Sun StorEdge™ N8200 Filer Service Manual

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Preface

The *Sun StorEdge N8200 Filer Service Manual* describes the modifications to the Sun Enterprise™ 220R Server adapted for use in the Sun StorEdge™ N8200 filer (hereafter referred to as “the filer”). This document also provides troubleshooting information, a controller boot disk recovery procedure, and some minor maintenance procedures for the filer.

The intended audience of the manual is Sun service providers. Do not allow a customer to acquire this manual.

How This Book Is Organized

Chapter 1 provides a product overview.

Chapter 2 describes the software differences made to the Sun Enterprise 220R Server to customize it for adaptation to the filer.

Chapter 3 gives troubleshooting procedures for the filer.

Chapter 4 provides instructions for using the Sun StorEdge Filer Recovery Software (“filer recovery CD) to recover the filer.

Typographic Conventions

Typeface	Meaning	Examples
`AaBbCc123`	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
`AaBbCc123`	What you type, when contrasted with on-screen computer output	`% su` `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized	Read Chapter 6 in the *User's Guide.* These are called *class* options. You *must* be superuser to do this.
	Command-line variable; replace with a real name or value	To delete a file, type `rm` *filename.*

Shell Prompts

Shell	Prompt
C shell	*machine_name*%
C shell superuser	*machine_name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Reference Documentation

Document TItle	Part Number
Sun StorEdge N8200 Filer Release Notes	806-5419
Sun StorEdge N8200 Filer Installation, Configuration, and Service Guide	806-4668
Sun StorEdge N8200 Filer Installation Checklist	806-5417
Sun StorEdge N8000 Filer Series Administrator's Guide	806-4669
Sun StorEdge A1000 and D1000 Installation, Operations, and Service Manual	805-2624
Sun Enterprise 220R Server Setup and Rackmounting Guide	806-1087
Sun Solstice DiskSuite 4.2 User's Guide	805-5961
Sun StorEdge N8200 Filer Recovery Software	804-7320

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CHAPTER 1

Filer Overview

A network attached storage (NAS) device is an appliance that supplies disk storage to users over a network. Moving storage from the user's desktop to the network maximizes data availability and security. The Sun StorEdge N8200 Filer (hereafter referred to as "the filer") is a NAS that consists of a controller and one or more disk storage systems (hereafter referred to as "disk storage unit").

The filer contains features that are designed to minimize down time, including:

- Mirrored system disks in the controller
- Hardware redundant array of independent disks (RAID)-5 storage system
- Redundant power supplies in both the controller and disk storage units

Access to the filer's disk storage is through the following industry standard file access protocols:

- NFS™ file system
- Common Internet File System (CIFS)

The filer includes a web-based administration tool that provides an easy-to-use graphical user interface (GUI).

FIGURE 1-1 illustrates how a filer can interact in a common network environment.

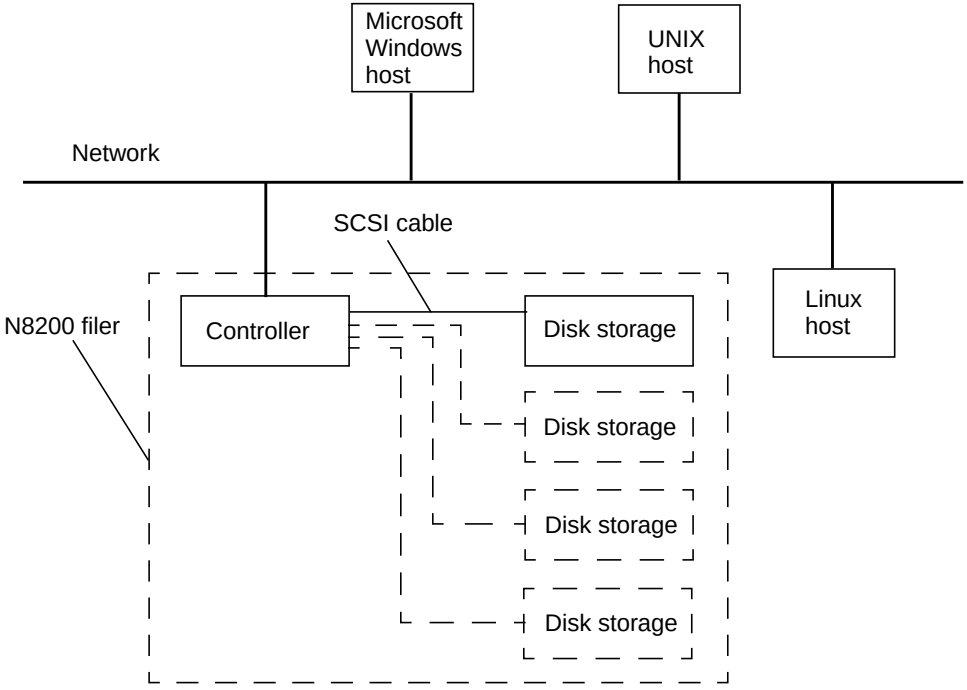


FIGURE 1-1 Typical N8200 Network Configuration

Note – The N8200 filer system storage can be expanded in 200-Gbyte increments to a maximum of 800 Gbytes. This is done by adding disk storage units. Contact your local Sun sales representative for more information.

CHAPTER 2

Software Differences

The Solaris operating environment contained in the Sun Enterprise 220R Server has been tuned to optimize performance for NFS and I/O operations. Some Solaris services that are not necessary for the filer have been disabled, making the filer more secure. This chapter provides detailed information on modifications and additions to the Solaris operating environment and is organized as follows:

- "Sun Enterprise 220R Server Differences as Configured for Use in the Filer" on page 16
  - "New Software Packages" on page 16
  - "Modified Filer Performance Software" on page 16
  - "Modified Files" on page 16
  - "Moved Files" on page 17
  - "New Directories" on page 18
  - "Explanation of the N8000 Directory Structure" on page 18
  - "New Factory Scripts" on page 19
  - "New Patches" on page 19

Sun Enterprise 220R Server Differences as Configured for Use in the Filer

New Software Packages

These packages have been added to the filer:

- RAID Manager 6.22
- Solstice DiskSuite™ 4.2
- Sun Gigabit Ethernet 2.0 Drivers

Modified Filer Performance Software

The goal of the modified software is to:

- Tune the system to be fully compatible with hosts running on the NFS™ and the Common Internet File System (CIFS)
- Provide a graphical user interface (GUI) for system management tasks
- Streamline operations by having unnecessary services and scripts disabled

Modified Files

The following files have been modified.

TABLE 2-1 Modified Files

File Name	Explanation
`/etc/system`	Contains tuning for the system.
`/etc/motd`	Adds a message that says, 'this is a sunfiler' so that service personnel knows it is a sunfiler if they login via telnet.
`/etc/vfstab`	Since it is pre configured, this file includes the preconcerted file systems.
`/etc/nologin`	Disables non-root logins.

TABLE 2-1 Modified Files *(Continued)*

File Name	Explanation
/etc/inttab	Respawn entry added for web management GUI.
/etc/rc2.d/S05RMTMPFILE	Prevents /etc/nologin from being removed.
/etc/rc2.d/S69inet	Sleep added to get router discovery to work.
/etc/rc3.d/S15nfsd.server	Script modified to always act as an NFS server. Also increases the number of nfsd threads.
/usr/lib/osa/bin/rmscript	Enables errors to be emailed to people that are set up using the Filer Administration Tool, Settings function.
/etc/services	Un-needed services are disabled.
/etc/inetd.conf	Un-needed services are disabled.

Moved Files

The following files have been moved from the /etc/rc2.d directory to the /usr/local/N8000/old directory.

S47asppp	S80PRESERVE	S92volmgt
S80lp	S91afbinit	S99tsquantum
S89bdconfig	S99dtlogin	S85power
S99audit	S72autoinstall	S93cacheos.finish
S70uucp	S80spc	

New Directories

TABLE 2-2 Added Directories

Directory	Explanation
`/usr/local/apache`	Apache 1.3.6 web server
`/usr/local/N8000/old`	Sun StorEdge N8200 filer files

Explanation of the N8000 Directory Structure

TABLE 2-3 Directory Structure Explanation

Directory	Explanation
`/usr/local/N8000/cfg/`	Contains an email file that lists the email addresses that will be notified in case of a hardware failure, and has a filer file that contains the configuration settings.
`/usr/local/N8000/classes/`	Contains the jar file for the daemon running on the filer.
`/usr/local/N8000/old/`	Contains the removed startup scripts.
`/usr/local/N8000/scripts/`	Contains various scripts used to configure and set up the Sun StorEdge N8000 filer in the factory (see TABLE 2-4). Do not use these scripts unless you are directed to do so.

New Factory Scripts

Do not use these scripts unless you are directed to do so.

TABLE 2-4 New Factory Scripts

Script Name	Explanation
`mirror_cfg.sh`	Provides the setup of the root disks for mirroring.
`mirror_chk.sh`	Checks the mirror every hour and emails the users you have specified if there is an error. The script is run by `cron`.
`S99onetime`	Sets autoboot to true after first reboot.
`S99resync`	Synchronizes the root disks.
`system_chk.sh`	Tests filer daemon connectivity.
`ship_settings.sh`	Prepares the system for shipment, sets a number of log files to zero, and unconfigures the system.

New Patches

The following patch IDs have been added in addition to the patches installed with the Solaris 7 operating environment (dated November 1999).

106541-09	106924-05	107473-04
107458-06	107460-04	107469-05
108482-01	107148-06	107171-05
108301-01	108662-01	

CHAPTER 3

Troubleshooting

This chapter provides the troubleshooting procedures for problems that might be encountered while using the Filer Administration Tool.

This chapter is organized as follows:

- "No Indication of a Console Connection Is Provided" on page 22
- "On First Boot, Error Messages Are Displayed and the System Will Not Boot" on page 22
- "The Filer Administration Tool Does Not Open" on page 24
- "The Filer Administration Tool Does Not Display Properly" on page 24
- "Cannot Ping the Filer on the Network" on page 24
- "The Web Browser Displays the Message: `The requested item could not be loaded by the proxy`" on page 26
- "A Data Disk in a Disk Storage Unit Fails" on page 27
- "A Boot Disk in the Controller Fails" on page 27
- "Disk Storage Unit Hot Spare Operation" on page 28
- "Long Reboot Time After Fixing a Controller Boot Disk Failure" on page 28
- "You Cannot Access Data on a Disk Storage Unit and the Amber LED on the Unit Is Lit" on page 29
- "Failure in the Controller Power Supply or Fan" on page 30
- "Failure in the Disk Storage Unit Power Supply or Cooling Canister" on page 30

No Indication of a Console Connection Is Provided

The ok prompt is not displayed and there is no output.

1. **Ensure that you are using the correct cables.**

   Are you using the NULL modem cable that comes with the filer in the serial port A on the back of the controller?

2. **Check the system configuration settings recorded in the** *Sun StorEdge N8200 Filer Installation, Configuration, and Service Guide***.**

On First Boot, Error Messages Are Displayed and the System Will Not Boot

1. **Ensure that the proper cables are used and that the cable connections are correct.**

   The disk storage SCSI cable must *not* go to the onboard SCSI port on the lower left of the back of the controller. It must go to SCSI ports 1 through 4 on the right side. See FIGURE 3-1.

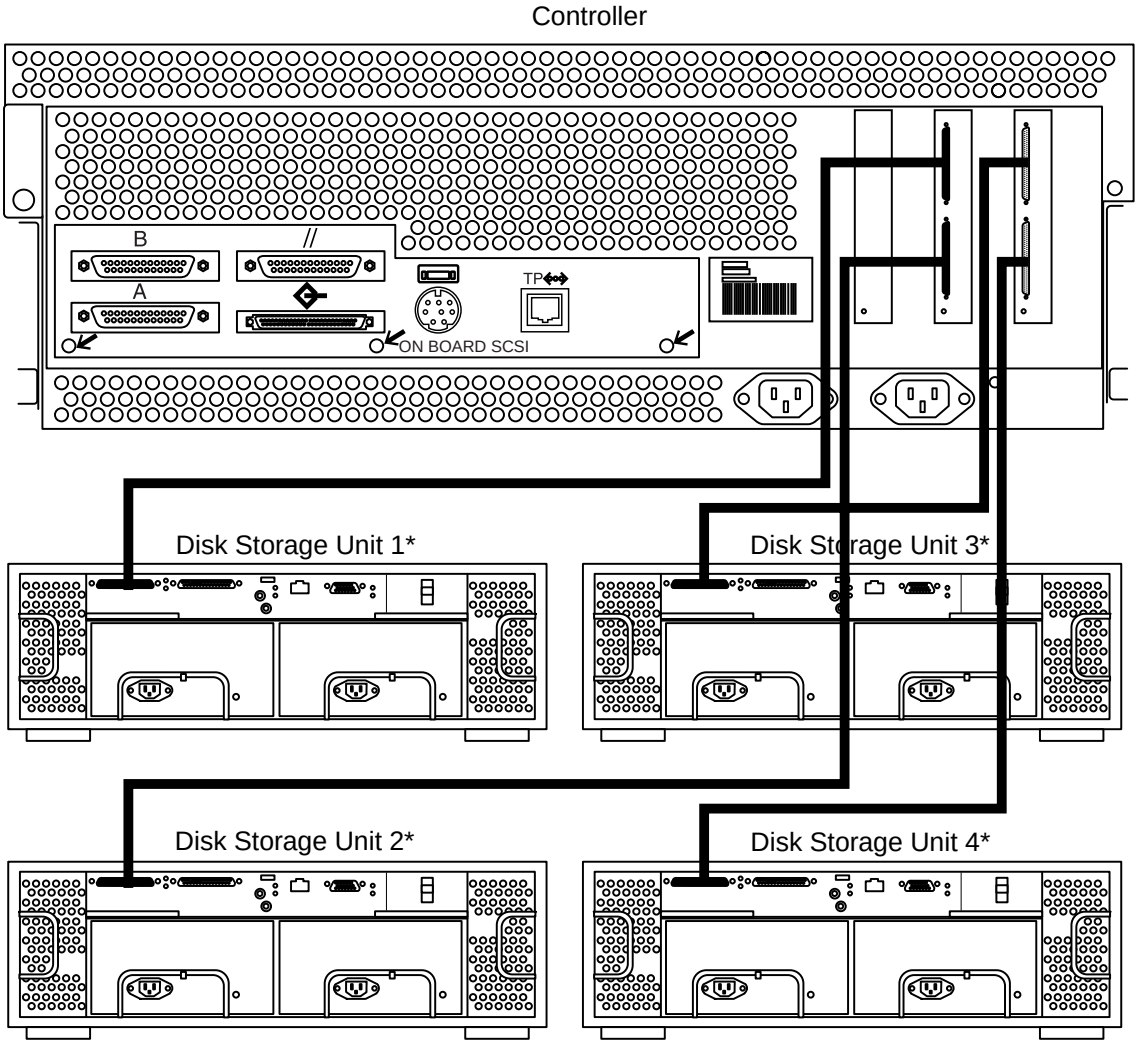
2. **Log in as the root user by typing**:

```
# sys-unconfig
```

3. **Type** `Yes` **when the following prompt is displayed**:

```
# Verify to execute card
```

4. **When you see the** `ok` **prompt, power off the system.**
5. **Correct any cabling errors.**
6. **Ensure the disk storage unit(s) are powered on and no amber lights are lit, then and reboot the system.**



* Numbered by order of installation (see text)

FIGURE 3-1 SCSI Connections Between Controller and Disk Storage Units

The Filer Administration Tool Does Not Open

The web browser shows a gray box and the login dialog box is not displayed.

1. **Make sure you are using the Netscape 4.x web browser.**
2. **Ensure that the Java™ language is enabled within the Netscape browser.**
3. **Bring up the Java console to check for any error messages.**

The Filer Administration Tool Does Not Display Properly

- **Make sure you are using the Netscape 4.x web browser.**

Cannot Ping the Filer on the Network

1. **Check to make sure you can ping other hosts on the network.**
2. **Verify the filer network cable is properly connected.**
3. **Check the network with the console connection.**
   a. **Connect the serial cable to the filer.**
   b. **Log in as a root user.**

      If no login prompt is displayed, go to "No Indication of a Console Connection Is Provided" on page 22.

   c. **Try to ping any host on the network.**

      If you can ping another host, a problem exists with the network.

   d. **Check to see if the filer can see traffic on the network by typing:**

```
# snoop -d hme0
```

      Where `hme0` is the network device.

      If nothing is displayed on the screen, verify again that the cable connections are correct.

Note – No indicated traffic means that the interface is not connected to the network.

---

e. Type:

```
# ifconfig -a
```

The output should look something like the following:

```
lo0: flags=849<UP,LOOPBACK.RUNNING, MULTICAST>mtu 8232
    inet 127.0.0.1 netmask ff000000
hme0:flags=863<UP,BROADCAST,NOTRAILERS,RUNNING,MULTICAST>
    mtu 1500 inet 192.1.1.1 netmask ffffff00 broadcast 192.1.1.255
```

f. Verify that the following settings are correct:

- IP address
- Broadcast address
- Flags

g. If any setting is incorrect, do the following:

i. Type:

```
# vi /etc/hosts
```

ii. Search the file to locate the filer IP address, which should be immediately below the local host IP address.

```
127.0.7.1 localhost name
192.130.151.22 filername loghost name
```

iii. Correct the *filername* IP address.

iv. Reboot by typing:

```
# init 6
```

The broadcast address and interface flags are automatically corrected.

The Web Browser Displays the Message: The requested item could not be loaded by the proxy

1. **Make sure that the URL address requested is correct and complete (**`IP address:8080`**).**

2. **Verify that the web server software is running by establishing a telnet connection to the filer from another host and typing:**

```
# ps -ef|grep httpd
```

The output should look something like the following:

```
# nobody 4298 4296 0 Apr 24 ? 0:00/usr/local/apache/bin/http
# nobody 4306 4296 0 Apr 24 ? 0:00/usr/local/apache/bin/http
# root 4296 1 0 Apr 24 ? 0:00/usr/local/apache/bin/http
# nobody 4302 4296 0 Apr 24 ? 0:00/usr/local/apache/bin/http
# nobody 4301 4296 0 Apr 24 ? 0:00/usr/local/apache/bin/http
# nobody 4300 4296 0 Apr 24 ? 0:00/usr/local/apache/bin/http
# nobody 4299 4296 0 Apr 24 ? 0:00/usr/local/apache/bin/http
```

- If the http processes are not displayed, re-start the web server.
- If the http processes are displayed and the problem persists, carefully verify the URL address again.

A Data Disk in a Disk Storage Unit Fails

This failure is reported in three ways:

- An amber LED on the disk drive lights
- You receive an SNMP trap message
- An email message sent to the address established with the Settings function. Refer to *Sun StorEdge N8000 Series Filer Administrator's Guide*, Chapter 3, in the "To Change Email Notifications" section.

Note – If only one disk drive fails in a disk storage unit, no data is lost and the operation of the unit is not interrupted.

- **Replace the disk drive by following the instructions in** *Sun StorEdge A1000 and D1000 Installation, Operations, and Service Manual***.**

  The failed disk data is automatically reconstructed on the new disk. You do not have to reboot the system.

A Boot Disk in the Controller Fails

You are notified of this failure by an email message sent to the address established with the Settings function. Refer to *Sun StorEdge N8000 Series Filer Administrator's Guide*, Chapter 3, in the "To Change Email Notifications" section.

1. **Use the** `metadb` **command to remove the replica database from the failed drive.**

   Refer to *Sun Solstice DiskSuite 4.2 User's Guide* section: "How to Remove State Database Replicas (Command Line)."

2. **If necessary, replace the failed disk drive.**

3. **Rebuild the mirror as required.**

   Refer to *Sun Solstice DiskSuite 4.2 User's Guide* for instructions.

4. **Use the** `metadb` **command to create a new replica database on the replacement drive.**

   Refer to *Sun Solstice DiskSuite 4.2 User's Guide* for instructions.

Note – The instructions to recover from a boot device failure are also located online at: `http://docs.sun.com`.

You do not have to reboot the system.

Disk Storage Unit Hot Spare Operation

A hot spare is an extra data disk used in the event of a failure of one of the data disks in a disk storage unit. If a data disk in a disk storage unit fails, the unit enters a degraded mode until all of the data on the failed disk is re-created on the hot spare. This process typically takes between one and two hours. The hot spare disk in the disk storage unit is in the right-most drive slot and is labeled “1,5”.

If a data disk fails, the hot spare becomes active. If then an active hot spare fails, you are notified of this failure in three ways:

- An amber LED on the disk drive goes bright
- An SNMP trap message is sent
- An email message sent to the address established with the Settings function. Refer to *Sun StorEdge N8000 Series Filer Administrator’s Guide*, Chapter 3, section “To Change Email Notifications.”

If an inactive hot spare fails, the only way to detect the failure is to issue a `healthchk` command from the console.

The procedure for replacing a hot spare is identical to replacing a data disk. Refer to “A Data Disk in a Disk Storage Unit Fails” on page 27.

Long Reboot Time After Fixing a Controller Boot Disk Failure

The filer is designed to have a fast reboot time due to a logging file system. The file system consistency check (`fsck`) time should be no more than 10 seconds. If it takes longer than 10 seconds:

1. **Check the console attached to the system to see what is happening to the system.**

   If you see no output and a lot of disk activity (the green LEDs on the disk drives are blinking), the system is working. Wait until it is finished.

2. **Check to see if the system has been modified by altering the mount options in the `/etc/vfstab` file.**

You Cannot Access Data on a Disk Storage Unit and the Amber LED on the Unit Is Lit

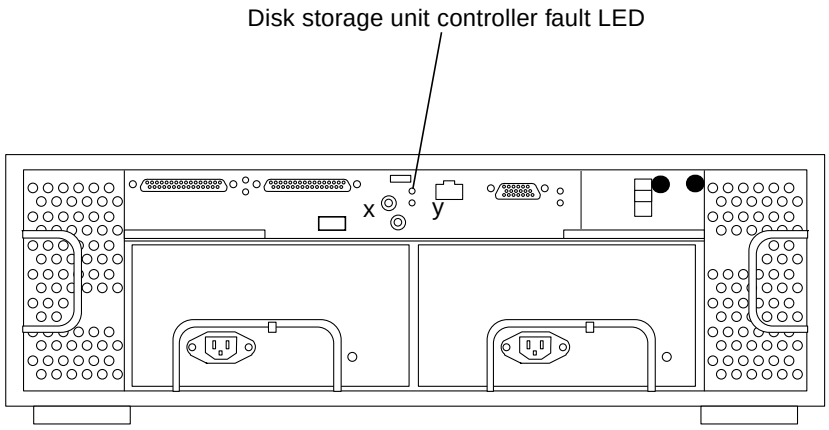


FIGURE 3-2 Back of Disk Storage Unit

This can be due to two possible causes:

- The SCSI cable is loose, or it is the wrong cable for the unit.
- The disk storage unit controller has failed. If this happens, the data on the disks is still intact, but you must replace the disk storage unit controller.

Replace the controller using the instructions in *Sun StorEdge A1000 and D1000 Installation, Operations, and Service Manual*.

Make sure you reboot the system after replacing the controller.

Caution – Make sure the memory in the new controller is the same as the original. Remove the memory from the old controller and install it in the new controller if necessary.

You do not have to reconfigure the new controller.

Failure in the Controller Power Supply or Fan

The cooling fan is integral to proper operation of the power supplies in the controller. This failure is reported in two ways:

- Error messages in the `/var/adm/messages` file
- An amber LED on the front of the controller lights

See the replacement instructions in *Sun StorEdge A1000 and D1000 Installation, Operations, and Service Manual*.

Failure in the Disk Storage Unit Power Supply or Cooling Canister

The cooling fans and power supplies are individual parts of the disk storage unit. This failure is reported in four ways:

- An SNMP trap message is sent
- Error messages are printed to the `/var/adm/messages` file
- An amber LED on the front of the disk storage unit lights
- An amber LED on the power supply or cooling canister lights

See the replacement instructions in *Sun StorEdge A1000 and D1000 Installation, Operations, and Service Manual*.

CHAPTER 4

Recovery Software Instructions

This chapter describes how use the Sun StorEdge N8200 Filer Recovery Software (hereafter referred to as “filer recovery CD”) to recover the Sun StorEdge N8200 filer. The filer recovery CD is a bootable CD-ROM with a complete image of the Sun StorEdge N8200 filer system disk, including the Solaris operating environment, RAID Manager 6.2.2, Solstice DiskSuite 4.2, Sun StorEdge N8200 filer Performance Software, and all required patches and tuning.

This is a disaster-recovery procedure. This procedure should be used only in the event that the internally mirrored system disks have both suffered a failure. This procedure resets the system (excluding the data contained on the attached storage arrays) to a factory-configured state.

There are six steps to the recovery process:

- “To Boot the System With the Filer Recovery CD” on page 32
- “To Use the `format` Command to Partition the Boot Disk” on page 33
- “To Use the `newfs` Command to Create a File System on the Root Slice of the Boot Disk” on page 39
- “To Restore From the Filer Recovery CD” on page 40
- “To Enable the Mounting of the Disk Arrays” on page 41
- “To Mirror the Internal Disks Using the Sun Solstice DiskSuite Software” on page 43

▼ To Boot the System With the Filer Recovery CD

This procedure performs an initial boot of the hard disk in the controller.

1. **Insert the filer recovery CD into the CD-ROM drive.**
2. **Boot from the CD using the appropriate boot device name for the CD-ROM by typing:**

```
ok boot cdrom
```

The following typical output is displayed.

```
Resetting ...
screen not found
Can't open input device
Keyboard not present. Using ttya for input and output
StorEdge(TM) N8200 filer (2 X UltraSPARC-II 450MHz), No Keyboard
OpenBoot 3.23, 2048 MB memory installed, Serial #11823569
Ethernet address 8:0:20:b4:69:d1, Host ID: 80b469d1
Rebooting with command: boot cdrom
Boot device: /pci@1f,4000/scsi@3/disk@6,0:f File and args:
SunOS Release 5.7 Version Generic [UNIX(R) System V Release 4.0]
Copyright (c) 1983-1998, Sun Microsystems, Inc.
Configuring devices...
#
```

At this point you might be able to recover some data from the failed system disks by temporarily mounting the "failed" system disks to determine what data, if any, might be recovered. The critical files to look for include:

- /etc/passwd
- /etc/shadow
- /etc/group
- /etc/inet/hosts
- /etc/dfs/dfstab

Partitioning the Boot Disk

It is critical to partition the boot disk as described below. Failure to do so could create problems later in the recovery process. This section has two basic steps:

- "To Use the `format` Command to Partition the Boot Disk" on page 33
- "To Use the `newfs` Command to Create a File System on the Root Slice of the Boot Disk" on page 39

▼ To Use the `format` Command to Partition the Boot Disk

1. **Create slice 0 starting at cylinder 0, 3 Gbytes in size, by typing:**

```
# format
```

The following typical output is displayed.

```
Searching for disks...done
AVAILABLE DISK SELECTIONS:
        0. c0t0d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
           /pci@1f,4000/scsi@3/sd@0,0
        1. c0t1d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
           /pci@1f,4000/scsi@3/sd@1,0
        2. c1t5d0 <Symbios-StorEDGEA1000-0301 cyl 47393 alt 2 hd 128 sec 64>
           /pci@1f,2000/scsi@1/sd@5,0
Specify disk (enter its number):
```

a. **Type** `0`.

The following typical output is displayed.

```
selecting c0t0d0
[disk formatted]
FORMAT MENU:
          disk        - select a disk
          type        - select (define) a disk type
          partition   - select (define) a partition table
          current     - describe the current disk
          format      - format and analyze the disk
          repair      - repair a defective sector
          label       - write label to the disk
          analyze     - surface analysis
          defect      - defect list management
          backup      - search for backup labels
          verify      - read and display labels
          save        - save new disk/partition definitions
          inquiry     - show vendor, product and revision
          volname     - set 8-character volume name
          !<cmd>      - execute <cmd>, then return
          quit
format>
```

b. Type p**.**

The following typical output is displayed.

```
PARTITION MENU:
          0       - change ‘0’ partition
          1       - change ‘1’ partition
          2       - change ‘2’ partition
          3       - change ‘3’ partition
          4       - change ‘4’ partition
          5       - change ‘5’ partition
          6       - change ‘6’ partition
          7       - change ‘7’ partition
          select  - select a predefined table
          modify  - modify a predefined partition table
          name    - name the current table
          print   - display the current table
          label   - write partition map and label to the disk
          !<cmd>  - execute <cmd>, then return
          quit
partition>
```

c. Type 0**.**

The following typical output is displayed.

```
Part       Tag     Flag      Cylinders          Size              Blocks
  0 unassigned     wm         0 -    57       101.70MB     (58/0/0)      208278
Enter partition id tag[unassigned]:
```

d. Type `root`**.**

The following typical output is displayed.

```
Enter partition permission flags[wm]:
```

e. Type `wm`**.**

The following typical output is displayed.

```
Enter new starting cyl[0]:
```

f. Type `0`**.**

The following typical output is displayed.

```
Enter partition size[208278b, 58c, 101.70mb, 0.10gb]:
```

g. Type `3g`**.**

The following typical output is displayed.

```
partition>
```

h. Type `p`**.**

The following typical output is displayed.

```
Current partition table (unnamed):
Total disk cylinders available: 4924 + 2 (reserved cylinders)
Part       Tag     Flag      Cylinders          Size              Blocks
  0         root     wm        0 - 1752          3.00GB     (1753/0/0)   6295023
  1         swap     wm       58 -  152        166.57MB     (95/0/0)      341145
  2 unassigned     wm        0 - 4923          8.43GB     (4924/0/0) 17682084
  3 unassigned     wm        0                   0          (0/0/0)             0
  4 unassigned     wm        0                   0          (0/0/0)             0
  5 unassigned     wm        0                   0          (0/0/0)             0
  6 unassigned     wm        0                   0          (0/0/0)             0
  7 unassigned     wm        0                   0          (0/0/0)             0
partition>
```

2. Create slice 1 swap, starting where Slice 0 leaves off, 2 Gbytes in size.

a. Type `1`**.**

The following typical output is displayed.

```
Part       Tag     Flag      Cylinders          Size              Blocks
  1         swap     wm       58 -  152        166.57MB     (95/0/0)      341145
Enter partition id tag[swap]:
```

b. Type `swap`**.**

The following typical output is displayed.

```
Enter partition permission flags[wm]:
```

c. Type `wu`**.**

The following typical output is displayed.

```
Enter new starting cyl[58]:
```

d. Type `1753`**.**

The following typical output is displayed.

```
Enter partition size[341145b, 95c, 166.57mb, 0.16gb]:
```

e. Type 2g**.**

The following typical output is displayed.

```
partition>
```

3. Create slice 7 metadb, 1 cylinder in size, starting at the last cylinder of the drive.

a. Type 7**.**

The following typical output is displayed.

```
Part       Tag     Flag      Cylinders          Size              Blocks
  7 unassigned     wm        0                   0          (0/0/0)             0
Enter partition id tag[unassigned]:
```

b. Type unassigned**.**

The following typical output is displayed.

```
Enter partition permission flags[wm]:
```

c. Type wu**.**

The following typical output is displayed.

```
Enter new starting cyl[58]:
```

d. Type 4923**.**

The following typical output is displayed.

```
Enter partition size[341145b, 95c, 166.57mb, 0.16gb]:
```

e. Type 1c**.**

The following typical output is displayed.

```
partition>
```

f. Type p**.**

The following typical output is displayed.

```
Current partition table (unnamed):
Total disk cylinders available: 4924 + 2 (reserved cylinders)
Part       Tag     Flag      Cylinders          Size              Blocks
  0         root     wm        0 - 1752          3.00GB     (1753/0/0)   6295023
  1         swap     wu     1753 - 2921          2.00GB     (1169/0/0)   4197879
  2 unassigned     wm        0 - 4923          8.43GB     (4924/0/0) 17682084
  3 unassigned     wm        0                    0          (0/0/0)             0
  4 unassigned     wm        0                    0          (0/0/0)             0
  5 unassigned     wm        0                    0          (0/0/0)             0
  6 unassigned     wm        0                    0          (0/0/0)             0
  7 unassigned     wu     4923 - 4923          1.75MB     (1/0/0)          3591
partition>
```

g. Type `1`**.**

The following typical output is displayed.

```
Ready to label disk, continue?
```

h. Type `y`**.**

The following typical output is displayed.

```
partition>
```

i. Type `q`**.**

The following typical output is displayed.

```
FORMAT MENU:
         disk        - select a disk
         type        - select (define) a disk type
         partition   - select (define) a partition table
         current     - describe the current disk
         format      - format and analyze the disk
         repair      - repair a defective sector
         label       - write label to the disk
         analyze     - surface analysis
         defect      - defect list management
         backup      - search for backup labels
         verify      - read and display labels
         save        - save new disk/partition definitions
         inquiry     - show vendor, product and revision
         volname     - set 8-character volume name
         !<cmd>      - execute <cmd>, then return
         quit
format>
```

j. Type q**.**

▼ To Use the newfs Command to Create a File System on the Root Slice of the Boot Disk

1. Type:

```
# newfs /dev/rdsk/c0t0d0s0
```

The following typical output is displayed.

```
newfs: construct a new file system /dev/rdsk/c0t0d0s0: (y/n)?
```

2. Type y**.**

The following typical output is displayed.

```
/dev/rdsk/c0t0d0s0:      6295022 sectors in 1753 cylinders of 27 tracks, 133
sectors
         3073.7MB in 110 cyl groups (16 c/g, 28.05MB/g, 3392 i/g)
super-block backups (for fsck -F ufs -o b=#) at:
 32, 57632, 115232, 172832, 230432, 288032, 345632, 403232, 460832, 518432,
 576032, 633632, 691232, 748832, 806432, 864032, 921632, 979232, 1036832,
 1094432, 1152032, 1209632, 1267232, 1324832, 1382432, 1440032, 1497632,
 1555232, 1612832, 1670432, 1728032, 1785632, 1838624, 1896224, 1953824,
 2011424, 2069024, 2126624, 2184224, 2241824, 2299424, 2357024, 2414624,
 2472224, 2529824, 2587424, 2645024, 2702624, 2760224, 2817824, 2875424,
 2933024, 2990624, 3048224, 3105824, 3163424, 3221024, 3278624, 3336224,
 3393824, 3451424, 3509024, 3566624, 3624224, 3677216, 3734816, 3792416,
 3850016, 3907616, 3965216, 4022816, 4080416, 4138016, 4195616, 4253216,
 4310816, 4368416, 4426016, 4483616, 4541216, 4598816, 4656416, 4714016,
 4771616, 4829216, 4886816, 4944416, 5002016, 5059616, 5117216, 5174816,
 5232416, 5290016, 5347616, 5405216, 5462816, 5515808, 5573408, 5631008,
 5688608, 5746208, 5803808, 5861408, 5919008, 5976608, 6034208, 6091808,
 6149408, 6207008, 6264608,
```

3. **Mount the root slice of the boot disk by typing:**

```
# mount /dev/dsk/c0t0d0s0 /mnt
```

▼ To Restore From the Filer Recovery CD

1. **Change the working directory to correspond to the root slice of the boot disk by typing:**

```
# cd /mnt
```

2. **Verify the name of the image that will be restored from the filer recovery CD by typing:**

```
# ls -l /cdrom/img
```

The following typical output is displayed.

```
total 789576
-rw-------   1 root      other     404262708 May   3 11:13 gd050300.dmp.Z
```

3. **Using the** `zcat` **and** `ufsrestore` **commands, restore from the filer recovery CD to the current directory by typing:**

```
# zcat /cdrom/img/gd050300.dmp | ufsrestore -rf -
```

The following typical output is displayed.

```
Warning: ./lost+found: File exists
```

4. **Using the** `installboot` **command, install a boot block on the root slice of the boot disk by typing:**

```
# installboot /usr/platform/sun4u/lib/fs/ufs/bootblk /dev/rdsk/c0t0d0s0
```

5. **Reboot the system to proceed to the next step by typing:**

```
# reboot
```

The following typical output is displayed.

```
syncing file systems... done
rebooting...
Resetting ...
```

▼ To Enable the Mounting of the Disk Arrays

After performing a reboot as described in “To Restore From the Filer Recovery CD” on page 40, you must provide some values to answer configuration questions to complete the Solaris installation process.

During an initial build, these values are temporary, because the system is reset using the `sys-unconfig` command prior to shipment. During a rebuild, these values are customer-assigned.

1. **Provide answers to system prompts to answer Solaris configuration questions.**

   Check the system configuration settings you recorded in the *Sun StorEdge N8200 Filer Installation Guide* or the *Sun StorEdge N8200 Filer Installation Checklist*.

   The following typical output is displayed after answering the last prompt.

```
rebooting ...
Resetting ...
screen not found
Can't open input device
Keyboard not present.  Using ttya for input and output
StorEdge(TM) N8200 filer (2 X UltraSPARC-II 450MHz), No Keyboard
OpenBoot 3.23, 2048 MB memory installed, Serial #11823569
Ethernet address 8:0:20:b4:69:d1, Host ID: 80b469d1
Rebooting with command: boot
Boot device: disk  File and args:
SunOS Release 5.7 Version Generic_106541-10 64-bit [UNIX(R) System V Release 4.0]
Copyright (c) 1983-1999, Sun Microsystems, Inc.
configuring network interfaces: hme0.
Hostname: sunfiler
metainit: sunfiler: there are no existing databases
The system is coming up.  Please wait.
Sun Microsystems Inc.   SunOS 5.7        Generic October 1998
This system has been configured as a Sun StorEdge(TM) N8200 filer, please
refer to the N8000 filer series Administrator's Guide for details.
The system is ready.
sunfiler console login:
```

2. **Log into the N8200 filer as the super-user root by typing:**

```
root
```

   The following typical output is displayed.

```
password:
```

3. **Type** *password.*

   The following typical output is displayed.

```
Last login: Thu May  4 11:03:24 on console
Sun Microsystems Inc.   SunOS 5.7        Generic October 1998
This system has been configured as a Sun StorEdge(TM) N8200 filer, please
refer to the N8000 filer series Administrator's Guide for details.
```

4. **Start the vi editor and access the** `/etc/vfstab` **file by typing:**

```
# vi /etc/vfstab
```

5. **Edit the** `/etc/vfstab` **file by adding entries to mount the customer's storage arrays.**

   Make sure you configure the mounts to automatically mount at boot time and enable the logging option.

   The following is an example of an edited `/etc/vfstab` file.

```
#device             device              mount      FS      fsck    mount     mount
#to mount           to fsck             point      type    pass    at boot   options
#
#/dev/dsk/c1d0s2    /dev/rdsk/c1d0s2    /usr       ufs     1       yes       -
fd                  -                   /dev/fd    fd      -       no        -
/proc               -                   /proc      proc    -       no        -
/dev/dsk/c0t0d0s1   -                   -          swap    -       no        -
/dev/dsk/c0t0d0s0   /dev/rdsk/c0t0d0s0  /          ufs     1       no        logging
swap                -                   /tmp       tmpfs   -       yes       -
/dev/dsk/c1t5d0s0   /dev/rdsk/c1t5d0s0  /data1     ufs     1       yes       logging
```

▼ To Mirror the Internal Disks Using the Sun Solstice DiskSuite Software

The process of mirroring the internal system disks is controlled by script. Any deviation from the boot disk partition presented in the previous procedure will result in a failure of the script.

Once the script is run, the system automatically reboots to use the newly mirrored system disks. Upon reboot, the mirrored internal disks are synchronized.

- **To run the script provided in** `/usr/local/N82000/mirror_cfg.sh`**, type:**

```
# /usr/local/N8000/scripts/mirror_cfg.sh
```

The following typical output is displayed.

```
fmthard:  New volume table of contents now in place.
d11: Concat/Stripe is setup
d12: Concat/Stripe is setup
d21: Concat/Stripe is setup
d22: Concat/Stripe is setup
d10: Mirror is setup
d20: Mirror is setup
May  4 10:55:43 sunfiler reboot: rebooted by root
May  4 10:55:43 sunfiler snmpdx: received signal 15
May  4 10:55:43 sunfiler syslogd: going down on signal 15
May  4 10:55:43 rpcbind: rpcbind terminating on signal.
syncing file systems... done
rebooting...
Resetting ...
screen not found.
Can't open input device.
Keyboard not present.  Using ttya for input and output.
StorEdge(TM) N8200 filer (2 X UltraSPARC-II 450MHz), No Keyboard
OpenBoot 3.23, 2048 MB memory installed, Serial #11823569.
Ethernet address 8:0:20:b4:69:d1, Host ID: 80b469d1.
Rebooting with command: boot
Boot device: disk  File and args:
SunOS Release 5.7 Version Generic_106541-10 64-bit [UNIX(R) System V Release 4.0]
Copyright (c) 1983-1999, Sun Microsystems, Inc.
WARNING: forceload of misc/md_trans failed
WARNING: forceload of misc/md_raid failed
WARNING: forceload of misc/md_hotspares failed
configuring network interfaces: hme0.
Hostname: sunfiler
The system is coming up.  Please wait.
starting router discovery.
starting rpc services: rpcbindkeyserv: failed to generate host's netname when es
tablishing root's key.
 keyserv done.
Setting netmask of hme0 to 255.255.255.0
Setting default interface for multicast: add net 224.0.0.0: gateway sunfiler
syslog service starting.
May  4 12:02:50 sunfiler sendmail[217]: My unqualified host name (sunfiler) unkn
own; sleeping for retry
The NVSRAM settings of controller c1t5d0(1T94516691) are correct.
nvutil command succeeded.
Array Monitor initiated
RDAC daemons initiated
volume management starting.
May  4 12:02:51 sunfiler unix: ID[RAIDarray.rdaemon.1001] RDAC Resolution Daemon
 locked in memory
/usr/local/apache/bin/apachectl start: httpd started
```

```
Sun Microsystems Inc.   SunOS 5.7        Generic October 1998
This system has been configured as a Sun StorEdge(TM) N8200 filer, please
refer to the N8000 filer series Administrator's Guide for details.
d10: submirror d12 is attached
d20: submirror d22 is attached
The system is ready.
sunfiler console login:
```

The recovery process is now complete and the system is ready for login. The customer can now restore the critical system files using their selected backup recovery scheme. Files of importance include:

- `/etc/passwd`
- `/etc/shadow`
- `/etc/group`
- `/etc/inet/hosts`
- `/etc/dfs/dfstab`

If the customer has not backed up these critical system files, they must re-create them using the N8000 Filer Administration Tool as described in *Sun StorEdge N8000 Filer Series Administrator's Guide.*

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