



Sun StorEdge™ Management Software Kit 04/04 Getting Started Guide

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Preface

The *Sun StorEdge Management Software Kit 04/04 Getting Started Guide* describes the software on the Sun StorEdge™ Management Software CD-ROM, provides introductory information about the software, and lists related documentation.

This guide is intended for Sun™ support engineers, software installers, and system and storage administrators.

How This Book Is Organized

Chapter 1 introduces the software on the Sun StorEdge Management Software Kit 04/04 CD-ROM.

Chapter 2 describes how to use the `setup` script on the CD-ROM and how to log in to the software.

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> .

* The settings on your browser might differ from these settings.

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
Sun StorEdge Enterprise Storage Manager software	<i>Sun StorEdge Enterprise Storage Manager 2.1 Software Installation Guide</i>	817-4798
	<i>Sun StorEdge Enterprise Storage Manager 2.1 Release Notes</i>	817-4799
	esm(1M)	N/A
	esminstall(1M)	
	esmuninstall(1M)	
	esmcheck(1M)	
	esmcontrol(1M)	
Storage Automated Diagnostic Environment software	<i>Storage Automated Diagnostic Environment 2.3 User's Guide - Device Edition</i>	817-3284
Sun StorEdge SAN Foundation 4.4	<i>Sun StorEdge SAN Foundation Software 4.4 Guide to Documentation</i>	817-3670
	<i>Sun StorEdge SAN Foundation Software 4.4 Installation Guide</i>	817-3671
	<i>Sun StorEdge SAN Foundation 4.4 Software Configuration Guide</i>	817-3672
	<i>Sun StorEdge SAN Foundation Software 4.4 Release Notes</i>	817-3673

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Introducing the Sun StorEdge Management Software Kit

The Sun StorEdge Management Software Kit provides an integrated and expandable storage software platform to help storage and system administrators manage their direct-attached storage (DAS) and storage area network (SAN) environments. This software platform can scale as your storage environment grows and can accommodate the existing software modules on the product CD-ROM, third-party software applications, and future value-added Sun StorEdge Management Software modules from Sun Microsystems.

The Sun StorEdge Management Software Kit 04/04 CD-ROM includes:

- Sun StorEdge Enterprise Storage Manager 2.1 software
- Storage Automated Diagnostic Environment 2.3 software
- Sun StorEdge SAN Foundation 4.4 software
- Sun Web Console software

This chapter provides a general overview of the products on the Sun StorEdge Management Software Kit 04/04 CD-ROM and how you can use them in your storage environment.

The chapter describes the following topics:

- “Sun StorEdge Enterprise Storage Manager 2.1 Software” on page 2
- “Storage Automated Diagnostic Environment Software” on page 7
- “Sun StorEdge SAN Foundation Software” on page 8
- “Sun Web Console” on page 8
- “Locating the Sun StorEdge Management Software Kit Documentation” on page 9

Sun StorEdge Enterprise Storage Manager 2.1 Software

The Sun StorEdge Enterprise Storage Manager 2.1 software is the best platform for managing Sun StorEdge-based SAN environments. Optimized for Sun StorEdge arrays and systems, the software delivers the core storage management services of SAN monitoring and management, configuration services, health monitoring, and basic capacity reporting.

The software consists of two functional modules, described in the following:

- “SAN Manager Module” on page 4
- “Capacity Reporter Module” on page 5

You can view and manage your SAN and Fibre Channel DAS environment through a web browser user interface (UI) connected to the Sun Web Console web server (refer to “Sun Web Console” on page 8 for more information). The SAN Manager module also includes a command-line interface (CLI).

From either software module, you can link to and launch other software from the UI. For example, you can access the Capacity Reporter module from the SAN Manager module.

Note – The web browser and launchable software must be installed on all relevant platforms in your SAN environment.

For complete information about the SAN Manager and Capacity Reporter modules, see the *Sun StorEdge Enterprise Storage Manager 2.0 Installation Guide* and the online help for each software module.

Management and Agent Stations

The Sun StorEdge Enterprise Storage Management 2.1 environment consists of one host machine that you designate as a *management station* and one or more host machines that you designate as *agent stations*.

Note – You must install the Sun StorEdge SAN Foundation 4.4 software on all host machines that act as agent stations.

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

The management station runs the Sun Web Console 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.

The agent station can be one or more machines in your environment from which the software collects information about your SAN and DAS devices. The agents report the information to the management station where it is stored in the software's database. You can then use the UI or CLI on the management station to view the information.

Note – The SAN Manager module requires that you install the agent station software on each host connected to a SAN or switch fabric (that is, switch and storage devices and their attributes) or on each host directly attached to storage. If you install the software on only some hosts, you will only partially discover information.

The information collection process is known as *discovery* and *scanning*. Discovery indicates the discovery of storage elements in the SAN, and scanning indicates the collection of data from those elements.

- **SAN Manager discovery** is the process by which software agents on agent stations retrieve information about Fibre-Channel-attached SAN elements in your environment, such as hosts, switches, host bus adapters (HBAs), storage devices, and zones.
- **Capacity Reporter discovery** is the process by which the software detects top-level elements in your network (such as hosts, switches, storage arrays, and clusters) and displays the storage elements in the UI.

Note – Typically, Capacity Reporter discovers information during its installation process if the installer has provided configuration information. After installation, you can view information from the Reports tab or further configure the software for discovery and scanning.

After discovery, you can let the agent software that is installed on various hosts in your network scan or collect detailed data from the storage elements by managing or registering the storage elements. The Capacity Reporter database stores scan results, which are used to build detailed storage capacity reports. You can view and manage storage capacity reports from the Capacity Reporter UI, which is accessible from the Capacity Reporter management station.

SAN Manager Module

The SAN Manager module includes agent, management, and database software that you install on host machines in your environment. The agent software 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 the changes it discovers in device status.

You can view information and manage devices at any time by using the SAN Manager web browser UI, accessible from the Sun Web Console. You can use the CLI to perform the same tasks.

The SAN Manager module enables you to:

- View hardware elements such as hosts, host bus adapters, switches, and storage devices, including a graphical view of your environment
- Track events, such as alarms, and have the software notify you by email, by mobile device email, and by SNMP traps when alarms occur
- Manage:
 - Event alarm reporting
 - SAN elements
 - Fabrics
 - Zones and zone sets
 - Firmware revision levels
- Run diagnostic tests on storage elements
- Configure user email notification and network host notification
- Launch supporting web browser-based applications related to devices in your environment
- Use the software to show connections between host systems and logical disks in an HP OpenView Network Node Manager console
- Enable Sun Remote Service (SRS) Net Connect notification of events for Sun service action

After you successfully install the SAN Manager module, you can configure and run a discovery process. This process polls the storage elements in your network that meet the discovery criteria, and delivers basic information to the SAN Manager management station for display in the browser UI.

Capacity Reporter Module

The Capacity Reporter module enables you to view storage capacity usage reports on the Sun StorEdge hardware and Sun Solaris-based software storage elements in your network. It includes support for a Capacity Reporter management station and various agent stations. The module uses an Oracle Standard Edition database for collecting and storing storage capacity and Capacity Reporter module configuration data.

You can view and manage storage capacity reports from the Capacity Reporter web browser UI, accessible from the Sun Web Console.

The Capacity Reporter module enables you to:

- View storage capacity reports on your network's top-level storage elements, such as Sun Solaris hosts, Sun StorEdge arrays and systems, clusters, and switches
- View historical and comparison graphical representations of report information
- Create policies to define thresholds that generate alarms
- Track storage capacity events, such as alarms and have the software notify you by email, by mobile device email, and by SNMP traps when alarms occur
- Execute a script when a storage element is in an alarm condition to address that alarm automatically

After you successfully install the Capacity Reporter module, you can configure and run a discovery process. This process polls the storage elements in your network that meet the discovery criteria, and delivers basic information to the Capacity Reporter management station for display in the Capacity Reporter web browser UI.

After discovery, the agent software that you installed on the various Sun Solaris-based hosts in your storage area network can scan (collect detailed data from) the storage elements. First, you must manage or register the storage elements. The Capacity Reporter database stores scan results, which it uses to build detailed storage capacity reports.

You can choose to install the Capacity Reporter software on each host from which you want to collect information (also known as scanning). If you do not want to install the software, you can use the remote host scanning feature. The remote host scanning feature enables you to collect storage capacity information from hosts without having the Capacity Reporter software module installed. However, the remote host scanning feature might not provide as much storage capacity detail as the information provided by an agent station with the Capacity Reporter software module installed.

How Do SAN Manager and Capacity Reporter Modules Work Together?

The SAN Manager and Capacity Reporter software modules provide an “at-a-glance” view of the logical and physical characteristics of your Sun StorEdge based SAN environment, such as devices, zones, storage policies, storage capacity reports, and device health information.

You can install the software modules on a single host machine that provides a “command console” integrated storage management station to help you manage your storage environment more easily.

You can launch each module from the other in context. For example:

- From the SAN Manager module’s Topology page, you can launch the Capacity Reporter module from the host icon. The Capacity Reporter module opens with storage capacity details about that host.

Note – The software must have discovered, monitored, and scanned the host machine completely before the it can launch the Capacity Reporter module successfully.

- From the Capacity Reporter module’s Reports page, you can launch the SAN Manager module from a selected element’s details link. The SAN Manager module opens with topology details about the selected element.

You can also link to and launch other supporting web browser-based software from within the SAN Manager and Capacity Reporter web browser UI. Launchable software includes but is not limited to the following:

- Sun StorEdge Configuration Service software for Sun StorEdge T3 and T3+ arrays, Sun StorEdge 6000 Family arrays and systems, and Sun StorEdge 3500FC arrays
- Sun StorEdge 9900 HiCommand and Storage Navigator software for Sun StorEdge 9900 Series arrays
- SunPlex™ manager for Sun Cluster environments
- VERITAS Cluster Server for VERITAS cluster environments
- Switch management software embedded in or included with switches in your environment, such as SANSurfer, Brocade Communications Corp. WEBTOOLS, or McDATA Corp. Enterprise Fabric Connectivity Manager software

Refer to the SAN Manager and Capacity Reporter module online help for more information about launching supporting applications.

Storage Automated Diagnostic Environment Software

The Storage Automated Diagnostic Environment software is a distributed online health and diagnostic monitoring tool for DAS and SAN devices. The software enables you to discover and monitor Fibre Channel and non-Fibre-Channel connected storage devices in a DAS environment. You can configure the software to monitor your Fibre Channel and non-Fibre-Channel-connected devices on a 24-hour basis, and collect information that helps enhance the reliability, availability, and serviceability (RAS) of the storage devices.

This software provides the following features:

- A common web-based user interface for device monitoring and diagnostics
- Distributed test invocation by means of lists or topology. You can run the tests through the Storage Automated Diagnostic Environment GUI or through the CLI
- Topology grouping for multi-level hosts and components
- Alternate master support for redundancy
- Revision checking
- Support for the Storage Service Processor of the Sun StorEdge 6320 system offerings
- Remote notification through Sun Remote Services, Sun Remote Services Net Connect service, Sun StorEdge Remote Response service, HTTP and SNMP Providers, or email
- Support for DAS and SANs
- Encryption by way of a Secure Socket Layer (SSL) protocol to protect transmitted information

See the Storage Automated Diagnostic Environment Software User's Guide listed in "Related Documentation" on page vii for more information about the software.

Sun StorEdge SAN Foundation Software

The Sun StorEdge SAN Foundation software incorporates kernel drivers and utilities that enable a host to connect, monitor, and transfer data over a SAN or DAS system. The software includes driver and utility packages for host bus adapters (HBAs) and other devices that support your SAN infrastructure.

This software is a requirement for the Storage Automated Diagnostic Environment software and the SAN Manager component of the Sun StorEdge Enterprise Storage Manager; it is optional for the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager.

You must do the following to support your SAN component infrastructure:

- Install the Sun StorEdge SAN Foundation 4.4 software on *every* SAN Manager agent station in your SAN.
- Install the Sun StorEdge SAN Foundation 4.4 software on a single machine in your SAN if it acts as a management and an agent station.

Sun Web Console

The Sun Web Console is a Sun-developed web server that provides a “common console” user interface for compatible management software modules, such as the SAN Manager and Capacity Reporter modules of the Sun StorEdge Enterprise Storage Manager software.

Note – The Sun StorEdge Enterprise Storage Manager installation procedure checks the management station machine for the correct Sun Web Console version. If it is not found, the installation process installs the Sun Web Console version required to launch these software modules.

Locating the Sun StorEdge Management Software Kit Documentation

“Related Documentation” on page vii lists the available documentation for the Sun StorEdge Management software. TABLE 1-1 lists the directories in which the documentation is located on the CD or after installation.

TABLE 1-1 Sun StorEdge Enterprise Storage Manager Documentation Locations

Documentation	Location
Sun StorEdge Enterprise Storage Manager*	
esm(1M) CLI man page	After you install the software, in the following directory: /opt/SUNWstm/man/man1m/esm.1m
Other man pages: <ul style="list-style-type: none">• esminstall(1M)• esmuninstall(1M)• esmcheck(1M)• esmcontrol(1M)	After you install the software, in the following directory: /opt/SUNWstm/man/man1m
<i>Sun StorEdge Enterprise Storage Manager 2.1 Software Installation Guide</i>	On the CD-ROM in the following directory: Docs/817-4798-10.pdf
<i>Sun StorEdge Enterprise Storage Manager 2.1 Release Notes</i>	On the CD-ROM in the following directory: Docs/817-4799-10.pdf
Storage Automated Diagnostic Environment†	
<i>Storage Automated Diagnostic Environment 2.3 User's Guide - Device Edition</i>	After you install the software, in the following directory: /opt/SUNWstade/docs
Sun StorEdge SAN Foundation 4.4 Software	
<i>Sun StorEdge SAN Foundation Software</i>	http://www.sun.com/storage/san This web page includes a link to the software and documentation. It requires you to register to download the software and documentation. The documentation, especially the release notes, contains information about patches, supported hardware, and so on.

* You can also find Sun StorEdge Enterprise Storage Manager documentation at <http://docs.sun.com/db/coll/ESM2.1>.

† You can also find Storage Automated Diagnostic Environment documentation at <http://docs.sun.com>.

Getting Started

This chapter describes how to use the `setup` script to install the Sun StorEdge Storage Management software and explains how to log in to the software. The topics described in this chapter include the following:

- “Choosing the Features to Install With the `setup` Script” on page 12
- “After Installation” on page 17

For specific information about the software on the Sun StorEdge Management Software 2.1 CD-ROM, see the documentation listed in “Related Documentation” on page vii and “Locating the Sun StorEdge Management Software Kit Documentation” on page 9.

Tip – If you plan to install the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, contact your Oracle database administrator to help coordinate the installation prerequisites and process.

Installing the Sun StorEdge SAN Foundation 4.4 Software

Before you install either the Sun StorEdge Enterprise Storage Manager or Storage Automated Diagnostic Environment 2.3 software, you must install the Sun StorEdge SAN Foundation 4.4 software on all host machines that act as agent stations.

▼ To Install the Sun StorEdge SAN Foundation 4.4 Software

1. Insert the Sun StorEdge Management Software 2.1 CD into your CD-ROM drive and run the `install_it` script:

```
# cd /cdrom/cdrom0/  
# cd ./SAN_Foundation_Software/SAN_4.4_install_it  
# ./install_it
```

2. Reply to the prompts according to your environment.

Choosing the Features to Install With the setup Script

The `setup` script is the Sun StorEdge Management Software installation script, located in the CD-ROM root directory. The script enables you to choose specific monitoring and management features based on your storage environment type.

1. Make sure that your environment meets all the prerequisites, which are listed in the *Sun StorEdge Enterprise Storage Manager 2.1 Software Installation Guide*.
2. Insert the Sun StorEdge Management Software 2.1 CD into your CD-ROM drive and run the `setup` script:

```
# cd /cdrom/cdrom0/  
# ./setup
```

The setup script displays the following menu:

```
=====
Sun StorEdge (TM) Management Software Installer
=====

For your storage management needs, are you primarily interested in:

1) Health Monitoring and Fault Management

2) SAN Management, Capacity Reporting, Health Monitoring
   and Fault Management

=====
Type 1 or 2, type q to Quit:
=====
Your Choice:
```

Note – If you choose Option 1, the setup script installs the Storage Automated Diagnostic Environment 2.3 software. If you choose Option 2, the setup script installs both the Sun StorEdge Enterprise Storage Manager 2.1 and Storage Automated Diagnostic Environment 2.3 software.

3. Choose 1 if you want the health monitoring and fault management function.

The setup script prompts you to verify license information:

```
The installation and use of this software requires a
licensing fee be paid to Sun Microsystems, Inc.
If you have questions about this licensing fee, contact
your Sun Microsystems, Inc. Sales Representative or go to
http://www.sun.com/storage/software/storage_mgmt/esm

Do you accept the terms?  [yes,no,view,?] yes
```

4. Type yes, if you have satisfied the licensing agreement.

The setup script installs the Storage Automated Diagnostic Environment 2.3 software. The installation procedure enables you to install the software on a management station and on one or more agent stations.

The following example is an installation on a single machine acting as a management (master) station and agent (slave) station, in nonsecure mode (that is, available through an HTTP URL). You have the option to choose an HTTPS secure mode.

```
Please wait - checking previously-installed Storage Automated
Diagnostic Environment...

Begin: Checking for prerequisites
Checking for prerequisite package
Checking for operating system
Checking for diskspace
End:   Checking for prerequisites

Begin: Get Configuration Attributes

Are you installing a Master or a Slave Agent?
(Enter M=master,S=slave) [M/S] or [m/s]:
(default=M) [?,q] m/s

Select language for GUI (en=English, fr=French,
ja=Japanese or zh=Chinese) [en]
(default=en) [?,q] en

Do you want to turn on https security? (default:
n) [y,n,?] n
End:   Get Configuration Attributes

Begin: Installing SUNWstade 2.3
Install takes a few minutes. Please wait ...
End:   Installing SUNWstade 2.3
Begin: Applying Configuration Parameters
**** Installing the Package and Crons ****
Language EN not available, using english!
*** Master Install ***
This script will now add the inet service to the inetd config file.
When this scripts ends, go to the IP Name/Address of the HOST
configured as
MASTER, port 7654, with a browser to complete the configuration.
/etc/services is now updated.
/etc/inetd.conf is now updated.
** cron installed.
```

```
- Resetting the inetd services to see the new rashttp service.
- Testing access to the webserver, (this will timeout after 30
secs) ...
***** ping 'hostname' succeeded!
1/6 attempting to contact agent service...
*** Contacted agent service (808f31e2).
SUNWstade installed properly!
To complete the configuration, point your browser to
http://<hostname>:7654. Use the browser only after package
has been installed on all Master and Slave hosts.

End:   Applying Configuration Parameters
Sun StorEdge (TM) Management Software install Successfully
Completed.
INFO: Sun StorEdge(TM) ESM  Installer Log:
/var/sadm/install/logs/esm.log
INFO: Storage Automated Diagnostic Environment 2.3 Log:
/var/sadm/install/logs/storade.log
```

When the installation procedure is complete, see the Storage Automated Diagnostic Environment product documentation for information about using the software.

5. Choose 2 if you want the SAN management, capacity reporting, health monitoring, and fault management functions.

The setup script prompts you to verify license information:

```
The installation and use of this software requires a
licensing fee be paid to Sun Microsystems, Inc.
If you have questions about this licensing fee, contact
your Sun Microsystems, Inc. Sales Representative or go to
http://www.sun.com/storage/software/storage_mgmt/esm

Have you completed the Enterprise Storage Manager 2.1
licensing (default: n) [y,n,?] y
```

6. Type *y*, if you have satisfied the licensing agreement.

7. Type 2 if you want to include the capacity reporting module of the software:

```
Are you primarily interested in:

1) SAN Management, Health Monitoring and Problem Diagnosis

2) Capacity Reporting, SAN Management, Health Monitoring
   and Problem Diagnosis

=====
Type 1 or 2, type q to Quit:
=====
Your Choice:
```

8. Choose the type of installation you want:

```
=====
Sun StorEdge(tm)
Enterprise Storage Manager 2.1
INSTALL MENU
=====

1) All Management and Agent Station Components (default)
2) Management Station Components (including the CLI Client)
3) Agent Station Components
4) Command Line Interface Client Components
5) HP OpenView (TM) Plugin
q) Quit.
=====
Type a number to install the selected components
[press Enter for default (management and agent stations),
Type q to Quit]:
=====
Your Choice:
```

Note – A typical configuration is one management station and one or more agent stations. You can also install the software on a single machine acting both as a management and as an agent station.

The setup script installs the Sun Web Console software (if required), and the Sun StorEdge Enterprise Storage Manager software modules, supporting components, and the Storage Automated Diagnostic Environment software.

9. Follow the prompts.

In most cases, after you choose an installation type, you can accept the default responses in the script.

10. Repeat the installation process on each agent station, installing only the agent station software.

After Installation

After the installation procedure is complete, log in to:

- The Storage Automated Diagnostic Environment UI, if you chose the Health Monitoring and Fault Management option from the `setup` script
- The Sun StorEdge Enterprise Storage Manager UI, if you chose the SAN Management, Capacity Reporting, Health Monitoring and Fault Management option from the `setup` script

▼ To Log In to Health Monitoring and Fault Management Option

1. Type one of the following default URLs in your web browser to log in to the software.

If you chose nonsecure installation:

`http://management-station-hostname:7654/`

If you chose secure installation:

`https://management-station-hostname:7654/`

hostname is the name of the management station where you installed software.

2. Type the following default user name and password in the popup login window to display the Storage Automated Diagnostic Environment window:

- Username: `ras`
- Password: `agent`

▼ To Log In to the SAN Management, Capacity Reporting, Health Monitoring, and Fault Management Option

1. Type the default following URL in your web browser to display the Sun Web Console access page:

```
https://hostname:6789/
```

hostname is the name of the host where the software is installed.

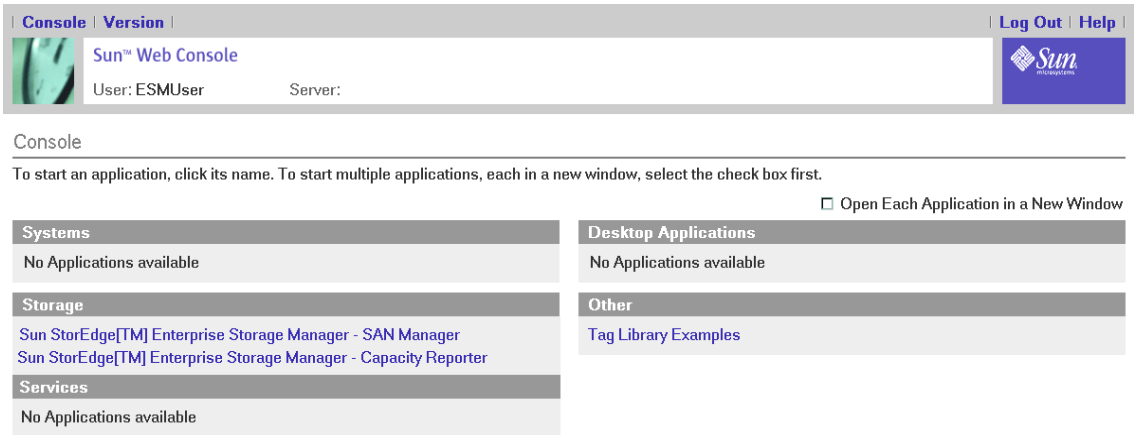
2. Type your user name and password.
3. Click Log In.
4. Select the `ESMUser` Role Name from the menu.

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5. Type the `ESMUser` role password.

By default, the installation procedures assigns the `ESMUser` user role to the superuser (root) user.

6. Click Log In to display the Sun Web Console server page.



The server page shows links to any available and installed software modules.

7. Click the SAN Manager or Capacity Reporter link to launch the software module.

Click the Help link to launch the online help for information about the features and functions of the software.

8. If necessary, set switch credentials for the switches in your SAN for the SAN Manager.

Contact your system administrator or see your switch documentation to determine the default switch user name and password.

9. Perform an initial discovery.

Note – The Capacity Reporter discovery process is different from the SAN Manager discovery process. The Capacity Reporter software lets you choose to perform detailed reporting on a storage element after the software discovers the storage element. The SAN Manager software automatically performs detailed reporting on every discovered storage element.

