



# Sun Cluster 3.x With Sun StorEdge 6320 System Manual

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# Preface

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The *Sun Cluster 3.x With Sun StorEdge 6320 System Manual* provides procedures that are specific to a Sun StorEdge™ 6320 system that is placed in a Sun™ Cluster environment.

Use this manual with any version of Sun Cluster 3.x software. Unless otherwise noted, procedures are the same for all Sun Cluster 3.x versions. See the “Revision History” on page 6 for a list of changes to this manual.

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## Who Should Use This Book

This book is for Sun representatives who are performing the initial installation of a Sun Cluster configuration and for system administrators who are responsible for maintaining the system.

This document is intended for experienced system administrators with extensive knowledge of Sun software and hardware. Do not use this document as a planning or presales guide. You should have already determined your system requirements and purchased the appropriate equipment and software before reading this document.

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## How This Book Is Organized

This book contains one chapter that consists of three major sections.

Section 1 discusses how to install Sun StorEdge 6120 storage arrays.

Section 2 discusses how to configure logical units on Sun StorEdge 6120 storage arrays.

Section 3 describes how to maintain Sun StorEdge 6120 storage arrays in a running cluster.

## Revision History

The following table lists the information that has been revised or added since the initial release of this documentation. The table also lists the revision date for these changes.

**TABLE P-1** Sun Cluster 3.x With Sun StorEdge 6320 System Manual

| Revision Date | New Information                               |
|---------------|-----------------------------------------------|
| July 2003     | Updated documentation with editorial changes. |

## Related Documentation

The following books provide conceptual information or procedures to administer hardware and applications. If you plan to use this documentation in a hard-copy format, ensure that you have the following books available for your reference.

The following Sun Cluster books support the Sun Cluster 3.1 release. If you are maintaining a different version of Sun Cluster software, refer to the appropriate documentation. All Sun Cluster documentation is available on <http://docs.sun.com>.

Documentation that is not available on <http://docs.sun.com> is listed with the appropriate URL.

**TABLE P-2** Hardware Documentation

| Title                                                                                                                                                                                                              | Part Number |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <i>Sun StorEdge Traffic Manager Software Release Notes</i><br>Available on <a href="http://www.sun.com/storage/san/">http://www.sun.com/storage/san/</a>                                                           | 817-0385    |
| <i>Sun StorEdge Traffic Manager Installation and Configuration Guide</i><br>Available on <a href="http://www.sun.com/products-n-solutions/hardware/docs">http://www.sun.com/products-n-solutions/hardware/docs</a> | 816-1420    |

**TABLE P-2** Hardware Documentation (Continued)

| Title                                                                                                                                  | Part Number |
|----------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <i>Sun StorEdge 6320 System Reference and Service Manual</i>                                                                           | 816-7879    |
| Available on <a href="http://www.sun.com/products-n-solutions/hardware/docs">http://www.sun.com/products-n-solutions/hardware/docs</a> |             |
| <i>Sun StorEdge 6320 System Installation Guide</i>                                                                                     | 816-7878    |
| Available on <a href="http://www.sun.com/products-n-solutions/hardware/docs">http://www.sun.com/products-n-solutions/hardware/docs</a> |             |
| <i>Sun StorEdge 6320 Series Site Preparation Guide</i>                                                                                 | 816-7877    |
| Available on <a href="http://www.sun.com/products-n-solutions/hardware/docs">http://www.sun.com/products-n-solutions/hardware/docs</a> |             |
| <i>Sun StorEdge 6020 and 6120 Array System Manual</i>                                                                                  | 817-0200    |
| Available on <a href="http://www.sun.com/products-n-solutions/hardware/docs">http://www.sun.com/products-n-solutions/hardware/docs</a> |             |
| <i>Sun StorEdge 6120 Array Installation Guide</i>                                                                                      | 817-0199    |
| Available on <a href="http://www.sun.com/products-n-solutions/hardware/docs">http://www.sun.com/products-n-solutions/hardware/docs</a> |             |
| <i>Sun StorEdge 6000 Family Host Installation Software Guide</i>                                                                       | 817-1739    |
| Available on <a href="http://www.sun.com/products-n-solutions/hardware/docs">http://www.sun.com/products-n-solutions/hardware/docs</a> |             |

**TABLE P-3** Sun Cluster Documentation

| Application           | Title                                                                                                                                       | Part Number |
|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Concepts              | <i>Sun Cluster 3.1 Concepts Guide</i>                                                                                                       | 816-3383    |
| Hardware              | <i>Sun Cluster 3.x Hardware Administration Manual</i>                                                                                       | 817-0168    |
|                       | Sun Cluster 3.x Hardware Administration Collection at <a href="http://docs.sun.com/db/coll/1024.1/">http://docs.sun.com/db/coll/1024.1/</a> |             |
| Software Installation | <i>Sun Cluster 3.1 Software Installation Guide</i>                                                                                          | 816-3388    |
| Data Services         | <i>Sun Cluster 3.1 Data Service Planning and Administration Guide</i>                                                                       | 817-1526    |
|                       | Sun Cluster 3.1 Data Service Collection at <a href="http://docs.sun.com/db/coll/573.10/">http://docs.sun.com/db/coll/573.10/</a>            |             |
| API Development       | <i>Sun Cluster 3.1 Data Services Developer's Guide</i>                                                                                      | 816-3385    |
| Administration        | <i>Sun Cluster 3.1 System Administration Guide</i>                                                                                          | 816-3384    |
| Error Messages        | <i>Sun Cluster 3.1 Error Messages Guide</i>                                                                                                 | 816-3382    |

**TABLE P-3** Sun Cluster Documentation (Continued)

| Application   | Title                                            | Part Number |
|---------------|--------------------------------------------------|-------------|
| Man Pages     | <i>Sun Cluster 3.1 Man Page Reference Manual</i> | 816-5251    |
| Release Notes | <i>Sun Cluster 3.1 Release Notes</i>             | 816-5317    |
|               | <i>Sun Cluster 3.1 Release Notes Supplement</i>  | 816-3381    |

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## Using UNIX Commands

This document contains information on commands used to install, configure, or upgrade a Sun Cluster configuration. This document might not contain complete 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 sources for this information.

- Online documentation for the Solaris software environment
- Other software documentation that you received with your system
- Solaris operating environment man pages

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## Getting Help

If you have problems installing or using Sun Cluster, contact your service provider and provide the following information.

- Your name and email address (if available)
- Your company name, address, and phone number
- The model number and serial number of your systems
- The release number of the operating environment (for example, Solaris 8)
- The release number of Sun Cluster (for example, Sun Cluster 3.0)

Use the following commands to gather information on your system for your service provider.

| Command                 | Function                                                                                |
|-------------------------|-----------------------------------------------------------------------------------------|
| <code>prtconf -v</code> | Displays the size of the system memory and reports information about peripheral devices |

| Command                                     | Function                                                     |
|---------------------------------------------|--------------------------------------------------------------|
| <code>psrinfo -v</code>                     | Displays information about processors                        |
| <code>showrev -p</code>                     | Reports which patches are installed                          |
| <code>prtdiag -v</code>                     | Displays system diagnostic information                       |
| <code>/usr/cluster/bin/scinstall -pv</code> | Displays Sun Cluster release and package version information |

Also have available the contents of the `/var/adm/messages` file.

## Accessing Sun Documentation Online

The docs.sun.com<sup>SM</sup> Web site enables you to access Sun technical documentation online. You can browse the docs.sun.com archive or search for a specific book title or subject. The URL is `http://docs.sun.com`.

## Typographic Conventions

The following table describes the typographic changes used in this book.

**TABLE P-4** Typographic Conventions

| Typeface or Symbol            | Meaning                                                                  | Example                                                                                                                       |
|-------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| <code>AaBbCc123</code>        | The names of commands, files, and directories; on-screen computer output | Edit your <code>.login</code> file.<br>Use <code>ls -a</code> to list all files.<br><code>machine_name%</code> you have mail. |
| <b><code>AaBbCc123</code></b> | What you type, contrasted with on-screen computer output                 | <code>machine_name%</code> <b><code>su</code></b><br>Password:                                                                |
| <i><code>AaBbCc123</code></i> | Command-line placeholder: replace with a real name or value              | To delete a file, type <b><code>rm</code></b> <i>filename</i> .                                                               |

**TABLE P-4** Typographic Conventions (Continued)

| Typeface or Symbol | Meaning                                                      | Example                                                                                                                  |
|--------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| <i>AaBbCc123</i>   | Book titles, new words, or terms, or words to be emphasized. | Read Chapter 6 in <i>User's Guide</i> .<br>These are called <i>class</i> options.<br>You must be <i>root</i> to do this. |

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## Shell Prompts in Command Examples

The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

**TABLE P-5** Shell Prompts

| Shell                                        | Prompt        |
|----------------------------------------------|---------------|
| C shell prompt                               | machine_name% |
| C shell superuser prompt                     | machine_name# |
| Bourne shell and Korn shell prompt           | \$            |
| Bourne shell and Korn shell superuser prompt | #             |

# Installing and Maintaining a Sun StorEdge 6320 System

---

This chapter contains the procedures about how to install, configure, and maintain a Sun StorEdge™ 6320 system. These procedures are specific to a Sun™ Cluster environment.

This chapter contains the following procedures.

- “How to Install Storage Systems” on page 12
- “How to Create a Volume” on page 15
- “How to Remove a Volume” on page 16
- “How to Upgrade Storage Array Firmware” on page 19
- “How to Add a Storage System” on page 19
- “How to Remove a Storage System” on page 24
- “How to Replace a Node-to-Switch Component” on page 24
- “How to Replace a Host Adapter” on page 25

The storage system configuration utilities can be run from a web-based Graphical User Interface (GUI) or a command-line interface, Sun StorEdge Configuration Service (sccs). This chapter describes the web-based GUI. For detailed information about storage system architecture, features, and configuration utilities, see the *Sun StorEdge 6320 System Reference and Service Manual* and the *Sun StorEdge 6320 System Installation Guide*.

---

## Installing Storage Systems

This section contains the procedure for an *initial installation* of a storage system in a new Sun Cluster configuration. If you are adding a storage system to an existing cluster, use the procedure in “How to Add a Storage System” on page 19.

You can install your storage system in several different configurations. Evaluate your needs. Determine which configuration is best for your situation. See the *Sun StorEdge 6320 System Installation Guide*, “Installing a 2x2 Configuration” in *Sun Cluster 3.x With Sun StorEdge 6120 Array Manual*, and “Installing a 2x4 Configuration” in *Sun Cluster 3.x With Sun StorEdge 6120 Array Manual*.

## ▼ How to Install Storage Systems

Use this procedure to install a storage system *before* you install the Solaris operating environment and Sun Cluster software on your nodes. To add a storage system to an existing cluster, use the procedure in “How to Add a Storage System” on page 19.

1. **If necessary, install host adapters in the nodes to be connected to the storage system.**  
For the procedure about how to install host adapters, see the documentation that shipped with your host adapters and nodes.
2. *(6320SL storage system ONLY)* **Install the Fibre Channel (FC) switch for the storage system if you do not have a switch installed.**

---

**Note** – In a 6320SL storage system, the customer provides the switch.

---

For the procedure about how to install an FC switch, see the documentation that shipped with your FC switch hardware.

3. **Unpack, place, and level the storage system.**  
For instructions, see the *Sun StorEdge 6320 System Installation Guide*.
4. **Install the system power cord and the system grounding strap.**  
For instructions, see the *Sun StorEdge 6320 System Installation Guide*.
5. *(6320SL storage system ONLY)* **Connect the storage arrays to the FC switches by using fiber-optic cables.**



---

**Caution** – Do not connect the switch’s Ethernet port to the storage system’s private LAN.

---

For the procedure about how to cable the storage system, see the *Sun StorEdge 6320 System Installation Guide*.

6. **Power on the storage system and the nodes.**  
For instructions about how to power on the storage system, see the *Sun StorEdge 6320 System Installation Guide*. For instructions about how to power on a node, see

the documentation that shipped with your node hardware.

**7. Configure the service processor.**

For more information, see the *Sun StorEdge 6320 System Installation Guide*.

**8. Create a volume.**

For the procedure about how to create a volume, see the *Sun StorEdge 6320 System Reference and Service Manual*.

**9. (Optional) Specify initiator groups for the volume.**

For the procedure about how to specify initiator groups, see the *Sun StorEdge 6320 System Reference and Service Manual*.

**10. If necessary, reconfigure the storage system's FC switches to ensure that all nodes can access each storage array.**

The following configurations might prevent some nodes from accessing each storage array in the cluster.

- Zone configuration
- Multiple clusters that use same switch
- Unconfigured ports or misconfigured ports

**11. On all nodes, install the Solaris operating environment. Apply the required Solaris patches for Sun Cluster software and storage array support.**

For the procedure about how to install the Solaris operating environment, see your Solaris documentation.

See the *Sun Cluster release notes documentation* for information about accessing Sun's Info Docs on <http://sunsolve.sun.com>. The Info Docs list information about required patches and firmware that are available for download. For the procedure about how to apply host adapter firmware, see the firmware patch README file.

**12. Install all required patches or software for Sun StorEdge Traffic Manager software support on all nodes.**

For the procedure on how to install the Sun StorEdge Traffic Manager software, see the *Sun StorEdge Traffic Manager Installation and Configuration Guide* at <http://www.sun.com/products-n-solutions/hardware/docs/>. For a list of required patches for Sun StorEdge Traffic Manager software, see the *Sun StorEdge Traffic Manager Software Release Notes* on <http://www.sun.com/storage/san>.

**13. Edit the `/kernel/drv/scsi_vhci.conf` file to activate the Sun StorEdge Traffic Manager software (STMS) functionality. Set the `mpxio-disable` parameter to `no`.**

```
mpxio-disable="no"
```

**14. Perform a reconfiguration boot on all nodes to create the new Solaris device files and links.**

**15. Configure the STMS paths.**

```
cfgadm -c configure controllerinstance
```

For the procedure about how to configure STMS paths, see the *Sun StorEdge Traffic Manager Installation and Configuration Guide*.

#### 16. Update the Solaris device files and links.

```
# devfsadm
```

---

**Note** – You can wait for the `devfsadm` daemon to automatically update the Solaris device files and links, or you can run the `devfsadm` command to immediately update the Solaris device files and links.

---

#### 17. Confirm that all storage arrays that you installed are visible to all nodes.

```
# luxadm probe
```

## Where to Go From Here

To continue with Sun Cluster software installation tasks, see your Sun Cluster software installation documentation.

---

# Configuring Storage Systems

This section contains the procedures about how to configure a storage system in a running cluster. Table 1–1 lists these procedures.

**TABLE 1–1** Task Map: Configuring a Storage Array

| Task             | Information                         |
|------------------|-------------------------------------|
| Create a volume. | "How to Create a Volume" on page 15 |
| Remove a volume. | "How to Remove a Volume" on page 16 |

The following is a list of administrative tasks that require no cluster-specific procedures. See the *Sun StorEdge 6320 System Reference and Service Manual* for the following procedures.

- Creating a storage pool.
- Removing a storage pool.

- Creating a volume group.
- Removing a volume group.
- Creating an initiator group.
- Adding an initiator group.
- Removing an initiator group.

## ▼ How to Create a Volume

Use this procedure to create a volume in a running cluster. This procedure assumes that you created the storage pool that is to contain the volume that you are creating. A volume has a one-to-one mapping to a LUN. For the procedure about how to create a storage pool, see the *Sun StorEdge 6320 System Reference and Service Manual*.

### 1. Create a volume.

For the procedure about how to create a volume, see the *Sun StorEdge 6320 System Reference and Service Manual*.

### 2. (Optional) Specify initiator groups for the volume.

For the procedure about how to specify initiator groups, see the *Sun StorEdge 6320 System Reference and Service Manual*.

### 3. Are any devices that are associated with the volume you created at an unconfigured state?

```
# cfigadm -al | grep disk
```

- If no, proceed to Step 4.
- If yes, configure the STMS paths.

```
cfigadm -c configure controllerinstance
```

For the procedure about how to configure STMS paths, see the *Sun StorEdge Traffic Manager Installation and Configuration Guide*.

---

**Note** – You need to reboot if the `cfigadm` command does not configure the unconfigured devices that are associated with the volume you are creating. See the *Sun StorEdge Traffic Manager Installation and Configuration Guide* for more information.

---

### 4. On one node that is connected to the storage array, label the new volume.

```
# format
```

### 5. Are you running VERITAS Volume Manager?

- If no, proceed to Step 6.

- If yes, update the list of devices on all nodes that are attached to the new volume that you created in Step 1.

For more information, see your VERITAS Volume Manager documentation.

**6. (Optional) Partition the volume.**

**7. From any node in the cluster, update the global device namespace.**

```
# scgdevs
```

---

**Note** – You might have a volume management daemon such as `vold` running on your node, and have a CD-ROM drive connected to the node. Under these conditions, a `device busy` error might be returned even if no disk is in the drive. This error is expected behavior. You can safely ignore this error.

---

## ▼ How to Remove a Volume

Use this procedure to remove a volume in a running cluster. This procedure assumes all nodes are booted and are attached to the storage array that hosts the volume that you are removing.




---

**Caution** – This procedure destroys all data from the volume that you are removing.

---

**1. If necessary, perform one of the following tasks to protect your data.**

- Migrate all data off the volume that you are removing.
- Backup all data that resides on the volume that you are removing.

**2. Is the volume that you are removing a quorum device?**

```
# scstat -q
```

- If no, proceed to Step 3.
- If yes, choose and configure another device to be the new quorum device. Then remove the old quorum device.

For procedures about how to add and how to remove quorum devices, see your Sun Cluster system administration documentation.

**3. Are you running VERITAS Volume Manager?**

- If no, proceed to Step 4.
- If yes, update the list of devices on all nodes that are attached to the volume that you are removing.

For more information, see your VERITAS Volume Manager documentation.

**4. Remove the reference to the volume from any diskset or disk group.**

For more information, see your Solstice DiskSuite/Solaris Volume Manager or VERITAS Volume Manager documentation.

**5. Remove the volume.**

For the procedure about how to remove a volume, see the *Sun StorEdge 6320 System Reference and Service Manual*.

**6. On all nodes, remove the obsolete Solaris links and device IDs (DIDs).**

```
# devfsadm -C
# sddidadm -C
```

## Where to Go From Here

To remove a storage pool, see the *Sun StorEdge 6320 System Reference and Service Manual*.

---

# Maintaining Storage Systems

This section contains the procedures for maintaining a storage system in a running cluster. Table 1–2 lists these procedures.

**TABLE 1–2** Task Map: Maintaining a Storage System

| Task                                                                                                                                                                                       | Information                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Add a storage system.                                                                                                                                                                      | "How to Add a Storage System" on page 19               |
| Remove a storage system.                                                                                                                                                                   | "How to Remove a Storage System" on page 24            |
| Upgrade storage array firmware.                                                                                                                                                            | "How to Upgrade Storage Array Firmware" on page 19     |
| Replace a node-to-switch component. <ul style="list-style-type: none"><li>■ Node-to-switch fiber-optic cable</li><li>■ FC host adapter</li><li>■ FC switch</li><li>■ GBIC or SFP</li></ul> | "How to Replace a Node-to-Switch Component" on page 24 |

**TABLE 1–2** Task Map: Maintaining a Storage System (Continued)

| Task                                  | Information                                     |
|---------------------------------------|-------------------------------------------------|
| Replace a node's host adapter.        | "How to Replace a Host Adapter" on page 25      |
| Add a node to the storage array.      | Sun Cluster system administration documentation |
| Remove a node from the storage array. | Sun Cluster system administration documentation |

The following is a list of administrative tasks that require no cluster-specific procedures. See the *Sun StorEdge 6320 System Reference and Service Manual* for the following procedures.

- Adding a disk drive.
- Replacing a failed disk drive.
- Removing a disk drive.
- Replacing an Ethernet cable.
- Replacing an Ethernet hub in a cabinet.
- Replacing the power cable on the storage array.
- Replacing a Power and Cooling Unit (PCU).
- Replacing a storage service processor.
- Replacing a storage service processor accessory tray.
- Replacing a service processor panel.
- Replacing a USB relay panel.
- Replacing a USB flash disk.
- Extending a dual-controller configuration.
- Removing a dual-controller configuration.
- Replacing a chassis.
- Replacing a controller.
- Replacing a storage array-to-switch component in a dual-controller configuration.

A storage array-to-switch component includes all of the following components.

- Fiber-optic cable that connects an FC switch to a storage array
- FC switch GBIC or an SFP that connects an FC switch to a storage array
- FC switch that connects an FC switch to a storage array
- FC switch power cord
- Interconnect cables that connect two storage arrays
- Interconnect cards

## ▼ How to Upgrade Storage Array Firmware

---

**Note** – When you upgrade firmware on a storage device or on an enclosure, redefine the stripe size of a LUN, or perform other LUN operations, a device ID (DID) might change unexpectedly. When you perform a check of the DID configuration by running the `scdidadm -c` command, the following error message appears on your console if the DID changed unexpectedly.

```
device id for nodename:/dev/rdisk/cXtYdZsN does not match physical
device's id for ddecimalnumber, device may have been replaced.
```

To fix DIDs that report this error, run the `scdidadm -R` command for each affected device.

---

Use this procedure to upgrade storage array firmware in a running cluster. Storage array firmware includes controller firmware, unit interconnect card (UIC) firmware, EPROM firmware, and disk drive firmware.

**1. Stop all I/O to the storage arrays you are upgrading.**

**2. Apply the controller, disk drive, and UIC firmware patches.**

For the list of required storage array patches, see the *Sun StorEdge 6320 System Reference and Service Manual*. For the procedure about how to apply firmware patches, see the firmware patch README file. For the procedure about how to verify the firmware level, see the *Sun StorEdge 6320 System Reference and Service Manual*. For the procedure about how to reset a storage array, see the *Sun StorEdge 6320 System Reference and Service Manual*.

**3. Confirm that all storage arrays that you upgraded are visible to all nodes.**

```
# luxadm probe
```

**4. Restart all I/O to the storage arrays. You stopped all I/O to these storage arrays in Step 1.**

## How to Add a Storage System

Use this procedure to add a new storage system to a running cluster. To install systems to a new Sun Cluster configuration that is not running, use the procedure in “How to Install Storage Systems” on page 12.

This procedure defines Node N as the node to be connected to the storage system you are adding and the node with which you begin working.

## ▼ How to Perform Initial Configuration Tasks on the Storage Array

1. (6320SL storage system *ONLY*) **Install the Fibre Channel (FC) switch for the storage system if you do not have a switch installed.**

---

**Note** – In a 6320SL storage system, the customer provides the switch.

---

For the procedure about how to install an FC switch, see the documentation that shipped with your FC switch hardware.

2. **Configure the service processor.**

For more information, see the *Sun StorEdge 6320 System Installation Guide*.

3. **Create a volume.**

For the procedure about how to create a volume, see the *Sun StorEdge 6320 System Reference and Service Manual*.

4. (Optional) **Specify initiator groups for the volume.**

For the procedure about how to specify initiator groups, see the *Sun StorEdge 6320 System Reference and Service Manual*.

5. **Unpack, place, and level the storage system.**

For instructions, see the *Sun StorEdge 6320 System Installation Guide*.

6. **Install the system power cord and the system grounding strap.**

For instructions, see the *Sun StorEdge 6320 System Installation Guide*.

7. (6320SL storage system *ONLY*) **Connect the storage arrays to the FC switches by using fiber-optic cables.**



---

**Caution** – Do not connect the switch's Ethernet port to the storage system's private LAN.

---

For the procedure about how to cable the storage system, see the *Sun StorEdge 6320 System Installation Guide*.

8. **Power on the new storage system.**

---

**Note** – The storage arrays in your system might require several minutes to boot.

---

For the procedure about how to power on the storage system, see the *Sun StorEdge 6320 System Installation Guide*.

**9. If necessary, reconfigure the storage system's FC switches to ensure that all nodes can access each storage array.**

The following configurations might prevent some nodes from accessing each storage array in the cluster.

- Zone configuration
- Multiple clusters that use the same switch
- Unconfigured ports or misconfigured ports

## ▼ How to Connect the Node to the FC Switches

**1. Determine the resource groups and device groups that are running on all nodes.**

Record this information because you use this information in Step 22 of this procedure to return resource groups and device groups to these nodes.

```
# scstat
```

**2. Move all resource groups and device groups off Node N.**

```
# scswitch -S -h from-node
```

**3. Do you need to install one or more host adapters in Node N?**

- If no, skip to Step 10.
- If yes, proceed to Step 4.

**4. Is the host adapter that you that are installing the first host adapter on Node N?**

- If no, skip to Step 6.
- If yes, determine whether the required drivers for the host adapter are already installed on this node. For the required packages, see the documentation that shipped with your host adapters.

**5. Are the required support packages already installed?**

- If yes, skip to Step 6.
- If no, install the packages.

The support packages are located in the `Product` directory of the Solaris CD-ROM.

**6. Shut down and power off Node N.**

For the procedure about how to shut down and power off a node, see your Sun Cluster system administration documentation.

**7. Install one or more host adapters in Node N.**

For the procedure about how to install host adapters, see the documentation that shipped with your host adapters and nodes.

**8. Power on and boot Node N into noncluster mode.**

For more information about how to boot nodes, see your Sun Cluster system administration documentation.

**9. If necessary, upgrade the host adapter firmware on Node N.**

See the *Sun Cluster release notes documentation* for information about accessing Sun's Info Docs on <http://sunsolve.sun.com>. The Info Docs list information about required patches and firmware that are available for download. For the procedure about how to apply host adapter firmware, see the firmware patch README file.

**10. If necessary, install a GBIC or an SFP in the FC switch or the storage array.**

For the procedure about how to install a GBIC or an SFP, see the documentation that shipped with your FC switch hardware or the *Sun StorEdge 6320 System Installation Guide*.

**11. Connect a fiber-optic cable between the FC switch and Node N.**

For the procedure about how to install a fiber-optic cable, see the *Sun StorEdge 6320 System Installation Guide*.

**12. Install the required Solaris patches for storage array support on Node N.**

See the *Sun Cluster release notes documentation* for information about accessing Sun's Info Docs on <http://sunsolve.sun.com>. The Info Docs list information about required patches and firmware that are available for download. For the procedure about how to apply host adapter firmware, see the firmware patch README file.

**13. Install all required patches or software for Sun StorEdge Traffic Manager software support to Node N.**

For the procedure on how to install the Sun StorEdge Traffic Manager software, see the *Sun StorEdge Traffic Manager Installation and Configuration Guide* at <http://www.sun.com/products-n-solutions/hardware/docs/>. For a list of required patches for Sun StorEdge Traffic Manager software, see the *Sun StorEdge Traffic Manager Software Release Notes* on <http://www.sun.com/storage/san>.

**14. If necessary, edit the `/kernel/drv/scsi_vhci.conf` file to activate the Sun StorEdge Traffic Manager software functionality. Set the `mpxio-disable` parameter to `no`.**

```
mpxio-disable="no"
```

**15. Perform a reconfiguration boot on Node N to create the new Solaris device files and links.**

**16. Are any devices that are associated with the volume you created at an unconfigured state?**

```
# cftadm -al | grep disk
```

- If no, proceed to Step 17.
- If yes, configure the STMS paths.

```
cfgadm -c configure controllerinstance
```

For the procedure about how to configure STMS paths, see the *Sun StorEdge Traffic Manager Installation and Configuration Guide*.

---

**Note** – You need to reboot if the `cfgadm` command does not configure the unconfigured devices that are associated with the volume you are creating. See the *Sun StorEdge Traffic Manager Installation and Configuration Guide* for more information.

---

#### 17. Update the Solaris device files and links.

```
# devfsadm
```

---

**Note** – You can wait for the `devfsadm` daemon to automatically update the Solaris device files and links, or you can run the `devfsadm` command to immediately update the Solaris device files and links.

---

#### 18. On Node N, update the paths to the DID instances.

```
# scgdevs
```

#### 19. If necessary, label the new storage array logical volume.

For the procedure about how to label a logical volume, see the *Sun StorEdge 6320 System Reference and Service Manual*.

#### 20. (Optional) On Node N, verify that the device IDs (DIDs) are assigned to the new storage array.

```
# scdidadm -l
```

#### 21. Repeat Step 2 through Step 20 for each remaining node that you plan to connect to the storage array.

#### 22. (Optional) Return the resource groups and device groups that you identified in Step 1 to the original nodes.

```
# scswitch -z -g resource-group -h nodename  
# scswitch -z -D device-group-name -h nodename
```

For more information, see your Sun Cluster system administration documentation.

#### 23. Perform volume management administration to incorporate the new volumes into the cluster.

For more information, see your Solstice DiskSuite/Solaris Volume Manager or VERITAS Volume Manager documentation.

## ▼ How to Remove a Storage System

Use this procedure to permanently remove a storage system from a running cluster.

This procedure defines **Node N** as the node that is connected to the storage system you are removing and the node with which you begin working.



---

**Caution** – During this procedure, you lose access to the data that resides on the storage system that you are removing.

---

1. If necessary, back up all database tables, data services, and volumes that are associated with each partner group that is affected.
2. Remove references to the volumes that reside on the storage system that you are removing.  
For more information, see your Solstice DiskSuite/Solaris Volume Manager or VERITAS Volume Manager documentation.
3. Disconnect the cables that connected **Node N** to the FC switches in your storage system.
4. On all nodes, remove the obsolete Solaris links and device IDs (DIDs).

```
# devfsadm -C  
# scdidadm -C
```

5. Repeat Step 3 through Step 4 for each node that is connected to the storage system.

## ▼ How to Replace a Node-to-Switch Component

Use this procedure to replace the following node-to-switch components in a running cluster.

- Node-to-switch fiber-optic cable
- FC host adapter
- FC switch
- GBIC or an SFP

1. On the node that is connected to the node-to-switch connection that you are replacing, determine the resource groups and device groups that are running on this node.

```
# scstat
```

2. Move all resource groups and device groups to another node.

```
# scswitch -s -h from-node
```

### 3. Replace the node-to-switch component.

- For the procedure about how to replace a fiber-optic cable, see the *Sun StorEdge 6320 System Reference and Service Manual*.
- For the procedure about how to replace an FC switch, see the documentation that shipped with your FC switch hardware.
- For the procedure about how to replace an FC host adapter, see your host adapter documentation.
- For the procedure about how to replace GBIC or an SFP, see your switch documentation.

### 4. Return the resource groups and device groups that you identified in Step 1 to the node that is connected to the node-to-switch connection that you replaced.

```
# scswitch -z -g resource-group -h nodename
# scswitch -z -D device-group-name -h nodename
```

## ▼ How to Replace a Host Adapter

Use this procedure to replace a failed host adapter in a running cluster. This procedure defines Node N as the node with the failed host adapter that you are replacing.

### 1. Determine the resource groups and device groups that are running on all nodes.

Record this information because you use this information in Step 9 of this procedure to return resource groups and device groups to these nodes.

```
# scstat
```

### 2. Move all resource groups and device groups off Node N.

```
# scswitch -S -h from-node
```

### 3. Shut down Node N.

For the procedure about how to shut down and power off a node, see your Sun Cluster system administration documentation.

### 4. Power off Node N.

For more information, see your Sun Cluster system administration documentation.

### 5. Replace the failed host adapter.

For the procedure about how to remove and how to add host adapters, see the documentation that shipped with your nodes.

### 6. Power on and boot Node N into noncluster mode.

For more information about how to boot nodes, see your Sun Cluster system administration documentation.

### 7. If necessary, upgrade the host adapter firmware on Node N.

See the *Sun Cluster release notes documentation* for information about accessing Sun's Info Docs on <http://sunsolve.sun.com>. The Info Docs list information about required patches and firmware that are available for download. For the procedure about how to apply host adapter firmware, see the firmware patch README file.

**8. Boot Node N into cluster mode.**

For more information about how to boot nodes, see your Sun Cluster system administration documentation.

**9. Return the resource groups and device groups that you identified in Step 1 to the original nodes.**

```
# scswitch -z -g resource-group -h nodename  
# scswitch -z -D device-group-name -h nodename
```

For more information, see your Sun Cluster system administration documentation.

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---

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