



Sun StorEdge™ Enterprise Storage Manager 1.0 Topology Reporter Administration and Operations Guide

Sun Microsystems, Inc.
4150 Network Circle
Santa Clara, CA 95054 U.S.A.
650-960-1300

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Preface

This document describes the administration and operation of the Sun StorEdge™ Enterprise Storage Manager 1.0 Topology Reporter. The intended audience for this document includes Sun support engineers, storage area network (SAN) administrators, and direct-attached storage (DAS) administrators.

How This Book Is Organized

Chapter 1 describes the software and its features.

Chapter 2 describes the Web-browser user interface and how to perform related tasks through this interface.

Chapter 3 describes the command line interface and how to perform related tasks through this interface.

Chapter 4 describes the `sstr_ctl` command and database backup and restore procedures.

Using UNIX Commands

This document might not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- *Solaris Handbook for Sun Peripherals*
- AnswerBook2™ online documentation for the Solaris™ operating environment
- Other software documentation that you received with your system

Typographic Conventions

Typeface	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% su Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be superuser to do this. To delete a file, type <code>rm filename</code> .
[]	In syntax, brackets indicate that an argument is optional.	<code>scmadm [-d sec] [-r n[:n],[n]...] [-z]</code>
{ arg arg }	In syntax, braces and pipes indicate that one of the arguments must be specified.	<code>sndradm -R b {p s}</code>
\	At the end of a command line, the backslash (\) indicates that the command continues on the next line.	<code>atm90 /dev/md/rdisk/d5 \ /dev/md/rdisk/d1 atm89 \ /dev/md/rdisk/d5 /bitmaps/map2 \ ip sync</code>

Shell Prompts

Shell	Prompt
C shell	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

Related Documentation

Application	Title	Part Number
Man pages	sstr sstr_ctl	N/A
Release	<i>Sun StorEdge Enterprise Storage Manager 1.0 Topology Reporter Release Notes</i>	816-4292
	<i>Sun StorEdge Enterprise Storage Manager 1.0 Configuration Service Release Notes</i>	816-4296
Installation	<i>Sun StorEdge Enterprise Storage Manager 1.0 Topology Reporter Installation Guide</i>	816-4291
	<i>Sun StorEdge Enterprise Storage Manager 1.0 Configuration Service Installation Guide</i>	816-4294
	<i>Sun StorEdge Network FC Switch-8 and Switch-16 Installation and Configuration Guide, Sun StorEdge SAN 3.0 Release</i>	816-0830
	<i>Sun StorEdge SAN 4.0 Release Installation Guide</i>	816-4469
System administration	<i>Sun StorEdge Enterprise Storage Manager 1.0 Configuration Service Administrator's Guide</i>	816-4295
	<i>Service Location Protocol Administration Guide</i>	806-1412
Diagnostic	<i>Storage Automatic Diagnostic Environment User Guide</i>	816-3142

Application	Title	Part Number
User manual	<i>SANbox 8/16 Segmented Loop Switch Management User's Manual</i>	875-3060
	<i>SANbox 8/16 Segmented Loop Fibre Channel Switch Installer's/ User's Manual</i>	875-1881
	<i>SANbox-16 Segmented Loop Fibre Channel Switch Installer's/ User's Manual</i>	875-3059

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Please include the part number (816-4293-10) of your document in the subject line of your email.

Introduction to the Topology Reporter

This chapter describes the following topics:

- [“What is the Topology Reporter?” on page 2](#)
- [“Management and Agent Station Host Machines” on page 5](#)
- [“Log Files” on page 6](#)
- [“Getting Started” on page 7](#)
- [“Starting and Stopping the Software” on page 8](#)
- [“Hard and Nameserver Zones” on page 9](#)

The Sun StorEdge™ Enterprise Storage Manager 1.0 Topology Reporter enables you to view and manage your storage area network (SAN) or direct-attached storage (DAS) environment. Using a Web-browser user interface (UI) or the command-line interface (CLI), you can:

- View hardware assets such as hosts, host bus adapters, switches, and storage devices, including a graphical view of your environment
- Manage users, alarms, and assets
- Configure user email notification and network host notification
- Manage asset reporting (also known as [discovery](#))
- Launch other management software applications related to devices in your environment

What is the Topology Reporter?

The topology reporter includes agent, management, and database software installed on host machines in your environment. The agent software continuously collects information from devices in your environment and stores the information in a database. This database contains the information needed to build a data model of your environment. The agent software updates the data model depending on discovered changes in device status.

You can view and manage this information at any time by using a Web browser or CLI. For example, you can view a graphic representing your environment and click parts of the graphic to see details about that host machine or device.

For information on the roles of host machines, see [“Management and Agent Station Host Machines” on page 5](#).

[Chapter 2](#) and [Chapter 3](#) describe how to use the Web browser and CLI.

Discovery

Note – See also [“Setting the Discovery Polling Interval” on page 23](#).

Discovery is the process where software agents on agent stations retrieve information about devices in your environment. The agents report it to the management station and the information is stored in the software’s database. You can then view this information by using the UI or CLI at a management station.

The first discovery process occurs at system startup time after you install the software. After shutting down and restarting your machine, the initial discovery process begins.

When you can first view device status depends on the size of your environment. In a small SAN or DAS environment, you might see information immediately. In larger environments, the initial discovery might take a few minutes. Also, discovery depends on the agents being started on agent station machines.

Automatic discovery always occurs at a set interval. The software also enables you to:

- Set an interval for the software to start discovery automatically
- Manually start discovery in addition to automatic discovery

Each page in the UI includes a Discover button. Next to the button is the date and time of the most recent discovery. The CLI includes commands to report the most recent discovery date and time and start discovery.



Caution – Do not click the Discover button or use the CLI to start discovery until the initial or any previous discovery process is finished.

See the following topics for more information about discovery.

- [“Discover Button” on page 17](#)
- [“Setting the Discovery Polling Interval” on page 23](#)
- [“Viewing Asset Status and Topology” on page 95](#)
- [“Managing Discovery” on page 111](#)

Notification Services

The software uses the Simple Mail Transfer Protocol (SMTP) to send email to users each time an alarm occurs. You can decide which alarm severity level gets reported to the user and how often it is reported.

The software also enables you to send information to applications that are able to receive Simple Network Management Protocol (SNMP) traps.

See [“Administering Email Servers and Network Host Notification” on page 40](#) and [“Administering SNMP Trap Notification” on page 90](#).

Launching Related Applications

The software enables you to launch applications related to the devices in your SAN. These applications include:

- Storage Automated Diagnostic Environment software
- Sun StorEdge Configuration Service software for the Sun StorEdge T3 and T3+ storage arrays
- Sun StorEdge 9900 Series HiCommand software for the Sun StorEdge T3 and T3+ storage arrays
- SANsurfer Switch Manager (SUNWsmgr) software for Sun switches
- Web servers that reside on devices such as switches, such as Brocade Communications Systems' WebTools

Note – You must install these launchable applications on all relevant platforms in your environment.

Management and Agent Station Host Machines

Each machine is considered a station in your environment and can have a different role:

- Management station
- Agent station

You can also install the software on one machine that acts as a management station and an agent station.

Management Station

Note – Only one machine per Service Locator Protocol (SLP) scope can be a management station. Do not install the software on more than one machine designated as a management station per scope. The management station and agent stations are considered to be in the same SLP scope when each machine has the same scope setting. The *Sun StorEdge Enterprise Storage Manager 1.0 Topology Reporter Installation Guide* describes configuring the SLP scope.

The management station is the machine where you can view information about and administer your devices using the UI or CLI. You can also install the agent software on this machine and use it as a management *and* agent station.

The management station runs Web server software that enables you to access the UI through a Web browser. You can use the Web browser on the management station or from any machine that has access to the management station.

Agent Station

The agent station can be one or more machines in your environment where the software collects information about your devices, such as hosts, host bus adapters, switches, and storage devices. You then use the UI or CLI on the management station to view this information. This information collection process is known as *discovery*.

You must install the agent station portion of the software on each host connected to a SAN or switch fabric (that is, switch and storage devices and their attributes). If you install the software on some hosts but not all, you will only partially discover information.

Log Files

Over time, the `/var/opt/SUNWnsm/cre/cre_log` and `/opt/SUNWnsm/util/tomcat/logs/catalina.out` files can become large. Make sure that you check these files occasionally so that they do not consume more disk space than desired.

The software logs information to the following log files:

- `/var/sadm/install/logs/SUNWnsm.log`
This log contains error or informational messages.
- `/var/adm/messages`
This log contains general system error or informational messages.
- `/var/opt/SUNWnsm/pgsql/nsmdb.log`
This log contains warnings and error messages from the database.
- `/var/opt/SUNWnsm/cre/cre_log`
This log contains messages from the Container Runtime Environment.
- `/var/opt/SUNWnsm/tomcat/eventtranslator.log`
This log contains messages from software about events that have occurred.
- `/opt/SUNWnsm/util/tomcat/logs/catalina.out`
This log contains messages from the software about any Java servlets used in the application and any errors associated with the event translator SLP registration.

Getting Started

After you start the software and log in through a Web browser, you can perform the following tasks to get started. (See [Chapter 3](#) for command-line interface equivalents for these tasks.)

TABLE 1-1 Getting Started Tasks List

Task	Web Browser	Command-line Interface
1. Start the software	“Starting and Stopping the Software” on page 8	“Starting and Stopping the Software” on page 8
2. Log in through a Web browser.	“Logging into the Web Browser” on page 14	Not applicable
3. Set the device polling interval for the software.	“Coordinating the Discovery Polling Interval and Alarm Expiration Threshold” on page 23	“Setting the Discovery Interval” on page 117
4. Configure email and SNMP notification.	“Administering Email Servers and Network Host Notification” on page 40	“Specifying the SMTP Mail Server” on page 117 “Administering SNMP Trap Notification” on page 90
5. Set the alarm expiration interval and alarm logging threshold.	“To Set the Alarm Expiration Time and Threshold” on page 50	“Setting the Alarm Expiration Interval” on page 115 “Setting the Alarm Logging Threshold Level” on page 116
6. Add the device management applications you can launch from a Web browser.	“Managing Applications” on page 45	“Managing Applications” on page 93
7. Add users who can use the software.	“Administering Users” on page 32	“Administering Users” on page 83
8. Set the system administrator contact email address. The default setting for this address is blank.	“To Add a Contact Email Address for the admin User” on page 39	“Setting the Administrator Email Contact Address” on page 116

Starting and Stopping the Software

Ensure that you start the software on the management station and each agent station after you install and configure the software, as described in the *Sun StorEdge Enterprise Storage Manager 1.0 Topology Reporter Installation Guide*.

- **To start the software, open a terminal window and type:**

```
# /etc/init.d/sstrd start
```

The software displays messages showing each software process starting.

- **To stop the software, open a terminal window and type:**

```
# /etc/init.d/sstrd stop
```

The software displays messages showing each software process stopping.

Hard and Nameserver Zones

The topology reporter software can display information for hard zones and name server zones. Some switches enable you to configure devices within your fabric or hard zone to be part of a name server zone (also known as a soft zone).

This section describes two zone naming situations to avoid:

- [“A Hard and Nameserver Zone Sharing the Same Name” on page 10](#)
- [“Nameserver Zones Sharing the Same Name” on page 11](#)

Note – When creating zones, use a unique name for each zone. Switches from Brocade Communications Systems force you to use unique names. Switches such as the Sun StorEdge Network FC Switch-8 and Switch-16 switch and Qlogic Corp. switches allow you to configure nonunique nameserver zone names.

A Hard and Nameserver Zone Sharing the Same Name

When you create zones using a switch management tool such as the SANsurfer Switch Manager software, you might create hard and nameserver zones with the same name. In this case, a hard zone might include an identically-named nameserver zone.

For example, [FIGURE 1-1](#) shows:

- One hard zone named ZONE1
- One hard zone named ZONE2
- One nameserver zone consisting of hard ZONE2 member devices, also named ZONE2

When you view these identically-named zones in the topology reporter UI, the hard zone names include the phrase (*hard*) as part of the name. For example, ZONE2(*hard*).

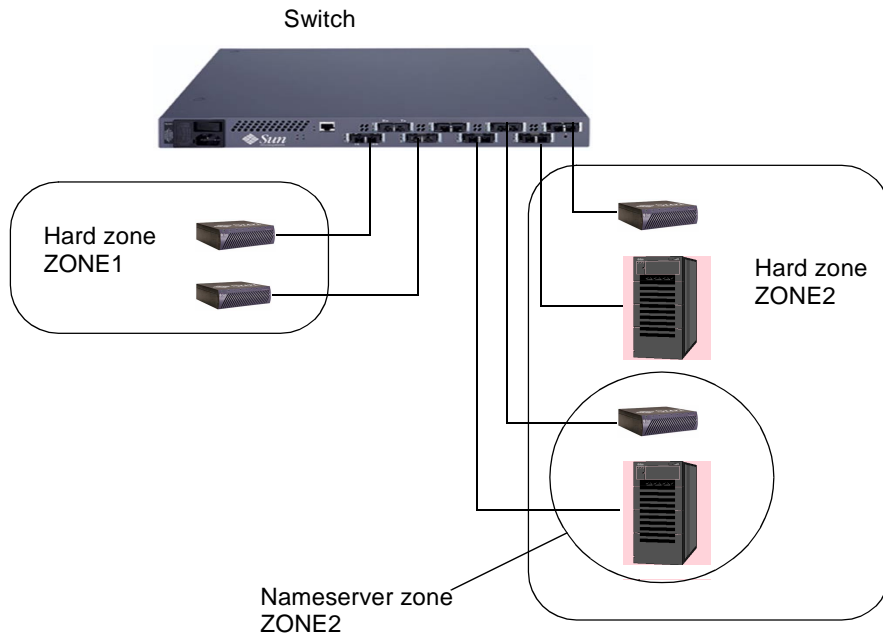


FIGURE 1-1 Hard and Nameserver Zone Naming To Avoid, Example 1

Nameserver Zones Sharing the Same Name

When you create zones using a switch management tool such as the SANsurfer Switch Manager software, you might create two nameserver zones in two different hardzones with the same name. In this case, each hard zone might include an identically-named nameserver zone.

For example, [FIGURE 1-2](#) shows:

- One hard zone named ZONE1 with a nameserver zone named NSVR1
- Another hard zone named ZONE2 with a nameserver zone named NSVR1

In this case, when you view the nameserver zones using the topology reporter Web-browser UI or CLI, only one nameserver zone named NSVR1 is shown or reported and contains the port members of both nameserver zones. (Hard zone names include the phrase `(hard)` as part of the name. For example, `ZONE2(hard)`.)

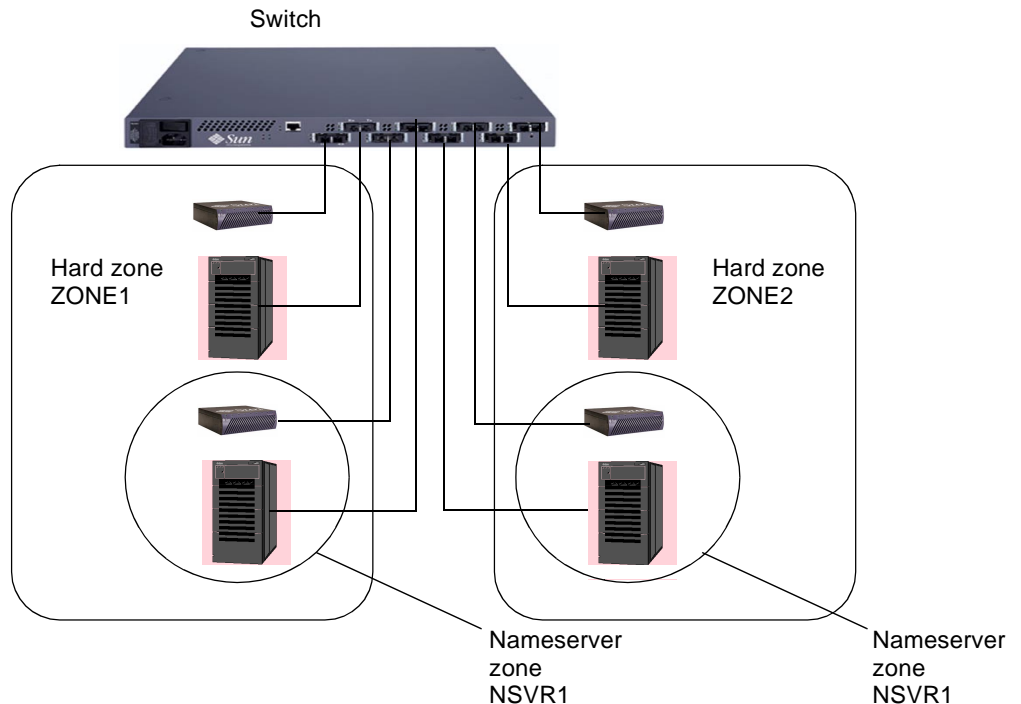


FIGURE 1-2 Hard and Nameserver Zone Naming To Avoid, Example 2

Using the Web-browser User Interface

This section describes how to log into and to navigate the Web-browser user interface (UI). The topology reporter enables you to view and manage your storage area network (SAN) or direct-attached storage (DAS) environment through a Web browser. You can also add and launch external applications such as the Storage Automated Diagnostic Environment software.

This chapter includes the following topics:

- [“Logging into the Web Browser” on page 14](#)
- [“Browser User Interface” on page 15](#)
- [“Setting the Discovery Polling Interval” on page 23](#)
- [“Viewing Your SAN or DAS Environment \(Topology Tab\)” on page 25](#)
- [“Administering Users” on page 32](#)
- [“Managing User Email Notification” on page 36](#)
- [“Administering Email Servers and Network Host Notification” on page 40](#)
- [“Managing Applications” on page 45](#)
- [“Managing Alarms” on page 48](#)
- [“Viewing and Managing Assets” on page 52](#)
- [“Launching the Storage Automated Diagnostic Environment Software \(Health Tab\)” on page 70](#)

Logging into the Web Browser

If you have successfully installed and started the software, log in through a Web browser.

1. **Open the Netscape™ Communicator Web browser, version 4.7x.**
2. **Type the following URL in the URL text field:**

- For an HTTP server:

```
http://your-hostname:port/nsm/
```

where *your-hostname* is your machine's hostname and *port* is its port number you configured (the default is 8180).

Note – If you are concerned about password security, use the SSL HTTP URL.

- For an SSL HTTP server:

```
https://your-hostname:port/nsm/
```

where *your-hostname* is your machine's hostname and *port* is its port number you configured (typically 8543).

The Login window is displayed.

3. **Log in as follows:**

```
User Name: admin
Password: none; leave blank
```

4. **Click the Log In button to log in.**

As soon as you add a user with `admin` mode privileges, the default `admin` user is deleted. See [“Administering Users” on page 32](#).

Note – After users are added by the `admin` user and users with `admin` mode privileges, they can log in using a normal user name and password.

Browser User Interface

After you log in, you can access each page of the software by clicking its labelled tab.

- [“Navigation Tips” on page 15](#)
- [“Items Common to Each Page” on page 17](#)
- [“Login Page” on page 19](#)
- [“Status Page” on page 19](#)
- [“Assets Page” on page 19](#)
- [“Alarms Page” on page 21](#)
- [“Topology Page” on page 21](#)
- [“Health Tab” on page 21](#)
- [“Administration Page” on page 22](#)
- [“The Show Paths Button” on page 22](#)

Note – The Administration tab and page is not accessible for users with a role of operator or guest.

Navigation Tips

The UI enables you to show various levels of detail about your SAN or DAS environment. Typically, you click links and buttons as on any other Web page to navigate the software.


The software also displays the navigation path on each page to show how you arrived at a page. This path includes clickable, underlined links so that you can return to a certain point in your navigation instead of starting at a top level page or tab.

For example, if you just enabled a user to receive email notification of alarms and want to quickly add more users, you can click the More E-Mail Features link to return to the Add User button. See [FIGURE 2-1](#).

The alternate method is to perform the procedure from the top level, as described in [“To Create a User Email Notification Profile” on page 37](#).

Click the More E-mail Features link to quickly add another user

[Administration](#) > [More E-mail Features](#) > [Add E-mail Address](#)

 The new E-mail address was added

Alarm Level:	<input type="text" value="Down"/>	
Medium:	<input type="text" value="E-mail"/>	
E-mail Address:	<input type="text" value="testuser@somedomain.com"/>	<input type="button" value="Send Test E-mail"/>
Minimum Time Between Messages:	<input type="text" value="5"/> <input type="text" value="Minute(s)"/>	
Locale:	<input type="text" value="English"/>	
		<input type="button" value="Save"/> <input type="button" value="Cancel"/>

FIGURE 2-1 Navigation Links Example

Items Common to Each Page

Navigation and status items that are common to each UI page are as follows:

- “[Search For Drop-down Menu](#)” on page 17
- “[Discover Button](#)” on page 17
- “[Summary Tables](#)” on page 18

Search For Drop-down Menu

The Search For drop-down menu appears on each page in the UI. This menu enables you to search for assets in your SAN or DAS environment.

▼ To Search for Assets

1. Choose one of the following from the drop-down menu:

- Hosts
- Switches
- Storage
- HBAs

If you do not select an asset, the software searches across all assets with the asset name you specify in the text field

2. Type an asset name in the text field and click Go to search for a particular asset.

The UI opens the [Assets page](#) and displays a table summarizing the asset or assets found.

Discover Button

Note – See “[Discovery](#)” on page 2 for information about how the software gets status about your SAN or DAS environment.

Also, “[Setting the Discovery Polling Interval](#)” on page 23 describes the relationship between polling intervals and alarm intervals.

The Discover button appears on each page in the UI. Next to the Discover button is a message showing the last time the software retrieved status about the assets and alarms in your SAN or DAS environment.

▼ To Update the Asset and Alarm Information

1. Click **Discover**.
2. Wait a few minutes for the software to update the information on the **Asset and Alarms** pages.

Summary Tables

The icons shown in [FIGURE 2-2](#) indicate that you can sort items in ascending or descending order in summary tables found on the pages. The light-colored icon indicates the current sort order of the selected column.

▼ To Sort Items in the Summary Table

1. Click the dark-colored icon to sort in the opposite order.
2. Click an icon in another column to sort that column.

Most tables, such as the Users summary table, include a button to select that table item. After selecting an item, you can perform a task related to that item. For example, see a [“To Modify a User’s Role”](#) on page 33.

Most tables also include a clickable link to see more detail about a particular device. See [FIGURE 2-2](#).

Asset Summary

Quantity	Type	Vendor & Model
5	HBA	Sun Microsystems, Inc./ql
2	Host	SUNW,Ultra-Enterprise
2	Storage	SUN /T3
2	Switch	Qlogic/SANbox

Indicates that this column is currently selected to sort

Clickable link to show more information about a device

FIGURE 2-2 Table Sorting Icons

Login Page

The Login page includes the User Name and Password fields to enable the admin, operator, and guest users to use the UI. (“[Administering Users](#)” on page 32 describes user roles.) See also “[Logging into the Web Browser](#)” on page 14.

Note – If you have a user role of operator or guest and do not have access to the software, click the System Administrator link on the Login page to send email to the admin user. “[To Add a Contact Email Address for the admin User](#)” on page 39 describes how to add the system administrator contact email address to the link on the Login page.

Status Page

The Status page is the default start page for the software. This page lists any current alarms in the Alarms table, showing the number and severity of alarms. This page also shows any installed applications that you can launch from the UI. See [FIGURE 2-3](#).

Assets Page

The Assets page enables you to manage and display information about your hosts, switches, storage, and host bus adapters (HBAs). The default Assets page shows an Assets Summary table of all assets.

▼ To Show Details about an Asset

- Click one of the links under the Assets page tab:
 - Summary—default view for this page
 - Hosts
 - Switches
 - Storage
 - HBAs

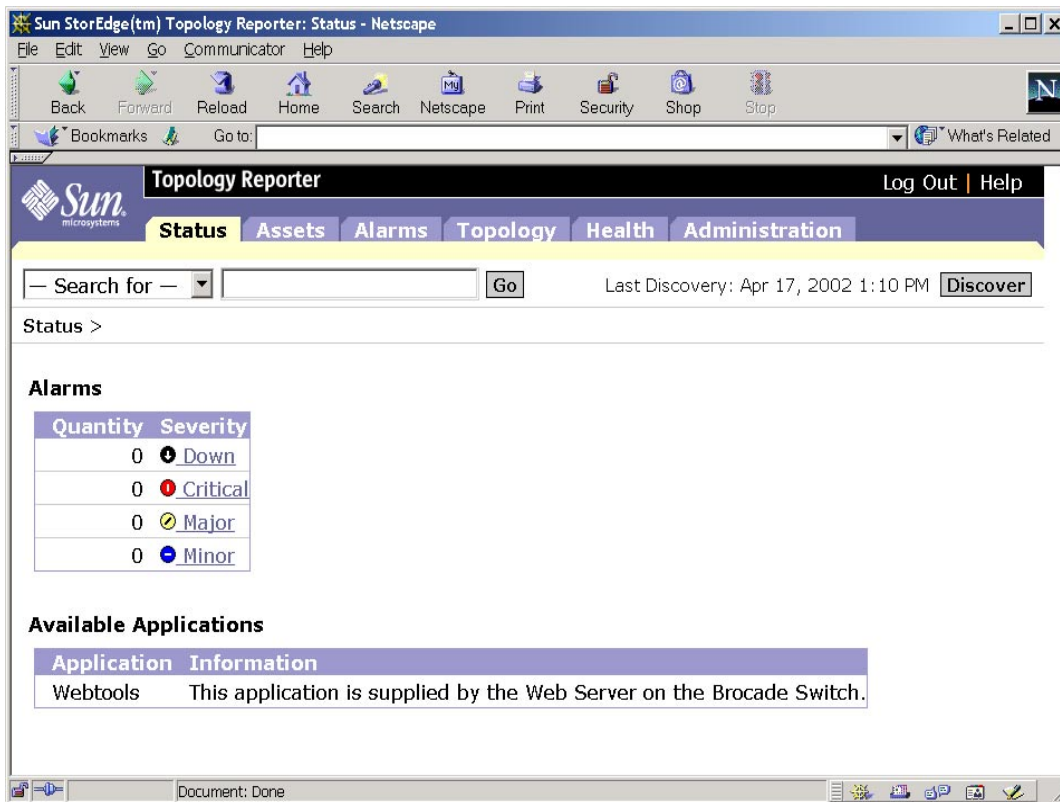


FIGURE 2-3 Status Page

Alarms Page

The Alarms page enables you to display information about any current alarms in your SAN or DAS environment.

▼ To Show Details about Alarms by Severity Level:

- **Click one of the links under the Alarms page tab:**
 - All—default view for this page
 - Down
 - Critical
 - Major
 - Minor

Topology Page

The Topology provides a top-level table view of your SAN or DAS environment. This page also enables you to view asset details through links to the Assets page and search for full and partial paths between a host and a storage device. See [“Viewing Your SAN or DAS Environment \(Topology Tab\)”](#) on page 25.

Health Tab

When you click the Health tab, another Web browser opens to enable you to use the Storage Automated Diagnostic Environment software. This software requires a user name and password. See [“Launching the Storage Automated Diagnostic Environment Software \(Health Tab\)”](#) on page 70. If this software is not installed, it can be added as described in [“Managing Applications”](#) on page 45.

Administration Page

Note – The Administration tab and page is not accessible for users with a role of operator or guest. [“Administering Users” on page 32](#) describes user roles.

The Administration page enables a user with the admin role to manage:

- Users
- Email notification
- Applications
- Discovery intervals
- Switch credentials

The Show Paths Button

The Show Paths button or drop-down menu selection is available from many topology reporter pages. For example, the button is available from the Host and Storage Assets pages and HBA port details page. Perform the following procedure to view the connection path of the device in your SAN or DAS environment.

1. **Click the Show Paths button or select Show Paths from the More Actions drop-down menu.**
2. **Perform one of the following:**
 - Click the option button and type a host name in the Host Name text field. (The name might already be in this field.)
 - Click the option button in the table to select one of the hosts.
3. **Click Next.**
4. **Perform one of the following:**
 - Click the option button and type device name in the Storage Device name text field. (The name might already be in this field.)
 - Click the option button in the table to select one of the devices.
5. **Click Finish.**

The Show Paths results page displays all existing paths between the selected host and storage device. The SAN Paths graphic might span multiple fabrics and displays both full and partial paths. A DAS Path graphic appears only if the host and storage device are directly connected.

Setting the Discovery Polling Interval

The Administration page enables the admin user to set the discovery polling interval. Once set, this polling interval determines how often the software retrieves information and status about devices in your SAN or DAS environment. You can set the interval in minutes. Depending on your environment size, you can have the software poll devices more or less frequently.

In a small SAN or DAS environment where the device configuration is stable and device state does not change very often, you might set the polling interval to 15 minutes.

In an environment where device configuration is less stable or in a large SAN environment where the device configuration is complex, you might set the polling interval to a longer time, perhaps 30 minutes.

Coordinating the Discovery Polling Interval and Alarm Expiration Threshold

You might need to coordinate the polling interval time and the alarm expiration threshold. For example, if you set the polling interval at 10 minutes and alarm expiration threshold at 5 minutes, it is possible that alarms might have occurred and expired (that is, not been reported to the software). You would not see alarms in the UI but they would have occurred.

Note – See [“To Set the Alarm Expiration Time and Threshold”](#) on page 50.

▼ To Set the Discovery Polling Interval

1. Click the **Administration** tab to display the **Administration** page.
2. Scroll down to the **Miscellaneous** region.
3. Enter a number in the **Polling Interval** text field.
4. Click **Save**.

SAN and DAS Changes and Discovery

If you add or delete assets like hosts, switches, HBAs, and storage in your environment, you can perform a manual discovery to ensure that the new asset is reporting its status to the software.

▼ To Perform a Manual Discovery After a Change to Your SAN or DAS Configuration

1. Change, add, or delete an asset.

2. Wait five to seven minutes.

Waiting a few minutes gives the operating environment a chance to register changes to the SAN or DAS environment. This discovery takes a few minutes, depending on the size of your SAN or DAS environment.

3. Manually perform a discovery.

a. If you have not done so already, log into the software using the Netscape Communicator v4.7x Web browser.

b. Click the Assets tab.

c. Click the Discover button.

The asset information is displayed on the Assets page.

Viewing Your SAN or DAS Environment (Topology Tab)

Available from the Topology tab, the Topology page enables you to view your SAN or DAS environment. This page enables you to display up to five topology views:

- Direct-attached storage (DAS) shows a table with clickable links for the host and its attached storage device.
- Storage area network (SAN) shows a table of fabrics in the SAN. The table includes clickable links for the Fabric Name, Switches, and Zones.
- Show Paths button shows SAN and DAS paths between the hosts and storage devices.
- Fabric Graph shows a graphic representation of your SAN when you click a Fabric Name in the fabric table.
- Zone Details shows a summary table when you click a Zones link in the fabric table. This table includes clickable links in the Device column and for the fabric in a link above the table.

The default view is a summary table view of the SAN fabric. See [FIGURE 2-4](#).

This section describe procedures for the following:

- [“To Show the Topology Graph or Device Details” on page 29](#)
- [“To Show Host-to-Storage Device Paths” on page 29](#)
- [“To View Zone Details” on page 30](#)
- [“To Display a Fabric's Zone” on page 30](#)
- [“To Show the DAS Inventory” on page 31](#)

See also:

- [“Hard and Nameserver Zones” on page 9](#)
- [“If The Topology Page Displays An Error” on page 27](#)
- [“SAN and DAS Changes and Discovery” on page 24](#)

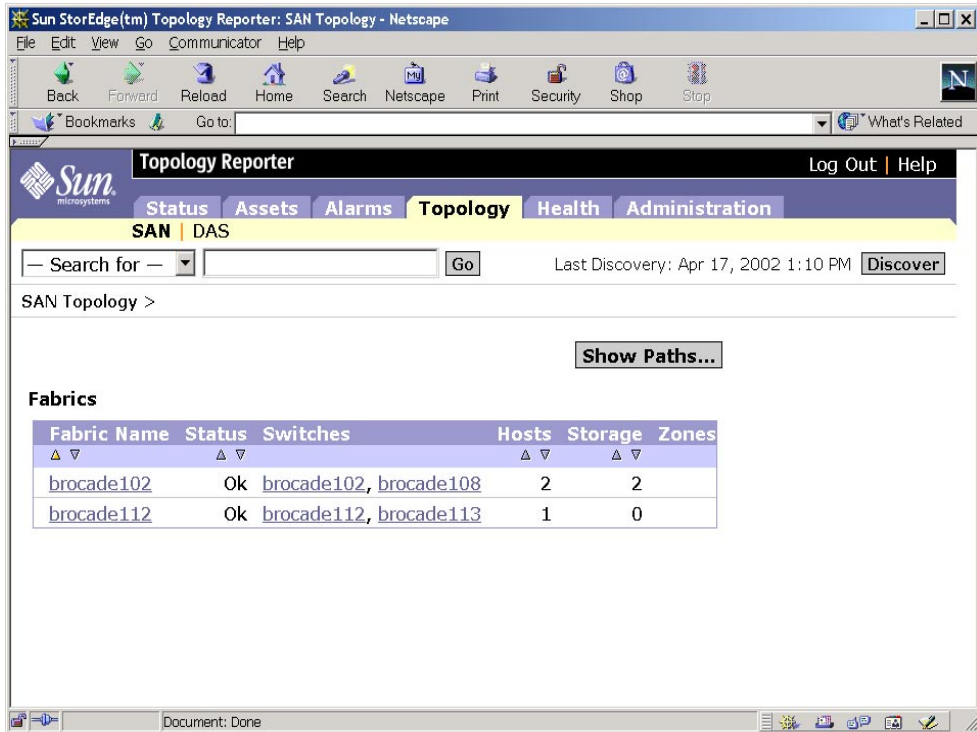


FIGURE 2-4 Example Topology Page SAN Fabric Table

If The Topology Page Displays An Error

If the Web browser displays an error on the Topology page such as following message, set the display as described:

```
Topology images are not available
```

▼ To Set the Display

1. **From the machine where you are trying to display the topology graphics, type the following:**

```
# /usr/openwin/bin/xhost + mgmt-station-hostname:0.0
```

Where *mgmt-station-hostname* is the host name of the management station machine. This step enables the management station to access your display.

2. **Log into the management station machine as the `root` user.**
3. **If the topology reporter software is running, stop it:**

```
# /etc/init.d/sstrd stop
```

4. **Edit the `/opt/SUNWnsm/sbin/sstr.tomcat` file and update the `DISPLAY` variable to the host name where you executed the `xhost` command in [Step 1](#).**

Change:

```
# Set display
DISPLAY=localhost:0.0
export DISPLAY
```

to:

```
# Set display
DISPLAY=UI-hostname:0.0
export DISPLAY
```

Where *UI-hostname* is the host name of the machine where you wish to display the topology graphics.

5. Start the topology reporter software:

```
# /etc/init.d/sstrd start
```

Note – Once the topology reporter software has started, you can reset the `xhost` settings on your machine and the `DISPLAY` setting on the management station. Use the `sstr_ctl -s status` command to check that the topology reporter software components are running. See [“Checking for Running Software Components” on page 128](#).

▼ To Show the Topology Graph or Device Details

1. Click the Topology tab.

The Fabrics summary table is displayed.

2. Perform one of the following steps.

- Click a link in the Fabric Name column to show the fabric graphic.
A graphic representing your environment is displayed.
 - Scroll down in the browser to see more if you have a larger environment.
 - Click a device name or graphic icon to display the Device Detail page for that device.
- Click a link in the Switches column to show switch device details.
The page displays device details. From this page, you can perform switch actions. See [“Switches” on page 58](#).

▼ To Show Host-to-Storage Device Paths

1. Click the Topology tab.

The Fabrics summary table is displayed.

2. To view device paths, click the Show Paths button.

3. Perform one of the following:

- Click the option button and type a host name in the Host Name text field.
- Click the option button in the table to select one of the hosts.

4. Click Next.

5. Perform one of the following:

- Click the option button and type a storage device name in the Storage Device Name text field.
- Click the option button in the table to select one of the devices.

6. Click Finish.

The Show Paths page under the Topology tab is displayed. A graphic showing all SAN and DAS paths from the host to the storage device appears on this page. The SAN graphic also displays partial paths. View zone-level information by selecting a zone from the View Zones drop-down menu. The SAN Paths graphic might span multiple fabrics and displays both full and partial paths. A DAS Path graphic appears only if the host and storage device are directly connected.

▼ To View Zone Details

1. **Click the Topology tab.**

The Fabrics summary table is displayed.

2. **Click a link in the Zones column.**

The Zone Details summary table is displayed. The Zone Details summary table shows the following:

- Switch name
- Switch port
- Connected device name (click this link for device details)
- Connected device vendor and model number

The table title includes a clickable link for the zone fabric. Click this link to show graphical zone topology.

▼ To Display a Fabric's Zone

1. **Click the fabric link in the Zone Details Summary table title to display the fabric topology graphic for this zone.**

You can also click the fabric name in the Fabric column shown on the Topology page. See [“To Show the Topology Graph or Device Details” on page 29](#).

2. **From the View Zones pull-down menu, select one of the following:**

- View *zonename* Zone, where *zonename* is a zone name. Other zones appear grayed out.
- View Without Zones, which shows the entire fabric.

The zone graphic appears.

Note – See also [“Hard and Nameserver Zones” on page 9](#).

▼ To Show the DAS Inventory

1. **Click the Topology tab.**

2. **Click the DAS link under the Topology tab.**

The Direct Attached Storage summary table appears. Each host with directly-attached storage is shown.

3. **Click one of the following to show device details:**

- Host link in the Host column
- Storage device link in the Storage column

4. **Click the Show Paths button to show details about the connection paths between a host and its storage.**

See [“The Show Paths Button”](#) on page 22.

Administering Users

The following sections describe how to administer users through the Administration page. As the `admin` user, you can add, modify, and delete users that you authorize to use the software. Once added, a user can log into the software using his or her user name and password. The user role determines user privileges. [TABLE 2-1](#) describes user roles.

TABLE 2-1 User Roles

User Role	Description
<code>admin</code>	An <code>admin</code> user has all administration privileges. The <code>admin</code> user can add, modify, and delete users, attributes, and devices in the software.
<code>operator</code>	An <code>operator</code> user can use most of the software features except those that add, modify, or delete users, attributes, and devices. This user can delete alarms. The Administration page in the UI is not available to this user.
<code>guest</code>	A <code>guest</code> has read-only privileges and can use most features of the software except those that add, modify, or delete users, attributes, and devices. The <code>guest</code> user can launch applications if the user has login access to them. The Administration page in the UI is not available to this user.

The topics described include the following:

- [“Before You Add a User” on page 33](#)
- [“To Add a User” on page 33](#)
- [“To Modify a User’s Role” on page 33](#)
- [“To Delete a User” on page 34](#)
- [“To Display Information About Users” on page 34](#)
- [“If An Admin User Password is Lost or Forgotten” on page 35](#)

Before You Add a User

Before you add a user, consider the following:

- Add only those users that already have a user account on the management station
- Users can use their Solaris (UNIX) passwords to log in. They can safely use these passwords because they are encrypted before verification
- `root` and `bin` cannot be added to or use the software

▼ To Add a User

1. Click the Administration tab to display the Administration page.

2. Click the Users link under the Administration tab.

The Manage Users page is displayed.

3. Click the Add User button.

4. Type the user name of the user you are adding in the User Name text field.

The user name is the user's login name for the machine where the software is installed. The software authenticates the user against the machine's list of users. The software then stores the user information in the software's data base.

5. Choose a user role from the Role drop-down menu.

See [TABLE 2-1](#) for a user role description.

6. Click Save.

A confirmation message is displayed. The user can now log in to the software using his or her normal user name and password.

▼ To Modify a User's Role

1. Click the Administration tab to display the Administration page.

2. Click the Users link under the Administration tab.

The Manage Users page is displayed.

3. Click the button in the Users table to select the user to modify.

4. Click the Modify User button.

5. Choose a user role from the Role drop-down menu.

See [TABLE 2-1](#) for a user role description.

6. Click Save.

A confirmation message is displayed. The user can now log in to the software.

▼ To Delete a User

1. Click the Administration tab to display the Administration page.

2. Click the Users link under the Administration tab.

The Manage Users page is displayed.

3. Click the button in the Users table to select the user to delete.

4. Click the Delete User button.

5. Click the Delete button.

▼ To Display Information About Users

1. Click the Administration tab to display the Administration page.

2. Click the Users link under the Administration tab.

The Manage Users page is displayed. This page displays all users currently authorized to use the software and their role.

If An Admin User Password is Lost or Forgotten

If a user with the role of `admin` forgets or loses his or her password and no other users with the `admin` role exist, the administrator of the management station machine must clear the user database.



Caution – This procedure erases all user login information for the software.

▼ To Erase User Login Information from the Data Base

1. Log into the management station as user `sstr001`.

```
# rlogin hostname sstr001
Password: sstr
```

Note – You changed the default password shown when you installed the software.

2. Source the database environment file to configure the database environment variables.

```
Bourne or Korn shell
# . /opt/SUNWnsm/util/pgsql/nsml/bin/postgres.env

C shell
# source /opt/SUNWnsm/util/pgsql/nsml/bin/postgres.env
```

3. Access the database.

```
# psql
```

4. At the database prompt, delete the user table information and exit.

The pound sign (#) in this case does not indicate a root user Solaris prompt.

```
#nsm1 delete from userpo;
#nsm1 \q
```

Managing User Email Notification

Note – You must enable email notification for the software to use this feature. See [“Administering Email Servers and Network Host Notification” on page 40.](#)

When a device alarm occurs, email is sent by the software to users designated by the `admin` user. The Notification section of the Administration page enables the `admin` user to manage this capability.

This section describes the procedures that enable the `admin` user to manage user email notification:

- [“To Create a User Email Notification Profile” on page 37](#)
- [“To Modify a User Notification Profile” on page 38](#)
- [“To Delete a User Notification Profile” on page 38](#)
- [“To Add a Contact Email Address for the admin User” on page 39](#)

▼ To Create a User Email Notification Profile

1. Click the Administration tab to display the Administration page.

2. Click the More E-mail Features button.

The More E-mail Features page is displayed. This page also displays a summary table of users who receive notification of alarms.

3. Click the Add button in the Alarm Levels section.

The Add E-mail Address page is displayed.

4. Choose an alarm level from the Alarm Level drop-down menu.

The user you create receives email notification of alarms occurring at this level. For example, select Critical to send all Critical alarms.

Tip – If you want the user to receive notification of other alarms levels, repeat all steps in this section for each alarm level for that user.

5. Choose how the user receives notification from the Medium: drop-down menu.

You can choose to send notification through email or to a pager address.

6. Type the user email address in the E-mail Address text field.

Click the Send Test E-mail button to ensure that the email address is correct and operating.

7. Type the minimum time between notification messages in the text field.

Choose the time interval from the drop-down menu: Minutes, Hours, or Days.

8. Choose the user's locale from the Locale drop-down menu.

9. Click Save.

A confirmation message is displayed.

▼ To Modify a User Notification Profile

1. **Click the Administration tab to display the Administration page.**

2. **Click the More E-mail Features button.**

The More E-mail Features page is displayed. This page also displays a summary table of users who receive notification of alarms.

3. **Click the button in the Alarm Level table to select the user to modify.**

4. **Click the Modify button.**

The Modify E-mail Address page is displayed. You can change the medium, email address, notification interval, and locale.

5. **Click Save.**

A confirmation message is displayed.

▼ To Delete a User Notification Profile

1. **Click the Administration tab to display the Administration page.**

2. **Click the More E-mail Features button.**

The More E-mail Features page is displayed. This page also displays a summary table of users who receive notification of alarms.

3. **Click the button in the Alarm Level table to select the user to delete.**

The Delete E-mail Address page is displayed and asks if you want to delete the user.

4. **Click the Delete button.**

A confirmation message is displayed.

▼ To Add a Contact Email Address for the admin User

1. Click the **Administration** tab to display the **Administration** page.
2. Scroll down the page to the **Miscellaneous** section.
3. Type an email address for the `admin` user in the **Contact E-mail** text field.
This email address is the address associated with the system administrator link on the Login page (see [“Login Page”](#) on page 19).
4. Click **Save**.

Administering Email Servers and Network Host Notification

When a device alarm occurs, email is sent by the software to users designated by the `admin` user. The host machine where the alarm occurred also routes the alarm information to a management station machine. You can then view this alarm information on the Alarm page.

The Notification section of the Administration page enables the `admin` user to manage this capability. This section describes the procedures that enable the `admin` user to manage the Simple Mail Transfer Protocol (SMTP) and Simple Network Management Protocol (SNMP) servers and notification:

- [“To Enable and Manage SMTP Email Notification” on page 41](#)
- [“To Enable SNMP Notification” on page 41](#)
- [“To Add SNMP Notification” on page 42](#)
- [“To Modify SNMP Notification Attributes” on page 43](#)
- [“To Delete an SNMP Notification Host” on page 44](#)

▼ To Enable and Manage SMTP Email Notification

1. **Click the Administration tab to display the Administration page.**
2. **Select the On or Off buttons in the Notification E-mail section:**

These buttons enable or disable the email notification feature. See also [“Managing User Email Notification” on page 36](#).
3. **Click the More E-Mail Features button to access SMTP server and alarm features.**

The More E-mail Features page is displayed. This page also displays a summary table of users who receive notification of alarms.
4. **Enter the IP address or host name of the SMTP server machine in the IP or Host text field.**

The host name of the machine that will manage the notification feature must be the fully qualified host name including the domain. For example,
martha.xyzcorp.com.
5. **Click Save.**

A confirmation message is displayed.

▼ To Enable SNMP Notification

1. **Click the Administration tab to display the Administration page.**
2. **Select the On or Off buttons in the Notification SNMP section:**

These buttons enable or disable the SNMP alarm trap notification feature.

▼ To Add SNMP Notification

1. Click the Administration tab to display the Administration page.

2. Click the More SNMP Features button to access SNMP server and alarm features.

The More SNMP Features page is displayed. This page also displays a summary table of host machines that receive SNMP alarm traps that occur in the SAN or DAS.

3. Click the Add button.

The Add SNMP Contract page is displayed.

4. Select an alarm level to trap from the Alarm Level drop-down menu.

5. Enter the IP address or host name of an SNMP host machine in the Hostname text field.

The host name of the management station machine where SNMP traps are routed must be the fully qualified host name including the domain. For example, `martha.xyzcorp.com`.

6. Enter a port number in the Port Number text field.

The default SNMP port is 162.

7. Choose one of the following locales from the drop-down menu:

- English
- French
- German
- Japanese

8. Click Save.

A confirmation message is displayed.

▼ To Modify SNMP Notification Attributes

- 1. Click the Administration tab to display the Administration page.**
- 2. Click the More SNMP Features button to access SNMP server and alarm features.**

The More SNMP Features page is displayed. This page also displays a summary table of host machines that receive SNMP alarm traps that occur in the SAN or DAS.
- 3. Click the Modify button.**

The Modify SNMP Contract page is displayed. You can change the SNMP host's host name, SNMP port, and alarm level from this page.
- 4. Enter the IP address or host name of an SNMP host machine in the Hostname text field.**

The host name of the management station machine where SNMP traps are routed must be the fully qualified host name including the domain. For example, `martha.xyzcorp.com`.
- 5. Enter a port number in the Port Number text field.**

The default SNMP port is 162.
- 6. Choose one of the following locales from the drop-down menu:**
 - English
 - French
 - German
 - Japanese
- 7. Click Save.**

A confirmation message is displayed.

▼ To Delete an SNMP Notification Host

1. **Click the Administration tab to display the Administration page.**
2. **Click the More SNMP Features button to access SNMP server and alarm features.**
The More SNMP Features page is displayed. This page also displays a summary table of host machines that receive SNMP alarm traps that occur in the SAN or DAS.
3. **Choose a host machine to delete in the SNMP Notification summary table.**
4. **Click the Delete button.**
A delete confirmation page is displayed.
5. **Click the Delete button to delete the host machine from the database.**

Managing Applications

Users can launch software applications associated with devices in the software from the Assets page. For example, you can launch the following software that helps manage devices:

- Sun StorEdge Enterprise Storage Manager Configuration Service software for the Sun StorEdge T3 and T3+ storage arrays
- Storage Automated Diagnostic Environment software
- Sun StorEdge 9900 Series HiCommand software

This section describes the procedures that enable the `admin` user to add Web-browser-based launchable applications to the UI.

- [“Using the Configuration Service for Sun StorEdge T3 and T3+ Arrays” on page 46](#)
- [“To Add the Sun Storage Automated Diagnostic Environment Software Application” on page 46](#)
- [“To Select an Application for Managing Sun StorEdge T3 and T3+ Arrays” on page 47](#)

See also:

- [“To Launch a Software Application To Manage a Switch” on page 60](#)
- [“To Launch a Software Application to Manage a Storage Device” on page 67](#)

Using the Configuration Service for Sun StorEdge T3 and T3+ Arrays

You can use the configuration service software as the device management tool for Sun StorEdge T3 and T3+ arrays. Consider the following:

- If you have already logged into the configuration service software in a separate Web-browser window, this separate window displays information about the device when you click the Launch Device Manager button from the storage Assets page.

Note – If you already have a configuration service Web-browser window open and click the Launch Device Manager button, a new window **does not** open. That is, another instance of the software is not launched.

- If you have not logged into the configuration service software in a separate Web-browser window, you must log in and discover the device in the launched Web-browser window. For instance, the array must already be configured for discovery by the configuration service or discovery fails. If the device is already configured for discovery, log in and the device is discovered automatically.

See the configuration service documentation listed in [“Related Documentation” on page xvii](#).

▼ To Add the Sun Storage Automated Diagnostic Environment Software Application

1. **Click the Administration tab.**
2. **Scroll down the page to the Applications section.**
The Applications section shows the Applications area.
3. **Type the Storage Automated Diagnostic Environment software application uniform resource locator (URL) address in the SADE text field.**

This application launches when you click the Launch Health Application button on the Health page.

4. **Click Save.**

▼ To Select an Application for Managing Sun StorEdge T3 and T3+ Arrays

1. **Click the Administration tab.**
2. **Scroll down the page to the Applications section.**
The Applications section shows the T3 Management drop-down menu.
3. **Choose an application for managing Sun StorEdge T3 and T3+ arrays from the T3 Management drop-down menu:**
 - SCCS—configuration service
 - HiCommand—Sun StorEdge 9900 Series HiCommand software
4. **Type the related application's uniform resource locator (URL) address in the HiCommand or SSCS text field.**

This application launches when you click the Launch Device Manager button associated with storage devices from the storage Assets page.

See [“Using the Configuration Service for Sun StorEdge T3 and T3+ Arrays” on page 46](#) and [“To Launch a Software Application to Manage a Storage Device” on page 67](#).

5. **Click Save.**

Managing Alarms

This section describes the procedures that enable the `admin` user to view and manage alarms. The [Status page](#) is the default page shown after you log in and it shows an Alarms summary table.

- [“Alarm Severity Levels” on page 48](#)
- [“To Display Alarm Information” on page 49](#)
- [“To Set the Alarm Expiration Time and Threshold” on page 50](#)
- [“To Delete Alarms” on page 51](#)

Alarm Severity Levels

The software reports alarms occurring at four alarm levels shown in [TABLE 2-2](#).

TABLE 2-2 Alarm Severity Levels

Alarm Severity Level	Description
Down	A fatal nonrecoverable error has occurred. For example, this error level occurs when a storage array is offline or unreachable.
Critical	A serious error has occurred. For example, this alarm type might occur if one or more subsystems fail. This alarm type requires your immediate attention.
Major	A serious error has occurred. For example, this alarm type might occur if one subsystem has failed. This alarm type requires your immediate attention.
Minor	An error or user action has occurred that requires your attention. For example, the <code>admin</code> user might have removed an asset. However, the error does not require your immediate attention.

▼ To Display Alarm Information

1. Click the Alarms tab.

The Alarms page is displayed. The default view in the Alarms table shows all alarms.

2. Perform one of the following:

- Choose one of the following links below the Alarms tab to view alarms of that severity level:
 - All
 - Down
 - Critical
 - Major
 - Minor
- Click the link in the Description column to view details about that alarm.

The page shows the alarm details. See [TABLE 2-2](#) for a description of alarm severity levels.

3. If the number of alarms requires more than one page to display, scroll down the page and select the next page to display.

If a large number of alarms exist, it might take a few minutes to display them all.

4. To return to the alarm summary table, click the All link.

▼ To Set the Alarm Expiration Time and Threshold

Note – See [“Coordinating the Discovery Polling Interval and Alarm Expiration Threshold”](#) on page 23.

1. Click the **Administration** tab.
2. Set the alarm expiration time in the **Alarms** section:
 - a. Type a number in the **Expiration Time** text field.
 - b. Choose a time interval from the **drop-down menu**.
Choose Minutes, Hours, or Days. This option sets how long the alarm remains active, is reported on the Alarms page, and then is closed by the software.
3. Choose an alarm severity level from the **Log Threshold drop-down menu** in the **Logging** section.

Note – All topology reporter alarm events are at the Minor level.

The level that you choose enables the software to log alarms of that level and below to the log file. For example, select Critical to see all Critical, Major, and Minor alarms.

4. Click **Save**.

▼ To Delete Alarms

1. Click the Alarms tab.

The Alarms page is displayed. The default view in the Alarms table shows all alarms.

2. Select one or more alarms in the All Alarms table by clicking the check box to the left of the Alarm Severity column.

3. Click the Delete Alarms button.

A confirmation page is displayed.

4. Click the Delete button.

5. To delete alarms by alarm severity level, choose one of the following links below the Alarms tab to view alarms of that severity level:

- Down
- Critical
- Major
- Minor

See [TABLE 2-2](#) for a description of alarm severity levels.

6. Repeat [Step 2](#) to [Step 5](#).

Viewing and Managing Assets

This section describes the procedures that enable the `admin` user to view and manage assets such as hosts, switches, storage, and host bus adapters (HBAs). The Assets page initially shows an Assets summary table that provides a top-level view of all devices in your SAN or DAS environment.

See [“Summary Tables” on page 18](#) for a description of summary tables.

▼ To Show Asset Details

- **Click one of the links under the Assets page tab:**

- All—default view for this page
- Hosts
- Switches
- Storage
- HBAs

A summary table for the selected asset is displayed.

[TABLE 2-3](#) list the assets and sections that describe the details.

TABLE 2-3 Managing and Viewing Assets

Asset	See This Section
All	“Searching for Assets” on page 54
Host machine	“Host Machines” on page 54 “To View More Detail About a Host Machine” on page 54 “To View More Detail About Host Machine HBA Connectivity” on page 55 “To View the Paths Between the Host Machine and Its Storage Devices” on page 56
Switches	“Switches” on page 58 “To View More Detail About a Switch” on page 58 “To View Switch Ports” on page 59 “To Launch a Software Application To Manage a Switch” on page 60 “To Remove a Switch From the Software” on page 60 “Managing Switch Credentials” on page 61

TABLE 2-3 Managing and Viewing Assets *(Continued)*

Asset	See This Section
Storage	“Storage” on page 64 “To View More Detail About a Storage Device” on page 64 “To View the Connection Path of the Storage Device in the SAN or DAS Environment” on page 65 “To View Storage Device Port Connections” on page 66 “To View Storage Device LUNs” on page 66 “To Launch a Software Application to Manage a Storage Device” on page 67 “To Remove a Storage Device from the Software” on page 67
HBAs	“Host Bus Adapters” on page 68 “To View More Detail About an HBA” on page 68 “To View HBA Path and Port Connections” on page 69

Searching for Assets

To search for assets in your environment, see [“Search For Drop-down Menu” on page 17](#).

Host Machines

This section describes how to view and manage hosts machines in your SAN or DAS environment.

▼ To View More Detail About a Host Machine

1. Click the Assets tab.

The Assets page is displayed.

2. Click the Hosts link under the Assets tab.

A Hosts summary table is displayed. This table includes links for the host machine and vendor name.

3. Click a host machine link in the Name column.

The Device Detail page is displayed. The detail includes:

- Vendor and model name
- Operating environment revision level
- Clickable links to the host machine’s HBAs
- Annotation text field that is used to include additional information or messages about the device
- Drop-down Host Actions menu with Remove, View Connectivity, and Show Paths as the choices

4. To associate a comment with an asset, type message text in the Annotation text field.

5. Click Save.

A confirmation page is displayed.

▼ To View More Detail About Host Machine HBA Connectivity

1. Click the Assets tab.

The Assets page is displayed.

2. Click the Hosts link under the Assets tab.

A Hosts summary table is displayed. This table includes links for the host machine and vendor name.

3. Click the option button to select the host machine.

4. Click the View Connectivity button.

The Connectivity Detail page is displayed. This page shows HBA details for the HBAs installed in this host (FIGURE 2-5).

Host Connectivity for Host1

HBA	Status	Address ID	World-Wide Name	Port Type	GBIC Type	Node WWN
c2	OK	0	210000e08b0286fe	Unknown		210000e08b0286fe
c3	Unknown	0	210100e08b24f9a2	Other		210100e08b24f9a2
c4	Unknown	0	210000e08b04f9a2	Unknown		210000e08b04f9a2

FIGURE 2-5 Host Connectivity Detail Table

▼ To View the Paths Between the Host Machine and Its Storage Devices

1. Click the Assets tab.

The Assets page is displayed.

2. Click the Hosts link under the Assets tab.

A Hosts summary table is displayed. This table includes links for the host machine and vendor name.

3. Click a host machine link in the Name column.

The Device Detail page is displayed.

4. Choose Show Paths from the Host Actions drop-down menu.

The Show Paths page is displayed.

5. Perform one of the following:

- Click the option button and type a host name in the Host Name text field.
- Click the option button in the table to select one of the hosts.

6. Click Next.

7. Perform one of the following:

- Click the option button and type a storage device name in the Storage Device Name text field.
- Click the option button in the table to select one of the devices.

8. Click Finish.

The Show Paths page is displayed. A graphic showing all SAN and DAS paths from the host to the storage device appears on this page. The SAN graphic also displays partial paths. View zone-level information by selecting a zone from the View Zones drop-down menu. The SAN Paths graphic might span multiple fabrics and displays both full and partial paths. A DAS Path graphic appears only if the host and storage device are directly connected.

See also [“Viewing Your SAN or DAS Environment \(Topology Tab\)”](#) on page 25.

▼ To Remove a Host

1. **Click the Assets tab.**

The Assets page is displayed.

2. **Click the Hosts link under the Assets tab.**

A Hosts summary table is displayed. This table includes links for the host machine and vendor name.

3. **Click the option button to select the host machine.**

4. **Click the Remove button to remove the host from the software.**

Switches

This section describes how to view and manage switches in your SAN or DAS environment. It also describes how to launch a software application in another Web-browser to manage a switch.

▼ To View More Detail About a Switch

1. Click the Assets tab.

The Assets page is displayed.

2. Click the Switches link under the Assets tab.

A Switches summary table is displayed. This table includes switch name links, IP address, World Wide Name (WWN), vendor and model name, and firmware revision level. Also displayed are the Remove, Launch Device Manager, and Show Ports buttons.

3. Click a switch name link in the Name column.

The Device Detail page is displayed. The detail includes:

- IP address and WWN
- Vendor or model name
- Firmware revision level
- Domain ID
- Annotation text field that is used to include additional information or messages about the device

4. To add a comment about the asset, type message text in the Annotation text field.

5. Click Save.

A confirmation page is displayed.

▼ To View Switch Ports

1. **Click the Assets tab.**

The Assets page is displayed.

2. **Click the Switches link under the Assets tab.**

A Switches summary table is displayed. This table includes switch name links, IP address, World Wide Name (WWN), vendor and model name, and firmware revision level. Also displayed are the Remove, Launch Device Manager, and Show Ports buttons.

3. **Click a switch name link in the Name column.**

The Device Detail page is displayed.

4. **Choose Show Ports from the Switch Actions drop-down menu.**

The Ports summary table is displayed.

5. **Click the option button in the table to select a port.**

6. **Click the Show Attached Ports button.**

The Attached Ports table is displayed ([FIGURE 2-6](#)).

Note that the device in the Device column is a clickable link. For example, this link displays the HBA Device Details page. See [“To View More Detail About an HBA” on page 68](#).

Ports Attached To 200000606920280f

Port Type	Port WWN	Device Type	Device
HBA	210000e08b02fdce	HBA	c7

FIGURE 2-6 Attached Ports Detail Table

▼ To Launch a Software Application To Manage a Switch

- 1. Click the Assets tab.**

The Assets page is displayed.

- 2. Click the Switches link under the Assets tab.**

A Switches summary table is displayed.

- 3. Click an option button next to the device name to select that device.**

- 4. Click the Launch Device Manager button.**

The software launches the related switch management application in another Web page. For example, the launched software for Brocade Communications Systems switches require that you provide a user name and password to log in to the Web server residing in the switch. For switches using the SANsurfer software, a window opens, requiring you to enter a host name (for example, *hostname:0.0*) where the application will display.

▼ To Remove a Switch From the Software

- 1. Click the Assets tab.**

The Assets page is displayed.

- 2. Click the Switches link under the Assets tab.**

A Switches summary table is displayed. This table includes switch name links, IP address, World Wide Name (WWN), vendor and model name, and firmware revision level. Also displayed are the Remove, Launch Device Manager, and Show Ports buttons.

- 3. Click an option button next to the device name to select that device.**

- 4. Click the Remove button.**

A confirmation page is displayed.

- 5. Click the Remove button.**

The switch is removed from the software database of devices in your SAN or DAS environment.

Managing Switch Credentials

The discovery agent of the software contacts the hardware switch for its status and identification. The switch then requires a user name and password to access the devices. Use these procedures to manage the IP addresses of the switch hardware and add an authorized user so that the switch can report its status to the software.

Note – If the switch requires a user name and password to access the devices and you have not entered this information through the browser user interface or command-line interface, you might see error messages related to XML parsing or other exceptions. To fix this, you need to enter the switch information into the software.

Finding the Switch IP Address, User Name, and Password

The typical out-of-the-box default login information for a switch is:

```
Username: admin
Password: password
```

To find the IP address, contact your system administrator or click the switch graphic in the [Topology page](#) to see the switch IP address. The user name and password must match the settings you entered for the switch when you used the switch's management tool.

Note – This step makes the software aware of switch user names and passwords and does not change existing switch settings.

▼ To Add Switch Credentials

Note – These steps makes the software aware of switch user names and passwords and does not change existing switch settings.

1. **Click the Administration tab to display the Administration page.**
2. **Click the Out-of-band Credentials link under the Administration tab.**
The Out-of-band Credentials page is displayed.
3. **Click the Add button.**
4. **Type the required information in the related text field:**
 - Address—IP address of the switch
 - User Name—The user's login name for the switch. Typically this field is `admin`.
 - Password—The default is a blank password if you choose not to use one.
 - Verify Password—If you use a password, type it again.
5. **Click Save.**
A confirmation page is displayed.

▼ To Modify Switch Credentials

6. **Click the Out-of-band Credentials link under the Administration tab.**
The Out-of-band Credentials page is displayed.
7. **Click the option button next to the IP Address column to select a user.**
8. **Click the Modify button.**
9. **Type the required information in the related text field:**
 - User Name—The user's login name for the switch. Typically this field is `admin`.
 - Password—The default is a blank password if you choose not to use one.
 - Verify Password—If you use a password, type it again.
10. **Click Save.**
A confirmation page is displayed.

▼ To Delete Switch Credentials

1. **Click the Administration tab to display the Administration page.**
2. **Click the Out-of-band Credentials link under the Administration tab.**
The Out-of-band Credentials page is displayed.
3. **Click the option button next to the IP Address column to select a user.**
4. **Click the Delete button.**
A confirmation page is displayed.
5. **Click the Delete button.**
6. **Click Save.**

Storage

This section describes how to view and manage storage devices in your SAN or DAS environment. It also describes how to launch a software application in another Web browser to manage a storage device.

▼ To View More Detail About a Storage Device

1. Click the Assets tab.

The Assets page is displayed.

2. Click the Storage link under the Assets tab.

A Storage summary table is displayed. This table includes storage name links, status, IP address (which you enter in [Step 4](#)), vendor and model name, and firmware revision level. Also displayed are the Remove and Launch Device Manager buttons and the More Actions drop-down menu.

3. Click a storage name link in the Name column.

The Device Detail page is displayed. The detail includes:

- Status
- IP address and node WWN
- Vendor or model name
- Firmware revision level
- Annotation text field that is used to include additional information or messages about the device
- Storage Actions drop-down menu

4. Type the IP address of the device in the IP Address field.

The IP address is displayed in summary tables when you click Save.

5. To add a comment about the asset, type message text in the Annotation text field.

6. Click Save.

A confirmation page is displayed.

▼ To View the Connection Path of the Storage Device in the SAN or DAS Environment

1. Click the Assets tab.

The Assets page is displayed.

2. Click the Storage link under the Assets tab.

A Storage summary table is displayed.

3. Click the link in the Name column to select a device.

4. Choose Show Paths from the Storage Actions drop-down menu.

5. Perform one of the following at the displayed page:

- Click the option button and type a host name in the Host Name text field.
- Click the option button in the table to select one of the hosts.

6. Click Next.

7. Perform one of the following:

- Click the option button and type a storage name in the Storage Device Name text field.
- Click the option button in the table to select one of the devices.

8. Click Finish.

The Show Paths page is displayed. A graphic showing all SAN and DAS paths from the host to the storage device appears on this page. The SAN graphic also displays partial paths. View zone-level information by selecting a zone from the View Zones drop-down menu. The SAN Paths graphic might span multiple fabrics and displays both full and partial paths. A DAS Path graphic appears only if the host and storage device are directly connected.

See also [“Viewing Your SAN or DAS Environment \(Topology Tab\)”](#) on page 25.

▼ To View Storage Device Port Connections

1. **Click the Assets tab.**

The Assets page is displayed.

2. **Click the Storage link under the Assets tab.**

A Storage summary table is displayed which shows the port WWN and node WWN.

3. **Click the link in the Name column to select a device.**

4. **Choose Show Ports from the Storage Actions drop-down menu.**

5. **Click the option button in the table to select a device.**

6. **Click the Attached FPorts button.**

The Attached Ports page is displayed, showing a Ports summary table. The table includes the Port Type, Port WWN, Device Type, and Device columns. Note that the device in the Device column is a clickable link. This link displays switch or other device details table.

▼ To View Storage Device LUNs

1. **Click the Assets tab.**

The Assets page is displayed.

2. **Click the Storage link under the Assets tab.**

A Storage summary table is displayed.

3. **Click the option button next to the Name column to select a device.**

4. **Choose Show LUNs from the More Actions drop-down menu.**

The LUNs summary table is displayed.

▼ To Launch a Software Application to Manage a Storage Device

1. **Click the Assets tab.**

The Assets page is displayed.

2. **Click the Storage link under the Assets tab.**

A Storage summary table is displayed.

3. **Click an option button next to the device name to select that device.**

4. **Click the Launch Device Manager button.**

The software launches the related storage management application in another Web page. For example, the launched configuration service software for Sun StorEdge T3 storage arrays requires that you provide a user name and password to log in to the software.

See [“Managing Applications” on page 45](#) and [“Using the Configuration Service for Sun StorEdge T3 and T3+ Arrays” on page 46](#).

Note – If you already have a configuration service Web-browser window open and click the Launch Device Manager button, a new window **does not** open. That is, another instance of the software is not launched.

▼ To Remove a Storage Device from the Software

1. **Click the Assets tab.**

The Assets page is displayed.

2. **Click the Storage link under the Assets tab.**

A Storage summary table is displayed.

3. **Click the option button next to the Name column to select a device.**

4. **Click the Remove button.**

A confirmation page is displayed.

5. **Click the Remove button.**

The storage device is removed from the software database of devices in your SAN or DAS environment.

Host Bus Adapters

This section describes how to view and manage HBAs in your SAN or DAS environment.

▼ To View More Detail About an HBA

1. Click the **Assets** tab.

The Assets page is displayed.

2. Click the **HBAs** link under the **Assets** tab.

An HBA summary table is displayed. This table includes device path, device name links, host name, vendor or model name, and firmware revision level.

3. Click a **device name** link in the **Path** column.

The Device Detail page is displayed. The detail includes:

- Host name of the machine where the HBA is installed
- Device path
- Vendor or model name
- Firmware revision level
- Show Ports button to view HBA port details

▼ To View HBA Path and Port Connections

1. Click the Assets tab.

The Assets page is displayed.

2. Click the HBAs link under the Assets tab.

An HBA summary table is displayed. This table includes device path, device name links, host name, vendor or model name, and firmware revision level.

3. Click the option button next to the Device Path column to select a device.

4. Click the Show Ports button.

A Ports Device Details page is displayed. The table shown includes two buttons:

- Show Paths button
- Show Attached Ports button

5. Click the Show Paths button.

6. Perform one of the following at the displayed page:

- Click the option button and type a host name in the Host Name text field.
- Click the option button in the table to select one of the hosts.

7. Click Next.

8. Perform one of the following:

- Click the option button and type an IP address in the Storage Device IP Address text field.
- Click the option button in the table to select one of the devices.

9. Click Finish.

The Show Paths page under the Topology tab is displayed. A graphic showing the path from your host to the storage device appears on this page. See [“Viewing Your SAN or DAS Environment \(Topology Tab\)”](#) on page 25.

10. Perform [Step 1](#) to [Step 4](#).

11. Click the Show Attached Ports button.

The Attached Ports table is displayed. See [FIGURE 2-6](#) for an example of this table.

Note that the device in the Device column is a clickable link. This link displays the Device Details page related to the device attached to the HBA port. For example, if the device is a switch, see [“To View More Detail About a Switch”](#) on page 58.

Launching the Storage Automated Diagnostic Environment Software (Health Tab)

When you click the Health tab, another Web browser opens to enable you to use the Storage Automated Diagnostic Environment software. This software requires a user name and password.

You add this application as described in [“Managing Applications” on page 45](#).

Note – If you already have a Storage Automated Diagnostic Environment Web browser window open and click the Launch Health Application button, a new window **does not** open. That is, another instance of the software is not launched.

▼ To Launch the Sun Storage Automated Diagnostic Environment Software

1. **Click the Health tab.**
2. **Click the Launch Health Application button.**
A new Web browser opens.
3. **Enter a user name and password.**

The Master Configuration window is displayed. See the *Storage Automatic Diagnostic Environment User Guide* for more information.

The `sstr` Command

Note – Issue these commands from the management station.

This chapter describes the topology reporter `/opt/SUNWnsm/bin/sstr` command line and options. The `sstr` command enables you to perform the same software operations as you can by using the Web-browser user interface (UI). Any changes you make by using this command are shown in the UI when you refresh or reload the related page in your browser.

This chapter includes the following topics:

- “[Command Syntax and Usage Summary](#)” on page 72
- “[Administering Users](#)” on page 83
- “[Managing User Email Notification](#)” on page 86
- “[Administering SNMP Trap Notification](#)” on page 90
- “[Managing Applications](#)” on page 93
- “[Managing Alarms](#)” on page 94
- “[Viewing Asset Status and Topology](#)” on page 95
- “[Managing Host Machines](#)” on page 98
- “[Managing Switches](#)” on page 101
- “[Managing Storage](#)” on page 106
- “[Managing Host Bus Adapters](#)” on page 109
- “[Managing Discovery](#)” on page 111
- “[Showing Properties](#)” on page 113
- “[Setting Software Properties](#)” on page 114

Command Syntax and Usage Summary

The `sstr(1M)` command is the command-line interface (CLI) for the software. The `sstr` command enables you to display your storage area network (SAN) and direct-attached storage (DAS) host, host bus adapter (HBA), switch, and storage device information. It also enables you to manage users, alarms, and user email options. These commands are the CLI equivalent of functions that are also available from the UI.

You can type this command with its subcommands and options from a terminal command line from the management station. Depending on your role as identified by the administrative user `admin`, you might not be able to execute all commands. The three roles associated with the software permissions are `admin`, `operator`, and `guest` ([TABLE 2-1](#)).

▼ To Display a List of Subcommands

- **Type:**

```
# sstr --help
```

▼ To Display a Usage Summary of the Subcommands

- **Type:**

```
# sstr subcommand --help
```

where *subcommand* is one of the subcommands shown in [TABLE 3-1](#).

Short and Long Option Names

Note – When you use a double hyphen option, do not type a space between hyphens.

The `sstr` command can accept a short or long name for each option. A short name option requires a single hyphen (-). A long name option requires a double hyphen (--). This section shows the short name option followed by the long name option in parentheses. For example, `sstr add-user -r(--role) guest user-name`.

sstr Subcommand Tables

[TABLE 3-1](#) shows the `sstr` subcommands sorted by function. [TABLE 3-2](#) shows the subcommands sorted by alphabetical order. You can also see the `sstr(1M)` man page.

TABLE 3-1 sstr Subcommands Sorted By Function

Subcommand	Description	See This Section
Administering Users and Email		
users	Display information about all users added by the administrator.	“Administering Users” on page 83
add-user	Add a user to the database of users authorized to use the software.	“Administering Users” on page 83
modify-user	Change existing user attributes.	
remove-user	Delete a current user.	
create-email-notification	Add a user who will receive notification of an alarm according to the alarm severity level by email or pager.	“Managing User Email Notification” on page 86
email-notifications	Display all users who are currently configured to receive email notification of alarms and notification ID information	
email-notification	Enables the admin user to change the attributes of a user who will receive notification of an alarm.	
delete-email-notification	Remove a notification.	
set-property email-notification	Enable email notification.	“Enabling and Disabling Notification” on page 118
set-property contact-email	Set the administrator email contact address.	“Setting the Administrator Email Contact Address” on page 116
Software Status Summary and Properties		
show-properties	Display all current software settings.	“Showing Properties” on page 113

TABLE 3-1 sstr Subcommands Sorted By Function (Continued)

Subcommand	Description	See This Section
Administering Email Servers and Network Host Notification		
set-property smtp-server	Set the SMTP email server.	“Specifying the SMTP Mail Server” on page 117
snmp-notifications	Use this command without options to display SNMP alarm notification details: alarm level, host name, port number, and locale.	“Administering SNMP Trap Notification” on page 90
create-snmp-notification	Enables you to add the type of alarm notifications and host machine to report to the SNMP client by alarm level, hostname, port number, and locale.	
snmp-notification	Change existing settings.	
delete-snmp-notification	Deletes an email or SNMP alarm notification by its ID. The sstr snmp-notification command shows the ID.	“Administering SNMP Trap Notification” on page 90
Managing Applications		
applications	Display the existing external applications that are launchable from the browser interface.	“Managing Applications” on page 93
application	Modify the path or URL of the existing launchable applications such as the Storage Automated Diagnostic Environment software.	
set-property t3-application	Set or change the name of the application that manages the Sun StorEdge T3 storage arrays	“Specifying the Sun StorEdge T3 Array Application” on page 118
Managing Alarms		
alarms	Display a list of all current alarms in your SAN or DAS.	“Managing Alarms” on page 94
alarm	Display details about a specific alarm by <i>alarm-id</i> . Use the sstr alarms command to list all current alarms with their IDs.	
delete-alarm	Delete an alarm by its ID number. Use the sstr alarms command to show alarm IDs.	“Managing Alarms” on page 94
set-property alarm-expiration	Set alarm expiration time.	“Setting the Alarm Expiration Interval” on page 115

TABLE 3-1 sstr Subcommands Sorted By Function (*Continued*)

Subcommand	Description	See This Section
set-property logging-threshold	Set the alarm severity level to log.	“Setting the Alarm Logging Threshold Level” on page 116
Viewing Assets and Managing Discovery		
assets	Display a brief summary of your SAN or DAS assets: host, host bus adapter (HBA), switch, and storage devices.	“Viewing Asset Status and Topology” on page 95
discover	Forces the software to retrieve the current status about hosts, HBA, switches, and storage devices in the SAN or DAS environment.	“Managing Discovery” on page 111
das	Display DAS (direct-attached storage) topology instead of SAN topology.	
fabric fabrics	Enables you to display a system view of all assets in the specified SAN fabric.	“Viewing Asset Status and Topology” on page 95
set-property discovery-interval	Set the interval at which discovery occurs.	“Setting the Discovery Interval” on page 117
Managing Host Machines		
hosts	Display information about all hosts in your environment.	“Managing Host Machines” on page 98
host	Display information about the host specified by <i>hostname</i> .	
paths	Display the paths between the host and its attached storage. The information shown includes the fabric, zone, switch name, switch port, device name, device type, and device port.	“Managing Host Machines” on page 98
remove-host	Remove the specified host from the list of devices managed by the software.	
Managing Host Bus Adapters		
hbas	Display information about all host bus adapters (HBAs) in your SAN.	“Managing Host Bus Adapters” on page 109
hba	Display information about a specific HBA.	
hba-ports	Display information about HBA ports.	

TABLE 3-1 sstr Subcommands Sorted By Function (*Continued*)

Subcommand	Description	See This Section
Managing Switches		
switches	Display a list of switches.	“Managing Switches” on page 101
switch	Display detailed information about the specified switch named <i>switch-name</i> .	
switch-ports	Display detailed information about the switch ports for the specified switch named <i>switch-name</i> .	
port-connections	Display information about the storage device ports, such as status, World Wide Name (WWN), and so on.	
remove-switch	Deletes the specified switch from the device set being managed by the software.	

TABLE 3-1 sstr Subcommands Sorted By Function (*Continued*)

Subcommand	Description	See This Section
Managing Switch IP Addresses and Users		
add-credential	Add a credential profile (the user name, password, and IP address) for the out-of-band switches currently configured in the software.	“Managing Switch Credentials (IP Addresses and User Login)” on page 104
credential	Change existing settings.	
credentials	Display the user name, password, and IP address for the out-of-band switches currently configured in the software.	
remove-credential	Deletes a switch credential profile (IP address and associated user information).	
Managing Storage		
storage-list	Display a list of storage devices in the environment.	“Managing Storage” on page 106
storage	Display information for a specific storage device.	
storage-luns	Display a list of logical unit numbers (LUNs) for a specified storage device.	
storage-ports	Display a list of ports for the specified storage device.	
remove-storage	Deletes a storage device from the set of devices being managed by the software	

TABLE 3-2 sstr Subcommands Sorted By Alphabetical Order

Command and Subcommand	Description	See This Section
add-user	Add a user to the database of users authorized to use the software.	“Administering Users” on page 83
add-credential	Add a credential profile (the user name, password, and IP address) for the out-of-band switches currently configured in the software.	“Managing Switch Credentials (IP Addresses and User Login)” on page 104
alarm	Display details about a specific alarm by <i>alarm-id</i> . Use the <code>sstr alarms</code> command to list all current alarms with their IDs.	“Managing Alarms” on page 94
alarms	Display a list of all current alarms in your SAN or DAS.	“Managing Alarms” on page 94
application applications	Display or add the external applications that are launchable from the browser interface.	“Managing Applications” on page 93
assets	Display a brief summary of your SAN or DAS assets: host, host bus adapter (HBA), switch, and storage devices.	“Viewing Asset Status and Topology” on page 95
create-email-notification	Add a user who will receive notification of an alarm according to the alarm severity level by email or pager.	“Managing User Email Notification” on page 86
create-snmp-notification	Enables you to add the type of alarm notifications and host machine to report to the SNMP client by alarm level, hostname, port number, and locale.	“Administering SNMP Trap Notification” on page 90
credentials credential	Display the user name, password, and IP address for the out-of-band switches currently configured in the software.	“Managing Switch Credentials (IP Addresses and User Login)” on page 104
das	Display DAS (direct-attached storage) topology instead of SAN topology.	“Viewing Asset Status and Topology” on page 95
delete-alarm	Delete an alarm by its ID number. Use the <code>sstr alarms</code> command to show alarm IDs.	“Managing Alarms” on page 94
delete-email-notification	Remove a notification.	“Managing User Email Notification” on page 86
delete-snmp-notification	Deletes an email or SNMP alarm notification by its ID. The <code>sstr snmp-notification</code> command shows the ID.	“Administering SNMP Trap Notification” on page 90

TABLE 3-2 sstr Subcommands Sorted By Alphabetical Order (Continued)

Command and Subcommand	Description	See This Section
discover	Enables the admin user to start asset discovery (to retrieve the current status about hosts, HBA, switches, and storage devices in the SAN or DAS environment) or to show the last time asset discovery occurred.	“Managing Discovery” on page 111
email-notification	Enables the admin user to change the attributes of a user who will receive notification of an alarm.	“Managing User Email Notification” on page 86
email-notifications	Display a list of email alarm notifications or enable or disable the notification feature.	“Managing User Email Notification” on page 86
fabric fabrics	Enables you to display a system view of all assets in the specified SAN fabric.	“Viewing Asset Status and Topology” on page 95
hba	Display information about a specific HBA.	“Managing Host Bus Adapters” on page 109
hbas	Display information about all host bus adapters (HBAs) in your SAN.	“Managing Host Bus Adapters” on page 109
hba-ports	Display information about HBA ports.	“Managing Host Bus Adapters” on page 109
host	Display information about the host specified by <i>hostname</i> .	“Managing Host Machines” on page 98
hosts	Display information about all hosts in your environment.	“Managing Host Machines” on page 98
modify-address	Change existing settings.	“Managing Switch Credentials (IP Addresses and User Login)” on page 104
modify-user	Change existing user attributes.	“Administering Users” on page 83
paths	Display the paths between the host and its attached storage. The information shown includes the fabric, zone, switch name, switch port, device name, device type, and device port.	“Managing Host Machines” on page 98
port-connections	Display information about the storage device ports, such as status, World Wide Name (WWN), and so on.	“Managing Switches” on page 101
remove-credential	Deletes a switch credential profile (IP address and associated user information).	“Managing Switch Credentials (IP Addresses and User Login)” on page 104

TABLE 3-2 sstr Subcommands Sorted By Alphabetical Order (Continued)

Command and Subcommand	Description	See This Section
remove-host	Remove the specified host from the list of devices managed by the software.	“Managing Host Machines” on page 98
remove-storage	Deletes a storage device from the set of devices being managed by the software	“Managing Storage” on page 106
remove-switch	Deletes the specified switch from the device set being managed by the software.	“Managing Switches” on page 101
remove-user	Delete a current user.	“Administering Users” on page 83
set-property <i>property</i> , where <i>property</i> is one of: alarm-expiration contact-email discovery-interval email-notification logging-threshold snmp-notification smtp-server t3-application	Set software settings such as alarm expiration time, alarm logging threshold, asset discovery interval, and so on.	“Setting Software Properties” on page 114
show-properties	Display all current software settings.	“Showing Properties” on page 113
snmp-notification	Enables the admin user to change the attributes of the machine that receives the SNMP trap notification information.	“Administering SNMP Trap Notification” on page 90
storage	Display information for a specific storage device.	“Managing Storage” on page 106
storage-list	Display a list of storage devices in the SAN. To show information for a single storage device, use the <i>device-name</i> where <i>device-name</i> is a name such as t3-49.	“Managing Storage” on page 106
storage-luns	Display a list of logical unit numbers (LUNs) for a specified storage device.	“Managing Storage” on page 106
storage-ports	Display a list of ports for the specified storage device.	“Managing Storage” on page 106
switch	Display detailed information about the specified switch named <i>switch-name</i> .	“Managing Switches” on page 101

TABLE 3-2 sstr Subcommands Sorted By Alphabetical Order (*Continued*)

Command and Subcommand	Description	See This Section
switches	Display a list of switches.	“Managing Switches” on page 101
switch-ports	Display detailed information about the switch ports for the specified switch named <i>switch-name</i> .	“Managing Switches” on page 101
users	Display information about all users added by the administrator.	“Administering Users” on page 83

Administering Users

This section describes the `sstr` commands for administering users—adding, modifying, deleting, and displaying them. When added, a user can log into the software using his or her user name and password. The user role determines user privileges. See also [“If An Admin User Password is Lost or Forgotten” on page 35](#).

Note – Do not add the superuser (`root`) user to the list of authorized users. The software cannot authenticate this user.

- [“Before You Add a User” on page 83](#)
- [“sstr add-user” on page 84](#)
- [“sstr modify-user” on page 85](#)
- [“sstr remove-user” on page 85](#)
- [“sstr users” on page 85](#)

Before You Add a User

Before you add a user, consider the following:

- Add only those users that already have a user account on the management station
- Users can use their Solaris (UNIX) passwords to log in. They can safely use these passwords because they are encrypted before verification
- `root` and `bin` cannot be added to or use the software

sstr add-user

Note – The superuser user `root` has a default role of `guest`, a user with read-only privileges.

This command enables the software administrator (a user with a role of `admin`) to add users to the software database of authenticated users. Once added, a user can log into the software using his or her username and password.

Syntax

```
sstr add-user [-r (--role) role] user-name
```

where the user *role* is as follows:

<code>admin</code>	An <code>admin</code> user has all administration privileges. The <code>admin</code> user can add, modify, and delete users, attributes, and devices in the software.
<code>operator</code>	An <code>operator</code> user can use most of the software features except those that add, modify, or delete users, attributes, and devices. This user can delete alarms. The Administration page in the UI is not available to this user.
<code>guest</code>	A <code>guest</code> has read-only privileges and can use most features of the software except those that add, modify, or delete users, attributes, and devices. The <code>guest</code> user can launch applications if the user has login access to them. The Administration page in the UI is not available to this user.

The *user-name* is the user's login name for the machine where the software is installed. The software authenticates the user against the machine's list of users. The software then stores the user information in the software's data base.

`sstr modify-user`

This command enables the admin user to change a user's current role.

Syntax

`sstr modify-user [-r (--role) role] user-name`

`sstr remove-user`

This command enables the admin user to remove a user from the software's list of authorized users.

Syntax

`sstr remove-user user-name`

`sstr users`

Use this command to show information about all users who have been added by the software administrator using the `sstr add-user` command. This command shows the user name and role.

Syntax

`sstr users`

Managing User Email Notification

When a device alarm occurs, email is sent by the software to users designated by the `admin` user. These commands enable the `admin` user to manage this capability:

- [“sstr email-notifications” on page 87](#)
- [“sstr create-email-notification” on page 87](#)
- [“sstr email-notification” on page 88](#)
- [“sstr delete-email-notification” on page 89](#)

See also [“Enabling and Disabling Notification” on page 118](#).

sstr email-notifications

This command enables you to display all users who are currently configured to receive email notification of alarms and notification ID information.

Syntax

```
sstr email-notifications
```

sstr create-email-notification

This command enables the `admin` user to add a user who will receive notification of an alarm according to the alarm severity level. The user receives the notification by email or a pager.

Syntax

```
sstr create-email-notification -e(--email-address) email-address  
[-a(--alarm-level) severity] [-m(--medium) {email | pager}]  
[-t(--min-interval) interval] [-l(--locale) locale]
```

where:

<i>email-address</i>	The email address of the user to be notified.
<i>severity</i>	The severity level of the alarm. Valid levels are 0, 1, 2, 3 where: 0 - Down. A fatal nonrecoverable error has occurred. 1 - Critical. A serious error has occurred 2 - Major. A somewhat serious error has occurred. 3 - Minor. An annoying error has occurred.
<i>email</i> <i>pager</i>	The medium to use to send the notification, where <i>email</i> is 0 and <i>pager</i> is 1. If not specified, the default is 0 (email).
<i>interval</i>	The minimum time between messages, in minutes. The default is 0.
<i>locale</i>	The user locale of sent messages. <i>locale</i> is one of the following: English French Japanese German

sstr email-notification

This command enables the `admin` user to change the attributes of a user who will receive notification of an alarm.

Syntax

```
sstr email-notification -e(--email-address) email-address id
[-m(--medium) {email | pager}] [-t(--min-interval) interval]
[-l(--locale) locale]
```

where:

<i>email-address</i>	The email address of the user to be notified.
<i>id</i>	The notification identification. Use the <code>sstr email-notifications</code> command without options to display the related notification <i>id</i> .
<i>severity</i>	The severity level of the alarm. Valid levels are 0, 1, 2, 3 where: 0 - Down. A fatal nonrecoverable error has occurred. 1 - Critical. A serious error has occurred 2 - Major. A somewhat serious error has occurred. 3 - Minor An annoying error has occurred.
<i>email</i> <i>pager</i>	The medium to use to send the notification, where <i>email</i> is 0 and <i>pager</i> is 1. If not specified, the default is 0 (email).
<i>interval</i>	The minimum time between messages, in minutes. The default is 0.
<i>locale</i>	The user locale of sent messages. <i>locale</i> is one of the following: English French Japanese German

sstr delete-email-notification

This command deletes the email notification by ID.

Syntax

```
sstr delete-email-notification id
```

where:

<i>id</i>	The notification identification. Use the <code>sstr email-notifications</code> command without options to display the related notification <i>id</i> .
-----------	--

Administering SNMP Trap Notification

This section describes the `sstr` commands that enable the `admin` user to manage the Simple Network Management Protocol (SNMP) servers and notification.

These commands enable the `admin` user to manage the SNMP trap notification service. This server routes SNMP traps that occur in the SAN or DAS to a particular machine hosting applications that can receive the traps.

- [“sstr snmp-notifications” on page 91](#)
- [“sstr create-snmp-notification” on page 91](#)
- [“sstr snmp-notification” on page 92](#)
- [“sstr delete-snmp-notification” on page 92](#)

See also [“Enabling and Disabling Notification” on page 118](#) and [“Specifying the SMTP Mail Server” on page 117](#).

sstr snmp-notifications

This command enables you to display the SNMP details (alarm level, host name, port number, and locale) of all machines that are currently configured to receive SNMP trap information.

Syntax

```
sstr snmp-notifications
```

sstr create-snmp-notification

This command enables the `admin` user to add the type of alarm notifications reported to the specified SNMP host name by alarm level, port number, and locale.

Syntax

```
sstr create-snmp-notification -h hostname [-a severity] [-p portnumber]  
[-l locale]
```

where:

<i>hostname</i>	The host name of the machine receiving the SNMP trap information. <i>hostname</i> must be the fully qualified hostname including the domain. For example: <code>martha.xyzcorp.com</code>
<i>severity</i>	The severity level of the alarm. Valid levels are 0, 1, 2, 3 where: 0 - Down. A fatal nonrecoverable error has occurred. 1 - Critical. A serious error has occurred 2 - Major. A somewhat serious error has occurred. 3 - Minor An annoying error has occurred.
<i>portnumber</i>	The SNMP port of the specified machine. The default port is 162.
<i>locale</i>	The user locale of sent messages. <i>locale</i> is one of the following: English French Japanese German

sstr snmp-notification

This command enables the `admin` user to change the attributes of the machine that receives the SNMP trap notification information.

Syntax

```
sstr snmp-notification id [-h hostname] [-a severity]  
[-p portnumber] [-l locale]
```

where:

<i>id</i>	The notification identification. Use the <code>sstr snmp-notifications</code> command without options to display the related notification <i>id</i> .
<i>hostname</i>	The host name of the machine receiving the SNMP trap information. <i>hostname</i> must be the fully qualified hostname including the domain. For example: <code>martha.xyzcorp.com</code>
<i>severity</i>	The severity level of the alarm. Valid levels are 0, 1, 2, 3 where: 0 - Down. A fatal nonrecoverable error has occurred. 1 - Critical. A serious error has occurred 2 - Major. A somewhat serious error has occurred. 3 - Minor An annoying error has occurred.
<i>portnumber</i>	The SNMP port of the specified machine. The default port is 162.
<i>locale</i>	The user locale of sent messages. <i>locale</i> is one of the following: English French Japanese German

sstr delete-snmp-notification

This command enables the `admin` user to delete the SNMP notification by ID.

Syntax

```
sstr delete-snmp-notification id
```

where:

<i>id</i>	The notification identification. Use the <code>sstr snmp-notifications</code> command without options to display the related notification <i>id</i> .
-----------	---

Managing Applications

This section describes the commands that enable the `admin` user to manage software applications. Users can launch these external applications from the software UI.

See also [“Specifying the Sun StorEdge T3 Array Application” on page 118](#).

`sstr applications`

This command enables you to show the software application that is currently configured in the software. The application information includes its name and its path or Uniform Resource Locator (URL) location.

Syntax

```
sstr applications
```

`sstr application`

This command enables the `admin` user to change the application path or URL.

Syntax

```
sstr application [-l location] app-name
```

where:

<i>location</i>	The path or URL where the software application is located.
<i>app-name</i>	The name of the software application.

Managing Alarms

This section describes the `sstr` commands that enable the `admin` user to manage alarms according to their ID and severity level.

See also [“Setting the Alarm Expiration Interval” on page 115](#) and [“Setting the Alarm Logging Threshold Level” on page 116](#).

`sstr alarms`

The command enables you to display a list of current alarms in your SAN or DAS.

Syntax

```
sstr alarms
```

`sstr alarm`

This command enables you to display details about a specific alarm by *id*. Use the `sstr alarms` command to list all current alarms with their IDs.

Syntax

```
sstr alarm id
```

where:

<i>id</i>	The alarm identification. Use the <code>sstr alarms</code> command without options to display the related alarm <i>id</i> .
-----------	---

`sstr delete-alarm`

This command enables the `admin` user to delete alarms according to their IDs.

Syntax

```
sstr delete-alarm id
```

where:

<i>id</i>	The alarm identification. Use the <code>sstr alarms</code> command without options to display the related alarm <i>id</i> .
-----------	---

Viewing Asset Status and Topology

These commands enable you to display the assets and the system view of assets (also known as topology).

- [“sstr assets” on page 96](#)
- [“sstr fabrics” on page 96](#)
- [“sstr fabric” on page 96](#)
- [“sstr das” on page 97](#)

sstr assets

This command displays a brief summary of all assets: host, host bus adapter (HBA), switch, and storage devices.

Syntax

```
sstr assets
```

sstr fabrics

This command displays all fabrics in the SAN.

Syntax

```
sstr fabrics
```

sstr fabric

This command enables you to display a system view of all assets in the specified SAN fabric.

Syntax

```
sstr fabric fabric-name [zone-name]
```

Where:

<i>fabric-name</i>	Shows only the specified SAN fabric by name. If the name includes a space character (for example, Primary 1), enclose the name in double quotes ("Primary 1").
<i>zone-name</i>	Shows only the specified SAN fabric zone. If the name includes a space character (for example, Zone 1), enclose the name in double quotes ("Zone 1").

```
sstr das
```

This command displays DAS (direct-attached storage) topology instead of SAN topology.

Syntax

```
sstr das
```

Managing Host Machines

This section describes the commands that enable the `admin` user to show and manage host machines in the SAN or DAS configuration.

- [“sstr hosts” on page 99](#)
- [“sstr host” on page 99](#)
- [“sstr paths” on page 99](#)
- [“sstr remove-host” on page 100](#)

sstr hosts

This command enables you to display information about all host machines: host name, vendor or model, and operating environment.

Syntax

```
sstr hosts
```

sstr host

This command enables the `admin` user to show information about a specific host machine and include a text message to associate with the host.

Syntax

```
sstr host [-a(--annotation) annotation] hostname
```

where:

<i>annotation</i>	Text message to associate with this host. Include this text in double-quotes (" ").
<i>hostname</i>	Name of host machine to display.

sstr paths

This command enables you to show the storage device path for the named host and storage device.

Syntax

```
sstr paths -h(--hostname) hostname -s(--storage) storage-name
```

where:

<i>hostname</i>	Name of host machine to display.
<i>storage-name</i>	Name of the storage device to display.

sstr remove-host

This command enables you to remove the specified host from the list of devices managed by the software.

Syntax

```
sstr remove-host hostname
```

where:

<i>hostname</i>	Name of host machine to remove.
-----------------	---------------------------------

Managing Switches

This section describes the commands that enable the `admin` user to show and manage the switch hardware in the SAN or DAS environment.

- [“sstr switches” on page 102](#)
- [“sstr switch-ports” on page 102](#)
- [“sstr port-connections” on page 103](#)
- [“sstr remove-switch” on page 103](#)
- [“Managing Switch Credentials \(IP Addresses and User Login\)” on page 104](#)

sstr switches

This command enables you to display information about all switches in your environment, including device name, WWN, vendor or model name, and firmware revision level.

Syntax

```
sstr switches
```

sstr switch

This command enables you to display information about a specific switch.

Syntax

```
sstr switch [-a(--annotation) annotation] device-name
```

where:

<i>annotation</i>	Text message to associate with this device. Include this text in double-quotes (" ").
<i>device-name</i>	<i>device-name</i> is a name such as ancor155.

sstr switch-ports

This command enables you to display information about a specific switch port number.

Syntax

```
sstr switch-ports device-name
```

where:

<i>device-name</i>	<i>device-name</i> is a name such as brocade55.
--------------------	---

sstr port-connections

This command enables you to display information about ports attached to switches.

Syntax

```
sstr port-connections WWN
```

where:

<i>WWN</i>	<i>WWN</i> is a port World Wide Name of the device such as: 20000c0dd006e31.
------------	---

sstr remove-switch

This command enables the `admin` user to remove the switch device from the list of devices managed by the software.

Syntax

```
sstr remove-switch device-name
```

where:

<i>device-name</i>	<i>device-name</i> is a name such as <code>brocade55</code> .
--------------------	---

Managing Switch Credentials (IP Addresses and User Login)

The discovery agent of the software contacts the hardware switch for its status and identification. The switch then requires a user name and password to access the devices. Use these procedures to manage the IP addresses of the switch hardware and add authorized users so that the switch can report its status to the software.

Note – If the switch requires a user name and password to access the devices and you have not entered this information through the browser user interface or command-line interface, you might see error messages related to XML parsing or other exceptions. To fix this, you need to enter the switch information into the software.

The typical out-of-the-box default login information for a switch is:

Username: admin Password: password

To find out the IP address, contact your system administrator or click the switch graphic in the [Topology page](#) to see the switch IP address. The user name and password must match the settings you entered for the switch when you used the switch's management tool.

Note – These commands make the software aware of switch user names and passwords and does not change existing switch settings.

sstr credentials

This command displays the user name and IP address of all switch users currently configured in the software.

Syntax

```
sstr credentials
```

sstr add-credential

This command adds and specifies a user name, password, and IP address profile to associate with a switch device and its related settings.

Syntax

```
sstr add-credential -u(--username) user-name [-p(--password) password]  
ip-address
```

where:

<i>user-name</i>	User name to associate with an IP address.
<i>password</i>	Password to assign to the user. The default is a blank password if you do not use this option.
<i>ip-address</i>	IP address of the user.

sstr credential

This command enables the admin user to change a user name, password, and IP address associated with a switch. If you do not specify a password, the current password is replaced with a blank password.

Syntax

```
sstr credential -u(--username) user-name [-p(--password) password]  
ip-address
```

sstr remove-credential

This command deletes a profile associated with a device. Execute the `sstr credentials` command after using this command to confirm that the IP address and user is removed.

Syntax

```
sstr remove-address ip-address
```

Managing Storage

This section describes the commands that enable the `admin` user to show and manage the storage devices, ports, and logical unit numbers (LUNs) in the SAN or DAS environment.

- [“sstr storage-list” on page 107](#)
- [“sstr storage” on page 107](#)
- [“sstr storage-luns” on page 108](#)
- [“sstr storage-ports” on page 108](#)
- [“sstr remove-storage” on page 108](#)

sstr storage-list

This command enables you to display information about the storage in your environment.

Syntax

```
sstr storage-list
```

sstr storage

This command enables you to display information about a specific storage device in your environment. Information includes the device World Wide Name (WWN), IP address, vendor or model type, and firmware revision level.

Syntax

```
sstr storage [-a(--annotation) annotation] [-i(--ip-address) ip-address]  
device-name
```

where:

<i>annotation</i>	Text message to associate with this device. Include this text in double-quotes (" ").
<i>ip-address</i>	IP address of the device.
<i>device-name</i>	<i>device-name</i> is a name such as t3-49.

sstr storage-luns

This command enables you to display a list of LUNs for the specified device.

Syntax

```
sstr storage-luns device-name
```

where:

<i>device-name</i>	<i>device-name</i> is a name such as t3-49.
--------------------	---

sstr storage-ports

This command enables you to display a list of storage device ports.

Syntax

```
sstr storage-ports device-name
```

where:

<i>device-name</i>	<i>device-name</i> is a name such as t3-49.
--------------------	---

sstr remove-storage

This command enables the `admin` user to remove the storage device from the list of devices managed by the software.

Syntax

```
sstr remove-storage device-name
```

where:

<i>device-name</i>	<i>device-name</i> is a name such as t3-49.
--------------------	---

Managing Host Bus Adapters

This section describes the commands that enable the `admin` user to show and manage the host bus adapters (HBAs) in each host machine.

`sstr hbas`

This command enables you to display information about all HBAs in your SAN or DAS environment, including device path, host name, vendor or model name, and driver or firmware revision level.

Syntax

```
sstr hbas
```

`sstr hba`

This command enables you to display information about a specific HBA in your SAN or DAS environment, including device path, host name, vendor or model name, and driver and firmware revision.

Syntax

```
sstr hba device-path
```

where:

<i>device-path</i>	<i>device-path</i> is a device path such as: <code>/devices/pci@1f,1f,2000/SUNW,qlc@1/fp@0,0:devctl</code>
--------------------	---

`sstr hba-ports`

This command enables you to display information about HBA ports in your SAN or DAS environment.

Syntax

```
sstr hba-ports device-path
```

where:

<i>device-path</i>	<i>device-path</i> is a device path such as: <code>/devices/pci@1f,1f,2000/SUNW,qlc@1/fp@0,0:devctl</code>
--------------------	---

Managing Discovery

This command enables the `admin` user to show the last time asset discovery occurred (`--last`) or to start asset discovery. See also [“Setting the Discovery Interval” on page 117](#).

```
sstr discover
```

Syntax

```
sstr discover [-l(--last)]
```

SAN and DAS Changes and Discovery

Discovery is the process where software agents on agent stations retrieve information about devices in your environment. The agents report it to the software and you can then view this information by using the UI or CLI at a management station.

The first discovery process occurs at system startup time after you install the software. The software then performs its discovery process according to a set interval. If you add or delete assets like hosts, switches, HBAs, and storage in your environment, you can perform a manual discovery to ensure that the new asset is reporting its status to the software.

▼ To Perform a Manual Discovery After a Change to Your SAN or DAS Configuration

1. **Change, add, or delete an asset.**
2. **Wait five to seven minutes.**

Waiting a few minutes gives the operating environment a chance to register changes to the SAN or DAS environment. This discovery takes a few minutes, depending on the size of your SAN or DAS environment.

3. Manually perform a discovery and check for the new asset:

a. Type:

```
# /opt/SUNWnsm/bin/sstr discover
```

b. Check for the new asset by typing:

```
# /opt/SUNWnsm/bin/sstr assets
```

Showing Properties

This command enables you to show the current settings for the software, including the following:

- Alarm expiration time
- Alarm logging threshold
- Discovery interval
- Sun StorEdge T3 array launchable application
- Email (SMTP) and Trap (SNMP) notification status
- SNMP server
- Email contact address

```
sstr show-properties
```

Syntax

```
sstr show-properties
```

Setting Software Properties

This command enables the `admin` user to set properties such as the following:

- [“Setting the Alarm Expiration Interval” on page 115](#)
- [“Setting the Alarm Logging Threshold Level” on page 116](#)
- [“Setting the Administrator Email Contact Address” on page 116](#)
- [“Setting the Discovery Interval” on page 117](#)
- [“Specifying the SMTP Mail Server” on page 117](#)
- [“Enabling and Disabling Notification” on page 118](#)
- [“Specifying the Sun StorEdge T3 Array Application” on page 118](#)

Setting the Alarm Expiration Interval

This command enables the `admin` user to set the alarm expiration time. That is, how long the alarm remains active and is then closed. Use this command without options to display the current alarm expiration interval. If you specify more than one option, the largest unit is used.

Note – See also “[Coordinating the Discovery Polling Interval and Alarm Expiration Threshold](#)” on page 23.

```
sstr set-property alarm-expiration
```

Syntax

```
sstr set-property alarm-expiration [-m (--minutes) minutes |  
-h (--hour) hours | -d (--days) days]
```

where:

<i>minutes</i>	Specifies how long the alarm remains active in <i>minutes</i> .
<i>hours</i>	Specifies how long the alarm remains active in <i>hours</i> .
<i>days</i>	Specifies how long the alarm remains active in <i>days</i> .

Setting the Alarm Logging Threshold Level

This command enables the `admin` user to set the alarm severity level to log into the `/var/sadm/install/logs/SUNWnsm.log` file. When the alarm reaches the specified or a greater severity level, it is logged.

```
sstr set-property logging-threshold
```

Syntax

```
sstr set-property logging-threshold [severity]
```

where:

<i>severity</i>	The severity level of the alarm. Valid levels are: down - A fatal nonrecoverable error has occurred. critical - A serious error has occurred major - A somewhat serious error has occurred. minor - An annoying error has occurred.
-----------------	---

Setting the Administrator Email Contact Address

This command shows or sets the `admin` user contact email address. To show the current address, use the command without options.

```
sstr set-property contact-email
```

Syntax

```
sstr set-property contact-email [admin-email-address]
```

where:

<i>admin-email-address</i>	The email address of the <code>admin</code> user.
----------------------------	---

Setting the Discovery Interval

This command enables the `admin` user to set the interval at which discovery occurs.

Note – See also “[Coordinating the Discovery Polling Interval and Alarm Expiration Threshold](#)” on page 23.

```
sstr set-property discovery-interval
```

Syntax

```
sstr set-property discovery-interval polling-interval
```

where:

<i>polling-interval</i>	The interval in minutes when the software starts polling all assets.
-------------------------	--

Specifying the SMTP Mail Server

This command enables the `admin` user to specify the mail server to use for notification. Use this command without options to display the current mail server.

```
sstr set-property smtp-server
```

Syntax

```
sstr set-property smtp-server [hostname]
```

where

<i>ip-address</i>	The IP address of the mail server machine.
<i>hostname</i>	The host name of the mail server machine. <i>hostname</i> must be the fully qualified hostname including the domain. For example: <code>martha.xyzcorp.com</code>

Enabling and Disabling Notification

These commands enable the `admin` user to turn email (SMTP) and trap (SNMP) notification on. Use the command without options to see the current setting.

```
sstr set-property email-notification
```

Syntax

```
sstr set-property email-notification [on | off]
```

```
sstr set-property snmp-notification
```

Syntax

```
sstr set-property snmp-notification [on | off]
```

Specifying the Sun StorEdge T3 Array Application

This command enables the `admin` user to set or display the name of the management application for the Sun StorEdge T3 storage arrays. Use this command without options to see the current name.

```
sstr set-property t3-application
```

Syntax

```
sstr set-property t3-application [app-name]
```

where:

<i>app-name</i>	The name of the software application: SCCS or HiCommand
-----------------	---

The `sstr_ctl` Command

This chapter describes the `sstr_ctl(1M)` command. Use this command to configure, start, and stop the topology reporter software. You can also back up and restore the software database.

This chapter includes the following topics:

- [“Command Syntax and Usage Summary” on page 120](#)
- [“Starting and Stopping the Software” on page 122](#)
- [“Configuring the Software” on page 123](#)
- [“Backing Up and Restoring the Database” on page 126](#)
- [“Displaying Software Properties” on page 127](#)
- [“Checking for Running Software Components” on page 128](#)

Command Syntax and Usage Summary

The `/opt/SUNWnsm/bin/sstr_ctl` command is the command-line interface for administrative control of the software. (It does not control the features of the software. See the `sstr(1M)` man page.)

Type this command with its subcommands from a terminal command line.

Syntax

```
sstr_ctl [start|stop|-s|-b|-r|-c|-p|-v] [-h|--help]
```

TABLE 4-1 sstr_ctl Subcommands

Option	Description
start	Starts all software components. See “Starting and Stopping the Software” on page 122.
stop	Stops all software components. See “Starting and Stopping the Software” on page 122.
-s (--status)	Displays the currently-running software components.
-b (--backup)	Backs up the database information. See “Backing Up and Restoring the Database” on page 126.
-r (--restore)	Restores the database information. See “Backing Up and Restoring the Database” on page 126.
-c (--configure)	Configures the software. See “Configuring the Software” on page 123.
-p (--printcfg)	Displays the current software properties, such as configured ports, Apache and Tomcat server names, and so on. See “Displaying Software Properties” on page 127.
-v (--version)	Displays the version information.
-h (--help)	Shows a syntax usage statement.

Short and Long Option Names

Note – When you use a double hyphen option, do not type a space between hyphens.

The `/opt/SUNWnsm/bin/sstr_ctl` command can accept a short or long name for each option. A short name option requires a single hyphen (-). A long name option requires a double hyphen (--). You can use the short or long name options when using this command.

For example, to show software status, type one of the following:

- `sstr_ctl -s`
- `sstr_ctl --status`

Starting and Stopping the Software

Ensure that you start the software on the management station and each agent station after you install and configure the software, as described in the *Sun StorEdge Enterprise Storage Manager 1.0 Topology Reporter Installation Guide*.

- **To start the software, open a terminal window and type:**

```
# /opt/SUNWnsm/bin/sstr_ctl start
```

The software displays messages showing each software process starting.

- **To stop the software, open a terminal window and type:**

```
# /opt/SUNWnsm/bin/sstr_ctl stop
```

The software displays messages showing each software process stopping.

Configuring the Software

Use the `/opt/SUNWnsm/bin/sstr_ctl` command to configure the software on your management station and each agent station (the command detects the station type). The command displays a series of prompts to set your configuration. In most cases, you can accept the default answers.

The example in [CODE EXAMPLE 4-1](#) shows the user responses in **bold** text.

If You Configure the Software More Than Once

If you install and configure the software and then want to reconfigure it later, you must stop the software. If you do not stop the software and it is running while you attempt to configure it, the software detects that ports are in use.

When you run the `sstr_ctl -c` command, the software allows you to choose the next available port number. For example, it will allow you to choose port 8280 but not port 8180.

- **To stop the software, type the following on the management station and each agent station:**

```
# /opt/SUNWnsm/bin/sstr_ctl stop
```

Default Ports for Installation

The default ports for the software are:

Port Number	Description
8180	Non- Secure Socket Layer (SSL) port. For example: <code>http://hostname:8180/nsm/</code>
8543	SSL port. For example: <code>https://hostname:8543/nsm/</code>
1024	Apache HTTP server port
5437	Postgres SQL data base port

Where Configuration Information is Stored

When you successfully complete the procedures in this section, the software writes this information to the `/opt/SUNWnsm/etc/sstr.properties` file.

Caution – Do not manually edit this file. Use the `sstr_ctl -c` command only.

CODE EXAMPLE 4-1 Configuration Script Example Responses

```
Run PostgreSQL server on port 5437 [y,n,?] y
Run Tomcat non-SSL server on port 8180 [y,n,?] y
Run Tomcat SSL server on port 8543 [y,n,?] y
Run Apache server on port 1024 [y,n,?] y
Do you want to use the Apache email address drew@hostname.domain [y,n,?] y
Do you want to use the SLP scope nsmscope [y,n,?] y
Configuration successful.
```

▼ To Configure the Software

1. Log into your machine as the root user.
2. Configure the software.

```
# /opt/SUNWnsm/bin/sstr_ctl -c
```

3. Respond to the prompts shown in [CODE EXAMPLE 4-1](#) with your system information.

See [“Starting and Stopping the Software” on page 122](#) and [“Logging into the Web Browser” on page 14](#).

Backing Up and Restoring the Database

The agent software collects information from devices in your environment and stores it in a database. This database then contains information to build a data model of your environment. The agent software polls your environment and updates the data model based on any new events or changes in device status.

You can manually back up and restore the database information using the `sstr_ctl` command. To automatically back up the database, use these commands as part of a `cron(1M)` job.

▼ To Back Up the Database

1. At the management station, back up the database by typing:

```
# /opt/SUNWnsm/bin/sstr_ctl --backup
```

The software displays messages showing each software process stopping. It also displays the following messages when it starts backing up the database.

```
Performing SSTR PostgreSQL database backup.
```

```
SSTR PostgreSQL database backup process complete.
```

```
Performing SSTR CRE backup.
```

```
SSTR CRE backup process complete.
```

```
SSTR backup process complete.
```

2. Restart the software.

```
# /opt/SUNWnsm/bin/sstr_ctl start
```

The software displays messages showing each software process starting.

▼ To Restore the Database

1. At the management station, restore the database by typing:

```
# /opt/SUNWnsm/bin/sstr_ctl --restore
```

The software displays messages showing each software process stopping. It also displays the following messages when it starts restoring up the database.

```
Performing SSTR PostgreSQL database restore.
```

```
SSTR PostgreSQL database restore process complete.
```

```
Performing SSTR CRE restore.
```

```
SSTR CRE restore process complete.
```

```
SSTR restore process complete.
```

2. Restart the software.

```
# /opt/SUNWnsm/bin/sstr_ctl start
```

The software displays messages showing each software process starting.

Displaying Software Properties

The `sstr_ctl --printcfg` command displays the current software properties, such as configured ports, Apache and Tomcat server names, and so on.

The command prints the contents of the `/opt/SUNWnsm/etc/sstr.properties` file.

Checking for Running Software Components

Perform the following steps to ensure that the required software application processes are running.

▼ To Check for Running Components

- **Check for running components.**

```
# /opt/SUNWnsm/bin/sstr_ctl --status
```

The following messages are displayed (if the machine is both station types, all messages display):

- **If the machine is a management station:**

```
Status of Sun StorEdge(TM) Topology Reporter Components

Core Components:

PostgreSQL for SSTR.....running.
The CRE for SSTR.....running.
Tomcat for SSTR.....running.

Supporting Applications:

SLP.....running.
iPlanet iMQ.....running.
```

- **If the machine is an agent station:**

```
Status of Sun StorEdge(TM) Topology Reporter Components
Core Components:

Apache for SSTR.....running.
SLP.....running.
```

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