# Sun Cluster 3.0-3.1 With Sun StorEdge 3310 or 3320 SCSI RAID Array Manual

## For Solaris OS

Adobe PostScript™

051005@13215

# Contents

# Preface

The *Sun Cluster 3.0-3.1 With Sun StorEdge 3310 or 3320 SCSI RAID Array Manual* provides procedures specific to Sun StorEdge™ 3310 and 3320 SCSI RAID storage devices that are placed in a Sun® Cluster environment. Use this manual with any version of Sun Cluster 3.0 or 3.1 software.

Unless otherwise noted, procedures are the same for all supported Sun Cluster versions on both SPARC™ and x86 based systems.

## 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

The following chapters contain information about hardware used in a Sun Cluster environment.

Chapter 1 discusses how to install and configure StorEdge 3310 and 3320 RAID storage arrays.

Chapter 2 discusses how to maintain StorEdge 3310 and 3320 RAID storage arrays.

# 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 3.0-3.1 With Sun StorEdge 3310 or 3320 SCSI RAID Array Manual

| Revision Date | New Information |
| --- | --- |
| October 2005 | Added Sun StorEdge 3320 as a supported array. |

# Related Documentation

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

The following Sun Cluster books support the Sun Cluster 3.1, 2004, and 2005 releases. If you are maintaining a different version of Sun Cluster software, refer to the appropriate documentation. All Sun Cluster documentation is available at http://docs.sun.com.

Documentation that is not available at `http://docs.sun.com` is listed with the appropriate URL.

**TABLE P–2** Sun StorEdge 3310 and 3320 RAID Storage Array Documentation

| Title | Part Number |
| --- | --- |
| *OpenBoot 4.x Command Reference Manual* | 816–1177 |
| Available at http://docs.sun.com/db/doc/816–1177–10 | |
| *Sun StorEdge 3000 Family Installation, Operation, and Service Manual, 3310 SCSI Array* | 816–7290 |
| *Sun StorEdge 3000 Family Installation, Operation, and Service Manual, 3320 SCSI Array* | 819–1274 |

**TABLE P–2** Sun StorEdge 3310 and 3320 RAID Storage Array Documentation    *(Continued)*

| Title | Part Number |
|---|---|
| *Sun StorEdge 3000 Family CLI 2.0 User's Guide* | 817–4951 |
| *Sun StorEdge 3000 Family FRU Installation Guide* | 816–7326 |
| *Sun StorEdge 3000 Family RAID Firmware 4.1x User's Guide* | 817–3711 |
| *Sun StorEdge 3000 Family Configuration Service 2.1 User's Guide* <br> Available at http://docs.sun.com/db/doc/817–3337–14 | 817–3337 |
| *Sun StorEdge 3310 SCSI Array Release Notes* | 816-7292 |
| *Sun StorEdge 3320 SCSI Array Release Notes* <br> Available at http://docs.sun.com/db/doc/817–7660–10 | 817–7660 |
| *Sun StorEdge PCI Dual Ultra3 SCSI Host Adapter Release Notes* | 816-2157 |

**TABLE P–3** Sun Cluster Documentation

| Application | Title |
|---|---|
| Concepts | *Sun Cluster Concepts Guide for Solaris OS* |
| Overview | *Sun Cluster Overview for Solaris OS* |
| Hardware administration | *Sun Cluster 3.0-3.1 Hardware Administration Manual for Solaris OS* |
| | Individual hardware administration guides |
| Software installation | *Sun Cluster Software Installation Guide for Solaris OS* |
| Data service administration | *Sun Cluster Data Services Planning and Administration Guide for Solaris OS* |
| | Individual data service guides |
| Data service development | *Sun Cluster Data Services Developer's Guide for Solaris OS* |
| System administration | *Sun Cluster System Administration Guide for Solaris OS* |
| Error messages | *Sun Cluster Error Messages Guide for Solaris OS* |
| Command and function reference | *Sun Cluster Reference Manual for Solaris OS* |
| Release Notes | *Sun Cluster 3.1 8/05 Release Notes for Solaris OS* |
| | *Sun Cluster 3.0-3.1 Release Notes Supplement* |

# Using UNIX Commands

This document contains information about commands that are used to install, configure, or upgrade a Sun Cluster configuration. This document might not contain complete information about 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™ Operating System (Solaris OS)
- Other software documentation that you received with your system
- Solaris Operating System 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 9)
- The release number of Sun Cluster (for example, Sun Cluster 3.1 8/05)

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

| Command | Function |
| --- | --- |
| `prtconf -v` | Displays the size of the system memory and reports information about peripheral devices |
| `psrinfo -v` | Displays information about processors |
| `showrev -p` | Reports which patches are installed |
| `prtdiag -v` | Displays system diagnostic information |
| `/usr/cluster/bin/scinstall -pv` | Displays Sun Cluster release and package version information |

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

# Documentation, Support, and Training

| Sun Function | URL | Description |
|---|---|---|
| Documentation | `http://www.sun.com/documentation/` | Download PDF and HTML documents, and order printed documents |
| Support and Training | `http://www.sun.com/supportraining/` | Obtain technical support, download patches, and learn about Sun courses |

# Typographic Conventions

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

**TABLE P–4** Typographic Conventions

| Typeface or Symbol | Meaning | Example |
|---|---|---|
| `AaBbCc123` | The names of commands, files, and directories, and onscreen computer output | Edit your `.login` file. Use `ls -a` to list all files. `machine_name% you have mail.` |
| **`AaBbCc123`** | What you type, contrasted with onscreen computer output | `machine_name%` **`su`** `Password:` |
| *aabbcc123* | Placeholder: replace with a real name or value | The command to remove a file is `rm` *filename*. |
| *AaBbCc123* | Book titles, new terms, and terms to be emphasized | Read Chapter 6 in the *User's Guide*. Perform a *patch analysis*. Do *not* save the file. [Note that some emphasized items appear bold online.] |

# 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 | `#` |

# Product Training

Sun Microsystems offers training in many Sun technologies through a variety of
instructor-led courses and self-paced courses. For information about the training
courses that Sun offers and to enroll in a class, visit Sun Training at
`http://training.sun.com/`.

# Installing and Configuring a Sun StorEdge 3310 and 3320 SCSI RAID Array

This chapter describes the procedures about how to install and configure Sun StorEdge™ 3310 and 3320 SCSI RAID arrays in a Sun™ Cluster environment.

Read the entire procedure before you perform any steps within a procedure in this chapter. If you are not reading an online version of this document, ensure that you have the books listed in Related Documentation available.

This chapter contains the following major topics:

- "Installing Storage Arrays" on page 11
- "Configuring Storage Arrays" on page 16

## Installing Storage Arrays

This section contains instructions on installing storage arrays both in new clusters and in existing clusters.

**TABLE 1–1** Task Map: Installing Storage Arrays

| Task | Information |
|------|-------------|
| Install a storage array in a new cluster, before the OS and Sun Cluster software are installed. | "How to Install a Storage Array in a New Cluster" on page 12 |
| Add a storage array to an operational cluster. | "How to Add a Storage Array to an Existing Cluster" on page 13 |

## ▼ How to Install a Storage Array in a New Cluster

Use this procedure to install and configure RAID storage arrays *before* installing the Solaris operating environment and Sun Cluster software on your nodes. To add storage arrays to an operating cluster, use the procedure, "How to Add a Storage Array to an Existing Cluster" on page 13.

**Before You Begin**  This procedure assumes that the hardware is not connected.

---

**SPARC only –** To attach a JBOD storage array to a RAID storage array as an expansion unit, attach the JBOD storage array before connecting the RAID storage array to the nodes. For more information, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

---

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

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

**2. Cable the storage array to the nodes.**

Ensure the cable does not exceed bus length limitations. For more information on bus length limitations, see the documentation that shipped with your hardware.

For the procedure about how to cable the storage arrays, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

**3. RAID storage arrays have redundant power inputs. Connect each power cord from the storage array to a different power source.**

Different RAID storage arrays can share power sources.

**4. Install the Solaris operating environment, then apply any required Solaris patches.**

For software installation procedures, see your 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`.

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**5. If necessary, install the qus driver and appropriate driver patches.**

For driver installation procedures, see the *Sun StorEdge PCI Dual Ultra 3 SCSI Host Adapter Release Notes*.

6. **If necessary, upgrade the controller firmware.**

7. **Set up and configure the storage arrays with logical units (LUNs).**

   For the procedure about how to set up the storage array with LUNs, see "How to Create and Map a LUN" on page 17.

   ---

   **Note –** If you want to use the Configuration Service Console, perform this step after Step 8.

   ---

8. **(Optional) Install the Configuration Service.**

   For the procedure about how to install the Configuration Service, see the *Sun StorEdge 3000 Family Configuration Service 2.1 User's Guide*.

9. **Install the Sun Cluster software and volume management software.**

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

**See Also**    To continue with Sun Cluster software and data services installation tasks, see your Sun Cluster software installation documentation and your Sun Cluster data services collection.

## ▼ How to Add a Storage Array to an Existing Cluster

Use this procedure to add RAID storage arrays to a running cluster. If you need to install a storage array in a new cluster, use the procedure in "How to Install a Storage Array in a New Cluster" on page 12.

**Before You Begin**    This procedure assumes that your nodes are not configured with dynamic reconfiguration functionality.

If your nodes are configured for dynamic reconfiguration, see your "Dynamic Reconfiguration Operations For Sun Cluster Nodes" in *Sun Cluster 3.0-3.1 Hardware Administration Manual for Solaris OS*.

**Steps**    1. **Install any storage array packages and patches on nodes.**

   ---

   **Note –** For the most current list of software, firmware, and patches that are required for the RAID storage array, 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.

   ---

2. **Power on the storage array.**

   For procedures about how to power on the storage array, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

3. **Configure the storage array.**

   For the procedure about how to create LUNs, see "How to Create and Map a LUN" on page 17.

4. **On each node that is connected to the storage array, ensure that each LUN has an associated entry in the `/kernel/drv/sd.conf` file.**

   For more information, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

5. **If you need to install host adapters in the node, perform the following steps.**

   a. **Shut down the node.**

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

   b. **Power off the node.**

      For the procedure about how to power off a node, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

   c. **Install the host adapters in the node.**

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

6. **Cable the storage array to the node.**

   Ensure the cable does not exceed bus length limitations. For more information on bus length limitations, see the documentation that shipped with your hardware.

   For the procedure about how to cable the storage arrays, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

7. **Boot the node.**

   For the procedure about how to boot nodes, see your Sun Cluster system administration documentation.

8. **Verify that the node recognizes the new host adapters and disk drives.**

   If the node does not recognize the new hardware, check all hardware connections and repeat installation steps you performed in Step c.

   ■ SPARC:

   ```
   {0} ok show-disks
   a) /pci@1f,4000/pci@2/scsi@5/sd
   b) /pci@1f,4000/pci@2/scsi@4/sd
   ...
   ```

- x86:

```
Adaptec AIC-7899 SCSI BIOS v2.57S4
(c) 2000 Adaptec, Inc. All Rights Reserved.
    Press <Ctrl><A> for SCSISelect(TM) Utility!

Ch B,  SCSI ID: 0 SEAGATE  ST336605LC       160
       SCSI ID: 1 SEAGATE  ST336605LC       160
       SCSI ID: 6 ESG-SHV  SCA HSBP M18     ASYN
Ch A,  SCSI ID: 2 SUN      StorEdge 3310    160
       SCSI ID: 3 SUN      StorEdge 3310    160

AMIBIOS (C)1985-2002 American Megatrends Inc.,
Copyright 1996-2002 Intel Corporation
SCB20.86B.1064.P18.0208191106
SCB2 Production BIOS Version 2.08
BIOS Build 1064

2 X Intel(R) Pentium(R) III CPU family      1400MHz
Testing system memory, memory size=2048MB
2048MB Extended Memory Passed
512K L2 Cache SRAM Passed
ATAPI CD-ROM SAMSUNG CD-ROM SN-124

SunOS - Intel Platform Edition    Primary Boot Subsystem, vsn 2.0

                 Current Disk Partition Information

           Part#    Status    Type     Start      Length
           =========================================
              1    Active   X86 BOOT   2428        21852
              2             SOLARIS    24280     71662420
              3             <unused>
              4             <unused>
        Please select the partition you wish to boot: *   *

Solaris DCB

              loading /solaris/boot.bin

SunOS Secondary Boot version 3.00

              Solaris Intel Platform Edition Booting System

Autobooting from bootpath: /pci@1,0/pci8086,340f@7,1/sd@0,0:a

If the system hardware has changed, or to boot from a different
device, interrupt the autoboot process by pressing ESC.
Press ESCape to interrupt autoboot in 2 seconds.
Initializing system
Please wait...
Warning: Resource Conflict - both devices are added

NON-ACPI device: ISY0050
    Port: 3F0-3F5, 3F7; IRQ: 6; DMA: 2
```

```
ACPI device: ISY0050
     Port: 3F2-3F3, 3F4-3F5, 3F7; IRQ: 6; DMA: 2

                    <<< Current Boot Parameters >>>
Boot path: /pci@1,0/pci8086,340f@7,1/sd@0,0:a
Boot args:

Type    b [file-name] [boot-flags] <ENTER>  to boot with options
or      i <ENTER>                           to enter boot interpreter
or      <ENTER>                             to boot with defaults

                    <<< timeout in 5 seconds >>>

Select (b)oot or (i)nterpreter:
```

9. **If necessary, perform a reconfiguration boot on the node to create the new Solaris device files and links.**

10. **Perform Step 1 through Step 9 on each additional node connected to the new array.**

11. **For all nodes that are attached to the storage array, verify that the DIDs have been assigned to the LUNs.**

    # **scdidadm -L**

---

# Configuring Storage Arrays

This product supports the use of hardware RAID and host-based software RAID. For host-based software RAID, this product supports RAID levels 0+1 and 1+0.

---

**Note –** When you use host-based software RAID with hardware RAID, the hardware RAID levels you use affect the hardware maintenance procedures due to volume management administration.

If you use hardware RAID level 1, 3, or 5, you can perform most maintenance procedures in "Maintaining RAID Storage Arrays" on page 21 without volume management disruptions. If you use hardware RAID level 0, some maintenance procedures in "Maintaining RAID Storage Arrays" on page 21 require additional volume management administration because the availability of the LUNs is impacted.

---

**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 might change unexpectedly. When you perform a check of the device ID configuration by running the `scdidadm -c` command, the following error message appears on your console if the device ID changed unexpectedly.

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

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

This section describes the procedures about how to configure a RAID storage array *after* installing Sun Cluster software. Table 1–2 lists these procedures.

To configure a RAID storage array *before* you install Sun Cluster software, follow the same procedure that you use in a noncluster environment. For procedures about how to configure RAID storage arrays before you install Sun Cluster, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

**TABLE 1–2** Task Map: Configuring Disk Drives

| Task | Information |
| --- | --- |
| Create a logical unit (LUN). | "How to Create and Map a LUN" on page 17 |
| Remove a LUN. | "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 4.1x User's Guide* for the latest information about LUN administration.

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

For more information on creating a LUN, see the *Sun StorEdge 3000 Family RAID Firmware 4.1x User's Guide*.

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

For more information on mapping LUNs to host channels, see the *Sun StorEdge 3000 Family RAID Firmware 4.1x User's Guide*.

> **Note –** You can have a maximum of 64 shared LUNs.

3. **Ensure that each LUN has an associated entry in the `/kernel/drv/sd.conf` file.**

   For more information, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

4. **To make the changes to the `/kernel/drv/sd.conf` file active, perform one of the following options.**

   - **On systems that run Solaris 8 Update 7 or below, perform a reconfiguration boot.**

   - **For Solaris 9 and above, run the `update_drv -f sd` command and then the `devfsadm` command.**

5. **If necessary, label the LUNs.**

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

   ```
   # scgdevs
   ```

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

   For information on administering LUNs, see your Sun Cluster system administration documentation.

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

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

   For the procedure about how to add a quorum device, see your 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 4.1x User's Guide* for the latest information about LUN administration.

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

**Before You Begin**  This procedure assumes that the cluster is online. A cluster is online if the RAID storage array is connected to the nodes and all nodes are powered on. This procedure also assumes that you plan to telnet to the RAID storage array perform this procedure.

**Steps**  1.  **Identify the LUNs that you need to remove.**

    # **cfgadm -al**

2.  **Is the LUN a quorum device? This LUN is the LUN that you are removing.**

    # **scstat -q**

    ▪ **If no, proceed to Step 3.**

    ▪ **If yes, relocate that quorum device to another suitable RAID storage array.**

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

3.  **Remove the LUN from disksets or disk groups.**

    Run the appropriate Solstice DiskSuite/Solaris Volume Manager commands 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 the LUNs 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 c$N$t$X$d$Y$**
    # **vxdisk rm c$N$t$X$d$Y$**

4.  **On both nodes, unconfigure the device that is associated with the LUN.**

    # **cfgadm -c unconfigure c$x$::dsk/c$x$t$y$d$z$**

5.  **Unmap the LUN from both host channels.**

    For the procedure about how to unmap a LUN, see the *Sun StorEdge 3000 Family RAID Firmware 4.1x User's Guide*.

6.  **Delete the logical drive.**

    For more information, see the *Sun StorEdge 3000 Family RAID Firmware 4.1x User's Guide*.

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

    # **devfsadm -C**

8. **On both nodes, remove all obsolete device IDs (DIDs).**

   ```
   # scdidadm -C
   ```

9. **If no other LUN is assigned to the target and LUN ID, remove the LUN entries from /kernel/drv/sd.conf file.**

   Perform this step on both nodes to prevent extended boot time caused by unassigned LUN entries.

   ---
   **Note –** Do not remove the default *cXtXdX* entries.

   ---

# Maintaining Sun StorEdge 3310 and 3320 SCSI RAID Arrays

This chapter describes the procedures about how to maintain Sun™ StorEdge™ 3310 and 3320 SCSI RAID arrays in a Sun™ Cluster environment.

Read the entire procedure before you perform any steps within a procedure in this chapter. If you are not reading an online version of this document, ensure that you have the books listed in Preface available.

This chapter contains the following procedures.

- "How to Remove a RAID Storage Array" on page 23
- "How to Replace a Controller" on page 25
- "How to Replace an I/O Module" on page 26
- "How to Replace a Terminator Module" on page 27

# Maintaining RAID Storage Arrays

This section contains the procedures about how to maintain a RAID storage array in a Sun Cluster environment. Maintenance tasks in Table 2–1 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 ID might change unexpectedly. When you perform a check of the device ID configuration by running the scdidadm -c command, the following error message appears on your console if the device ID changed unexpectedly.

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

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

TABLE 2–1 Tasks: Maintaining a RAID Storage Array

| Task | Information |
|------|-------------|
| Remove a RAID storage array. | "How to Remove a RAID Storage Array" on page 23 |
| Replace a RAID storage array.<br><br>To replace a RAID storage array, remove the RAID storage array. Add a new RAID storage array to the configuration. | "How to Remove a RAID Storage Array" on page 23<br><br>"How to Add a Storage Array to an Existing Cluster" on page 13 |
| Add a JBOD as an expansion unit.<br><br>Follow the same procedure that you use in a noncluster environment.<br><br>If you plan to use the disk drives in the expansion unit to create a new LUN, see "How to Create and Map a LUN" on page 17 | *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*<br><br>"How to Create and Map a LUN" on page 17 |
| Remove a JBOD expansion unit.<br><br>Follow the same procedure that you use in a noncluster environment.<br><br>If you plan to remove a LUN in conjunction with the disk drive, see "How to Unmap and Delete a LUN" on page 18. | *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*<br><br>"How to Unmap and Delete a LUN" on page 18 |
| Add a disk drive.<br><br>Follow the same procedure that you use in a noncluster environment.<br><br>If you plan to create a new LUN with the disk drive, see "How to Create and Map a LUN" on page 17. | *Sun StorEdge 3000 Family FRU Installation Guide*<br><br>"How to Create and Map a LUN" on page 17 |

**TABLE 2–1** Tasks: Maintaining a RAID Storage Array    *(Continued)*

| Task | Information |
| --- | --- |
| Remove a disk drive.<br><br>Follow the same procedure that you use in a noncluster environment.<br><br>If you plan to remove a LUN in conjunction with the disk drive, see "How to Unmap and Delete a LUN" on page 18.<br><br>If your configuration is running in RAID level 0, take appropriate action to prepare the volume manager for the impacted disk to be inaccessible. | *Sun StorEdge 3000 Family FRU Installation Guide*<br><br>"How to Unmap and Delete a LUN" on page 18 |
| Replace a failed controller or restore an offline controller. | "How to Replace a Controller" on page 25 |
| Replace a host-to-storage array SCSI cable.<br><br>Switch the device group over to the other node before performing this procedure.<br><br>Then follow the same procedure that you use in a noncluster environment. | *Sun StorEdge 3000 Family Installation, Operation, and Service Manual* |
| Replace the I/O module. | "How to Replace an I/O Module" on page 26 |
| Replace the terminator module. | "How to Replace a Terminator Module" on page 27 |

## Sun StorEdge 3310 and 3320 RAID Array FRUs

The following is a list of administrative tasks that require no cluster-specific procedures. See the *Sun StorEdge 3000 Family FRU Installation Guide* for instructions on replacing the following FRUs.

- Replace a disk drive
- Replace an AC or DC power supply and fan module
- Replace a battery
- Replace an LED and reset switch module
- Replace an EMU module

## ▼ How to Remove a RAID Storage Array

Use this procedure to remove a RAID storage array from a running cluster.

**Caution –** This procedure removes all data that is on the RAID storage array that you remove.

**Before You Begin**  This procedure assumes that your nodes are not configured with dynamic reconfiguration functionality. If your nodes are configured for dynamic reconfiguration, see your *Sun Cluster Hardware Administration Manual for Solaris OS*.

**Steps**  **1. Is one of the disks in the RAID storage array a quorum device? This RAID storage array is the storage array that you are removing.**

```
# scstat -q
```

- **If no, proceed to**

- **If yes, relocate that quorum device to another suitable RAID storage array.**

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

**2. If necessary, back up the metadevice or volume.**

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

**3. Perform volume management administration to remove the RAID storage array from the configuration.**

If a volume manager does manage the LUN, run the appropriate Solstice DiskSuite/Solaris Volume Manager commands 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 the LUNs 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. Identify the LUNs that you need to remove.**

```
# cfgadm -al
```

5. **On all nodes, remove references to the LUNs in the RAID storage array that you removed.**

   ```
   # cfgadm -c unconfigure cN::dsk/cNtXdY
   ```

6. **Disconnect the SCSI cables from the RAID storage array.**

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

   ```
   # devfsadm -C
   ```

8. **On both nodes, remove all obsolete device IDs (DIDs).**

   ```
   # scdidadm -C
   ```

9. **If no other LUN is assigned to the target and LUN ID, remove the LUN entries from /kernel/drv/sd.conf file.**

   Perform this step on both nodes to prevent extended boot time caused by unassigned LUN entries.

   ---

   **Note –** Do not remove default t0d0 entries.

   ---

10. **Power off the RAID storage array. Disconnect the RAID storage array from the AC power source.**

    For the procedure about how to power off a storage array, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

11. **Remove the RAID storage array.**

    For the procedure about how to remove a storage array, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

12. **If necessary, remove any unused host adapters from the nodes.**

    For the procedure about how to remove a host adapter, see your Sun Cluster system administration documentation and the documentation that shipped with your host adapter and node.

13. **From any node, verify that the configuration is correct.**

    ```
    # scdidadm -L
    ```

## ▼ How to Replace a Controller

If the RAID storage array is configured with dual controllers, see the *Sun StorEdge 3000 Family FRU Installation Guidey* for controller replacement procedures. If the RAID storage array is configured with a single controller, perform the procedure below to ensure high availability.

**Steps** 1. **Detach the submirrors on the RAID storage array that are connected to the controller. This controller is the controller that you are replacing. Detach the submirrors to stop all I/O activity to the RAID storage array.**

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

2. **Replace the controller.**

For the procedure about how to replace a controller, see the *Sun StorEdge 3000 Family Installation, Operation, and Service Manual*.

3. **Reattach the submirrors to resynchronize the submirrors.**

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

## ▼ How to Replace an I/O Module

Use this procedure to replace a RAID storage array I/O module.

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**Note –** If your configuration is running in RAID level 0, take appropriate action to prepare the volume manager for the impacted disk to be inaccessible.

---

**Steps** 1. **Detach the submirrors on the RAID storage array that are connected to the I/O module that you are replacing. Detach the submirrors to stop all I/O activity to the RAID storage array.**

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

2. **Disconnect the SCSI cables from the hosts.**

3. **Disconnect the SCSI cables from the I/O module.**

4. **Replace the I/O module.**

For the procedure about how to replace the I/O module, see the *Sun StorEdge 3000 Family FRU Installation Guide*.

5. **Reconnect the SCSI cables to the I/O module.**

6. **Reconnect the SCSI cables to the host.**

7. **Reattach the submirrors to resynchronize submirrors.**

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

▼ How to Replace a Terminator Module

Use this procedure to replace a RAID storage array terminator module.

---

**Note –** If your configuration is running in RAID level 0, take appropriate action to prepare the volume manager for the impacted disk to be inaccessible.

---

**Steps** **1. Detach the submirrors on the RAID storage array that are connected to the terminator module that you are replacing. Detach the submirrors to stop all I/O activity to the RAID storage array.**

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

**2. Replace the terminator module.**

For the procedure about how to replace the terminator module, see the *Sun StorEdge 3000 Family FRU Installation Guide*.

**3. Reattach the submirrors to resynchronize submirrors.**

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

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