



Sun Cluster 3.x With Sun StorEdge 3510 FC Array Manual

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Preface

The *Sun Cluster 3.x With Sun StorEdge 3510 FC Array Manual* provides procedures specific to Sun StorEdge™ 3510 FC storage devices 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.

See the *Sun Cluster 3.x Release Notes Supplement* for current information on bugs or restrictions.

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.

How This Book Is Organized

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

Section 1 discusses how to install Sun StorEdge 3510 FC storage arrays

Section 2 describes how to configure a Sun StorEdge 3510 FC storage arrays in a running cluster.

Section 3 describes how to maintain Sun StorEdge 3510 FC 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 3.1 With Sun StorEdge 3510 FC Array Manual

Revision Date	New Information
No revisions.	

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 PCI Dual Ultra 3 SCSI Host Adapter Release Notes</i>	816-2157
<i>Sun StorEdge 3000 Family Installation, Operation, and Service Manual</i>	816-7300
<i>Sun StorEdge 3000 Family RAID Firmware 3.27 User's Guide</i>	816-7934
<i>Sun StorEdge 3000 Family Best Practices Manual</i>	816-7325

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 http://docs.sun.com/db/coll/1024.1/	
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 http://docs.sun.com/db/coll/573.10/	
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
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

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

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
<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.comSM 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
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. <code>machine_name%</code> you have mail.
AaBbCc123	What you type, contrasted with on-screen computer output	<code>machine_name% su</code> Password:
<i>AaBbCc123</i>	Command-line placeholder: replace with a real name or value	To delete a file, type rm <i>filename</i> .
<i>AaBbCc123</i>	Book titles, new words, or terms, or words to be emphasized.	Read Chapter 6 in <i>User's Guide</i> . These are called <i>class</i> options. You must be <i>root</i> to do this.

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	<code>machine_name%</code>
C shell superuser prompt	<code>machine_name#</code>
Bourne shell and Korn shell prompt	<code>\$</code>
Bourne shell and Korn shell superuser prompt	<code>#</code>

Installing and Maintaining a Sun StorEdge 3510 FC Array

This chapter describes the procedures for installing, configuring, and maintaining Sun StorEdge™ 3510 FC arrays in a Sun™ Cluster environment.

Before you perform any of the tasks in this chapter, read the entire procedure. If you are not reading an online version of this document, have the books listed in the Preface available.

This chapter contains the following procedures.

- “How to Install a Storage Array” on page 13
- “How to Create and Map a LUN” on page 17
- “How to Unmap and Delete a LUN” on page 18
- “How to Add a Storage Array to a Running Cluster” on page 21
- “How to Remove a Storage Array From a Running Cluster” on page 24
- “How to Replace a Failed Disk Drive in a Running Cluster” on page 26
- “How to Replace a Fibre Channel Component in a Running Cluster” on page 27
- “How to Replace a Chassis in a Running Cluster” on page 27

For conceptual information on multihost disks, see the Sun Cluster concepts documentation document.

Installing Storage Arrays

This section contains the procedure for an initial installation of a storage array in a new cluster configuration. To add a storage array to an operating cluster, use the procedure, “How to Add a Storage Array to a Running Cluster” on page 21.

You can install the StorEdge 3510 FC array in several different configurations. Use the *Sun StorEdge 3000 Family Best Practices Manual* to help evaluate your needs and determine which configuration is best for your situation. See your Sun service provider for currently supported Sun Cluster configurations.

The following figures illustrate two maximum configurations by using multipathing solutions.

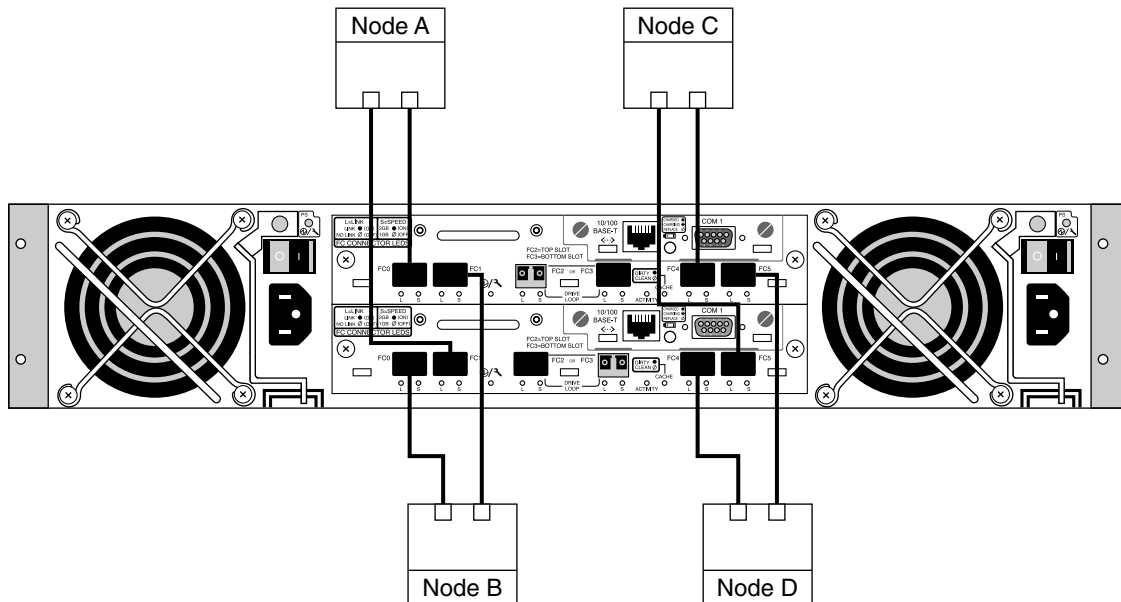


FIGURE 1-1 Direct attach storage (DAS) configuration with multipathing and two controllers

With the direct attach storage (DAS) configuration with multipathing, you can configure LUNs in a variety of ways. The two maximum configuration options are as listed.

- Each LUN is mapped to each host channel. This configuration allows all four nodes to see the same 256 LUNs.
- Half of the LUNs are mapped to half of the nodes. This configuration allows the nodes that are connected to host channels 0 and 1 to see the same 512 LUNs. The nodes that are connected to host channels 4 and 5 can see the other 512 LUNs.

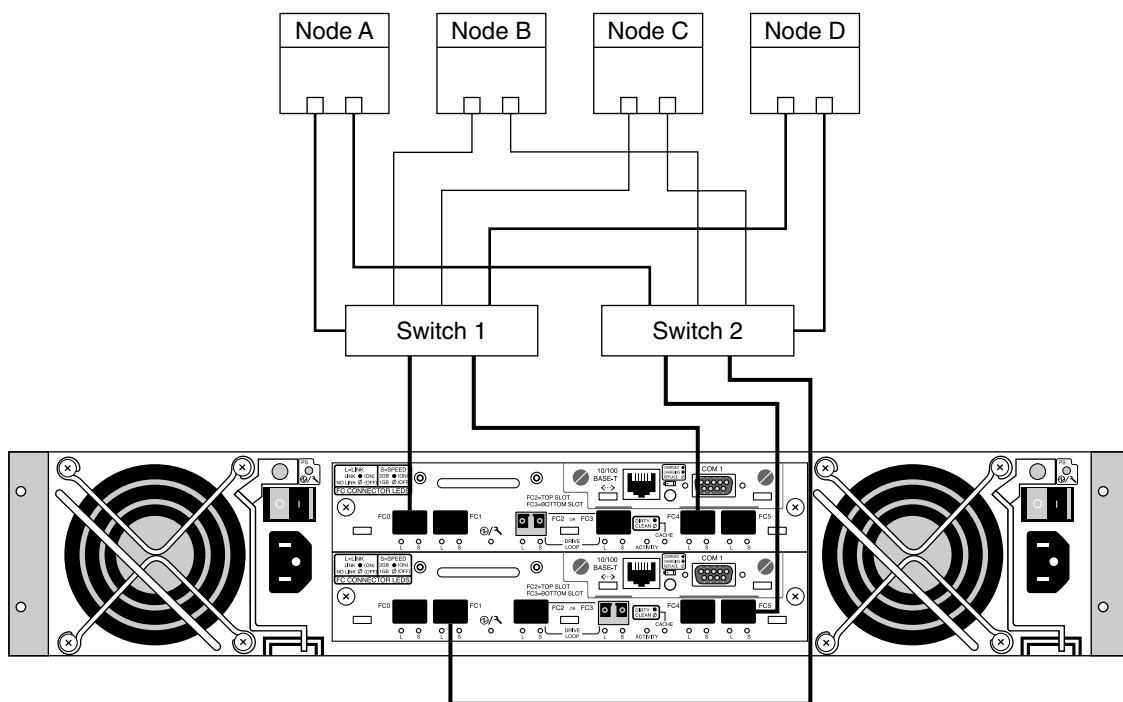


FIGURE 1-2 SAN configuration with multipathing and two controllers

The two-controller SAN configuration allows 32 LUNs to be mapped to each pair of host channels. Since this configuration uses multipathing, each node sees a total of 64 LUNs.

▼ How to Install a Storage Array

Before installing or configuring your cluster, see "Known Problems" in the *Sun Cluster 3.x Release Notes Supplement* for important information about the StorEdge 3510 FC storage array.

Use this procedure to install and configure storage arrays *before* installing the Solaris operating environment and Sun Cluster software on your cluster nodes.

This procedure assumes that the hardware is not connected.

Note – If you plan to attach a StorEdge 3510 FC expansion storage array to a StorEdge 3510 FC RAID storage array, attach the expansion storage array before connecting the RAID storage array to the cluster nodes. See the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* for more information.

1. Install host adapters in the nodes that connect to the storage array.

For the procedure on installing host adapters, see the documentation that shipped with your host adapters and nodes.

2. If necessary, install the Fibre Channel (FC) switches.

For the procedure on installing an FC switch, see the documentation that shipped with your switch hardware.

Note – You must use FC switches when installing storage arrays in a SAN configuration.

3. If necessary, install gigabit interface converters (GBICs) or Small Form Factor Pluggables (SFPs) in the FC switches.

For the procedures on installing a GBIC or an SFP to an FC switch, see the documentation that shipped with your FC switch hardware.

4. Cable the storage array.

For the procedures on connecting your FC storage array, see *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

- If you plan to create a storage area network (SAN), connect the storage array to the FC switches using fiber-optic cables.
- If you plan to have a direct connect configuration (DAS), connect the storage array to the nodes.

5. Power on the storage arrays.

Verify that all components are powered on and functional.

For the procedure on powering up the storage arrays and checking LEDs, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

6. Set up and configure the storage array.

For procedures on setting up logical drives, logical volumes, and LUNs, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* or the *Sun StorEdge 3000 Family RAID Firmware 3.27 User's Guide*.

For the procedure on configuring the storage array, see *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

7. Install the Solaris operating environment and any required Solaris patches.

For software installation procedures, see the Sun Cluster software installation documentation.

Note – For the current list of patches that are required for the Solaris operating environment, refer to SunSolve. SunSolve is available online to Sun service providers and to customers with SunSolve service contracts at the SunSolve site: <http://sunsolve.sun.com>.

8. Install any required storage array controller firmware.

Sun Cluster software requires patch version 113723–03 or later for each array in the cluster.

See the Sun Cluster release notes documentation for information about accessing Sun's EarlyNotifier web pages. The EarlyNotifier web pages list information about any required patches or firmware levels that are available for download.

9. Install any required patches or software for the Sun StorEdge SAN Foundation software and Sun StorEdge Traffic Manager software support on all nodes.

Sun Cluster software requires at least version 4.2 of the Sun StorEdge SAN Foundation software. You can obtain the *Sun StorEdge SAN Foundation Software Installation Guide* from <http://www.sun.com/storage/san>.

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>.

10. If necessary, edit the `/kernel/drv/scsi_vhci.conf` file to activate multipathing functionality. Set the `mpxio-disable` parameter to `no`.

The storage array requires at least version 6.2 of the Sun StorEdge Traffic Manager.

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

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

12. On all nodes, update the `/devices` and `/dev` entries.

```
# devfsadm -C
```

13. On all nodes, confirm that the storage arrays that you installed are visible.

```
# luxadm probe
```

14. If necessary, label the LUNs.

```
# format
```

15. Install the Sun Cluster software and volume management software.

For software installation procedures, see the Sun Cluster software installation documentation.

Where to Go From Here

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

Configuring Storage Arrays in a Running Cluster

This section contains the procedures for configuring a storage array in a running cluster. Table 1–1 lists these procedures.

Before installing or configuring your cluster, see "Known Problems" in the *Sun Cluster 3.x Release Notes Supplement* for important information about the StorEdge 3510 FC storage array.

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’s 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.
```

Run the `scdidadm -R` command for each affected device.

TABLE 1–1 Task Map: Configuring a Fibre-Channel Storage Array

Task	Information
Create a logical volume	"How to Create and Map a LUN" on page 17
Remove a logical volume	"How to Unmap and Delete a LUN" on page 18

▼ How to Create and Map a LUN

Use this procedure to create a logical unit (LUN) from unassigned disk drives or remaining capacity. See the *Sun StorEdge 3000 Family RAID Firmware 3.27 User's Guide* for the latest information about LUN administration.

1. Create and partition the logical device(s).

For more information on creating a LUN, see the *Sun StorEdge 3000 Family RAID Firmware 3.27 User's Guide*.

2. Map the LUNs to the host channels that are cabled to the cluster nodes.

For more information on mapping LUNs to host channels, see *Sun StorEdge 3000 Family RAID Firmware 3.27 User's Guide*.

3. On one node at a time, perform a reconfiguration boot on the nodes that are connected to the storage array.

For the full procedure on shutting down and powering off a node, see the Sun Cluster system administration documentation.

4. If necessary, label the LUNs.

5. On each node, update the paths to the LUNs that you added.

```
# devfsadm
```

6. If the cluster is online and active, update the global device namespace.

```
# scgdevs
```

7. Verify that the DIDs have been assigned to the disk drives in the storage array.

```
# scdidadm -L
```

8. If you want a volume manager to manage the new LUN, run the appropriate Solstice DiskSuite/Solaris Volume Manager or VERITAS Volume Manager commands to incorporate the new LUN into a diskset or disk group.

For information on administering LUNs and disk device groups, see the Sun Cluster system administration documentation.

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

9. If you want the new LUN to be a quorum device, add the quorum device.

For the procedure on adding a quorum device, see the Sun Cluster system administration documentation.

▼ How to Unmap and Delete a LUN

Use this procedure to delete a LUN(s). See the *Sun StorEdge 3000 Family RAID Firmware 3.27 User's Guide* for the latest information about LUN administration.

This procedure assumes that the storage array is connected to the nodes, all of the nodes are powered on, and that you plan to use the `telnet` to access the storage array to perform the following steps.



Caution – When you delete a LUN, you remove all data on the LUN that you delete.

1. Identify the LUNs that you need to remove.

```
# luxadm probe
# scdidadm -L pathname
```

2. Is the LUN that you plan to remove configured as 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 on adding and removing quorum devices, see the Sun Cluster system administration documentation.

3. Remove the LUN from disksets or disk groups.

Run the appropriate Solstice DiskSuite/Solaris Volume Manager or VERITAS Volume Manager commands to remove the LUN from any diskset or disk group. For more information, see your Solstice DiskSuite/Solaris Volume Manager or VERITAS Volume Manager documentation. See the following paragraph for additional VERITAS Volume Manager commands that are required.

Note – LUNs that were managed by VERITAS Volume Manager must be completely removed from VERITAS Volume Manager control before you can delete them from the Sun Cluster environment. After you delete the LUN from any disk group, use the following commands **on both nodes** to remove the LUN from VERITAS Volume Manager control.

```
# vxdisk offline cNtXdY
# vxdisk rm cNtXdY
```

4. Unmap the LUN from both host channels.

For the procedure on unmapping a LUN, see the *Sun StorEdge 3000 Family RAID Firmware 3.27 User's Guide*.

5. (Optional) Delete the logical drive.

For more information, see the *Sun StorEdge 3000 Family RAID Firmware 3.27 User's Guide*.

6. On both nodes, remove the paths to the LUN that you are deleting.

```
# devfsadm -C
```

7. On both nodes, remove all obsolete device IDs (DID)s.

```
# scdidadm -C
```

Maintaining Storage Arrays

This section contains the procedures for maintaining a storage array in a Sun Cluster environment. Maintenance tasks are listed in Table 1–2 contain cluster-specific tasks. Tasks that are not cluster-specific are referenced in a list following the table.

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's 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.
```

Run the `scdidadm -R` command for each affected device.

TABLE 1–2 Task Map: Maintaining a Storage Array

Task	Information
Add a storage array to a running cluster.	"How to Add a Storage Array to a Running Cluster" on page 21
Remove a storage array from a running cluster.	"How to Remove a Storage Array From a Running Cluster" on page 24
Replace a disk drive in an storage array.	"How to Replace a Failed Disk Drive in a Running Cluster" on page 26

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

Task	Information
Replace a node-to-switch fiber optic cable.	"How to Replace a Fibre Channel Component in a Running Cluster" on page 27
Replace a gigabit interface converter (GBIC) or Small Form Factor Pluggable (SFP) on a node's host adapter.	"How to Replace a Fibre Channel Component in a Running Cluster" on page 27
Replace a GBIC or an SFP on an FC switch, connecting to a node.	"How to Replace a Fibre Channel Component in a Running Cluster" on page 27
Replace a storage array-to-switch fiber-optic cable.	"How to Replace a Fibre Channel Component in a Running Cluster" on page 27
Replace a GBIC or an SFP on an FC switch, connecting to a storage array.	"How to Replace a Fibre Channel Component in a Running Cluster" on page 27
Replace an FC switch.	"How to Replace a Fibre Channel Component in a Running Cluster" on page 27
Replace the power cord of an FC switch.	"How to Replace a Fibre Channel Component in a Running Cluster" on page 27
Replace the controller.	"How to Replace a Fibre Channel Component in a Running Cluster" on page 27
Replace the chassis.	"How to Replace a Chassis in a Running Cluster" on page 27
Replace a host adapter in a node.	"Installing and Maintaining Cluster Interconnect Hardware" in <i>Sun Cluster 3.x Hardware Administration Manual</i>
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 3000 Family Installation, Operation, and Service Manual* for the following procedures.

- Replacing an Ethernet cable.
- Replacing the power cable on the storage array.
- Replacing a Power and Cooling Unit (PCU).
- Upgrading storage array firmware.
- Replacing the expansion unit-to-RAID storage array interconnect components such as SFPs and fiber-optic cables.

How to Add a Storage Array to a Running Cluster

Use this procedure to add new storage array to a running cluster. To install to a new Sun Cluster that is not running, use the procedure in “How to Install a Storage Array” on page 13.

If you need to add a storage array to more than two nodes, repeat the steps for each additional node that connects to the storage array.

Note – This procedure assumes that your nodes are not configured with dynamic reconfiguration functionality.

If your nodes are configured for dynamic reconfiguration, see the Sun Cluster system administration documentation and skip steps that instruct you to shut down the node.

▼ How to Perform Initial Configuration Tasks on the Storage Array

1. Power on the storage array.

2. Set up and configure the storage array.

For the procedures on configuring the storage array, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

3. If necessary, upgrade the storage array’s controller firmware.

Sun Cluster software requires patch version 113723-03 or later for each array in the cluster.

See the Sun Cluster release notes documentation for information about accessing Sun’s EarlyNotifier web pages. The EarlyNotifier web pages list information about any required patches or firmware levels that are available for download. For the procedure on applying any host adapter’s firmware patch, see the firmware patch README file.

4. Configure the new storage array. Map the LUNs to the host channels.

For the procedures on setting up logical drives, logical volumes, and LUNs, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* or *Sun StorEdge 3000 Family RAID Firmware 3.27 User’s Guide*.

▼ How to Connect the Storage Array to FC Switches

Use this procedure if you plan to add a storage array to a SAN environment. If you do not plan to add the storage array to a SAN environment, go to “How to Connect the Node to the FC Switches or the Storage Array” on page 22.

1. Install the SFPs in the storage array that you plan to add.

For the procedure on installing an SFP, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

2. If necessary, install GBICs or SFPs in the FC switches.

For the procedure on installing a GBIC or an SFP to an FC switch, see the documentation that shipped with your FC switch hardware.

3. Install a fiber-optic cable between the new storage array and each FC switch.

For the procedure on installing a fiber-optic cable, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

▼ How to Connect the Node to the FC Switches or the Storage Array

Use this procedure when you add a storage array to a SAN or DAS configuration. In SAN configurations, you connect the node to the FC switches. In DAS configurations, you connect the node directly to the storage array.

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

Record this information because you will use it in Step 14 of this procedure to return resource groups and device groups to these nodes.

```
# scstat
```

2. Move all resource groups and device groups off the node that you plan to connect.

```
# scswitch -S -h nodename
```

3. Determine if you need to install host adapters in the node.

- If no, skip to Step 4.
- If yes, see the documentation that shipped with your host adapters.

4. If necessary, install GBICs or SFPs to the FC switches or the storage array.

For the procedure on installing a GBIC or an SFP to an FC switch, see the documentation that shipped with your FC switch hardware.

For the procedure on installing a GBIC or an SFP to a storage array, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

5. Connect fiber-optic cables between the node and the FC switches or the storage array.

For the procedure on installing a fiber-optic cable, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

6. If necessary, install the required Solaris patches for storage array support on the node.

See the Sun Cluster release notes documentation for information about accessing Sun's EarlyNotifier web pages. The EarlyNotifier web pages list information about any required patches or firmware levels that are available for download. For the procedure on applying any host adapter's firmware patch, see the firmware patch README file.

7. Install any required patches or software for the Sun StorEdge SAN Foundation software and Sun StorEdge Traffic Manager software support on all nodes.

Sun Cluster software requires at least version 4.2 of the Sun StorEdge SAN Foundation software. You can obtain the *Sun StorEdge SAN Foundation Software Installation Guide* from <http://www.sun.com/storage/san>.

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>.

8. If necessary, edit the `/kernel/drv/scsi_vhci.conf` file to activate multipathing functionality. Set the `mpxio-disable` parameter to `no`.

The storage array requires at least version 6.2 of the Sun StorEdge Traffic Manager.

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

9. On the node, update the `/devices` and `/dev` entries.

```
# devfsadm -C
```

10. On the node, update the paths to the DID instances.

```
# scgdevs
```

11. If necessary, label the LUNs on the new storage array.

```
# format
```

12. (Optional) On the node, verify that the device IDs (DIDs) are assigned to the new storage array.

```
# scdidadm -l
```

13. Repeat Step 2 to Step 12 for each remaining node that you plan to connect to the storage array.

14. 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 the Sun Cluster system administration documentation.

15. Perform volume management administration to incorporate the new logical volumes into the cluster.

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

▼ How to Remove a Storage Array From a Running Cluster

Use this procedure to permanently remove storage arrays and their submirrors from a running cluster.

If you need to remove a storage array from more than two nodes, repeat the steps Step 6 to Step 11 for each additional node that connects to the storage array.



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

1. Does the storage array you are removing contain any quorum devices?

```
# scstat -q
```

- If no, proceed to Step 2.
- If yes, choose another disk drive to configure as the quorum device. Then remove the old quorum device.

For procedures on adding and removing quorum devices, see the Sun Cluster system administration documentation.

2. If necessary, back up all database tables, data services, and volumes associated with each storage array that you are removing.

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

Record this information because you will use it in Step 15 of this procedure to return resource groups and device groups to these nodes.

```
# scstat
```

4. If necessary, run the appropriate Solstice DiskSuite or VERITAS Volume Manager commands to detach the submirrors from each storage array that you are removing to stop all I/O activity to the storage array.

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

5. Run the appropriate volume manager commands to remove references to each LUN that belongs to the storage array that you are removing.

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

6. Shut down the node.

For the full procedure on shutting down and powering off a node, see the Sun Cluster system administration documentation.

7. If necessary, disconnect the storage arrays from the nodes or the FC switches.

8. Is the storage array that you are removing the last storage array connected to the node?

- If no, skip to Step 11.
- If yes, disconnect the fiber-optic cable between the node and the FC switch that was connected to this storage array.

9. Do you want to remove the host adapters from the node?

- If no, skip to Step 11.
- If yes, power off the node.

10. Remove the host adapters from the node.

For the procedure on removing host adapters, see the documentation that shipped with your host adapter and nodes.

11. Boot the node into cluster mode.

For more information on booting nodes, see the Sun Cluster system administration documentation.

12. Repeat steps Step 6 to Step 11 on each additional node that you need to disconnect from the storage array.

13. On all cluster nodes, remove the paths to the devices that you are deleting.

```
# devfsadm -C
```

14. On all cluster nodes, remove all obsolete device IDs (DIDs).

```
# sddidadm -C
```

15. Return the resource groups and device groups that you identified in Step 3 to the original nodes.

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

Where to Go From Here

To prepare the storage array for later use, unmap and delete all LUNs and logical drives. See “How to Unmap and Delete a LUN” on page 18 for information about LUN removal. For more information about removing logical drives, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

▼ How to Replace a Failed Disk Drive in a Running Cluster

Use this procedure to replace one failed disk drive in a storage array in a running cluster.

This procedure will be useful for configurations that rely on host-based mirroring.

1. Did the failed disk drive impact the availability of the storage array's logical drive?

- If no, proceed to Step 2.
- If yes, remove the logical volume from volume management control.
For more information, see your Solstice DiskSuite or VERITAS Volume Manager documentation.

2. Is the disk drive you are replacing a quorum device or is in a LUN that is 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 on adding and removing quorum devices, see the Sun Cluster system administration documentation.

3. Replace the disk drive in the storage array.

For the procedure on replacing a disk drive, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

4. If you recreated the logical drive and want the new logical drive to be a quorum device, add the quorum device.

For the procedure on adding a quorum device, see the Sun Cluster system administration documentation.

5. Did you remove a LUN from volume management control in Step 1?

- If not, you are finished with this procedure.
- If you did remove a LUN from volume management control, return the LUN to volume management control now.
For more information, see your Solstice DiskSuite or VERITAS Volume Manager documentation.

▼ How to Replace a Fibre Channel Component in a Running Cluster

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

- Node-to-switch fiber-optic cable
- Node-to-storage fiber-optic cable
- GBIC or an SFP on an FC switch, storage array, or node

1. Determine the resource groups and device groups that are running on the node that is connected to the component that you are replacing.

Record this information because you will use it in Step 4 of this procedure to return resource groups and device groups to these nodes.

```
# scstat
```

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

```
# scswitch -S -h nodename
```

3. Replace the node-to-switch component.

- For the procedure on replacing a fiber-optic cable between a node and an FC switch, see the documentation that shipped with your switch hardware.
- For the procedure on replacing a GBIC or an SFP on an FC switch, see the documentation that shipped with your FC switch hardware.

4. Return the resource groups and device groups that you identified in Step 1 to the node that is connected to the component that you replaced.

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

▼ How to Replace a Chassis in a Running Cluster

Use this procedure to replace a storage array chassis in a running cluster. This procedure assumes that you want to retain all FRUs other than the chassis and the backplane.

1. To stop all I/O activity to this storage array, detach the submirrors that are connected to the chassis you are replacing.

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

2. Is this storage array made redundant by host-based mirroring?

- If yes, proceed to Step 3.
- If no, shut down the cluster.

For the full procedure on shutting down a cluster, see the Sun Cluster system administration documentation.

3. Replace the chassis and backplane.

For the procedure on replacing a chassis, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

4. Did you shut down the cluster in Step 2?

- If no, proceed to Step 5.
- If yes, boot it back into cluster mode.

For the full procedure on booting a cluster, see the Sun Cluster system administration documentation.

5. Reattach the submirrors that you detached in Step 1 to resynchronize them.



Caution – The world wide numbers (WWNs) might change as a result of this procedure. If the WWNs change, and you must reconfigure your volume manager software to recognize the new WWNs.

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

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