Sun StorEdge™ N8200 Filer Installation, Configuration, and Service Guide

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Sun StorEdge N8200 Filer Installation, Configuration, and Service Guide

The *Sun StorEdge N8200 Filer Installation Guide* describes how to install and configure the Sun StorEdge™ N8200 Filer. This document is organized as follows:

Reference Documentation

Document TItle	Part Number
Sun StorEdge A1000 and D1000 Installation, Operations, and Service Manual	805-2624
Sun StorEdge A1000 and D1000 Rackmount Installation Guide	805-2626
Sun Enterprise 220R Server Setup and Rackmounting Guide	806-1087
Sun StorEdge N8000 Filer Series Administrator's Guide	806-4669
Product Support Document (PSD) for Sun DNS	N/A
Solaris Naming Setup and Configuration Guide	806-1390
Sun Solstice DiskSuite 4.2 User's Guide	805-5961

Product 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 illustrates how a filer can interact in a common network environment.
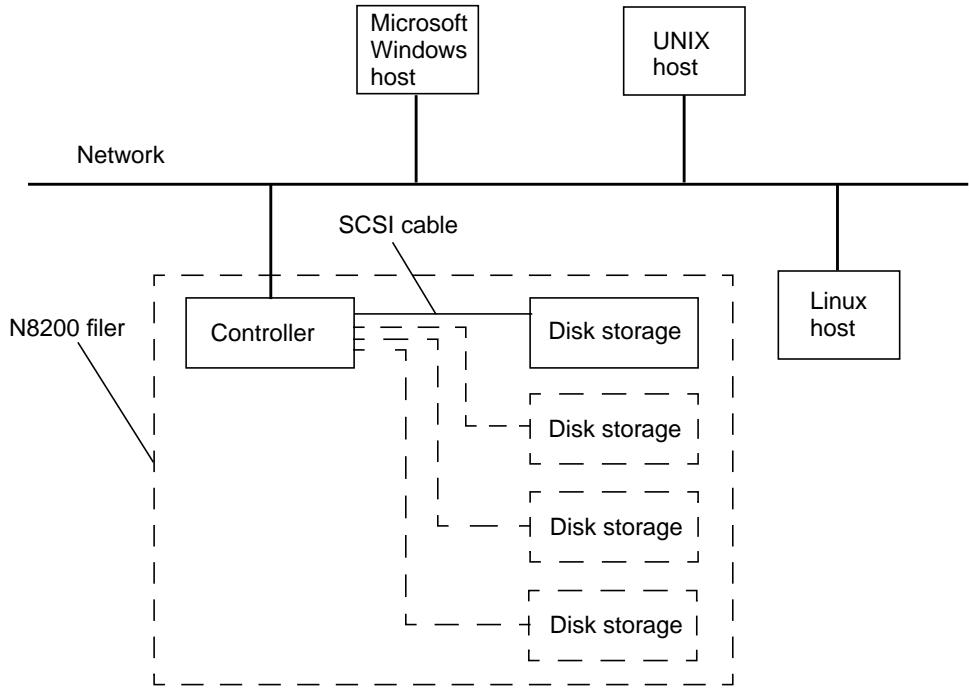
FIGURE 1   Typical N8200 Network Configuration

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.

Installing the N8200 Filer

This section includes instructions for rackmounting the filer hardware. The filer hardware includes the disk storage unit, the controller, and the rackmounting hardware for the disk storage unit. This section contains the following topics:

- "To Rackmount the Equipment" on page 4
- "To Connect the Cables and Power On the System" on page 5
- "To Set Up the Initial System Configuration" on page 9
- "To Verify the Installation" on page 14

▼ To Rackmount the Equipment

1. **Unpack the disk storage unit.**

   Refer to *Sun StorEdge A1000 and D1000 Installation, Operation, and Service Manual.*

2. **Unpack the mounting rails for the disk storage unit.**

3. **Install the mounting rails in the rack and mount the disk storage unit on the rails.**

   Refer to *Sun StorEdge A1000 and D1000 Rackmount Installation Guide.*

4. **Unpack the controller (it comes with mounting rails).**

   Refer to *Sun Enterprise 220R Server Setup and Rackmounting Guide.*

5. **Install the mounting rails in the rack.**

   Refer to the instructions decal on the top of the controller or to *Sun Enterprise 220R Server Setup and Rackmounting Guide.*

6. **Mount the controller on the rails.**

   Refer to the instructions decal on the top of the controller or to *Sun Enterprise 220R Server Setup and Rackmounting Guide.*

▼ To Connect the Cables and Power On the System

1. **Connect the SCSI cable to the disk storage unit(s) and to the SCSI slot of the controller.**

   If your system has multiple disk storage units, connect them to the controller SCSI ports in the order shown in FIGURE 2. Thus, if you have two disk storage units, you would connect them to slots 1 and 2. FIGURE 3 shows the correct SCSI connections for two disk storage units.
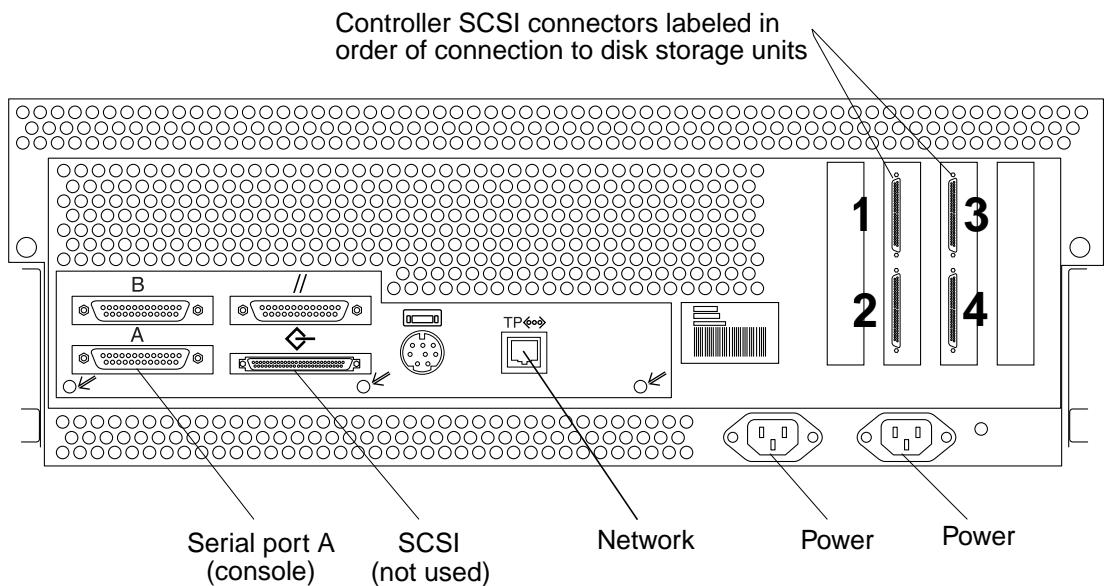
FIGURE 2   Controller Back Panel Connections
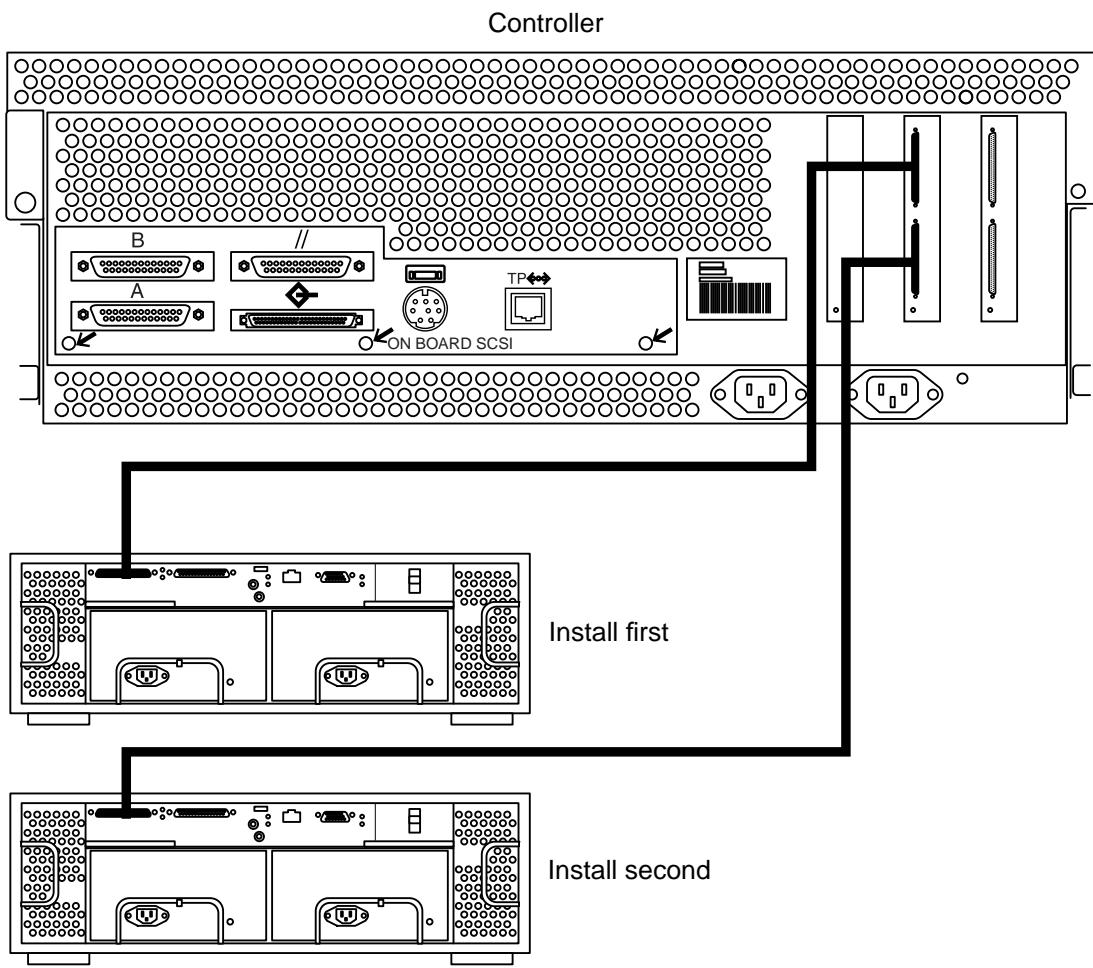
Controller

FIGURE 3   SCSI Connections Between Controller and Two Disk Storage Units

2. **Connect the SCSI terminator to the second SCSI port of the disk storage unit.**

   If you are using additional disk storage units, connect the other terminators. See FIGURE 4.

Controller SCSI connector

SCSI Terminator connector

Power

Power
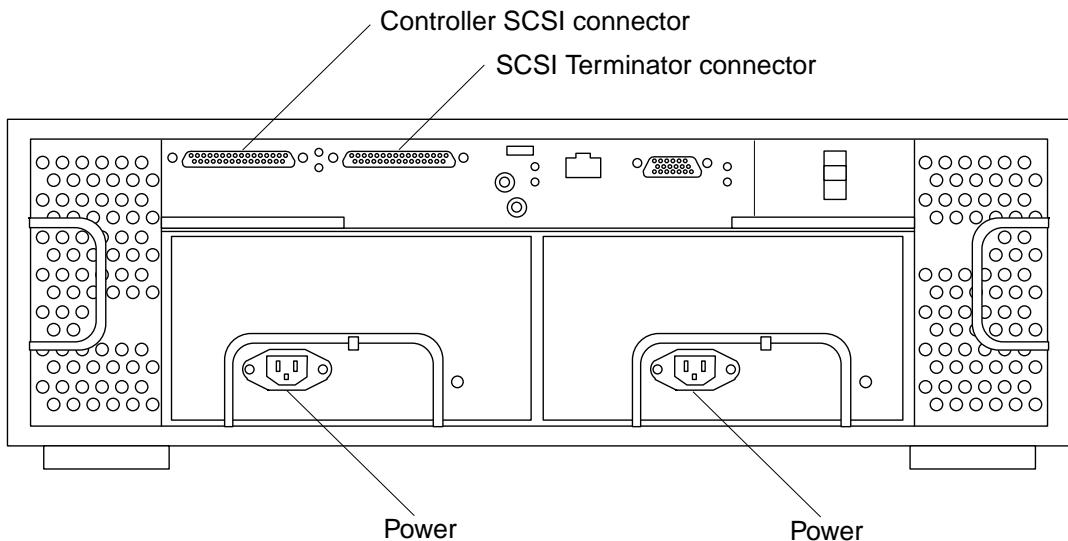
FIGURE 4 Disk Storage Unit Back Panel Connections

3. **Unpack the serial cable.**

4. **Make a temporary connection with the serial cable from the controller serial port A (see** FIGURE 2**) to any host that will act as a console during the initial network configuration.**

Note – The serial port on the back of the controller is a standard RS-232 DTE port. To connect a terminal, use the standard null-modem cable provided for your convenience. If you lose the null-modem cable, you can purchase a new one from most electronics suppliers.

---

5. **Connect the network twisted-pair Ethernet (TPE) cable provided with the controller from the controller network port (see** FIGURE 2**) to the network switch or TPE (RJ-45) wall outlet.**

6. **Connect both power cables to the disk storage unit(s).**

7. **Connect both power cables to the controller.**

8. **Verify all cable connections as shown in** FIGURE 5**.**
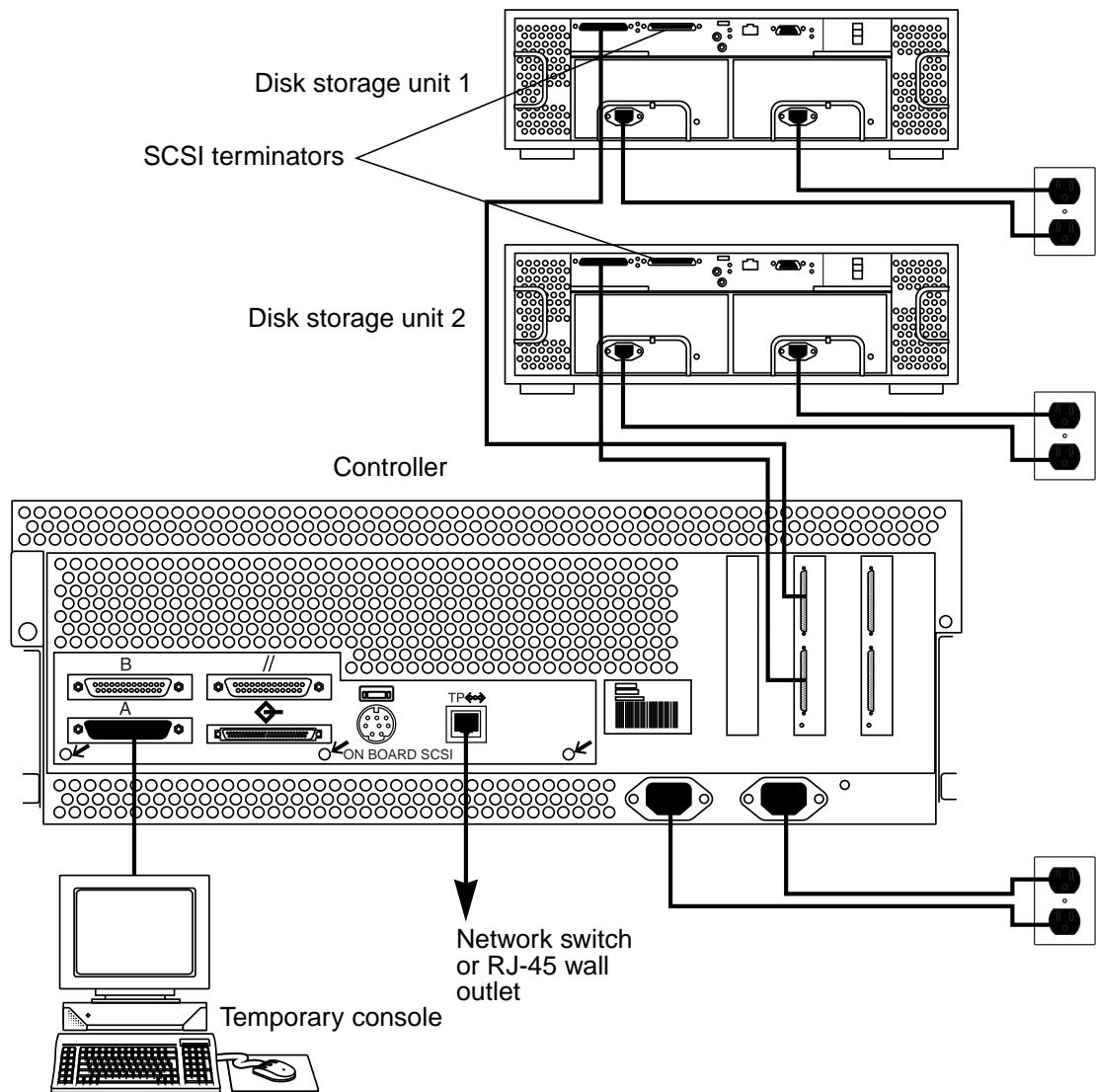
FIGURE 5   Complete Filer Connections for Initial Setup with Two Disk Storage Units

   9. Power on the disk storage unit(s) and wait 30 seconds.

   10. Power on the controller.

▼ To Set Up the Initial System Configuration

This section describes how to set up and configure the filer to communicate with the network hosts.

Note – Before you start this procedure, review Step 4 to identify the required information to obtain from your network administrator.

---

1. **Establish communications with the controller from your system by doing one of the following:**

   a. **For Sun and other UNIX systems, type:**

   ```
   # tip -9600 /dev/ttyx
   ```

   where x = a or b

   Go to Step 2 on page 12.

   b. **For systems using Microsoft Windows 95, 98, or NT:**

   i. **Choose: Start → Run.**

      The Run dialog box is displayed.
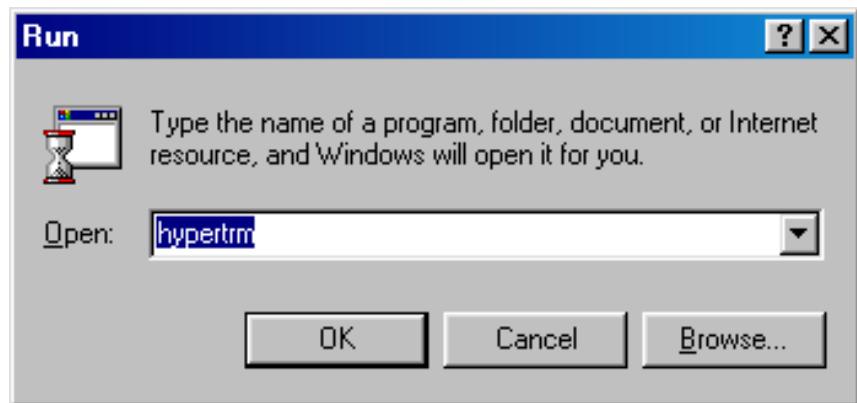
ii. Type `Hypertm`**, and click OK.**

The Connection Description dialog box is displayed.
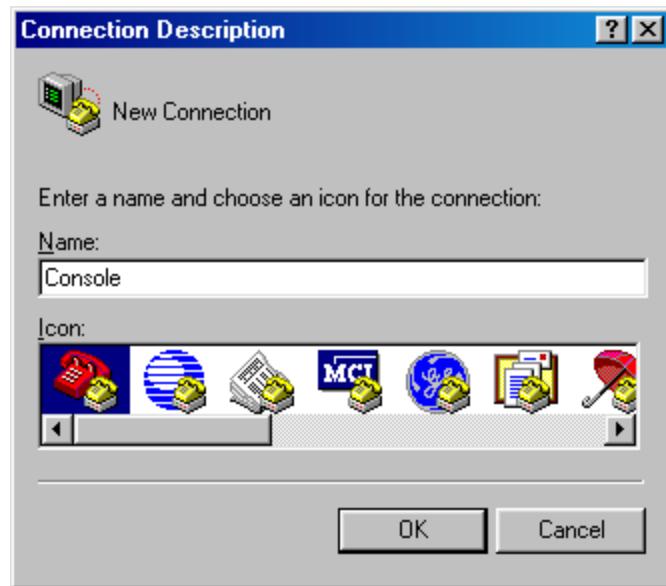
iii. Enter a connection name, choose a connection icon, and click OK.

The Connect To dialog box is displayed.

iv. Choose the Com port that will be used to connect to the filer, and then click on OK.

The COM1 (or COM2) Properties dialog box is displayed.

v. Choose the exact parameters shown in FIGURE 6**, and then click OK.**

A new window is displayed.

2. Press Enter to obtain the ok **prompt.**

3. Type boot**.**

The initial configuration begins.

4. **Provide the following information as the system prompts you to set up the initial configuration.**

   a. **Choose a language. [0 = English]**   **0**

   b. **Choose a locale. [0 = USA (ASCII)]**   **0**

   c. **Choose a terminal type.**
      [3 = DEC VT100, 12 = XTERM]   **3 or 12**

   d. **Type the host name.**   _____, **F2**

   e. **Specify whether you have network connectivity. [Yes/No]**   **F2 (Yes)**

   f. **Give the IP address.**   _____, **F2**

   g. **Confirm the above information. [Yes/No]**   **F2 (Yes)**

   h. **Name the service. [NIS, DNS, or none]** _____, **F2**

      If NIS or DNS, consult your network
      administrator to provide:
      - The domain name   _____, **F2**
      - The controller name   _____, **F2**

   i. **Confirm the name service information. [Yes/No]**   **F2 (Yes)**

   j. **Is the system part of a subnet? [Yes/No]**   **F2 (Yes)**

   k. **Type the netmask.**   _____, **F2**

   l. **Confirm the time.**
      - Region   _____, **F2**
      - Time zone   _____, **F2**
      - Date and time   _____, **F2**
      - Confirm information   _____, **F2**

   m. **Type and verify the root password.**   _____, **Enter**

   Note – Make a copy of these settings and store it in a safe place for future reference and disaster recovery.

   ---

5. **Wait while the system automatically reboots; it will take approximately two to three minutes.**

   When the login prompt appears, indicating the system has successfully booted, disconnect the serial cable from the controller serial port A and the console.

Note – To enable a Microsoft Windows NT host to access the filer storage system, you must install and configure an NFS client on the NT hosts. The filer currently supports any connection via versions 2 and 3 of the NFS system. Several NFS clients are available for download from various companies. Common Internet File System (CIFS) is not currently supported.

The filer is installed and ready to run. For instructions on how to use and manage the filer, refer to *Sun StorEdge N8000 Filer Series Administrator's Guide*.

▼ To Verify the Installation

Verifying the installation consists of creating a new share and accessing it from a remote host. To complete this section, refer to the *Sun StorEdge N8000 Filer Series Administration Guide* to perform the following steps:

1. **Start the Filer Administration Tool.**

   Refer to "To Start the Filer Administration Tool."

2. **Create a new share.**

   Refer to "To Add a New Share."

3. **Try to mount the newly created share from another host.**

Note – If the Filer is configured with both NFS and CIFS protocols, perform step 3 from a host that supports both of these protocols.

Configuration Options

Configuration of some of the filer's features require specific knowledge of the environment in which it will be operating. As such, various configuration steps must be completed to enable these features.

There are two primary configuration options for setting up the filer on the network. You can increase the sensitivity of the system to detecting component failures and upgrade the backup client support. This section contains the following topics:

- "Configuring SNMP" on page 15
- "Setting Up SNMP Traps" on page 16
- "Backup Client Support" on page 18

Configuring SNMP

The RAID Manager 6.*x* software provided with the filer can detect and provide remote notification of disk array failures and other subsystem events using Simple Network Management Protocol (SNMP) traps. SNMP traps are event notification messages that are sent across the network to the SNMP console. An example of the SNMP console is the Sun Domain Manager software. If you have SNMP traps, set them up to monitor the activity of some of the hardware devices on the network.

Monitoring the Controller

Monitoring the controller requires system-specific agents that are not part of the filer package. These agents are available as part of:

- Sun Domain Manager (formerly known as SunNet Manager™)
- Sun Management Center (formerly known as SyMon)

Monitoring the Storage

The Sun StorEdge N8*x*00 disk storage units generate SNMP traps if a component fails. These components are:

- Disk drives
- Power supplies
- Cooling units
- Batteries
- Controller

Setting Up SNMP Traps

In order to receive the SNMP traps, perform the following configuration steps.

▼ To Enable SNMP Traps

1. **Compile the RAID Manager 6.*x* Management Information Base (MIB) into the Network Management Station (NMS).**

   a. **Copy the** `/etc/raid/rm6traps.mib` **file to the NMS.**

   b. **Follow the steps required by your specific NMS to compile the MIB.**

   Note – The MIB is written to the standard version 1 SNMP syntax. It is designed specifically for RAID Manager 6.*x* and is not applicable to other vendors' RAID products.

   For example, if you are using Sun Domain Manager, the command `mib2schema rm6traps.mib` creates the following files:
   - `rm6traps.mib.schema`
   - `rm6traps.mib.oid`
   - `rm6traps.mib.traps`

   The `rm6traps.mib.schema` and `rm6traps.mib.oid` files are placed in the `/opt/SUNWconn/snm/agents` directory. The `rm6traps.mib.traps` file is appended to the `/var/opt/SUNWconn/snm/snmp.traps` file.

   Start the SunNet Manager/Sun Domain Manager graphical user interface by typing:

   ```
   # /opt/SUNWconn/bin/snm -i
   ```

   Where `-i` initializes the run-time management database (MDB) from structure and instance files, both of which are implied by the configuration file:
   - `/etc/snm.conf` for Solaris 1.x
   - `/etc/opt/SUNWconn/snm/snm.conf` file for Solaris 2.x

When an array event occurs, the `rmscript(1M)` script takes the information passed by `arraymon(1M)` and constructs an SNMP trap message and then sends it to the host defined in the `/etc/osa/rmparams` file.

See the NMS documentation for more information on how to install SNMP devices.

2. **Set up the** `/etc/raid/rmparams` **file so that RAID Manager 6.***x* **will know where to direct the SNMP trap messages.**

   a. **Ensure the host system is connected to the network.**

   b. **Access the** `/etc/raid/rmparams` **file and set the value of** `SNMP_Target_IP_Address` **to the dotted-notation IP address of the NMS on which the MIB has been compiled.**

      On most systems, this IP address can also be a dotted-notation multicast address or broadcast address. The `SNMP_Target_IP_Address` provides the SNMP IP address for remote notification.

   c. **Access the** `/etc/raid/rmparams` **file and change the community name from its default of NONE to a community name you want such as** `public`**.**

      Your network environment might require a different name. The `SNMP_Community_Name` file provides the community name to be used for SNMP remote notification.

   d. **Access the** `/etc/raid/rmparams` **file and change the** `SNMP_Action_Number` **default value from 0 to either 1 or 2.**

      The `SNMP_Action_Number` indicates the SNMP trap notification option you want to use. A value of 1 sends SNMP traps to the designated NMS station. A value of 2 writes all relevant data to the `/etc/raid/bin/trap.dat` file.

   e. **Copy the edited** `/etc/raid/rmparams` **file to the** `/etc/default` **directory and make a backup copy of the file.**

   f. **Ensure that the** `/etc/osa/locks/rmparams.lock` **file is writable by root.**

      This can be a problem if the Sun StorEdge RAID Manager 6.x software in NFS mounted.

   g. **Ensure that the** `/etc/resolv.conf` **file exists and has the Domain Name Service (DNS) entries required.**

      For example, to configure the filer to be a DNS client:

      i. **Access the** `/etc/resolv.conf` **file and add the following entry for** *nameserver***:**

      ```
      #  nameserver 129.148.1.245
      ```

      where:

      nameserver is a default parameter/name depicting the primary function of a DNS server

      `129.148.1.245` is the IP address of your primary DNS nameserver

ii. Access the `/etc/nsswitch.conf` **file and add DNS to the hosts line.**

For example:

`hosts: nis dns files`

For additional details on setting up DNS:

- SunSolve[SM] contract customers can refer to *Product Support Document (PSD) for Sun DNS*. This document is available from Sun's SunSolve database at `http://sunsolve.Sun.COM`. Search for 11975; then under "Domain Name Service (DNS) Support Document/FAQ, Info Docs: 11975," click 11975.

- All other customers can refer to *Solaris Naming Setup and Configuration Guide*. This document is available at `http://docs.sun.com.` Search for DNS.

▼ To Disable SNMP Traps

You can disable RAID Manager 6.*x* from issuing SNMP traps in three ways:

- **Change the** `SNMP_Community_Name` **to** `NONE` **in the** `/etc/raid/rmparams` **file.**

- **Delete the** `SNMP_Target_IP_Address` **line in the** `/etc/raid/rmparams` **file.**

- **Change the value of** `SNMP_Action_Number` **to 0 in the** `/etc/raid/rmparams` **file.**

Backup Client Support

The filer supports two backup products by default:

- Sun Solstice Backup™ software
- VERITAS NetBackup software

▼ To Install the Solstice Backup Software

1. **Establish a telnet connection to the filer.**
   - On a PC, choose Start → Run, and type `telnet` *hostname*.
   - On Solaris systems, type `telnet` *hostname* in a terminal window.

   Where *hostname* is the host name of the filer.

   The log in prompt appears.

2. **Type** `root`**.**

3. **Type the root password.**

4. Type:

```
# /user/local/N8000/scripts/backup_cfg.sh
```

5. Answer the questions and follow the instructions.

▼ To Install the VERITAS NetBackup Software

● **Follow the instructions in the** *VERITAS NetBackup System Administrator's Guide*, **"Adding Clients" section, to download and configure the client software.**

Installation Troubleshooting

This section provides information and troubleshooting procedures to help resolve problems that might occur during the installation. For additional troubleshooting, contact your Sun service provider. This section contains the following topics:

- "No Indication of a Console Connection Is Provided" on page 20
- "On First Boot, Error Messages Are Displayed and the System Will Not Boot" on page 20
- "Cannot Ping the Filer on the Network" on page 21
- "The Web Browser Displays the Message: `The requested item could not be loaded by the proxy`" on page 23
- "A Boot Disk in the Controller Fails" on page 24
- "A Data Disk in a Disk Storage Unit Fails" on page 24
- "Disk Storage Unit Hot Spare Operation" on page 25

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 Step 4 on page 13 again for the proper system configuration settings.**

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 and 2 on the right side. See FIGURE 3 on page 6.

2. **Log in as the root user and type:**

```
# 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, and then reboot and follow the instructions from Step 3 on page 12.**

7. **If the problem persists, have the error messages available and contact your local Sun service provider.**

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 20.

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

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

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, perform the following steps:

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.

4. **If the problem persists, contact your local Sun service provider.**

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 connection to the filer from another host and typing:**

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

Output similar to the following should be displayed.

```
# 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, contact your local Sun service provider.
- If the http processes are displayed and the problem persists, carefully verify the URL address again.

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* for instructions.

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.

A Data Disk in a Disk Storage Unit Fails

This failure is reported in three ways:

- An amber LED on the disk drive lights
- An SNMP trap message is sent
- An email message is 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, Operation, and Service Manual.*

The failed disk data is automatically reconstructed on the new disk. 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 the active hot spare fails, the failure is reported in three ways:

- An amber LED on the disk drive goes lights

- You receive an SNMP trap message

- An email message is 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.

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 the procedure for replacing a data disk. Refer to "A Data Disk in a Disk Storage Unit Fails" on page 24.