Netra™ 210 Server Service Manual

Sun Microsystems, Inc.
www.sun.com

Part No. 819-2750-10
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Preface

The *Netra 210 Server Service Manual* provides detailed procedures that describe the removal and replacement of FRU components in the Netra™ 210 server. This document is written for technicians, system administrators, authorized service providers (ASPs), and users who have advanced experience troubleshooting and replacing hardware.

How This Document Is Organized

Chapter 1 describes procedures and conditions to consider before replacing components.

Chapter 2 provides service procedures for storage devices.

Chapter 3 describes service procedures for system board components.

Chapter 4 provides service procedures for chassis components.

Chapter 5 describes procedures and conditions after replacing components.

Appendix A lists the specifications of the Netra 210 server.

Appendix B provides several signal pinouts for the external connectors.

Using UNIX Commands

Use this section to alert readers that not all UNIX commands are provided. For example:

This document might not contain information about basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris™ Operating System documentation, which is at:

  `http://docs.sun.com`

Shell Prompts

Shell	Prompt
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

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. Replace command-line variables with real names or values.	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this. To delete a file, type `rm` *filename*.

* The settings on your browser might differ from these settings.

Related Documentation

The documents listed as online are available at:

`http://www.sun.com/products-n-solutions/hardware/docs/`

Application	Title	Part Number	Format	Location
Setup	*Netra 210 Server Setting Up*	819-2752	Printed	Shipping kit
Administration	*Netra 210 Server System Administration Guide*	819-2749	PDF	Online
Service	*Netra 210 Server Service Manual*	819-2750	PDF	Online
Product Notes	*Netra 210 Server Product Notes*	819-2751	PDF	Online
Compliance	*Netra 210 Server Safety and Compliance Guide*	819-3206	PDF	Online

Documentation, Support, and Training

Sun Function	URL
Documentation	`http://www.sun.com/documentation/`
Support	`http://www.sun.com/support/`
Training	`http://www.sun.com/training/`

Third-Party Web Sites

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Please include the title and part number of your document with your feedback:

Netra 210 Server Service Manual, part number 819-2750-10

CHAPTER 1

Getting Started

This chapter contains information to help you prepare for service procedures. Topics include:

1.1 Safety Information

This section describes the safety precautions to follow when servicing a Netra 210 server.

1.1.1 Safety Precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all Sun standard cautions, warnings, and instructions marked on the equipment and described in *Important Safety Information for Sun Hardware Systems*, 816-7190.
- Follow the cautions, warnings, and instructions in the *Netra 210 Server Safety and Compliance Guide*, 819-3206. The document is available at:

  `http://www.sun.com/documentation`

- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Never push objects of any kind through openings in the equipment. Dangerous voltages might be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

1.1.2 Safety Symbols

The following symbols might appear in this book, note their meanings:

Caution – There is a risk of personal injury and equipment damage. To avoid personal injury and equipment damage, follow the instructions.

Caution – Hot surface. Avoid contact. Surfaces are hot and might cause personal injury if touched.

Caution – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

1.1.3 Electrostatic Discharge Safety

Electrostatic discharge (ESD) sensitive devices, such as memory, the system board, the PCI card, the SAS board, and the hard drives, require special handling.

Caution – The boards and hard drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or the work environment can destroy components. Do not touch the components along their connector edges.

Caution – Wear an antistatic wrist strap and use an antistatic mat when handling components such as drive assemblies, boards, or cards. When servicing or removing server components, attach an antistatic strap to your wrist and then to a metal area on the chassis.

1.2 Required Tools

The Netra 210 server was designed to be serviced with the following tools:

- Antistatic wrist strap
- No. 2 Phillips screwdriver

See FIGURE 1-1.

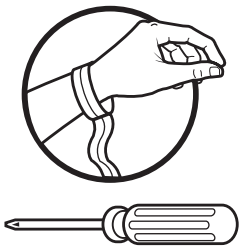

FIGURE 1-1 Required Tools

Place ESD-sensitive components such as the system board, memory, PCI cards, hard drives, and the NVRAM on an antistatic mat. The following items can be used as an antistatic mat:

- Antistatic bag used to wrap a Sun replacement part
- Sun ESD mat, part number 250-1088 (available through your Sun sales representative)
- Disposable ESD mat (shipped with replacement parts or optional server components)

1.3 Powering Off the Server

Most procedures require the server to be powered off before proceeding.

Note – If the server is accessed by several users, inform them of your intentions.

- **Become superuser of the server and power it off using the following command:**

```
# poweroff
```

The server powers off.

1.4 Removing the Server From the Rack

Many procedures require the server to be removed from the rack. The following instructions are for a generic racking system and might include steps that are not necessary to remove the server from your rack.

1. **Power off the server.**

   See Section 1.3, "Powering Off the Server" on page 1-3.

2. **Disconnect the following cables from the rear panel of the server:**
   - Network cables
   - ALOM cables
   - Serial cables
   - USB cables
   - PCI connector cables
   - SCSI cables
   - Alarm cables
   - Power cables

3. **Loosen the screws or release the levers or latches at both sides of the bezel**

   See FIGURE 1-2.

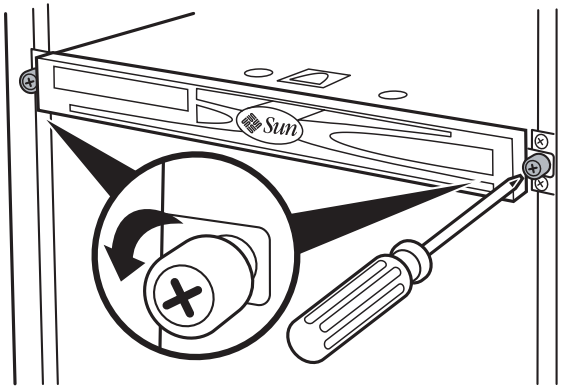

FIGURE 1-2 Releasing the Server From the Rack

4. **Slide and lift the server from the rack.**

   See FIGURE 1-3.

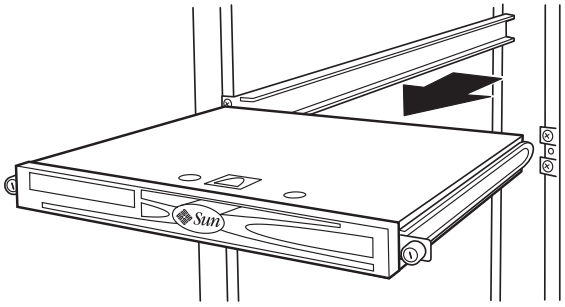

FIGURE 1-3 Sliding the Server Out of the Rack

5. **Set the server down onto a clean work surface or antistatic mat.**

1.5 Opening the Bezel

1. **Locate the bezel.**

   The bezel is the plastic cover at the front of the server.

2. **Grasp the two grips at the right and left sides of the bezel.**

   See FIGURE 1-4.

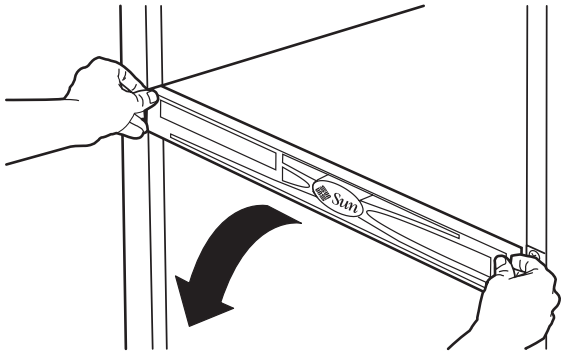

FIGURE 1-4 Opening the Bezel

3. **Gently pull the grips both toward you and downward at the same time.**
   The bezel unfolds downward. See FIGURE 1-5.

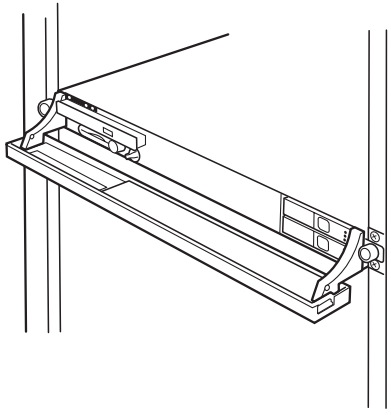

FIGURE 1-5 Bezel Open

Note – If the bezel catches while unfolding, stop. Gently raise the side of the bezel that is lower to be parallel with the opposite side. Then try to unfold the bezel again.

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4. **Determine your next steps:**
   - If you are opening the bezel so that it can be removed, go to Section 4.7.1, "Removing the Bezel" on page 4-22.
   - Otherwise, return to the procedure that directed you here.

1.6 Removing the Top Cover

1. **Power off and remove the server from the rack.**
   - See Section 1.3, "Powering Off the Server" on page 1-3
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4
2. **Locate the top cover.**

   Facing the bezel, the top cover is on the top of the chassis.
3. **Using a No. 2 Phillips screwdriver, rotate each cover screw 90 degrees counterclockwise.**

   See FIGURE 1-6

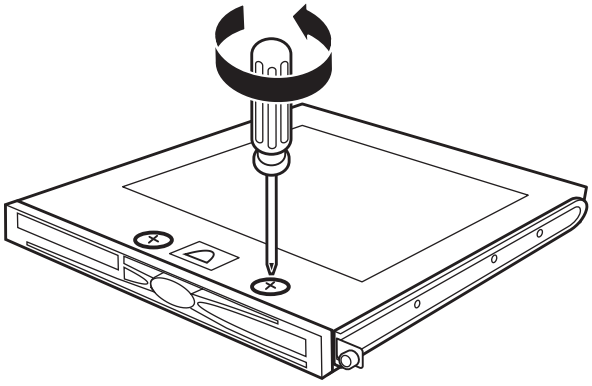

FIGURE 1-6 Loosening the Cover Screws

4. **Lift up the D-ring from the recess in the top cover and lift the top cover off the chassis.**

   See FIGURE 1-7

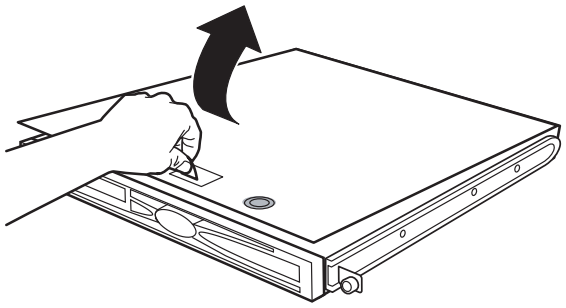

FIGURE 1-7 Removing the Top Cover

5. **Set the top cover aside.**
6. **Lift up on the air duct and remove it from the chassis.**

   See FIGURE 1-8.

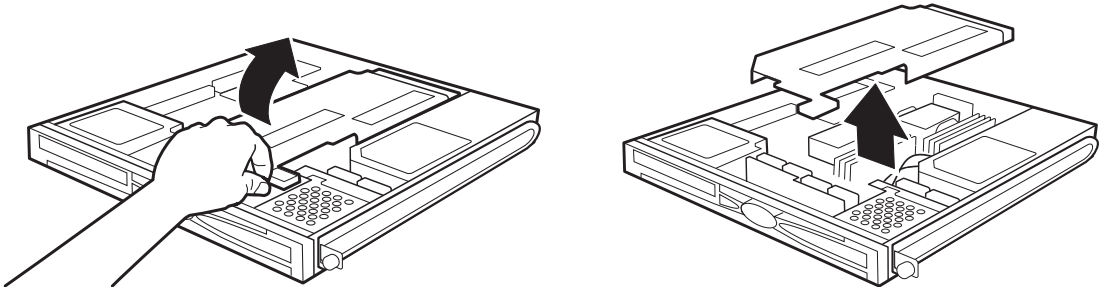

FIGURE 1-8 Removing the Air Duct

Note – It is not necessary to remove the air duct if you are servicing fans 4 and 5.

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7. **Set the air duct aside.**
8. **Attach the antistatic wrist strap to your wrist and to a clean grounding surface on the chassis.**

   See FIGURE 1-9.

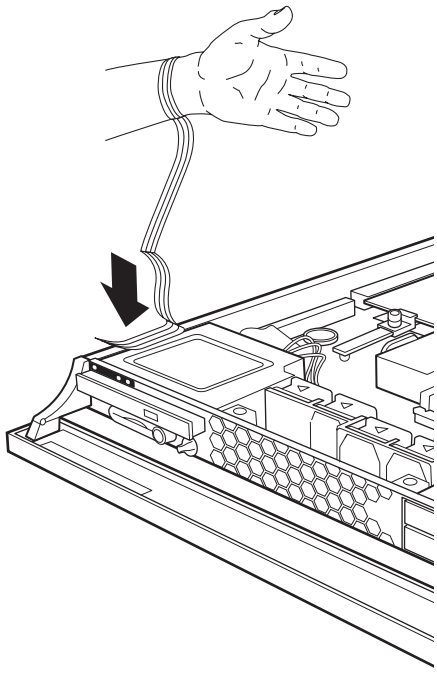

FIGURE 1-9 Attaching the Antistatic Wrist Strap

9. **Return to the procedure that directed you here.**

1.7 Service Procedures

FIGURE 1-10 shows an open view of the Netra 210 server and its replaceable components. TABLE 1-1 contains links to the service procedures to replace those components.

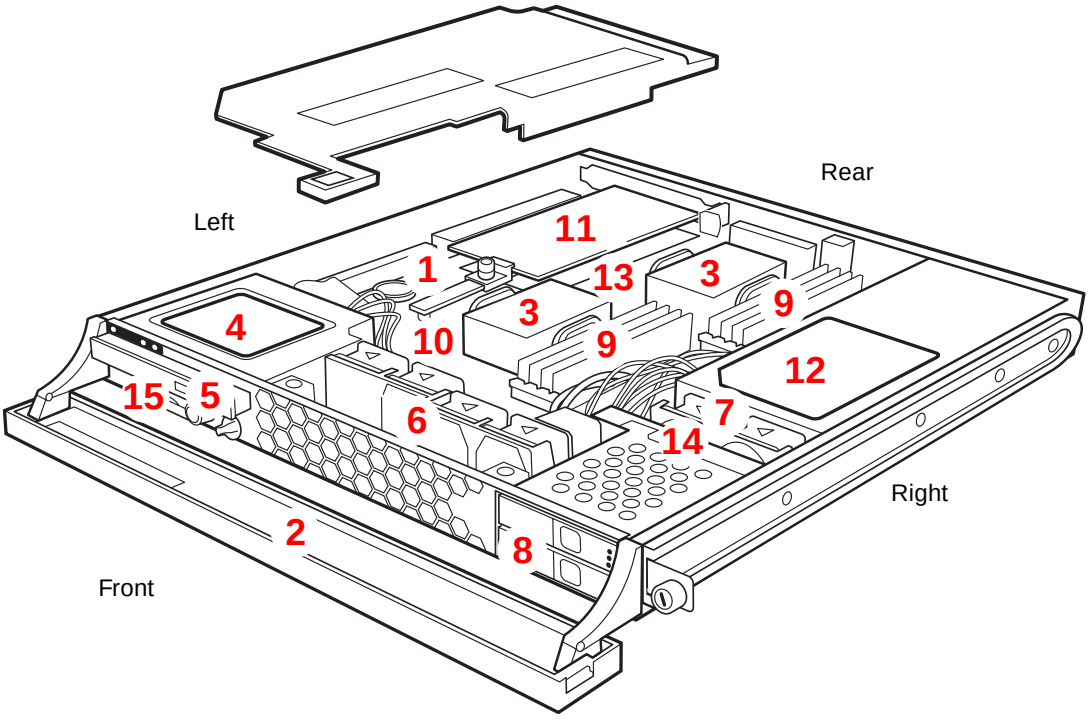

FIGURE 1-10 Netra 210 Server Replaceable Components

TABLE 1-1 Component Replacement Procedures

Number	Component	Procedure
1	Battery	Section 3.5, “Replacing the Battery” on page 3-16
2	Bezel	Section 4.7, “Replacing the Bezel” on page 4-22
3	CPU	Section 3.6, “Replacing the System Board” on page 3-18
4	DVD assembly	Section 4.5, “Replacing the DVD Assembly” on page 4-13
5	DVD module	Section 2.3, “Replacing the DVD Module” on page 2-7
6	Fans 0-3	Section 4.3, “Replacing Fans 0-3” on page 4-7
7	Fans 4 and 5	Section 4.4, “Replacing Fans 4 and 5” on page 4-10

TABLE 1-1 Component Replacement Procedures *(Continued)*

Number	Component	Procedure
8	Hard drive	Section 2.2, "Replacing the Hard Drive" on page 2-2
9	Memory	Section 3.2, "Replacing Memory" on page 3-2
10	System board	Section 3.6, "Replacing the System Board" on page 3-18
11	PCI card	Section 3.3, "Replacing the PCI Card" on page 3-5
12	Power supply	Section 4.2, "Replacing the Power Supply" on page 4-2
13	SAS board	Section 3.4, "Replacing the SAS Board" on page 3-10
14	SAS IF assembly	Section 4.6, "Replacing the SAS IF Assembly" on page 4-18
15	SCC	Section 2.4, "Replacing the System Configuration Card" on page 2-10

CHAPTER 2

Storage Components

This chapter provides service procedures for data storage components. Topics include:

2.1 Electrostatic Discharge Safety

Electrostatic discharge (ESD) sensitive devices, such as memory, the system board, the PCI card, the SAS board, and the hard drives, require special handling.

Caution – The boards and hard drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or the work environment can destroy components. Do not touch the components along their connector edges.

Caution – Wear an antistatic wrist strap and use an antistatic mat when handling components such as drive assemblies, boards, or cards. When servicing or removing server components, attach an antistatic strap to your wrist and then to a metal area on the chassis.

2.2 Replacing the Hard Drive

2.2.1 Removing the Hard Drive

1. **Open the bezel.**

   See Section 1.5, "Opening the Bezel" on page 1-5.

2. **Locate the hard drive to be removed.**

   The hard drives are located at the front of the chassis, on the right side. The top drive is `HDD1`; the bottom drive is `HDD0`.

3. **If the server is powered off, go to Step 5.**

4. **If the server is powered on:**

   a. **Determine the `Ap_Id` for the hard drive to be removed. As superuser in a terminal window, type:**

```
# cfgadm -al
Ap_Id                Type         Receptacle   Occupant     Condition
c0                    scsi-bus     connected    configured   unknown
c0::dsk/c0t0d0        CD-ROM       connected    configured   unknown
c1                    scsi-bus     connected    configured   unknown
c1::dsk/c1t0d0        disk         connected    configured   unknown
c1::dsk/c1t1d0        disk         connected    configured   unknown
c2                    scsi-bus     connected    unconfigured unknown
c3                    scsi-bus     connected    unconfigured unknown
c4                    fc-private   connected    configured   unknown
c4::216000c0ff883cc4  disk         connected    configured   unknown
c5                    fc           connected    unconfigured unknown
usb0/1                  unknown      empty        unconfigured ok
usb0/2                  unknown      empty        unconfigured ok
```

   b. **Search the `Type` column for the first occurrence of the word, `disk`.**

      This is the entry for `HDD0`. In this example, the respective `Ap_Id` for `HDD0` is `c1::dsk/c1t0d0`.

      The entry immediately following is for `HDD1`, or `c1::dsk/c1t1d0`.

   c. **Remove the drive.**

- To remove HDD0, type:

```
# cfgadm -c unconfigure c1::dsk/c1t0d0
```

- To remove HDD1, type:

```
# cfgadm -c unconfigure c1::dsk/c1t1d0
```

Wait for the top LED of the respective hard drive to illuminate.

5. **Press the drive button to release the drive latch.**
   The latch opens. See FIGURE 2-1.

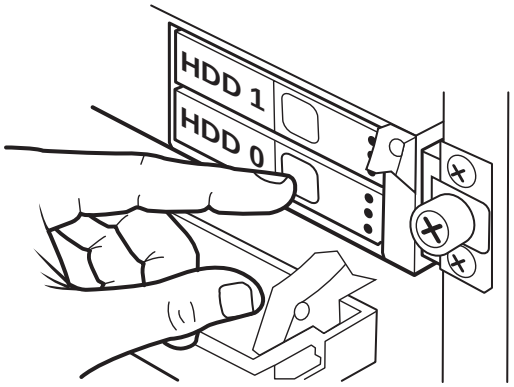

FIGURE 2-1 Releasing the Drive Latch

6. **Pull firmly on the drive latch to slide the drive out of the drive bay.**
   See FIGURE 2-2.

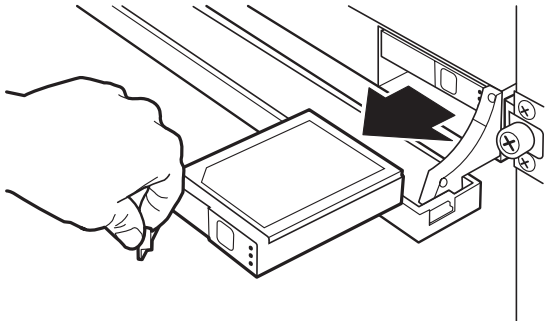

FIGURE 2-2 Sliding the Drive Out of the Drive Bay

7. **Set the drive aside on an antistatic mat.**
8. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - If you are replacing the hard drive with another, go to Section 2.2.2, "Installing the Hard Drive" on page 2-4.
   - If you are not replacing the hard drive, go to Section 5.2, "Closing the Bezel" on page 5-3.

2.2.2 Installing the Hard Drive

1. **Open the bezel.**

   See Section 1.5, "Opening the Bezel" on page 1-5.

2. **Locate where the hard drive is to be installed.**

   The hard drives are located at the front of the chassis, on the right side. The top drive is `HDD1`; the bottom drive is `HDD0`.

3. **Remove the replacement hard drive from its shipping container and antistatic packaging.**
4. **Press the drive button to release the drive latch.**

   The latch opens.

5. **Orient the hard drive with the drive latch towards you and the label facing up.**
6. **Gently slide the drive into the drive bay by pressing on the area between the drive button and the drive status LEDs.**

   See FIGURE 2-3.

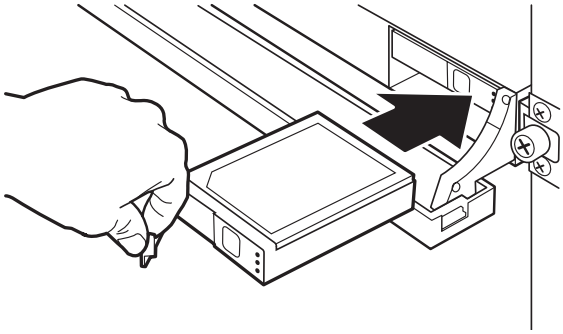

FIGURE 2-3 Sliding the Drive Into the Drive Bay

When you feel resistance, press firmly so that the drive latch begins to close.

7. **Press the drive latch closed.**

   The latch clicks. See FIGURE 2-4.

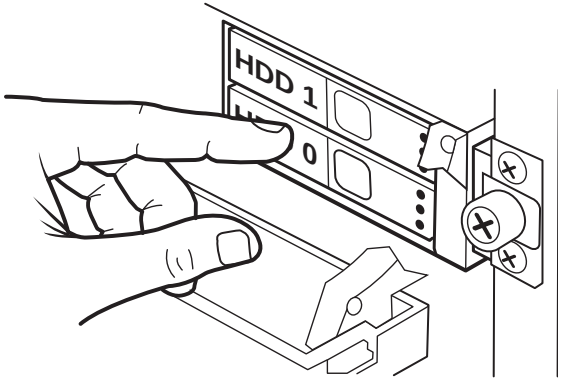

FIGURE 2-4 Closing the Drive Latch

Note – If you feel the latch bind, stop. Gently pull back on the latch and try closing it again.

---

8. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - If the server is powered on, configure the installed drive.

a. Determine the `Ap_Id` for the hard drive installed. As superuser in a terminal window, type:

```
# cfgadm -al
Ap_Id                Type         Receptacle   Occupant     Condition
c0                    scsi-bus     connected    configured   unknown
c0::dsk/c0t0d0        CD-ROM       connected    configured   unknown
c1                    scsi-bus     connected    configured   unknown
c1::dsk/c1t0d0        disk         connected    unconfigured unknown
c1::dsk/c1t1d0        disk         connected    unconfigured unknown
c2                    scsi-bus     connected    unconfigured unknown
c3                    scsi-bus     connected    unconfigured unknown
c4                    fc-private   connected    configured   unknown
c4::216000c0ff883cc4  disk         connected    configured   unknown
c5                    fc           connected    unconfigured unknown
usb0/1                unknown      empty        unconfigured ok
usb0/2                unknown      empty        unconfigured ok
```

b. Search the `Type` column for the first occurrence of the word, `disk`.

This is the entry for `HDD0`. In this example, the respective `Ap_Id` for `HDD0` is `c1::dsk/c1t0d0`.

The entry immediately following is for `HDD1`, or `c1::dsk/c1t1d0`.

c. Configure the installed hard drive.

- To configure `HDD0`, type:

```
# cfgadm -c configure c1::dsk/c1t0d0
```

- To configure `HDD1`, type:

```
# cfgadm -c configure c1::dsk/c1t1d0
```

- Otherwise, close the bezel**, power on the server, and verify the installation**.
  - See Section 5.2, “Closing the Bezel” on page 5-3.
  - See Section 5.4, “Powering On the Server” on page 5-6.
  - See Section 5.5, “Verifying the Installation” on page 5-7

2.3 Replacing the DVD Module

2.3.1 Removirng the DVD Module

1. **Power off the server, remove the server from the rack, open the bezel, and remove the top cover and airduct.**
   - See Section 1.3, "Powering Off the Server" on page 1-3.
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.5, "Opening the Bezel" on page 1-5.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.

Note – It is not necessary to remove the air duct.

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2. **Locate the DVD module.**

   The DVD module is located at the left of the front panel.

3. **Pull and hold the release tab at the right rear of the DVD module.**

   See FIGURE 2-5.

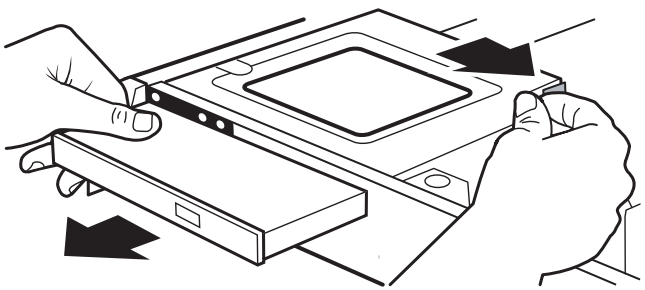

FIGURE 2-5 Removing the DVD Module

4. **While holding the release tab, pull the DVD module out through the chassis front panel.**

   See FIGURE 2-5.

5. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.

- If you are replacing the DVD drive, go to Step 4 of Section 2.3.2, "Installing the DVD Module" on page 2-8
- Otherwise, continue with Step 6.

6. **Insert the filler panel into the opening of the DVD assembly.**

   See FIGURE 2-6.

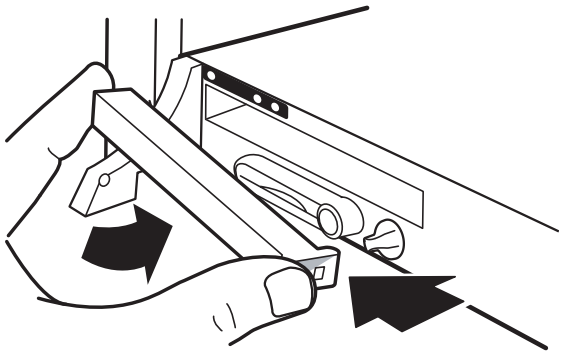

FIGURE 2-6 Installing the Filler Panel

Note – The filler panel *does not* sit flush in the DVD assembly

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7. **Install the air duct and top cover, close the bezel, install the server into the rack, power on the server, and verify the installation.**
   - See Section 5.1, "Installing the Top Cover" on page 5-1.
   - See Section 5.2, "Closing the Bezel" on page 5-3
   - See Section 5.3, "Installing the Server Into the Rack" on page 5-4.
   - See Section 5.4, "Powering On the Server" on page 5-6.
   - See Section 5.5, "Verifying the Installation" on page 5-7.

2.3.2 Installing the DVD Module

1. **Power off the server and open the bezel.**
   - See Section 1.3, "Powering Off the Server" on page 1-3.
   - See Section 1.5, "Opening the Bezel" on page 1-5.

2. **Locate where the DVD module installs.**

   The DVD module installs into the DVD assembly at the left side of the front panel.

3. **If a filler panel is present, follow these steps. Otherwise go to Step 4.**

a. Depress the right edge of the filler panel and swing the panel outward.

See FIGURE 2-7.

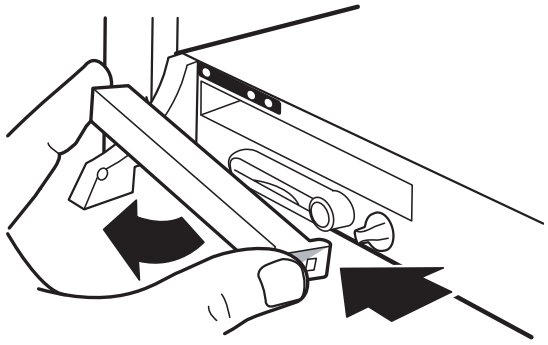

FIGURE 2-7 Removing the DVD Filler Panel

b. Store the filler panel in a safe place.

4. **Remove the replacement DVD module from its shipping container and antistatic packaging.**
5. **Orient the DVD module with the door towards you and the label facing up.**
6. **Slide the DVD module into the DVD assembly until it clicks.**

See FIGURE 2-8.

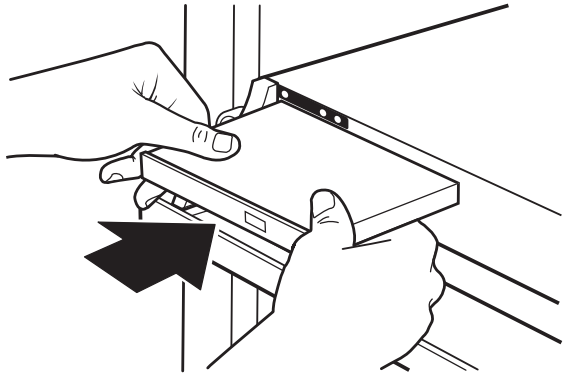

FIGURE 2-8 Sliding the DVD **Module** In

7. **Close the bezel.**

See Section 5.2, “Closing the Bezel” on page 5-3.

8. **If you are replacing a defective DVD module, follow these steps. Otherwise, go to Step 9.**

   a. **Install the air duct and top cover.**

      See Section 5.1, "Installing the Top Cover" on page 5-1.

   b. **Install the server into the rack.**

      See Section 5.3, "Installing the Server Into the Rack" on page 5-4.

9. **Power on the server.**

   See Section 5.4, "Powering On the Server" on page 5-6.

2.4 Replacing the System Configuration Card

The system configuration card (SCC) is an identification card that uses smart card technology.

2.4.1 Removing the SCC

1. **Power off the server and open the bezel.**
   - See Section 1.3, "Powering Off the Server" on page 1-3.
   - See Section 1.5, "Opening the Bezel" on page 1-5.
2. **Locate the SCC.**

   The SCC is located at the left side of the front panel.
3. **If present, remove the tie wrap securing the SCC in the slot.**
4. **Grasp the SCC and pull it from the slot.**

   See FIGURE 2-9.

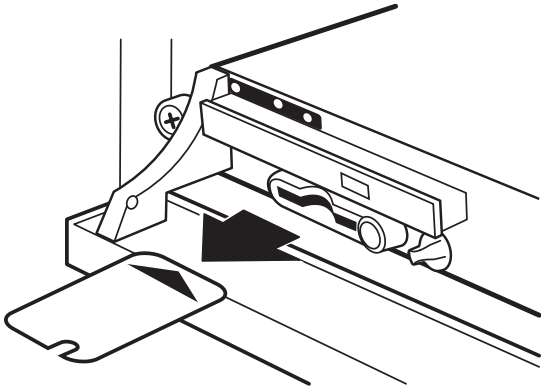

FIGURE 2-9 Removing the SCC

Caution – Do not power on the server without the SCC installed.

5. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, install the SCC.

     Go to Step 3 of Section 2.4.2, "Installing the SCC" on page 2-11.

2.4.2 Installing the SCC

1. **Open the bezel.**

   See Section 1.5, "Opening the Bezel" on page 1-5.

2. **Locate where the SCC installs.**

   The SCC installs at the left side of the front panel.

3. **Remove the replacement SCC from its shipping container and antistatic packaging.**

4. **Slide the SCC into the slot, gold pads down.**

   See FIGURE 2-10.

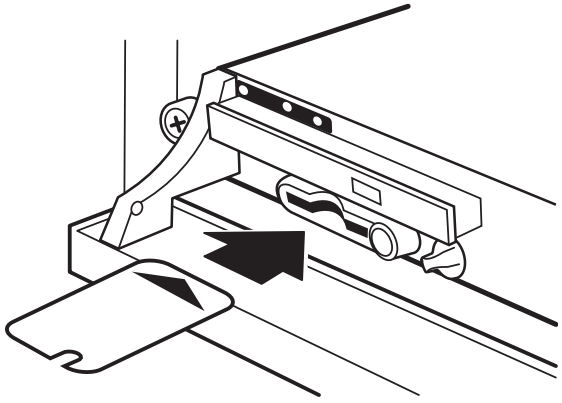

FIGURE 2-10 Sliding the SCC Into the Slot

5. **Secure the SCC by attaching a tie wrap to the slot.**
6. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, close the bezel, power on the server, and verify the installation.
     - See Section 5.2, "Closing the Bezel" on page 5-3.
     - See Section 5.4, "Powering On the Server" on page 5-6.
     - See Section 5.5, "Verifying the Installation" on page 5-7.

CHAPTER 3

System Board Components

This chapter provides service procedures for system board components. Topics include:

3.1 Electrostatic Discharge Safety

Electrostatic discharge (ESD) sensitive devices, such as memory, the system board, the PCI card, the SAS board, and the hard drives, require special handling.

Caution – The boards and hard drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or the work environment can destroy components. Do not touch the components along their connector edges.

Caution – Wear an antistatic wrist strap and use an antistatic mat when handling components such as drive assemblies, boards, or cards. When servicing or removing server components, attach an antistatic strap to your wrist and then to a metal area on the chassis.

3.2 Replacing Memory

3.2.1 Removing Memory

1. **Power off the server, remove the server from the rack, and remove the top cover and airduct.**
   - See Section 1.3, "Powering Off the Server" on page 1-3.
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.
2. **Locate the memory.**

   The memory is located near the center of the system board, just right of the CPU.
3. **Press down on the ejector levers at both ends of the memory module.**

   See FIGURE 3-1.

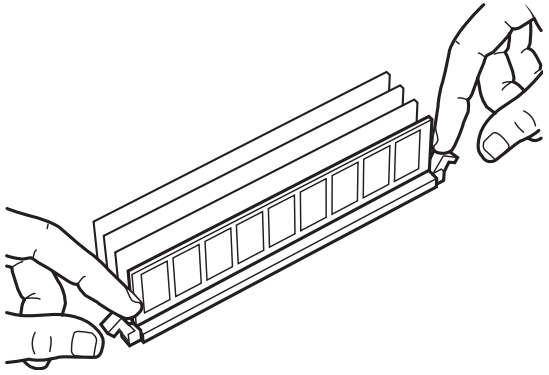

FIGURE 3-1 Pressing Down the Ejector Levers

4. **Lift the memory straight up and out of the socket.**

   See FIGURE 3-2.

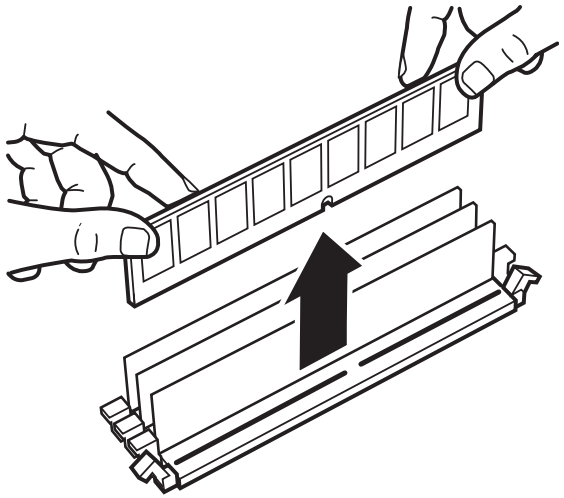

FIGURE 3-2 Lifting the Memory Out of the Socket

5. **Set the memory aside on an antistatic mat.**
6. **Repeat** Step 3 **to** Step 5 **for each memory module to be removed.**
7. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - If you are replacing memory, go to Step 3 of Section 3.2.2, "Installing Memory" on page 3-3
   - Otherwise, install the air duct and top cover, install the server into the rack, and power on the server.
     - See Section 5.1, "Installing the Top Cover" on page 5-1.
     - See Section 5.3, "Installing the Server Into the Rack" on page 5-4.
     - See Section 5.4, "Powering On the Server" on page 5-6.

3.2.2 Installing Memory

1. **Power off the server, remove the server from the rack, and remove the top cover and airduct.**
   - See Section 1.3, "Powering Off the Server" on page 1-3.
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.

2. **Locate where the memory installs.**

   The memory installs in matched pairs near the center of the system board, just right of the CPU. See FIGURE 3-3.

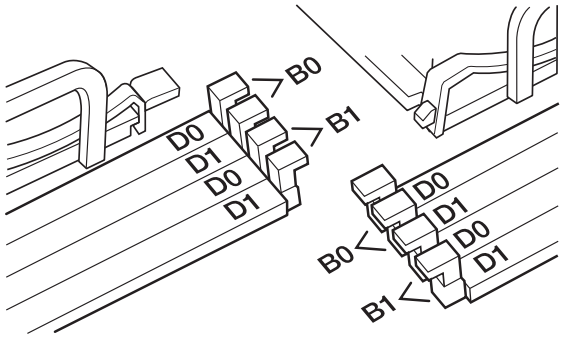

FIGURE 3-3 Memory Pairs

For each CPU, install the first matched pair in `Bank0` (`B0`). Install the second matched pair in `Bank1` (`B1`).

3. **Remove one memory module from its shipping container and antistatic packaging.**

4. **Position the memory over the respective slot, with the notch in the memory aligning to the key of the slot.**

   See FIGURE 3-4.

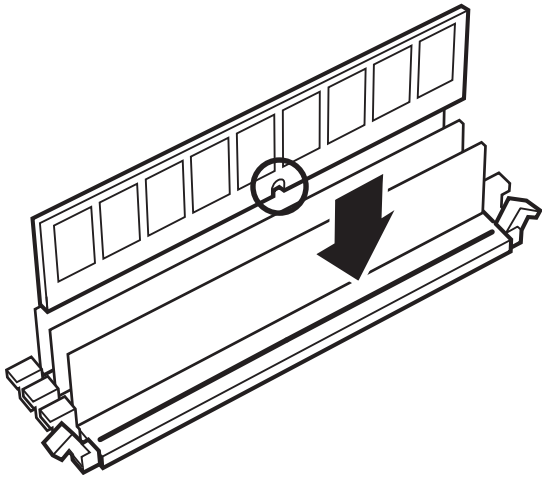

FIGURE 3-4 Positioning the Memory Over the Slot

5. **Press the memory down into the slot firmly until it clicks into place.**

   See FIGURE 3-5.

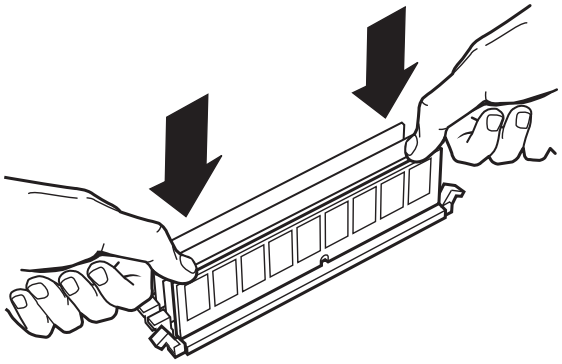

FIGURE 3-5 Pressing Memory Into the Slot

6. **Repeat Step 3 to Step 5 for each memory module to be installed.**

7. **Determine your next steps:**

   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, install the air duct and top cover, install the server into the rack, power on the server, and verify the installation.
     - See Section 5.1, "Installing the Top Cover" on page 5-1.
     - See Section 5.3, "Installing the Server Into the Rack" on page 5-4.
     - See Section 5.4, "Powering On the Server" on page 5-6.
     - See Section 5.5, "Verifying the Installation" on page 5-7.

3.3 Replacing the PCI Card

3.3.1 Removing the PCI Card

1. **Power off the server, remove the server from the rack, and remove the top cover and airduct.**

   - See Section 1.3, "Powering Off the Server" on page 1-3.
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.

2. **Locate the PCI card.**

   The PCI card is located at the left rear of the chassis.

3. **Loosen the PCI card thumbscrew at the chassis rear panel.**

   See FIGURE 3-6.

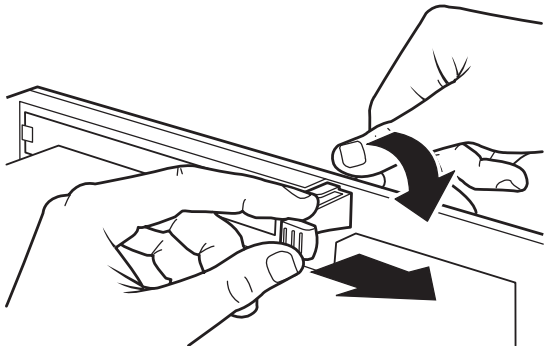

FIGURE 3-6 Loosening the PCI Card Thumbscrew

4. **Rotate the PCI card latch clockwise.**

   See FIGURE 3-6.

5. **Lift up on the PCI card retainer knob and slide the retainer forward.**

   See FIGURE 3-7.

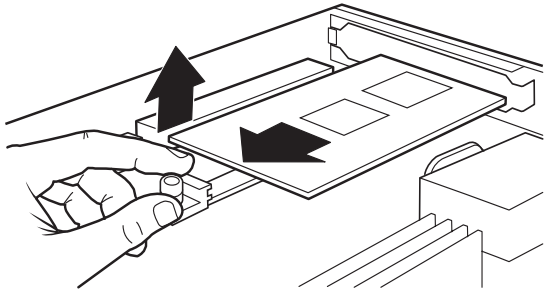

FIGURE 3-7 Sliding the PCI Card Retainer Forward

6. **Remove the PCI card from the slot.**

   See FIGURE 3-8.

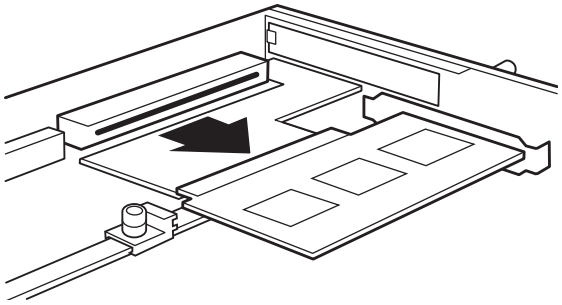

FIGURE 3-8 Removing the PCI Card From the Slot

7. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - If you are replacing the PCI card, go to Step 7 of Section 3.3.2, "Installing the PCI Card" on page 3-7
   - Otherwise, install the air duct and top cover, install the server into the rack, power on the server, and verify the installation.
     - See Section 5.1, "Installing the Top Cover" on page 5-1.
     - See Section 5.3, "Installing the Server Into the Rack" on page 5-4.
     - See Section 5.4, "Powering On the Server" on page 5-6.
     - See Section 5.5, "Verifying the Installation" on page 5-7.

3.3.2 Installing the PCI Card

1. **Power off the server, remove the server from the rack, and remove the top cover and airduct.**
   - See Section 1.3, "Powering Off the Server" on page 1-3.
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.
2. **Locate where the PCI card installs.**

   The PCI card installs at the left rear of the chassis.
3. **Loosen the PCI card thumbscrew at the chassis rear panel.**

   See FIGURE 3-9.

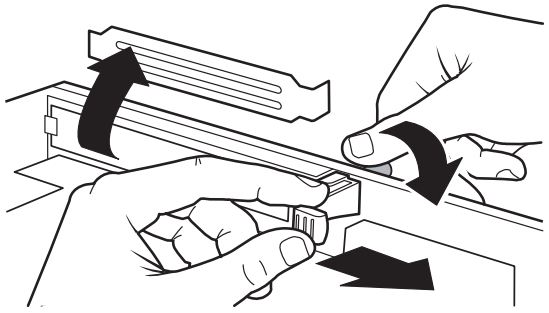

FIGURE 3-9 Loosening the PCI Card Thumbscrew

4. **Rotate the PCI card latch clockwise.**

   See FIGURE 3-9.

5. **If present, remove the filler panel from the chassis rear panel.**

   See FIGURE 3-9. Set it aside in a safe place.

6. **Lift up on the PCI card retainer knob and slide the retainer forward.**

   See FIGURE 3-10.

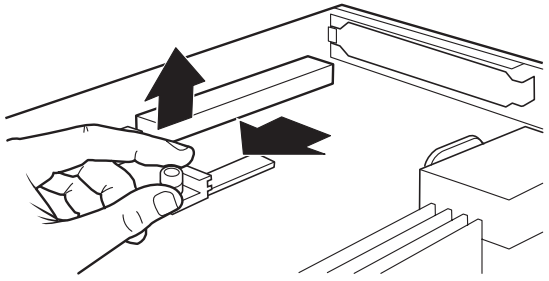

FIGURE 3-10 Sliding the PCI Card Retainer Forward

7. **Remove the PCI card from its shipping container and antistatic packaging.**

8. **Install the PCI card into the slot.**

   See FIGURE 3-11.

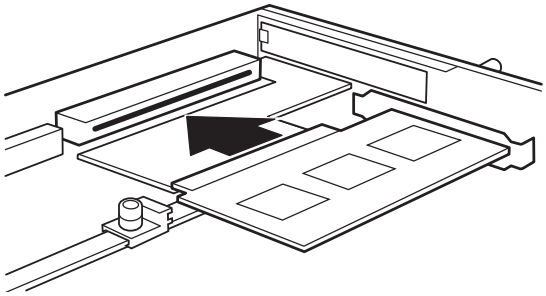

FIGURE 3-11 Installing the PCI Card Into the Slot

9. **Rotate the PCI card latch counter-clockwise so that it holds the PCI card in place.**

   See FIGURE 3-12.

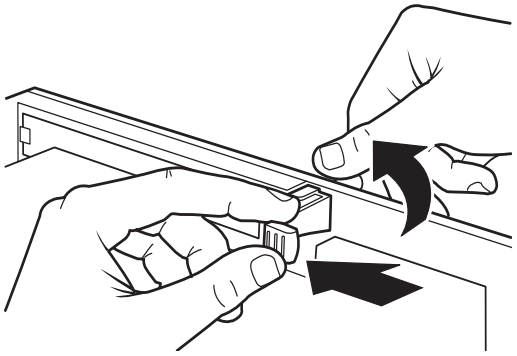

FIGURE 3-12 Securing the PCI Card

10. **Tighten the PCI card thumbscrew at the chassis rear panel.**

    See FIGURE 3-12.

11. **Lift up on the PCI card retainer knob and slide the retainer back to secure the PCI card.**

    See FIGURE 3-13.

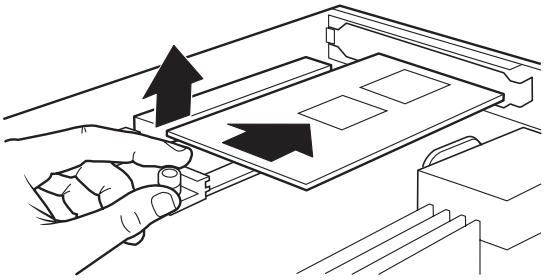

FIGURE 3-13 Sliding the PCI Card Retainer Back

12. **Determine your next steps:**
    - If you were directed here by another procedure, return to that procedure.
    - Otherwise, install the air duct and top cover, install the server into the rack, power on the server, and verify the installation.
      - See Section 5.1, "Installing the Top Cover" on page 5-1.
      - See Section 5.3, "Installing the Server Into the Rack" on page 5-4.
      - See Section 5.4, "Powering On the Server" on page 5-6.
      - See Section 5.5, "Verifying the Installation" on page 5-7.

3.4 Replacing the SAS Board

3.4.1 Removing the SAS Board

1. **Power off the server, remove the server from the rack, and remove the top cover and airduct.**
    - See Section 1.3, "Powering Off the Server" on page 1-3.
    - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
    - See Section 1.6, "Removing the Top Cover" on page 1-7.
2. **Locate the SAS board.**

    The SAS board is located under the PCI card at the left rear of the system board.
3. **Remove the PCI card.**

    See Section 3.3.1, "Removing the PCI Card" on page 3-5.
4. **Disconnect the two SAS cables from the SAS board.**

    See FIGURE 3-14.

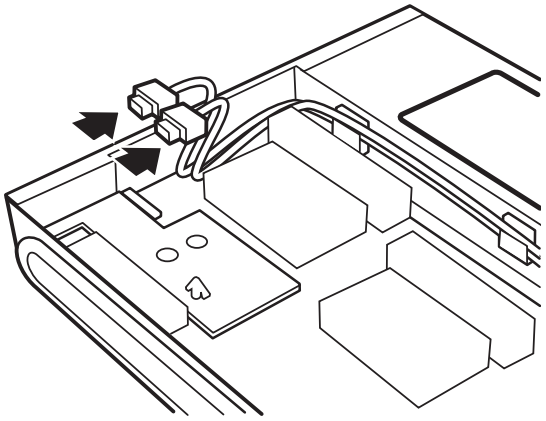

FIGURE 3-14 Disconnecting the SAS Cables

Note – Remember which color cable attaches to which connector.

---

5. **Lift the SAS cables out of the clamps on the side of the power supply.**
   See FIGURE 3-15.

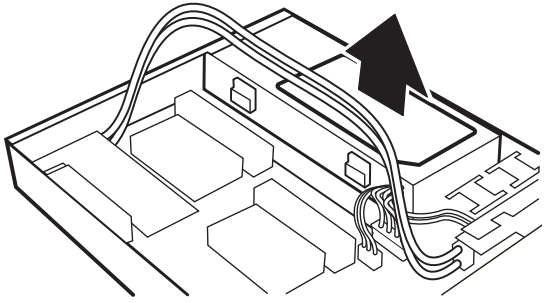

FIGURE 3-15 Lifting the SAS Cables Out of the Clamps

6. **Disconnect the two SAS cables from the SAS IF assembly** at J7.
   See FIGURE 3-16.

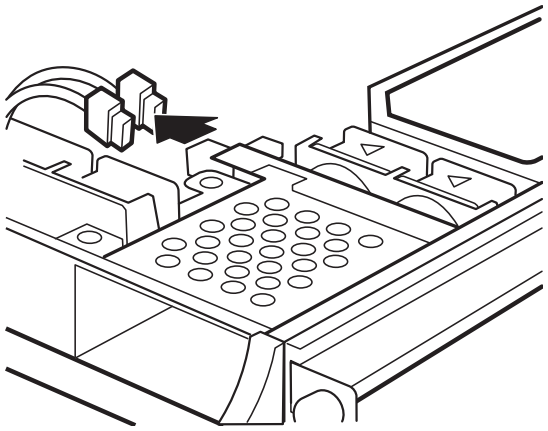

FIGURE 3-16 Disconnecting Cables From the SAS IF Assembly

Note – Remember which color cable attaches to which connector.

---

7. **Using a No. 2 Phillips screwdriver, remove the screw at the left rear of the SAS board.**

   See FIGURE 3-17.

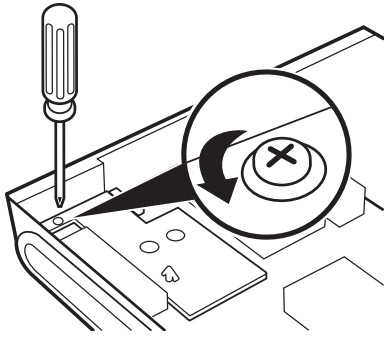

FIGURE 3-17 Removing the SAS Board Screw

8. **Pinch the plastic standoff at the front left of the SAS board, and lift up on the right front edge of the SAS board.**

   See FIGURE 3-18.

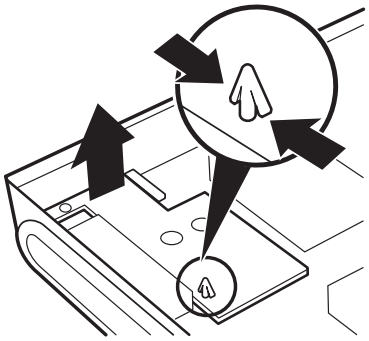

FIGURE 3-18 Removing the SAS Board

9. **Set the SAS board aside on an antistatic mat.**

Caution – Do not power on the server without the SAS board installed.

10. **Determine your next steps:**
    - If you were directed here by another procedure, return to that procedure.
    - Otherwise, replace the SAS board.

      Go to Step 4 of Section 3.4.2, "Installing the SAS Board" on page 3-13.

3.4.2 Installing the SAS Board

1. **Power off the server, remove the server from the rack, and remove the top cover and airduct.**
    - See Section 1.3, "Powering Off the Server" on page 1-3.
    - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
    - See Section 1.6, "Removing the Top Cover" on page 1-7.
2. **If installed, remove the PCI card.**

   See Section 3.3.1, "Removing the PCI Card" on page 3-5.
3. **Locate where the SAS board installs.**

   The SAS board installs under the PCI card at the left rear of the system board.
4. **Remove the replacement SAS board from its shipping container and antistatic packaging.**
5. **Align the holes of the SAS board over the plastic and metal standoffs.**

6. **Press the left edge of the SAS board down onto the plastic standoff.**

   See FIGURE 3-19.

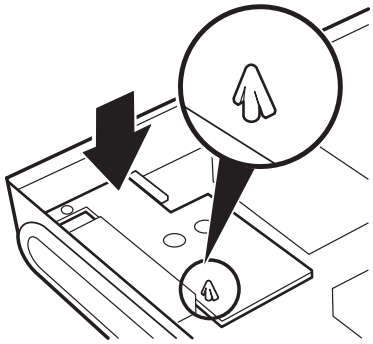

FIGURE 3-19 Installing the SAS Board

7. **Carefully lower the right edge of the SAS board down onto the system board connectors and press firmly.**

   See FIGURE 3-19.

8. **Using a No. 2 Phillips screwdriver, install the screw at the left rear of the SAS board to secure it in place.**

   See FIGURE 3-20.

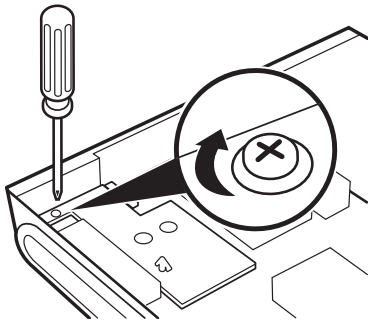

FIGURE 3-20 Installing the SAS Board Screw

9. **Remove the two SAS cables from the shipping container and connect them to the SAS IF assembly** at `J7`.

   See FIGURE 3-21.

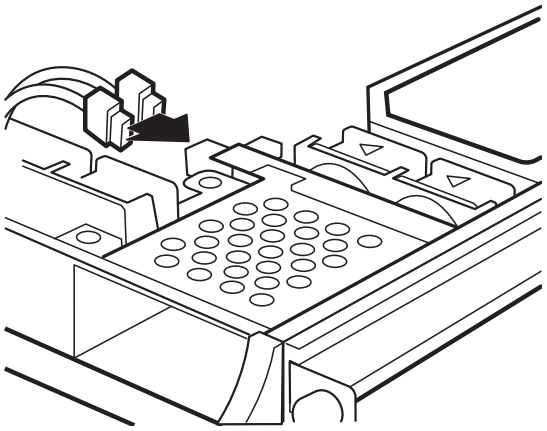

FIGURE 3-21 Connecting Cables to the SAS IF Assembly

10. **Press the SAS cables into the clamps on the side of the power supply.**

    See FIGURE 3-22.

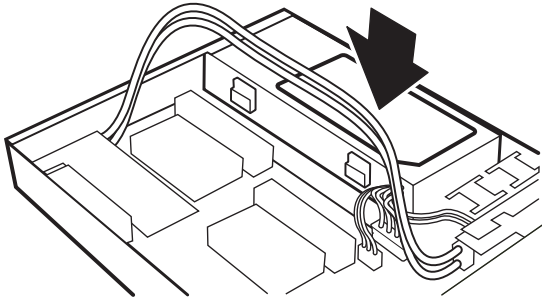

FIGURE 3-22 Pressing the SAS Cables In to the Clamps

11. **Connect the two SAS cables to the SAS board.**

    See FIGURE 3-23.

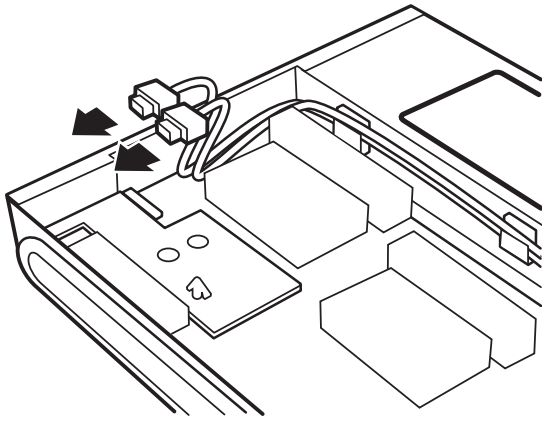

FIGURE 3-23 Connecting the SAS Cables

12. **Determine your next steps:**
    - If you were directed here by another procedure, return to that procedure.
    - Otherwise, install the air duct and top cover, install the server into the rack, power on the server, and verify the installation.
      - See Section 5.1, "Installing the Top Cover" on page 5-1.
      - See Section 5.3, "Installing the Server Into the Rack" on page 5-4.
      - See Section 5.4, "Powering On the Server" on page 5-6.
      - See Section 5.5, "Verifying the Installation" on page 5-7.

3.5 Replacing the Battery

The battery used on the Netra 210 server system board is a type CR2032 or compatible equivalent.

3.5.1 Removing the Battery

1. **Power off the server, remove the server from the rack, and remove the top cover and airduct.**
    - See Section 1.3, "Powering Off the Server" on page 1-3.
    - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
    - See Section 1.6, "Removing the Top Cover" on page 1-7.

2. **Locate the battery.**

   The battery is located at the left front of the system board.

3. **Press the tab at the side of the battery to release it.**

   See FIGURE 3-24.

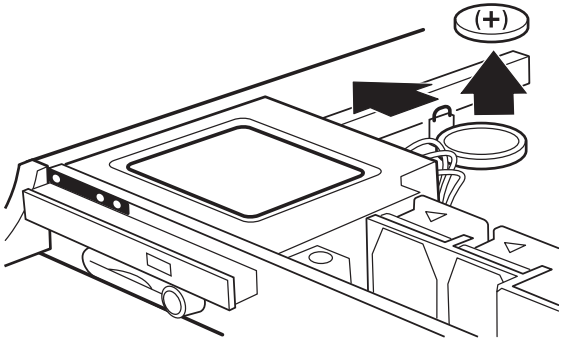

FIGURE 3-24 Releasing the Battery

4. **Lift the battery up and out of the socket.**

   See FIGURE 3-24.

Caution – Do not power on the server without the battery installed.

5. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, replace the battery.

     Go to Step 3 of Section 3.5.2, "Installing the Battery" on page 3-17.

3.5.2 Installing the Battery

1. **Remove the server from the rack and remove the top cover.**
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.

2. **Locate where the battery installs.**

   The battery installs at the left front of the system board.

3. **Remove the replacement battery from its shipping container and antistatic packaging.**

4. **Press the battery down into the socket, plus (+) side up.**

   See FIGURE 3-25.

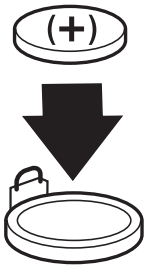

FIGURE 3-25 Installing the Battery

5. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, install the air duct and top cover, install the server into the rack, power on the server, and verify the installation.
     - See Section 5.1, "Installing the Top Cover" on page 5-1.
     - See Section 5.3, "Installing the Server Into the Rack" on page 5-4.
     - See Section 5.4, "Powering On the Server" on page 5-6.
     - See Section 5.5, "Verifying the Installation" on page 5-7.

3.6 Replacing the System Board

Note – Replacement of the system board is to be done by only Sun Service qualified personnel.

For this replacement procedure, you will also require the following tools:

- No. 1 Phillips screwdriver
- **Jeweller's flatblade screwdriver**
- 4.5 mm nut driver

3.6.1 Removing the System Board

1. **Power off the server, remove the server from the rack, open the bezel, and remove the top cover and airduct.**

- See Section 1.3, “Powering Off the Server” on page 1-3.
- See Section 1.4, “Removing the Server From the Rack” on page 1-4.
- See Section 1.5, “Opening the Bezel” on page 1-5.
- See Section 1.6, “Removing the Top Cover” on page 1-7.

2. **Locate the system board.**

   The system board is located in the chassis.

3. **Remove the DVD module or filler panel.**

   See Section 2.3.1, “Removirng the DVD Module” on page 2-7.

4. **Remove the SCC.**

   See Section 2.4.1, “Removing the SCC” on page 2-10.

5. **Remove the DVD assembly.**

   See Section 4.5.1, “Removing the DVD Assembly” on page 4-13.

6. **Remove the hard drives.**

   See Section 2.2.1, “Removing the Hard Drive” on page 2-2.

7. **Remove the SAS IF assembly.**

   See Section 4.6.1, “Removing the SAS IF Assembly” on page 4-18.

8. **Remove fans 4 and 5.**

   See Section 4.4.1, “Removing Fans 4 and 5” on page 4-10.

9. **Remove the power supply.**

   See Section 4.2.1, “Removing the Power Supply” on page 4-2.

10. **Remove the PCI card, if installed.**

    See Section 3.3.1, “Removing the PCI Card” on page 3-5.

11. **Remove the SAS board.**

    See Section 3.4.1, “Removing the SAS Board” on page 3-10.

12. **Remove the memory.**

    See Section 3.2.1, “Removing Memory” on page 3-2.

13. **Using a No. 2 screwdriver, remove the two screws that secure the PCI card retainer rail.**

    Set the rail aside.

14. **Using a No. 2 screwdriver, remove the screw that secures the SAS cables to the system board.**

    Set the cable aside.

15. **Disconnect any remaining cables from the system board.**

    For example, `F0`, `F1`, and `J16`.

16. **Use a jeweller's flatblade screwdriver to remove the two screws that secure the SCSI port to the chassis rear panel.**

    See FIGURE 3-26.

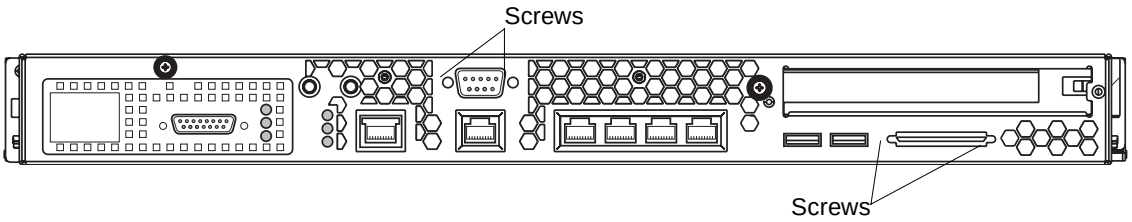

FIGURE 3-26 Removing the SCSI and Serial Port Screws

17. **Use a 4.5 mm nut driver to remove the two screws that secure the serial port to the chassis rear panel.**

    See FIGURE 3-26.

18. **Remove the remaining screws and standoffs that secure the system board to the chassis.**

    See FIGURE 3-27.

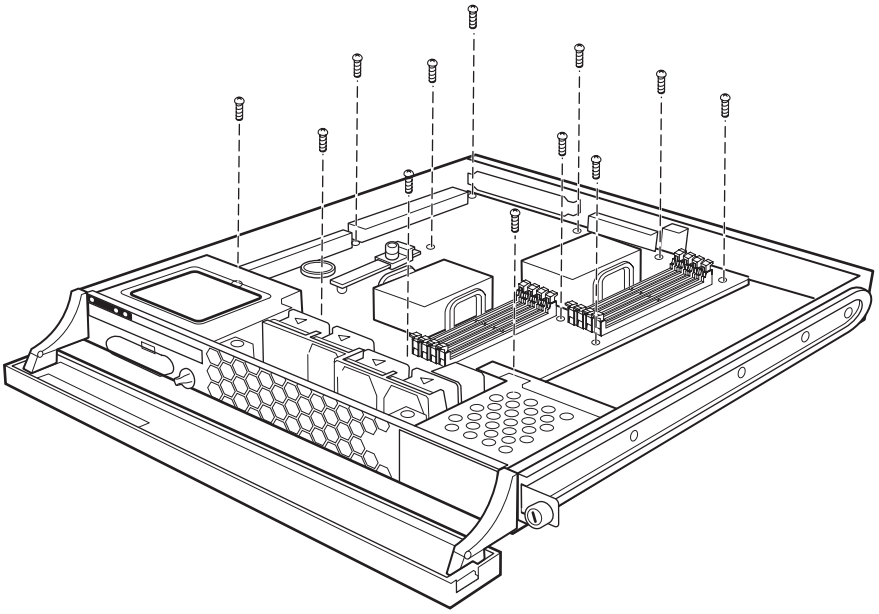

FIGURE 3-27 Removing the System Board Screws and Standoffs

19. **Slide the system board forward, and lift it from the chassis.**

    See FIGURE 3-28.

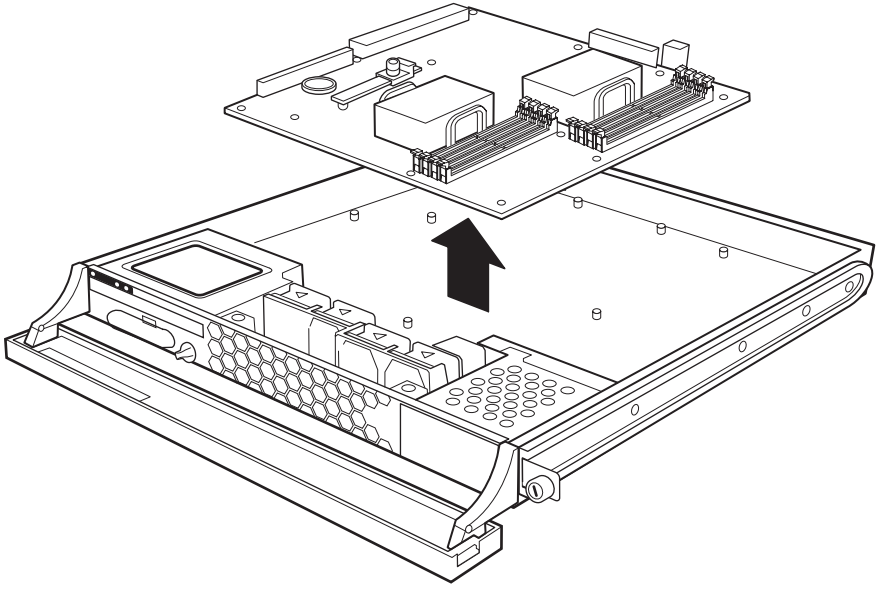

FIGURE 3-28 Removing the System Board

Caution – Do not power on the server without the system board installed.

20. **Replace the system board.**

    Go to Step 3 of Section 3.6.2, "Installing the System Board" on page 3-22.

3.6.2 Installing the System Board

1. **Remove the server from the rack, open the bezel, and remove the top cover and airduct.**
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.5, "Opening the Bezel" on page 1-5.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.

2. **Locate where the system board installs.**

   The system board installs in the chassis.

3. **Remove the replacement system board from its shipping container and antistatic packaging.**

4. **Locate the CPU heat sink assemblies on the system board.**

   See FIGURE 3-29. Depending on your system board FRU, you might have either one or two CPU heat sink assemblies.

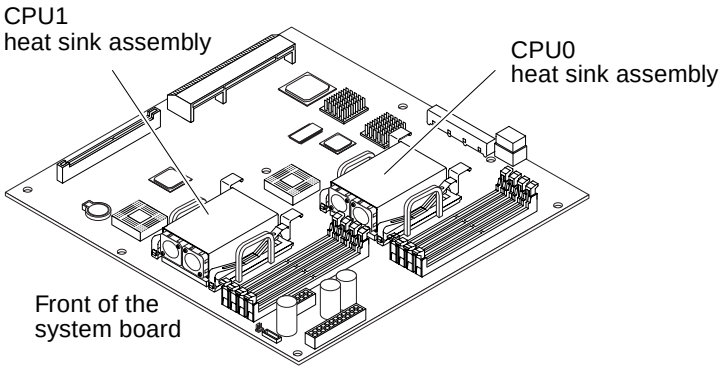

FIGURE 3-29 Location of the CPU Heat Sink Assemblies

5. **Detach the fan power cable connectors from the system board.**

   See FIGURE 3-30. Follow the fan power cables from the fans to the cable connectors on the board.

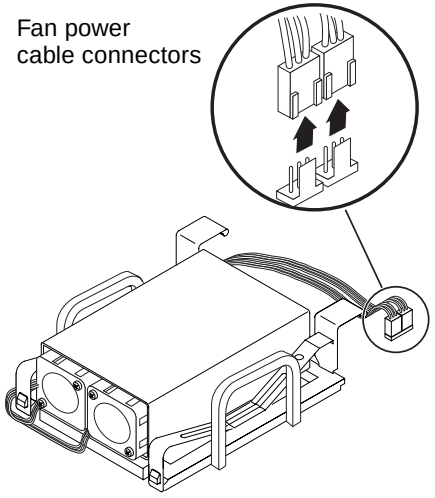

FIGURE 3-30 Detaching the Fan Power Cables

Note – The connectors for the CPU0 heat sink fans are labeled `P0 F0` and `P0 F1` on the system board, and the connectors for the CPU1 heat sink fans are labeled `P1 F0` and `P1 F1`.

6. **Unlock the heat sink from the CPU socket by first pressing down on the fasteners securing the heat sink assembly and then lifting them up.**

   See FIGURE 3-31. Repeat this step for both fasteners on the heat sink.

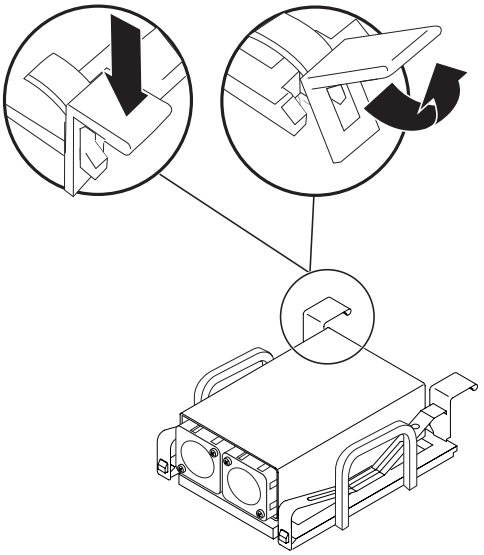

FIGURE 3-31 Unlocking the Heat Sink Fasteners

7. **Perform the appropriate step for your situation:**

   - If the heat sink is free after the heat sink fasteners are disconnected, carefully remove the heat sink. See FIGURE 3-32.

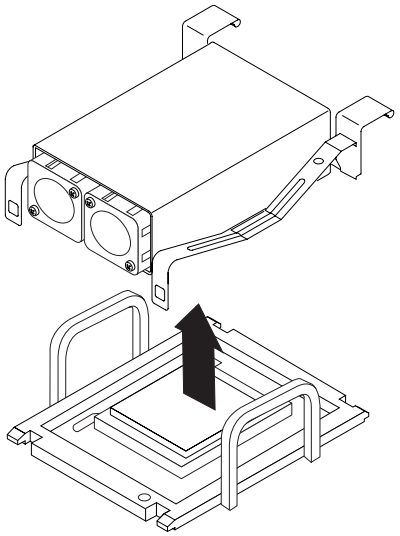

FIGURE 3-32 Lifting the Heat Sink from the CPU Socket

- If the heat sink is firmly attached to the CPU, twist the heat sink in a clockwise direction and then in a counter-clockwise direction. Repeat this twisting motion until the heat sink releases, and carefully remove it. See FIGURE 3-33.

FIGURE 3-33 Heat Sink With Clockwise Pointing Arrows

- If the heat sink is not free after repeated twisting, you must use the heat sink removal tool included in your kit to remove the heat sink. See Step 8.

8. **(Optional) Remove the heat sink using the heat sink removal tool.**

   a. **Fully insert the end of the tool between the heat sink base and the heat sink frame.**

      See FIGURE 3-34. The tool will stop travel and will be nearly flush with the heat sink handle.

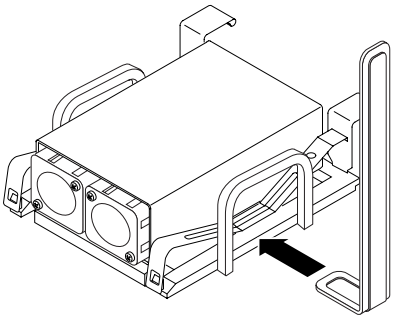

FIGURE 3-34 Inserting the Heat Sink Removal Tool

b. Gently wiggle the tool in both directions to release the heat sink from the CPU.

See FIGURE 3-35.

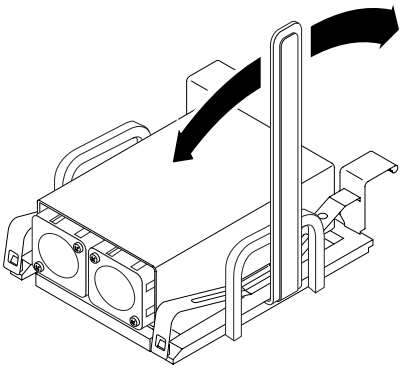

FIGURE 3-35 Using the Heat Sink Removal Tool

Caution – Do not attempt to remove the heat sink with one motion of the tool. This might break the CPU socket.

---

9. Once the heat sink is free, set it upside down on the work surface.

Note – Do not touch or contaminate the exposed thermal interface material on the heat sink or the top of the exposed CPU.

---

10. Using a No. 1 Phillips screwdriver, remove the screws securing the fans to the heat sink and remove the fans.

See FIGURE 3-36.

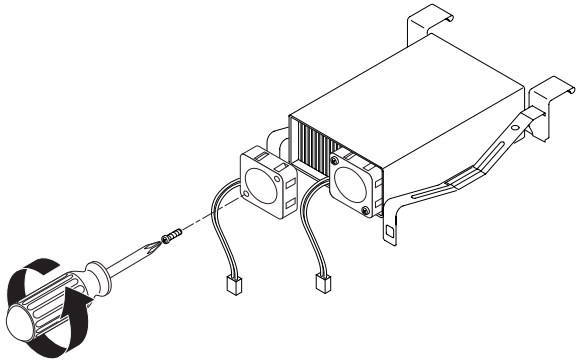

FIGURE 3-36 Removing the Heat Sink Fans

There are two screws securing each fan. Set the fans and screws aside after removing them from the heat sink.

11. **Carefully replace the heat sink on to the CPU and secure the heat sink by first attaching the rear clips and then pushing down the two front fasteners to the CPU socket.**

    See FIGURE 3-37.

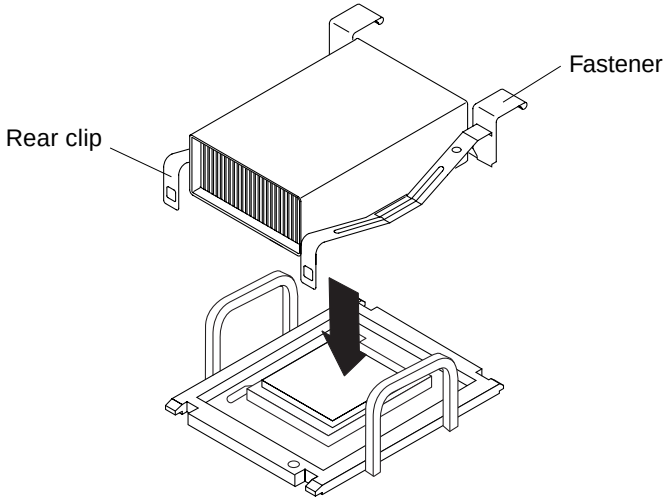

FIGURE 3-37 Replacing the Heat Sink on the CPU Socket

12. **If your system board has two CPU heat sink assemblies, repeat** Step 5 **through** Step 11 **for the second heat sink.**

13. **Configure jumper JP4 on the system board to bridge pins 5 and 6 only.**

See FIGURE 3-38

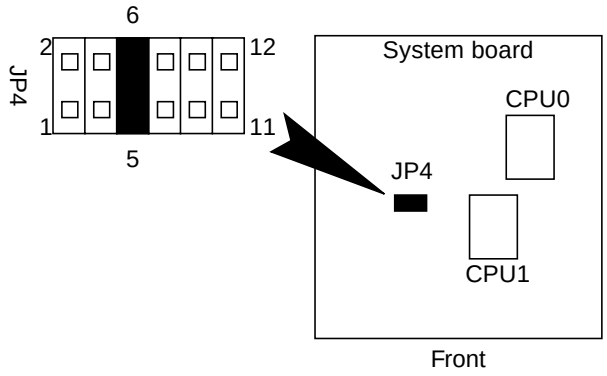

FIGURE 3-38 Setting for JP4

Caution – Setting JP4 incorrectly might prevent the Netra 210 server from booting, or might damage the system board.

14. **Position the system board over the chassis, lowering the rear of the system board to match with the openings on the rear panel.**

See FIGURE 3-39.

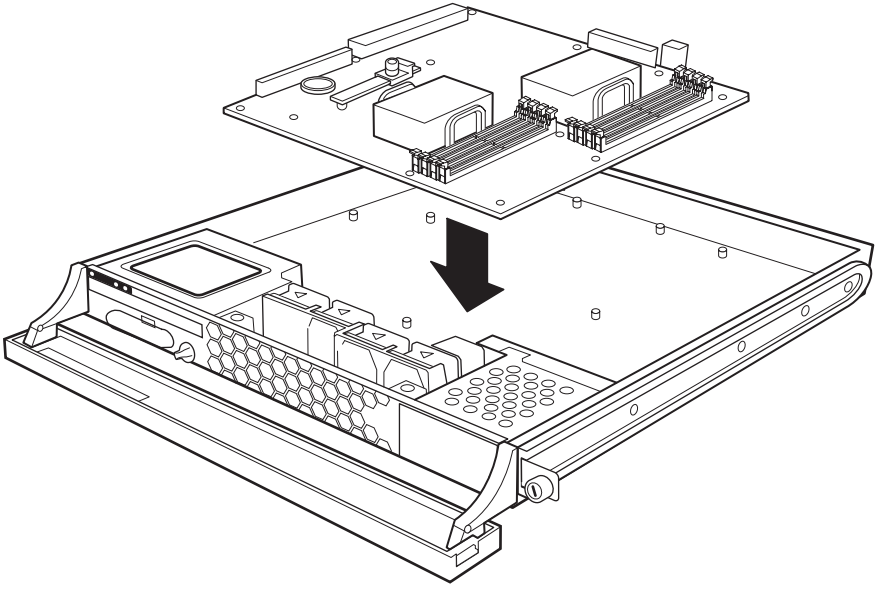

FIGURE 3-39 Installing the System Board

15. **Lower the front of the system board to the chassis, aligning the mounting holes.**

    See FIGURE 3-39.

16. **Use a jeweller's flatblade screwdriver to install the two screws that secure the SCSI port to the chassis rear panel.**

    See FIGURE 3-40.

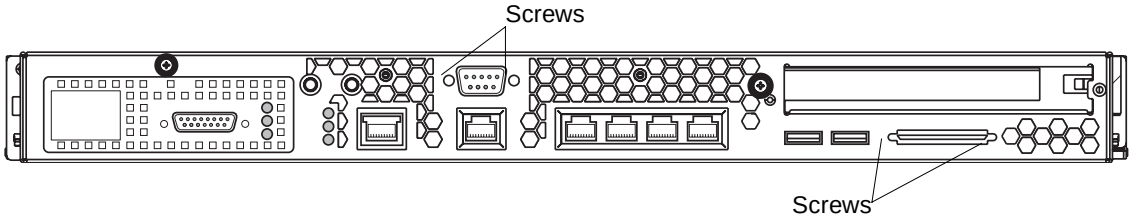

FIGURE 3-40 Installing the SCSI and Serial Port Screws

17. **Use a 4.5 mm nut driver to install the two screws that secure the serial port to the chassis rear panel.**

    See FIGURE 3-40.

18. **Install the 11 screws and standoffs that secure the system board to the chassis.**

    See FIGURE 3-41.

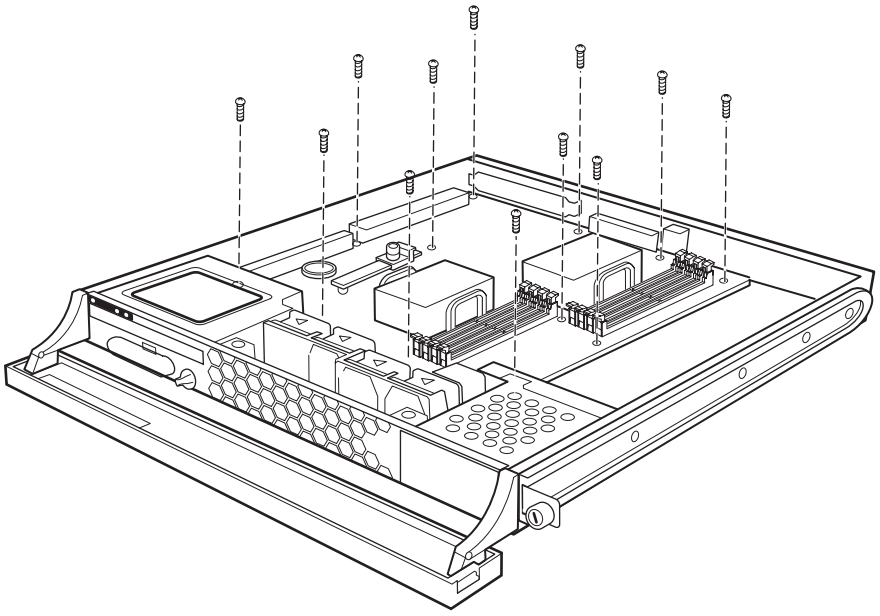

FIGURE 3-41 Installing the System Board Screws and Standoffs

19. **Connect any loose cables to the system board.**

    For example, `F0`, `F1`, and `J16`.

20. **Using a No. 2 screwdriver, install the screw that secures the SAS cables to the system board.**

21. **Using a No. 2 screwdriver, install the two screws that secure the PCI card retainer rail.**

22. **Install the memory.**

    See Section 3.2.2, "Installing Memory" on page 3-3.

23. **Install the SAS board.**

    See Section 3.4.2, "Installing the SAS Board" on page 3-13.

24. **Install the PCI card, if removed.**

    See Section 3.3.2, "Installing the PCI Card" on page 3-7.

25. **Install the power supply.**

    See Section 4.2.2, “Installing the Power Supply” on page 4-4.

26. **Install fans 4 and 5.**

    See Section 4.4.2, “Installing Fans 4 and 5” on page 4-11.

27. **Install the SAS IF assembly.**

    See Section 4.6.2, “Installing the SAS IF Assembly” on page 4-20.

28. **Install the hard drives.**

    See Section 2.2.2, “Installing the Hard Drive” on page 2-4.

29. **Install the DVD assembly.**

    See Section 4.5.2, “Installing the DVD Assembly” on page 4-15.

30. **Install the SCC.**

    See Section 2.4.2, “Installing the SCC” on page 2-11.

31. **Install the DVD module or a filler panel.**

    See Section 2.3.2, “Installing the DVD Module” on page 2-8.

32. **Install the air duct and top cover, close the bezel, install the server into the rack, power on the server, and verify the installation.**

    - See Section 5.1, “Installing the Top Cover” on page 5-1.
    - See Section 5.2, “Closing the Bezel” on page 5-3
    - See Section 5.3, “Installing the Server Into the Rack” on page 5-4.
    - See Section 5.4, “Powering On the Server” on page 5-6.
    - See Section 5.5, “Verifying the Installation” on page 5-7.

CHAPTER 4

Chassis Components

The chapter provides service procedures for chassis components. Topics include:

4.1 Electrostatic Discharge Safety

Electrostatic discharge (ESD) sensitive devices, such as memory, the system board, the PCI card, the SAS board, and the hard drives, require special handling.

Caution – The boards and hard drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or the work environment can destroy components. Do not touch the components along their connector edges.

Caution – Wear an antistatic wrist strap and use an antistatic mat when handling components such as drive assemblies, boards, or cards. When servicing or removing server components, attach an antistatic strap to your wrist and then to a metal area on the chassis.

4.2 Replacing the Power Supply

4.2.1 Removing the Power Supply

1. **Power off the server, remove the server from the rack, and remove the top cover and airduct.**
   - See Section 1.3, "Powering Off the Server" on page 1-3.
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.
2. **Locate the power supply.**

   The power supply is located at the right rear of the chassis.
3. **Remove fan 4 and 5.**

   See Section 4.4.1, "Removing Fans 4 and 5" on page 4-10.
4. **Lift the SAS cables out of the clamps on the side of the power supply.**

   See FIGURE 4-1.

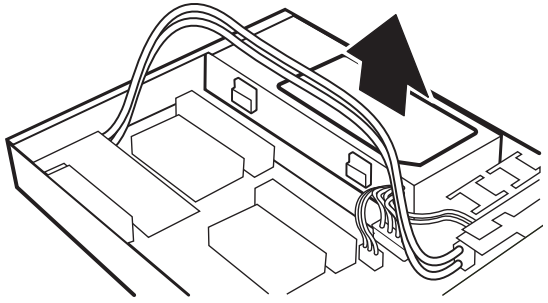

FIGURE 4-1 Lifting the SAS Cables Out of the Clamps

5. **Disconnect the power supply cables from the connectors in this order:**
   - `P2`, on the system board
   - `P3`, on the system board
   - `P1`, on the system board
   - `J501`, from the SAS IF assembly

   See FIGURE 4-2.

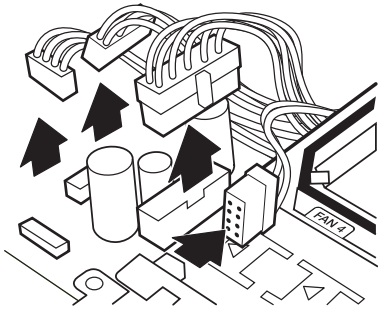

FIGURE 4-2 Disconnecting the Power Supply Cables

6. **Loosen the power supply thumbscrew at the chassis rear panel.**

   See FIGURE 4-3.

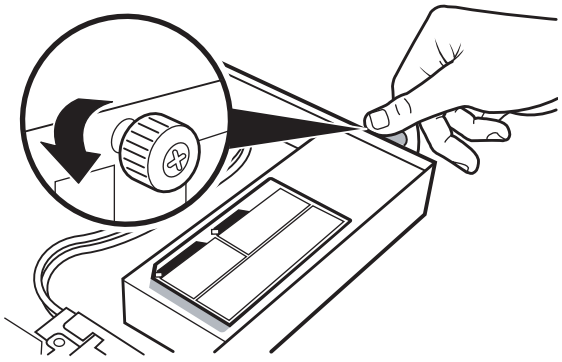

FIGURE 4-3 Loosening the Power Supply Thumbscrew

7. **Slide the power supply forward, and lift it out of the chassis.**

   See FIGURE 4-4.

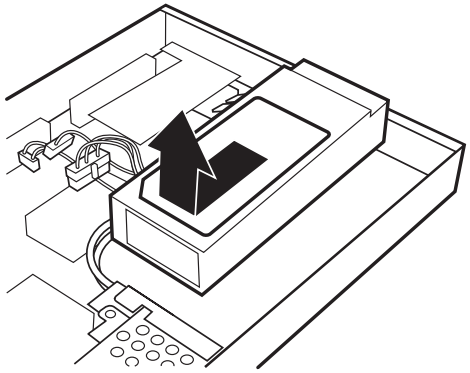

FIGURE 4-4 Removing the Power Supply

8. **Set the power supply aside on an antistatic mat.**
9. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, replace the power supply.

     Go to Step 3 of Section 4.2.2, "Installing the Power Supply" on page 4-4.

4.2.2 Installing the Power Supply

1. **Remove the server from the rack, and remove the top cover and airduct.**
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.
2. **Locate where the power supply installs.**

   The power supply installs at the right rear of the chassis.
3. **Remove the replacement power supply from its shipping container and antistatic packaging.**
4. **Lower the power supply into the chassis, ensuring that it locks with the mounting tabs.**

   See FIGURE 4-5.

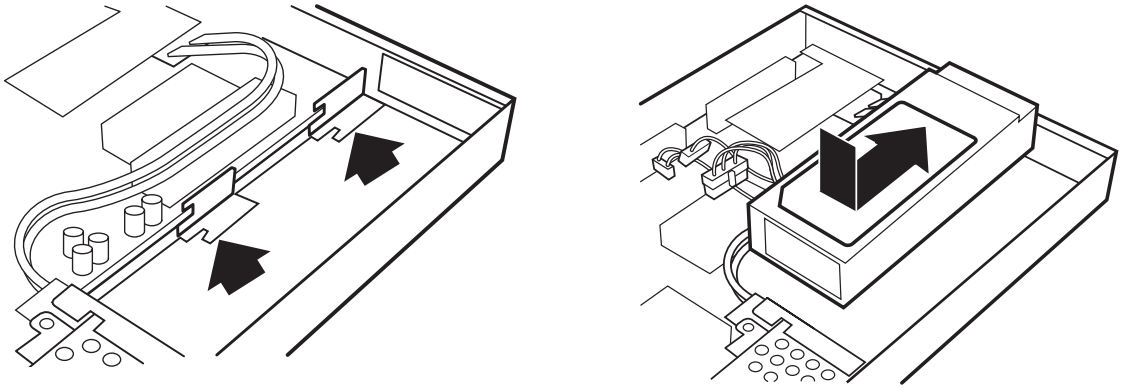

FIGURE 4-5 Installing the Power Supply

5. **Tighten the power supply thumbscrew at the chassis rear panel.**

   See FIGURE 4-6.

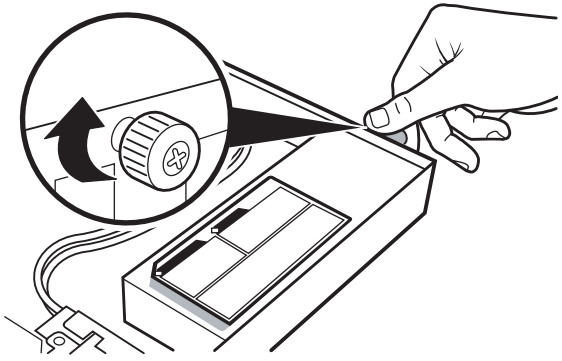

FIGURE 4-6 Tightening the Power Supply Thumbscrew

6. **Connect the power supply cables to the connectors in this order:**
   - `J501`, to the SAS IF assembly
   - `P1`, on the system board
   - `P3`, on the system board
   - `P2`, on the system board

   See FIGURE 4-7.

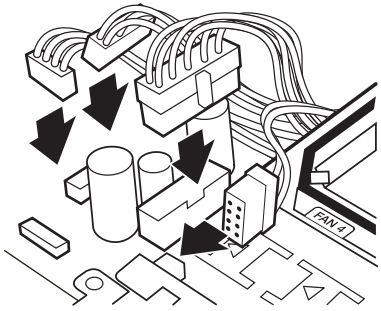

FIGURE 4-7 Connecting the Power Supply Cables

7. **Press the SAS cables into the clamps on the side of the power supply.**

   See FIGURE 4-8.

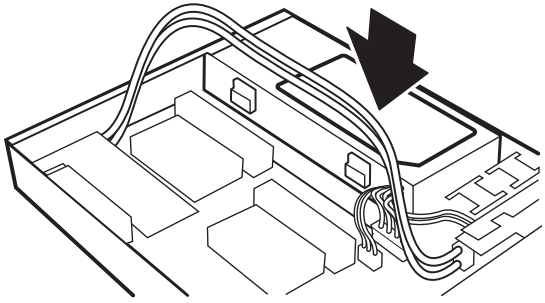

FIGURE 4-8 Pressing the SAS Cables Into the Clamps

Note – Press down on the power supply cables to aid when later installing the air duct.

---

8. **Install fan 4 and 5.**

   See Section 4.4.2, "Installing Fans 4 and 5" on page 4-11.

9. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, install the air duct and top cover, install the server into the rack, power on the server, and verify the installation.
     - See Section 5.1, "Installing the Top Cover" on page 5-1.
     - See Section 5.3, "Installing the Server Into the Rack" on page 5-4.
     - See Section 5.4, "Powering On the Server" on page 5-6.

- See Section 5.5, “Verifying the Installation” on page 5-7.

4.3 Replacing Fans 0-3

4.3.1 Removing Fans 0-3

1. **Power off the server, remove the server from the rack, and remove the top cover and airduct.**
   - See Section 1.3, “Powering Off the Server” on page 1-3.
   - See Section 1.4, “Removing the Server From the Rack” on page 1-4.
   - See Section 1.6, “Removing the Top Cover” on page 1-7.
2. **Locate the fans.**

   Fans 0-3 are located at the center front of the chassis.
3. **Disconnect the fan cable according to the following table.**

TABLE 4-1 Fans 0-3 and Their Connectors

Fan	Connector
Fan 0	J1, adapter board
Fan 1	J2, adapter board
Fan 2	F2, system board
Fan 3	F3, system board

See FIGURE 4-9.

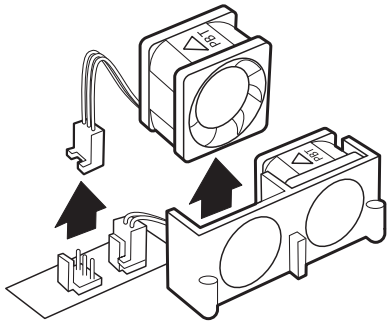

FIGURE 4-9 Removing Fans 0-3

Note – Remove the SAS cables from `J7` of the SAS IF board before removing the fan cable from `F3.`

---

4. **Lift the fan up and out of its bracket.**

   See FIGURE 4-9.

5. **Set the fan aside on an antistatic mat.**

6. **Repeat Step 3 to Step 5 for each fan to be removed.**

Caution – Do not power on the server without the fans installed.

---

7. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, replace the fans.

     Go to Step 3 of Section 4.3.2, "Installing Fans 0-3" on page 4-8.

4.3.2 Installing Fans 0-3

1. **Remove the server from the rack and remove the top cover.**
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.

2. **Locate where the fan installs.**

   Fans 0-3 install at the center front of the chassis.

3. **Remove the replacement fan from its shipping container and antistatic packaging.**

4. **Set the fan down into the bracket.**

   See FIGURE 4-10.

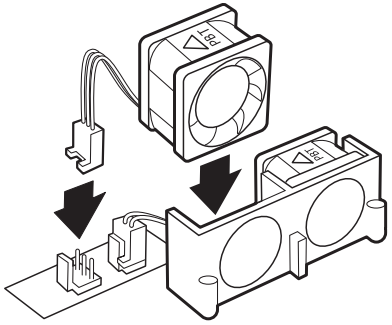

FIGURE 4-10 Installing Fans 0-3

5. **Connect the fan cable to its respective connector.**

   Use the following table.

TABLE 4-2 Fans 0-3 and Their Connectors

Fan	Connector
Fan0	`J1`, adapter board
Fan1	`J2`, adapter board
Fan2	`F2`, system board
Fan3	`F3`, system board

See FIGURE 4-10.

Note – Connect the SAS cables to `J7` of the SAS IF board after connecting the fan cable from `F3`.

---

6. **Repeat Step 3 to Step 5 for each fan being installed.**

7. **Determine your next steps:**

   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, install the air duct and top cover, install the server into the rack, power on the server, and verify the installation.
     - See Section 5.1, "Installing the Top Cover" on page 5-1.
     - See Section 5.3, "Installing the Server Into the Rack" on page 5-4.
     - See Section 5.4, "Powering On the Server" on page 5-6.

- See Section 5.5, "Verifying the Installation" on page 5-7.

4.4 Replacing Fans 4 and 5

4.4.1 Removing Fans 4 and 5

1. **Power off the server, remove the server from the rack, and remove the top cover.**
   - See Section 1.3, "Powering Off the Server" on page 1-3.
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.

Note – It is not necessary to remove the air duct.

---

2. **Locate the fans.**

   Fans 4 and 5 are located between the SAS IF assembly and the power supply at the right front of the chassis.

3. **Lift both fans up and out of the bracket.**

   See FIGURE 4-11.

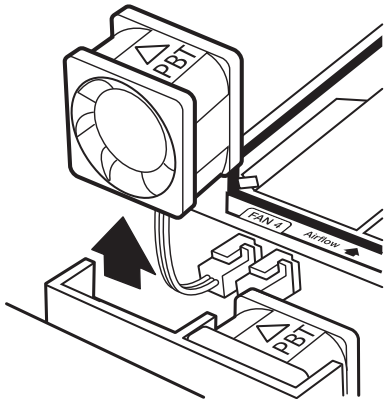

FIGURE 4-11 Removing Fans 4 and 5

4. **Disconnect the fan cable of the fan to be removed from the power supply:**
   - Fan 4 - J7

- Fan 5 - J5

See FIGURE 4-12.

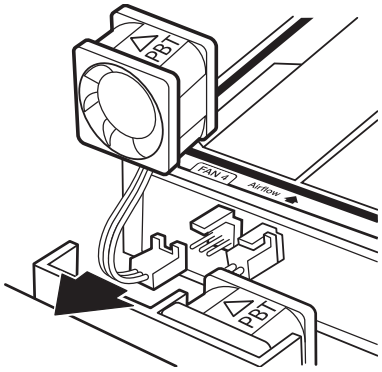

FIGURE 4-12 Disconnecting the Fan Cable

5. **Remove the fan and set it aside on an antistatic mat.**
6. **Repeat Step 4 and Step 5 for each fan to be removed.**

Caution – Do not power on the server without the fans installed.

7. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, replace the fans.

     Go to Step 4 of Section 4.4.2, "Installing Fans 4 and 5" on page 4-11.

4.4.2 Installing Fans 4 and 5

1. **Remove the server from the rack and remove the top cover.**
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.
2. **Locate where the fans install.**

   Fans 4 and 5 install between the SAS IF assembly and the power supply at the right front of the chassis.
3. **If either Fan 4 or Fan 5 is installed, lift it from the bracket.**
4. **Remove the replacement fan from its shipping container and antistatic packaging.**

5. **Connect the fan cable to its connector on the power supply.**
   - Fan 4 - J7
   - Fan 5 - J5

   See FIGURE 4-13.

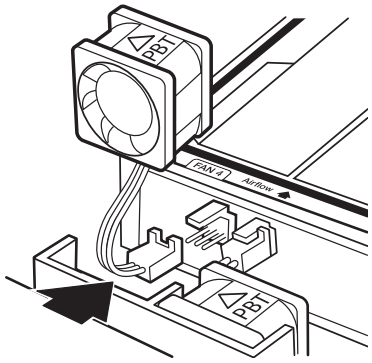

FIGURE 4-13 Connecting the Fan Cable

6. **Repeat Step 4 and Step 5 for each fan to be installed.**
7. **Set both fans down into the bracket.**

   See FIGURE 4-14.

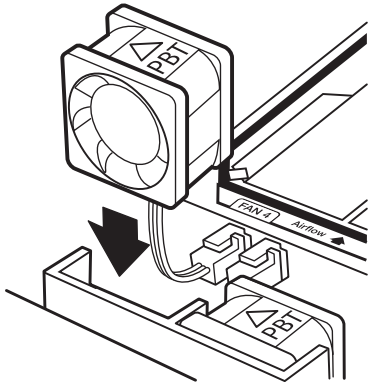

FIGURE 4-14 Installing Fans 4 and 5

8. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, install the top cover, install the server into the rack, power on the server, and verify the installation.

- See Section 5.1, “Installing the Top Cover” on page 5-1.
- See Section 5.3, “Installing the Server Into the Rack” on page 5-4.
- See Section 5.4, “Powering On the Server” on page 5-6.
- See Section 5.5, “Verifying the Installation” on page 5-7.

4.5 Replacing the DVD Assembly

4.5.1 Removing the DVD Assembly

1. **Power off the server, remove the server from the rack, open the bezel, and remove the top cover and airduct.**
   - See Section 1.3, “Powering Off the Server” on page 1-3.
   - See Section 1.4, “Removing the Server From the Rack” on page 1-4.
   - See Section 1.5, “Opening the Bezel” on page 1-5.
   - See Section 1.6, “Removing the Top Cover” on page 1-7.
2. **Locate the DVD assembly.**

   The DVD assembly is located at the left front of the chassis.
3. **Remove the DVD module.**

   See Section 2.3.1, “Removirng the DVD Module” on page 2-7.
4. **Remove the SCC.**

   See Section 2.4.1, “Removing the SCC” on page 2-10.
5. **Remove the rotary switch cap by pulling it straight off.**

   See FIGURE 4-15.

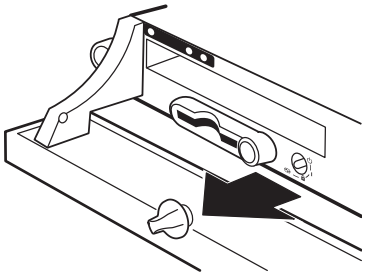

FIGURE 4-15 Removing the Rotary Switch Cap

6. **Disconnect the ribbon cable from `J501` and the signal cable from `J505` on the rear of the DVD assembly.**

   See FIGURE 4-16.

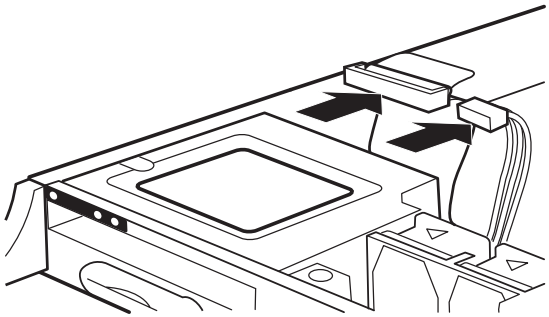

FIGURE 4-16 Disconnecting the Cables From the DVD Assembly

7. **Using a No. 2 Phillips screwdriver, loosen the screws that secure the DVD assembly in place.**

   See FIGURE 4-17.

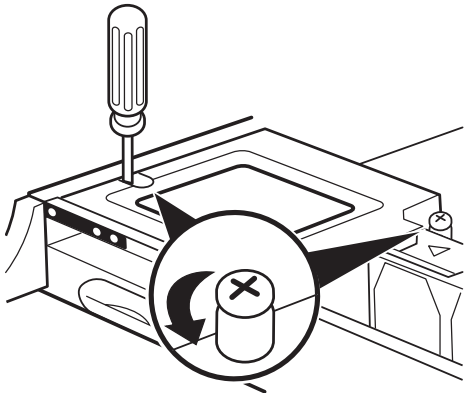

FIGURE 4-17 Loosening the DVD Assembly Screws

8. **Slide the DVD assembly back and lift it out of the chassis.**

   See FIGURE 4-18.

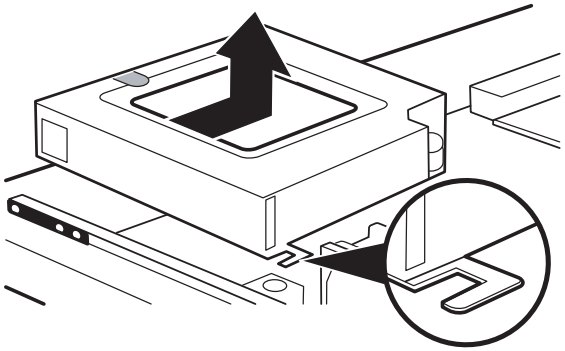

FIGURE 4-18 Removing the DVD Assembly From the Chassis

Caution – Do not power on the server without the DVD assembly installed.

9. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, replace the DVD assembly.

     Go to Step 3 of Section 4.5.2, "Installing the DVD Assembly" on page 4-15.

4.5.2 Installing the DVD Assembly

1. **Remove the server from the rack, open the bezel, and remove the top cover and airduct.**
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.5, "Opening the Bezel" on page 1-5.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.
2. **Locate where the DVD assembly installs.**

   The DVD assembly installs at the left front of the chassis.
3. **Remove the replacement DVD assembly from its shipping container and antistatic packaging.**
4. **Position the DVD assembly over the chassis, and lower the front end down into the chassis front panel.**

   See FIGURE 4-19.

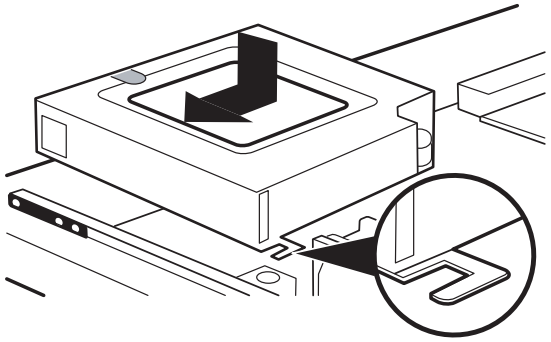

FIGURE 4-19 Installing the DVD Assembly Into the Chassis

5. **Lower the rear end down and slide the DVD assembly forward.**

   See FIGURE 4-19.

6. **Using the No. 2 Phillips screwdriver, tighten the two screws to secure the DVD assembly to the chassis.**

   See FIGURE 4-20.

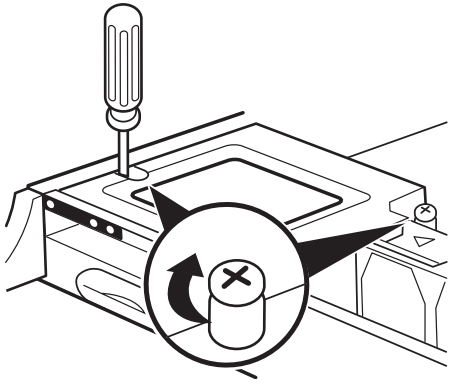

FIGURE 4-20 Tightening the DVD Assembly Screws

7. **Connect the ribbon cable to `J501` and the cable to `J505`.**

   See FIGURE 4-21.

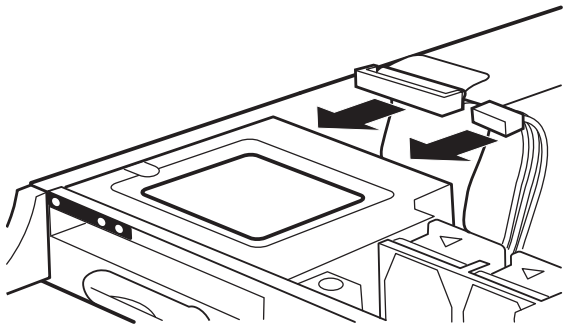

FIGURE 4-21 Connecting the Cables to the DVD Assembly

8. **Install the rotary switch cap by aligning it with the flat spot of the shaft and then pressing it straight on.**

   See FIGURE 4-22.

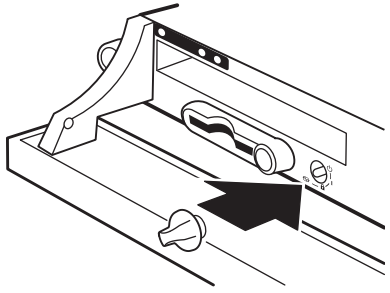

FIGURE 4-22 Installing the Rotary Switch Cap

9. **Install the SCC.**

   See Section 2.4.2, "Installing the SCC" on page 2-11.

10. **Install the DVD module.**

    See Section 2.3.2, "Installing the DVD Module" on page 2-8.

11. **Determine your next steps:**

    - If you were directed here by another procedure, return to that procedure.
    - Otherwise, install the air duct and top cover, close the bezel, install the server into the rack, power on the server, and verify the installation.
      - See Section 5.1, "Installing the Top Cover" on page 5-1.
      - See Section 5.2, "Closing the Bezel" on page 5-3
      - See Section 5.3, "Installing the Server Into the Rack" on page 5-4.
      - See Section 5.4, "Powering On the Server" on page 5-6.

- See Section 5.5, "Verifying the Installation" on page 5-7.

4.6 Replacing the SAS IF Assembly

4.6.1 Removing the SAS IF Assembly

1. **Power off the server, remove the server from the rack, open the bezel, and remove the top cover and airduct.**
   - See Section 1.3, "Powering Off the Server" on page 1-3.
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.5, "Opening the Bezel" on page 1-5.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.
2. **Locate the SAS IF assembly.**

   The SAS IF assembly is located at the right front of the chassis.
3. **Remove the hard drives.**

   See Section 2.2.1, "Removing the Hard Drive" on page 2-2.
4. **Disconnect the cables from the SAS IF assembly in this order:**
   - The cable from the DVD assembly at `J5`
   - The cable from the power supply at `J501`
   - The two SAS cables at `J7`

   See FIGURE 4-23.

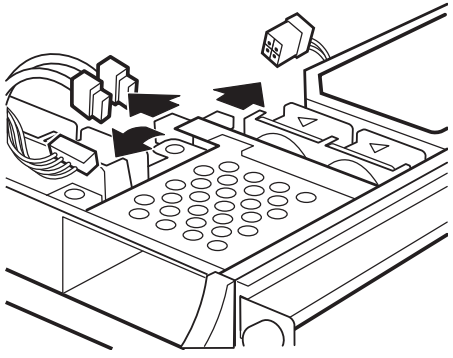

FIGURE 4-23 Disconnecting Cables From the SAS IF Assembly

5. **Using a No. 2 Phillips screwdriver, loosen the two screws that secure the SAS IF assembly to the chassis.**

   See FIGURE 4-24.

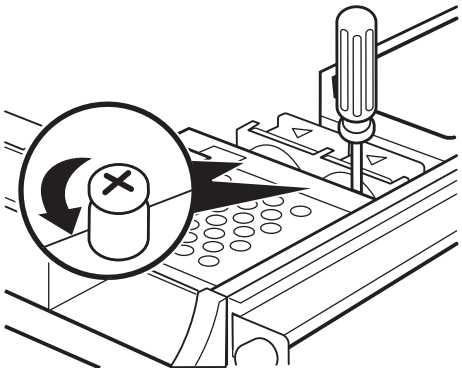

FIGURE 4-24 Loosening the SAS IF Assembly Screws

6. **Lift the SAS IF assembly straight up and out of the chassis.**

   See FIGURE 4-25.

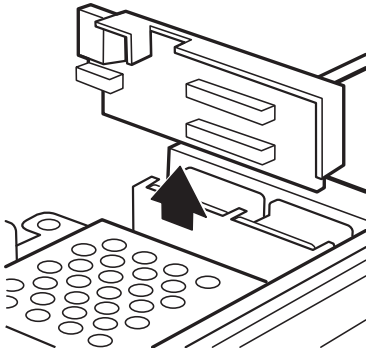

FIGURE 4-25 Lifting the SAS IF Assembly From the Chassis

7. **Set the SAS IF assembly aside on an antistatic mat.**

Caution – Do not power on the server without the SAS IF assembly installed.

8. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.

- Otherwise, replace the SAS IF assembly.

  Go to Step 3 of Section 4.6.2, "Installing the SAS IF Assembly" on page 4-20.

4.6.2 Installing the SAS IF Assembly

1. **Remove the server from the rack, open the bezel, and remove the top cover and airduct.**
   - See Section 1.4, "Removing the Server From the Rack" on page 1-4.
   - See Section 1.5, "Opening the Bezel" on page 1-5.
   - See Section 1.6, "Removing the Top Cover" on page 1-7.
2. **Locate where the SAS IF assembly installs.**

   The SAS IF assembly installs at the right front of the chassis.
3. **Remove the replacement SAS IF assembly from its shipping container and antistatic packaging.**
4. **Lower the SAS IF assembly into position.**

   See FIGURE 4-26.

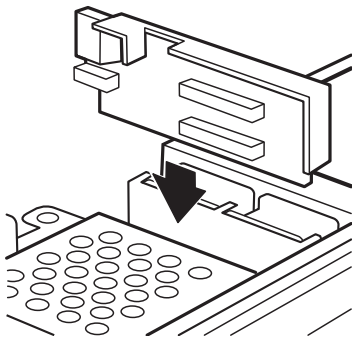

FIGURE 4-26 Lowering the SAS IF Assembly into the Chassis

5. **Using the No. 2 Phillips screw driver, tighten the two screws to secure the SAS IF assembly to the chassis.**

   See FIGURE 4-27.

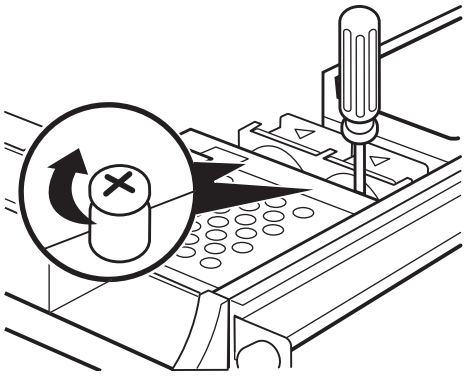

FIGURE 4-27 Tightening the SAS IF Assembly Screws

6. **Connect the cables to the SAS IF assembly in this order:**
   - The two SAS cables at `J7`
   - The cable from the power supply at `J501`
   - The cable from the DVD assembly at `J5`

   See FIGURE 4-28.

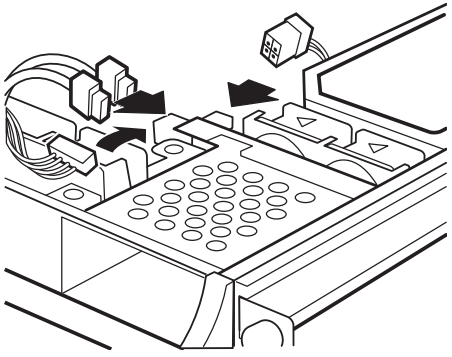

FIGURE 4-28 Connecting Cables to the SAS IF Assembly

7. **Install the hard drives.**

   See Section 2.2.2, "Installing the Hard Drive" on page 2-4.

8. **Determine your next steps:**
   - If you were directed here by another procedure, return to that procedure.
   - Otherwise, install the air duct and top cover, close the bezel, install the server into the rack, power on the server, and verify the installation.
     - See Section 5.1, "Installing the Top Cover" on page 5-1.

- See Section 5.2, “Closing the Bezel” on page 5-3
- See Section 5.3, “Installing the Server Into the Rack” on page 5-4.
- See Section 5.4, “Powering On the Server” on page 5-6.
- See Section 5.5, “Verifying the Installation” on page 5-7.

4.7 Replacing the Bezel

4.7.1 Removing the Bezel

1. **Open the bezel.**

   See Section 1.5, “Opening the Bezel” on page 1-5.

2. **Using a No. 2 Phillips screwdriver, remove the two screws that secure the bezel hinge to the chassis.**

   See FIGURE 4-29.

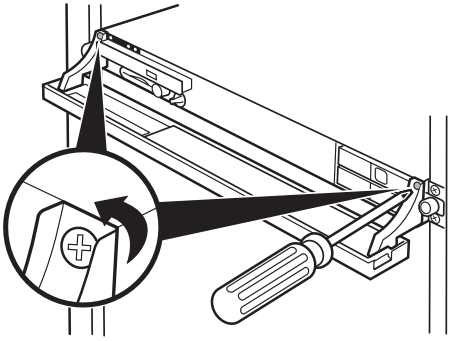

FIGURE 4-29 Removing the Bezel Hinge Screws

3. **Grasp the bezel at the hinges, lifting it straight up and then forward, and unhooking it from the front of the chassis.**

   See FIGURE 4-30.

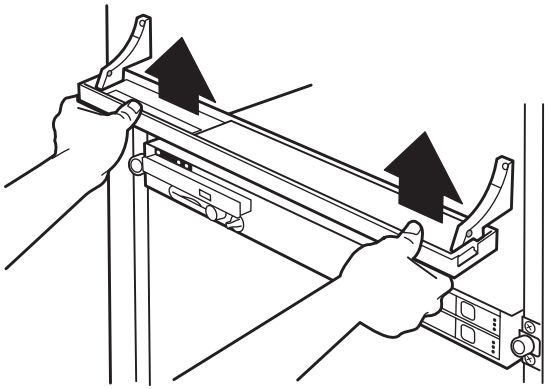

FIGURE 4-30 Lifting the Bezel off the Chassis

4. **Set the bezel and screws aside in a safe place.**

4.7.2 Installing the Bezel

1. **Identify the mounting tabs of the bezel hinges.**

   See FIGURE 4-31.

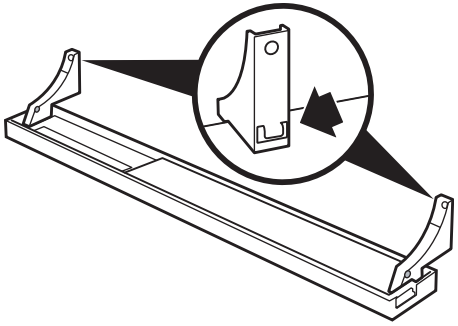

FIGURE 4-31 Identifying the Mounting Tabs of the Bezel Hinges

2. **Grasp the bezel by the hinges, and place the hinges against the front of the chassis.**
3. **Slide the hinges down until the mounting tabs seat properly.**

   See FIGURE 4-32.

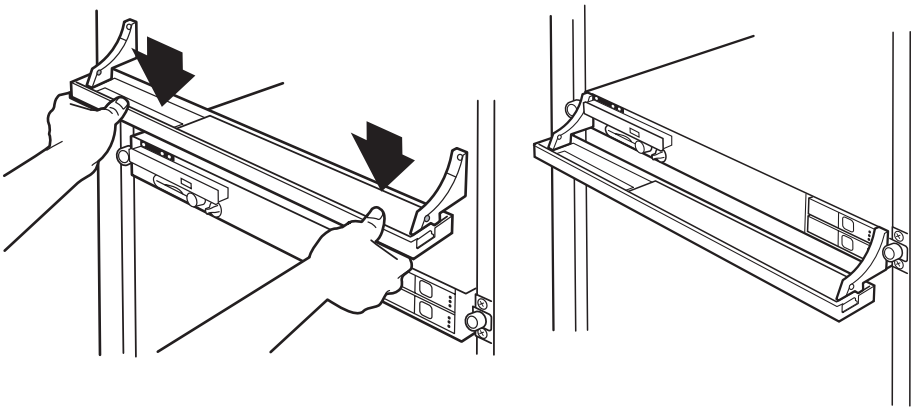

FIGURE 4-32 Sliding the Hinges Down and Hooking Tabs

4. **Using the No. 2 Phillips screwdriver, secure the bezel hinges to the chassis with the two screws.**

   See FIGURE 4-33.

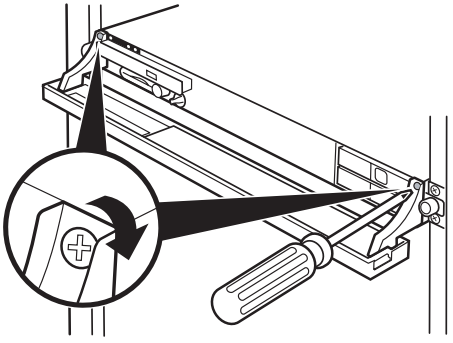

FIGURE 4-33 Installing the Bezel Hinge Screws

5. **Close the bezel.**

   See Section 5.2, "Closing the Bezel" on page 5-3.

CHAPTER 5

Finishing Up

This chapter discusses tasks performed to finish the service procedures. Topics include:

5.1 Installing the Top Cover

1. **Locate where the air duct is to be installed.**

   Facing the bezel, the air duct is over the center of the system board and covers the CPUs and memory.

Caution – The server might overheat is the air duct is not installed.

2. **Position the air duct over the CPUs and memory, with the rear edge of the duct under the lip at the chassis rear panel.**

3. **Lower the air duct so that the handles of the CPU brackets just enter the slots in the air duct.**

   See FIGURE 5-1.

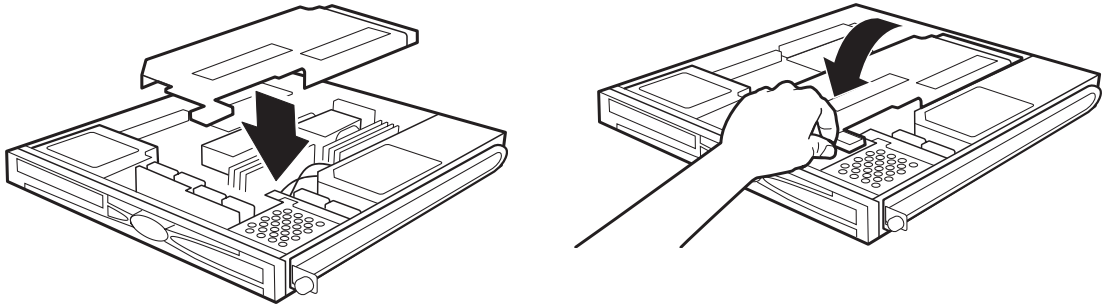

FIGURE 5-1 Installing the Air Duct

4. **Remove the antistatic wrist strap from the chassis and your wrist.**
5. **Position the top cover over the chassis, with the cover screws and D-ring toward the bezel.**
6. **Slide the rear end of the top cover under the lip at the chassis rear panel and lower the top cover.**

   See FIGURE 5-2.

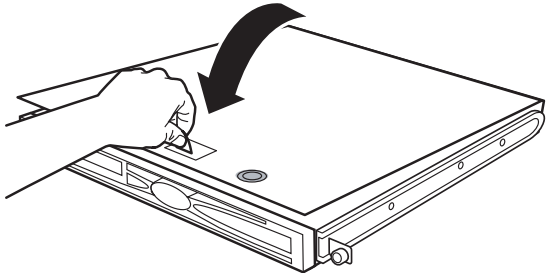

FIGURE 5-2 Lowering the Top Cover

7. **Using the No. 2 Phillips screwdriver, rotate each cover screw 90 degrees clockwise to secure the top cover.**

   See FIGURE 5-3.

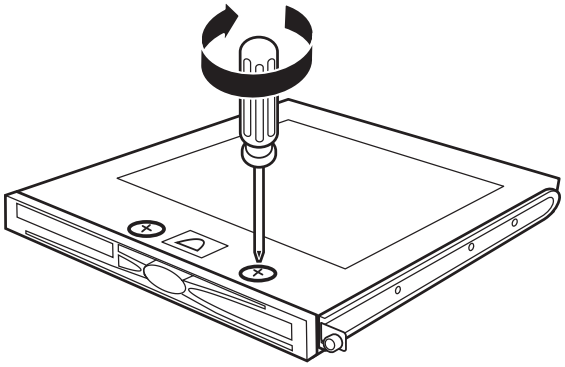

FIGURE 5-3 Securing the Top Cover

8. **Return to the procedure that directed you here.**

5.2 Closing the Bezel

1. **Locate the bezel.**

   The bezel is the plastic cover at the front of the server.

2. **Grasp the two grips at the right and left sides of the bezel.**

   See FIGURE 5-4.

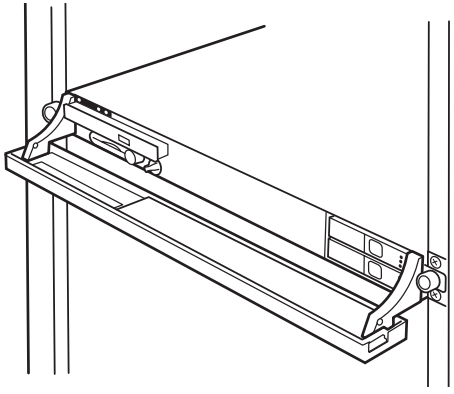

FIGURE 5-4 Holding the Bezel

3. **Gently lift the grips up and push them toward the chassis at the same time.**

   See FIGURE 5-5.

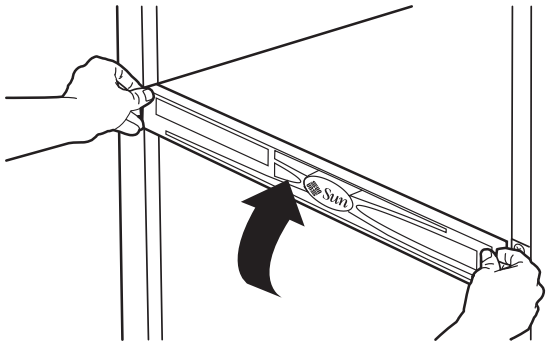

FIGURE 5-5 Closing the Bezel

The bezel folds upward.

Note – If the bezel catches while folding, stop. Gently lower the side of the bezel that is higher to be parallel with the opposite side. Then try to fold the bezel again.

---

4. **Determine your next steps:**
   - If the server is powered off, power it on. See Section 5.4, "Powering On the Server" on page 5-6.
   - Otherwise, return to that procedure that directed you here.

5.3 Installing the Server Into the Rack

The following instructions are for replacing the server into a generic rack and might include steps that are not necessary to install the server into your rack.

Note – If you are installing the server into the rack for the first time, see the Netra 210 Server Setting Up Guide, 817-2752.

---

1. **Ensure that the top cover is securely in place.**

   See Section 5.1, "Installing the Top Cover" on page 5-1.

2. **Ensure that the bezel is properly closed.**

   See Section 5.2, “Closing the Bezel” on page 5-3.

3. **Lift the server to its position on the rack and begin to slide it in.**

   See FIGURE 5-6.

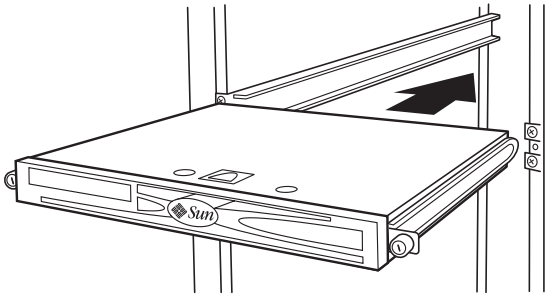

FIGURE 5-6 Beginning to Slide the Server In

4. **Continue to slide the server back into the rack.**

5. **When fully seated, secure the server in place by tightening the screws at both sides of the bezel.**

   See FIGURE 5-7.

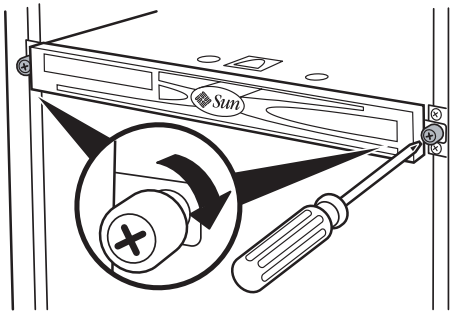

FIGURE 5-7 Securing the Server

6. **Reconnect the following cables to the rear panel of the server:**

   - Network cables
   - ALOM cables
   - Serial cables
   - USB cables
   - PCI connector cables
   - SCSI cables

- Alarm cables
- Power cables

7. **Power on the server.**

   See Section 5.4, “Powering On the Server” on page 5-6.

5.4 Powering On the Server

After servicing the server, power it back on.

1. **Ensure that the server is properly installed back into the rack.**

   See Section 5.3, “Installing the Server Into the Rack” on page 5-4.

2. **Open the bezel.**

   See Section 1.5, “Opening the Bezel” on page 1-5.

3. **Press and release the power button.**

   See FIGURE 5-8.

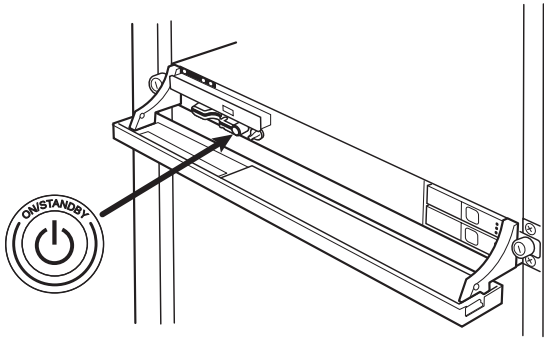

FIGURE 5-8 Powering On the Server

4. **Close the bezel.**

   See Section 5.2, “Closing the Bezel” on page 5-3.

5. **If components were installed, verify their installation.**

   See Section 5.5, “Verifying the Installation” on page 5-7.

5.5 Verifying the Installation

Use TABLE 5-1 to help verify the installation of the replacement part.

TABLE 5-1 Verifying the Installation

	SITUATION / TASK / QUESTION	YES? Go to:	NO? Go to:
	Suspected component has been replaced.		
Step 1	Power on the server and boot the system.		
Step 2	Is the detrimental behavior still observed?	Step 4	Step 3
Step 3	Is the replacement part functioning properly?	Step 7	Step 4
Step 4	Are other causes of failure possible?	Step 6	Step 5
Step 5	Check replacement part installation and functionality. Replace if necessary. Return to Step 1		
Step 6	Troubleshoot the server operation. See the *Netra 210 Server System Administration Guide*, 819-2749.		
Step 7	Done		

APPENDIX **A**

Specifications

This appendix provides the Netra 210 server specifications. This appendix is divided into the following sections:

A.1 Physical Specifications

TABLE A-1 Physical Specifications of the Netra 210 Server

Netra 210 Server Dimensions	Measurements
Height	1 rack unit, 1.72 inches (43.6 mm)
Width without bezel	16.73 inches (425 mm)
Width with bezel	17.4 inches (442 mm)
Depth from front bezel to system board connectors	19.4 inches (493 mm)
Depth to rear of power supply unit handle	20.06 inches (509.5 mm)
Weight (approximate) with full configuration (not including PCI cards)	21.6 pounds (9.8 kg)

A.2 Environmental Requirements

You can operate and store the server safely in the conditions detailed in TABLE A-2.

TABLE A-2 Operating and Storage Specifications

Specification	Operating	Storage
Ambient temperature	41˚F to 104˚F (5˚C to 40˚C) Short term - 23˚F to 131˚F (-5˚C to 55˚C)	-40˚F to 158˚F (-40˚C to 70˚C)
Relative humidity	5% to 85% RH noncondensing, 80˚F (27˚C) max wet bulb	5% to 93% RH noncondensing, 100˚F (38˚C) max wet bulb
Altitude	-1300 ft up to 13100 ft (-400 m up to 4000 m)	-1300 ft up to 39000 ft (-400 m up to 12000 m)

A.3 Acoustic Noise Emissions

The acoustic noise emissions on a Netra 210 server are as follows:

- Operating acoustic noise is 7.0 B (LWAd (1B=10dB))
- Idling acoustic noise is 7.0 B (LWAd (1B=10dB))

Declared noise emissions are in accordance with ISO 9296 standards.

A.4 Electrical Specifications

TABLE A-3 Power Requirements

Electrical Element	DC Version Requirement	AC Version Requirement
Voltage (nominal)	-48 VDC, -60 VDC	100 to 240 VAC
Input current (maximum)	10 A	4.9 A RMS at 100 VAC
Max. input surge current	20 A	20 A

A.5 NEBS Level 3 Compliance

The DC-powered version of the Netra 210 server meets NEBS Level 3 requirements per SR-3580, including the appropriate sections of GR-63-CORE (*Network Equipment-Building System Requirements: Physical Protection*) and GR-1089-CORE (*Electromagnetic Compatibility and Electrical Safety - Generic Criteria for Network Telecommunications Equipment*).

Caution – To maintain NEBS compliance, the network management (NET MGT) Ethernet port and the RJ45 serial management (SERIAL MGT) port must use shielded cables and both ends of the shield must be grounded.

APPENDIX **B**

Signal Pinouts

This appendix gives the pinouts for the following Netra 210 server rear ports:

B.1 Gigabit Ethernet Ports

The Netra 210 server has four autonegotiating 10/100/1000BASE-T Gigabit Ethernet system domain ports. All four Ethernet ports use a standard RJ-45 connector, the transfer rates for which are given in TABLE B-1. FIGURE B-1 shows the pin numbering of the ports, and TABLE B-2 describes the pin signals.

TABLE B-1 Ethernet Connection Transfer Rates

Connection Type	IEEE Terminology	Transfer Rate
Ethernet	10BASE-T	10 Mbit/sec
Fast Ethernet	100BASE-TX	100 Mbits/sec
Gigabit Ethernet	1000BASE-T	1000 Mbit/sec

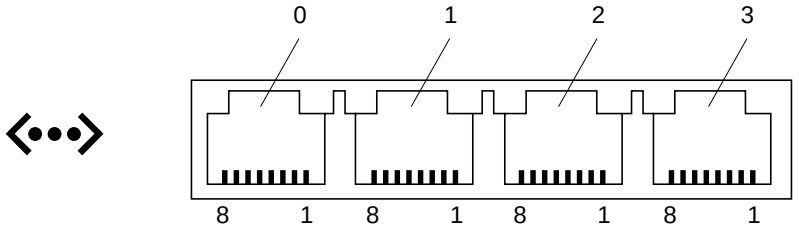

FIGURE B-1 Gigabit Ethernet Port Pin Numbering

TABLE B-2 Gigabit Ethernet Port Signals

Pin	Signal Description	Pin	Signal Description
1	Transmit/Receive Data 0 +	5	Transmit/Receive Data 2 –
2	Transmit/Receive Data 0 –	6	Transmit/Receive Data 1 –
3	Transmit/Receive Data 1 +	7	Transmit/Receive Data 3 +
4	Transmit/Receive Data 2 +	8	Transmit/Receive Data 3 –

B.2 Network Management Port

The server has one 10BASE-T Ethernet management domain interface, labelled NET MGT. For information on configuring this port for managing the server with ALOM, see the *Sun Advanced Lights Out Manager User Guide*, 817-5481.

Caution – If you are planning to use the network management (NET MGT) port, you must use a shielded Ethernet cable to maintain your server's NEBS compliance. The cable's shield must be grounded at both ends.

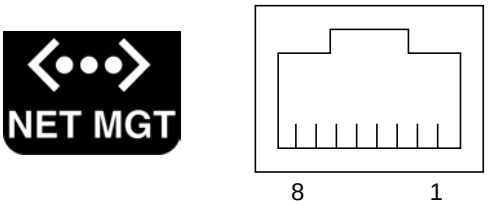

FIGURE B-2 Network Management Port Pin Numbering

TABLE B-3 Network Management Connector Signals

Pin	Signal Description	Pin	Signal Description
1	Transmit Data +	5	Common Mode Termination
2	Transmit Data –	6	Receive Data –
3	Receive Data +	7	Common Mode Termination
4	Common Mode Termination	8	Common Mode Termination

B.3 Serial Ports

The server has two serial ports, labeled SERIAL MGT and 10101. TABLE B-4 lists the default serial connection settings for both serial ports.

TABLE B-4 Default Serial Connection Settings

Parameter	Setting
Connector	SERIAL MGT or 10101
Rate	9600 baud
Parity	None
Stop bits	1
Data bits	8

B.3.1 Serial Management Port

The serial management connector (labeled SERIAL MGT) is an RJ-45 connector that can be accessed from the rear panel. This port is the default connection to the server. Use this port *only* for server management.

Caution – You must use a shielded Ethernet cable to maintain your server's NEBS compliance. The cable's shield must be grounded at both ends.

FIGURE B-3 shows the pin numbering of the serial management port, and TABLE B-5 describes the pin signals.

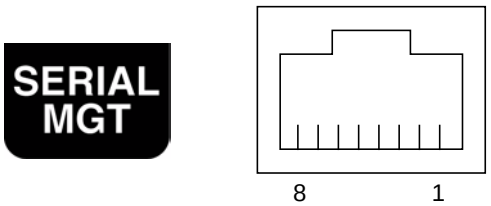

FIGURE B-3 Serial Management Port Pin Numbering

TABLE B-5 Serial Management RJ-45 Connector Signals

Pin	Signal Description	Pin	Signal Description
1	Request to Send	5	Ground
2	Data Terminal Ready	6	Receive Data
3	Transmit Data	7	Data Set Ready
4	Ground	8	Clear to Send

If you need to connect to the SERIAL MGT port using a cable with either a DB-9 or a DB-25 connector, use a supplied adapter to perform the crossovers given for each connector. The supplied RJ-45 to DB-9 and RJ-45 to DB-25 adapters are wired as described in TABLE B-6 and TABLE B-7.

B.3.1.1 RJ-45 to DB-9 Adapter Crossovers

TABLE B-6 RJ-45 to DB-9 Adapter Crossovers

Serial Port (RJ-45 Connector)		DB-9 Adapter	
Pin	**Signal Description**	**Pin**	**Signal Description**
1	RTS	8	CTS
2	DTR	6	DSR
3	TXD	2	RXD
4	Signal Ground	5	Signal Ground

TABLE B-6 RJ-45 to DB-9 Adapter Crossovers *(Continued)*

Serial Port (RJ-45 Connector)		DB-9 Adapter	
Pin	**Signal Description**	**Pin**	**Signal Description**
5	Signal Ground	5	Signal Ground
6	RXD	3	TXD
7	DSR	4	DTR
8	CTS	7	RTS

B.3.1.2 RJ-45 to DB-25 Adapter Crossovers

TABLE B-7 RJ-45 to DB-25 Adapter Crossovers

Serial Port (RJ-45 Connector)		DB-25 Adapter	
Pin	**Signal Description**	**Pin**	**Signal Description**
1	RTS	5	CTS
2	DTR	6	DSR
3	TXD	3	RXD
4	Signal Ground	7	Signal Ground
5	Signal Ground	7	Signal Ground
6	RXD	2	TXD
7	DSR	20	DTR
8	CTS	4	RTS

B.3.2 Serial Port (10101)

The port labeled 10101 accepts a DB-9 connector. Use this port for general purpose serial data transfers. FIGURE B-4 shows the pin numbering of the serial port, and TABLE B-8 describes the pin signals.

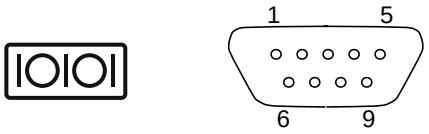

FIGURE B-4 Serial Port (IOIOI) Pin Numbering

TABLE B-8 Serial Port (IOIOI) Connector Signals

Pin	Signal Description	Pin	Signal Description
1	Data Carrier Detect	6	Data Set Ready
2	Receive Data	7	Request to Send
3	Transmit Data	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicate
5	Ground		

B.4 Alarm Port

The alarm port on the alarm rear transition module uses a standard DB-15 connector. In a telecommunications environment, use this port to connect to the central office alarming system. FIGURE B-5 shows the pin numbering of the alarm port, and TABLE B-9 describes the pin signals.

Note – The alarm port relay contacts are rated for 100 V 0.2 A maximum.

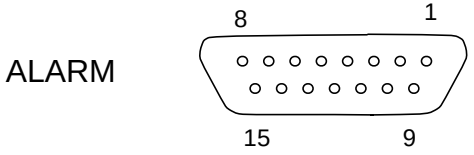

FIGURE B-5 Alarm Port Pin Numbering

TABLE B-9 Alarm Connector Signals

Pin	Service	Pin	Service
1	NC	9	ALARM1_NC
2	NC	10	ALARM1_COM
3	NC	11	ALARM2_NO
4	NC	12	ALARM2_NC
5	ALARM0_NO	13	ALARM2_COM
6	ALARM0_NC	14	ALARM3_NO
7	ALARM0_COM	15	ALARM3_COM
8	ALARM1_NO	CHASSIS	FRAME GND

B.5 USB Ports

The server has two USB ports for attaching supported USB 1.1 compliant devices. FIGURE B-6 shows the pin numbering of the USB ports, and TABLE B-10 describes the pin signals.

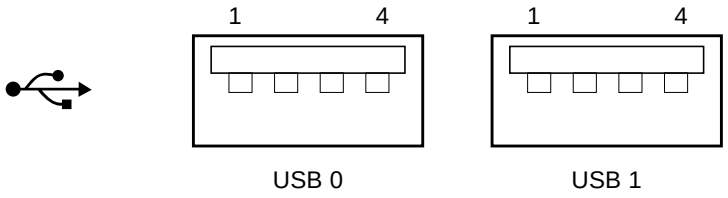

FIGURE B-6 USB Ports Pin Numbering

TABLE B-10 USB Connector Pin Signals

Pin	Signal Description
1	+5 V
2	DAT-
3	DAT+
4	Ground

B.6 SCSI Port

The SCSI port is a multimode Ultra 160 SCSI interface. To operate at Ultra 160 SCSI speeds, the device must be in low-voltage differential (LVD) mode. If a single-ended device is connected to the server, it automatically switches to single-ended mode. FIGURE B-7 shows the pin numbering of the SCSI port, and TABLE B-11 describes the pin signals.

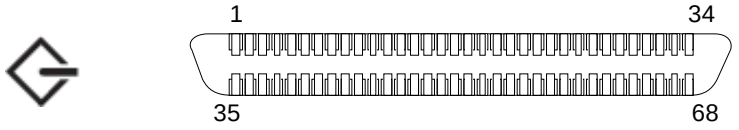

FIGURE B-7 SCSI Port Pin Numbering

TABLE B-11 SCSI Port Pin Signals

Pin	Signal Description	Pin	Signal Description
1	Data12 +	35	Data12 –
2	Data13 +	36	Data13 –
3	Data14 +	37	Data14 –
4	Data15 +	38	Data15 –
5	Parity1 +	39	Parity1 –
6	Data0 +	40	Data0 –
7	Data1 +	41	Data1 –
8	Data2 +	42	Data2 –
9	Data3 +	43	Data3 –
10	Data4 +	44	Data4 –
11	Data5 +	45	Data5 –
12	Data6 +	46	Data6 –
13	Data7 +	47	Data7 –
14	Parity0 +	48	Parity0 –
15	Ground	49	Ground
16	DIFF_SENSE	50	Ground
17	TERM_PWR	51	TERM_PWR
18	TERM_PWR	52	TERM_PWR

TABLE B-11 SCSI Port Pin Signals *(Continued)*

Pin	Signal Description	Pin	Signal Description
19	(N/C)	53	(N/C)
20	Ground	54	Ground
21	ATN +	55	ATN –
22	Ground	56	Ground
23	BSY +	57	BSY –
24	ACK +	58	ACK –
25	RST +	59	RST –
26	MSG +	60	MSG –
27	SEL +	61	SEL –
28	CD +	62	CD –
29	REQ +	63	REQ –
30	I/O +	64	I/O –
31	Data8 +	65	Data8 –
32	Data9 +	66	Data9 –
33	Data10 +	67	Data10 –
34	Data11 +	68	Data11 –

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