Sun StorEdge™ 6920 System Host Installation Software Guide

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Preface

This document describes the installation considerations, requirements, and procedures for the Sun StorEdge 6920 System Host Installation and supporting software. The intended audience for this document includes Sun service and support engineers, SAN administrators, and storage system administrators.

How This Book Is Organized

Chapter 1 describes the requirements and preparation procedures for the software installation.

Chapter 2 describes how to install and remove the software.

Chapter 3 describes how to log in to the software using the command-line interface (CLI).

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 `.login` file. Use `ls -a` to list all files. `% You have mail.`
`AaBbCc123`	What you type, when contrasted with on-screen computer output	`% su` `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the *User's Guide.* These are called *class* options. You *must* be superuser to do this. To delete a file, type `rm` *filename.*
[ ]	In syntax, brackets indicate that an argument is optional.	`scmadm` [`–d` *sec*] [`–r` *n*[:*n*][,*n*]...] [`–z`]
{*arg* | *arg*}	In syntax, braces and pipes indicate that one of the arguments must be specified.	`sndradm -R b {p | s}`

\	At the end of a command line, the backslash (\) indicates that the command continues on the next line.	`atm90 /dev/md/rdsk/d5 \`
		`/dev/md/rdsk/d1 atm89 \`
		`/dev/md/rdsk/d5 /bit-maps/map2 \`
		`ip sync`

Shell Prompts

Shell	Prompt
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#
C shell	*machine-name*%
C shell superuser	*machine-name*#

Related Documentation

Application	Title	Part Number
Man pages	`sscs(1M)`	Not applicable
Release and product information	*Sun StorEdge SAN Foundation Software 4.4 Release Notes*	817-3673-nn
	Storage Automated Diagnostic Environment 2.3 Getting Started Guide	817-3284-10
	Sun StorEdge 6920 System 1.0 Release Notes	817-5229-nn
Installation	*Sun StorEdge SAN Foundation Software 4.4 Installation Guide*	817-3671-nn
	Sun StorEdge SAN Foundation Software 4.4 Configuration Guide	817-3672-nn
	Best Practices for Deploying the Storage Automated Diagnostic Environment to Monitor Storage	817-5205-10
	Sun StorEdge 6920 System Getting Started Guide	817-5227-nn
User and diagnostic	*Sun StorEdge 6920 System Regulatory and Safety Compliance Manual*	817-5230-nn
	Sun StorEdge 6920 System Site Preparation Guide	817-5224-nn

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Sun StorEdge 6920 System Host Installation Software Guide, part number 817-5831-10

CHAPTER 1

Planning for the Installation

This chapter describes requirements and preparation procedures for installing the StorEdge 6920 System Host Installation Software.

The topics described in this chapter include the following:

- "Overview of the Sun StorEdge 6920 System Host Installation Software" on page 2
- "Hardware and Software Requirements" on page 5
- "Required Hardware and Software" on page 5
- "Suggested Installation Strategies" on page 6

Overview of the Sun StorEdge 6920 System Host Installation Software

The Sun StorEdge 6920 System Host Installation Software enables you to manage, monitor and transfer data for all storage systems in a storage area network (SAN) environment. The system arrives with the following management software on the internal Storage Service Processor. The Sun StorEdge 6920 Host Installation Software CD also contains the following software as listed in TABLE 1-1.

TABLE 1-1 Components of the Sun StorEdge 6920 System Host Installation Software

Software	Description
Sun StorEdge Remote Configuration CLI (sscs) (Solaris OS version)	The Sun StorEdge Remote Configuration (`sscs`) software provides the ability to perform remote configuration from a command-line interface. Also known as the *thin-scripting client* software, the software provides access to storage array configuration and management services through a client on an external host.

Sun Storage Automated Diagnostic Environment Software - Device Edition	This software is a distributed online health and diagnostic monitoring tool for SAN devices. It can be configured to monitor on a 24-hour basis, collecting information that enhances the reliability, availability, and servicability (RAS) of the storage devices.
	This software provides the following features:
	• A web-based user interface for device monitoring and diagnostics
	• Distributed test invocation by means of lists or topologies.
	• Remote notification through Sun Remote Services, (SRS Net Connect), HTTP and SNMP providers or email.
	Though the Storage Automated Diagnostic Environment may already be installed on your system, the software is also on the Sun StorEdge 6920 Host Installation Software CD, and online at:
	`http://www.sun.com/software/download`
	Patches are required from:
	`http://sunsolve.sun.com/`

Sun StorEdge SAN Foundation Software 4.4	This software incorporates kernel drivers and utilities that enable the host to connect to, monitor and transfer data on a SAN.
	Though the Sun StorEdge SAN Foundation Software 4.4 may already be installed on your system, the base software package is on the Sun StorEdge 6920 Host Installation Software CD, and is also online at:
	`http://www.sun.com/software/download`
	Patches are available from:
	`http://sunsolve.sun.com/`

TABLE 1-1 Components of the Sun StorEdge 6920 System Host Installation Software

Software	Description

Sun StorEdge Traffic Manager Software	In order to enable multipathing functionality, each Solaris data host must have Sun StorEdge Traffic Manager software installed before it can reliable communicate with the systems' storage.
	To enable Dynamic Multipathing (DMP) you can purchase VERITAS software, as described in "Additional Supported Software" in the *Sun StorEdge 6920 System Getting Started Guide.*
	Though the Sun StorEdge Traffic Manager software may already be installed on your system, the base software package is on the Sun StorEdge 6920 Host Installation Software CD, and is also online at:
	`http://www.sun.com/software/download`
	Patches are available from:
	`http://sunsolve.sun.com/`

The Sun StorEdge Remote Configuration CLI (`sscs`) for operating systems other than Solaris is not available on the Sun StorEdge 6920 Host Installation Software CD, but is available for download. Additionally, the Sun StorEdge Traffic Manager

Software for data hosts that are not Solaris is also available:

TABLE 1-2 Software Available for Download

Software	Description

Sun StorEdge Remote Configuration CLI (sscs) - Hosts for Other Operating Systems	For remote configuration from a command-line interface, install the Sun StorEdge 6920 CLI package for AIX, HP-UX, Linux, or Windows 2000 Server. This thin-scripting client software provides access to storage array configuration and management services through a CLI client on an external host.
	Supported Operating Systems
	AIX - Sun StorEdge 6920 CLI Package for AIX
	Red Hat Linux - Sun StorEdge 6920 CLI Package for Linux
	HP-UX - Sun StorEdge 6920 CLI Package for HP-UX
	Windows 2000 Advanced Server - Sun StorEdge 6920 CLI Package for Windows
	Available for download from:
	`http://www.sun.com/software/download`
	Patches are available from:
	`http://sunsolve.sun.com`

Sun StorEdge Traffic Manager Software - Hosts for Other Operating Systems	In order to enable multipathing functionality, each data host must have Sun StorEdge Traffic Manager software installed before it can reliable communicate with the system's storage. This software incorporates kernel drivers and utilities that enable data hosts running operating systems other than Solaris OS to automatically or manually connect to, monitor, and manage transfer data flow on a SAN.
	Available for download from:
	`http://www.sun.com/software/download`
	Patches are available from:
	`http://sunsolve.sun.com`

System Requirements

Hardware and Software Requirements

TABLE 1-3 lists the hardware and software that must be set up and installed before you can install the StorEdge 6920 System Host Installation Software.

TABLE 1-3 Required Hardware and Software

Hardware Requirements	
Media Drive	A CD-ROM drive connected to the host machine where the software is to be installed.
Host Machines	The software is supported on host machines that use the Solaris OS.
Storage Arrays and Systems	Sun StorEdge 6920 system
Disk and Memory Requirements	1 Gbyte of disk space 256 Mbytes of system memory (512 Mbytes for best performance)
Software Requirements	
Operating Environment and Supporting Software	Solaris 9 OS with minimum patch number 113277-17 Solaris 8 10/01 OS with minimum patch number 110934-07 and 108974-37 Java™ SDK version 1.4.0 Sun™ Management Center version 3.0 Perl version 5.005 through 5.6 , which is available at: `http://www.perl.com/pub/language/info/software.html`
Web Browser (minimum version)	Netscape Navigator™ minimum version 7.0 or, Microsoft Internet Explorer version 5.0 or, Mozilla 1.2.1

SAN vs. DAS Configurations

Both storage area network (SAN) and direct access storage (DAS) configurations are supported with the Sun StorEdge SAN foundation software and the Sun StorEdge 6920 system. The main factor for choosing between a SAN or DAS configuration would be the number of host bus adapter ports required, the number of Sun StorEdge 6920 system ports (16 or 32) and the bandwidth required. All host bus

adapters and software supported in the SAN are also supported in DAS configurations.

For further information on SAN and DAS configurations, refer to the *Sun StorEdge 6920 System Getting Started Guide.*

Suggested Installation Strategies

Each server is considered a *station* and can have a different role: as either a *management* station or a *data host* station.

For Sun StorEdge 6920 systems, the management and data host stations can be combined on a single server. However, for efficiency, install the Remote Configuration CLI (`sscs`) software on a server that is not in the data path (that is, a server that is not a data host station).

Management Station

- The management station is the server on which you install the Remote Configuration CLI (`sscs`), as well as the Sun StorEdge Automated Diagnostic Environment.
- These hosts must be on the same LAN as the Sun StorEdge 6920 systems.

Data Host Stations

The data host stations are hosts that have a Fibre Channel connection to the Sun StorEdge 6920 system. The Sun StorEdge SAN Foundation software should be installed on each data host connected to Sun StorEdge 6920 system. Use the Storage Automated Diagnostic Environment software for monitoring and debugging any data path connectivity issues.

For data hosts running operating systems other than Solaris, install Sun StorEdge Traffic Manager instead of Sun StorEdge SAN Foundation software. The software is available via web download as noted in TABLE 1-2.

CHAPTER 2

Installing the Software

This chapter provides instructions on the steps required to install and configure the Sun StorEdge 6920 System Host Installation Software.

Note – Perform the procedures in this chapter as the superuser (root).

This chapter describes the following topics:

- "Installation Task Summary" on page 8
- "Installing the Software" on page 11
- "Post Installation Procedures" on page 15
- "Removing the Software" on page 16

Installation Task Summary

TABLE 2-2 provides a high-level overview of the tasks required to install the Sun StorEdge 6920 System Host Installation Software and its location in this document.

TABLE 2-1 Installation Task Summary

Planning for the Installation	See This Section or Chapter
1. Learn about the software components. 2. Make sure your system meets the hardware and SAN requirements. 3. Determine your installation strategy. 4. Remove Storage Automated Diagnostic Environment Software 2.2 or earlier if necessary.	"Overview of the Sun StorEdge 6920 System Host Installation Software" on page 2 in Chapter 1 "The Sun StorEdge 6920 System Host Installation Software enables you to manage, monitor and transfer data for all storage systems in a storage area network (SAN) environment. The system arrives with the following management software on the internal Storage Service Processor. The Sun StorEdge 6920 Host Installation Software CD also contains the following software as listed in TABLE 1-1." on page 2 in Chapter 1 "Suggested Installation Strategies" on page 6 in Chapter 1 "Pre-existing Versions of the Host Software" on page 9
Installation Steps	**See This Section or Chapter**
5. Install the software.	"Installing the Software" on page 11
Post-Installation Step	**See This Section or Chapter**
6. Configure the Storage Automated Diagnostic Environment software (if installed with the `install.sh` script).	"Storage Automated Diagnostic Environment Software" on page 15
7. Configure the Sun Storage SAN Foundation software (if installed with the `install.sh` script)	"Sun StorEdge SAN Foundation Software" on page 15
8. Check the log files for messages related to the installation.	"To Check Log Files After the Installation" on page 16
9. Log in using `sscs`(1M) or a web browser.	"User Accounts for the Remote Configuration CLI (`sscs`)" on page 18 in Chapter 3

Before you install the software, read the following sections:

- "Suggested Installation Strategies" on page 6
- "Pre-existing Versions of the Host Software" on page 9
- "Downloading from the Sun Download Center" on page 10
- "Installing the Software" on page 11

Pre-existing Versions of the Host Software

In some instances, you may have pre-existing versions of the host software on your system. In order to ensure that the new host software works correctly, it may be necessary to remove old versions of software, as outlined below.

Storage Automated Diagnostic Environment Software

If Storage Automated Diagnostic Environment software 2.2 or earlier is already installed on the system, it must be removed before installing the version contained on the Host CD. Removing the previous version will not affect the contents of the existing database. However, if there are any pending alarms or events, they may be lost. Therefore, it is recommended that all alarms and events be addressed prior to removing the software.

Java Environment

The Remote Configuration CLI (`sscs`) requires Java 1.4.0 or higher. The default versions for Solaris 8 are 1.1, 1.2 and 1.3. As a result, Java 1.4 may not be installed. Since 1.3 and 1.4 are installed in the same location, 1.3 must be removed prior to 1.4 installation.

The installation script will recognize and report that Java 1.3 must be removed before the installation of the Remote Configuration CLI (`sscs`) can be installed. However, this may cause problems for some earlier Java applications that have not been tested with 1.4. Refer to the online compatibility documentation for information about incompatibilities between Java 2 SDK 1.4 and earlier releases prior to the removal of 1.3 at
http://`java.sun.com/j2se/1.4.2/compatibility.html`

Downloading from the Sun Download Center

The software is delivered on Sun StorEdge 6920 Host Installation Software CD-ROM, but it is also available from the Sun Download Center (SDLC).

▼ To Download and Install the Package

1. **Download the latest version of the software from the Sun Download Center by going to the following URL:**

   `http://www.sun.com/software/download/`

2. **Click the link for the Sun StorEdge 6920 Host Installation software.**

3. **Log in.**

   If you have not already registered, do so and then log in.

4. **Click Accept and Continue on the Legal/License Agreement page.**

5. **Click the link for the** `SE6920_host_sw.tar.Z` **package.**

6. **Save the** `SE6920_host_sw.tar.Z` **package to a temporary working directory after you download it.**

   For example:

   ```
   # cp SE6920_host_sw.tar.Z /directory
   ```

   where */directory* is a directory name in which to copy the package.

7. **Change to the directory in which you saved the** `SE6920_host_sw.tar.Z` **file.**

   ```
   # cd /directory
   ```

8. **Uncompress the** `SE6920_host_sw.tar.Z` **package.**

   ```
   # uncompress SE6920_host_sw.tar.Z
   ```

9. **Extract the** `SE6920_host_sw.tar` **package.**

```
# tar -xvf SE6920_host_sw.tar
```

10. **Go to “Installing the Software” on page 11 to complete the installation.**

Installing the Software

Install the software packages by using the `install.sh` script.

- “Install the Software as the Superuser (root)” on page 11
- “Installing the Correct Configuration” on page 12
- “To Install the Sun StorEdge 6920 Host Installation Software” on page 14

Install the Software as the Superuser (root)

You must install the software packages as superuser (root).

If aliases exist in the superuser environment or profile, the software installation and configuration might have unexpected results. Remove any aliases created for the environment (for example, `cp=”cp -i”`) before you install or configure the software.

- **Log in as superuser and type the appropriate command in a terminal window.**

```
# unalias -a
```

Installing the Correct Configuration

An installation script main menu is displayed when you execute the `install.sh` script. CODE EXAMPLE 2-1 contains the installation script main menu. Once you have begun the installation process, you will have the ability to install one or all of the components that comprise the Sun StorEdge 6920 System Host Installation Software.

CODE EXAMPLE 2-1 Installation Script Main Menu

```
                     Host Software Installation
                    --------------------------

This script installs software for your Sun StorEdge(tm) 6920
storage system.


Software components included in this distribution:
- Sun StorEdge[tm] SAN Foundation Software
- Storage Automated Diagnostic Environment
- Remote Configuration CLI (sscs)

Do you want to continue? [y/n] : y
```

Type y to continue the installation process. You will now be presented with the choices for installation.

```
Do you want to install ....
     Sun StorEdge[tm] SAN Foundation Software [y/n]: n
     Storage Automated Diagnostic Environment [y/n]: y
     Remote Configuration CLI (sscs)  [y/n]:y

You have chosen to install the following components:
       Storage Automated Diagnostic Environment
       Remote Configuration CLI (sscs)
Is this correct? [y/n] y
```

This is where you indicate which components of the management software should be installed. For example, to install the Remote Configuration CLI (`sscs`) and Storage Automated Diagnostic Environment software on the management station and the SAN Foundation and Storage Automated Diagnostic Environment software on the data host station for a Sun StorEdge 6920 system, install the software as follows:

- **On the management station:** To install the Remote Configuration CLI (`sscs`), and Storage Automated Diagnostic Environment software on the management station, type **`y`** next to the `Remote Configuration CLI (sscs)`, and `Storage Automated Diagnostic Environment Software` choices and **`n`** next to the other choices, as displayed in the above example.
- **On each data host station:** To install the Sun StorEdge SAN Foundation software and Storage Automated Diagnostic Environment on a data host station, type **`y`** next to those two menu choices and **`n`** next to the other choices.
- For further information, refer to the *Storage Automated Diagnostic Environment Software Best Practices Guide.*

TABLE 2-2 describes the menu choices.

TABLE 2-2 Installation Script Menu Choices

If You Want to Install	Type y for These Menu Options
All packages on one machine.	• Sun StorEdge SAN Foundation software • Storage Automated Diagnostic Environment • Remote Configuration CLI (`sscs`)
Remote Configuration CLI on the *Sun StorEdge 6920 system management station.*	• Remote Configuration CLI (`sscs`)
Storage Automated Diagnostic Environment on *the Sun StorEdge 6920 system management station*	• Storage Automated Diagnostic Environment
Sun StorEdge SAN Foundation software on *each data host station.*	• Sun StorEdge SAN Foundation software
Storage Automated Diagnostic Environment on *each data host station.*	• Storage Automated Diagnostic Environment

▼ To Install the Sun StorEdge 6920 Host Installation Software

1. **Log in to your station as superuser.**

2. **Remove any defined aliases for this user.**

```
# unalias -a
```

3. **With the CD in the CD-ROM drive, start the Volume Manager daemon** `vold`**(1) (if needed).**

   If you downloaded the software from the Sun Download Center, and you uncompressed the `SE6920_host_sw.tar` file, go to the directory where you extracted the files, and then skip to step 5. If you are installing the software from the CD, continue with step 4.

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

4. **Change to the** `root` **directory. For example,**

```
# cd /cdrom/cdrom0
```

5. **Start the** `install.sh` **script.**

```
# ./install.sh
```

   The installation menu is displayed.

6. **Type** `y` **next to the menu choices corresponding to the software being installed and** `n` **next to the other choices, and press Return after each choice.**

   For example, to install only the Storage Automated Diagnostic Environment software, type `y` next to that menu choice and `n` next to the rest of the menu choices.

```
Do you want to install ....
     Sun StorEdge[tm] SAN Foundation Software [y/n]: n
     Storage Automated Diagnostic Environment [y/n]: y
     Remote Configuration CLI (sscs)  [y/n]:n
```

```
You have chosen to install the following components:
       Storage Automated Diagnostic Environment
Is this correct? [y/n] y
```

Continue by following the instructions and prompts provided in the script.

7. **If you installed the Sun StorEdge SAN Foundation software, you must install the most recent Sun StorEdge SAN Foundation software patches from** `http://sunsolve.sun.com/`

8. **Continue on to "Post Installation Procedures" on page 15 to complete any applicable post- installation procedures.**

Post Installation Procedures

Follow the post-installation procedures depending on the software you installed.

This section describes the following topics:

- "Sun StorEdge SAN Foundation Software" on page 15
- "Storage Automated Diagnostic Environment Software" on page 15
- "To Check Log Files After the Installation" on page 16

Sun StorEdge SAN Foundation Software

If you installed the Sun StorEdge SAN Foundation software, see the *Sun StorEdge SAN Foundation Software Installation Guide (*at `http://www.sun.com/storage/san`) for post-installation procedures to ensure that the product operates correctly.

Storage Automated Diagnostic Environment Software

If you installed the Storage Automated Diagnostic Environment, see the "Getting the Storage Automated Diagnostic Environment Ready" section of the *Storage Automated Diagnostic Environment Getting Started Guide – Device Edition* (`GettingStartedDE.pdf`) in the `/opt/SUNWstade/docs` directory for the correct configuration procedures.

▼ To Check Log Files After the Installation

- **Check the following files for messages related to the installation if you encountered installation problems:**
  - `/var/sadm/install/se6920/6920_Host_SW_Install.log`

    This log contains installation, removal, configuration, error, or informational messages.
  - `/var/adm/messages`

    This log contains general system error or informational messages.

Removing the Software

To stop and remove the software, perform the following procedure.

▼ To Remove the StorEdge 6920 System Host Installation Software

1. **Log in to your machine as superuser.**
2. **Remove any defined aliases for this user as described in "Install the Software as the Superuser (root)" on page 11.**
3. **Run the** `uninstall.sh` **script.**

```
# cd /cdrom/cdrom0
# ./uninstall.sh
```

Follow any directions presented during the running of the script.

CHAPTER 3

Logging In to the Software

This chapter describes how to log in to the Remote Configuration CLI (sscs) software, as well as the Storage Automated Diagnostic Environment.

- "User Accounts for the Remote Configuration CLI (sscs)" on page 18
- "Logging In Using the Remote Configuration CLI (sscs)" on page 18
- "Logging In to the Storage Automated Diagnostic Environment" on page 20

User Accounts for the Remote Configuration CLI (sscs)

This section describes user accounts in Remote Configuration CLI (sscs).

The following are the User Accounts/IDs and passwords that are used by the software. The Sun StorEdge 6920 system is configured with the three user accounts and their corresponding default passwords shown in TABLE 3-1.

TABLE 3-1 User Accounts

User Account/ID	Description	Default Password
admin	An admin user has all administration privileges. Only the admin user can change passwords. The admin user has all administrative privileges, and can modify users and system attributes on the Administration page.	!admin
storage	A storage user can use the software features related to storage device configuration and array management.	!storage
guest	A guest user has read-only privileges and can only view information. This user cannot modify any settings or features.	!guest

Logging In Using the Remote Configuration CLI (sscs)

Use the /opt/se6920/cli/bin/sscs command to perform the remote management operations. For further information on remote management operations, see the sscs(1M) man page.

▼ To Log In Using the CLI

- **Type the following command in a terminal window:**

```
% sscs login -h SE-6920-SPname [-t] [-f] -u user
Password: !password
```

- *SE-6920-SPname* is the Sun StorEdge 6920 system, *user* is one of the accounts (admin, storage, or guest) on the *SE-6920-SPname* system, and *!password* is the default password for the account (!admin, !storage, or !guest).
- The *SE-6920-SPname* is a configuration number ranging from SP0 - SP7. You can also use `localhost` to access the default Storage Service Processor

TABLE 3-2 describes the optional arguments associated with the `sscs login` command for the Sun StorEdge 6920:

TABLE 3-2 `sscs login` Command-Line Optional Arguments

Argument	Description
`-f`	Forces a login if another user with the same user name is already logged in. The duplicate user is then logged off.
`-t`	Log in using an HTTP connection.

In this example, we are logging onto the Storage Service Processor named SP2 as

```
% sscs login -h SP2 -f -u admin
Password: !admin
```

admin.

▼ To Log Out Using the CLI

- **Type the following command:**

```
# sscs logout
```

Logging In to the Storage Automated Diagnostic Environment

Use the Sun Automated Diagnostic Environment to monitor, detect, and diagnose array failures for Sun storage devices.

If you have successfully installed the software, perform the following procedures to log in to the Storage Automated Diagnostic Environment.

▼ To Log In

1. **Open your web browser.**
2. **Type one of the following URLs in the URL text field.**

Note – *hostname* is the host name where the software is installed

---

- For a non-SSL HTTP server.

```
http://hostname:7654/
```

The default port number for a non-SSL HTTP server is 7654.

- For an SSL HTTP (secure) server.

```
https://hostname:7443/
```

The default port number for an SSL HTTP server is 7443.

3. **Log in by typing:**

```
User Name: ras
Password: agent
```

The default login is **ras**. The default password is **agent**.

4. **Click the Log In button.**

The Storage Automated Diagnostic Environment main window is displayed.

▼ To Log Out

- **Click Log Out from any page in the Storage Automated Diagnostic Environment.**

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