen.

After viewing the error messages, you can commit all data in the SL Console partition workspace to the library controller database by clicking the **Yes** button.

Possible errors include:

- A partition has orphaned cartridges. See [“Orphaned Cartridges in Partitioned Libraries”](#) for details.
- Library resources have been removed from a partition.
- A host-partition connection does not have a partition assigned to LUN 0 (applies to FC-SCSI connections only).

If any of these error conditions are present, the screen initially displays summary warning messages. You can view detailed messages by clicking the **Details** button.

It is recommended that you resolve all errors before committing the data to the library controller database.

Optionally, you can print the screen data or save it to a comma-separated file.

Caution – Information in the SL Console partition workspace is saved to the library controller database only through the **Commit (Step 4)** screen. If your SL Console session ends or you refresh the workspace data before you have committed your updates through the **Commit (Step 4)** screen, you will lose any partition changes you have made through the **Summary (Step 2)** and **Design (Step 3)** screens and all associated popups.

Screen Fields

Note – The screen fields are the same as those displayed in the [Partitions—Design \(Step 3\)—Verify Results](#) popup.

Warnings found

Display only.

Summary error messages regarding the partition configuration.

The following hosts will need re-audited

Display only.

World Wide Port Names (WWPNs) of any hosts that should re-audit their library partition. This may be because library resources have been deleted from the partition.

The following hosts do not have Lun 0 set

Display only.

World Wide Port Names (WWPNs) of any hosts that have not defined any library partitions as LUN 0 on the host.

The following orphaned cartridges were found

Display only.

Detailed information regarding all orphaned cartridges in the current partition configuration. Includes module, row, and column location of the cartridge, cartridge volume serial number (volid), and probable causes and explanations why the cartridge is orphaned.

Buttons

Print

Click to print the report on a selected printer.

Save

Click to save the report to a designated comma-separated text file (.csv extension). Comma-separated files can be opened by a variety of spreadsheet and database programs.

Yes

Click to confirm that you want to update the library controller database with the current settings from the SL Console workspace.

No

Click to cancel the update. The library controller database is not updated, but all partition changes from this login session are retained in the SL Console partition workspace.

Details

Click to toggle between the expanded and collapsed views of the warning message display.

See Also

- [Partitions—Commit \(Step 4\)](#)
- [Partitions—Design \(Step 3\)—Verify Results](#)

Partition Report Screens

[Partitions—Reports](#)

[Partitions—Reports—Cartridge Cell and Media Summary](#)

[Partitions—Reports—Host Connections Summary](#)

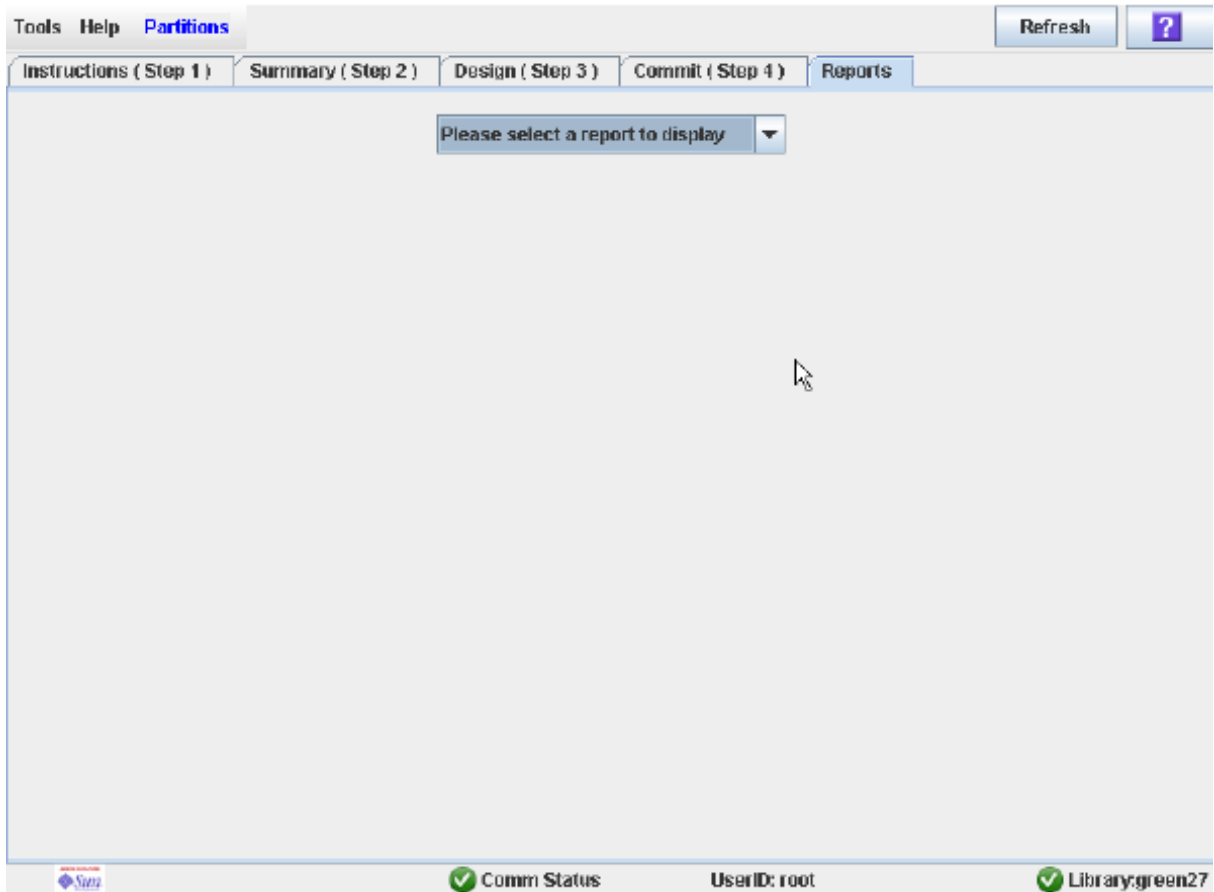
[Partitions—Reports—Orphaned Cartridge Report](#)

[Partitions—Reports—Partition Details](#)

[Partitions—Reports—Partition Summary](#)

Partitions—Reports

Sample Screen



Description

Allows you to select one of the following library partition reports:

- Cartridge Cell and Media Summary
- Host Connections Summary
- Orphaned Cartridge Report
- Partition Details
- Partition Summary

Note – The partition reports display data saved to the library controller database. If you have made partition configuration changes without committing the changes to the library controller through the **Commit (Step 4)** screen, the data in these reports will differ from data shown on the partition **Summary (Step 2)** and **Design (Step 3)** screens.

Screen Fields

Please select a report to display

Required.

Click the report you want to display. The drop-down menu lists all available library partition reports.

Buttons

Refresh

Click to refresh the SL Console partition workspace with current data from the library controller database. All uncommitted partition changes you have made during this SL Console login session will be discarded. The **Partition Refresh** popup appears, prompting you to confirm the refresh.

? (Help)

Click to display online help for the screen.

See Also

- [Partitions—Summary \(Step 2\)](#)
- [Partitions—Design \(Step 3\)](#)
- [Partitions—Commit \(Step 4\)](#)
- [Partitions—Reports—Cartridge Cell and Media Summary](#)
- [Partitions—Reports—Host Connections Summary](#)
- [Partitions—Reports—Orphaned Cartridge Report](#)
- [Partitions—Reports—Partition Details](#)
- [Partitions—Reports—Partition Summary](#)

Partitions—Reports—Cartridge Cell and Media Summary

Sample Screen

Cartridge Cell and Media Summary

▼ Mod	Row	Col	Cell Status	Partition Id	Partition Name	SCSI Element	Element Type	Vol Ser
1	1	4	Assigned	1	PARTITION...	1000	CELL	
1	2	4	Assigned	1	PARTITION...	1001	CELL	
1	3	4	Assigned	1	PARTITION...	1002	CELL	
1	4	4	Assigned	1	PARTITION...	1003	CELL	
1	5	4	Assigned	1	PARTITION...	1004	CELL	
1	6	4	Assigned	1	PARTITION...	1005	CELL	
1	7	4	Assigned	1	PARTITION...	1006	CELL	
1	8	4	Assigned	1	PARTITION...	1007	CELL	
1	9	4	Assigned	1	PARTITION...	1008	CELL	
2	3	1	Assigned	6	sixer	1000	CELL	
2	4	1	Assigned	6	sixer	1001	CELL	
2	3	2	Assigned	6	sixer	1002	CELL	
2	4	2	Assigned	6	sixer	1003	CELL	
2	3	3	Assigned	6	sixer	1004	CELL	
2	4	3	Assigned	6	sixer	1005	CELL	
2	5	4	Assigned	6	sixer	1006	CELL	

Print... Save To File...

Comm Status UserID: root Library:green27

Description

Displays detailed information about all library resources (storage cells, tape drives, and CAP cells) and any stored cartridges.

Note – The partition reports display data saved to the library controller database. If you have made partition configuration changes without committing the changes to the library controller through the **Commit (Step 4)** screen, the data in these reports will differ from data shown on the partition **Summary (Step 2)** and **Design (Step 3)** screens.

You can modify the layout and display of this screen. See [“Modifying the Screen Layout” on page 32](#) for details.

Optionally, you can print the screen data or save it to a comma-separated file.

Screen Fields

Module

Display only.

Module number where the library resource is located.

Row

Display only.

Row number where the library resource is located. Rows are numbered consecutively from the top down, with row 1 at the top.

Column

Display only.

Column number where the library resource is located. Column location is referenced from the center of the drive bays. +1 is to the right of the drive bays; -1 is to the left.

Cell Status

Display only.

Partition status of the library resource. Options are:

- Assigned
- Unassigned

Partition ID

Display only.

Partition ID to which the library resource is allocated, if applicable.

Partition Name

Display only.

Name of the partition to which the library resource is allocated, if applicable. If the library has no defined partitions, "Non-Partitioned Library" is displayed.

SCSI Element

Display only.

Host SCSI element number assigned to the library resource. SCSI element numbers are continuous within a partition, even if resources are not adjacent.

Element Type

Display only.

Type of library resource. Options are:

- CAP
- CELL
- DRIVE

Vol Ser

Display only.

Volume serial number (VOLID) of the cartridge resident in the library resource, if applicable.

Buttons

Print

Click to print the report on a selected printer.

Save to File

Click to save the report to a designated comma-separated text file (.csv extension). Comma-separated files can be opened by a variety of spreadsheet and database programs.

Refresh

Click to refresh the SL Console partition workspace with current data from the library controller database. All uncommitted partition changes you have made during this SL Console login session will be discarded. The **Partition Refresh** popup appears, prompting you to confirm the refresh.

? (Help)

Click to display online help for the screen.

See Also

- [Partitions—Reports—Host Connections Summary](#)
- [Partitions—Reports—Orphaned Cartridge Report](#)
- [Partitions—Reports—Partition Details](#)
- [Partitions—Reports—Partition Summary](#)

Partitions—Reports—Host Connections Summary

Sample Screen

Tools Help **Partitions** Refresh ?

Instructions (Step 1) Summary (Step 2) Design (Step 3) Commit (Step 4) Reports

Host Connections Summary

Partitions

Partition ID	Partition Name	Cell Count	Drive Count	CAP Count	Cartridge Count	% of Cells with Media
1	PARTITION-1	27	1	2	2	3.7%
2	2Two	18	1	0	0	0%
3	3Three	0	0	0	0	0%
4	Green27--Partit...	0	0	0	0	0%
6	sixer	28	1	2	1	3.57%
7	7Seven	0	0	0	0	0%
8	Green27 -- Part...	0	0	0	0	0%

Host Connections

Initiator WWPN	Library Controller Port	LUN	Partition ID
20:00:00:A0:BD:08:07:00	0	0	3
20:00:00:A0:BD:08:0A:00	0	0	3
20:00:00:A0:BD:08:0A:00	0	2	1
20:00:00:A0:BD:08:0A:00	0	3	4

Print... Save To File...

Comm Status UserID: root Library:green27

Description

Displays detailed information about all host-partition connections for the library.

Note – The partition reports display data saved to the library controller database. If you have made partition configuration changes without committing the changes to the library controller through the **Commit (Step 4)** screen, the data in these reports will differ from data shown on the partition **Summary (Step 2)** and **Design (Step 3)** screens.

You can modify the layout and display of this screen. See [“Modifying the Screen Layout” on page 32](#) for details.

Optionally, you can print the screen data or save it to a comma-separated file.

Screen Fields

Partitions

Note – The screen fields in this section also appear on the [Partitions—Reports—Partition Summary](#) report.

Partition ID

Display only.
ID of the partition (1–8).

Partition Name

Display only.
Name of the partition.

Cell Count

Display only.
Total number of storage cells allocated to the partition.

Drive Count

Display only.
Total number of tape drives allocated to the partition.

CAP Count

Display only.
Total number of CAP cells allocated to the partition.

Cartridge Count

Display only.
Total number of tape cartridges resident in the partition.

% of Cells with Media

Display only.
Percentage of storage cells containing tape cartridges. Calculated as **Cartridge Count** / **Cell Count**.

Host Connections

Initiator WWPN

Display only.
World Wide Port Name of an host bus adapter (HBA) with a connection to the partition.

Library Controller Port

Display only.
Port number of the SL500 library controller on the host. This entry is always “0”.

LUN

Display only.

Logical unit number of the library partition on the host.

Partition ID

Display only.

Partition ID to which the host has a connection.

Buttons

Print

Click to print the report on a selected printer.

Save

Click to save the report to a designated comma-separated text file (.csv extension). Comma-separated files can be opened by a variety of spreadsheet and database programs.

Refresh

Click to refresh the SL Console partition workspace with current data from the library controller database. All uncommitted partition changes you have made during this SL Console login session will be discarded. The **Partition Refresh** popup appears, prompting you to confirm the refresh.

? (Help)

Click to display online help for the screen.

See Also

- [Partitions—Reports—Cartridge Cell and Media Summary](#)
- [Partitions—Reports—Orphaned Cartridge Report](#)
- [Partitions—Reports—Partition Details](#)
- [Partitions—Reports—Partition Summary](#)

Partitions—Reports—Orphaned Cartridge Report

Sample Screen

Tools Help Partitions Refresh ?

Instructions (Step 1) Summary (Step 2) Design (Step 3) Commit (Step 4) Reports

Orphaned Cartridge Report

▼ Mod	Row	Col	Vol Ser	Explanation
3	3	1	012416L1	Unreachable from any ...
3	7	11	DG 003L2	Unreachable from any ...
3	1	7	A00008L1	Unreachable from any ...
3	1	1	EN0341L1	Unreachable from any ...

Print... Save To File...

Comm Status UserID: root Library:green20

Description

Displays the locations and volume serial numbers (VOLIDs) of all orphaned cartridges in the library. Also identifies why the cartridge is orphaned.

Note – The partition reports display data saved to the library controller database. If you have made partition configuration changes without committing the changes to the library controller through the **Commit (Step 4)** screen, the data in these reports will differ from data shown on the partition **Summary (Step 2)** and **Design (Step 3)** screens.

You can modify the layout and display of this screen. See [“Modifying the Screen Layout” on page 32](#) for details.

Optionally, you can print the screen data or save it to a comma-separated file.

Screen Fields

Module

Display only.

Module number where the orphaned cartridge is located.

Row

Display only.

Row number where the orphaned cartridge is located. Rows are numbered consecutively from the top down, with row 1 at the top.

Column

Display only.

Column number where the orphaned cartridge is located. Column location is referenced from the center of the drive bays. +1 is to the right of the drive bays; -1 is to the left.

Vol Ser

Display only.

Volume serial number (volid) of the orphaned cartridge.

Explanation

Display only.

Explanation of why the cartridge is orphaned.

Because this report is produced from the library controller database, the only option is:

- Unreachable from any host

Buttons

Print

Click to print the report on a selected printer.

Save

Click to save the report to a designated comma-separated text file (.csv extension). Comma-separated files can be opened by a variety of spreadsheet and database programs.

Refresh

Click to refresh the SL Console partition workspace with current data from the library controller database. All uncommitted partition changes you have made during this SL Console login session will be discarded. The **Partition Refresh** popup appears, prompting you to confirm the refresh.

? (Help)

Click to display online help for the screen.

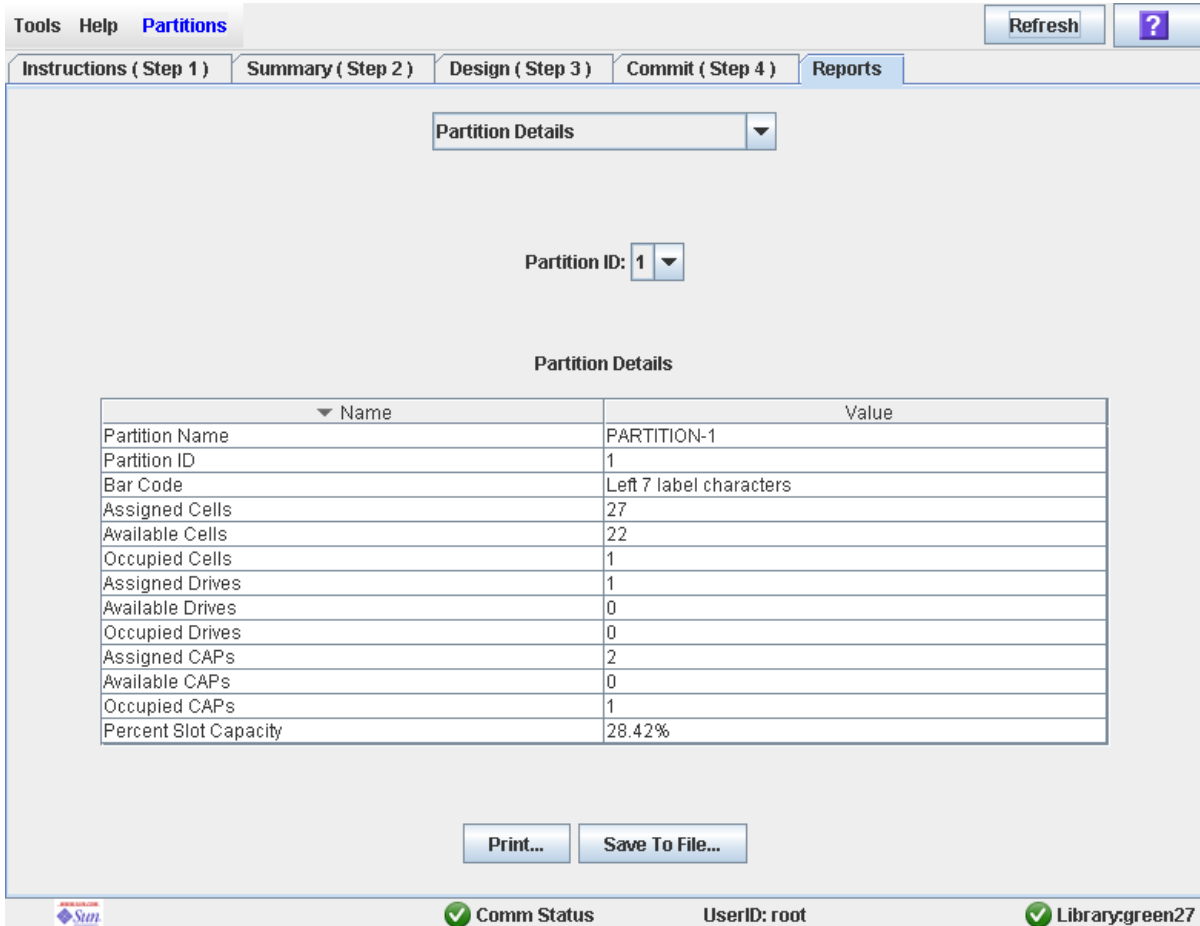
See Also

- [Partitions—Reports—Cartridge Cell and Media Summary](#)

- [Partitions—Reports—Host Connections Summary](#)
- [Partitions—Reports—Partition Details](#)
- [Partitions—Reports—Partition Summary](#)

Partitions—Reports—Partition Details

Sample Screen



Tools Help **Partitions** Refresh ?

Instructions (Step 1) Summary (Step 2) Design (Step 3) Commit (Step 4) Reports

Partition Details

Partition ID: 1

Partition Details

Name	Value
Partition Name	PARTITION-1
Partition ID	1
Bar Code	Left 7 label characters
Assigned Cells	27
Available Cells	22
Occupied Cells	1
Assigned Drives	1
Available Drives	0
Occupied Drives	0
Assigned CAPs	2
Available CAPs	0
Occupied CAPs	1
Percent Slot Capacity	28.42%

Print... Save To File...

Comm Status UserID: root Library:green27

Description

Displays detailed information for a selected partition.

Note – The partition reports display data saved to the library controller database. If you have made partition configuration changes without committing the changes to the library controller through the **Commit (Step 4)** screen, the data in these reports will differ from data shown on the partition **Summary (Step 2)** and **Design (Step 3)** screens.

You can modify the layout and display of this screen. See [“Modifying the Screen Layout” on page 32](#) for details.

Optionally, you can print the screen data or save it to a comma-separated file.

Screen Fields

Partition Name

Display only.
Name of the partition.

Partition ID

Display only.
ID of the partition (1–8).

Bar Code

Display only.
Bar code format assigned to the partition.

Assigned Cells

Display only.
Total number of storage cells allocated to the partition.

Available Cells

Display only.
Total number of storage cells in the library available for allocation to the partition.

Occupied Cells

Display only.
Total number of storage cells in the partition with tape cartridges present.

Assigned Drive Bays

Display only.
Total number of drive bays allocated to the partition.

Available Drive Bays

Display only.
Total number of drive bays in the library available for allocation to the partition.

Occupied Drives

Display only.
Total number of installed tape drives in the partition with tape cartridges present.

Assigned CAP cells

Display only.
Total number of CAP cells allocated to the partition.

Available CAP cells

Display only.
Total number of CAP cells in the library available for allocation to the partition. This number includes all CAP cells in CAPs not allocated to any partition.
This number excludes all CAP cells in CAPs allocated to this partition.

Occupied CAP cells

Display only.

Total number of storage cells in the partition with tape cartridges present.

Percent Slot Capacity

Display only.

Percentage of storage cells in the library allocated to this partition. Calculated as:

Number of cells allocated to the partition / Total physical capacity of the library

Buttons

Print

Click to print the report on a selected printer.

Save

Click to save the report to a designated comma-separated text file (.csv extension). Comma-separated files can be opened by a variety of spreadsheet and database programs.

Refresh

Click to refresh the SL Console partition workspace with current data from the library controller database. All uncommitted partition changes you have made during this SL Console login session will be discarded. The **Partition Refresh** popup appears, prompting you to confirm the refresh.

? (Help)

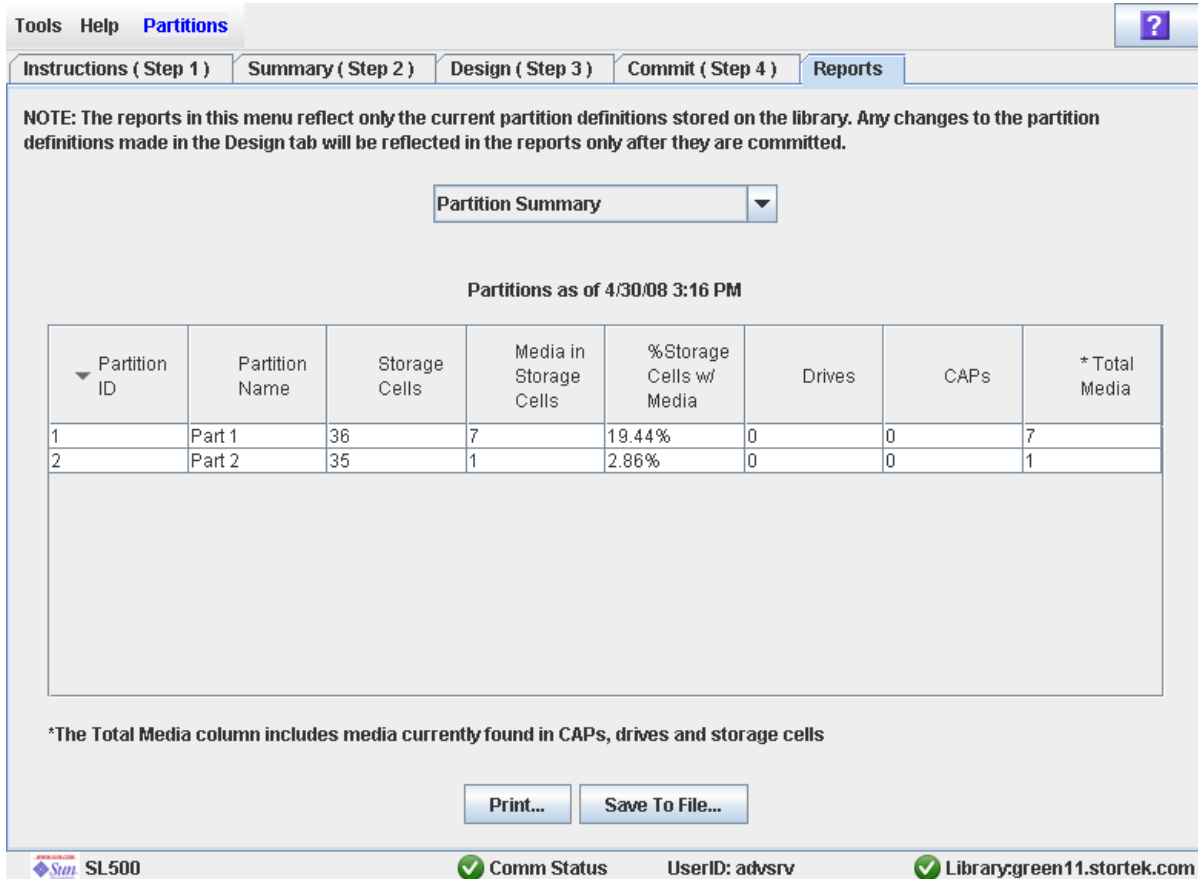
Click to display online help for the screen.

See Also

- [Partitions—Reports—Cartridge Cell and Media Summary](#)
- [Partitions—Reports—Host Connections Summary](#)
- [Partitions—Reports—Orphaned Cartridge Report](#)
- [Partitions—Reports—Partition Summary](#)

Partitions—Reports—Partition Summary

Sample Screen



Tools Help **Partitions** ?

Instructions (Step 1) Summary (Step 2) Design (Step 3) Commit (Step 4) **Reports**

NOTE: The reports in this menu reflect only the current partition definitions stored on the library. Any changes to the partition definitions made in the Design tab will be reflected in the reports only after they are committed.

Partition Summary

Partitions as of 4/30/08 3:16 PM

Partition ID	Partition Name	Storage Cells	Media in Storage Cells	%Storage Cells w/ Media	Drives	CAPs	* Total Media
1	Part 1	36	7	19.44%	0	0	7
2	Part 2	35	1	2.86%	0	0	1

*The Total Media column includes media currently found in CAPs, drives and storage cells

Print... Save To File...

SL500 ✔ Comm Status UserID: advsrv ✔ Library:green11.stortek.com

Description

Displays summary information for all partitions in the library.

Note – The partition reports display data saved to the library controller database. If you have made partition configuration changes without committing the changes to the library controller through the **Commit (Step 4)** screen, the data in these reports will differ from data shown on the partition **Summary (Step 2)** and **Design (Step 3)** screens.

You can modify the layout and display of this screen. See [“Modifying the Screen Layout” on page 32](#) for details.

Optionally, you can print the screen data or save it to a comma-separated file.

Screen Fields

Note – These screen fields also appear on the [Partitions—Reports—Host Connections Summary](#) report.

Partition ID

Display only.
ID of the partition (1–8).

Partition Name

Display only.
Name of the partition.

Cell Count

Display only.
Total number of storage cells allocated to the partition.

Drive Count

Display only.
Total number of tape drives allocated to the partition.

CAP Count

Display only.
Total number of CAP cells allocated to the partition.

Cartridge Count

Display only.
Total number of tape cartridges resident in the partition.

% of Cells with Media

Display only.
Percentage of storage cells containing tape cartridges. Calculated as **Cartridge Count** / **Cell Count**.

Buttons

Print

Click to print the report on a selected printer.

Save

Click to save the report to a designated comma-separated text file (.csv extension). Comma-separated files can be opened by a variety of spreadsheet and database programs.

Refresh

Click to refresh the SL Console partition workspace with current data from the library controller database. All uncommitted partition changes you have made during this SL Console login session will be discarded. The **Partition Refresh** popup appears, prompting you to confirm the refresh.

? (Help)

Click to display online help for the screen.

See Also

- [Partitions—Reports—Cartridge Cell and Media Summary](#)
- [Partitions—Reports—Host Connections Summary](#)
- [Partitions—Reports—Orphaned Cartridge Report](#)
- [Partitions—Reports—Partition Details](#)

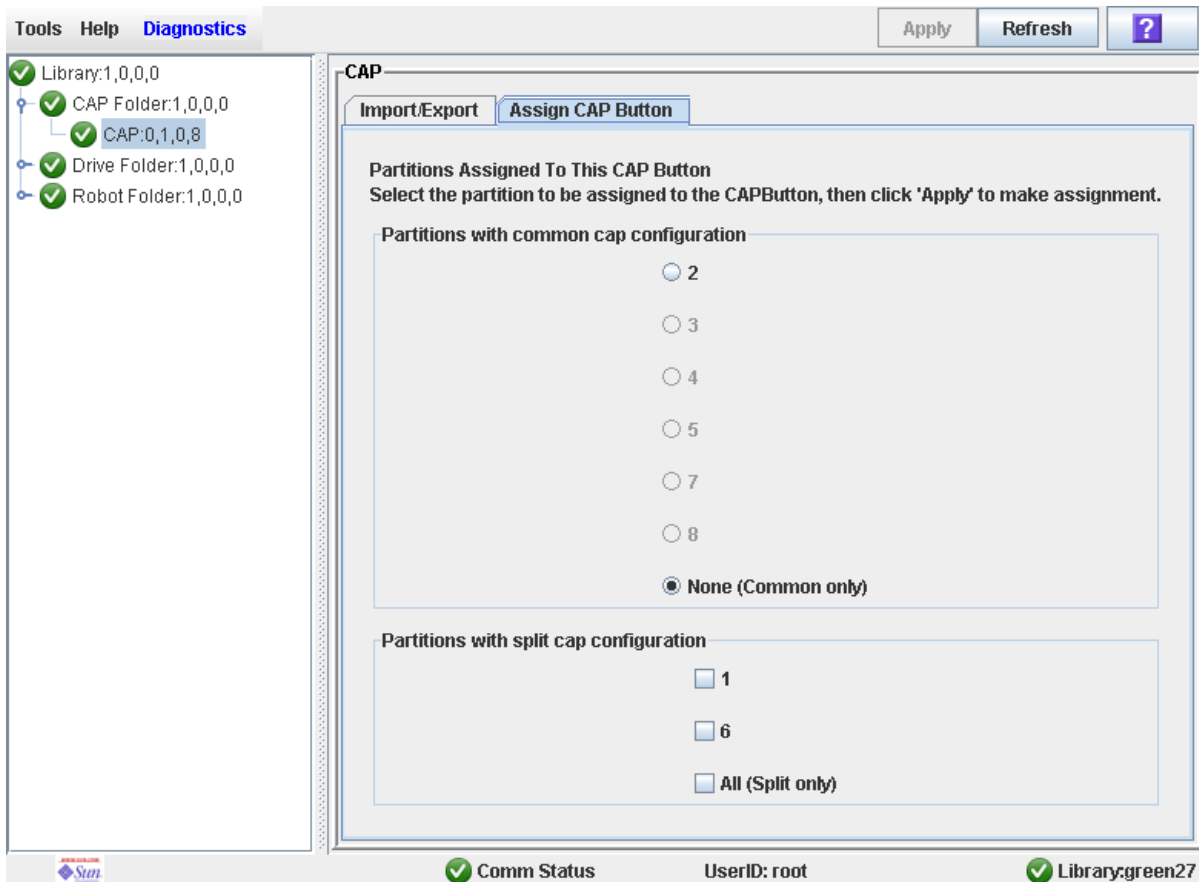


Partition CAP Operation Screens

[Diagnostics > CAP—Assign CAP Button](#)

Diagnostics > CAP—Assign CAP Button

Sample Screen



Description

Allows you to select the partitions to which you want to assign the **CAP Open** button on the library control panel. After using this screen, the following actions occur when you press the **CAP Open** button:

- The library opens the doors of all CAPs containing cells accessible to the partitions selected on this screen.
- The library sends CAP status messages to all hosts with access to the exposed cells.
- Doors to CAPs that contain only inaccessible cells do not open.
- Doors to CAPs with cartridges in inaccessible cells do not open.

Note – Depending on how your library’s CAPs are configured, this operation may expose CAP cells that are not accessible to the requesting host’s partition.

Note – Although it is possible to enter cartridges through a CAP without using the **Assign CAP Button** screen, it is recommended that you access the screen first to verify the partition settings. This will help to prevent cartridges from being entered inadvertently into the wrong partition.

See [“Enter Cartridges Into a Partitioned Library” on page 187](#) and [“Enter Cartridges Into a Partitioned Library” on page 187](#) for complete details on using this screen in conjunction with the **CAP Open** button.

Screen Fields

Partitions with common CAP configuration

Required.

Partitions with access to common CAP cells are displayed in this table in black type. Partitions that have not been configured are grayed out.

Select the partition for which you want to enter or eject cartridges. You can select only one partition at a time from this table. Options are:

- 1–8—Click the radio button to select the partition.
- None (Common only)—Click the radio button to de-select all partitions in this table. This indicates that the enter or eject operation does not involve any partitions with access to common CAP cells.

Partitions with split CAP configuration

All partitions with access to split CAP cells are displayed in this table.

Select the partitions for which you want to enter or eject cartridges. You can select more than one partition at a time from this table. Clearing all checkboxes indicates that the enter or eject operation does not involve any partitions with allocated CAP cells.

Options are:

- 1–8—Click the checkbox to select the partition; clear the checkbox to de-select the partition.
- All (Split only)—Click the checkbox to select all partitions in this table.

Buttons

Apply

Click to update the library controller database with the current settings from this screen. The **CAP Confirm** popup appears, prompting you to confirm the update.

Refresh

Click to refresh the SL Console partition workspace with current data from the library controller database. All uncommitted partition changes you have made during this SL Console login session will be discarded. The **Partition Refresh** popup appears, prompting you to confirm the refresh.

? (Help)

Click to display online help for the screen.

See Also

None

SL Console Diagnostics and Utilities

Library Events

The library controller continually monitors library operations and logs all events. Events are stored under three headings:

- Communication events—Includes host-to-library, library-to-library, and library-to-drive communications.
- Error event—Each error event is assigned a four-digit (hexadecimal) action code.
- Warning events—Indicate a loss of performance or conditions that may be indicative of future, fatal errors.

Event Monitors

You or your Sun support representative can use the SL Console monitors to review library events. You can spool the event monitor information to a text file.

The following information can help to diagnose the cause of the event:

- Date/time stamp—Identifies when the event occurred.
- Action codes—Identifies the command that was issued, such as “load drive”.
- Result codes—Identifies the result of the requested action.
- Known service plan (KSP) diagnosis—Identifies the mechanism or component responsible for the task or fault.

Note – There is no option to clear the event log.

Library Self-Tests

The self-test diagnostic utility is intended to help diagnose basic problems with the library. A self-test is typically run after the library is installed. It can be run whenever necessary.

Note – The library self-test routines are non-disruptive.

Library self-tests involve the following process:

1. Checks the communication path between the library controller, drives, and HandBot.
2. Performs get and put operations to check the health of the HandBot and CAPs. This includes get and put operations from a reserved cell to a random empty:
 - Storage cell
 - CAP cell
 - Corner cell
3. Performs a full library audit.
4. Performs mounts and dismounts of diagnostic cartridges for all the drives installed in the library.

Note – The self-test will not start unless a diagnostic cartridge is found in the reserved cells.

Note – The self-test is repeated for each drive type if a compatible diagnostic cartridge is found in the reserved cells. If a diagnostic cartridge is not found for a drive type, the mount/dismount operation is skipped for the drive.

Library Firmware Upgrades

Note – This feature is available starting with SL500 firmware version 1022.

The library firmware resides on the library controller. The initial firmware is installed at the factory. When new firmware is released, you must use the code load utility to upgrade the firmware on the library and associated devices (CAP and HandBot).

Note – Library firmware does not contain drive code upgrades.

Firmware Download Sites

The SL500 library firmware package is a .img (image) file. See [“SunSolve and Helpful Links” on page xxxi](#) for download sites.

Note – You must have a valid login ID and password for the download site you are using. Contact your Sun support representative for assistance.

Firmware Installation Process

The process for loading firmware code on the library controller is as follows:

1. Locate the firmware upgrade package (.img file) on the appropriate Sun download site. See [“SunSolve and Helpful Links” on page xxxi](#).
2. Download the code to a folder on your local PC or workstation.
3. Download the firmware package from your PC to the library controller. This process also unpacks the package after downloading to make it ready for activation. See [“Download Code to the Library Controller” on page 270](#).
4. Activate the downloaded code on the library controller. See [“Activate Code on the Library Controller” on page 272](#).
5. Reboot the library to make the code operational. See [“Reboot the Library” on page 268](#).

Audits

An audit is the process of reading and cataloging cartridges within a library, verifying the locations of cartridges, or validating a range of slot locations. The library controller maintains a cartridge database that contains the following information for all the cartridges in the library:

- Volume serial numbers (VOLID or VOLSER)
- Current location (in library internal address format)
- Verified status (true or false)

The library audits all cartridge locations in the storage and reserved areas at the following times:

- An audit request is made through the SL Console.
- A host request to audit the library is entered.

You can use the SL Console to perform the following types of audits:

- [Physical Audit](#)
- [Verified Audit](#)

Caution – System-level problems may occur if a host’s cartridge record does not match what is in the library controller cartridge database.

Physical Audit

In a physical audit, the HandBot visits cartridge locations and verifies the VOLID of resident cartridges, and the library controller updates the cartridge database. This audit changes the “verified” status of the cartridge locations to “True.” Audit times vary according to the size of the library.

The library performs a physical audit at the following times.

- When initiated manually from the SL Console. There are two types of manually initiated physical audits:
 - Entire library audit—The HandBot visits all cells (storage, CAP, and drive), catalogs the VOLIDs and locations, and updates the library controller cartridge database. This audit is a background process and so does not interrupt online library operations. See [“Audit the Entire Library” on page 275](#) for details. Estimated time for such an audit is from less than 10 minutes for a Base Module to 30 minutes for a maximum size library.
 - Specific range audit—The HandBot visits only a specific range of cells (storage, CAP, and drive) and updates the library controller cartridge database. The audit information is displayed on the SL Console while the audit is performed. See [“Audit a Range of Cells” on page 277](#) for details.

Verified Audit

A verified audit validates the status of a specific cartridge location or range of locations (including CAP and drives) in the cartridge database. If a cartridge address has a verified status of “false” then a physical audit of that location is performed and the cartridge database is updated. The progress of the audit is displayed in the Audit Console section of the SL Console. See [“Perform a Verified Audit” on page 279](#) for details.

Robot Diagnostic Moves

Note – This feature is available starting with SL500 firmware version 1026 and SL Console version 2.40.

Diagnostic moves are used to monitor or diagnose a problem with a HandBot. The move can be performed with or without cartridges.

Successful diagnostic moves do not rearrange the cartridges in the storage cells; cartridges are returned to their original locations after the diagnostic move is completed. However, some diagnostic move failures can cause cartridges to be left in new locations.

A diagnostic move involves the following elements:

- [Target Address Range](#)
- [Pool Address Range](#)
- [Move Access Order](#)

Target Address Range

The target address range defines the location parameters in a library within which the get operation is performed in a diagnostic move. There are two types of access orders for a target address:

- [“Sequential Access Order” on page 255](#)
- [“Random Access Order” on page 255](#)

Following are valid target address types:

- Storage cells—Reserves all the storage locations as the target range
- CAP—Reserves the cells in the as the target/pool range.
- Drive and Storage cells—Reserves all the drives and storage cells as the target/pool range.
- System cells—Reserves the locations (reserved cells) containing the cleaning or diagnostic cartridges as the target/pool range.
- All—Reserves all storage cells, CAP and Drives as target/pool range.

Note – Selecting the Storage, CAP, drive, system, or All option does reserve all the associated locations as the target range. However, only the location currently being accessed by the HandBot for a get/put operation is unavailable to the host.

Pool Address Range

The pool address range locations are used to supply cartridges required for diagnostic moves to and from the target address range. A pool address is also used in a get operation if a target address does not contain a cartridge. There is no specified access order within the pool address range. The pool address ranges does not include drive locations.

Note – The address ranges are in the Library, Module, Row, and Column format.

Note – The pool address ranges cannot contain drive locations.

Move Access Order

Sequential Access Order

In a sequential access order diagnostic move, the HandBot performs a get operation starting with the first location in the target address ranges and then continues visiting the locations sequentially through the range until it completes the requested number of moves.

Note – If you choose not to move cartridges the get/put operations are not performed. The HandBot just positions itself at the target and pool addresses.

Random Access Order

In a random access order diagnostic move, the HandBot randomly picks a location in the target address range to get a cartridge. The HandBot can also visit the same location in the in the target address range multiple times to get a cartridge. The random access routine ends after the requested number of moves is complete.

If you choose not to move cartridges the get/put operations are not performed. The HandBot just positions itself at the target and pool addresses.

Diagnostic Move Control Functions

The following options are available to manage the moves currently open:

To	Select Menu Option	Notes
Start	File > Start Sequence	
Pause	File > Pause Sequence	Stops all diagnostic moves, but maintains the current location in the access order.
Stop	File > Stop Sequence	Stops a running or paused exerciser.
Resume	File > Start Sequence	Resumes a paused exerciser starting with the last known location in the target address range.
Clear the messages displayed in the monitor window	File > Clear Output Window	Erases the previous message lines and continues to fill the screen with new messages.
Spool	Spool File > Start Spooling	Directs the move output to a file.
Stop spooling the exerciser output to a file	Spool File > Stop Spooling	Stops directing the move output to the spool file.

Note – If multiple diagnostic moves are open, then each move has its own monitor screen.

Troubleshooting

Before you run diagnostic tests, check the following areas of the library using the troubleshooting tips in the following table:

TABLE 7-1 Troubleshooting Table

Problem	What to do
Service Required (amber) LED is constantly on.	<p>Perform the following procedure:</p> <p>Using the SL Console, check the health of the library and the attached devices (drives, CAP, and robots). See “StorageTek Library Console” on page 27 for more details about operations.</p> <p>To perform a health check:</p> <ol style="list-style-type: none"> 1. Log in to the SL Console application. 2. Access the System Detail module, View > System Detail. 3. Check the device tree for the following indicators: <ul style="list-style-type: none"> ■ Device Healthy ■ Device Error <p>The Status (for example, online/offline) and Statistics (for example, uptime, downtime, errors and warnings) tabs provide more information on the health of the library and devices.</p> <p>Other checks:</p> <ul style="list-style-type: none"> ■ Make sure that cartridges are fully seated and properly oriented in their storage cells. ■ Inspect the X table for any foreign objects or debris; remove them if found.
Library does not power-on. The SL Console does not display any messages.	<ol style="list-style-type: none"> 1. Check that the library power switch is in the ON position. 2. Check all power cord connections. 3. Replace the power cord. 4. Make sure that there is power to the outlet.
CAP open LED is on and blinking.	Open the CAP and make sure that the cartridges in the CAP cells are properly seated.
The client computer cannot communicate with the library or tape drives.	Make sure that cables are securely attached to their connectors on the rear of the library, tape drives, and client computer.
The SL Console does not display modified data or information remains static.	Check the SL Console Heartbeat icon.

TABLE 7-1 Troubleshooting Table (Continued)

Problem	What to do
Robot Fault or Library Fault Amber LED is constantly on.	<ol style="list-style-type: none"> 1. Check the SL Console for any displayed error messages. Write down the error messages reported. 2. Open the front door. Observe and note the state of the cartridges, hand, and tape drives. 3. Make sure that cartridges are fully seated and properly oriented in their storage cells. 4. Make sure that packing materials have been removed. 5. Inspect the library floor for any objects or debris; remove them. 6. Check the status of the tape drives. 7. Close the front door. 8. Make sure that the tape drives are fully seated and locked forward by pushing and pulling on the rear of the drive tray. Any motion of the tray indicates that it requires reseating and locking down.
Tape drive is unable to eject a cartridge.	Manually remove the cartridge from the tape drive. “Remove a Cartridge from a Tape Drive” on page 325.
The client computer cannot communicate with the library or tape drives.	<ol style="list-style-type: none"> 1. Make sure that cables are securely attached to their connectors on the rear of the library, the tape drives, and the client computer. 2. Make sure that each SCSI device a same bus has a unique address and that the last device is properly terminated.
The library is unable to communicate with the drives. Drive status on the SL Console displays Not communicating.	<ol style="list-style-type: none"> 1. Make sure that cables are securely attached to their connectors on the rear of the library, the drives, and the client computer. 2. Make sure that each SCSI device on a bus has a unique address and that the last device is properly terminated.
Repeated or excessive drive cleanings or cleaning messages.	<ol style="list-style-type: none"> 1. Replace the cleaning cartridge with a new cleaning cartridge. 2. Run the Library Self-Test and note if errors are reported for the drive. 3. Run any client computer-based drive diagnostic tests.
Cartridge stuck in tape drive.	See “Remove a Cartridge from a Tape Drive” on page 325.
Tape drive is unable to eject a cartridge.	See “Remove a Cartridge from a Tape Drive” on page 325.

Diagnostic and Utility Tasks

Library diagnostic and utility tasks are divided into the following categories:

- [“Event Monitor Tasks” on page 260](#)
- [“Library Utility Tasks” on page 266](#)
- [“Audit Tasks” on page 274](#)
- [“Drive Utility Tasks” on page 281](#)
- [“HandBot Utility Tasks” on page 285](#)

Event Monitor Tasks

Task	Page
Display an Event Monitor	261
Spool Event Monitor Data to a File	263
Display Multiple Monitors	265

▼ Display an Event Monitor

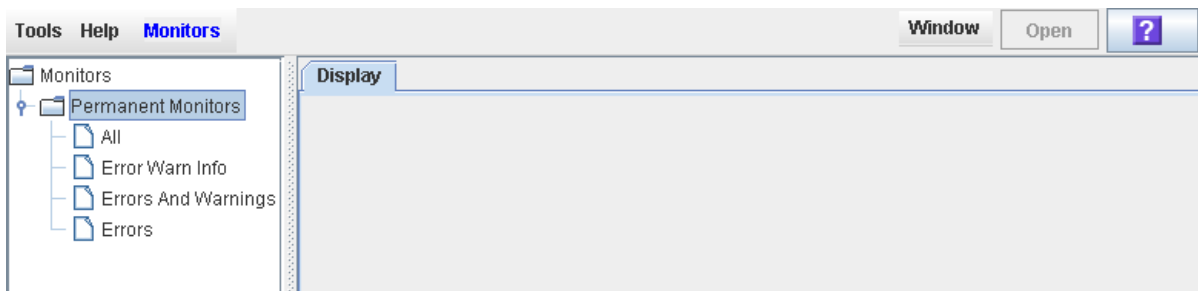
Event monitor information is dynamically updated depending upon occurrence of the selected events. The information sent during an e-mail, print, save, or spool operation reflects the data (and format) shown on-screen at the time the operation is requested.

Note – Event monitors are useful tools for root cause analysis of errors. If the library is experiencing reproducible errors, you can open an event monitor and spool all events to a file to capture the data. Later, you can send the file to your Sun support representative for analysis.

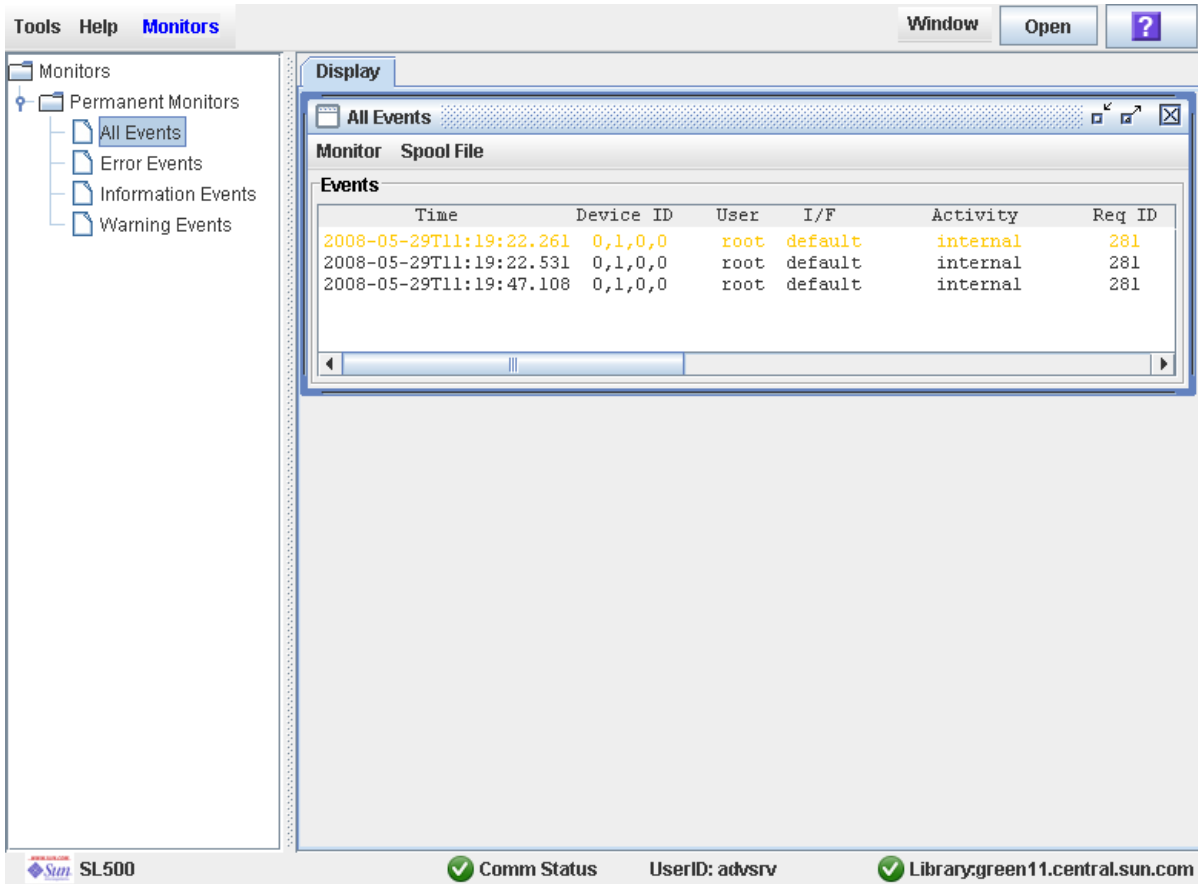
Note – To monitor multiple events, see [“Display Multiple Monitors” on page 265](#).

1. Select **Tools > Monitors**.
2. Expand the **Permanent Monitors** folder.

The library monitors you have access to are displayed.



3. Click the event monitor you want to use, and then click Open from the Options Bar. The system displays the associated data collected for the event.



4. Use these options to manage the information displayed on the screen for the event selected:

Select	To
Monitor > Pause	Pause the continuous display of data related to the event selected
Monitor > Resume	Resume displaying the events
Monitor > Stop	Permanently stop the continuous display of data related to the event selected
Monitor > Clear	Clear the event monitor display

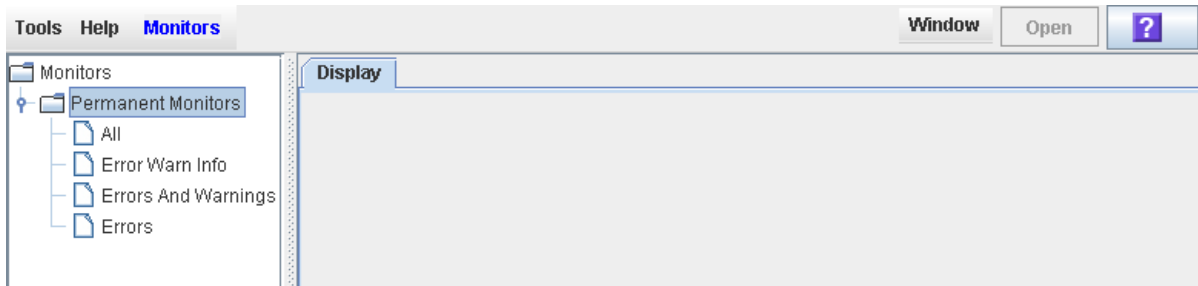
5. To close a monitor, click the X in the upper right corner of the window.

▼ Spool Event Monitor Data to a File

Use this procedure to spool and save event monitor data to a file. You can send the file to your Sun support representative to assist in diagnosing problems.

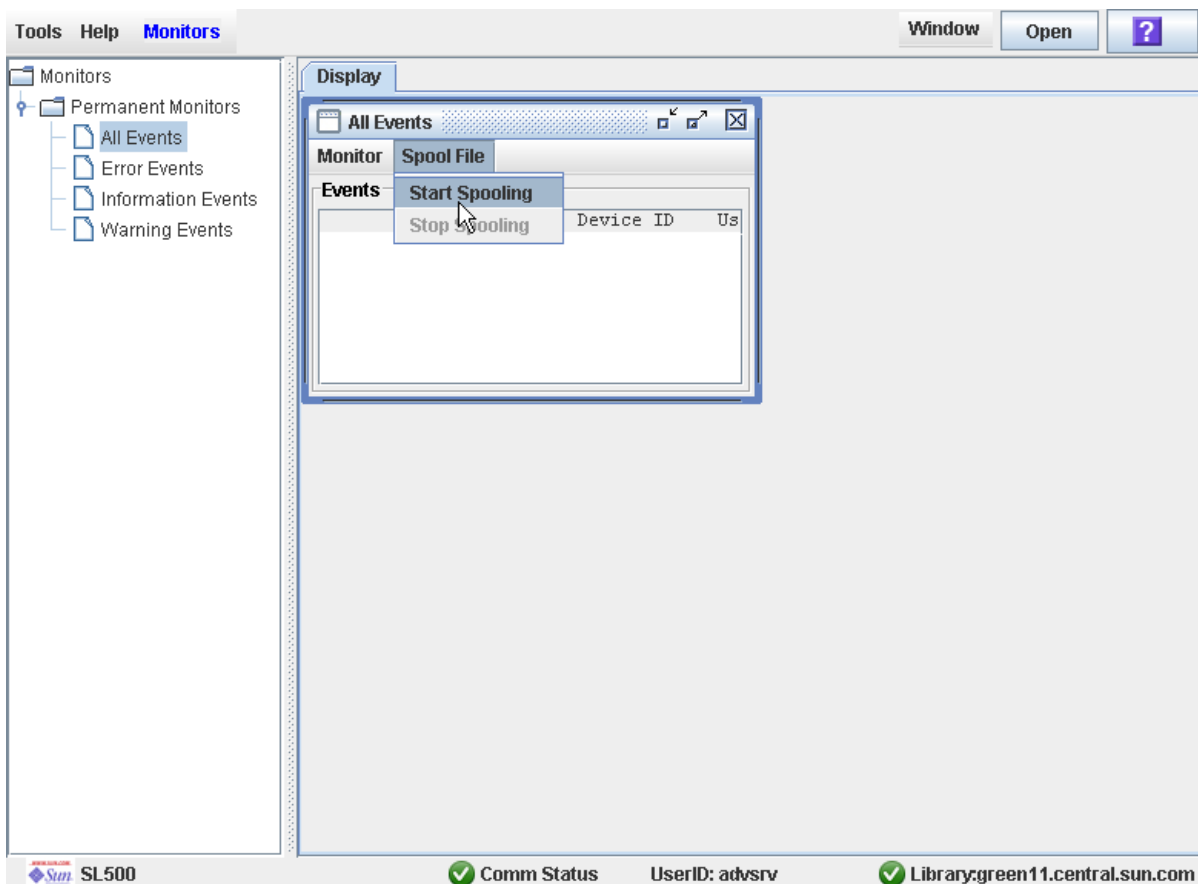
1. **Select Tools > Monitors.**
2. **Expand the Permanent Monitors folder.**

The library monitors you have access to are displayed.



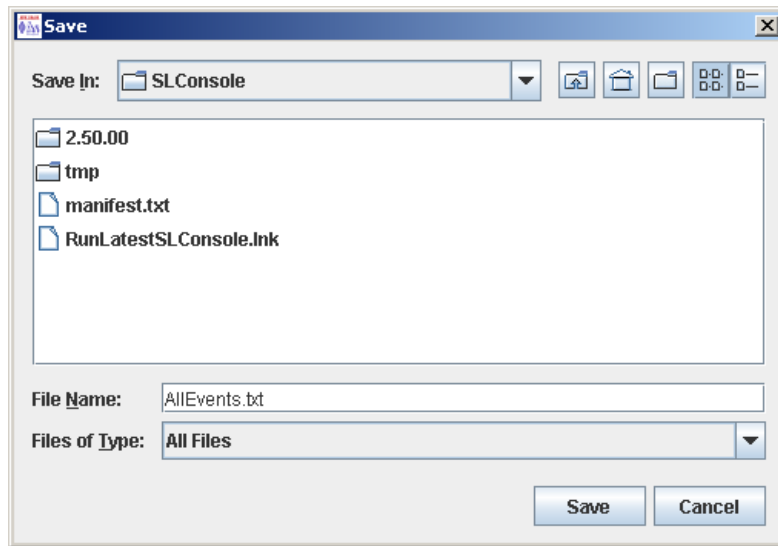
3. **Click the event monitor you want to use, and then click Open from the Options Bar.**

The system displays the an event monitor window.



4. **In the event monitor window, select Spool File > Start Spooling.**

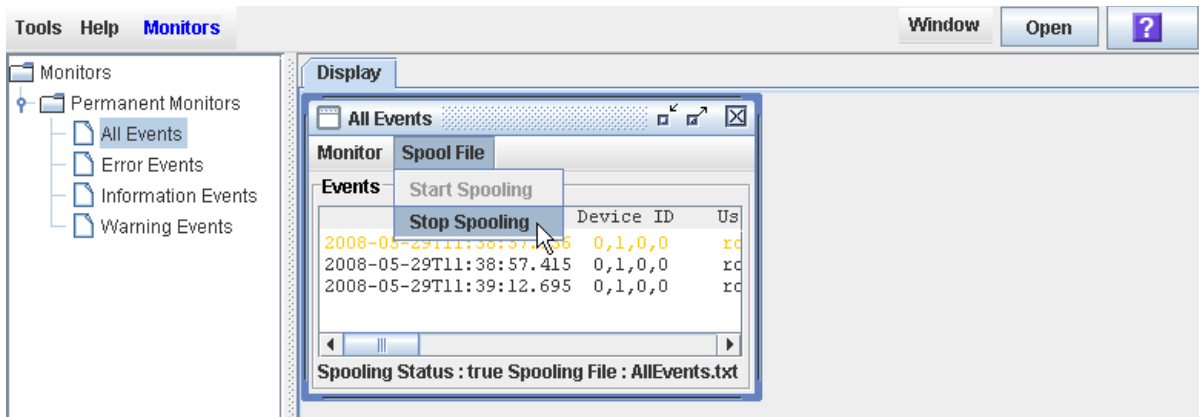
The **Save** popup appears.



5. Browse to the directory where you want to save the file. In the File Name field, enter the file name, and click Save.

All event data is spooled to the specified file.

6. To stop spooling, select **Monitor > Stop Spooling**.



Following is a sample of the spool file:

```
2008-05-29T11:23:27.448 0,1,0,0 root default internal 281 warn
0 rb_Reboot():reboot(): Resetting drive [0,3,4,9]
2008-05-29T11:23:27.760 0,1,0,0 root default internal 281 info
0 Service Beacon is ACTIVE: Current Health Event indicates Drive 04 in Module 03 is
not operational
2008-05-29T11:23:53.211 0,1,0,0 root default internal 281 info
0 Service Beacon is ACTIVE: Current Health Event indicates Drive 04 in Module 03 is
operational
```


▼ Display Multiple Monitors

You can open and manage multiple event monitors using these selections from the Options Bar:

To	Select
Custom arrange the open monitors on screen	Window > Arrange
Arrange the event monitor windows horizontally	Window > Tile Horizontal
Arrange the event monitor windows vertically	Window > Tile Vertical
Stack the event monitors	Window > Cascade

Library Utility Tasks

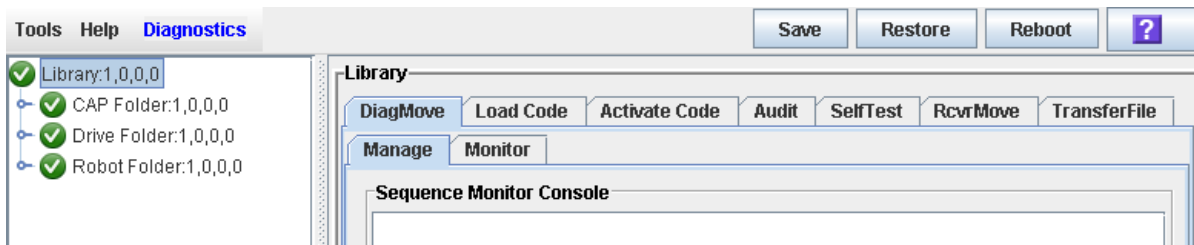
Task	Page
Perform a Library Self-Test	267
Reboot the Library	268
Download Code to the Library Controller	270
Activate Code on the Library Controller	272

▼ Perform a Library Self-Test

Note – The proper diagnostic cartridges for library drives must be present in the library.

1. Select Tools > Diagnostics.
2. Click the Library folder on the device tree.

The Library screen appears.



3. Click the SelfTest tab.

Note – The self-test screen displays a Mode field with two options: disruptive and non-disruptive. At present, only the non-disruptive option is valid.

4. Click the Run tab from the Options Bar.

During the self-test the SL Console window displays the status of the various diagnostics being performed.

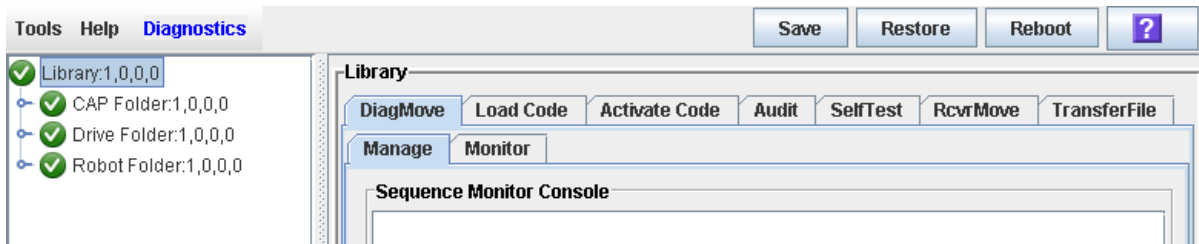
▼ Reboot the Library

Note – This feature is available starting with SL500 firmware version 1026 and SL Console version 2.40.

Use this procedure to reboot the library. This process involves reloading the firmware from flash memory and restarting the library controller.

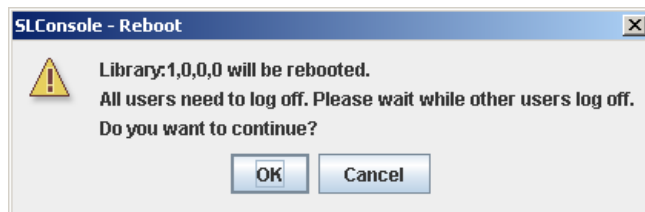
1. Select **Tools > Diagnostics**.
2. Click the **Library** folder on the device tree.

The **Library** screen appears.



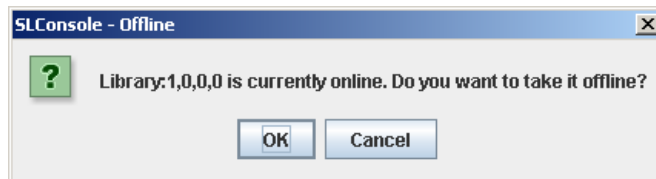
3. Click **Reboot** in the Options Bar.

The **Reboot** confirmation popup appears.



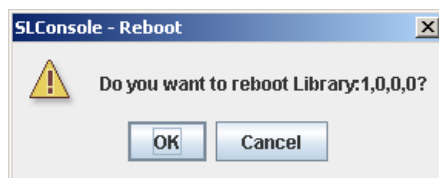
4. Click **OK** to continue.

If the library is online, the **Offline** confirmation popup appears.



5. Click **OK** to vary the library offline.

The **Reboot** confirmation popup appears



6. Click **OK** to continue.

The SL Console termination popup appears.

7. Click OK to terminate this SL Console session.

You are logged off the SL Console.

The library controller reboots the library. This may take several minutes.

Note – You will not be able to log back in to the SL Console until the library has fully initialized.

▼ Download Code to the Library Controller

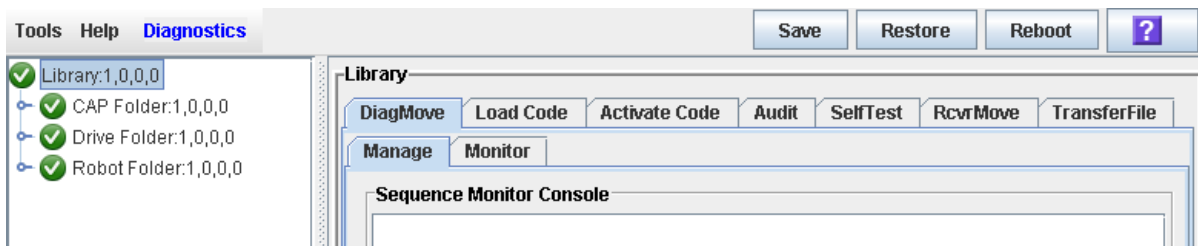
Use this procedure to download updates to the library controller firmware. This procedure is not used for downloading drive firmware updates.

Note – You can perform this procedure only from the standalone SL Console or Web-launched SL Console, not the local operator panel.

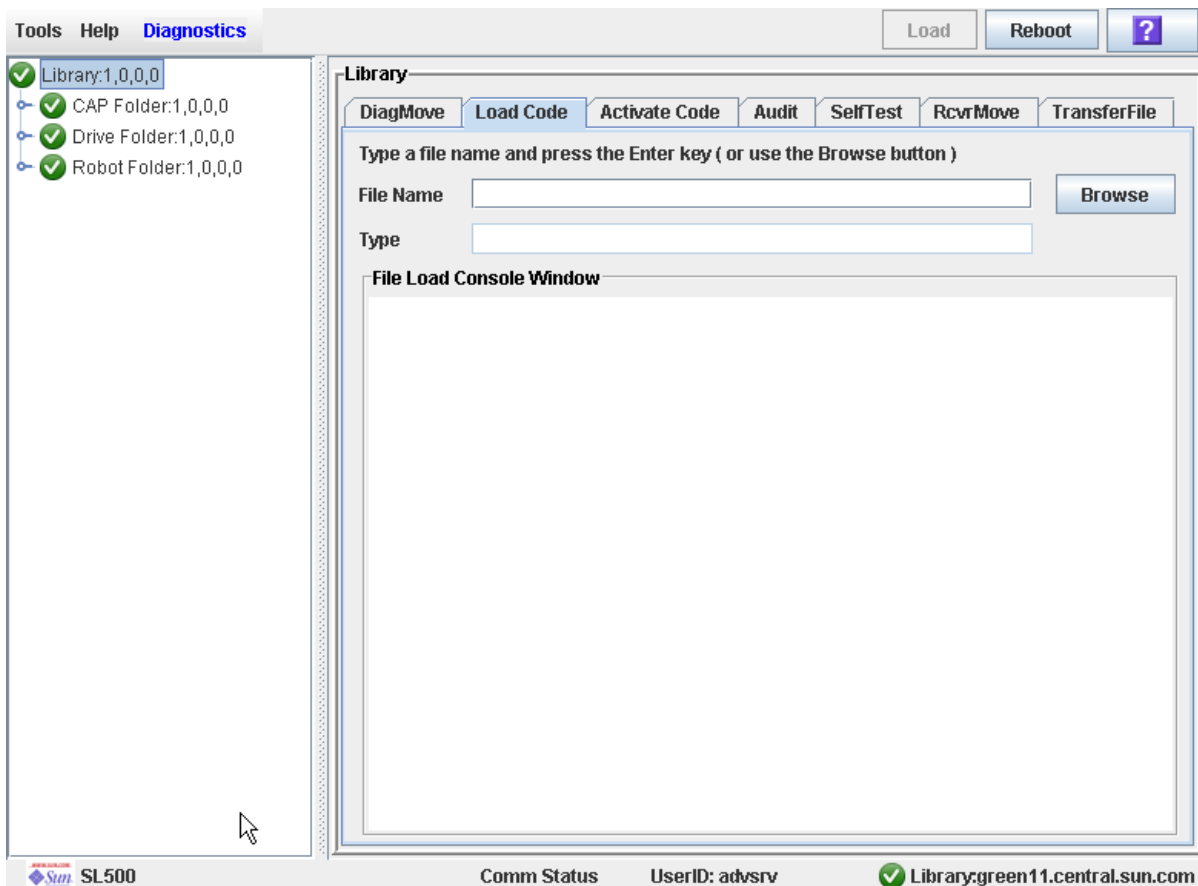
Note – This feature is available starting with SL500 firmware version 1026 and SL Console version 2.40.

1. Select **Tools > Diagnostics**.
2. Click the **Library** folder on the device tree.

The **Library** screen appears.



3. Click the Load Code tab.



4. Click the **Browse** button to locate, select the folder and file name containing the firmware package (.img file) on your PC, and then click **Open**.
5. Click the **Load** button from the Options Bar.
6. Click **OK** to confirm the download.

Note – The download process could take up to five minutes. The SL Console indicates the progress of the file transfer from the PC to the library controller.

Note – After the downloading, the system unpacks the package.

Note – You can store up to two versions of the SL500 code. If you exceed this limit, a delete button pops up prompting you to delete a code version.

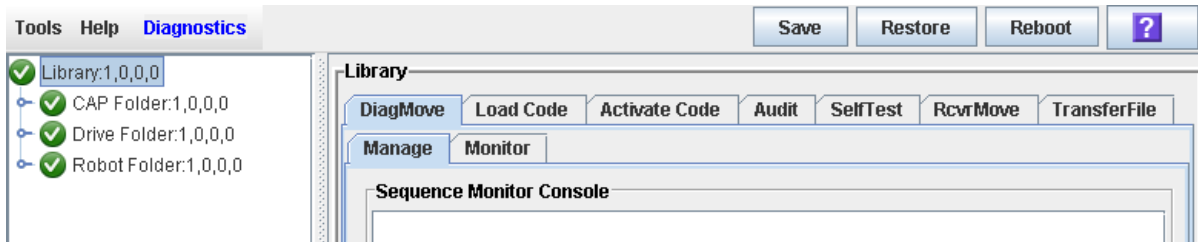
7. After the package is successfully unpacked, you can activate the code immediately, or you can wait until a later time. See [“Activate Code on the Library Controller”](#) on page 272 for detailed instructions.

▼ Activate Code on the Library Controller

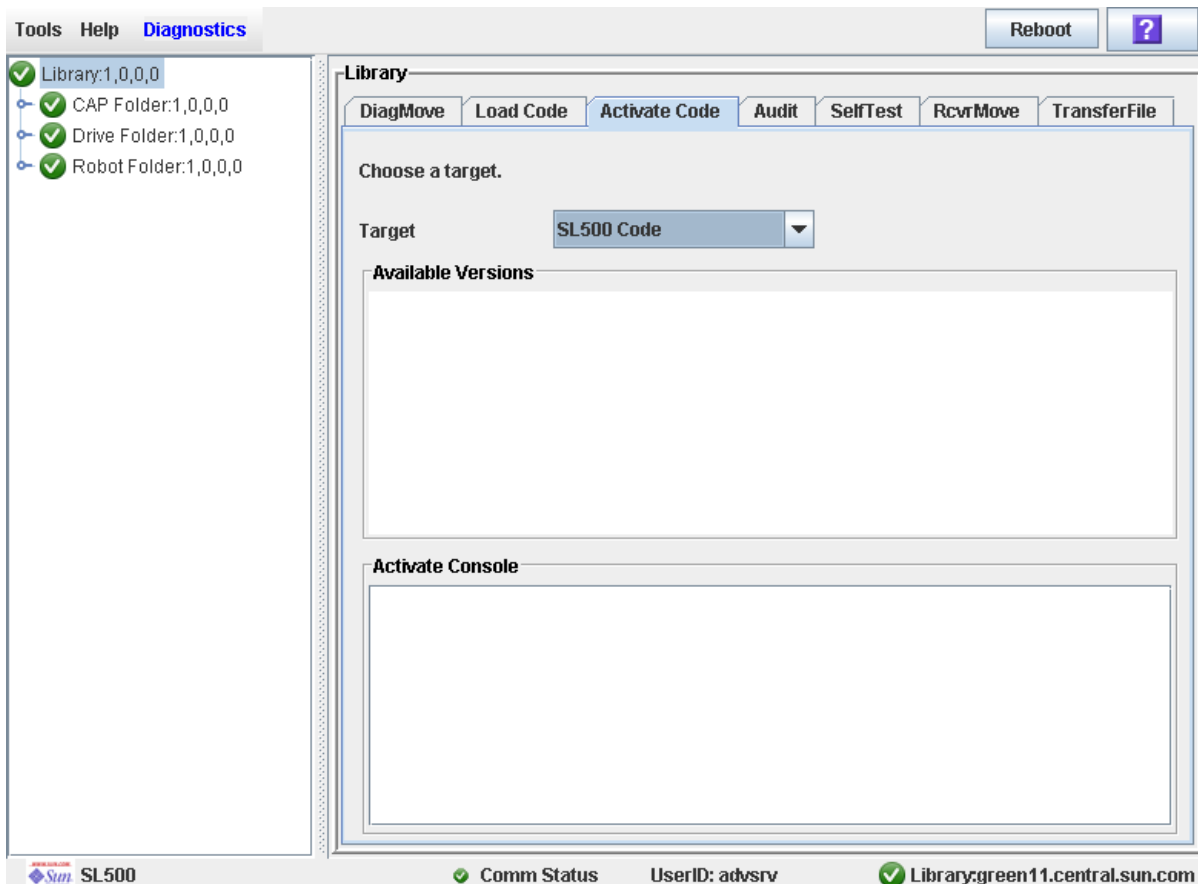
Activating the code makes the code residing in the library controller ready for operation.

1. Select **Tools > Diagnostics**,
2. Click the **Library** folder on the device tree.

The **Library** screen appears.



3. Click the **Activate Code** tab.



4. Click the **Target** on the pull-down menu.

Note – Target refers to firmware package (.img file) containing the SL500 library code.

5. Click the code to activate from the **Available Versions** section.

Note – The version prefixed with an "*" is the code currently active. You can not select this code again to activate.

6. **Click the Activate button in the Options Bar.**

Note – The activate code process could take up to ten minutes to complete.

Caution – POTENTIAL INTERNAL FILE CORRUPTION. Do not reboot any devices in the library or execute any operations on the library while code is being activated.

7. **Click OK to continue.**

Note – The Activate Console screen displays the status of the code activation process. The code you just activated is listed in the available versions section, marked with an "*". The unpacked version and previously activated versions of the code are also listed (without the "*").

8. **The system prompts you to reboot the library. Click OK to reboot the library.**

Note – The library has two versions of the image file residing in the flash memory. After the library completes the reboot process, the latest image becomes active and the earlier version serves as a backup. The earlier version may be restored if required.

9. **Click OK to terminate the SL Console session.**

10. **In the logon screen, click Exit to close the application.**

Audit Tasks

Task	Page
Audit the Entire Library	275
Audit a Range of Cells	277
Perform a Verified Audit	279

▼ Audit the Entire Library

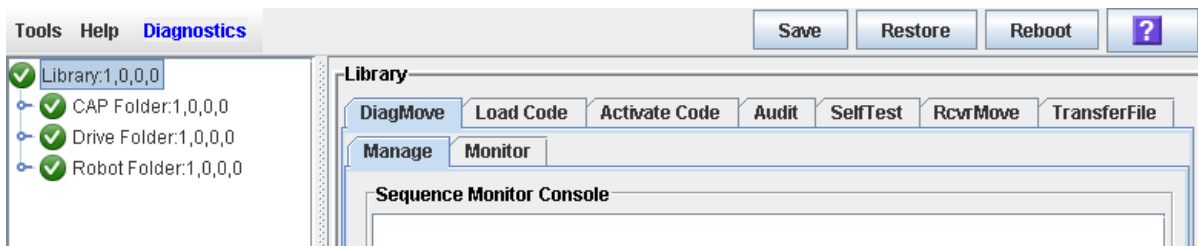
During this audit the HandBot visits all the storage cells, catalogs the VOLIDs and locations, and updates the library controller database.

Note – Although this audit is a background process and does not interrupt library operations, it does require sharing of HandBot resources. Therefore, it is not recommended that you run this audit during peak activity periods.

Note – You cannot stop this audit once it has initiated.

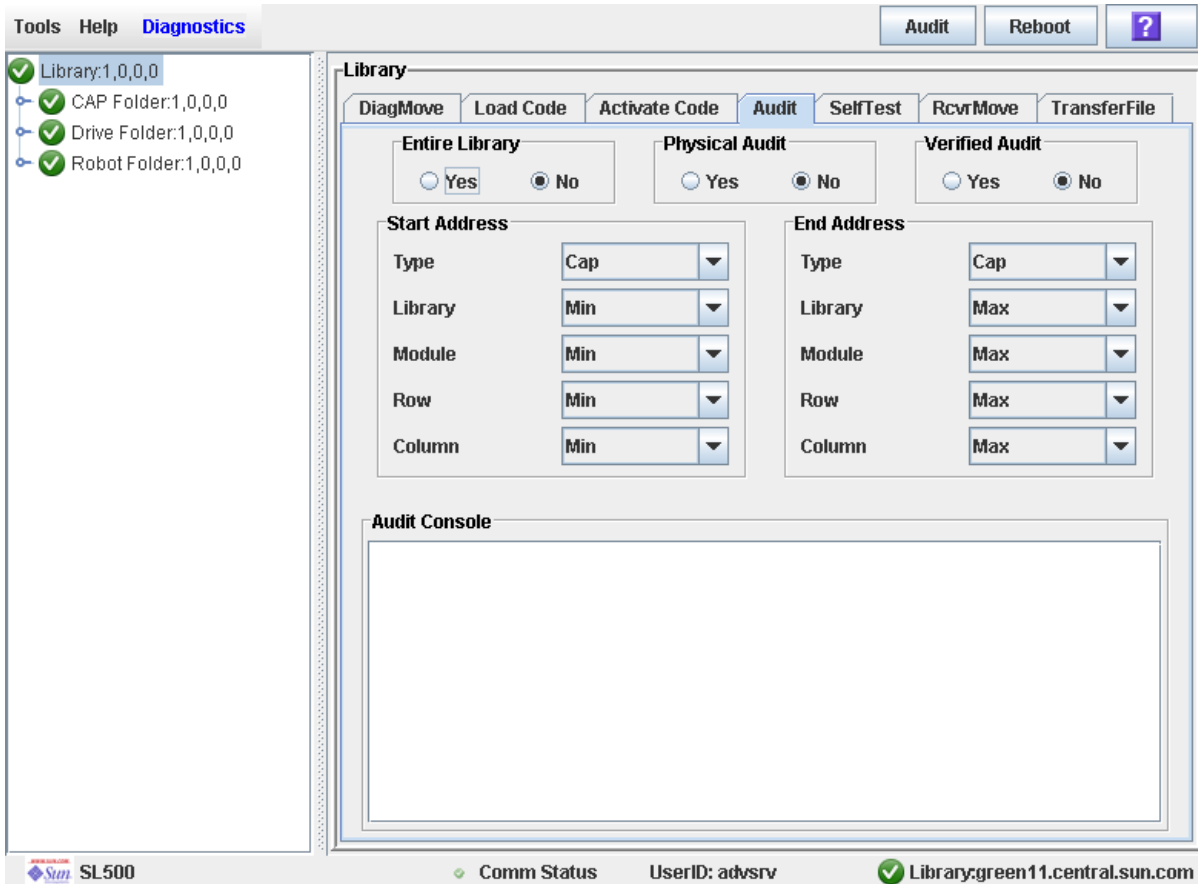
1. Select **Tools > Diagnostics**.
2. Click the **Library** folder on the device tree.

The **Library** screen appears.

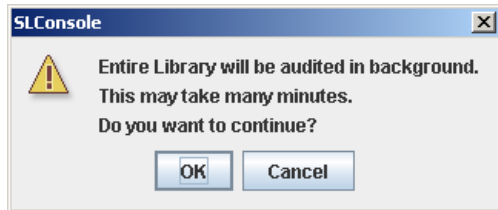


3. Click the Audit tab.

The Library Audit screen appears.



4. In the Entire Library field, click Yes. Then click the Audit button in the Options Bar. A confirmation popup appears.



5. Click OK to perform the audit as a background process or Cancel to cancel the audit.

Note – Once you click OK, you cannot stop the audit; it will run until completion.

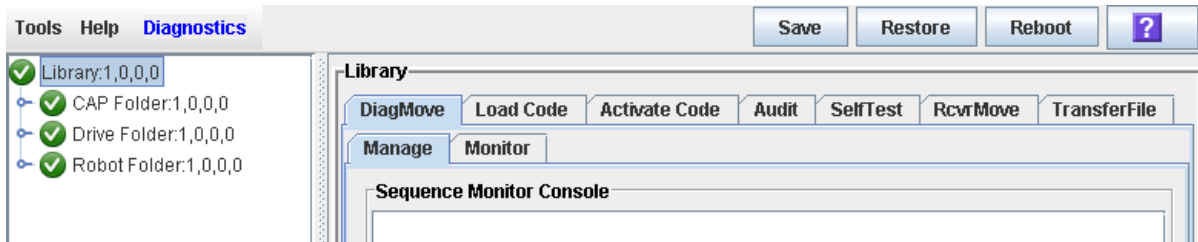
6. You can view the Cartridge Summary report after a few hours for the latest cartridge locations and VALIDs. See [“Display a Library Report” on page 74](#) for details.

▼ Audit a Range of Cells

During this audit the HandBot visits only a specific range of storage cells (including the cap and drives) and updates the library controller database.

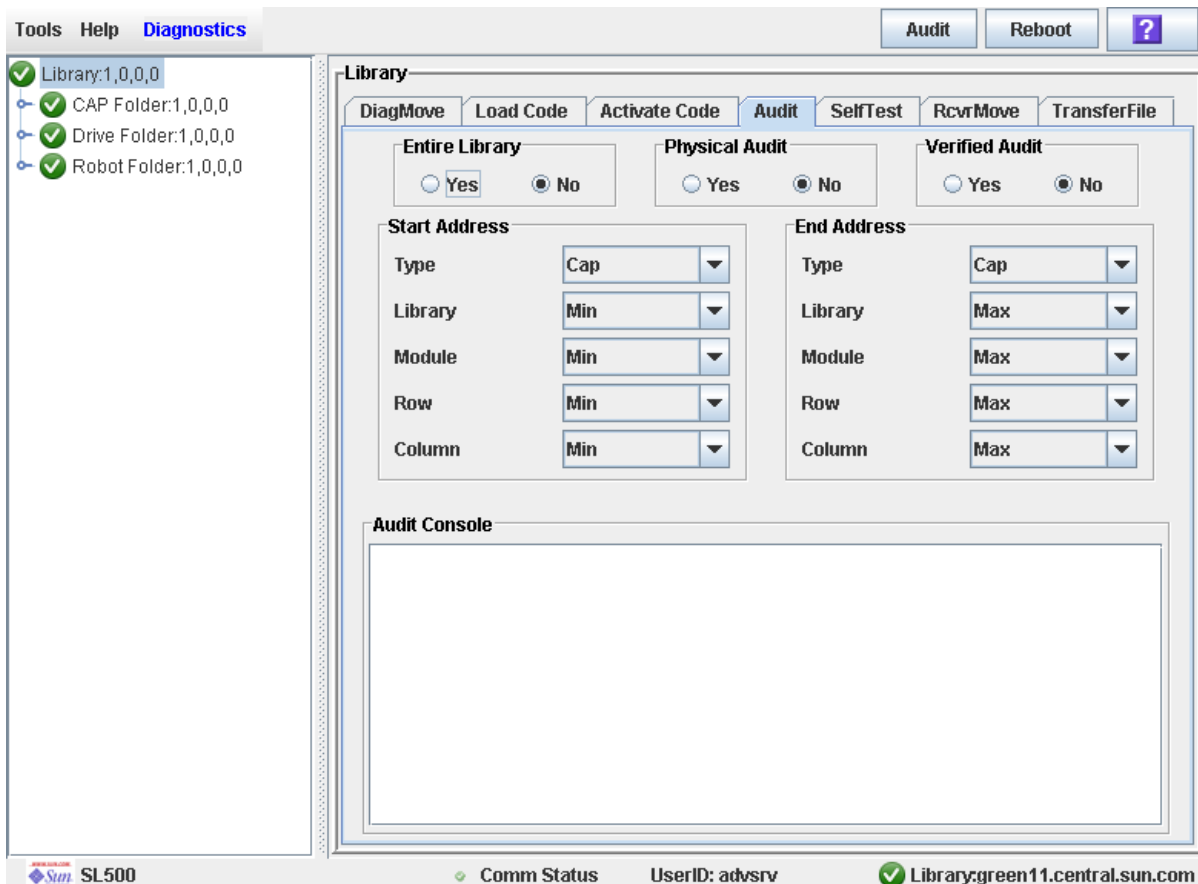
1. Select Tools > Diagnostics.
2. Click the Library folder on the device tree.

The Library screen appears.



3. Click the Audit tab.

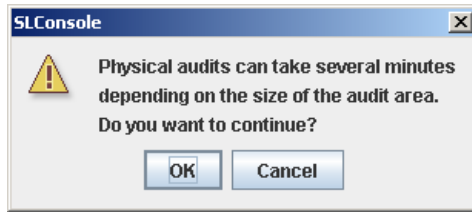
The Library Audit screen appears.



4. In the Entire Library field, click No. In the Physical Audit field, click Yes. In the Verified Audit field, click No.
5. In the Start Address and End Address fields, select the device types you want to audit and the starting and ending library internal address locations.

6. Click the Audit button in the Options Bar.

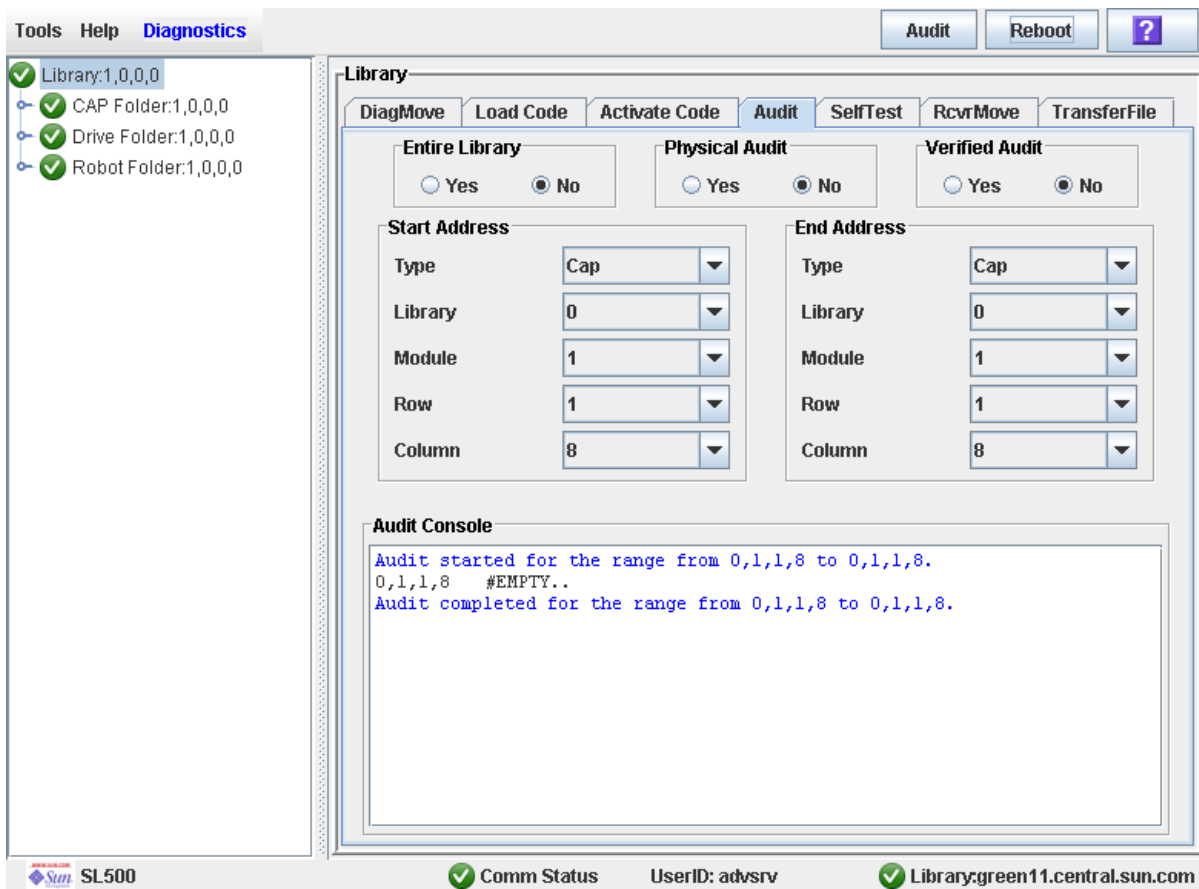
A confirmation popup appears.



7. Click OK to perform the audit as a background process or Cancel to cancel the audit.

Note – Once you click OK, you cannot stop the audit; it will run until completion.

8. The Audit Console section displays the progress of the audit.



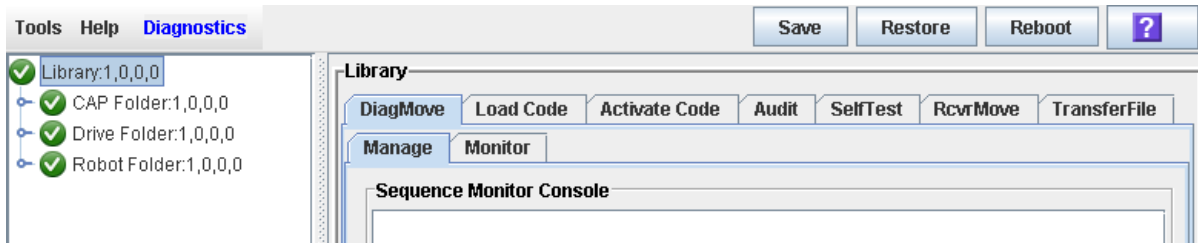
Note – You can also view the Cartridge Summary report for the latest cartridge locations and VOLIDs. See [“Display a Library Report”](#) on page 74 for details.

▼ Perform a Verified Audit

A verified audit validates the status of a specific cartridge location or a range of locations (including CAP and drives) in the library controller database. If a cartridge address has a verified status of “false” then a physical audit of that location is performed and the library controller database is updated.

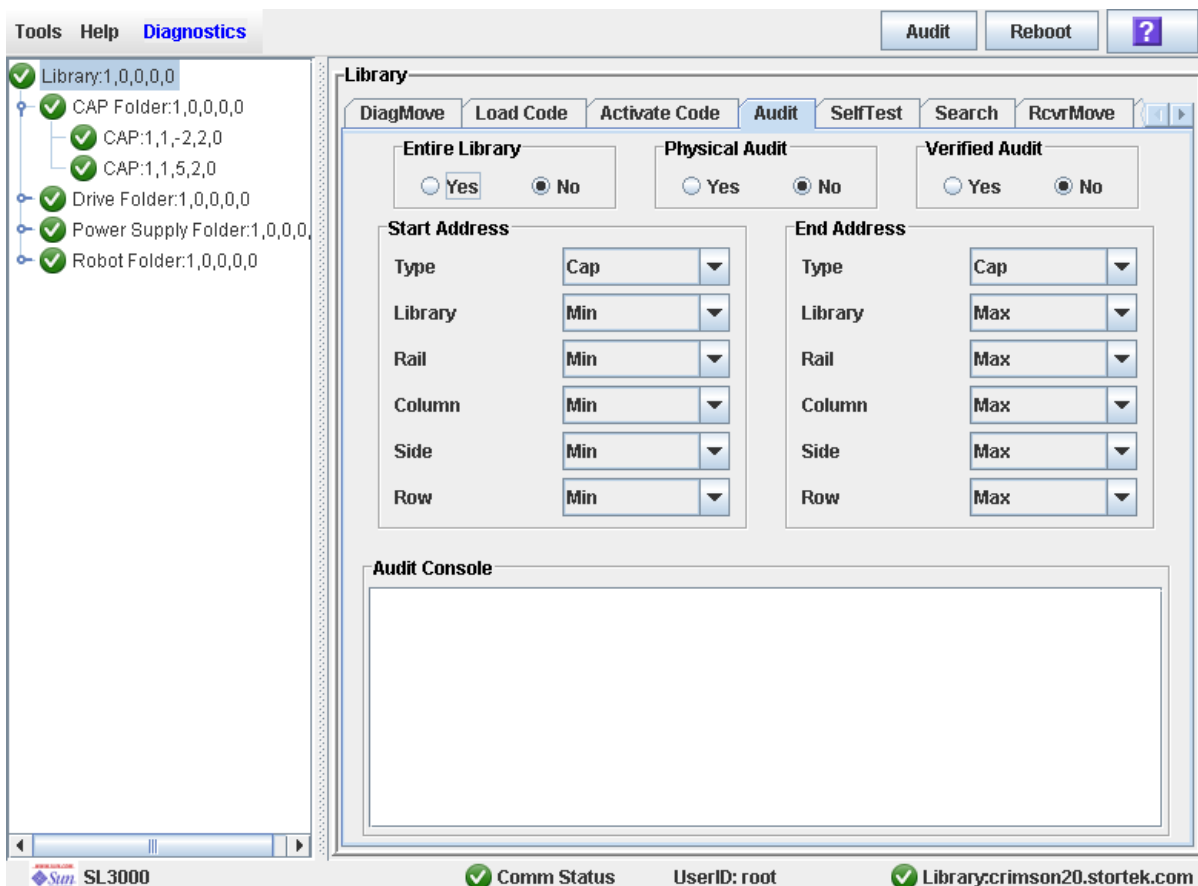
1. Select Tools > Diagnostics.
2. Click the Library folder on the device tree.

The Library screen appears.



3. Click the Audit tab.

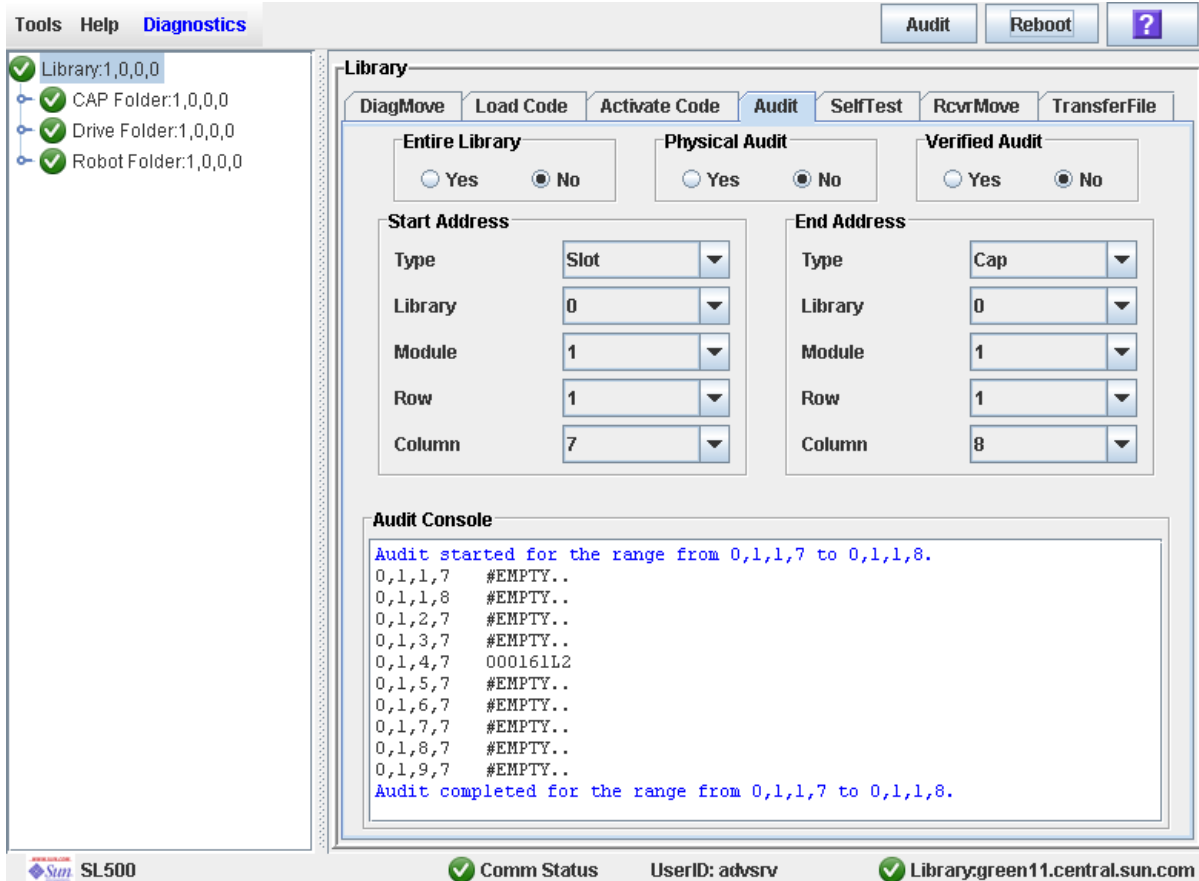
The Library Audit screen appears.



4. In the Entire Library field, click No. In the Physical Audit field, click No. In the Verified Audit field, click Yes.

5. In the Start Address and End Address fields, select the device types you want to audit and the starting and ending library internal address locations.
6. Click the Audit button in the Options Bar.

The **Audit Console** section displays the progress of the audit.

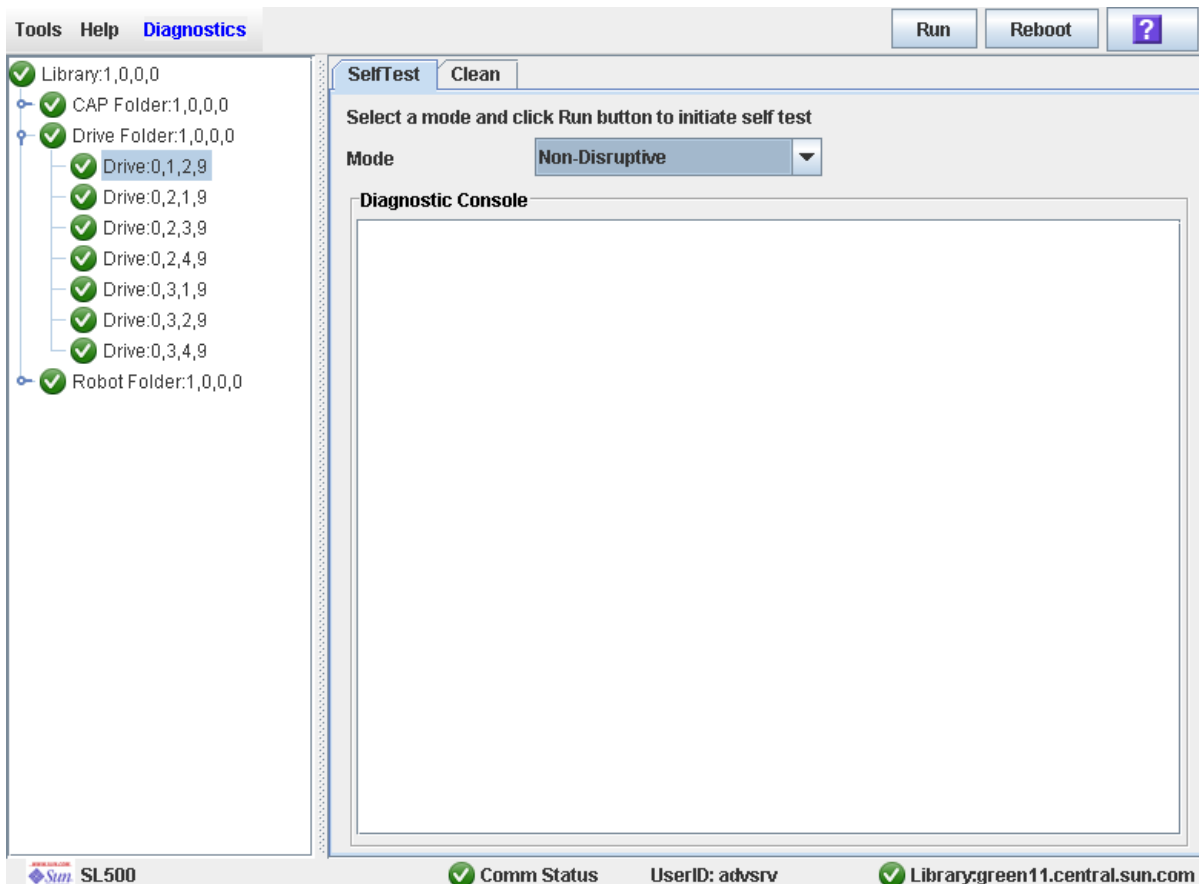


Drive Utility Tasks

Task	Page
Perform a Drive Self-Test	282
Reboot a Drive	283

▼ Perform a Drive Self-Test

1. Select Tools > Diagnostics.
2. Expand the Drive Folder, and click the drive you want to test.
3. Click the SelfTest tab.



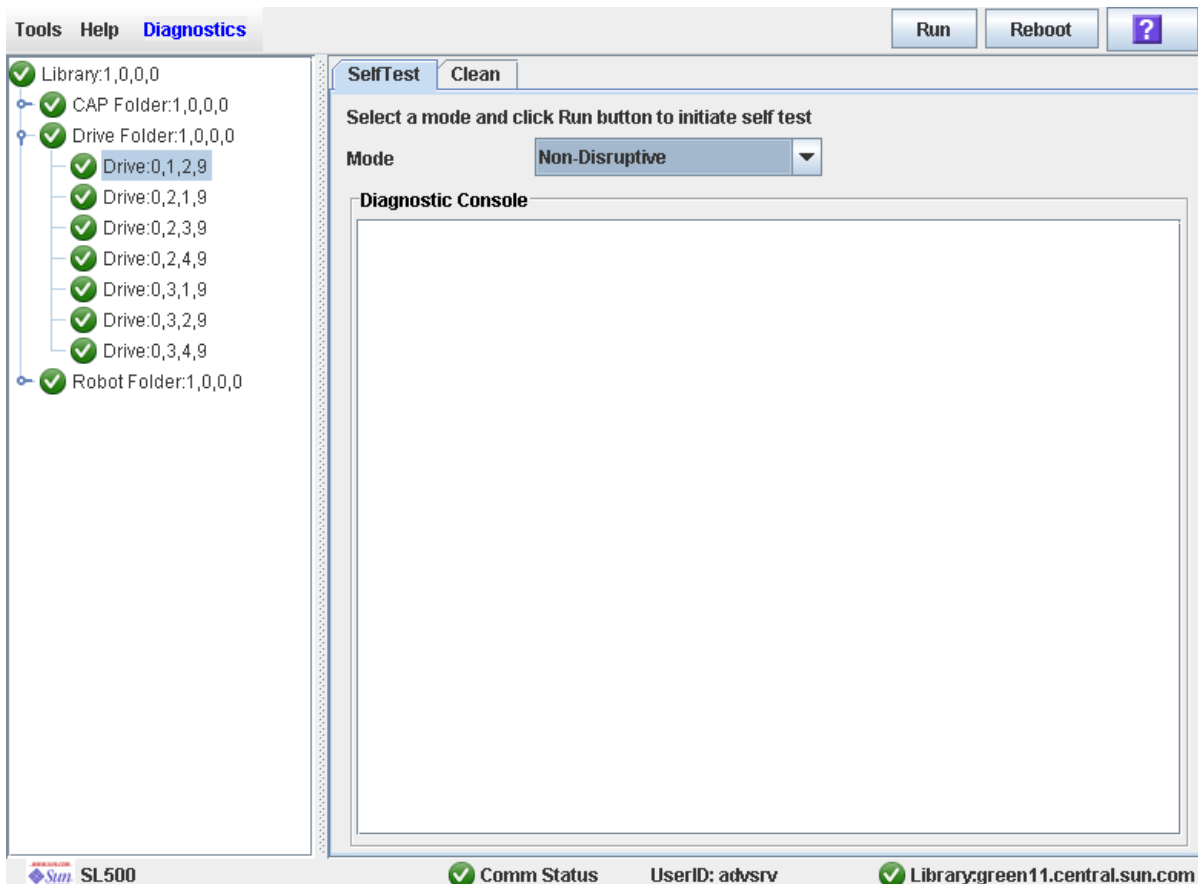
4. In the Mode pull-down, click Non-Disruptive.
5. Click the Run button from the Options Bar.

Status messages are displayed as the self-test is run. A Diagnostic completed message appears when the test finishes.

▼ Reboot a Drive

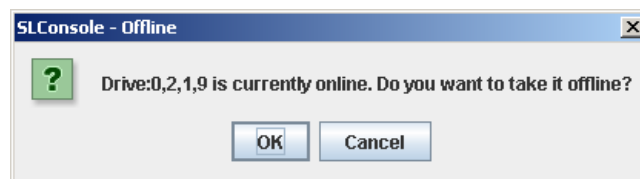
Use this procedure to reboot a drive.

1. Select **Tools > Diagnostics**.
2. Expand the **Drive Folder**, and click the drive you want to modify.



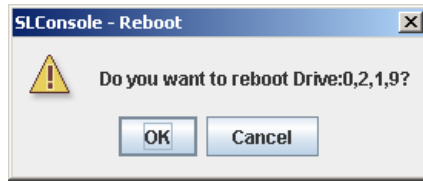
3. Click **Reboot** in the Options Bar.

If the drive is offline, the **Offline Confirm** popup appears.



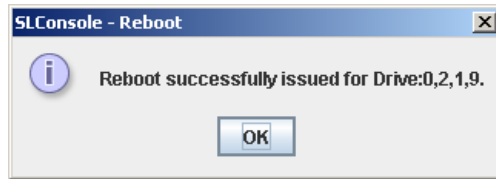
4. Click OK to vary the drive offline.

The **Reboot Confirm** popup appears.



5. Click OK.

The library controller reboots the drive, and the **Reboot Success** popup appears.



6. Click OK to dismiss the popup.

HandBot Utility Tasks

Task	Page
Define a Diagnostic Move	286
Manage Diagnostic Move Definitions	290
Save a Diagnostic Move to a File	292
Start a Diagnostic Move	294
Monitor and Control Open Diagnostic Moves	296

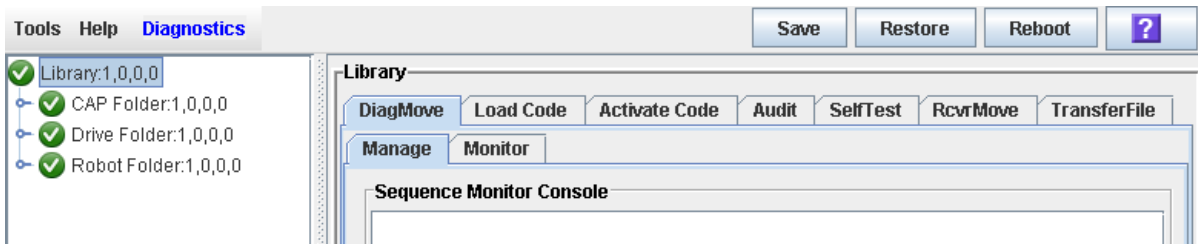
▼ Define a Diagnostic Move

Multiple diagnostic move routines can be set up and run simultaneously, as long as the target and pool address ranges do not overlap.

Note – This procedure requires sharing of HandBot resources; therefore, it is not recommended that you run it during peak activity periods.

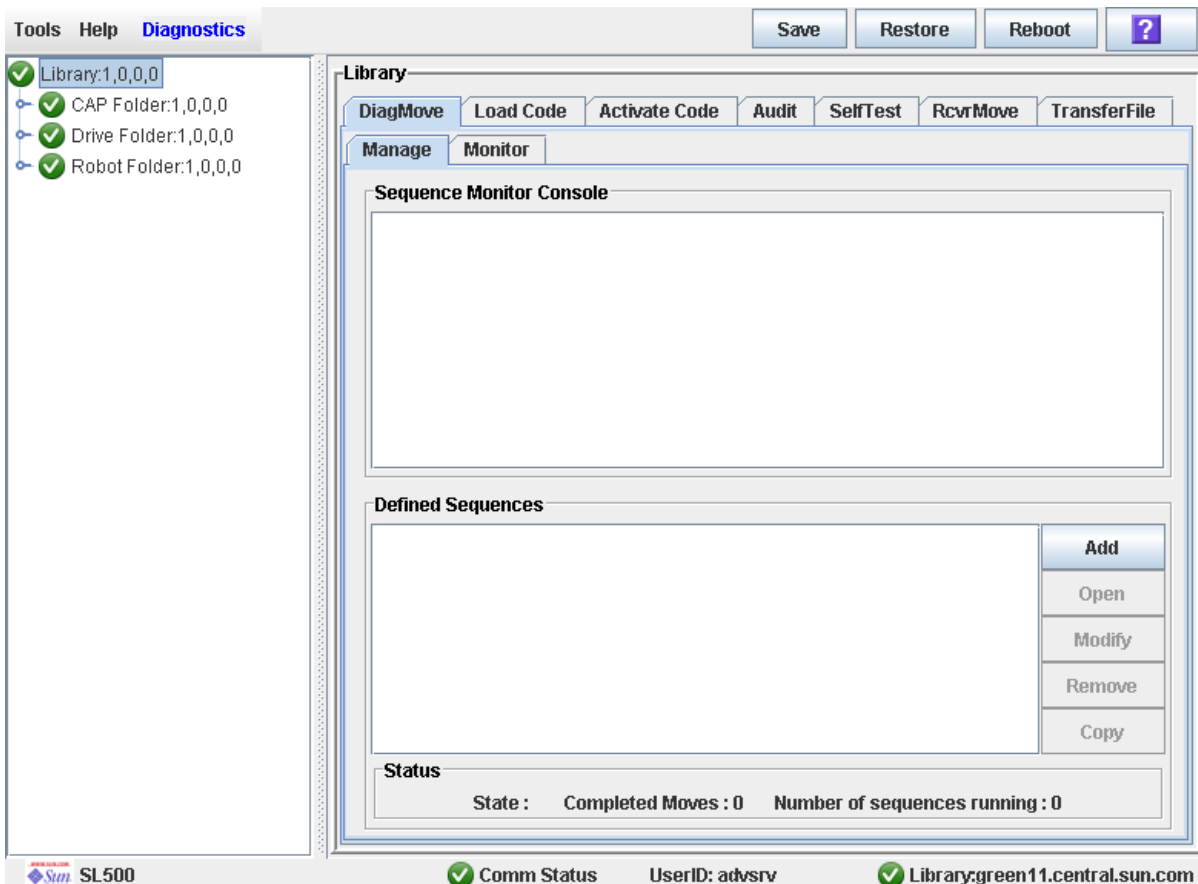
1. Select Tools > Diagnostics.
2. Click the Library folder on the device tree.

The Library screen appears.



3. Click the DiagMove tab and then the Manage tab.

The Diagnostic Move Manage screen appears.



4. In the Defined Sequence section, click Add.

The TARGET screen appears.

The screenshot shows a dialog box titled "SLConsole - Sequence" with a close button (X) in the top right corner. The main heading is "Enter TARGET address range:" followed by the instruction: "All slots within this range will be accessed according to the Access Order specified in the last dialog box." Below this is a "Selection Mode" section with four radio button options: "All" (selected), "Drive", "Cap", "Storage Slots", and "Drive & Storage Slots". The "Minimum Address" and "Maximum Address" sections each contain four dropdown menus for "Library", "Module", "Row", and "Column". The "Minimum Address" dropdowns are labeled "Min" and the "Maximum Address" dropdowns are labeled "Max". At the bottom, there are two buttons: "Next >" and "Cancel".

5. Complete the TARGET screen as follows. See "Target Address Range" on page 254 for details.

- In the **Selection Mode** field, click the type of cells you want to diagnose.
- In the **Minimum Address** and **Maximum Address** fields, select the library internal address of the starting and ending locations of the cells you want to diagnose.

6. Click Next.

The SOURCE screen appears.

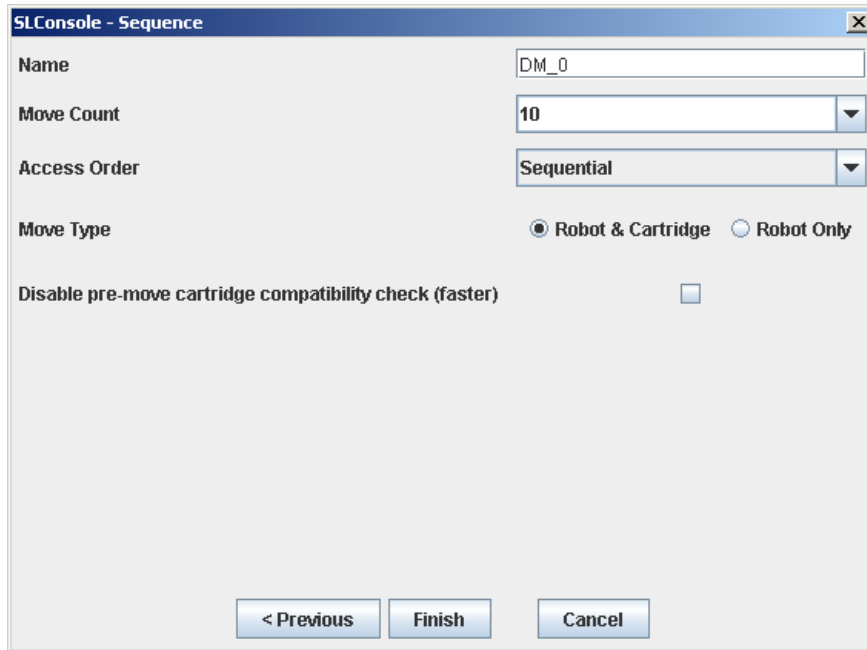
The screenshot shows a dialog box titled "SLConsole - Sequence" with a close button (X) in the top right corner. The main heading is "Enter SOURCE address range:" followed by the instruction: "Locations within this range will be used to supply cartridges and/or empty slots required for diagnostic moves to/from the Target Address Range. There is no specified access order within the Source Address Range." Below this is a "Selection Mode" section with three radio button options: "All" (selected), "Cap", and "Storage Slots". The "Minimum Address" and "Maximum Address" sections each contain four dropdown menus for "Library", "Module", "Row", and "Column". The "Minimum Address" dropdowns are labeled "Min" and the "Maximum Address" dropdowns are labeled "Max". At the bottom, there are three buttons: "< Previous", "Next >", and "Cancel".

7. Complete the SOURCE screen as follows. See [“Pool Address Range”](#) on page 255 for details.

- In the **Selection Mode** field, click the appropriate cartridge pool address type.
- In the **Minimum Address** and **Maximum Address** fields, select the library internal addresses of the starting and ending locations of the cartridge pool you want to use.

8. Click Next.

The **Sequence** screen appears.

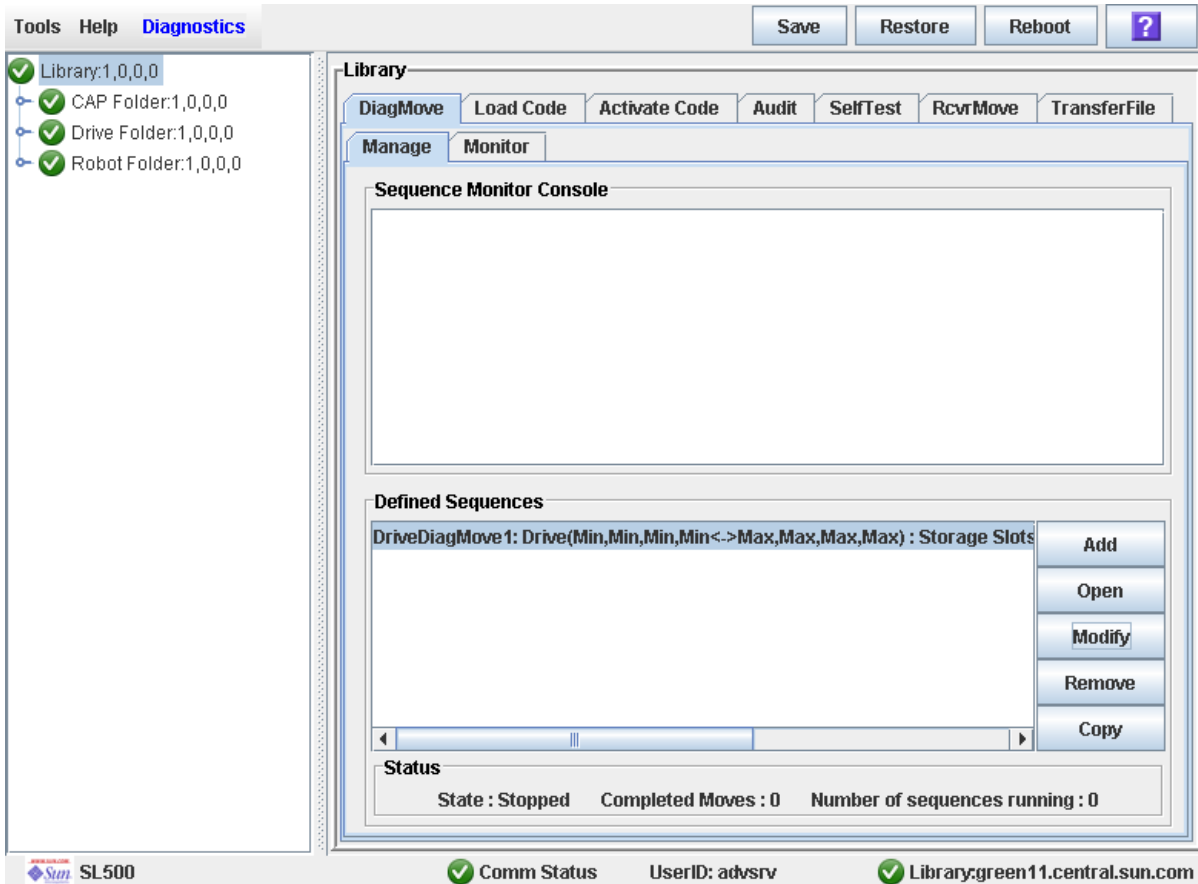


9. Complete the Sequence screen as follows. See [“Move Access Order”](#) on page 255 for details.

- Name of the diagnostic move
- Move Count (specify a number between 1 and 5000)
- Access order (Sequential or Random)
- Move Type (Robot and Cartridge or Robot Only)
- Disable pre move cartridge compatibility check

10. Click Finish to complete the setup.

The **Diagnostic Move Manage** screen appears. The diagnostic sequence you have just defined is listed in the **Defined Sequences** section.

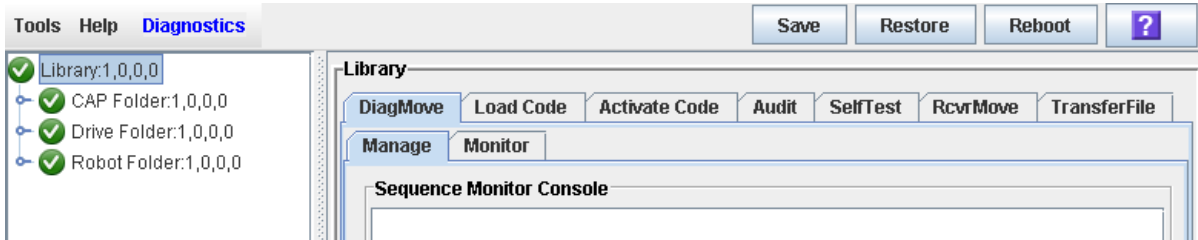


▼ Manage Diagnostic Move Definitions

Use this procedure to manage diagnostic move sequence definitions.

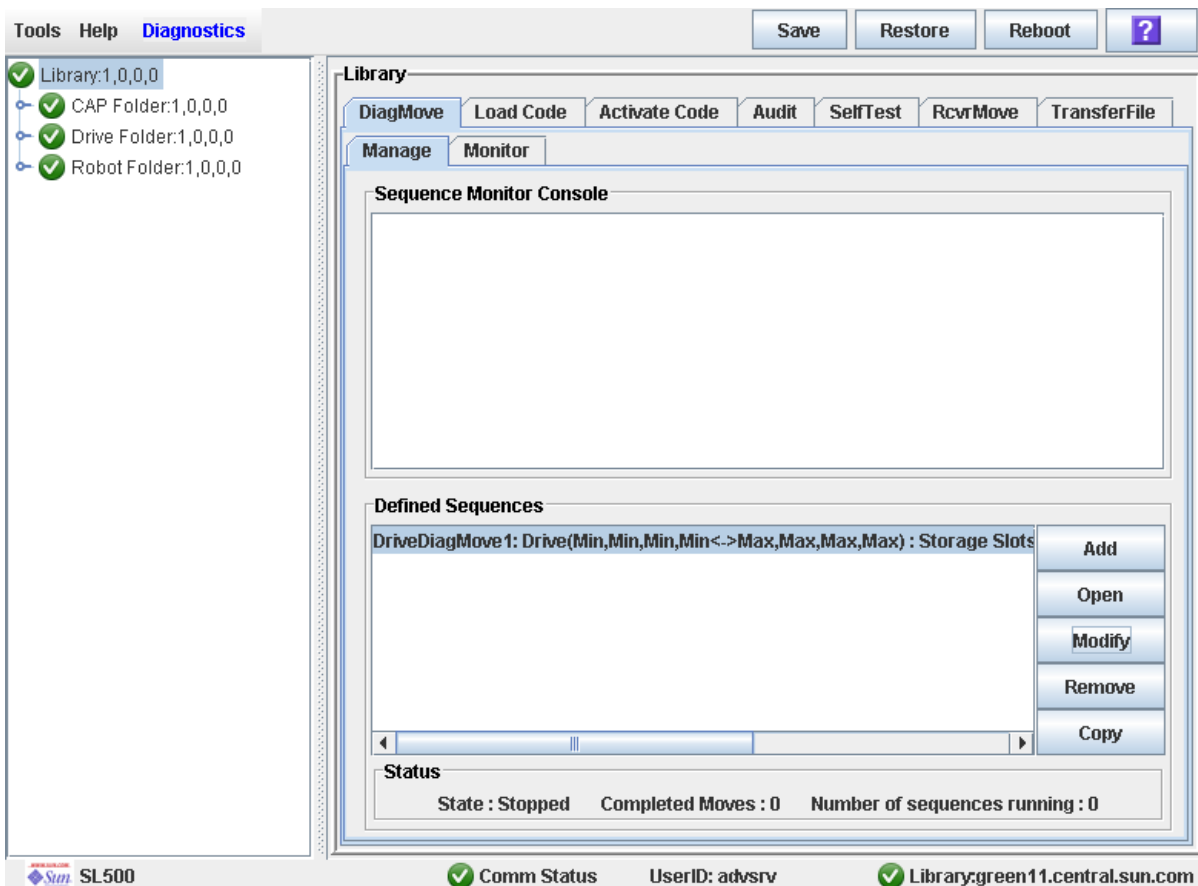
1. Select Tools > Diagnostics.
2. Click the Library folder on the device tree.

The Library screen appears.



3. Click the DiagMove tab and then the Manage tab.

The Diagnostic Move Manage screen appears.



4. From the Defined Sequences section, select any of the following options:

Select Option	To	Notes
Add	Define a diagnostic move	
Open	Start a diagnostic move	Multiple diagnostic moves may be open at a time, so long as the target and pool address ranges setup for the moves do not overlap.
Modify	Modify options for a diagnostic move	This diagnostic move routine must not be open or if open must be in a "Stopped" state.
Remove	Remove a diagnostic move	This diagnostic move routine must not be open.
Copy	Copy an existing diagnostic move	Copy a diagnostic move definition, make changes if necessary, and assign a different name.

5. To manage the diagnostic moves currently open, see ["Monitor and Control Open Diagnostic Moves"](#) on page 296.

▼ Save a Diagnostic Move to a File

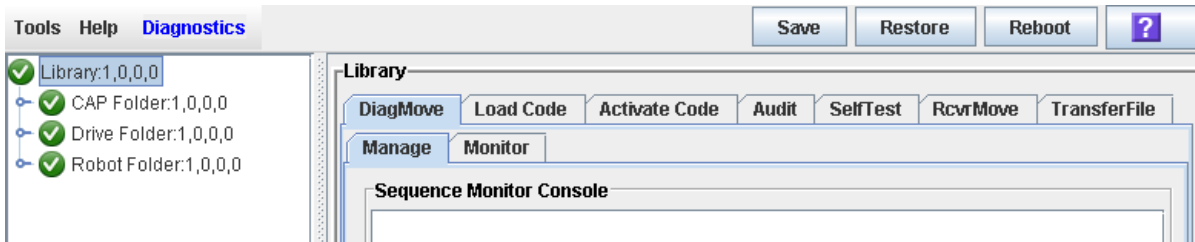
Use this procedure to save a defined diagnostic move to a local file on your workstation or PC. The file is saved as a JavaBean component represented as an XML 1.0 document (.xml).

Possible uses for the saved file are:

- Can be used to restore a move that has been deleted from the library.
- Can be copied to a different library for use there.

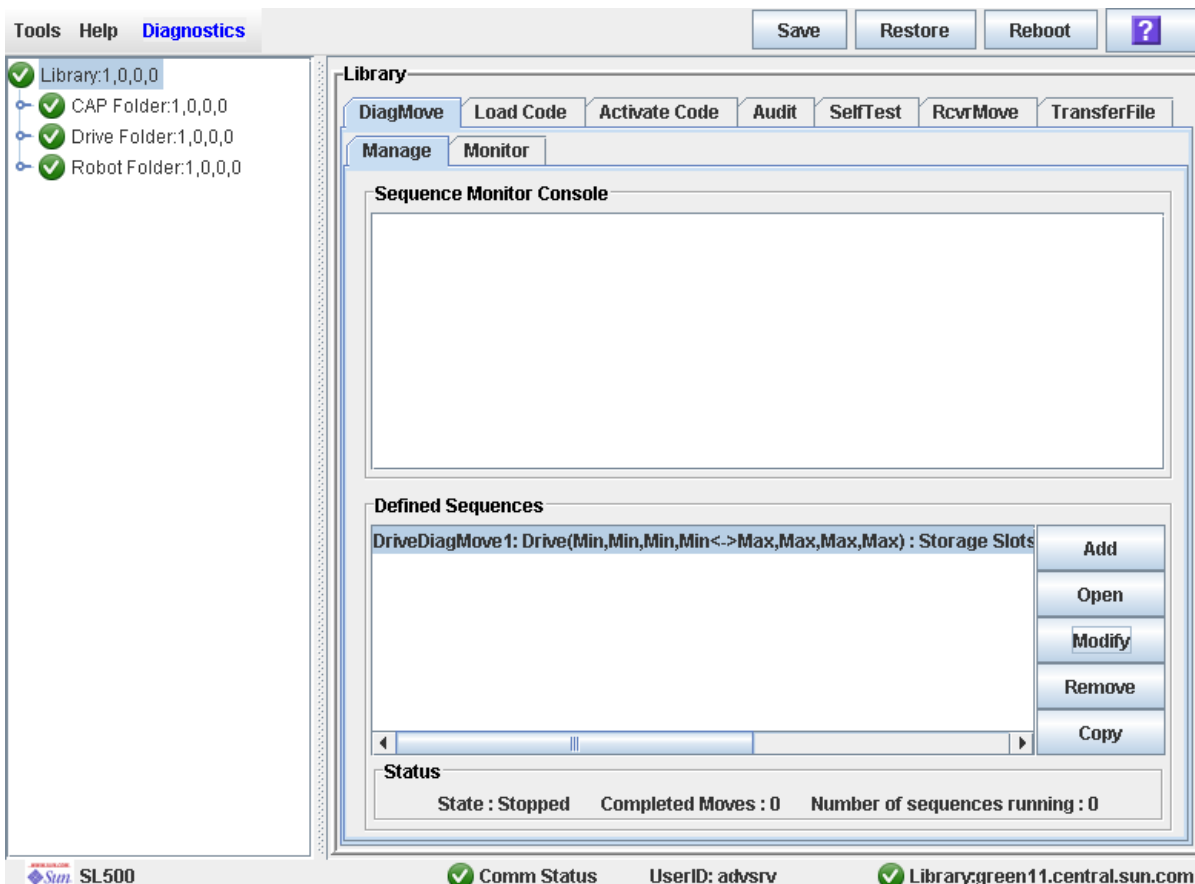
1. Select **Tools > Diagnostics**.
2. Click the **Library** folder on the device tree.

The **Library** screen appears.



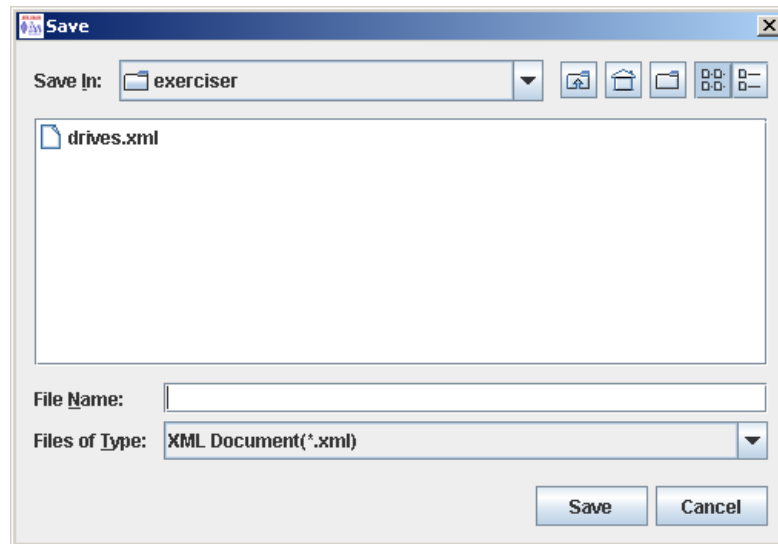
3. Click the **DiagMove** tab and then the **Manage** tab.

The **Diagnostic Move Manage** screen appears.



- Click the diagnostic move you want to save, and then click the Save button in the Options Bar.

The Save popup appears.



- Browse to the directory where you want to save the file. In the File Name field, enter the file name.
- Click Save.

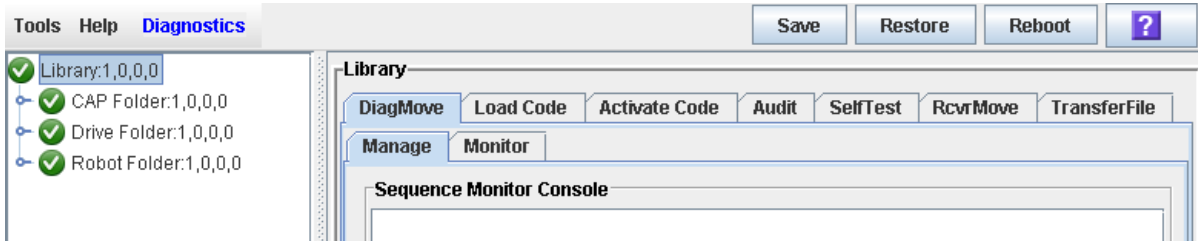
The data is saved to the specified file. Following is a sample excerpt:

```
<?xml version="1.0" encoding="UTF-8"?>
<java version="1.5.0_11" class="java.beans.XMLDecoder">
  <object class="com.stortek.ats.elib.opel.model.SequenceBeanList">
    <string>FRS_4.10</string>
    <string>SL500</string>
    <void method="add">
      <object class=
"com.stortek.ats.elib.opel.model.SequenceBeanList$SequenceBean">
        <void property="accessOrder">
          <string>Sequential</string>
        </void>
        <void property="moveCartridge">
          <boolean>true</boolean>
        </void>
        <void property="moveCount">
          <int>10</int>
        </void>
        <void property="name">
          <string>DriveDiagMove1</string>
        </void>
        . . .
        <void property="targetType">
          <string>Drive</string>
        </void>
      </object>
    </void>
  </object>
</java>
```

▼ Start a Diagnostic Move

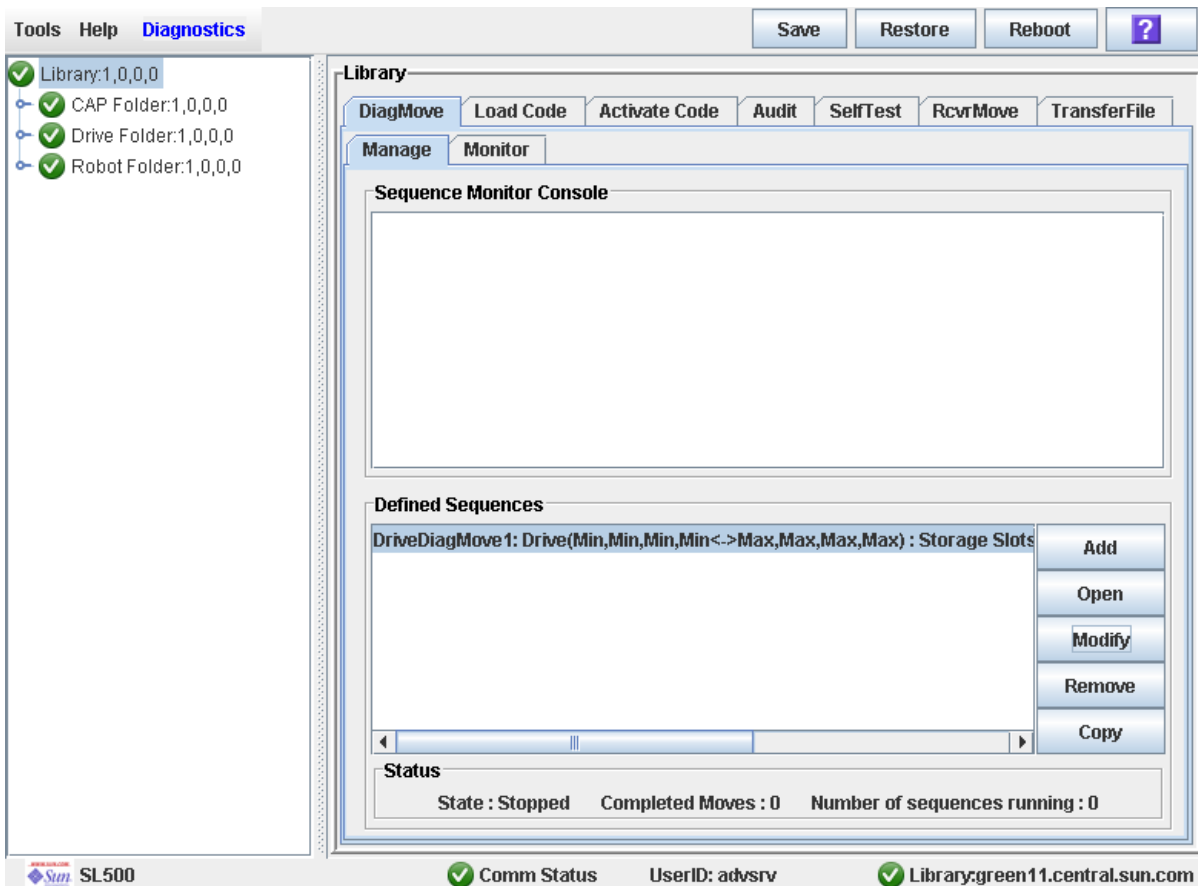
1. Select Tools > Diagnostics.
2. Click the Library folder on the device tree.

The Library screen appears.

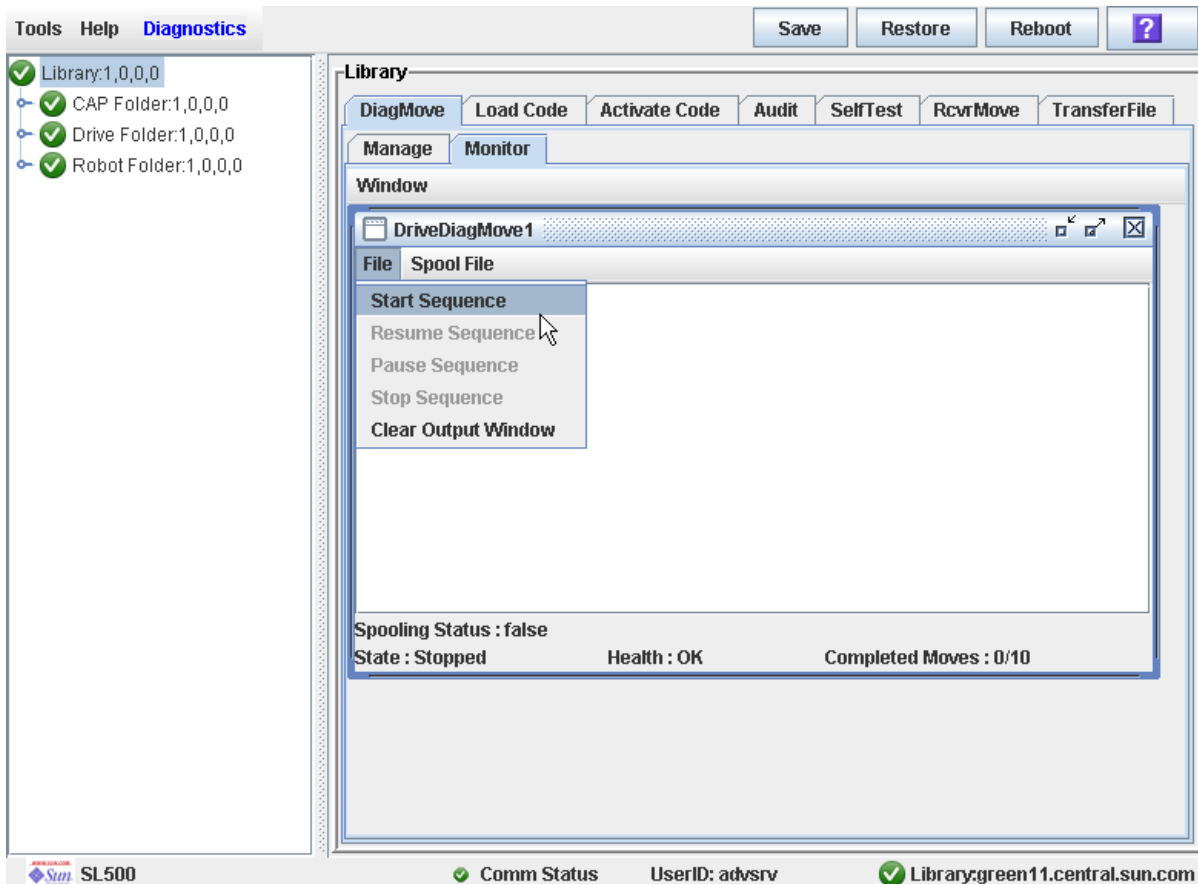


3. Click the DiagMove tab and then the Manage tab.

The Diagnostic Move Manage screen appears.



4. From the Defined Sequences section click a diagnostic move and then click Open.
The **Monitor** window is activated.



You can repeat this step to open multiple moves, as long as the target and pool address ranges for the moves do not overlap.

A monitor window is displayed for each move you open.

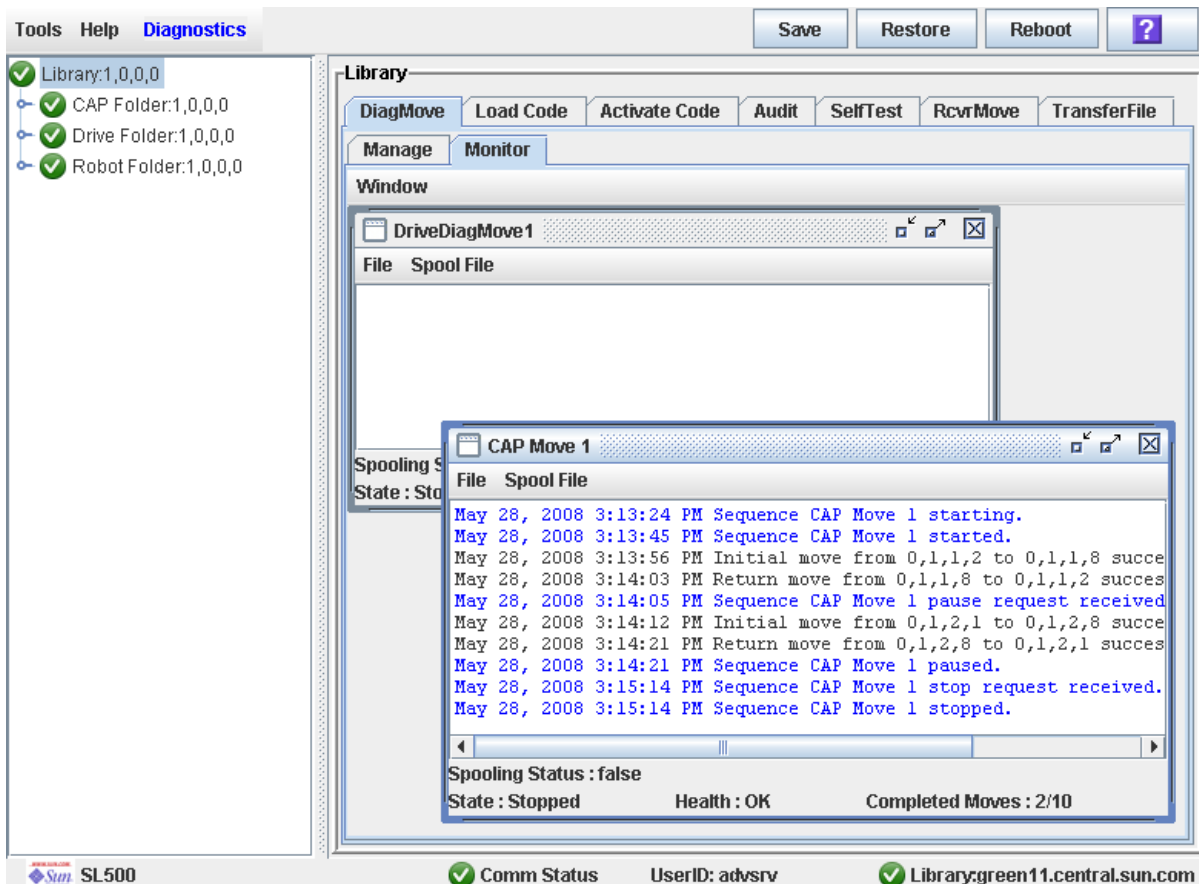
5. From each monitor window, select **File > Start Sequence** to start the move.

▼ Monitor and Control Open Diagnostic Moves

Use this procedure to control and monitor the status of one or more open diagnostic moves.

1. See [“Start a Diagnostic Move” on page 294](#) for instructions on starting one or more diagnostic moves.
2. Click the Monitor tab.

The Monitor screen appears, with one monitor window for each open move.



Each monitor window has the following status indicators:

Status Indicators	Description	Valid Values
Spooling Status	Indicates if the move output is being spooled to a file	True, False
State	Current execution state of the move	Running, pausing, paused, stopping, stopped
Health	Current health state of the move	OK, warning, error
Completed moves	Number of moves completed in the requested move count	

3. Use the File menu in each Monitor window to perform any of the following functions:

Select Option	To	Notes
File > Start Sequence	Start	
File > Pause Sequence	Pause	Stops all diagnostic moves, but maintains the current location in the access order.
File > Stop Sequence	Stop	Stops a running or paused move.
File > Start Sequence	Resume	Resumes a paused move starting with the last known location in the target address range.
File > Clear Output Window	Clear the messages displayed in the monitor window	Erases the previous message lines and continues to fill the screen with new messages.
Spool File > Start Spooling	Spool	Directs the move output to a file.
Spool File > Stop Spooling	Stop spooling the move output to a file	Stops directing the move output to the spool file.

SNMP Support

Simple Network Management Protocol is an application layer protocol that performs network management operations over an Ethernet connection using a User Datagram Protocol (UDP/IP).

The Simple Network Management Protocol allows:

- Libraries to inform the systems administrator of potential problems.
- Systems administrators to query the library for configuration, operation, and statistical information.

The SL500 libraries support:

- SNMPv2c: read-only support primarily for machine status queries. With this version, any information transmitted is not secure.
- SNMPv3: both read and write support; transmitted information is secure.

SNMP configuration requirements include:

- SL500 library firmware must be version 1067 or higher.
- SL Console software must be version FRS_2.95 or higher.

Trap Levels

SNMP traps provide data that are a source of log entries, containing:

- Severity (indications such as error or warning)
- Result codes (such as “0000 = success,” or “5010 = robotic posn error”)
- Activity string (such as “HLI move” or “CLI version print”)
- A descriptive text string
- Date and time
- Other information might include:
 - Device address associated with the event
 - User name associated with the activity (such as “HLI host,” “advsvr”)
 - The interface-specific request identifier (such as “HLI000001”)

Trap levels are generally filtered to include only those traps that you wish to monitor. These levels are specified when entering the trap information.

Trap or notification levels available at this time are listed in the table below:

Trap Level	Number	Description
Error	1	Error/System Log entries. Errors critical to library operation. For example, Device inoperable: refers to the entire system. Failure of a redundant component is not a Category 1.
Warning	2	Warning Log entries. Conditions that require attention. For example, Device degraded: Refers to recoverable failures that may allow the system to remain in use, but only in a degraded mode.
11	11	SNMP Agent Start Up

Note – You can also set combinations of trap levels. For example, "1,2", "1,11", "1,2,11".

Port Control

Typically, SNMP uses user datagram protocol (UDP) ports:

- 61 for the agent
- 62 for the manager

UDP like TCP, runs on top of IP networks and is one of the core protocols in the Internet protocol suite. UDP allows network-based devices to send short messages faster and more efficiently for many lightweight and time-sensitive applications.

The basic protocol for communications between manager and agent is:

- The manager can send requests from any available port to the agent at port 161. The agent then responds to that source port, to the requesting manager.
- The agent generates traps or notifications and sends them from any available port to the manager at port 162.

Access Control

SNMPV2c community strings are capable of providing a form of access control in SNMP. Because of this, the Sun StorageTek embedded agent will not allow community strings to make changes to the library's configuration.

The MIB file can be retrieved with either SNMPv2c or SNMPv3; however, because SNMPv3 provides encryption capabilities and a stronger user identification, library properties can be changed only with the SNMPv3 set command.

Using an administrative password also provides access control and authorization for set command operations.

Traps, however, can be sent to recipients using either SNMPv2c or SNMPv3 by adding entries to the Trap Recipient List.

SNMP Configuration and Usage Tasks

Task	Page
Add SNMP Users	302
Delete SNMP Users	303
Add Trap Recipients	304
Delete Trap Recipients	305
Set Up Port Control	306
Transfer the Library MIB File	307

▼ Add SNMP Users

Use this procedure to add an SNMP user.

1. **Select Tools > System Detail.**
2. **Select the Library folder from the device tree.**
3. **Select SNMP > Add Users and enter the following details:**

Version	Version of the SNMP standard. The SL500 library supports: <ul style="list-style-type: none"> ■ SNMPv2c of the simple network management protocol for machine status queries. With this version, any information transmitted is not secure. ■ SNMPv3 of the simple network management protocol is reserved for proprietary information. Because this version supports encryption and stronger user identification it is the preferred protocol for proprietary data.
Community (v2c only)	Applications use community strings for access control. The manager includes the community string in its SNMP messages to an agent. The agent consequently can accept or reject the operation. This can be a maximum of 31 alphanumeric characters.
UserName (v3 only)	SNMP user ID.
Auth (v3 only)	Authentication protocol type (MD5 or SHA) string for users and hosts receiving traps. One of the two primary SNMPv3 security protocols designed to reliably identify the integrity of the originating party.
AuthPass (v3 only)	Authentication password of the user.
Priv (v3 only)	Privacy protocol type (DES or AES): The other two primary SNMPv3 security protocols are designed to protect information within the message from disclosure.
PrivPass (v3 only)	Encryption Password that is the private key for encryption.

4. **Click Apply.**

The indexed SNMP users list is displayed at the bottom of the screen. There can be a maximum of 20 users.

▼ Delete SNMP Users

Use this procedure to delete a SNMP user.

1. **Select Tools > System Detail.**
2. **Select the Library folder from the device tree.**
3. **Select SNMP > Delete Users.**
4. **Enter the Index number of the SNMP user from the list.**
5. **Click Apply.**

Verify the SNMP users list and make sure that the user is deleted.

▼ Add Trap Recipients

A recipient is a location on a manager where the SNMP agent sends traps. This location is defined by the combination of either the IP address or DNS name and the port number.

Use this procedure to add a trap recipient.

1. **Select Tools > System Detail.**
2. **Select the Library folder from the device tree.**
3. **Select SNMP > Add Trap Recipient and enter the following details:**

Host	Server name where the SNMP software application resides.
TrapLevel	See “Trap Levels” on page 299 for details.
Version	Version of the SNMP standard. The SL500 library supports: <ul style="list-style-type: none"> ■ SNMPv2c of the simple network management protocol for machine status queries. With this version, any information transmitted is not secure. ■ SNMPv3 of the simple network management protocol is reserved for proprietary information. Because this version supports encryption and stronger user identification it is the preferred protocol for proprietary data.
Community (v2c only)	Agent community string. When set to public, requests coming from any community string will be accepted.
TrapName (v3 only)	Name of the trap recipient.
Auth (v3 only)	Authentication protocol type (MD5 or SHA) string for users and hosts receiving traps. One of the two primary SNMPv3 security protocols designed to reliably identify the integrity of the originating party.
AuthPass (v3 only)	Authentication password of the user.
Priv (v3 only)	Privacy protocol type (DES or AES): The other two primary SNMPv3 security protocols are designed to protect information within the message from disclosure.
PrivPass (v3 only)	Encryption Password that is the private key for encryption.
EngineID (v3 only)	Engine Id is an administratively unique identifier of an SNMP v3 engine used for identification, not for addressing (Source: The Internet Society, RFC 3411). SNMP v3 authentication and encryption keys are generated based upon the associated passwords and the engine ID. The engine ID is a string of at most 31 hexadecimal characters, preceded with 0x.

4. **Click Apply.**

The indexed trap recipients list is displayed at the bottom of the screen. This list supports up to 20 recipients with no duplicate entries. Users must add themselves to the recipients list to receive traps.

▼ Delete Trap Recipients

Use this procedure to delete a trap recipient.

1. **Select Tools > System Detail.**
2. **Select the Library folder from the device tree.**
3. **Select SNMP > Delete Trap Recipients.**
4. **Enter the Index number of the trap recipient from the list.**
5. **Click Apply.**
6. **Verify the trap recipients list and make sure that the trap is deleted.**

▼ Set Up Port Control

Use this procedure to set up SNMP port control.

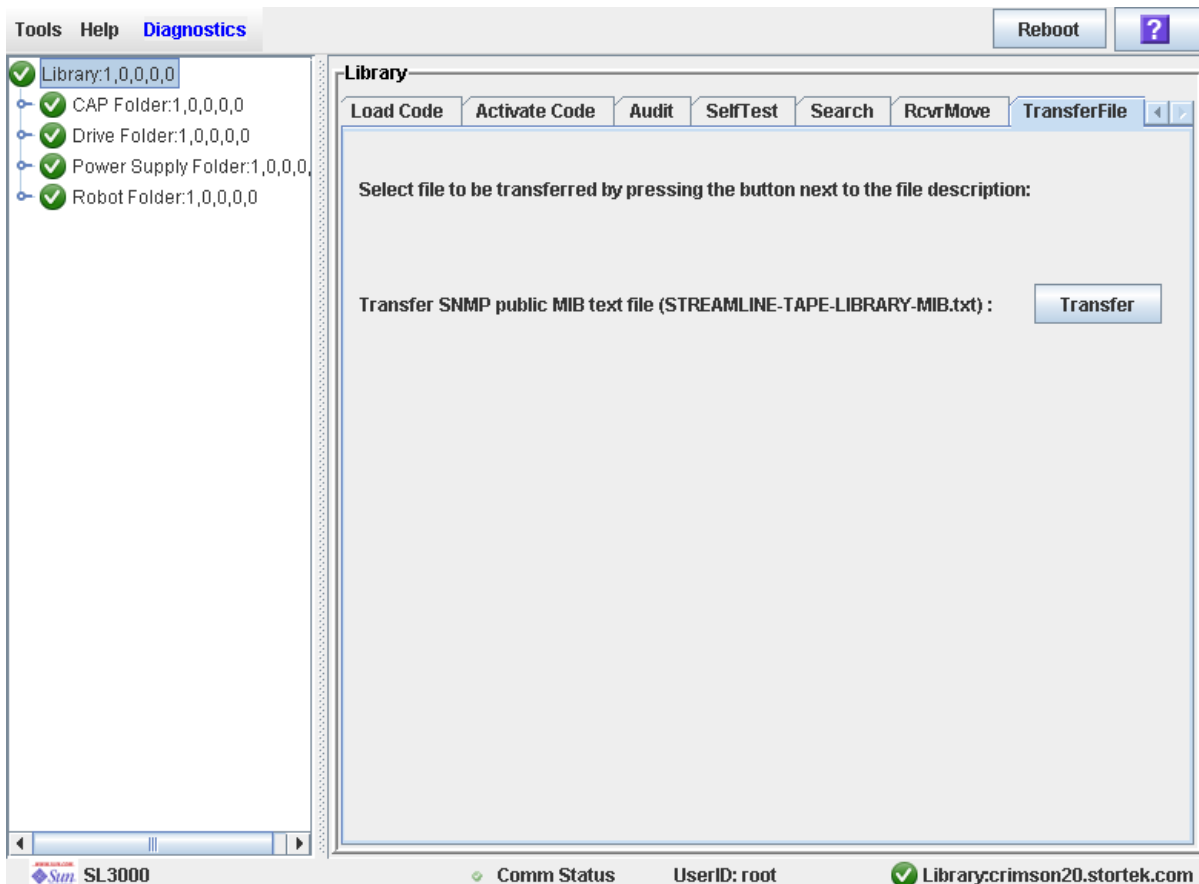
1. **Select Tools > System Detail.**
2. **Select the Library folder from the device tree.**
3. **Select SNMP > Port Control.**
4. **Enter the following information:**
 - **Port**—For SL500 tape library. Port 1B is the public access port; other ports are unavailable on this library.
 - **Command**
 - **Disable**—Default. Agent trap requests are sent/received on LAN port:
 - **Enable**—SNMP traps are enabled and the agent responds to gets from the clients.
5. **Click Apply.**

▼ Transfer the Library MIB File

Use this procedure to copy the public SNMP management information base (MIB) file to a specified location on your local PC or workstation. The file is saved as a text file. You can e-mail the file to your Sun support representative to help diagnose problems with the library.

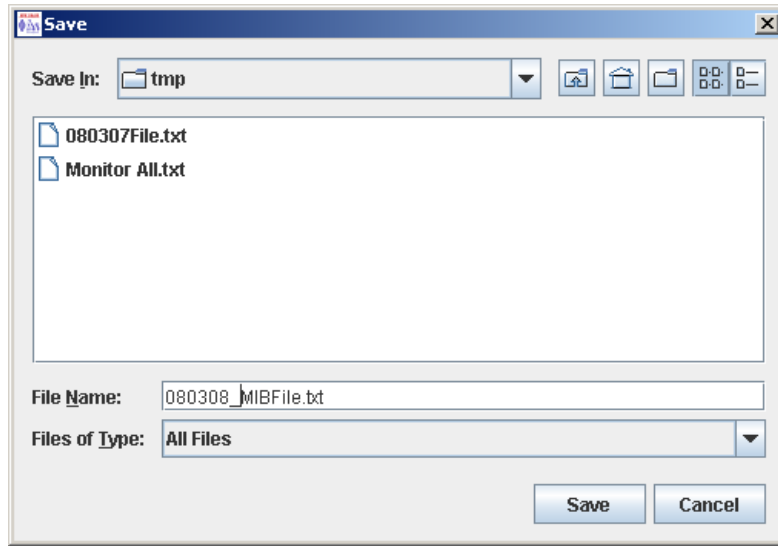
1. Select **Tools > Diagnostics**,
2. Click the **Library** folder on the device tree.
The **Library** screen appears.
3. Click the **TransferFile** tab.

The MIB file transfer screen appears.



4. Click **Transfer**.

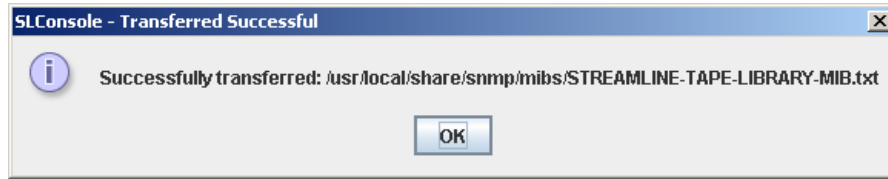
The **Save** popup appears.



5. Browse to the directory where you want to save the file, and enter the file name in the **File Name** field. Be sure to give it a `.txt` suffix.

6. Click **Save**.

The data is saved to the specified file, and the **Transferred Successful** popup appears.



7. Click **OK** to dismiss the popup.

Manual Operations

When in manual mode of operation, the library is unavailable for host access. This may be because the library has experienced an unrecoverable error or a library component requires service or installation. When the library is in this mode, cartridge mounts and dismounts require human intervention.

Library Safety

Thoroughly review the safety precautions in this section before attempting to enter the library. It is essential that you follow proper safety procedures at all times.

Cards and Power Supply

The RLC card, SCSI (MPW/RLW) or Fibre Channel (MPU2) interface card, and the power supply are housed inside protective modules to prevent you from coming into contact with hazardous voltages and sensitive electronics.

Robotics

The software parks the robot by retracting it into the robotics unit module before the front door can be opened to prevent the robot from being damaged.

When the front door is opened, power is removed from the robot.

Front Door

The front door must be opened with a key to ensure that the data is secure. If the door is not fully closed, a sensor relays the condition to the software and the robot remains disabled.

Manual Operation Tasks

Manual library tasks are divided into the following categories:

- [“General Library Operation Tasks” on page 311](#)
- [“Cartridge Handling Tasks” on page 320](#)

General Library Operation Tasks

Task	Page
Power Off the Library	312
Power On the Library	313
Return the Library to Ready Status	314
Open the Front Door (With Power)	315
Open the Front Door (Without Power)	316
Secure the Front Door (With Power)	318
Secure the Front Door (Without Power)	319

▼ Power Off the Library

Caution – *Possible equipment or cartridge damage or data loss.* If you power-off the library without performing the following procedure, you risk possible equipment or cartridge damage or loss of data.

1. **Make sure all jobs have completed processing.**
2. **Quiesce the library to make sure the library and tape drives are not in use.**

Note – Refer to your client server software publication for instructions.

3. **Move the power-on/off switch to the OFF position (0).**

▼ Power On the Library

To power on the library:

1. **Close and lock the front door if the door is open.**
2. **Press the power switch (on the top right corner of the back of the library) to the ON (1) position.**

▼ Return the Library to Ready Status

To return the library to ready status:

1. **Make sure cartridges are inserted correctly in the storage cells or tape drives and that they do not block the path of the X table assembly.**
2. **Close the door and lock it by turning the key counterclockwise; put the key in a safe place.**
3. **Make sure the power switch are set to the ON position (1).**
4. **Check the status display of the SL Console to make sure the library goes to Ready Status when initialization and audit are complete.**
5. **Enter the system command to place all tape drives online.**
6. **When all tape drives are online, enter the command to place the library online.**

▼ Open the Front Door (With Power)

To open the front door when library power exists:

1. **Press the Open Door button on the keypad.**

The software allows the current job to complete.

The software retracts the robot into the robotic unit to prevent the robot from being damaged and to prepare it for servicing.

2. **When the Open Door indicator turns on, use the key to open the door.**

▼ Open the Front Door (Without Power)

To open the front door when no library power exists:

Note – You must manually move the robotics park lever (beneath the facade and to the bottom left of the keypad) to the left position so that you can open the door with the key. Under normal conditions, the lever signifies that the robot is parked inside the robotics unit at the top of the library, and the door can be safely opened. When no power exists, the robot is not actually parked, but you will be able to open the door when you move the lever to the left.

In the following picture, the lever is **not** in the parked position.



1. Press the power switch on the back of the library to the OFF position.
2. Remove the robotic facade from the top of the library by gently pulling the facade from side to side to pull the ball studs away from the clips. You might have to use a screwdriver to gently pry it off.



Warning – Possible Physical Injury. *Possible injury to finger:* Make sure that your finger is completely to the left in the next step so that it will not be pinched when the door locking lever extends as shown in the lower picture.

3. While using one hand to move the robotics park lever to the left, use your other hand to unlock the door with the key.

▼ Secure the Front Door (With Power)

To secure the front door when library power exists, push it closed and use the key to lock it.

▼ Secure the Front Door (Without Power)

To secure the front door when no library power exists:

1. Remove the robotic facade from the top of the library by gently pulling the facade from side to side to pull the ball studs away from the clips. You might have to use a screwdriver to gently pry it off.

Caution – *Possible component damage:* Note the door locking lever protruding from the top of the door. Do not let it hit the robotics park lever when you close the door.



2. While using one hand to move the robotics park lever to the *left*, use your other hand to close the door.
3. While still holding the door shut, release the robotics park lever.
4. Use the key to lock the door.
5. The robotics lever automatically moves to the right when the door locking lever retracts.

Cartridge Handling Tasks

Task	Page
Locate and Remove a Cartridge	321
Insert Cartridges into Storage Cells	322
Insert a Cartridge into a Tape Drive	324
Remove a Cartridge from a Tape Drive	325
Remove a Cartridge from the Gripper Assembly	327
Replace a Cleaning Cartridge	325

▼ Locate and Remove a Cartridge

To locate a particular cartridge inside the library:

1. **Open the door.**
2. **Locate the particular cartridge by its VOLID (volume ID) label and storage cell.**
3. **Remove the cartridge from the cell by sliding the cartridge out.**
4. **Close the library door.**

▼ Insert Cartridges into Storage Cells

Depending on the version and configuration of your library, some storage cells cannot be used. See [Appendix A, "SL500 Wall Diagrams and Specifications"](#) for details.

Note – You do not have to insert a cartridge into every storage cell. The library automatically audits cartridges and empty cells as part of its initialization routine.

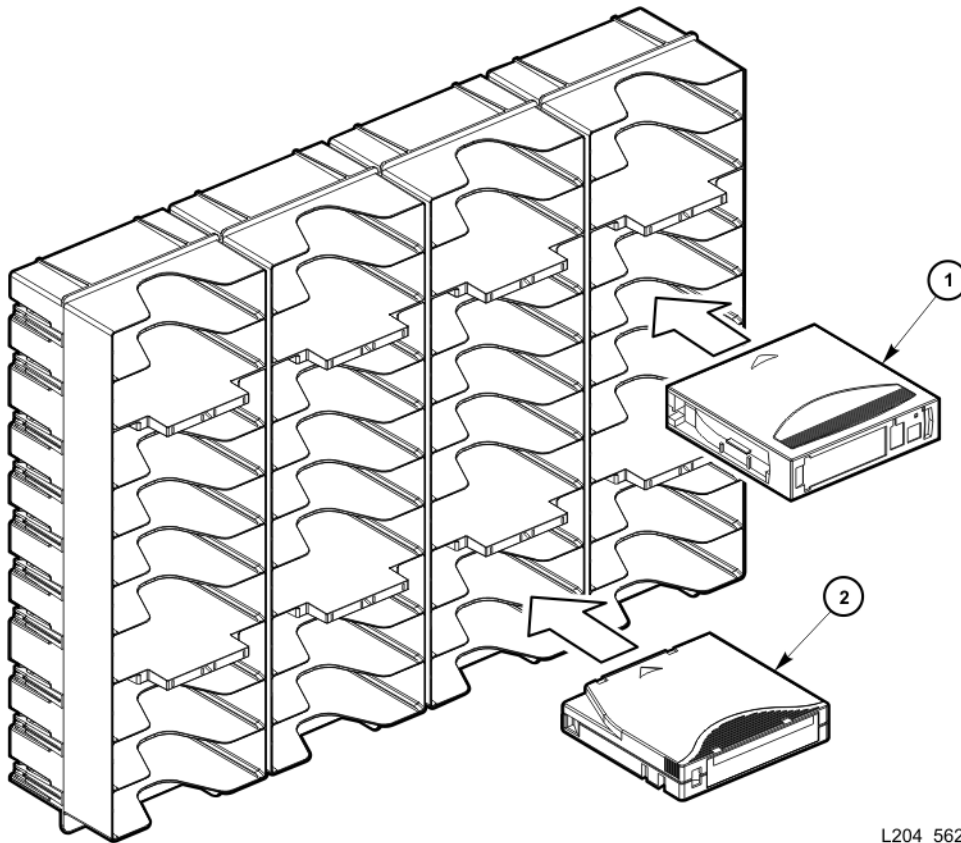
Note – LTO cartridges can be placed in either LTO arrays or mixed-media arrays. SDLT/DLT-S4 cartridges can only be placed in mixed-media arrays, not LTO arrays.

Caution – Inserting the cartridges correctly is critical for library operation. If you do not orient the cartridges correctly or do not insert them all the way into the storage cells, the library might fail, and the SL Console might display an error message. Make sure you insert the cartridge *inside* the array, not above or beneath it. [FIGURE 9-1](#) shows the correct way to insert cartridges into the magazine.

1. **Check the cartridges to make sure they are correctly labeled.**

2. Insert as many cartridges into the library as you want and as your configuration allows, making sure you seat them all the way into the storage cells.

FIGURE 9-1 Insert Mixed Media Cartridges into Arrays



L204_562

1. SDLT/DLT-S4 cartridge
2. LTO cartridge

▼ Insert a Cartridge into a Tape Drive

Use this procedure to manually insert a cartridge into a tape drive.

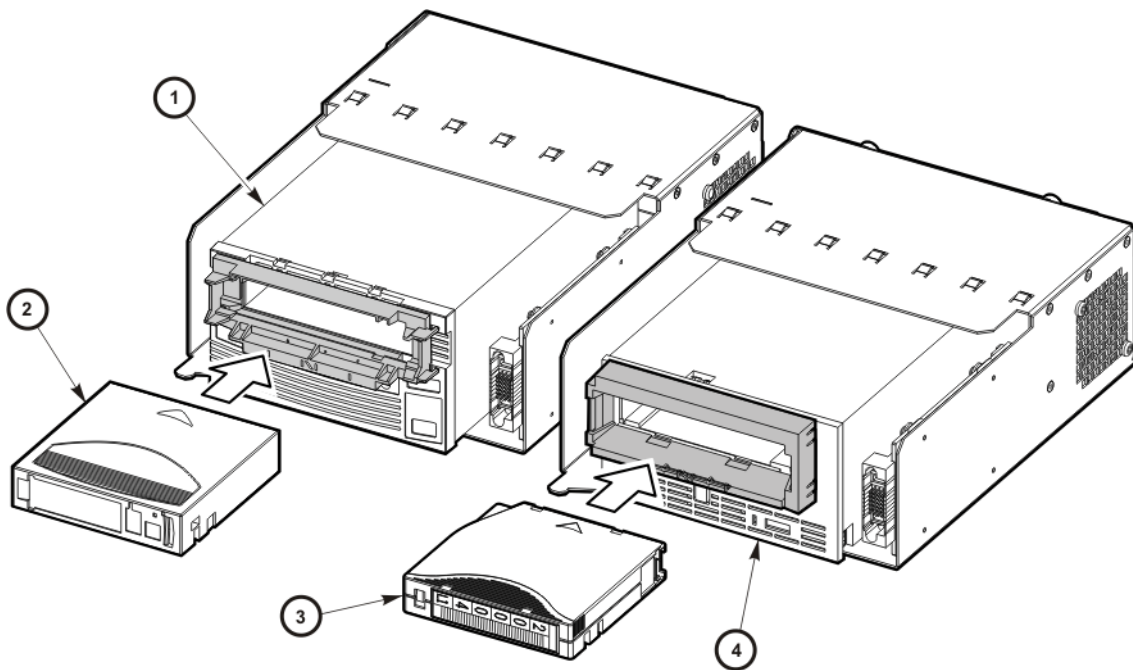
Note – LTO cartridges can be placed in either LTO arrays or mixed-media arrays. SDLT/DLT-S4 cartridges can only be placed in mixed-media arrays, not in LTO arrays.

1. Obtain the VOLID label, location, and tape drive number from the server console.
2. Open the door.
3. Locate the cartridge (see “Locate and Remove a Cartridge” on page 321).

Caution – *Potential equipment damage.* You must insert the cartridge properly or you will damage the tape drive.

4. Hold the cartridge so that the VOLID is facing you and can be read from right to left.
5. Insert the cartridge into the tape drive.
6. Close the library access door.

FIGURE 9-2 Insert Cartridge into Drive



L204_018

1. SDLT/DLT-S4 Drive
2. SDLT/DLT-S4 Cartridge
3. LTO Cartridge
4. LTO Drive

▼ Remove a Cartridge from a Tape Drive

To manually remove a cartridge from a tape drive:

1. Obtain the tape drive number from the server console.
2. Open the door and locate the appropriate tape drive.

Caution – *Possible data loss.* Failure to perform the next step could result in data loss.

3. Press the Unload button on the tape drive and wait approximately 12 seconds until the operation completes.

FIGURE 9-3 Remove a Cartridge from an LTO Tape Drive

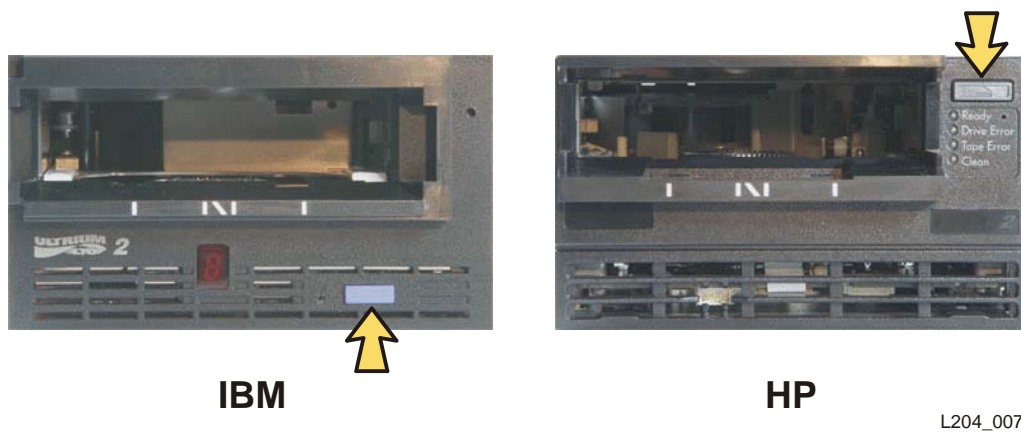
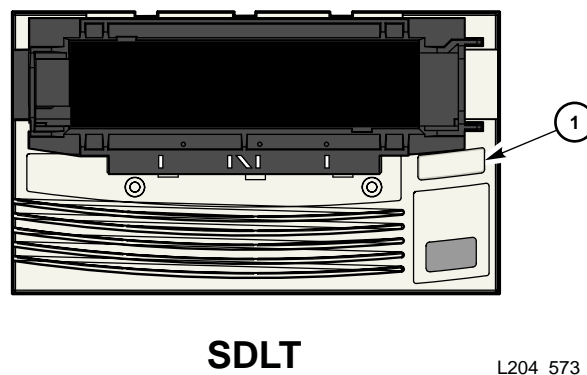


FIGURE 9-4 Remove a Cartridge from an SDLT Tape Drive



1. SDLT Unload Button

4. Gently pull the cartridge from the tape drive.
5. Store the cartridge in an empty storage cell or outside the library.

Note – If you store the cartridge in an empty storage cell, you must reinitialize the library and update the tape management's database (see [“Return the Library to Ready Status” on page 314](#)).

6. Close the library door.

▼ Remove a Cartridge from the Gripper Assembly

The hand assembly can be in any position when the library loses power. Before you can remove the cartridge, the hand assembly must be facing the front left arrays and aligned with an empty storage cell.

See [“Open the Front Door \(Without Power\)”](#) on page 316.

If the hand assembly is facing right:

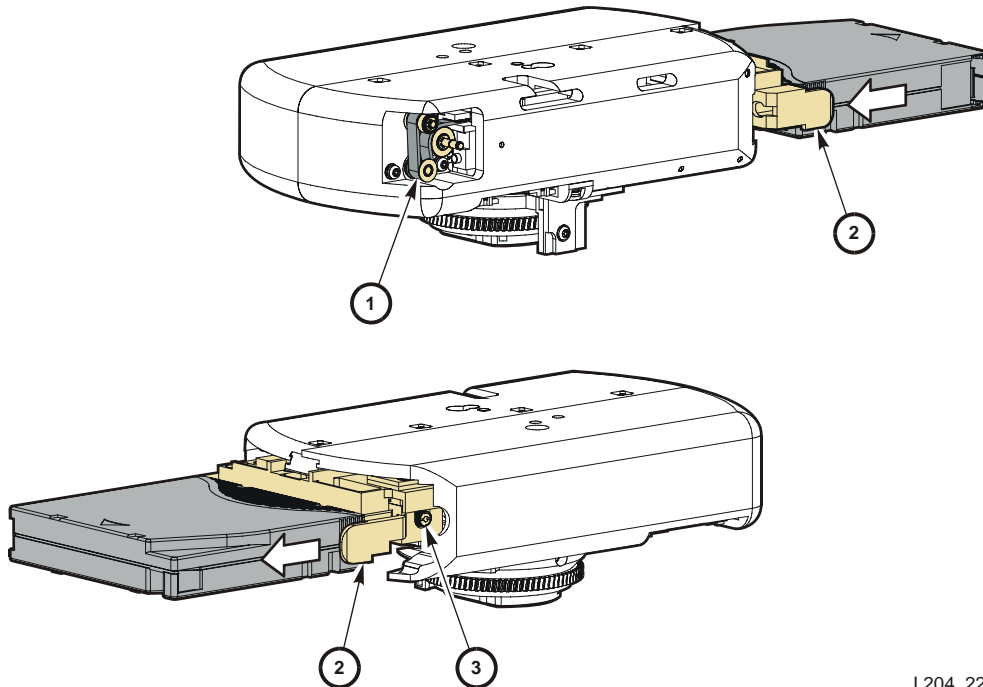
1. Gently turn the hand to the left.
2. Slide the hand assembly along the rail until the gripper is positioned across from an empty storage cell and close to you.
3. Continue with the following steps.

If the hand assembly is facing left:

1. Turn the gripper belt ([FIGURE 9-5](#)) to extend the gripper until the release screw is accessible.
2. Use a small, flat-blade screwdriver to turn the screw 1/4 turn clockwise until the cartridge is released.
3. Push the cartridge into a storage cell.
4. Gently push the gripper back into the hand.
5. Slide the hand assembly toward the back of the library.

6. Remove the cartridge from the storage cell, or leave it there.

FIGURE 9-5 Manual Release Screw



L204_227

- 1. Gripper belt and pulleys
 - 2. Release screw
 - 3. Gripper
-

▼ Replace a Cleaning Cartridge

Cleaning cartridges have a limited life span. Refer to your tape drive publication to determine how many times a cleaning cartridge should be used. When the usage count exceeds its limit, you must replace it with a new one. You can use the SL Console to eject the cleaning cartridge to the CAP.

To replace a cleaning cartridge:

1. **Open the door.**
2. **Remove the expired cleaning cartridge from its reserved cell.**
3. **Insert the new cleaning cartridge into that cell.**

Note – Refer to [TABLE B-1](#) to make sure your cartridge has the correct vendor and usage label.

4. **Close the library door.**
The SL Console status display shows that initialization tests are running.
5. **Wait until the initialization tests complete before you perform another task.**

SL500 Wall Diagrams and Specifications






This appendix provides the following diagrams and tables:

- “LTO Configurations” on page 332
- “Mixed-Media Configurations” on page 337
- “Specifications” on page 342

Use the legend in [TABLE A-1](#) for all diagrams in this appendix.

Note – Your tape management software might conflict with the following information. Refer to your software publication for unique information.

TABLE A-1 Cell Figure Legend

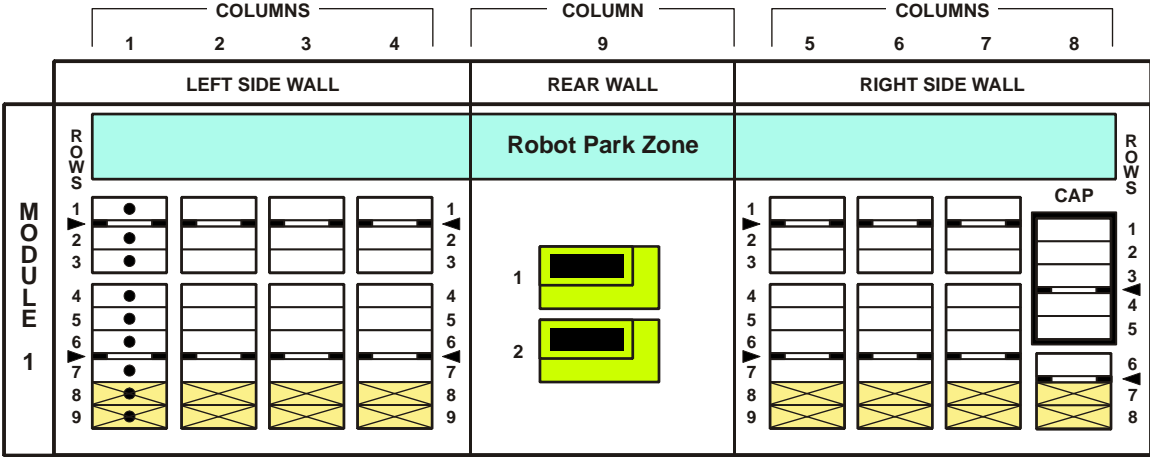
	Storage cells available for customer data cartridge
	Cells reserved for cleaning and diagnostic cartridges (can be configured for data cartridges)
	Cells only available when an expansion module is installed. If this is the lowest module in the rack, these cells are not available.
	Array targets
	Tape drives

LTO Configurations

The following figures show LTO storage cell and tape drive locations.

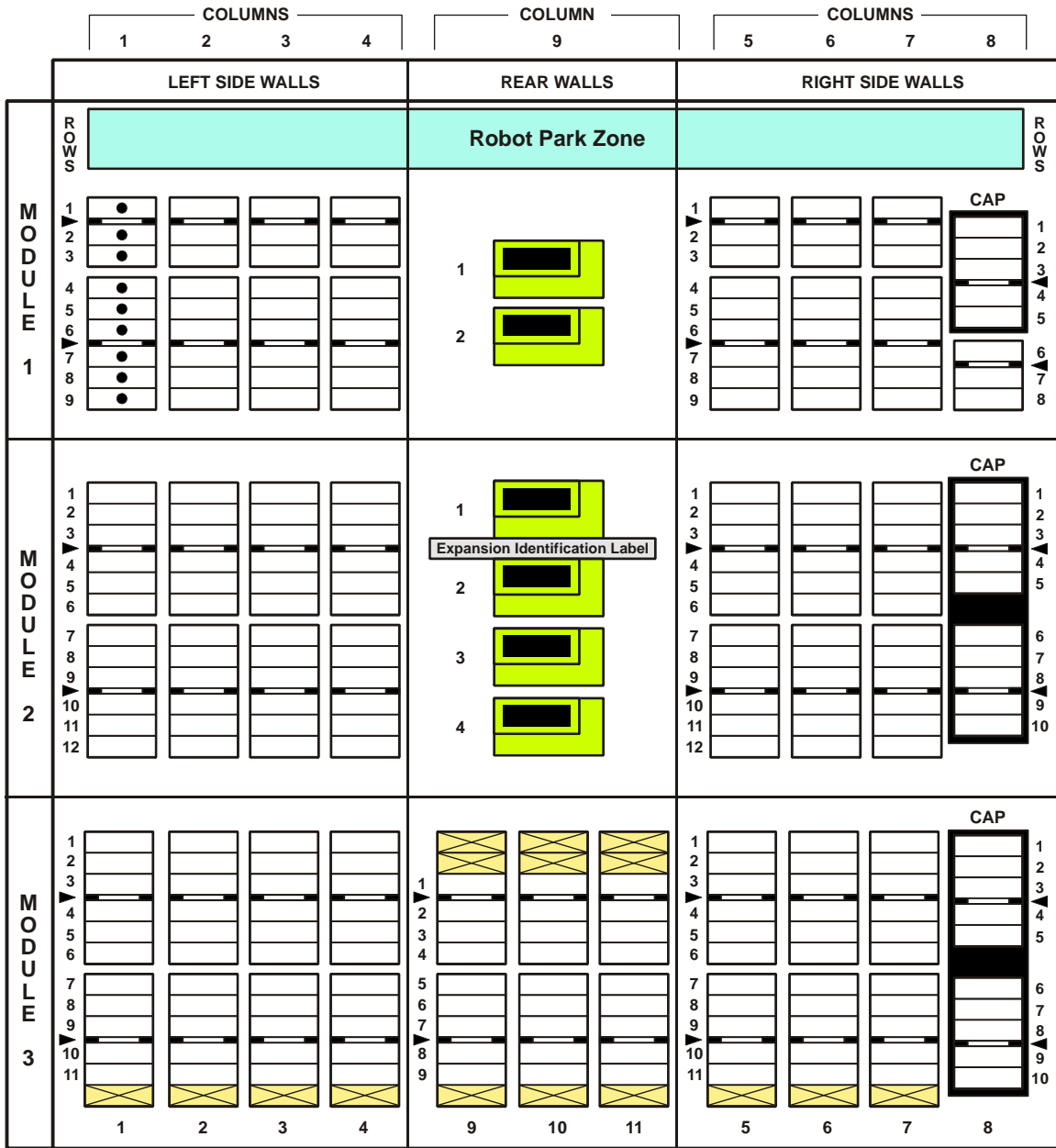
- [FIGURE A-1, “Base Module LTO Cells” on page 333](#) shows a library with only a Base Module.
- [FIGURE A-2, “LTO Cell Locations for Firmware Site Mapping” on page 334](#) shows a library with a Base Module that has nine reserved cells, one Drive Expansion Module, and one Cartridge Expansion Module.
- [FIGURE A-3, “LTO Cell Locations for SCSI Element Numbering Mapping” on page 335](#) shows a library with a Base Module that has two reserved cells, one Drive Expansion Module, and one Cartridge Expansion Module. The storage cell numbering begins with the first cell after the reserved cells in column 1. The figure shows two reserved cells, but there could be more. If the reserved cells are configured as storage cells, the top cell (row 1) would be 1.
- [FIGURE A-4, “LTO Cells for Back Wall of Cartridge Expansion Module” on page 336](#) shows the cell capacity of a Cartridge Expansion Module according to which type of module is installed above and below it.

FIGURE A-1 Base Module LTO Cells



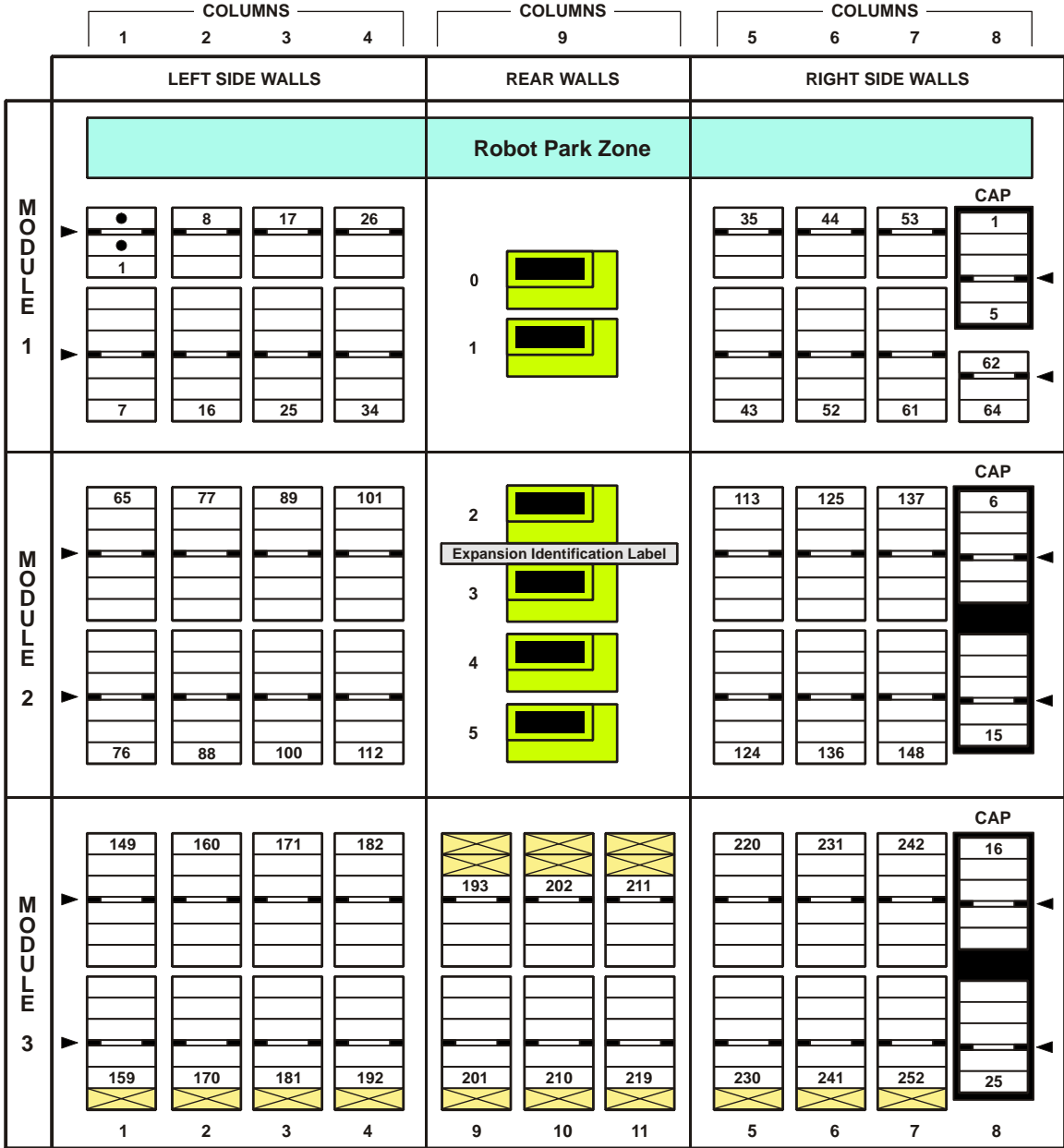
L204_004

FIGURE A-2 LTO Cell Locations for Firmware Site Mapping



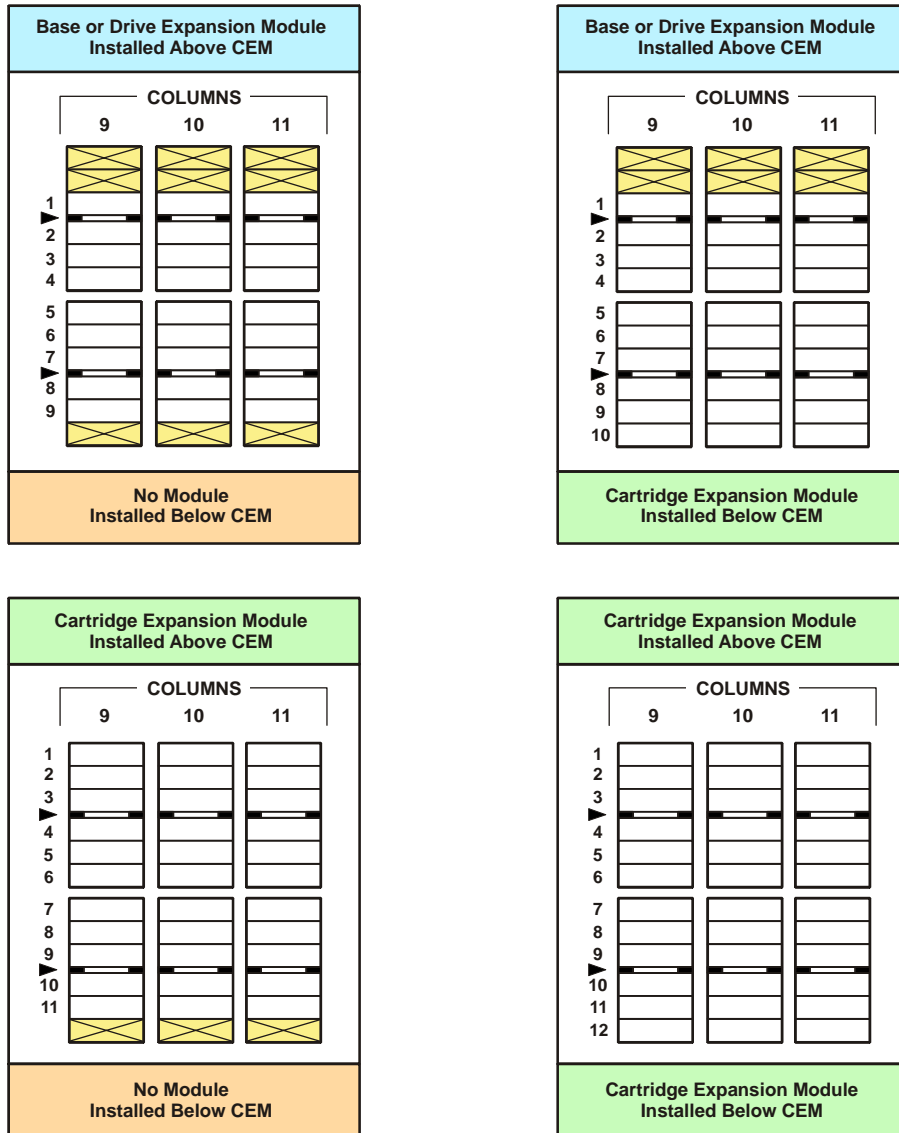
L204_010

FIGURE A-3 LTO Cell Locations for SCSI Element Numbering Mapping



L204_009

FIGURE A-4 LTO Cells for Back Wall of Cartridge Expansion Module



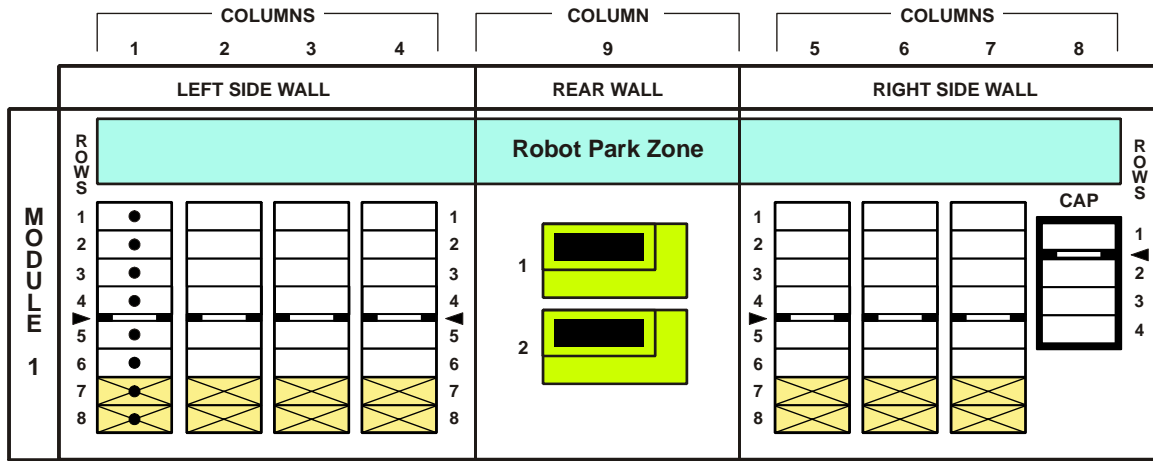
L204_556

Mixed-Media Configurations

The following figures show mixed-media storage cell and tape drive locations.

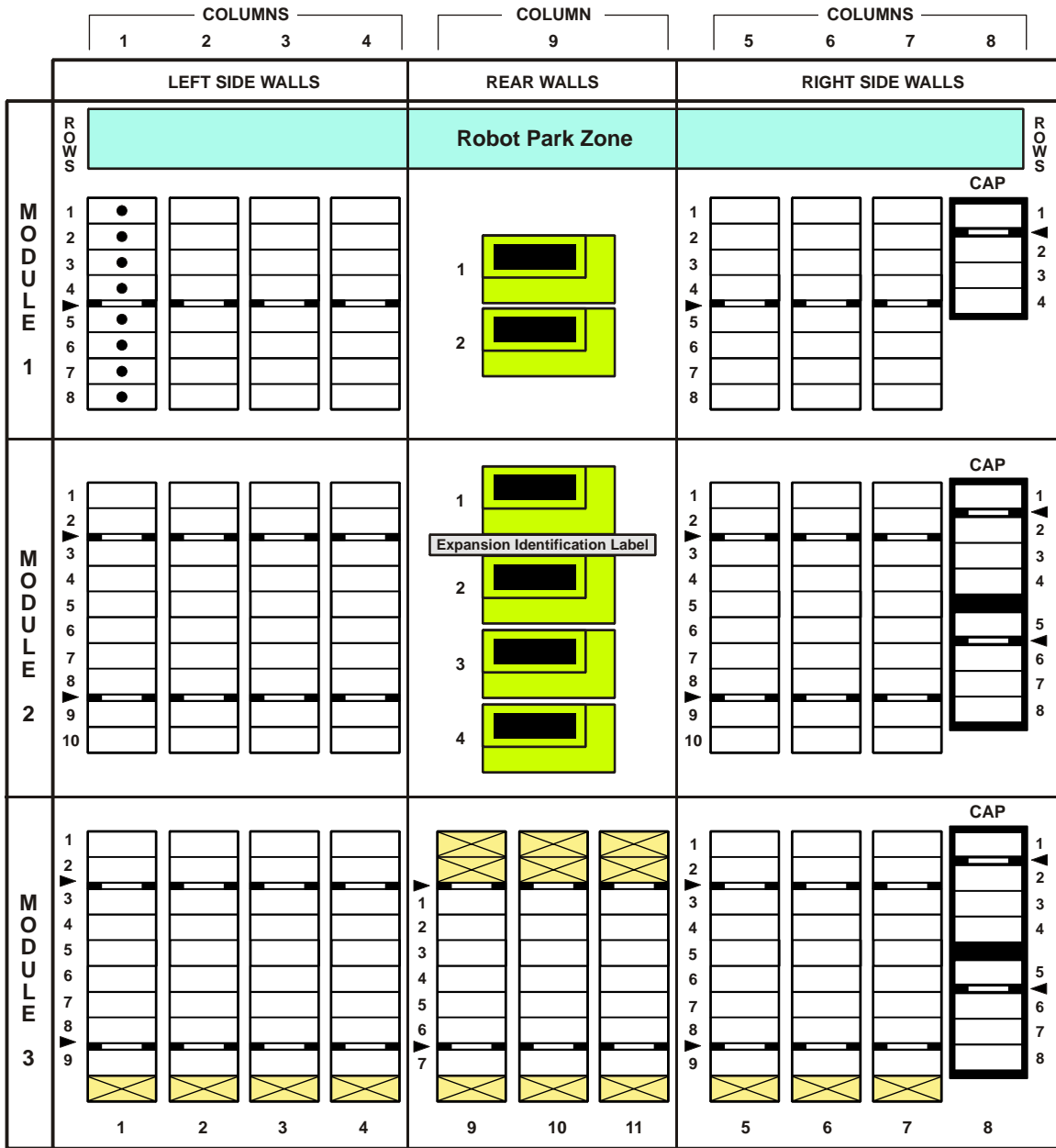
- [FIGURE A-5, “Base Module Mixed-Media Cells” on page 338](#) shows a library with only a Base Module.
- [FIGURE A-6, “Mixed-Media Firmware Cell Mapping” on page 339](#) shows a library with a Base Module that has eight reserved cells, one Drive Expansion Module, and one Cartridge Expansion Module.
- [FIGURE A-7, “Mixed-Media SCSI Element Numbering Mapping” on page 340](#) shows a library with a Base Module that has two reserved cells, one Drive Expansion Module, and one Cartridge Expansion Module. The storage cell numbering begins with the first cell after the reserved cells in column 1. The figure shows two reserved cells, but there could be more. If the reserved cells are configured as storage cells, the top cell (row 1) would be 1.
- [FIGURE A-8, “Mixed-Media Cells for Back Wall of Cartridge Expansion Module” on page 341](#) shows the cell capacity of a Cartridge Expansion Module according to which type of module is installed above and below it.

FIGURE A-5 Base Module Mixed-Media Cells



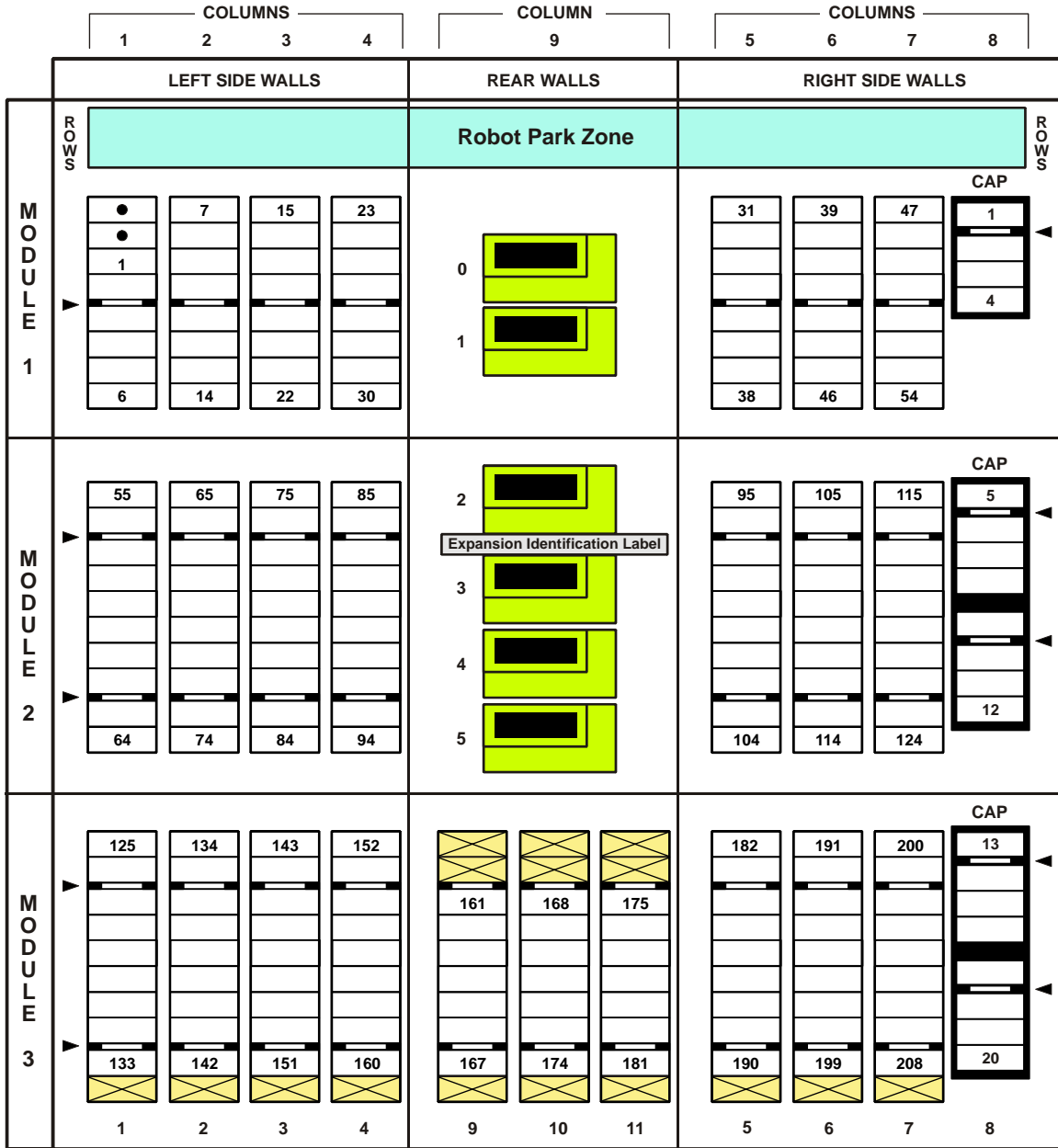
L204_558

FIGURE A-6 Mixed-Media Firmware Cell Mapping



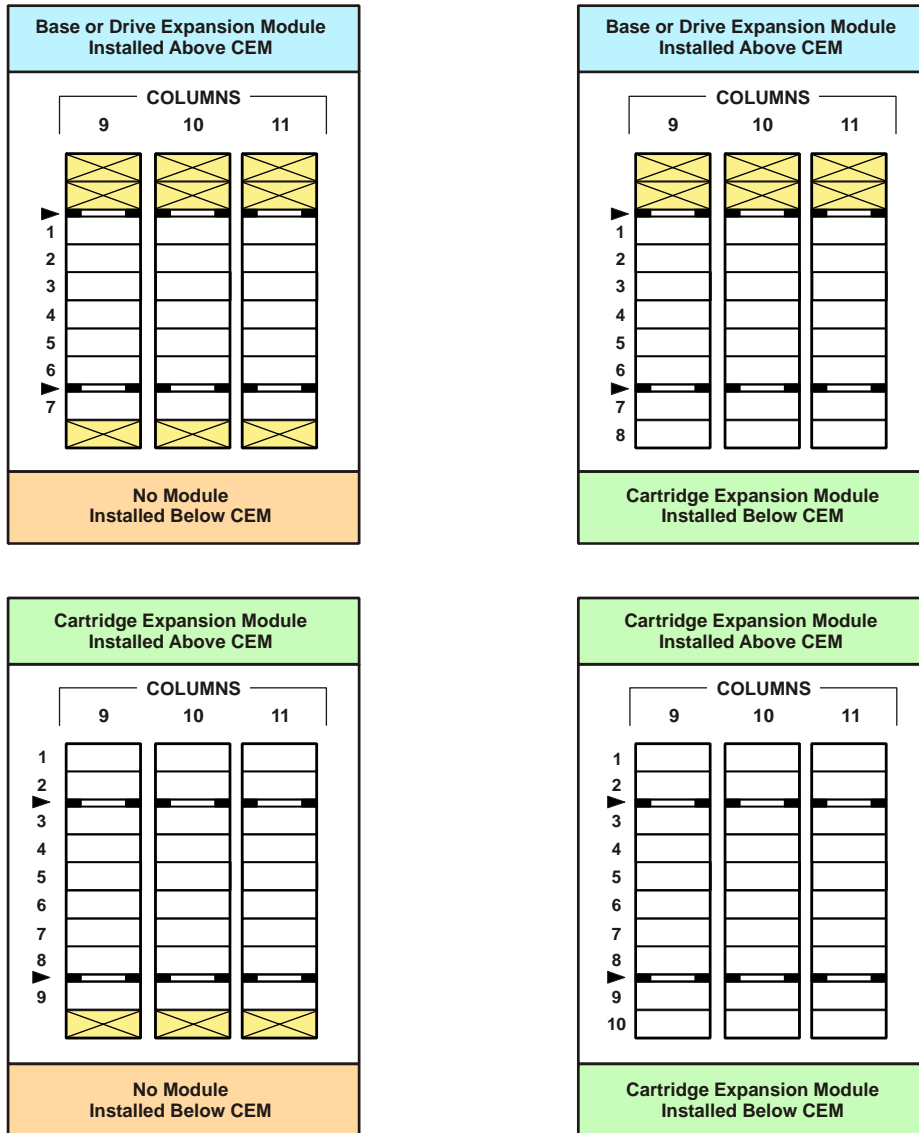
L204_559

FIGURE A-7 Mixed-Media SCSI Element Numbering Mapping



L204_560

FIGURE A-8 Mixed-Media Cells for Back Wall of Cartridge Expansion Module



L204_561

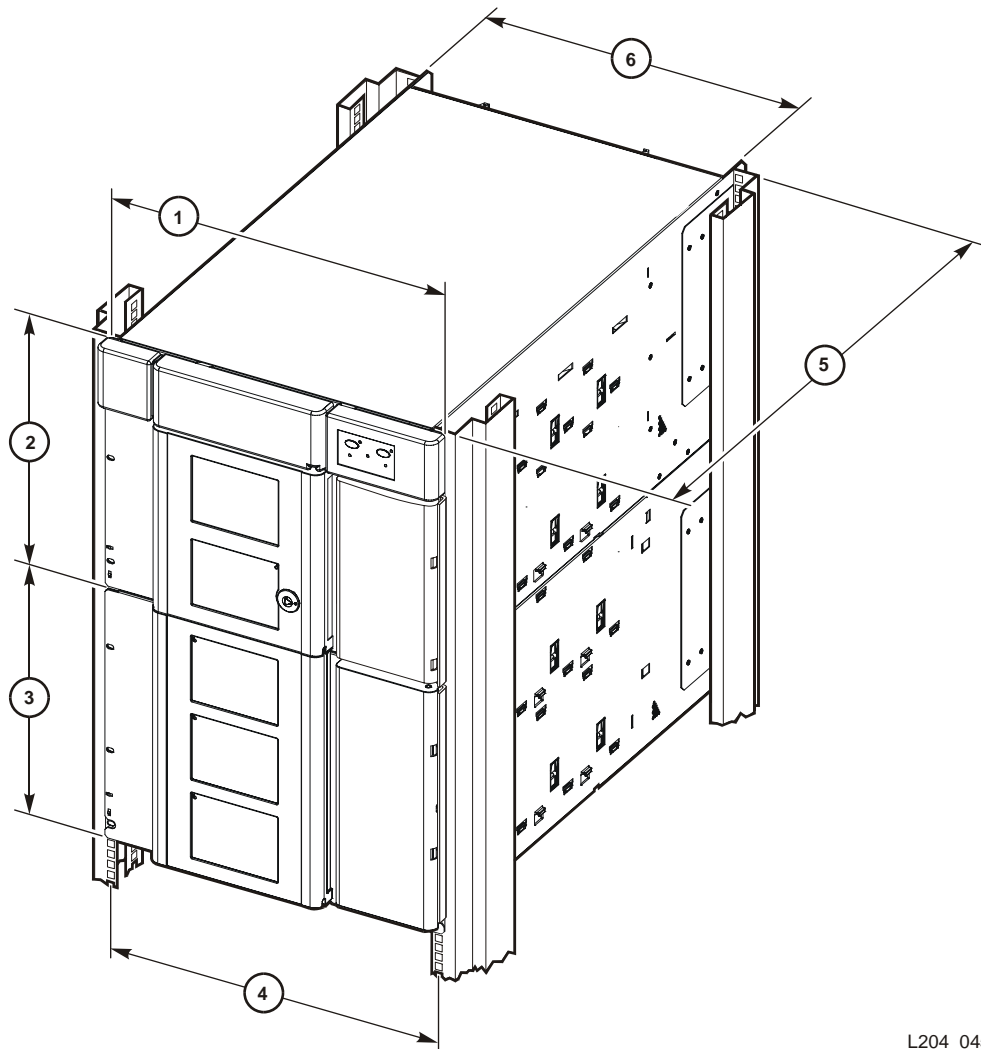
Specifications

The following pages provide the following specifications:

- [“Library and Rack Dimensions” on page 343](#)
- [“Library and Rack Clearances” on page 344](#)
- [“Library Component Weights” on page 345](#)
- [“Library Environment Specifications” on page 345](#)
- [“Power Specifications” on page 346](#)

For more specific tape drive and cartridge information, refer to the vendor Web site or documentation.

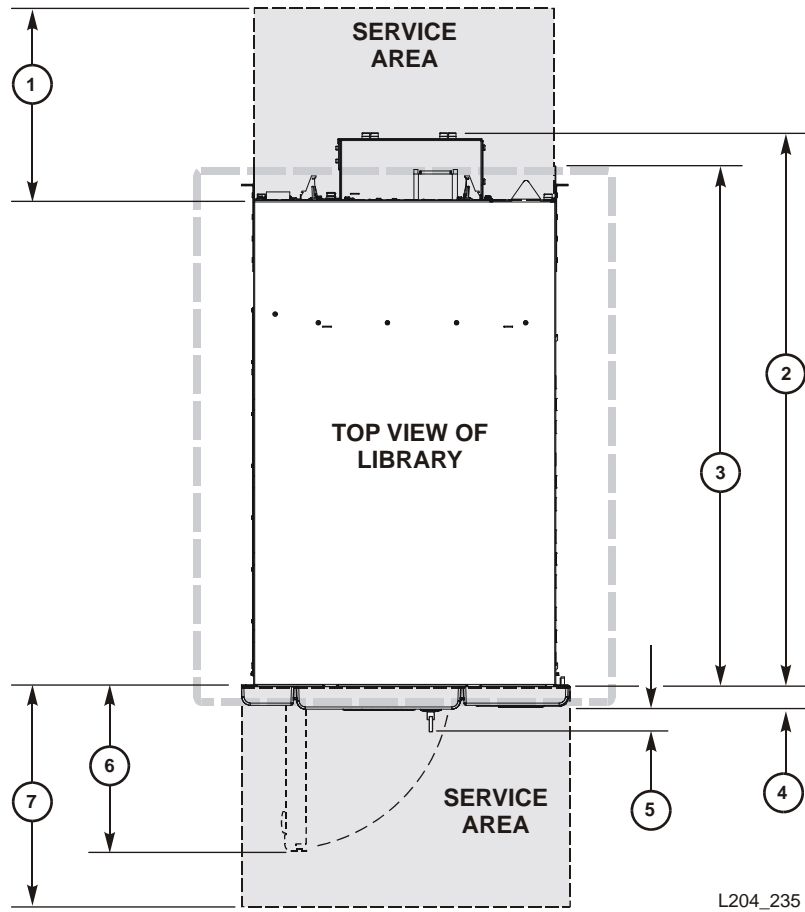
FIGURE A-9 Library and Rack Dimensions



L204_045

1. 48.3 cm (19.0 in.) width of front of Base Module with flange
2. 35.6 cm (14.0 in.) height of Base Module
3. 35.6 cm (14.0 in.) height of expansion module
4. 46.5 cm (18.3 in.) distance between rack holes
5. *Original design modules:* 60.9 cm (24.0 in.) to 86.4 cm (34.0 in.), optimally 74 cm (29 in.) front to rear rack mounting distance
EZ install modules: 55.9 cm (22.0 in.) to 78.7 cm (31.0 in.), optimally 66 cm (26 in.) front to rear rack mounting distance (with optional extensions, depths up to 94 cm [37 in.])
6. 44.5 cm (17.5 in.) width of back of Base Module

FIGURE A-10 Library and Rack Clearances



L204_235

1. 60.9 cm (2 ft) minimum service clearance behind the library or rack
2. 81.0 cm (31.9 in.) depth of Base Module from front mounting plane to back of tape drives
3. 76.2 cm (30.0 in.) depth of *original design* Base Module
71.4 cm (28.1 in.) depth of *EZ install* Base Module (with optional extensions, depths up to 94 cm [37 in.])
4. 3.8 cm (1.5 in.) depth of front door, required clearance
5. 5.3 cm (2.1 in.) depth of front door and unique latch hardware
6. 24.1 cm (9.5 in.) front door opening clearance
7. 60.9 cm (2 ft) minimum front service clearance

Library Component Weights

The following table lists the weights of the library, tape drives and trays, and cartridges.

TABLE A-2 Library Component Weights

Component	Weight
Base module with 1 power supply, 2 LTO tape drives, and robotics unit	44.5 kg (98.0 lb)
Drive expansion module (DEM) with one power supply and four LTO tape drives	41.3 kg (91.0 lb)
Cartridge expansion module (CEM)	20.1 kg (44.2 lb)
Robotics unit	10.1 kg (22.2 lb)
Power supply	2.3 kg (5.1 lb)
HP LTO Ultrium tape drive and tray assy	3.6 kg (7.9 lb)
IBM LTO Ultrium tape drive and tray assy	4.5 kg (9.9 lb)
SDLT LVD tape drive and tray assy	4.2 kg (9.3 lb)
SDLT FC tape drive and tray assy	4.1 kg (9.0 lb)
DLT-S4 tape drive and tray assy	3.88 kg (8.6 lb)
Tape drive tray assy without tape drive	1.5 kg (3.4 lb)
LTO Ultrium cartridge	221.0 g (7.8 oz)

Library Environment

The following table lists the library environment specifications.

TABLE A-3 Library Environment Specifications

Item	Measurements		
	Operating	Storage	Transporting
Temperature	+10 to +40°C (+50 to +104°F)	+10 to +40°C (+50 to +104°F)	-40 to +60°C (-40 to +140°F)
Humidity	20 to 80%	10 to 95%	10 to 95%
Wet bulb (maximum, noncondensing)	+29.2°C (+84.5°F)	+35°C (+95°F)	+35°C (+95°F)
Altitude	-76 to 3,048 m (-250 to 10,000 ft)		

Power Specifications

The following tables list power specifications for the modules and tape drives.

TABLE A-4 Power for Library Without Tape Drives

Input voltage	100–240 VAC, single phase
Frequency	50/60 Hz
Maximum library power consumption	1.4 A @ 120 V 0.8 A @ 240 V
Maximum heat output	614 Btu/hr
Voltage-amperes	180 VA

TABLE A-5 Power for Base Unit and Two LTO Tape Drives

	Two LTO Tape Drives
Input power	219 Watts
Input voltage-amperes	226 voltage-amperes
Input current (100 VAC)	2.3 amperes
Input current (120 VAC)	1.9 amperes
Input current (240 VAC)	0.9 amperes
Btu/hour	748 Btu/hr

TABLE A-6 Power for Drive Expansion Module and Four LTO Tape Drives

	Four LTO Tape Drives
Input power	288 Watts
Input voltage-amperes	297 voltage-amperes
Input current (100 VAC)	3.0 amperes
Input current (120 VAC)	2.5 amperes
Input current (240 VAC)	1.2 amperes
Btu/hour	983 Btu/hr

Cartridge Information

This appendix provides detailed information about the cartridges that can be used in the SL500 library.

Handling Cartridges

Improper handling of cartridges can result in a loss of data or damage to a library component.

To handle a cartridge correctly:

- Make sure the leader is latched every time you pick up a cartridge.
- Keep cartridges clean.
- Inspect a cartridge before each use, and never put a damaged cartridge into a tape drive or library.
- Never pull tape from a cartridge.
- Never open a cartridge.
- Do not handle tape that is outside the cartridge; the tape edge might be damaged.
- Do not expose the tape or cartridge to direct sunlight or moisture.
- Do not expose a recorded cartridge to magnetic fields; this might destroy data on the tape.

Inspecting Cartridges

A defective or dirty cartridge can damage a tape drive. Always inspect a cartridge before you insert it into a tape drive or a library. Look for:

- Cracked or broken cartridge
 - Broken leader
 - Broken leader latch
 - Damaged write-protect switch
 - Liquid in the cartridge
 - Labels not firmly or neatly attached or extending over the cartridge edge
 - Any other obvious damage
-

Maintaining Cartridges

It is important to keep your tape cartridges in good condition. A defective or dirty cartridge can damage a tape drive see [“Inspecting Cartridges” on page 348](#).

When you store a cartridge:

- Leave it in its protective wrapping until you are ready to use it.
- Choose a clean environment that duplicates the conditions of the room in which it is used.
- Make sure the cartridge has been in its operating environment for at least 24 hours.

When you clean a cartridge exterior:

Caution – *Potential damage to cartridges.* Do not use certain solvents to remove labels or to clean cartridges because they can damage the cartridges. Do not use acetone, trichloroethane, toluene, xylene, benzene, ketone, methylethyl ketone, methylene chloride, ethyldichloride, esters, ethyl acetate, or similar chemicals.

- Wipe all dust, dirt, and moisture from the cartridge with a lint-free cloth.
 - Use StorageTek Tape Cleaner Wipes, PN 4046289-01, to clean the cartridges. These wipes are saturated with isopropyl alcohol. Do not let any solution touch the tape or get inside the cartridge.
-

Cartridge Requirements

Cartridges must meet specifications defined in *American National Standard Magnetic Tape and Cartridge for Information Interchange*, ACS X3B5.

Refer to your tape drive manufacturer’s publication and Web site for specific cartridge requirements and specifications.

Color cartridges are approved only if the measured reflection density is greater than 0.1 as measured by an X-rite 404G color reflection densitometer. For more information about colored cartridges, contact your Sun support representative.

Color measurements are:

Bandwidth	ANSI Status T Wide band (380 to 780 nm)
Measuring range	Density (0.00 to 2.50) D
Accuracy	± 0.02 D
Repeatability	± 0.01 D
Aperture diameter	3.4 mm (0.13 in.)

Ordering Cartridges and Labels

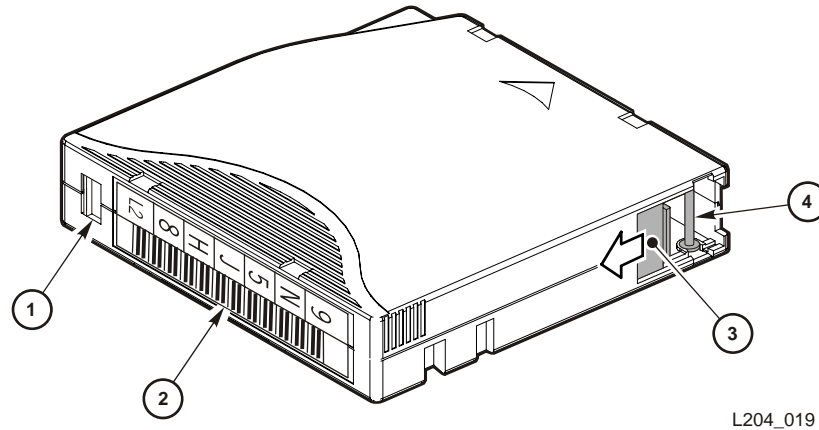
Contact your authorized Selling Agent for Sun-branded labeled cartridges. You do not need to order labels separately, because the data cartridges have labels already, and the cleaning and diagnostic labels are shipped with the installation hardware. However, you must select the VOLID range and other label options when ordering cartridges.

If you choose to order additional labels, order them from any standard media vendor. See [“Cartridge Requirements” on page 348](#) before ordering.

LTO (Ultrium) Cartridges

The following sections describe LTO cartridges.

FIGURE B-1 LTO Cartridge Components



1. Write-protect switch (data cartridge has red switch, cleaning cartridge has gray switch)
 2. Volume ID label (barcode to hub side of cartridge)
 3. Access door
 4. Leader pin
-

Valid Labels

LTO cartridge labels have six or eight characters (see the following note). The last two characters are the Media ID (L1, L2, L3, L4, LT, LU and CU). The cleaning and diagnostic label have a CLN or DG as the first characters on the label See [FIGURE B-2](#).

Note – Unlabeled cartridges are not supported.

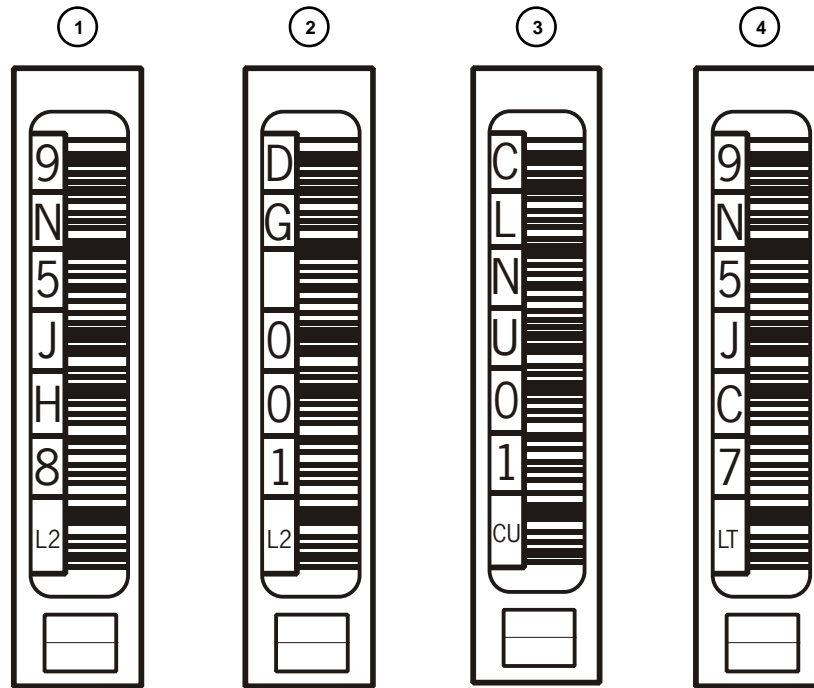
Discuss whether you want six or eight characters with your service representative. The representative can set what characters are available with the “orientlabel print” and “orientlabel” host commands from the command line interface.

TABLE B-1 LTO Cartridge Codes

Label	Type of Cartridge
L1	Generation 1 data cartridge
L2	Generation 2 data cartridge
L3	Generation 3 data cartridge
L4*	Generation 4 data cartridge
LT	Write once read many times (WORM)—400 GB, LTO Gen 3 drive only This feature prevents the user from altering or erasing information from the tape. For more information, go to your vendor Web site and do a search on WORM.
LU	Write once read many times (WORM)—800 GB, LTO Gen 4 drive only
CLN plus CU	Universal cleaning cartridge Use this universal label instead of a vendor-unique label (CLN plus C1 for Hewlett-Packard or CLN plus C2 for IBM).
DG	Diagnostic cartridge (apply a DG label to a blank data cartridge to be used for library diagnostic tests)

Note – Check availability for LTO Gen 4 drives and media. Library firmware must be Version 1126 or later to support LTO Gen 4 drives and media.

FIGURE B-2 LTO Cartridge Labels



L204_214

1. LTO Generation 2 data cartridge label.

Note: Generation 3 data cartridge labels are "L3."; Generation 4 data cartridge labels are "L4."

2. LTO Generation 2 Diagnostics cartridge label

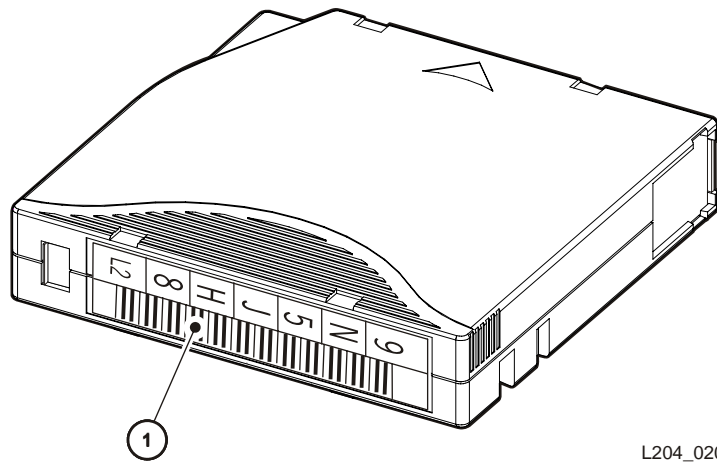
3. LTO Universal cleaning cartridge label

4. LTO 400 GB Worm cartridge label (LTO Generation 3 and 4)

Note: LTO 800 GB Worm cartridge labels are "LU" and available for Generation 4 drives only.

Labels must be attached as shown in the following figure.

FIGURE B-3 Apply the Ultrium Cartridge Label



L204_020

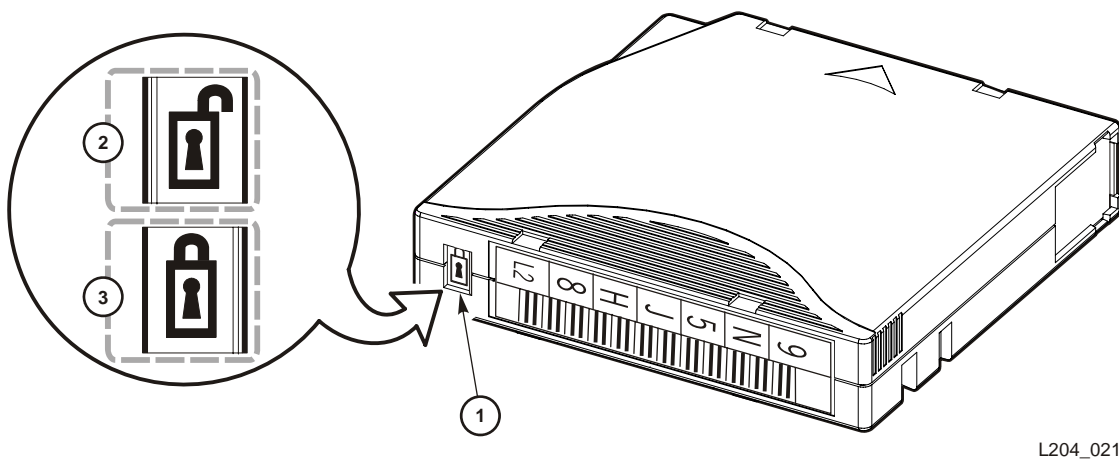
1. Volume number label

Write-protect Switch

You can set the write-protect switch so the cartridge is write-enabled. Slide the switch to reveal the “open lock” symbol to write-enable the tapes. In this position, the tape drive can write as well as read data. This setting is recommended when inserting cartridges into the tape library.

You can set the write-protect switch so that the cartridge is read-only (nothing can be written on the tape). Slide the switch to reveal the “closed lock” symbol. In this position, the tape drive can only read data from the tape, but cannot write data to it.

FIGURE B-4 Set the LTO Write-Protect Switch



L204_021

1. Write-protect switch (data cartridge has red switch, cleaning cartridge has gray switch)
2. Write-enabled

FIGURE B-4 Set the LTO Write-Protect Switch

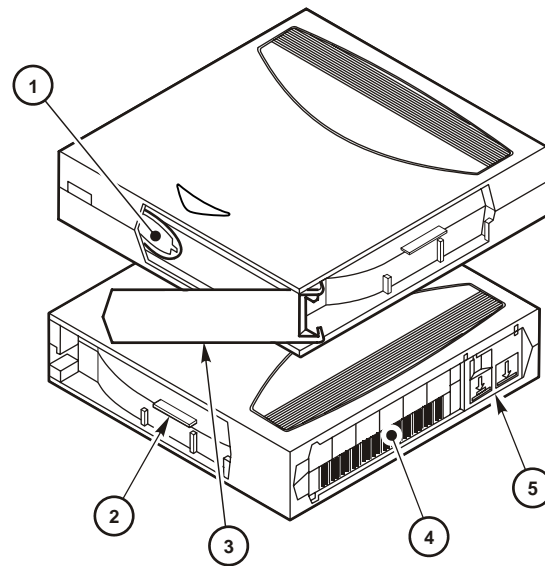
3. Write-protected

SDLT/DLT-S4 Cartridges

Note – Your robotics unit must be part number 314558705 or higher to read SDLT cartridge labels.

The following sections describe SDLT/DLT-S4 cartridges.

FIGURE B-5 SDLT Cartridge Components



L204_564

1. Tape leader
2. SDLT cartridge identifier tab
3. Access door
4. Volume serial number (VOLID) label
5. Read/Write protect switch

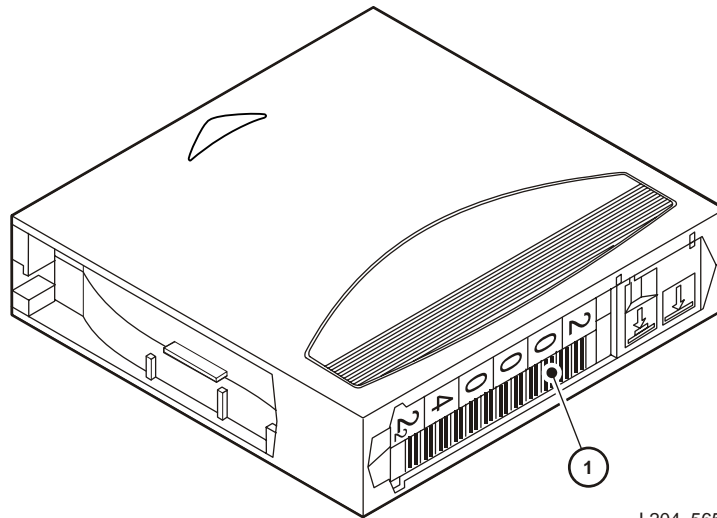
Note – DLTtape S4 cartridges are black in color. See Quantum manuals for more information regarding DLTtape S4 cartridges.
Library firmware must be version 1126 or later for DLT-S4 support.

For best results:

- Use Super DLTtape 1 cartridges in SDLT 320 tape drives
- Use Super DLTtape 2 cartridges in SDLT 600 tape drives
- Use DLTtape S4 cartridges in DLT-S4 tape drives

Labels must be attached as shown in the following figure.

FIGURE B-6 Apply the SDLT Cartridge Label



L204_565

1. Volume number label

Note: Consult Quantum documentation regarding application of labels for DLTtape S4 tapes.

Valid Labels

SDLT/DLT-S4 cartridge labels have six, seven, or eight characters (see the following note). The last character is the media ID (S, 2 or 4). CLN or DG are the first characters on the cleaning or diagnostic label.

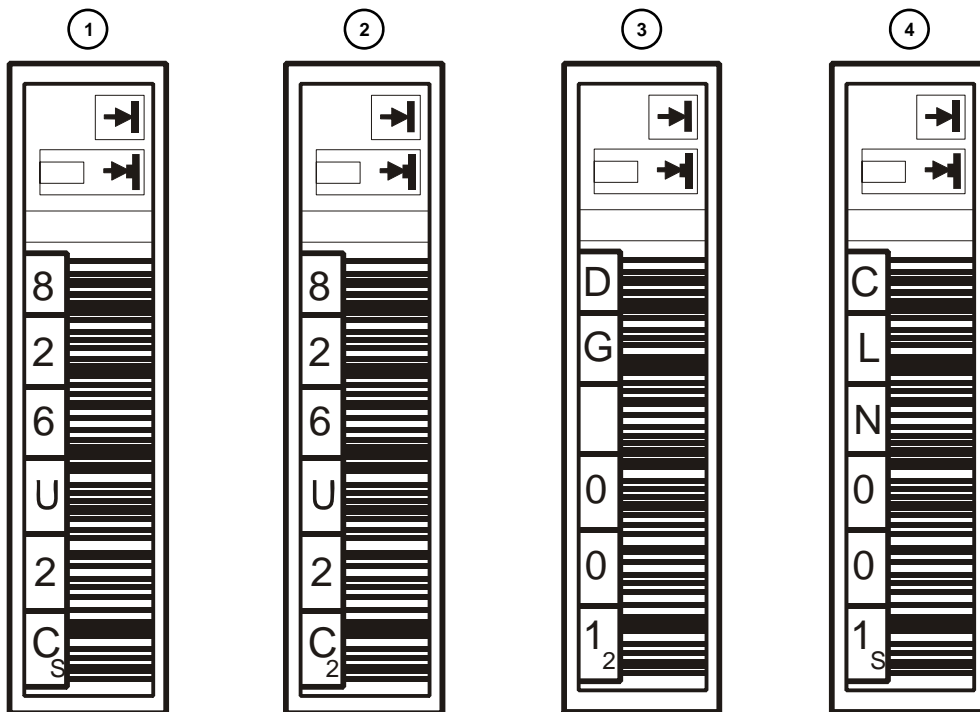
Note – Discuss whether you want six or seven characters with your service representative. The representative can set what characters are available with the “orientlabel print” and “orientlabel” host commands from the command line interface.

TABLE 0-1 SDLT/DLT-S4 Cartridge Codes

Label	Type of Cartridge
S	SDLT 220/320 data cartridge
2	SDLT 600 data cartridges
4	DLTtape S4 data cartridges
CLN + S	SDLT cleaning cartridge.
DG + 2	Diagnostic cartridge—SDLT
DG + 4	Diagnostic cartridge—DLT-S4

Note: Apply a DG label to a blank data cartridge to be used for library diagnostic tests.

FIGURE B-7 SDLT Cartridge Labels



L204_567

- 1. SDLT 320 data label
- 2. SDLT 600 data label

Note: DLT-S4 data cartridges contain the number “4.”

FIGURE B-7 SDLT Cartridge Labels

3. SDLT 320/600 diagnostic label

Note: DLT-S4 diagnostic cartridge labels are “DG + 4.”

4. SDLT 320/600 cleaning label

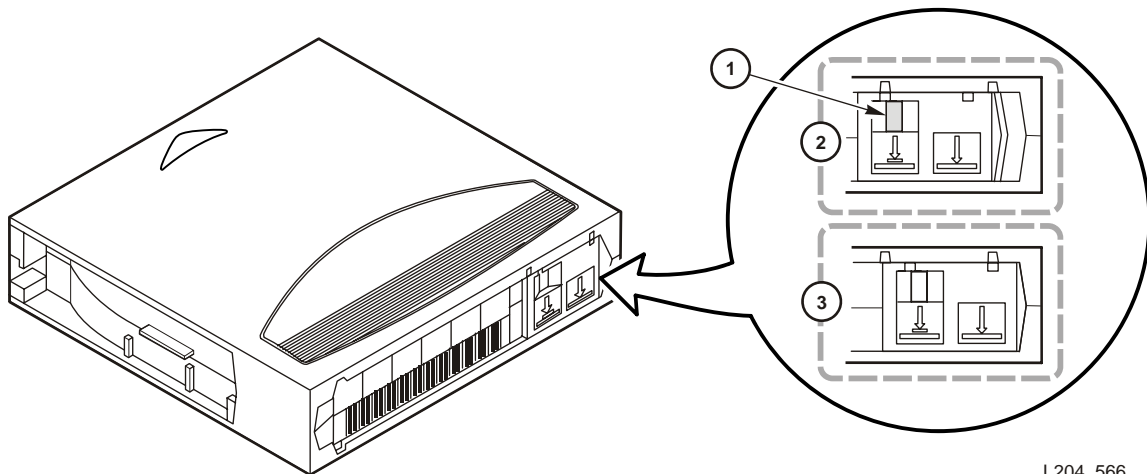
Note: You may use SDLT “CLN + S” cleaning labels for DLT-S4 drives.

Write-Protect Switch

You can set the write-protect switch so the cartridge is write-enabled. Slide the switch to reveal the orange indicator to write-enable the tapes. In this position, the tape drive can write as well as read data. This setting is recommended when inserting cartridges into the tape library.

You can set the write-protect switch so that the cartridge is read-only (nothing can be written on the tape). Slide the switch to reveal the “closed lock” symbol. In this position, the tape drive can only read data from the tape, but cannot write data to it.

FIGURE B-8 Set the SDLT Write-Protect Switch



L204_566

1. Write-protect switch (data cartridge has orange indicator)
2. Write-protected position
3. Write-enabled position

Note – See Quantum documentation regarding the write-protect/write enable setting for DLTtape S4 tapes.

Cartridge Handling Tasks

Task	Page
Apply a Label to a Cartridge	360

▼ Apply a Label to a Cartridge

Cartridge labels reflect the cartridge media and usage. If your cartridges were not ordered with labels already applied, you must apply them yourself. You must correctly label all cartridges for library use.

Caution – *Possible misread of volume number label:* Make sure the edges of the labels do not curl; curling causes the cartridges to stick in the tape drive loader and the robot to misread the label.

Use the procedure to apply a label to a tape cartridge.

1. **Make sure the cartridge has been at room temperature for at least 24 hours.**
2. **Clean the surface where the labels will be placed using a cleaning solution made for this purpose see “[Maintaining Cartridges](#)” on page 348.**
3. **Locate the type of label that you require.**
4. **Hold the cartridge so that the write-protect switch is toward you.**
5. **Attach the label to the cartridge. See the following figures for details:**
 - LTO cartridges—[FIGURE B-3 on page 353](#)
 - SDLT/DLT-S4 cartridges—[FIGURE B-6 on page 356](#)

Web-launched SL Console Server

The Web-launched SL Console is a standard feature of the SL500 and is included on a CD shipped with each library. It enables the SL Console to be installed on a centralized Web server. Individual clients can then use a supported Web browser to download and log in to the Web-launched SL Console.

The Web-launched SL Console is deployed as a Java WebARchive (.war) file.

Security Considerations

The customer is responsible for implementing all appropriate security systems, including firewalls, user access, etc.

Server Requirements

You can deploy the Web-launched SL Console on any Web server that is compliant with the J2EE (Java 2 Platform, Enterprise Edition) platform. It is recommended that you use the Java System Web Server.

Note – All procedures in this document assume you are using the Java System Web Server.

Server Installation and Management

Installation and management of the Web-launched SL Console server involves the following procedures:

- “Download the Java System Web Server” on page 362
- “Install the Sun Java System Web Server” on page 366
- “Log in to the Java System Web Server Administration Console” on page 370
- “Install and Deploy the Web-launched SL Console” on page 373
- “Start the Web-launched SL Console” on page 379
- “Update the Web-launched SL Console” on page 381

▼ Download the Java System Web Server

Use this procedure to download the Java System Web Server, if it is not already installed on your server.

Note – This procedure requires you to have a Sun Online Account username and password.

1. Open a Web browser, and in the Location Bar or Address field enter the URL of the Sun Web Servers page:

<http://www.sun.com/download/index.jsp?cat=Web%20%26%20Proxy%20Servers&tab=3&subcat=Web%20Servers>

2. On the Web Servers page, click the Web Server link that corresponds to your server platform.

	native NSAPI library form as well as the popular FastCGI form. An installer is provided to ease installation and setup .	
» Web Server 7.0 Update 1	This is a full multi-language product installation with performance and stability improvements; out-of-box Java support for Servlets 2.5, JSP 2.1, JSF 1.2, and more; support for Java SE 5.0 and 6, plus NetBeans IDE 5.0, 5.5, and 5.5.1; and administration interface support for FastCGI.	Download
» Web Server FastCGI Add-On 6.1 Service Pack 4	This software provides support for the FastCGI protocol. This allows third-party applications that do not support the Web Server's native API (NSAPI) or may have thread safety issues to be safely used without a significant	Download

3. On the Sun Java System Web Server screen (this will vary according to your selection in the previous step), scroll down to verify the list of supported platforms, and click **Download**.

Sun Java(TM) System Web Server 7.0 Update 1 is a full multi-language product installation. For platform and patch requirements, features, localizations, and other important information please read the [Release Notes](#).

New in Java System Web Server 7.0 Update 1:

- Performance and stability improvements
- Out-of-box Java support for Servlets 2.5, JSP 2.1, JSF 1.2, and more
- Support for Java SE 5.0 and 6
- Support for NetBeans IDE 5.0, 5.5, and 5.5.1
- Administration interface support for FastCGI
- More

Java System Web Server 7.0 introduced:

- Solaris AMD-64 and SPARC 64-bit platform support
- Redesigned administration framework featuring
 - Cluster management
 - Easy access to frequently utilized activities
 - Wizards to assist with difficult tasks
 - Full featured and scriptable Command Line Interface
 - Simplified management of SSL certificates
 - Fully localized browser based Graphical Interface

Language	Platform
Multi-language	Red Hat Enterprise Linux 4
Multi-language	Windows Server 2003, Enterprise Edition
Multi-language	Solaris 9/10, x86
Multi-language	Windows XP Professional
Multi-language	Red Hat Enterprise Linux 3 U4
Multi-language	SUSE Linux Enterprise Server 9 (x86)
Multi-language	HP-UX 11i
Multi-language	Solaris 8/9/10, SPARC
Multi-language	Windows 2000 Advanced Server SP4
Multi-language	Solaris 10 OS, AMD x64

Price: Free **Download**

Did you find what you were looking for today?

4. In the Sun Download Center Login screen, enter your Username and Password, and click **Login**.

Note – If you do not already have an account, click **Register Now** and follow the instructions to create one.

5. In the Sun Download Center screen, make the following selections:

- Click the **Accept License Agreement** radio button.

- Click the **Sun Java System Web Server** link that corresponds to your server platform.

Sun Downloads

Home > Download Center >

Download

Download Center

- > FAQ
- > Purchase & Shipping Policies
- > Update Account
- > Log Out

Sun Java System Web Server 7.0 Update 1
Sun Java System Web Server 7.0 Update 1 is a secure, massively scalable and stable platform for the most demanding web sites. It features out-of-box support for Java technologies, SSL, clusters, an integrated search engine, and much more.

NOTE: This page offers files for different platforms - please be sure to download the proper file(s) for your platform. We highly recommend using [Sun Download Manager \(SDM\)](#), as it lets you pause, resume, and restart your download while ensuring a successful download experience. Just select the files you want to download, then click the "Download Selected with Sun Download Manager" button to automatically install and start SDM. Alternately, click directly on the links in the file list to download through your browser.

For any download problems or questions, please see the [Download Center FAQ](#).
[How long will the download take?](#)

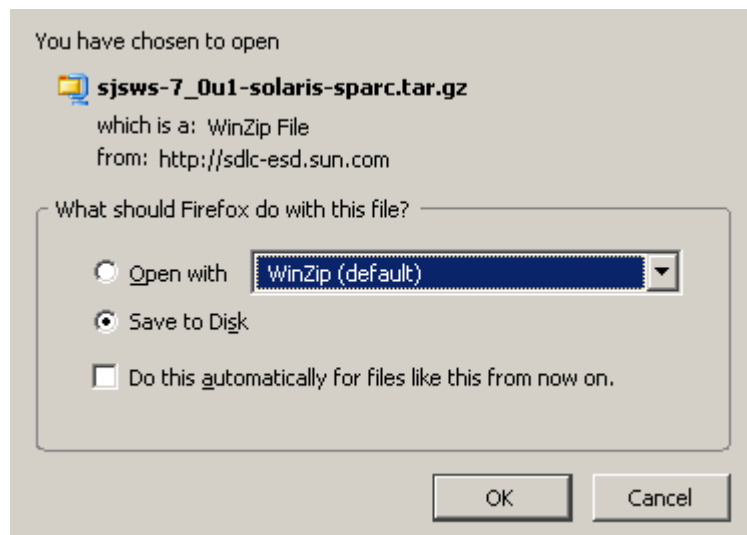
Download selected with Sun Download Manager Easily manage your downloads (pause, resume, restart, verify). » [Learn more](#)

Solaris 10 OS, AMD x64/Solaris 9/9/10, SPARC/Solaris 9/10, x86 Platform - Sun Java System Web Server 7.0 Update 1			
<input checked="" type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	↓ Sun Java Web Server 7.0 Update 1 - Sparc, Multi-language	sjsws-7_0u1-solaris-sparc.tar.gz	144.09 MB
<input type="checkbox"/>	↓ Sun Java Web Server 7.0 Update 1 - AMD x64/x86, Multi-language	sjsws-7_0u1-solaris-amd64.tar.gz	130.84 MB

Red Hat Enterprise Linux 3 U4/Red Hat Enterprise Linux 4/SUSE Linux Enterprise Server 9 (x86) Platform - Sun Java System Web Server 7.0 Update 1			
<input checked="" type="checkbox"/>	<input type="checkbox"/>		
<input type="checkbox"/>	↓ Sun Java System Web Server 7.0 Update 1 - Linux, Multi-language	sjsws-7_0u1-linux-i586.tar.gz	113.50 MB

6. In the popup, click **Save to Disk**, to save the compressed archive file to a directory of your choice, and click **OK**.

Note – This process may take several minutes.



7. Use the appropriate extraction utility (for example, `gunzip`, `pkunzip`) to extract the Sun Java System Web Server files to a directory of your choice.

▼ Install the Sun Java System Web Server

Use this procedure to install the Java System Web Server, if it is not already installed on your server.

1. **In the directory where you have extracted the Sun Java System Web Server files, double-click or execute from a command line the setup file (setup or setup.exe, depending on your platform).**

If you are installing on a Solaris platform, you may need to invoke `root` or `sudo` permissions, depending on the directory you are installing to. If so, use the following steps:

- a. `cd extraction_directory`

where *extraction_directory* is the directory to which you extracted the compressed Java Web Server files.

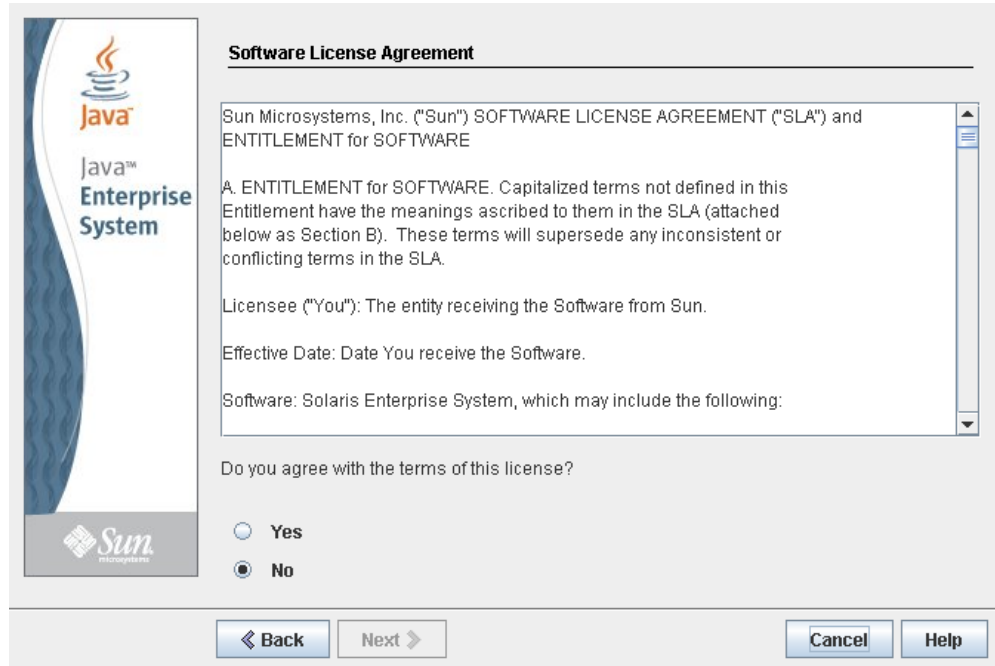
- b. `xhost +`

- c. `sudo ./setup`

2. **On the Welcome screen, click Next.**



3. On the Software License Agreement screen, click the Yes radio button, and click Next.



The screenshot shows the "Software License Agreement" window. On the left is a vertical banner with the Java logo and "Java™ Enterprise System" text, and the Sun Microsystems logo at the bottom. The main area is titled "Software License Agreement" and contains the following text:

Sun Microsystems, Inc. ("Sun") SOFTWARE LICENSE AGREEMENT ("SLA") and ENTITLEMENT for SOFTWARE

A. ENTITLEMENT for SOFTWARE. Capitalized terms not defined in this Entitlement have the meanings ascribed to them in the SLA (attached below as Section B). These terms will supersede any inconsistent or conflicting terms in the SLA.

Licensee ("You"): The entity receiving the Software from Sun.

Effective Date: Date You receive the Software.

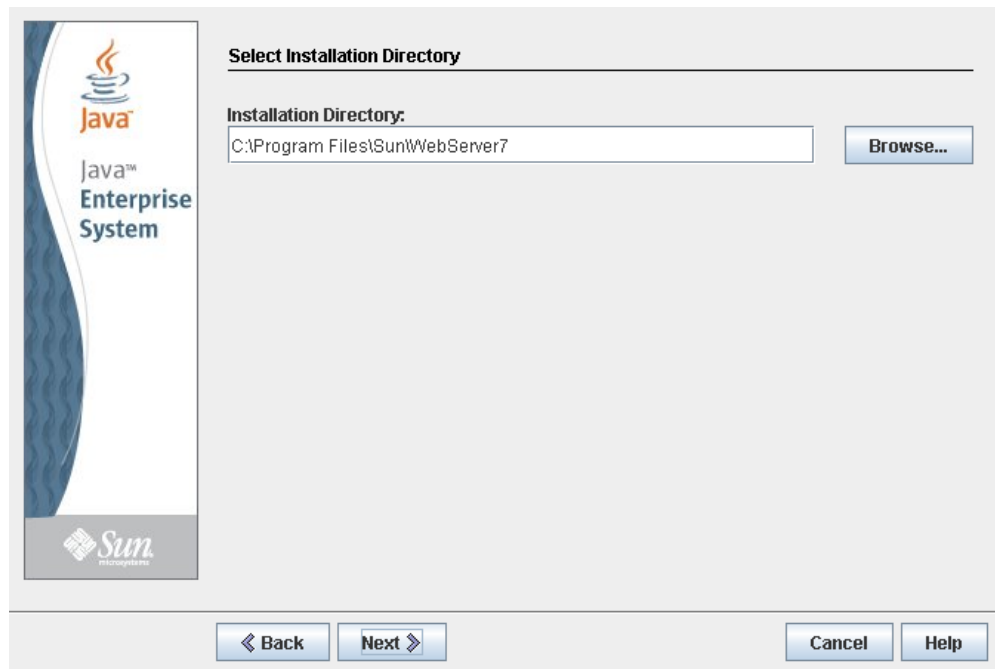
Software: Solaris Enterprise System, which may include the following:

Do you agree with the terms of this license?

There are two radio buttons: "Yes" (unselected) and "No" (selected).

At the bottom are four buttons: "Back", "Next", "Cancel", and "Help".

4. On the Select Installation Directory screen, specify the directory where you want the Web Server installed, and click Next.



The screenshot shows the "Select Installation Directory" window. On the left is a vertical banner with the Java logo and "Java™ Enterprise System" text, and the Sun Microsystems logo at the bottom. The main area is titled "Select Installation Directory" and contains the following text:

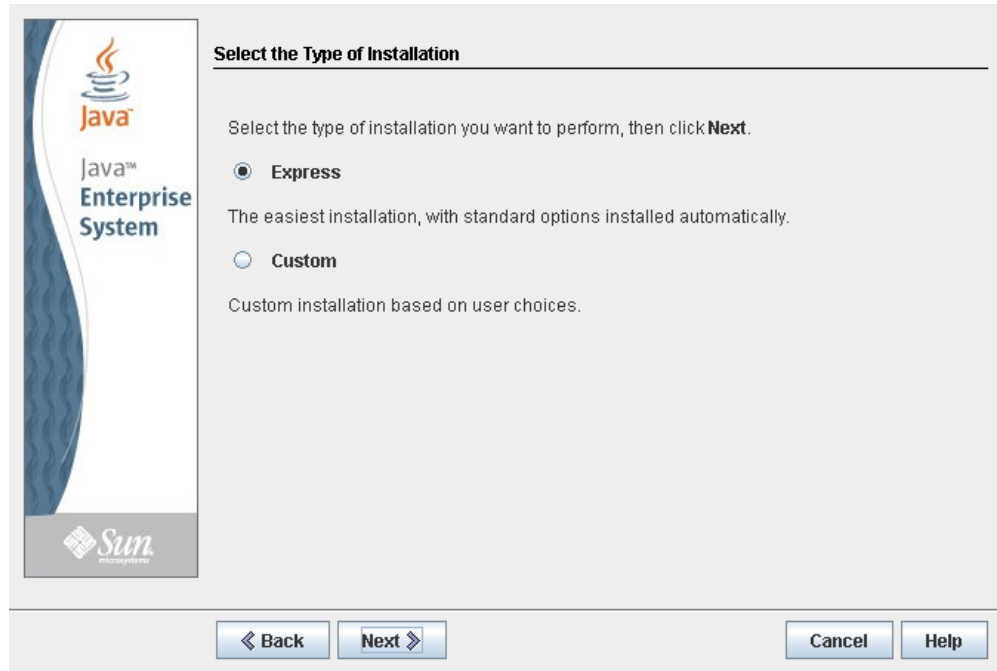
Installation Directory:

C:\Program Files\Sun\WebServer7

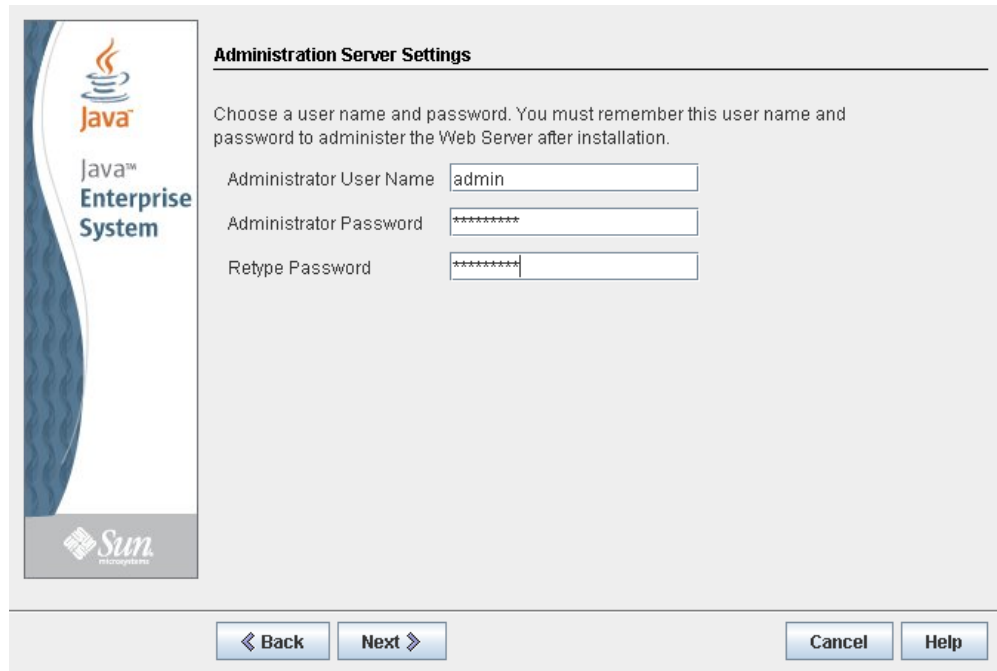
There is a "Browse..." button to the right of the text box.

At the bottom are four buttons: "Back", "Next", "Cancel", and "Help".

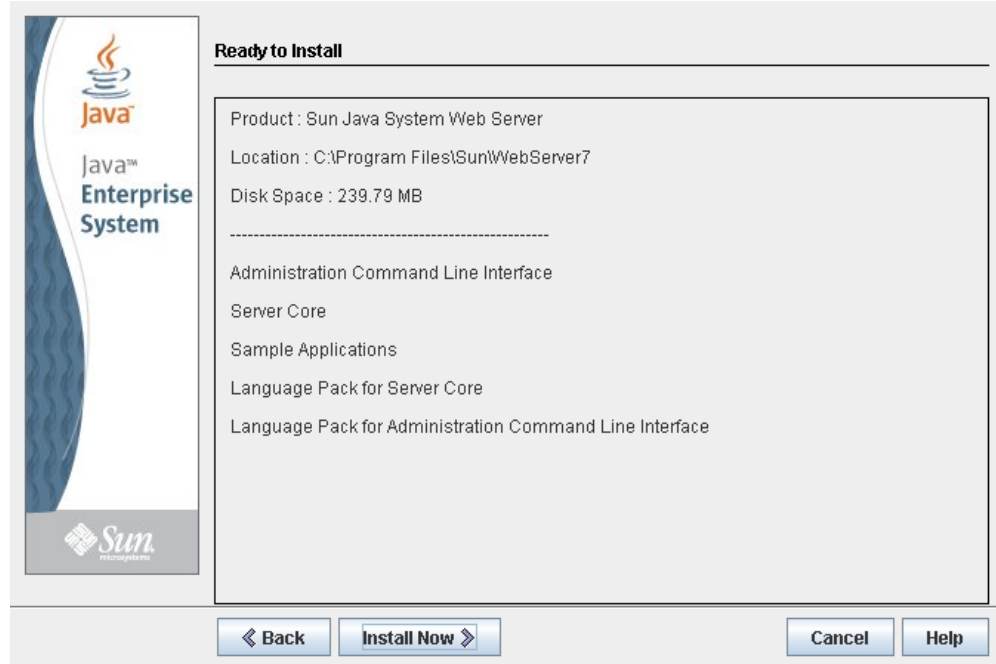
5. On the Type of Installation screen, click Express, and click Next.



6. On the Administration Server Settings screen, specify a secure password for the admin user, and click Next.

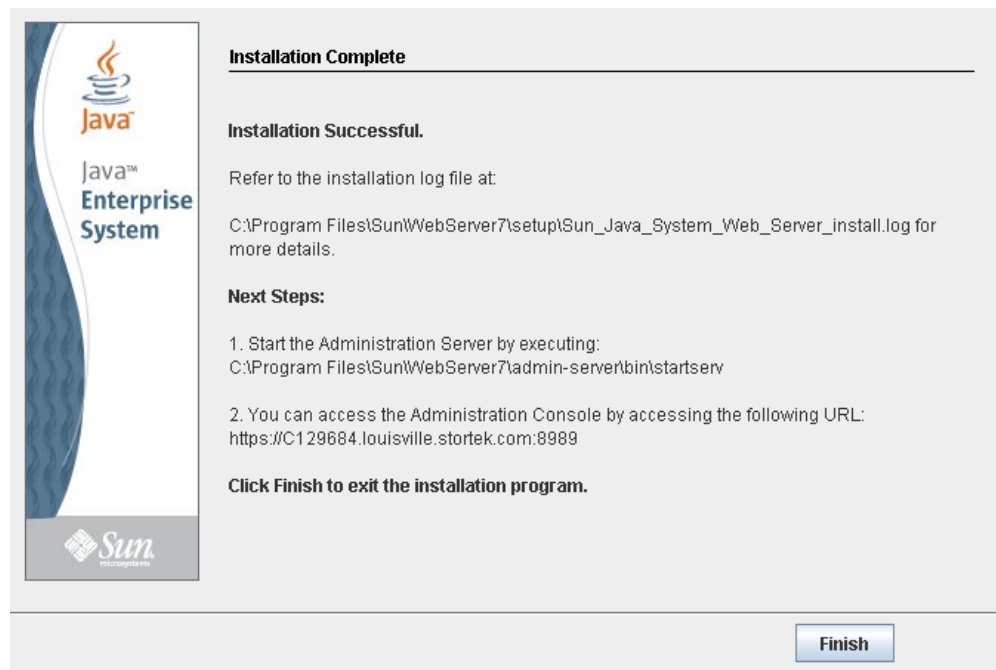


7. On the Ready to Install screen, review the installation information and click Install Now.



The installation begins, and screen with a progress bar is displayed.

8. On the Installation Complete screen, review the information and write down the Administration Console URL specified in #2 under "Next Steps. You will need this in the next procedure.



9. Click Finish to exit the setup program.

▼ Log in to the Java System Web Server Administration Console

1. **Start the Sun Java System Web Server, if it is not already running:**
 - On Windows—Click **Start > All Programs > Sun Microsystems > Web Server 7.0 > Start Administration Server**.
 - On Solaris—Open a terminal window, and type the following:

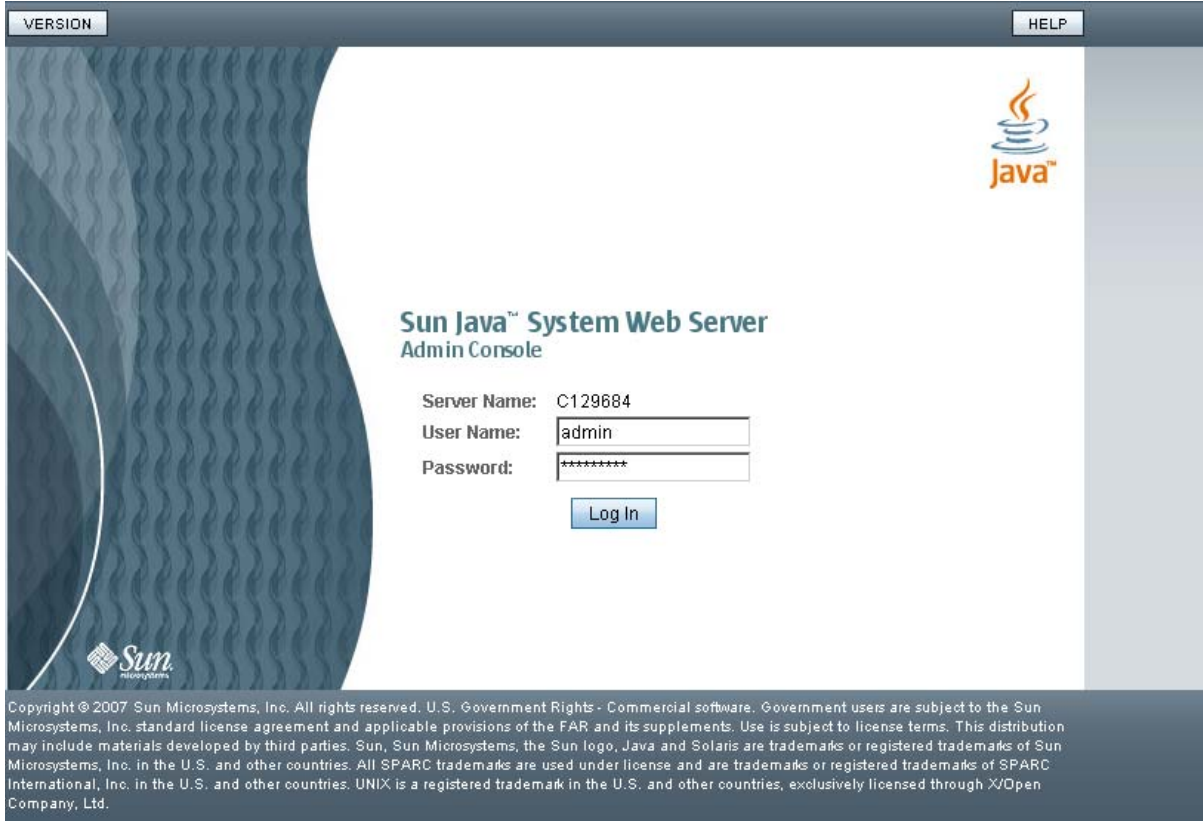
```
sudo /opt/webserver7/admin-server/bin/startserv
```

Note – Wait several minutes for the server to start.

2. **Open a Web browser, and in the Location Bar or Address field enter the URL you wrote down at the end of the previous procedure (“[Install the Sun Java System Web Server](#)”). This will start the Admin Console.**
3. **In the popup, accept the server certificate, and click OK.**

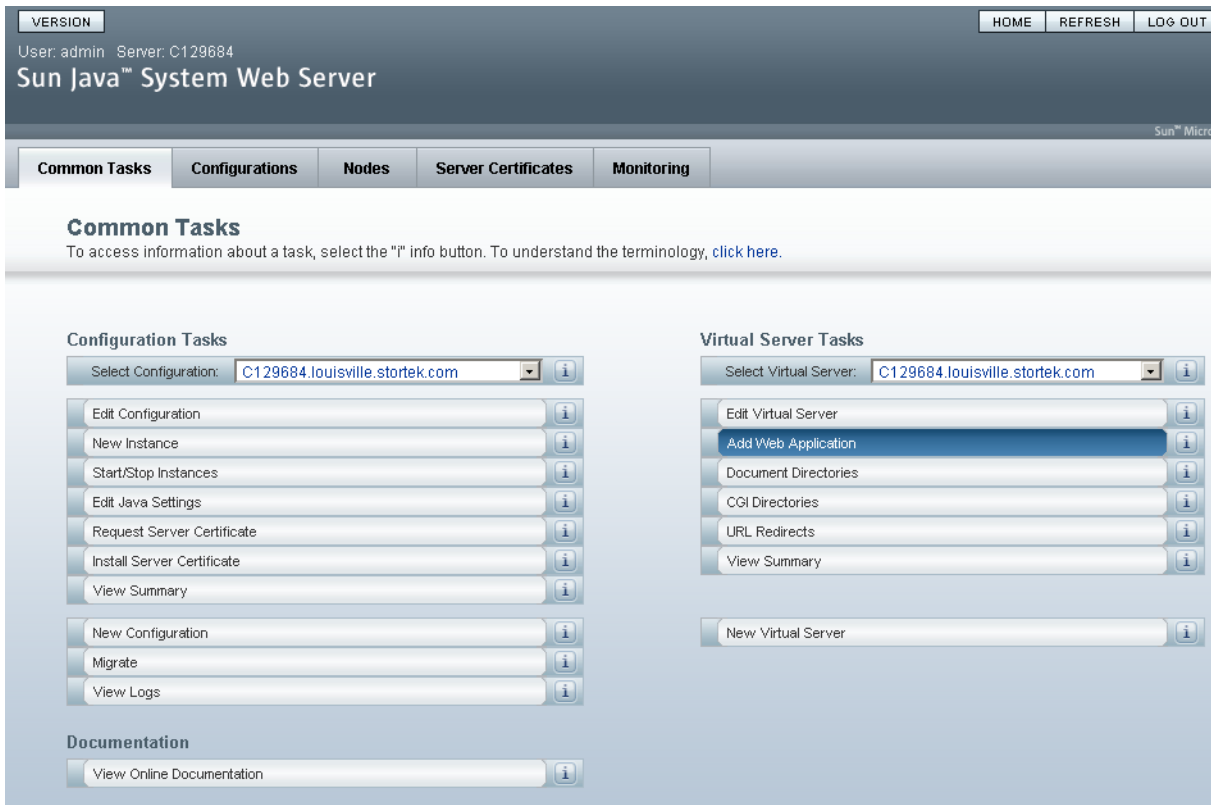


4. In the Web browser where you opened the Admin Console URL, enter the admin User Name and Password, and click Log in.



The screenshot shows the Sun Java System Web Server Admin Console login page. The page has a dark blue header with 'VERSION' on the left and 'HELP' on the right. The main content area is white with a blue wavy pattern on the left side. The Sun logo is in the bottom left corner. The Java logo is in the top right corner. The title is 'Sun Java™ System Web Server Admin Console'. The form fields are: Server Name: C129684, User Name: admin, Password: *****. A 'Log In' button is below the password field. At the bottom, there is a copyright notice: Copyright © 2007 Sun Microsystems, Inc. All rights reserved. U.S. Government Rights - Commercial software. Government users are subject to the Sun Microsystems, Inc. standard license agreement and applicable provisions of the FAR and its supplements. Use is subject to license terms. This distribution may include materials developed by third parties. Sun, Sun Microsystems, the Sun logo, Java and Solaris are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. and other countries. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the U.S. and other countries. UNIX is a registered trademark in the U.S. and other countries, exclusively licensed through X/Open Company, Ltd.

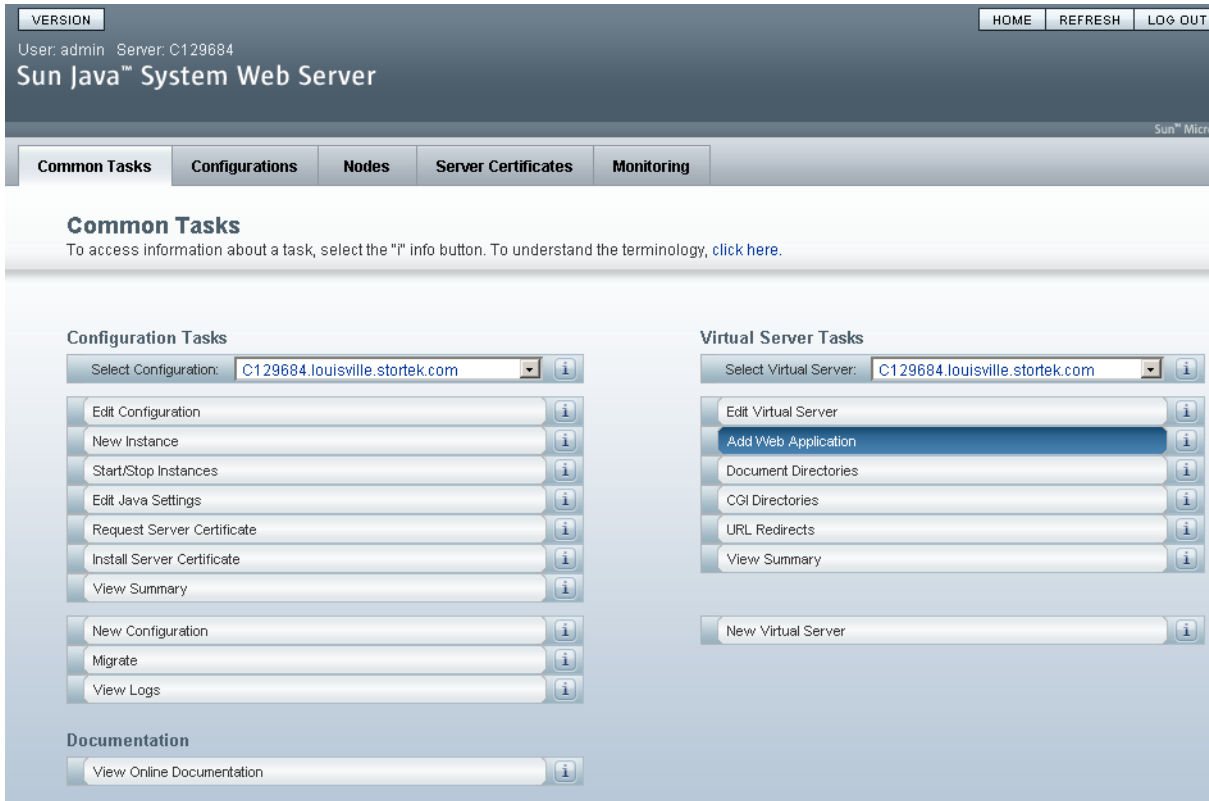
5. The Common Tasks screen appears.



▼ Install and Deploy the Web-launched SL Console

Note – Before you perform this activity, you must obtain the Web-launched SL Console installation CD.

1. On the server, insert the Web-launched SL Console installation CD in the CD drive.
2. Log in to the Sun Java System Web Server administration console. See “Log in to the Java System Web Server Administration Console” on page 370 for details.
3. On the Common Tasks screen, click Add Web Application.



4. On the Add Web Application screen, make the following entries:
 - **Web Application Location:** Click the **Browse** button and browse to the location of the `opel.war` file on the installation CD.
 - **URI:** Type `/opel`
 - Leave all other fields as the defaults.

- Click OK.

Sun Java™ System Web Server

Add Web Application

Add Web Application from this page. You can add a web application archive (.war file) or specify the web application path in the server.

* Indicates required field

Virtual Server:	C129684.louisville.stortek.com
Web Application Location:	<input checked="" type="radio"/> Specify a package file to upload to the Web Server. <input type="text" value="C:\SLC_WebLaunch\opel.war"/> <input type="button" value="Browse..."/>
	<input type="radio"/> Specify a package file or a directory path that must be accessible from the server. <input type="text"/>
* URI:	<input type="text" value="/opel"/> Specify the URI for your web application. This will be the application's context root and is relative to the server host
Target Directory:	<input checked="" type="radio"/> Default <input type="radio"/> This directory <input type="text"/> Directory to deploy the web application
Description:	<input type="text"/> Provide a short description about the application
JSP Pre-compilation:	<input type="checkbox"/> Enabled Enabling this directive will allow all the JSPs present in the web application to be pre-compiled to improve performance

5. On the Web Applications screen, click Save.

Configurations > C129684.louisville.stortek.com > Virtual Servers > C129684.louisville.stortek.com

[Server Settings](#)
[Web Applications](#)
[Content Handling](#)
[WebDAV](#)
[Search](#)
[Access Control](#)
[Summary](#)

C129684.louisville.stortek.com - Virtual Server Web Applications [Save](#)

This page lets you add web applications to the virtual server. Web applications are added as web archive (.war) files. After adding the web application you need to deploy the configuration to propagate the added web applications to the instances. The page also allows you to set single signon properties.

[Single Signon](#)
[Web Applications](#)

Single Signon

Single Signon: Enabled

Session Idle Timeout: seconds (0.001 - 3600)
Timeout after which user's single sign-on records becomes eligible for purging if no activity is seen (Use -1 for no timeout)

[Back to top](#)

Web Applications

Web Applications (1)

[New...](#)
[Enable](#)
[Disable](#)
[Update...](#)
[Delete](#)

<input checked="" type="checkbox"/>	URI	Enabled	Deployed Path	Description
<input type="checkbox"/>	/opel	true	..web-app/C129684.louisville.stortek.com/opel	

[Back to top](#)

[Save](#)

6. On the updated Web Applications screen, click the Deployment Pending link in the upper-right corner.

The screenshot shows the Sun Java System Web Server administration interface. At the top, there is a navigation bar with buttons for HOME, REFRESH, LOG OUT, and HELP. Below this, the user is identified as 'admin' and the server as 'C129684'. The main title is 'Sun Java™ System Web Server'. On the right side, there is a 'Deployment Pending' warning icon and text indicating 'Instance(s) Running 0' and 'Instance(s) Stopped 1'. Below the title, there is a breadcrumb trail: 'Configurations > C129684.louisville.stortek.com > Virtual Servers > C129684.louisville.stortek.com'. A menu bar contains 'Server Settings', 'Web Applications', 'Content Handling', 'WebDAV', 'Search', 'Access Control', and 'Summary'. A yellow notification box in the center reads 'Web Application Properties Saved Successfully'.

C129684.louisville.stortek.com - Virtual Server Web Applications

Save

This page lets you add web applications to the virtual server. Web applications are added as web archive (.war) files. After adding the web application you need to deploy the configuration to propagate the added web applications to the instances. The page also allows you to set single signon properties.

Single Signon Web Applications

Single Signon

Single Signon: Enabled

Session Idle Timeout: seconds (0.001 - 3600)

Timeout after which user's single sign-on records becomes eligible for purging if no activity is seen. (Use -1 for no timeout)

Back to top

Web Applications

Web Applications (1)			
	URI	Enabled	Deployed Path
<input type="checkbox"/>	/opel	true	..web-app/C129684.louisville.stortek.com/opel

7. On the Configuration Deployment screen, click Deploy.



Configuration Deployment

Deploying configuration to all instances.


The screenshot shows a yellow warning box with a warning icon. The text inside reads: 'Deployment Pending. The configuration C129684.louisville.stortek.com has changed locally. Click on "Deploy..." to propagate the changes to all instances'.

Deploy... Cancel

8. On the Results screen, click Close.

Sun Java™ System Web Server

Results

 The configuration has been deployed successfully to all available nodes.

Close

9. The Web Applications screen displays a message that the application has been added successfully.

The screenshot shows the Sun Java System Web Server administration interface. At the top, there is a navigation bar with buttons for HOME, REFRESH, LOG OUT, and HELP. Below this, the user is identified as 'admin' and the server as 'C129684'. The main title is 'Sun Java™ System Web Server'. A breadcrumb trail shows the path: Configurations > C129684.louisville.stortek.com > Virtual Servers > C129684.louisville.stortek.com. A menu bar contains 'Server Settings', 'Web Applications', 'Content Handling', 'WebDAV', 'Search', 'Access Control', and 'Summary'. A yellow notification box in the center reads 'Web Application Added Successfully'. Below this, the page title is 'C129684.louisville.stortek.com - Virtual Server Web Applications' with a 'Save' button. A paragraph explains that web applications are added as .war files and need to be deployed. There are two tabs: 'Single Signon' and 'Web Applications'. The 'Single Signon' section has a 'Single Signon' checkbox (disabled) and a 'Session Idle Timeout' of 300 seconds. The 'Web Applications' section shows a table with one application:

Web Applications (1)			
	URI	Enabled	Deployed Path
<input checked="" type="checkbox"/>	/opel	true	..web-app/C129684.louisville.stortek.com/opel

You can click the **Home** button in the upper-right corner to return to the Common Tasks screen.

▼ Start the Web-launched SL Console

1. Log in to the Sun Java System Web Server administration console. See [“Log in to the Java System Web Server Administration Console”](#) on page 370 for details.
2. On the Common Tasks screen, click Start/Stop Instances.

The screenshot shows the Sun Java System Web Server administration console. At the top, there is a navigation bar with tabs for 'Common Tasks', 'Configurations', 'Nodes', 'Server Certificates', and 'Monitoring'. The 'Common Tasks' tab is selected. Below the navigation bar, the 'Common Tasks' section is displayed. It includes a header with the text 'Common Tasks' and a sub-header 'To access information about a task, select the "i" info button. To understand the terminology, [click here](#).' The main content area is divided into three sections: 'Configuration Tasks', 'Virtual Server Tasks', and 'Documentation'. Each section contains a list of tasks, each with an 'i' info button. The 'Start/Stop Instances' task in the 'Configuration Tasks' section is highlighted in blue. The 'Documentation' section contains a single task 'View Online Documentation'.

VERSION

HOME REFRESH LOG OUT HELP

User: admin Server: C129684

Sun Java™ System Web Server

Sun™ Microsystems, Inc.

Common Tasks Configurations Nodes Server Certificates Monitoring

Common Tasks

To access information about a task, select the "i" info button. To understand the terminology, [click here](#).

Configuration Tasks

Select Configuration: C129684.louisville.stortek.com

- Edit Configuration
- New Instance
- Start/Stop Instances**
- Edit Java Settings
- Request Server Certificate
- Install Server Certificate
- View Summary
- New Configuration
- Migrate
- View Logs

Virtual Server Tasks

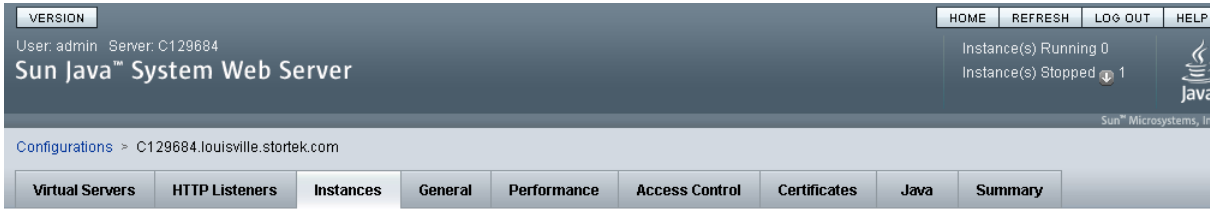
Select Virtual Server: C129684.louisville.stortek.com

- Edit Virtual Server
- Add Web Application
- Document Directories
- CGI Directories
- URL Redirects
- View Summary
- New Virtual Server

Documentation

- View Online Documentation

3. On the Configuration Instances screen, click the checkbox next to the local instance of the Web-launched SL Console server, and click Start.



C129684.louisville.stortek.com - Configuration Instances

[View Logs...](#)

Instance refers to the environment of a web server daemon on a given node, including its configuration, log files and other runtime artifacts such as lock databases, caches and temporary files. An instance can be started, stopped, dynamically re-configured or deleted. You can perform all these actions from this page. The View Server Logs button brings up a popup that displays the logs for the instances on various nodes. If there are no instances, then the button is disabled.

Instances (1)		
Instance	Node	Instance State
<input checked="" type="checkbox"/> https-C129684.louisville.stortek.com	c129684.louisville.stortek.com	● Not Running

The Web-launched SL Console application instances are started, and screen with a progress bar is displayed.

4. On the Results screen, click Close.



i Instance(s) Started Successfully

Close

▼ Update the Web-launched SL Console

You can update the Web-launched SL Console while it is running. Updates are automatically propagated to the clients when they retrieve the Web-launched SL Console application from the server.

Note – Before you perform this activity, you must obtain the Web-launched SL Console update CD.

1. On the server, insert the Web-launched SL Console update CD in the CD drive.
2. Log in to the Sun Java System Web Server administration console. See “[Log in to the Java System Web Server Administration Console](#)” on page 370 for details.
3. On the Common Tasks screen, click **Edit Virtual Server**.

The screenshot shows the Sun Java System Web Server administration console interface. At the top, there is a navigation bar with 'VERSION', 'HOME', 'REFRESH', and 'LOG OUT' buttons. Below this, the user information 'User: admin Server: C129684' and the title 'Sun Java™ System Web Server' are displayed. A main navigation menu includes 'Common Tasks', 'Configurations', 'Nodes', 'Server Certificates', and 'Monitoring'. The 'Common Tasks' section is active, showing a list of tasks under 'Configuration Tasks' and 'Virtual Server Tasks'. In the 'Virtual Server Tasks' section, the 'Edit Virtual Server' option is highlighted with a yellow tooltip that also says 'Edit Virtual Server'. Other tasks listed include 'Add Web Application', 'Document Directories', 'CGI Directories', 'URL Redirects', 'View Summary', and 'New Virtual Server'. A 'Documentation' section at the bottom has a 'View Online Documentation' link.

4. On the General Properties screen, click the Web Applications tab.

The screenshot shows the Sun Java System Web Server Administration Console. At the top, it displays 'User: admin Server: C129684' and 'Sun Java™ System Web Server'. There are navigation buttons: HOME, REFRESH, LOG OUT, HELP. On the right, it shows 'Instance(s) Running 1' and 'Instance(s) Stopped 0'. Below the header is a breadcrumb trail: 'Configurations > C129684.louisville.stortek.com > Virtual Servers > C129684.louisville.stortek.com'. A menu bar contains 'Server Settings', 'Web Applications', 'Content Handling', 'WebDAV', 'Search', 'Access Control', and 'Summary'. Under 'Server Settings', there are sub-tabs: 'General', 'Log Preferences', 'Monitoring Settings', and 'Request Limits'. The main content area is titled 'C129684.louisville.stortek.com - Virtual Server General Properties' with a 'Save' button. A paragraph explains that all virtual servers have one or more HTTP Listeners. Below are expandable sections: 'General', 'Quality of Service', 'P3P Settings', 'HTTP Listeners', 'Localization', and 'Variables'. The 'General' section is expanded, showing:

- Name: C129684.louisville.stortek.com
- Virtual Server: Enabled
- Document Root:
 - Document root for the virtual server (Absolute path or path relative to the server's configuration directory)
- Hosts:
 - You can enter more than one URL host, separated by commas

 At the bottom left, there is a 'Back to top' link.

5. On the Web Applications screen, click the checkbox next to the /opel URI, and click Update.

The screenshot shows the Sun Java System Web Server Administration Console. At the top, it displays 'User: admin Server: C129684' and 'Sun Java™ System Web Server'. There are navigation buttons: HOME, REFRESH, LOG OUT, HELP. On the right, it shows 'Instance(s) Running 1' and 'Instance(s) Stopped 0'. Below the header is a breadcrumb trail: 'Configurations > C129684.louisville.stortek.com > Virtual Servers > C129684.louisville.stortek.com'. A menu bar contains 'Server Settings', 'Web Applications', 'Content Handling', 'WebDAV', 'Search', 'Access Control', and 'Summary'. Under 'Server Settings', there are sub-tabs: 'General', 'Log Preferences', 'Monitoring Settings', and 'Request Limits'. The main content area is titled 'C129684.louisville.stortek.com - Virtual Server Web Applications' with a 'Save' button. A paragraph explains that this page lets you add web applications to the virtual server. Below are expandable sections: 'Single Signon' and 'Web Applications'. The 'Web Applications' section is expanded, showing:

- Single Signon: Enabled
- Session Idle Timeout: seconds (0.001 - 3600)
 - Timeout after which user's single sign-on records becomes eligible for purging if no activity is seen (Use -1 for no timeout)

 At the bottom left, there is a 'Back to top' link.

Web Applications (1)				
	URI	Enabled	Deployed Path	Description
<input checked="" type="checkbox"/>	/opel	true	./web-app/C129684.louisville.stortek.com/opel	

6. On the Update Web Application screen, make the following entries:

- **Web Application Location:** Click the **Browse** button and browse to the location of the `opel.war` file on the update CD.
- Leave all other fields as the defaults.
- Click **OK**.

Sun Java™ System Web Server

Update Web Application

Update Web Application from this page. You can specify a new web application archive(.war file).

Virtual Server:	C129684.louisville.stortek.com
URI:	/opel
Target Directory:	..web-app/C129684.louisville.stortek.com/opel
Web Application Location:	<input checked="" type="radio"/> Specify a package file to upload to the Web Server. <input type="text" value="C:\SLC_WebLaunch\opel.war"/> <input type="button" value="Browse..."/> <input type="radio"/> Specify a package file that must be accessible from the server. <input type="text"/>
JSP Pre-compilation:	<input type="checkbox"/> Enabled <small>Enabling this directive will allow all the JSPs present in the web application to be pre-compiled to improve performance</small>

The server update begins, and screen with a progress bar is displayed.

7. On the Web Applications screen, click the Deployment Pending link in the upper right corner.

The screenshot shows the Sun Java System Web Server administration interface. At the top, there is a navigation bar with 'HOME', 'REFRESH', 'LOG OUT', and 'HELP' buttons. Below this, the user is identified as 'admin' on server 'C129684'. The main title is 'Sun Java™ System Web Server'. A status bar indicates 'Deployment Pending', 'Instance(s) Running 1', and 'Instance(s) Stopped 0'. The breadcrumb trail is 'Configurations > C129684.louisville.stortek.com > Virtual Servers > C129684.louisville.stortek.com'. The 'Web Applications' tab is selected in the navigation menu. A yellow message box states 'Web Application Updated Successfully'. Below this, the page title is 'C129684.louisville.stortek.com - Virtual Server Web Applications' with a 'Save' button. The main content area has a 'Single Signon' section with a 'Single Signon' checkbox (unchecked) and a 'Session Idle Timeout' of 300 seconds. A 'Web Applications' section contains a table with one entry, 'Web Applications (1)', and buttons for 'New', 'Enable', 'Disable', 'Update', and 'Delete'.

8. On the Configuration Deployment screen, click Deploy.


The screenshot shows the 'Configuration Deployment' screen. The title is 'Sun Java™ System Web Server'. Below the title, it says 'Configuration Deployment' and 'Deploying configuration to all instances.' A yellow message box with a warning icon states 'Deployment Pending' and 'The configuration C129684.louisville.stortek.com has changed locally. Click on "Deploy..." to propagate the changes to all instances'. At the bottom right, there are 'Deploy...' and 'Cancel' buttons.

The deployment begins, and screen with a progress bar is displayed.

9. In the Results screen, click **Close** to return to the Web Applications screen.

Sun Java™ System Web Server

Results

 The configuration has been deployed successfully to all available nodes.

Close

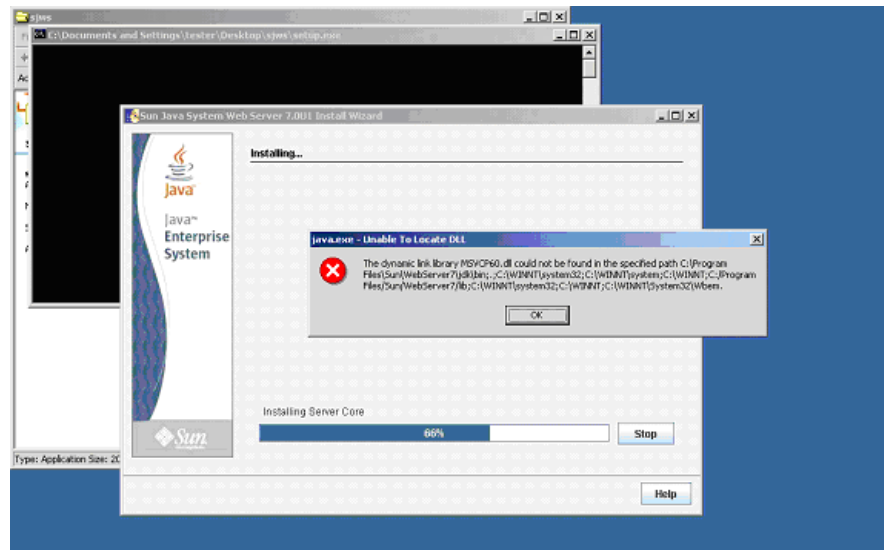
Common Problems and Solutions

This section describes solutions to some common problems with the installation and maintenance of the Java System Web Server.

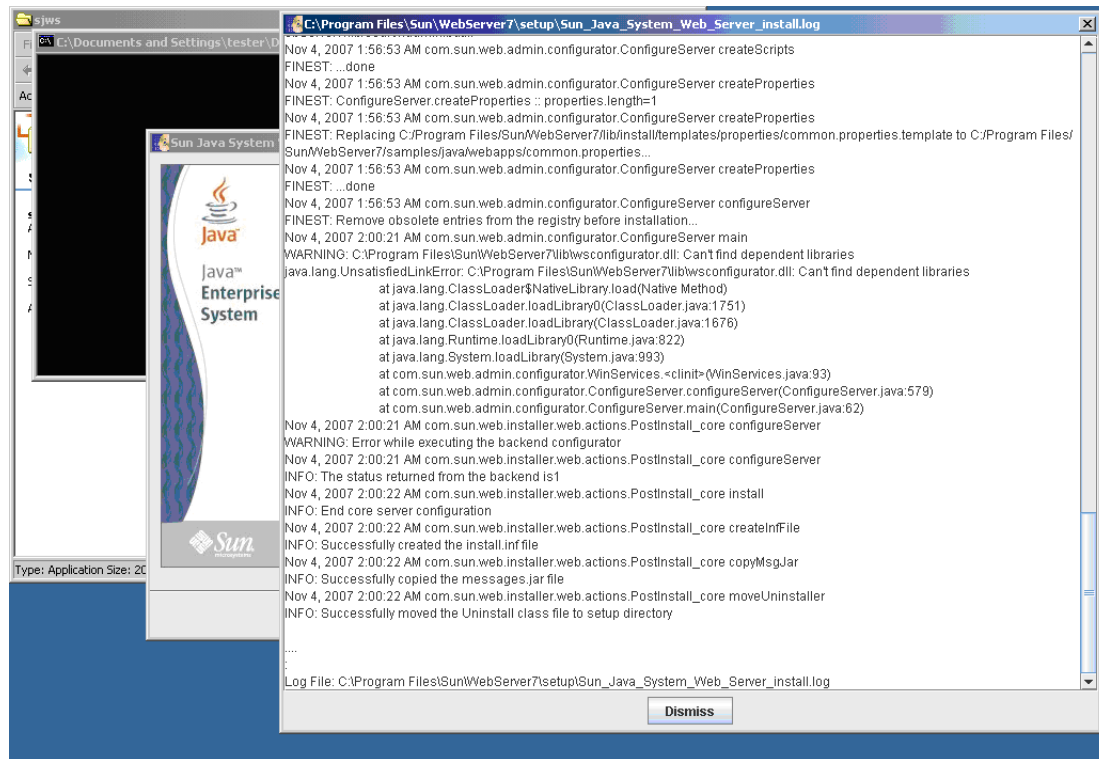
Windows 2000 Sun Java System Web Server Installation Errors

Windows MSVCP60.dll Error

If you are installing on a Windows 2000 platform that does not include the Microsoft Visual C v6 runtime DLL, MSVCP60 . dll, during installation you will see errors similar to the following:



The Web server installation log will include errors similar to the following:



▼ Remedy for Windows MSVCP60.dll Error

Use this procedure to solve the Windows MSVCP60.dll error.

1. Perform a Web search for the following string:
msvcp60.dll download
2. Download the DLL file to the `/winnt/system32` directory.
3. Delete the directory where you partially installed the Java System Web Server on the failed installation.
4. Repeat the Java System Web Server installation from the beginning.

The installation should complete successfully with no recurrence of the error.

▼ Solaris 9 & 10 Sun Java System Web Server Installation Errors

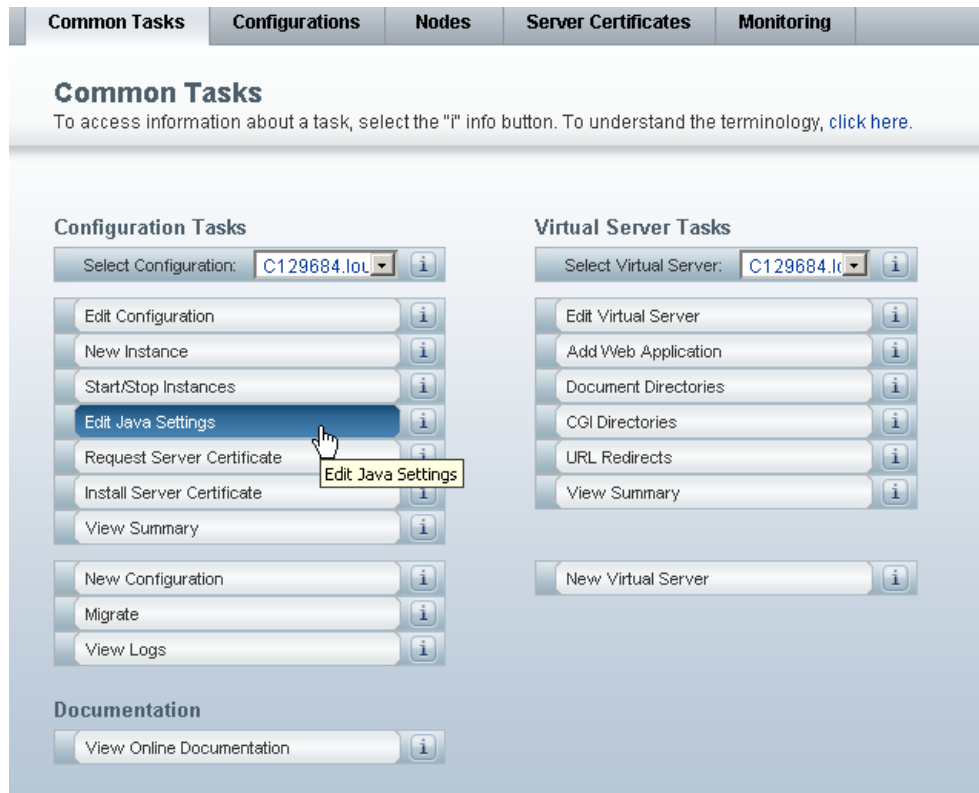
Java Home Error

If you cannot start the server instance and you see errors claiming your HotSpot start failed and your JVM could not be found, you need to change the Java Home configuration of your Sun Java System Web Server.

▼ Remedy for Solaris Java Home Error

Use this procedure to solve the Java Home error.

1. Log in to the Sun Java System Web Server administration console. See [“Log in to the Java System Web Server Administration Console”](#) on page 370 for details.
2. Select Home > Common Tasks.
3. Under Configuration Tasks, click Edit Java Settings.



4. In Java Home, enter the directory where your JDK/JRE is installed. For example:

`/usr/java`

C129684.louisville.stortek.com - JVM General Settings

Save

Enable Java for the selected configuration and view the server class path settings from this page.

[General](#)
[Path Settings](#)

* Indicates required field

General

Enable Java: Enabled

* Java Home:

Location of the JDK

Sticky Attach: Enabled

Whether the server attaches each HTTP request processing thread to the JVM only once

Note – You may also need to change permissions on the top-level directory where you installed the Sun Java System Web Server. In order for a non-root user to start a server instance, the user must be able to write to the server directory. For example, if you installed the server to the top-level directory `/opt/webserver7`, the user starting the server instance must be able to write to this directory and the `https-server_name` directory beneath it. For additional information see the Sun Java System Web Server site.

Glossary

A

- access door** A door on the front of a library through which service personnel or operators can access the interior of the library. *Synonymous with* front door.
- adaptor card** *See* MPW/RLW card or MPU2 card.
- array** (1) A section of vertical or horizontal tape cartridge receptacles inside a library.
(2) A molded unit that holds multiple cartridges.

B

- backplane** The main circuit board inside electronic equipment that contains the central processing unit, the bus, memory sockets, expansion slots, and other components.
- bar-code scanner** A component of the robot that is used for cartridge identification and position calibration.
- Base Module** The module in an SL500 library that contains the robotics unit and the base unit.
- base unit** The assembly that houses the library backplane (RLM card), RLC card, interconnect cards, and one or two power supplies and tape drives.
- blind mate connector** A connector that allows hot plugging instead of manually placing a cable between two fixed connectors.

C

- CAP** *See* cartridge access port.
- card** *Synonymous with* printed wire assembly.
- cartridge access port**
(CAP) A device in the library that allows an operator to insert or remove cartridges during library operations.
- cartridge array** *See* array.
- Cartridge Expansion Module** An optional module that adds cartridge storage cells to an SL500 library.
- cell database** The cartridge and storage cell records collected by the SL500 audit.

cleaning cartridge A tape cartridge that contains special material to clean the tape path in a transport or tape drive.

LTO cleaning cartridges labels have “CLN” prefixes.

CLI Command line interface.

CompactPCI (cPCI®) Industry standard bus used for card-to-card bus expansion.

containment box A box in the SL500 robotics unit that holds the Z flex cable. The cable retracts into the box as the X table is raised.

D

data cartridge A term used to distinguish a cartridge onto which a tape drive may write data from a cartridge used for cleaning or diagnostic purposes.

diagnostic cartridge A data cartridge with a “DG” label that is used for diagnostic routines.

dWWN *See* dynamic World Wide Name.

dynamic World Wide

Name (dWWN) A feature that applies dynamic names, rather than fixed names, to network devices. When a dWWN-named device is replaced, the new device is assigned the same WWN as the one it replaced, alleviating the need for re-configuration of the network.

E

environmental monitors A collective term for the sensors that track temperatures, fan speeds, and the status of various other mechanisms within a library.

Ethernet A local-area, packet-switched network technology. Originally designed for coaxial cable, it is now found running over shielded, twisted-pair cable. Ethernet is a 10- or 100-megabytes-per-second LAN.

export The action in which the library places a cartridge into the cartridge access port so that the operator can remove the cartridge from the library. *Synonymous with* eject.

F

Fibre Channel A bidirectional, full-duplex, point-to-point, serial data channel structured for high performance capacity. The Fibre Channel is an interconnection of multiple communication ports, called N_Ports. These N_Ports are interconnected by a switching network, called a fabric, to a point-to-point link, or an arbitrated loop. Fibre Channel is a generalized transport mechanism with no protocol of its own. A Fibre Channel does not have a native input/output command set, but can transport existing Upper Level Protocols (ULP) such as SCSI and IPI. Fibre Channel operates at speeds of 200 MB per second. Fibre Channel operates over distances of up to 100 m over copper media or up to 10 km over optical links.

flash memory Firmware memory for the current and previous version of library firmware.

G

get An activity in which a robot obtains a cartridge from a cell or tape drive.

gripper The portion of the hand assembly that grasps and holds a cartridge.

H

hand assembly A part of the library robot whose function is to grasp cartridges and move them between storage cells and tape drives. A bar-code scanner on the hand assembly reads cartridge volume labels.

host audit The process of updating the cartridge VOLIDs and locations (collected by a security audit) in a host CDS. This audit is initiated by a host command.

hot-swappable The capability that allows a component to be replaced while power to the component is maintained. This feature allows hardware maintenance actions and hardware upgrades to proceed without disrupting subsystem availability.

I

import The process of placing a cartridge into the cartridge access port so that the robot can insert it into a storage cell.

Synonymous with enter.

interface card See MPW/RLW card or MPU2 card.

interlock switch A switch that disconnects power to library mechanisms, excluding tape drives, when the front door is opened.

initialization The initialization procedure that activates a machine reset, initiates wake-up diagnostics (from EPROMs) and loads functional code.

L

logical library A virtual representation of a physical library.

M

magazine A removable array that holds cartridges and is placed into the cartridge access port (CAP).

manual crank A mechanism used to raise the X table assembly up to its home position when the library has lost power.

MPU2 card A Fibre Channel interface for the SL500 library.

MPW/RLW card A SCSI interface for the SL500 library.

O

opened Status indicating that software has made a CAP available for operator use. An LED is on when a CAP is unlocked.

P

PCI Peripheral component interconnect. *See also cPCI®.*

put An activity in which a robot places a cartridge into a storage cell or tape drive.

PWA Printed wiring assembly.

R

rack unit (u) A standard unit of measurement of vertical space inside a rack-mount cabinet. One u equals 44.5 mm (1.75 in.).

retraction handle A handle used to manually retract the Z flex cable into its containment box.

RLC card The library controller card.

RLM card The backplane for the Base Module.

RLW/MPW card A SCSI interface for the SL500 library.

remote operator console *See* StorageTek Library Console.

robot A mechanism that transports tape cartridges to and from locations in the library.

robotics unit The unit that includes the robotics components and that controls the movement of the robot between storage cells, tape drives, and CAPs.

S

security software layer

(SSL) The communication path between the RLC card and the StorageTek Library Console.

SL500 *See* StorageTek™ SL500 Modular Library System.

SL500 audit The process of reading and storing in memory the VOLIDs and locations of all cartridges in the library. *See also* Host audit.

slot *See* storage cell.

storage cell The location in the library in which a tape cartridge is stored. *Synonymous with* slot.

StorageTek Library

Console™ The operator panel software application used for the SL500.

StorageTek SL500 Modular

Library System An automated tape library composed of:

Base module

Drive expansion module (optional)

Cartridge expansion module (optional)

Super DLT The next generation of DLT (Digital Linear Tape) products, which remains a standard for mid-range operating systems.

suspension cable One of four cables used to raise and lower the X table.

T

- tape cartridge** A container holding magnetic tape that can be processed without separating the tape from the container.
- The library uses data, diagnostic, and cleaning cartridges. These cartridges are not interchangeable.
- tape drive** An electromechanical device that moves magnetic tape and includes mechanisms for writing and reading data to and from the tape.
- tape drive tray assembly** The mechanical structure that houses a tape drive, fan assembly, power and logic cards, cables, and connectors for data and logic cables. *Synonymous with tape drive tray assembly.*
- tape transport interface**
(TTI) An interface to control/monitor tape drive operation.
- TTI See tape transport interface.

V

- vacancy plate** A plate that covers an unused bay, such as a tape drive bay or power supply bay.

W

- wrist** A component of the hand assembly that rotates the hand horizontally.
- World Wide Name**
(WWN) A 64-bit integer that identifies a Fibre Channel port. *See also* dynamic World Wide Name (dWWN).
- WWN *See* World Wide Name.

X

- X carriage assembly** A component of the robotics unit that moves the robotic hand assembly to and from storage cells and tape drives.
- X flex cable** A signal cable that extends and retracts as the hand assembly moves forward and backward on the X table.
- X table assembly** A component of the robotics unit that carries the hand assembly vertically among the library modules.

Z

- Z drive assembly** A component of the robotics unit that moves the X table assembly vertically among the library modules.
- Z drive pulley** A component of the Z drive assembly used to move the X table assembly vertically along the Z pole to storage cells and tape drives.
- Z flex cable** The cable that carries control and power signals to the X table assembly. This cable automatically adjusts to the position of the X table assembly in library.
- Z pole** The device that guides the vertical movement of the X table assembly.
- Z reduction gear** The component of the Z drive assembly that controls the Z drive pulley.

Z suspension cables Four cables used to lift and lower the X table assembly between the library modules.

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