



Netra™ 210 Server Service Manual

Sun Microsystems, Inc.
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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	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
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 <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% su Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be superuser to do this. To delete a file, type <code>rm filename</code> .

* 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	<i>Netra 210 Server Setting Up</i>	819-2752	Printed	Shipping kit
Administration	<i>Netra 210 Server System Administration Guide</i>	819-2749	PDF	Online
Service	<i>Netra 210 Server Service Manual</i>	819-2750	PDF	Online
Product Notes	<i>Netra 210 Server Product Notes</i>	819-2751	PDF	Online
Compliance	<i>Netra 210 Server Safety and Compliance Guide</i>	819-3206	PDF	Online

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

Getting Started

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

- Section 1.1, “Safety Information” on page 1-1
- Section 1.2, “Required Tools” on page 1-3
- Section 1.3, “Powering Off the Server” on page 1-3
- Section 1.4, “Removing the Server From the Rack” on page 1-4
- Section 1.5, “Opening the Bezel” on page 1-5
- Section 1.6, “Removing the Top Cover” on page 1-7
- Section 1.7, “Service Procedures” on page 1-9

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](#).

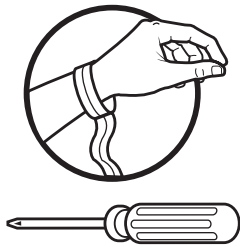


FIGURE 1-1 Required Tools

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](#).

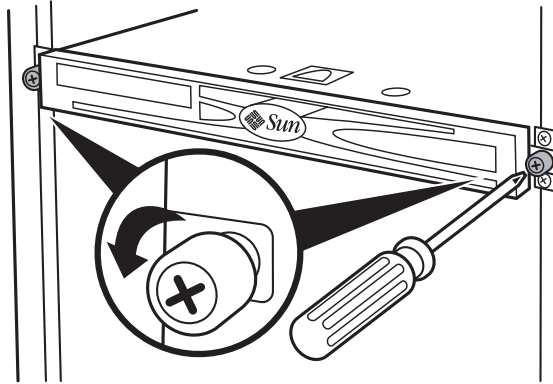


FIGURE 1-2 Releasing the Server From the Rack

4. Slide and lift the server from the rack.

See [FIGURE 1-3](#).

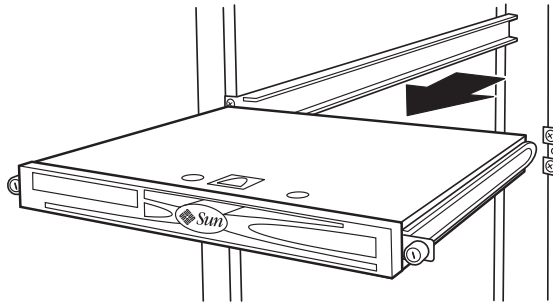


FIGURE 1-3 Sliding the Server Out of the Rack

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](#).

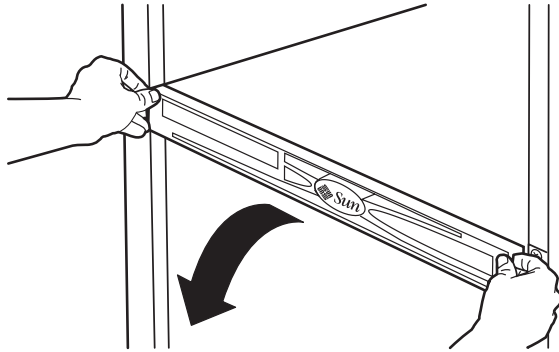


FIGURE 1-4 Opening the Bezel

3. Gently pull the grips both toward you and downward at the same time. The bezel unfolds downward. See [FIGURE 1-5](#).

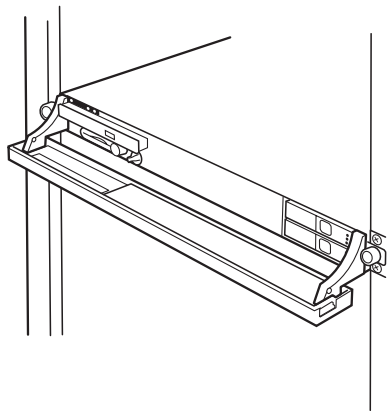


FIGURE 1-5 Bezel Open

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.

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](#)

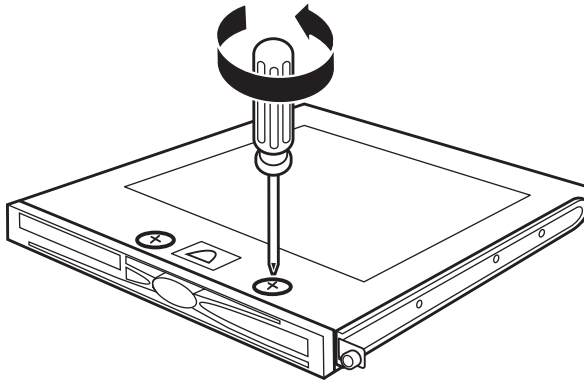


FIGURE 1-6 Loosening the Cover Screws

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](#)

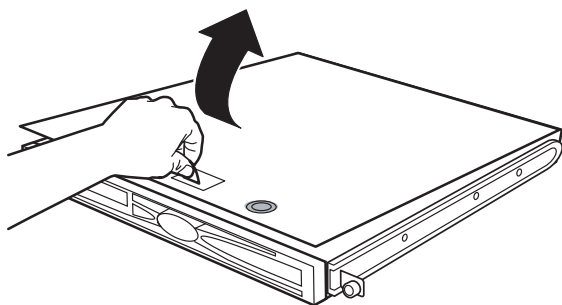


FIGURE 1-7 Removing the Top Cover

5. Set the top cover aside.
6. Lift up on the air duct and remove it from the chassis.
See [FIGURE 1-8](#).

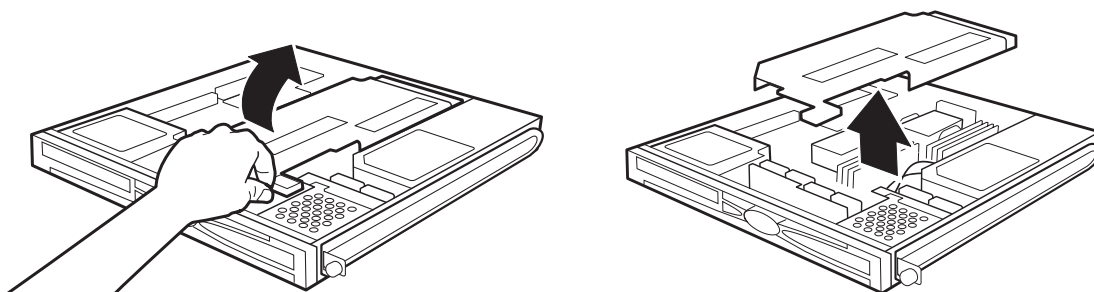


FIGURE 1-8 Removing the Air Duct

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

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](#).

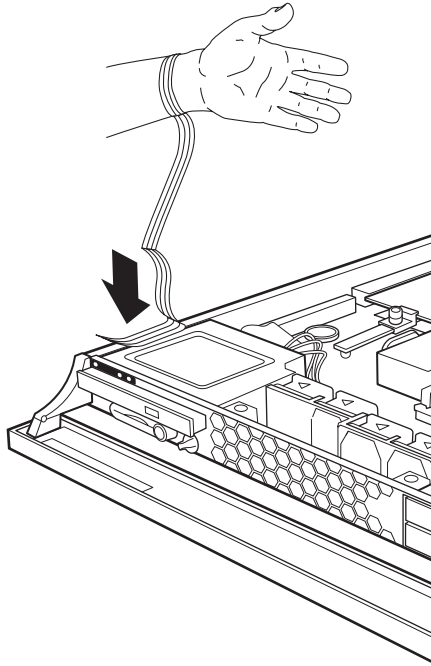


FIGURE 1-9 Attaching the Antistatic Wrist Strap

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.

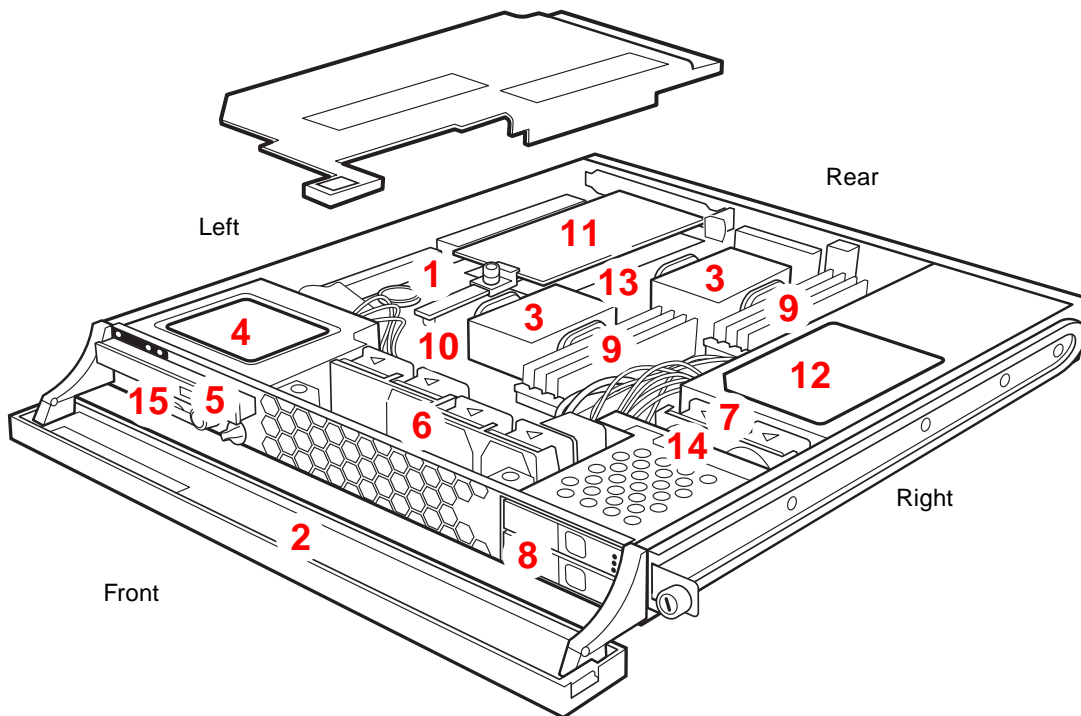


FIGURE 1-10 Netra 210 Server Replaceable Components

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

Storage Components

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

- [Section 2.1, “Electrostatic Discharge Safety” on page 2-1](#)
- [Section 2.2, “Replacing the Hard Drive” on page 2-2](#)
- [Section 2.3, “Replacing the DVD Module” on page 2-7](#)
- [Section 2.4, “Replacing the System Configuration Card” on page 2-10](#)

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](#).

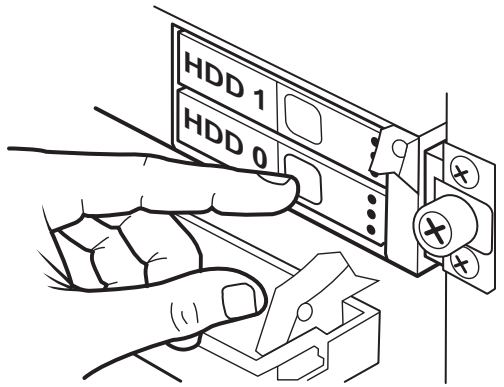


FIGURE 2-1 Releasing the Drive Latch

6. Pull firmly on the drive latch to slide the drive out of the drive bay.

See [FIGURE 2-2](#).

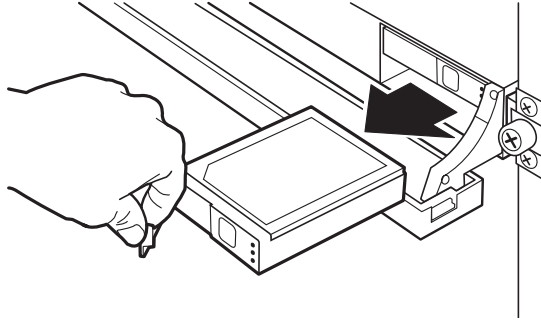


FIGURE 2-2 Sliding the Drive Out of the Drive Bay

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.](#)

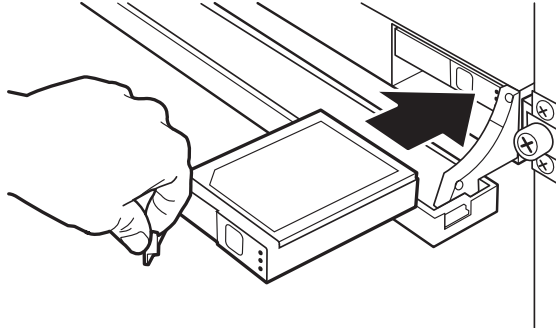


FIGURE 2-3 Sliding the Drive Into the Drive Bay

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](#).

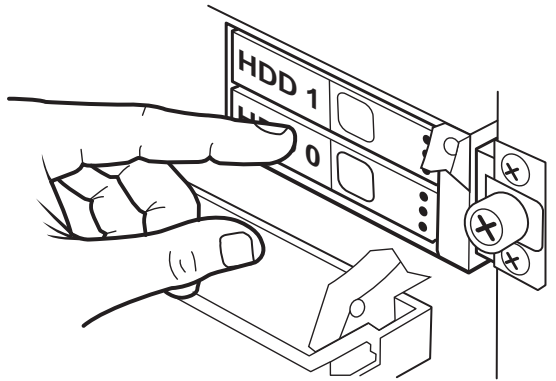


FIGURE 2-4 Closing the Drive Latch

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:

```
# cfigadm -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:

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

- To configure HDD1, type:

```
# cfigadm -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 Removing the DVD Module

1. Power off the server, remove the server from the rack, open the bezel, and remove the top cover and air duct.
 - 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.

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](#).

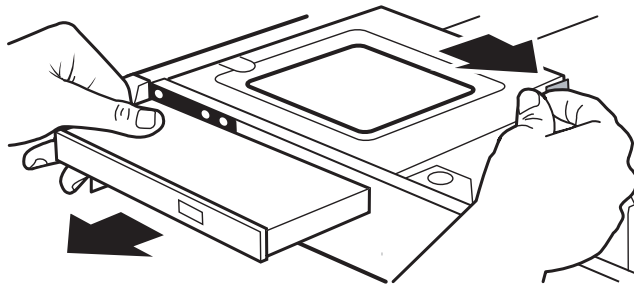


FIGURE 2-5 Removing the DVD Module

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](#).

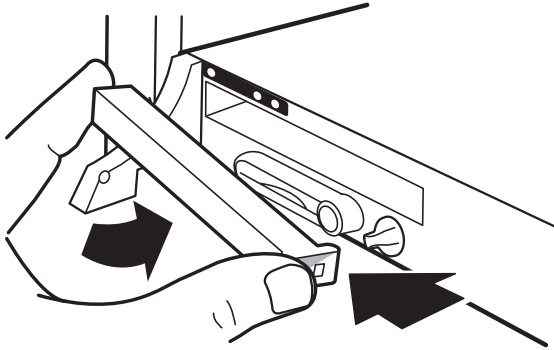


FIGURE 2-6 Installing the Filler Panel

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

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](#).

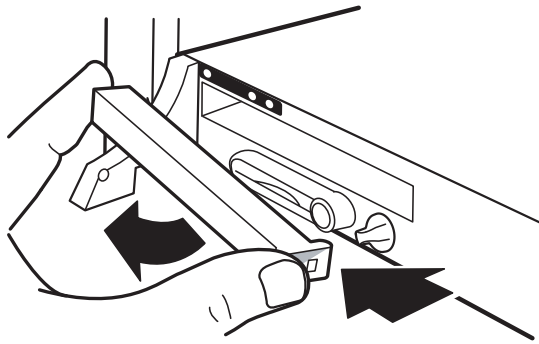


FIGURE 2-7 Removing the DVD Filler Panel

- 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](#).

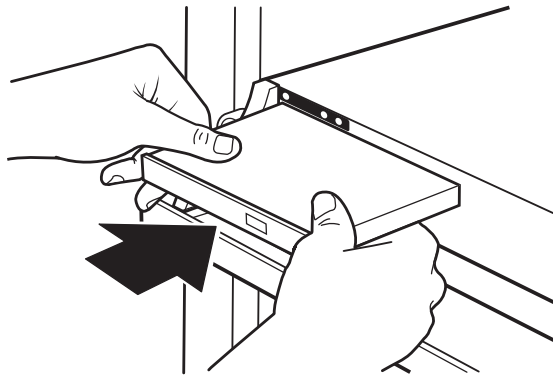


FIGURE 2-8 Sliding the DVD Module In

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](#).

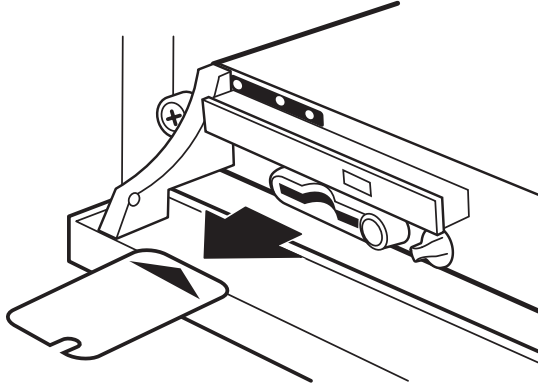


FIGURE 2-9 Removing the SCC



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](#).

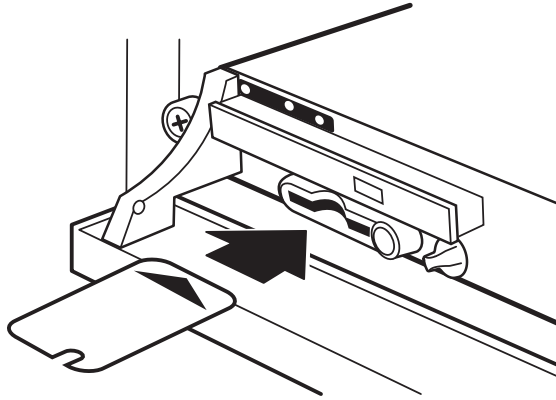


FIGURE 2-10 Sliding the SCC Into the Slot

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.

System Board Components

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

- Section 3.1, “Electrostatic Discharge Safety” on page 3-1
- Section 3.2, “Replacing Memory” on page 3-2
- Section 3.3, “Replacing the PCI Card” on page 3-5
- Section 3.4, “Replacing the SAS Board” on page 3-10
- Section 3.5, “Replacing the Battery” on page 3-16
- Section 3.6, “Replacing the System Board” on page 3-18

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](#).

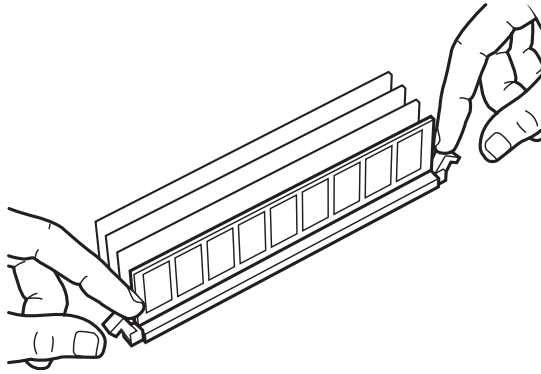


FIGURE 3-1 Pressing Down the Ejector Levers

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

See [FIGURE 3-2](#).

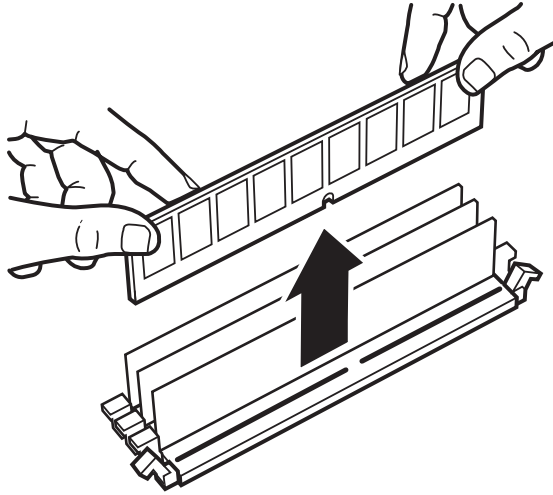


FIGURE 3-2 Lifting the Memory Out of the Socket

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](#).

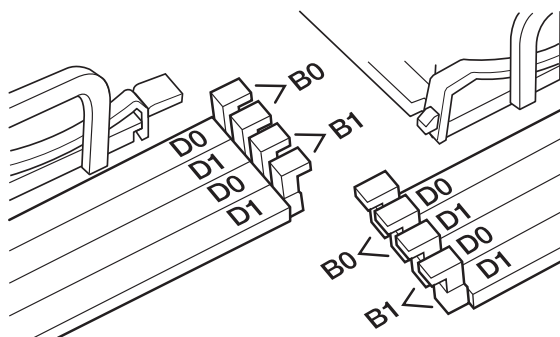


FIGURE 3-3 Memory Pairs

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](#).

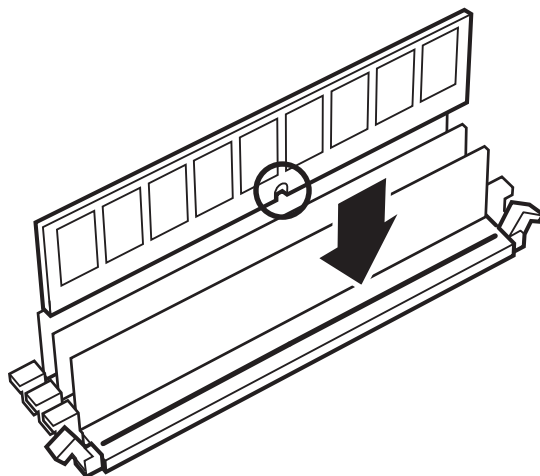


FIGURE 3-4 Positioning the Memory Over the Slot

5. Press the memory down into the slot firmly until it clicks into place.
See [FIGURE 3-5](#).

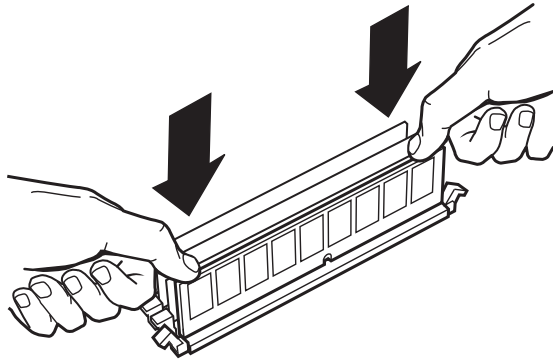


FIGURE 3-5 Pressing Memory Into the Slot

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](#).

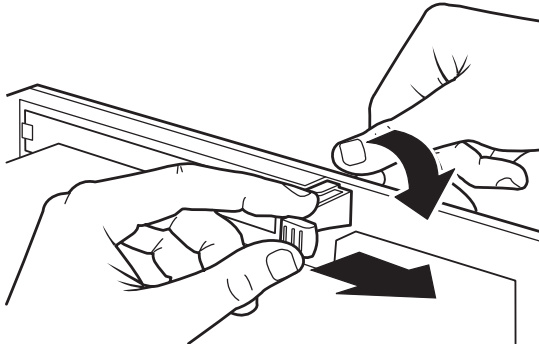


FIGURE 3-6 Loosening the PCI Card Thumbscrew

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](#).

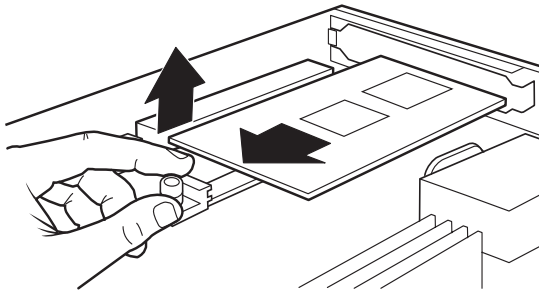


FIGURE 3-7 Sliding the PCI Card Retainer Forward

6. Remove the PCI card from the slot.

See [FIGURE 3-8](#).

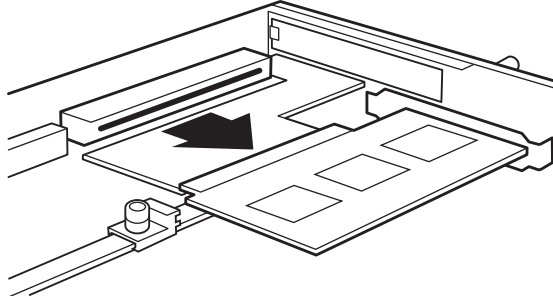


FIGURE 3-8 Removing the PCI Card From the Slot

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](#).

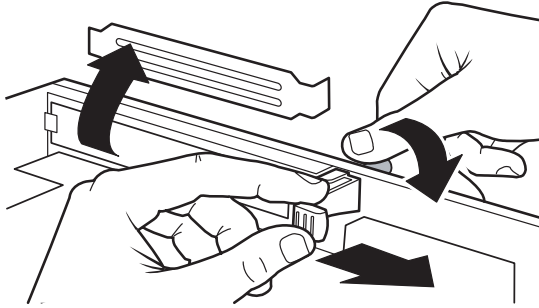


FIGURE 3-9 Loosening the PCI Card Thumbscrew

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](#).

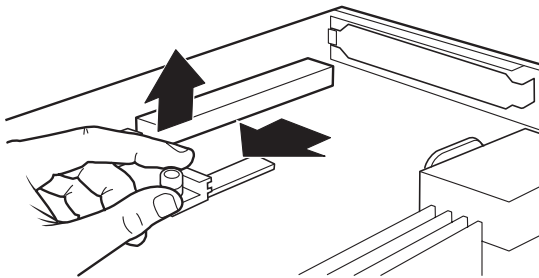


FIGURE 3-10 Sliding the PCI Card Retainer Forward

7. Remove the PCI card from its shipping container and antistatic packaging.
8. Install the PCI card into the slot.
See [FIGURE 3-11](#).

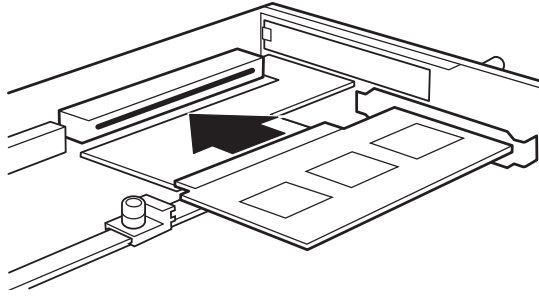


FIGURE 3-11 Installing the PCI Card Into the Slot

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

See [FIGURE 3-12](#).

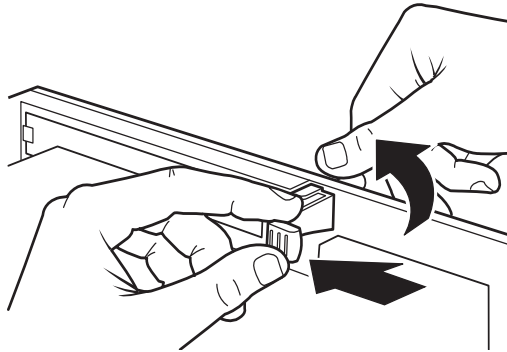


FIGURE 3-12 Securing the PCI Card

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](#).

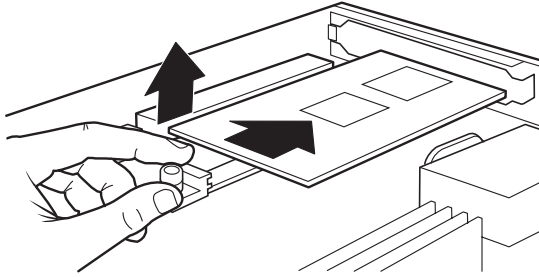


FIGURE 3-13 Sliding the PCI Card Retainer Back

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](#).

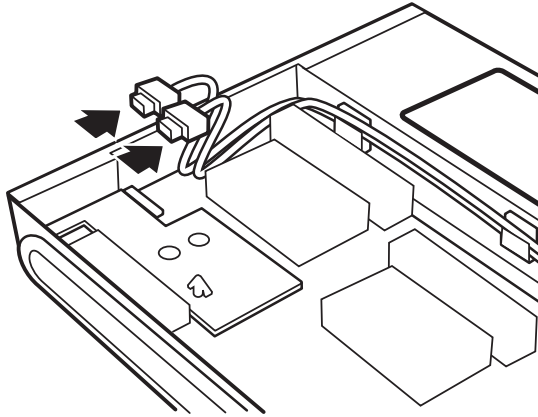


FIGURE 3-14 Disconnecting the SAS Cables

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](#).

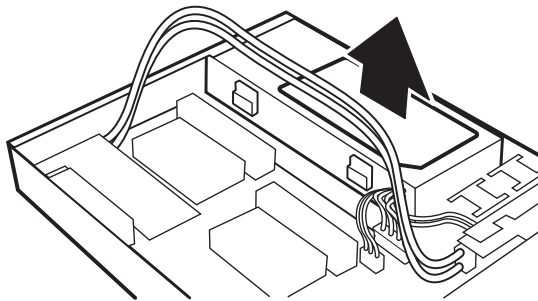


FIGURE 3-15 Lifting the SAS Cables Out of the Clamps

6. Disconnect the two SAS cables from the SAS IF assembly at J7.
See [FIGURE 3-16](#).

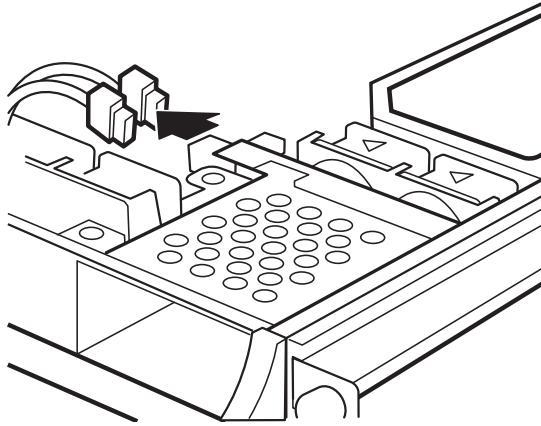


FIGURE 3-16 Disconnecting Cables From the SAS IF Assembly

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](#).

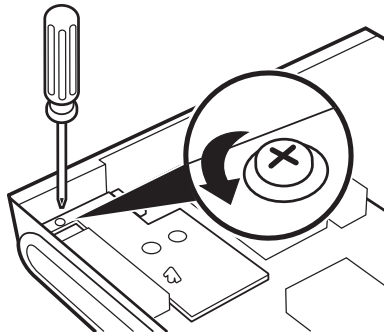


FIGURE 3-17 Removing the SAS Board Screw

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](#).

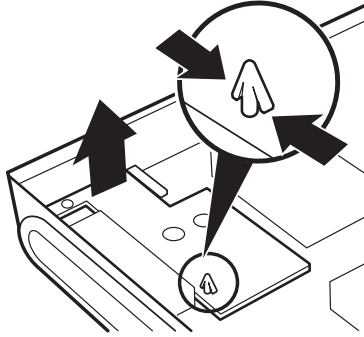


FIGURE 3-18 Removing the SAS Board

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](#).

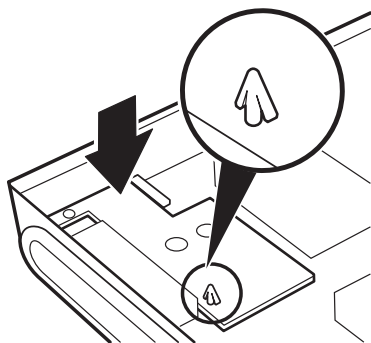


FIGURE 3-19 Installing the SAS Board

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](#).

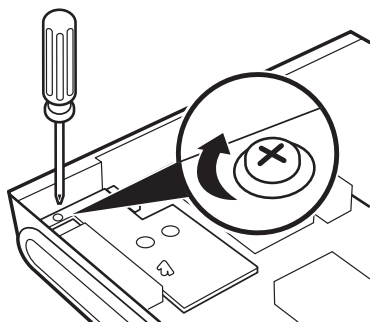


FIGURE 3-20 Installing the SAS Board Screw

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

See [FIGURE 3-21](#).

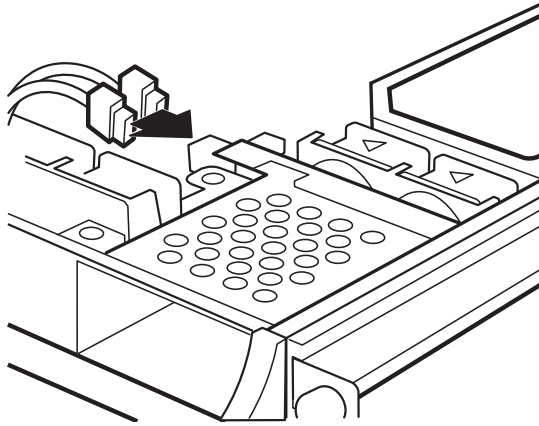


FIGURE 3-21 Connecting Cables to the SAS IF Assembly

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

See [FIGURE 3-22](#).

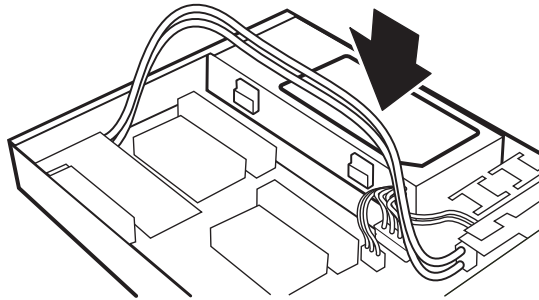


FIGURE 3-22 Pressing the SAS Cables In to the Clamps

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

See [FIGURE 3-23](#).

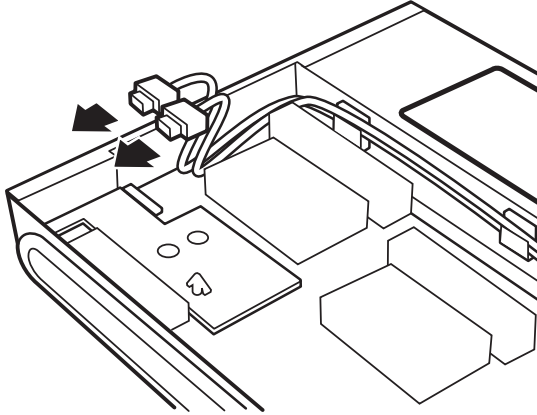


FIGURE 3-23 Connecting the SAS Cables

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](#).

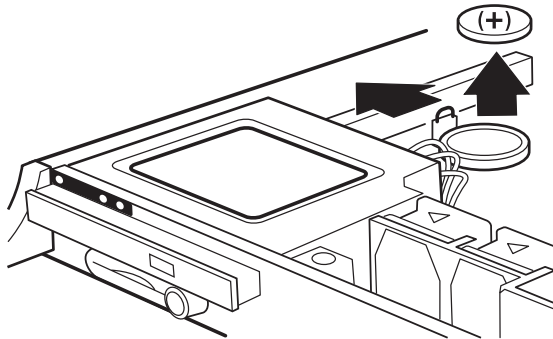


FIGURE 3-24 Releasing the Battery

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](#).

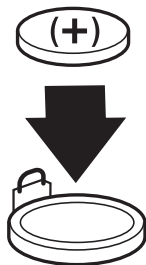


FIGURE 3-25 Installing the Battery

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](#).

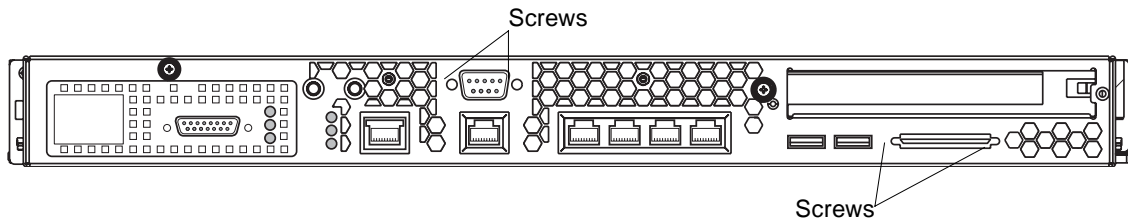


FIGURE 3-26 Removing the SCSI and Serial Port Screws

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](#).

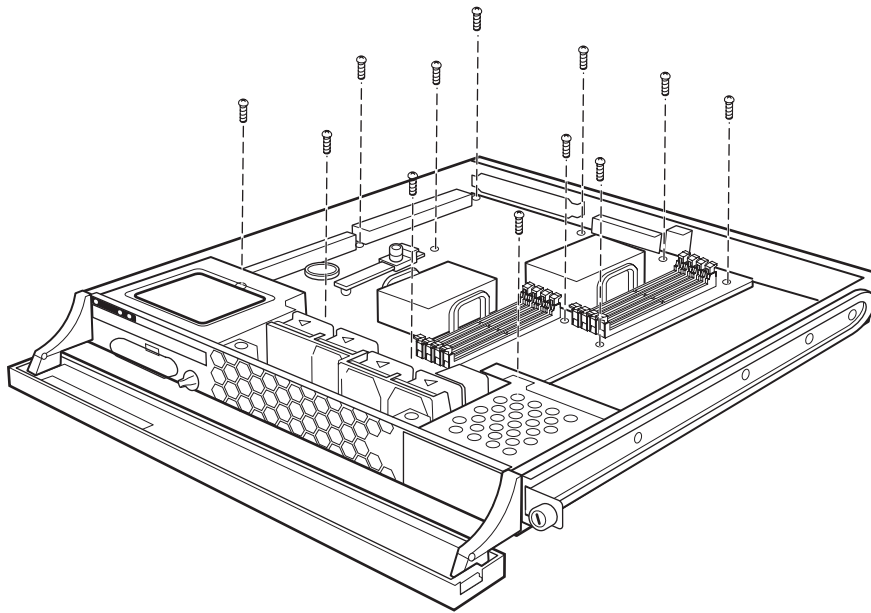


FIGURE 3-27 Removing the System Board Screws and Standoffs

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

See [FIGURE 3-28](#).

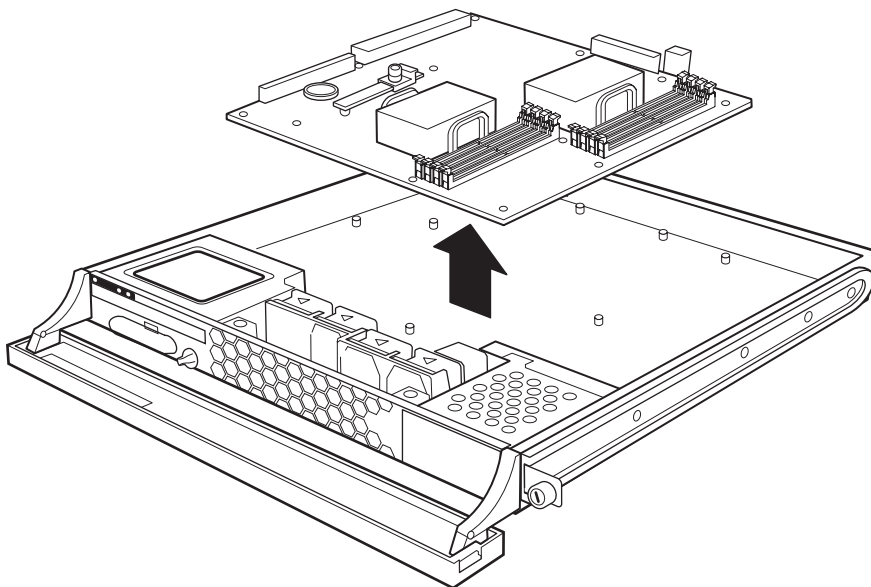


FIGURE 3-28 Removing the System Board



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.

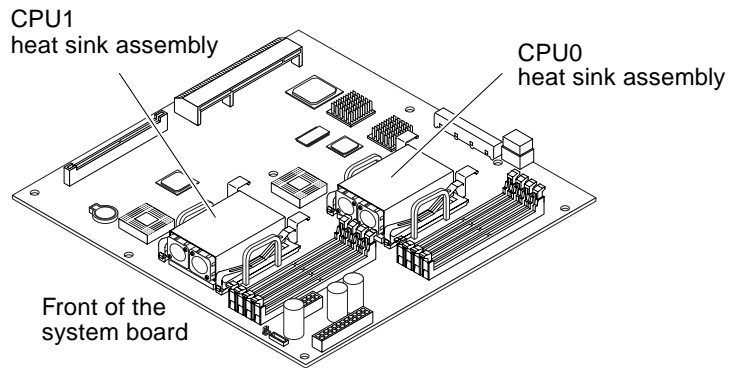


FIGURE 3-29 Location of the CPU Heat Sink Assemblies

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.

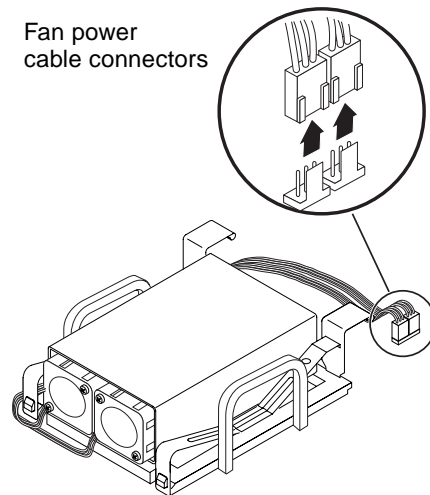


FIGURE 3-30 Detaching the Fan Power Cables

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.

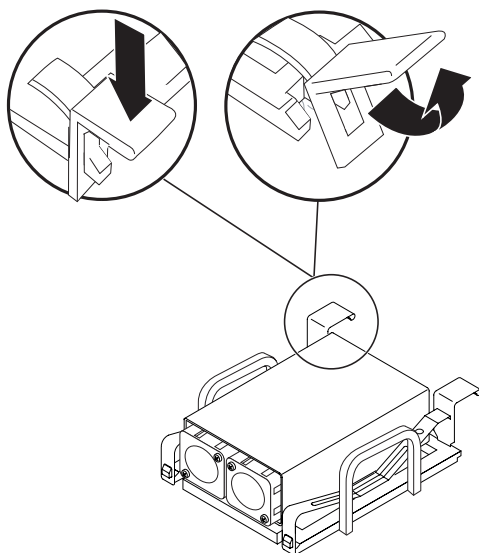


FIGURE 3-31 Unlocking the Heat Sink Fasteners

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](#).

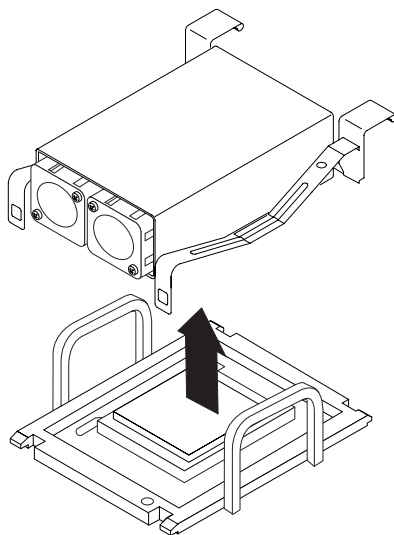


FIGURE 3-32 Lifting the Heat Sink from the CPU Socket

- 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.

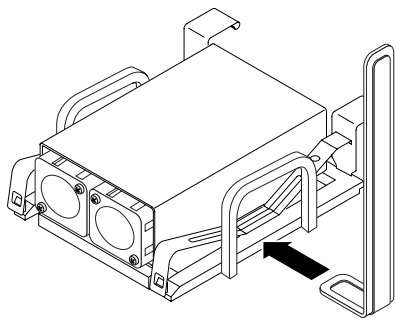


FIGURE 3-34 Inserting the Heat Sink Removal Tool

- b. Gently wiggle the tool in both directions to release the heat sink from the CPU.
See [FIGURE 3-35](#).

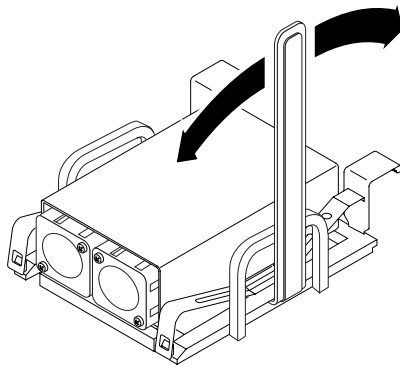


FIGURE 3-35 Using the Heat Sink Removal Tool



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](#).

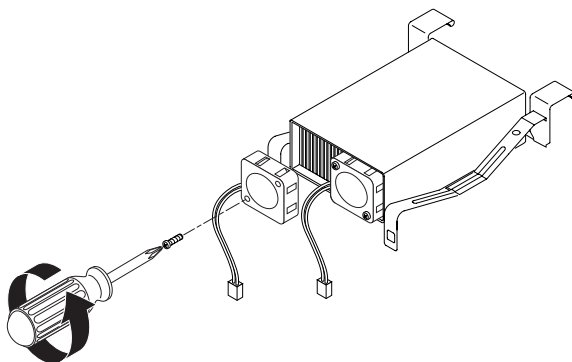


FIGURE 3-36 Removing the Heat Sink Fans

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](#).

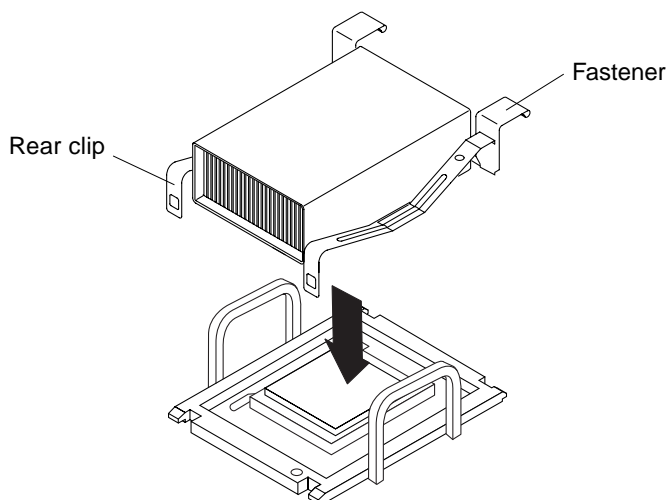


FIGURE 3-37 Replacing the Heat Sink on the CPU Socket

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](#)

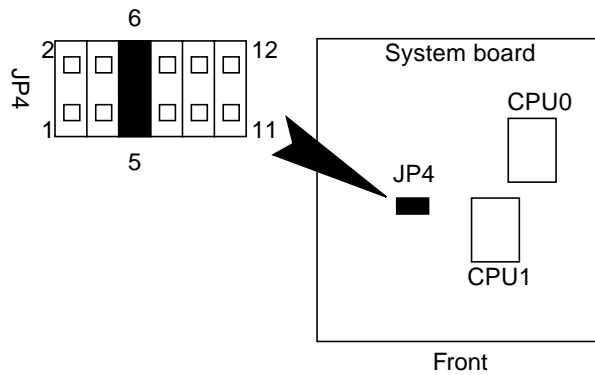


FIGURE 3-38 Setting for JP4



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](#).

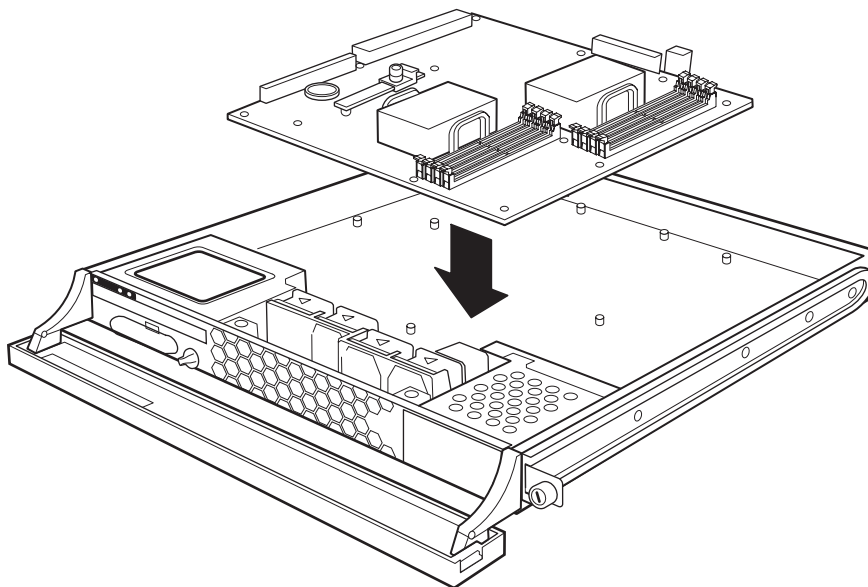


FIGURE 3-39 Installing the System Board

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](#).

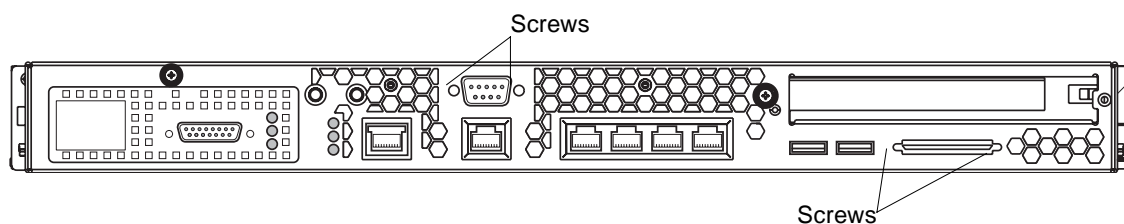


FIGURE 3-40 Installing the SCSI and Serial Port Screws

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](#).

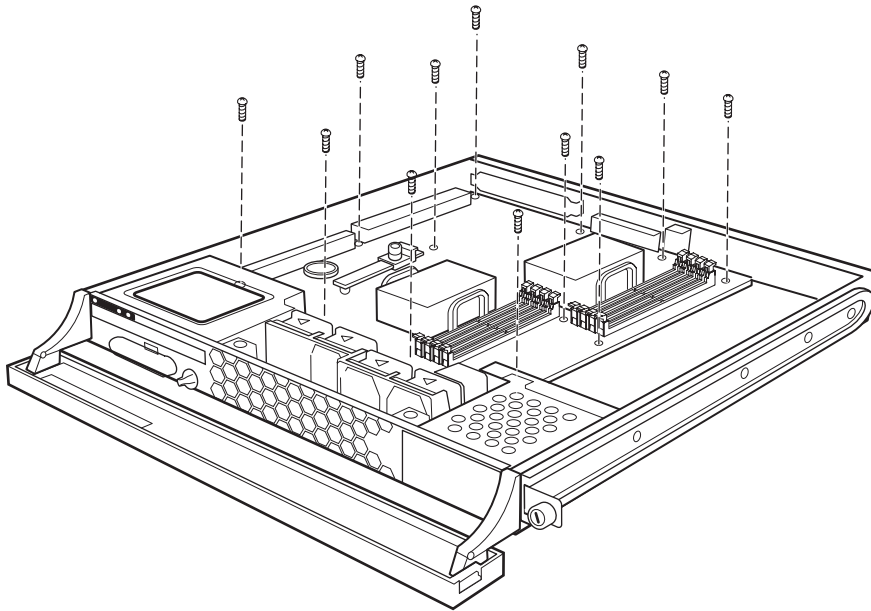


FIGURE 3-41 Installing the System Board Screws and Standoffs

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.

Chassis Components

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

- [Section 4.1, “Electrostatic Discharge Safety” on page 4-1](#)
- [Section 4.2, “Replacing the Power Supply” on page 4-2](#)
- [Section 4.3, “Replacing Fans 0-3” on page 4-7](#)
- [Section 4.4, “Replacing Fans 4 and 5” on page 4-10](#)
- [Section 4.5, “Replacing the DVD Assembly” on page 4-13](#)
- [Section 4.6, “Replacing the SAS IF Assembly” on page 4-18](#)
- [Section 4.7, “Replacing the Bezel” on page 4-22](#)

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](#).

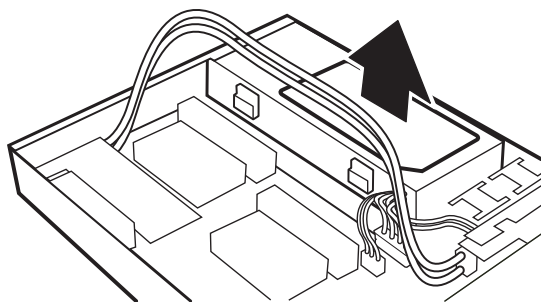


FIGURE 4-1 Lifting the SAS Cables Out of the Clamps

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](#).

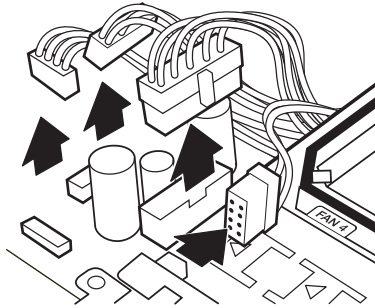


FIGURE 4-2 Disconnecting the Power Supply Cables

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

See [FIGURE 4-3](#).

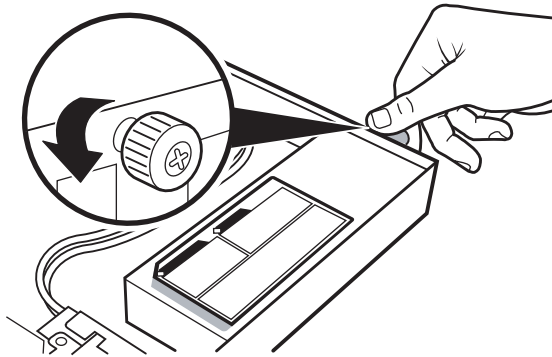


FIGURE 4-3 Loosening the Power Supply Thumbscrew

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

See [FIGURE 4-4](#).

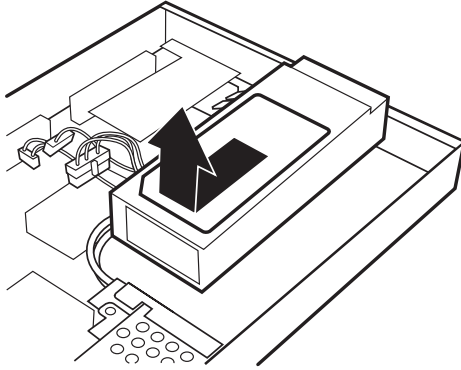


FIGURE 4-4 Removing the Power Supply

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](#).

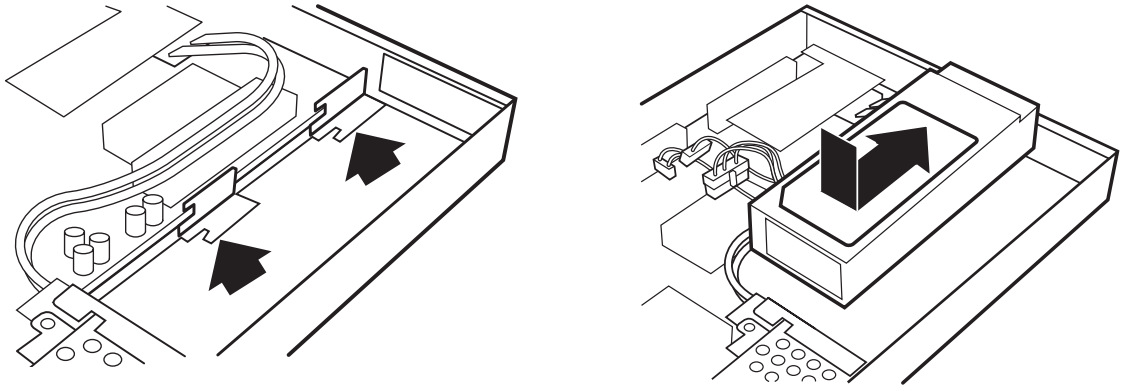


FIGURE 4-5 Installing the Power Supply

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

See [FIGURE 4-6](#).

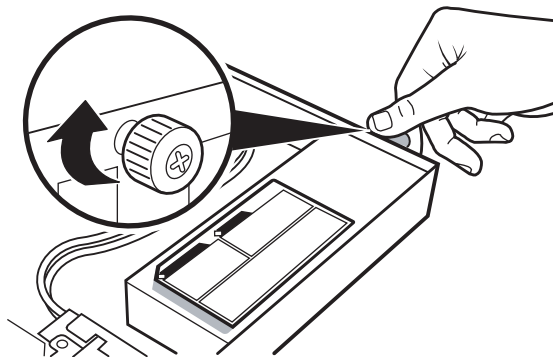


FIGURE 4-6 Tightening the Power Supply Thumbscrew

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](#).

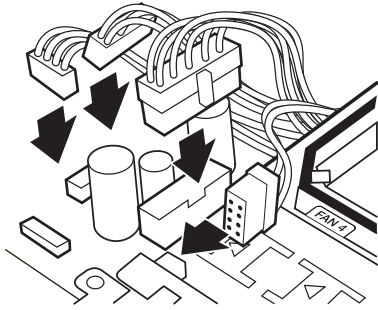


FIGURE 4-7 Connecting the Power Supply Cables

7. Press the SAS cables into the clamps on the side of the power supply.
See [FIGURE 4-8](#).

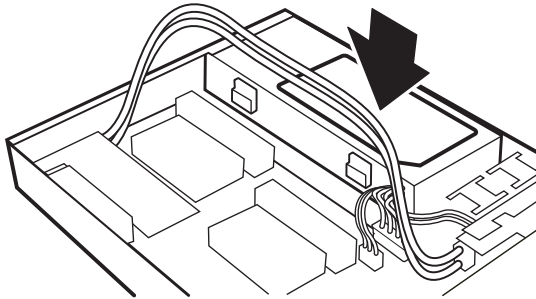


FIGURE 4-8 Pressing the SAS Cables Into the Clamps

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](#).

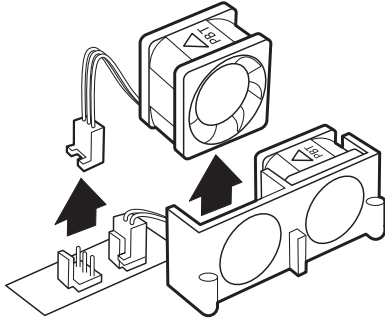


FIGURE 4-9 Removing Fans 0-3

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](#).

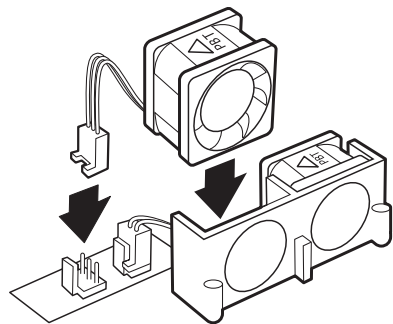


FIGURE 4-10 Installing Fans 0-3

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](#).

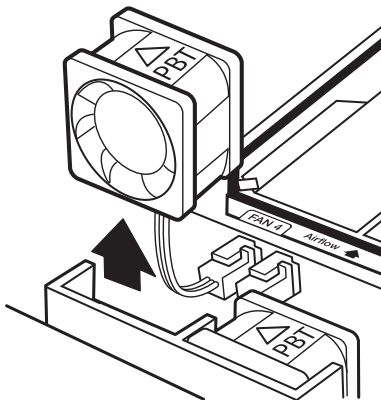


FIGURE 4-11 Removing Fans 4 and 5

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](#).

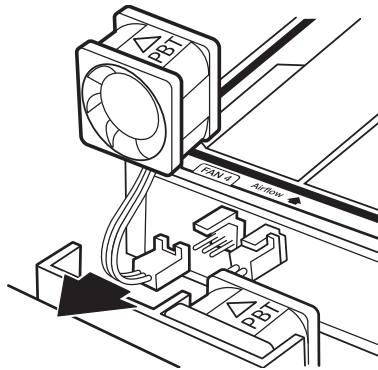


FIGURE 4-12 Disconnecting the Fan Cable

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](#).

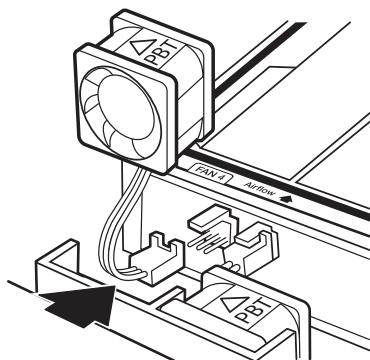


FIGURE 4-13 Connecting the Fan Cable

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](#).

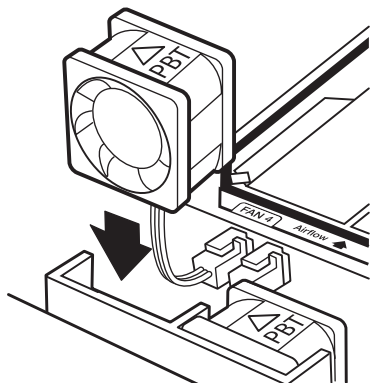


FIGURE 4-14 Installing Fans 4 and 5

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](#).

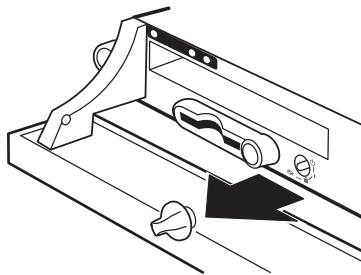


FIGURE 4-15 Removing the Rotary Switch Cap

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

See [FIGURE 4-16](#).

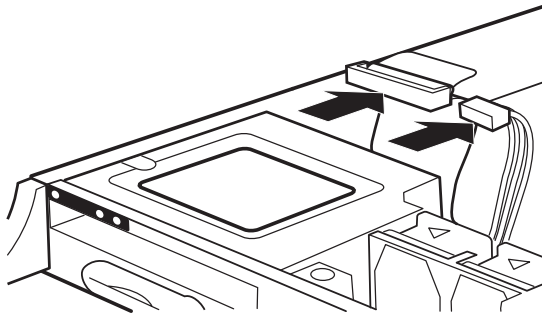


FIGURE 4-16 Disconnecting the Cables From the DVD Assembly

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

See [FIGURE 4-17](#).

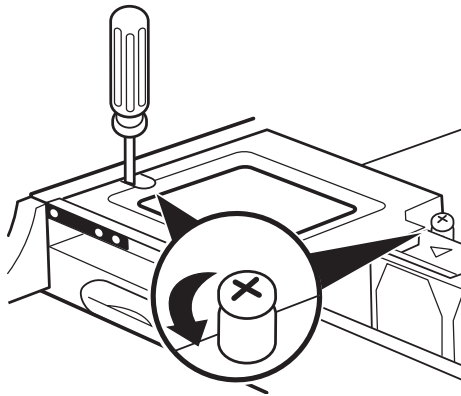


FIGURE 4-17 Loosening the DVD Assembly Screws

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

See [FIGURE 4-18](#).

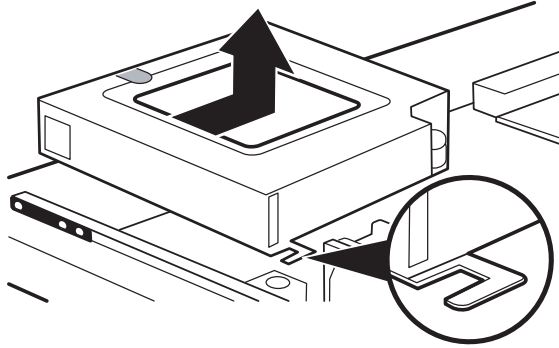


FIGURE 4-18 Removing the DVD Assembly From the Chassis



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](#).

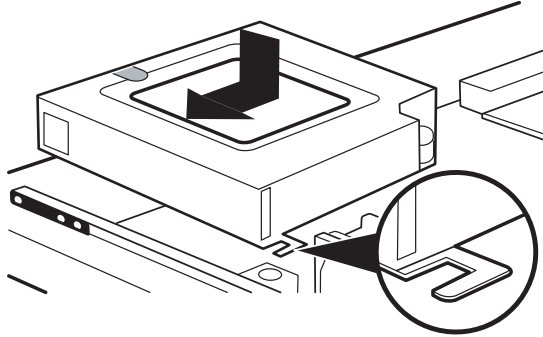


FIGURE 4-19 Installing the DVD Assembly Into the Chassis

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](#).

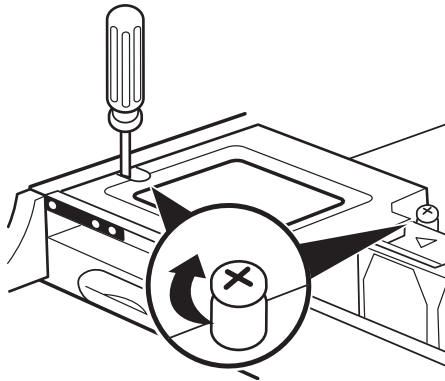


FIGURE 4-20 Tightening the DVD Assembly Screws

7. Connect the ribbon cable to J501 and the cable to J505.
See [FIGURE 4-21](#).

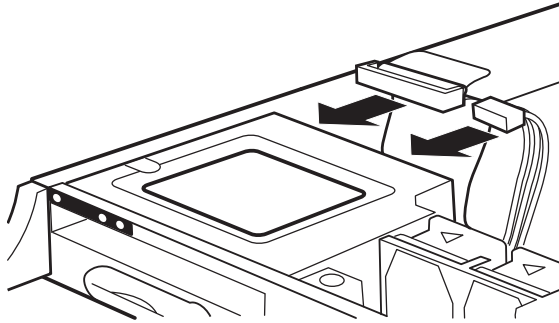


FIGURE 4-21 Connecting the Cables to the DVD Assembly

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](#).

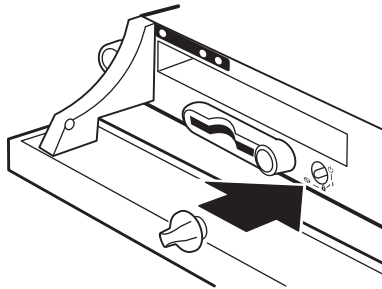


FIGURE 4-22 Installing the Rotary Switch Cap

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](#).

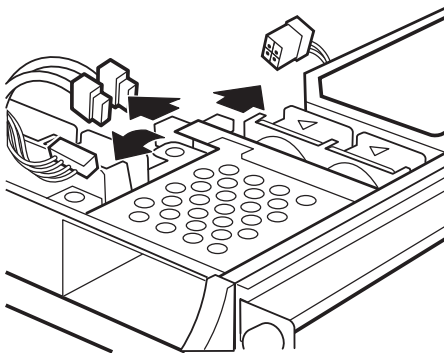


FIGURE 4-23 Disconnecting Cables From the SAS IF Assembly

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

See [FIGURE 4-24](#).

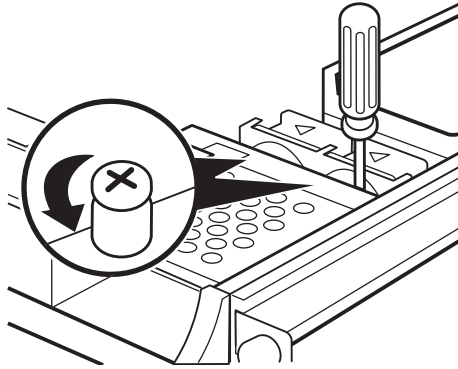


FIGURE 4-24 Loosening the SAS IF Assembly Screws

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

See [FIGURE 4-25](#).

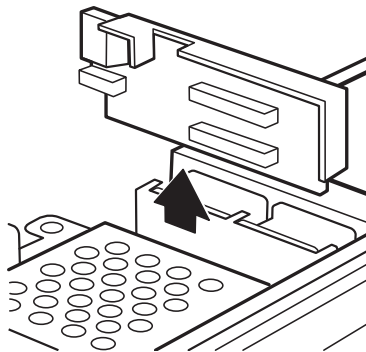


FIGURE 4-25 Lifting the SAS IF Assembly From the Chassis

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](#).

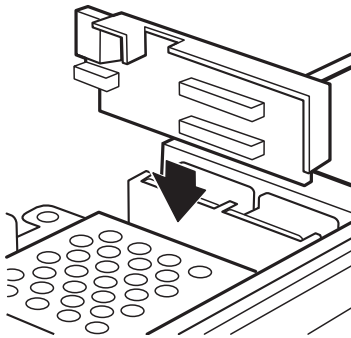


FIGURE 4-26 Lowering the SAS IF Assembly into the Chassis

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](#).

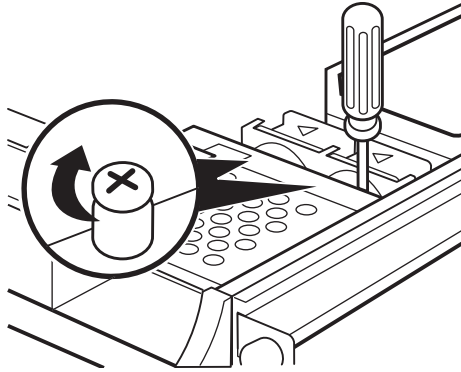


FIGURE 4-27 Tightening the SAS IF Assembly Screws

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](#).

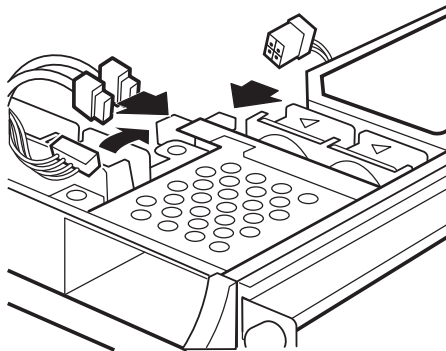


FIGURE 4-28 Connecting Cables to the SAS IF Assembly

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](#).

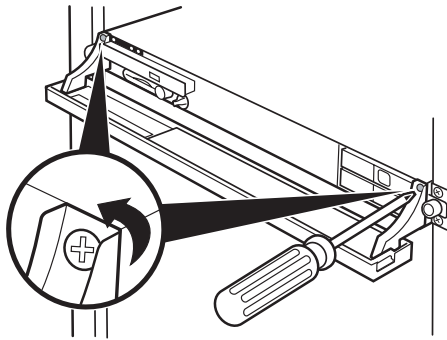


FIGURE 4-29 Removing the Bezel Hinge Screws

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](#).

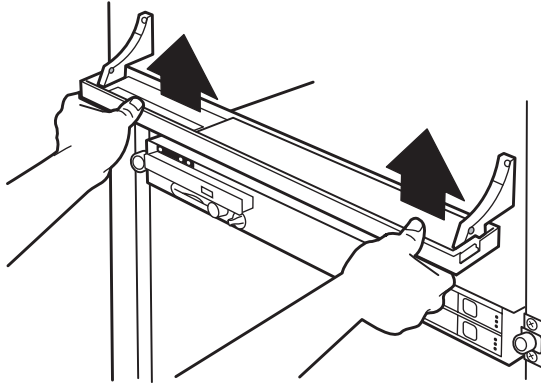


FIGURE 4-30 Lifting the Bezel off the Chassis

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](#).

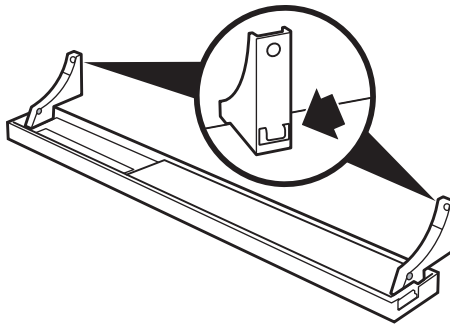


FIGURE 4-31 Identifying the Mounting Tabs of the Bezel Hinges

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](#).

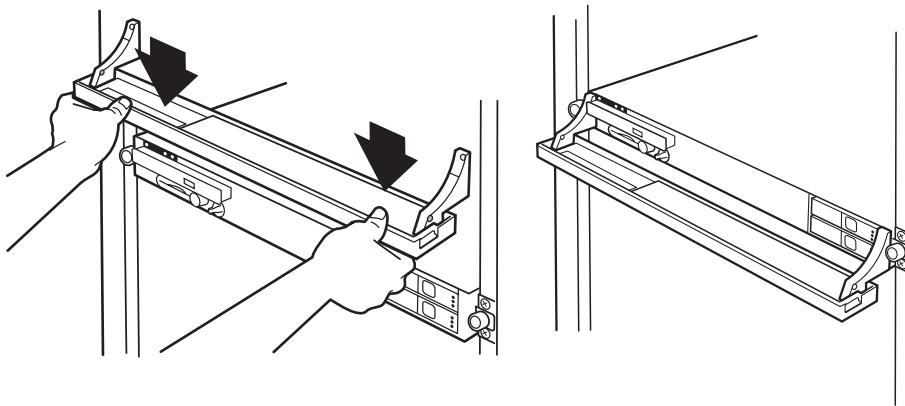


FIGURE 4-32 Sliding the Hinges Down and Hooking Tabs

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

See [FIGURE 4-33](#).

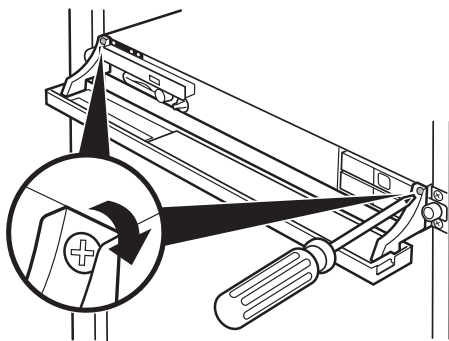


FIGURE 4-33 Installing the Bezel Hinge Screws

5. Close the bezel.

See [Section 5.2, "Closing the Bezel"](#) on page 5-3.

Finishing Up

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

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

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 if 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](#).

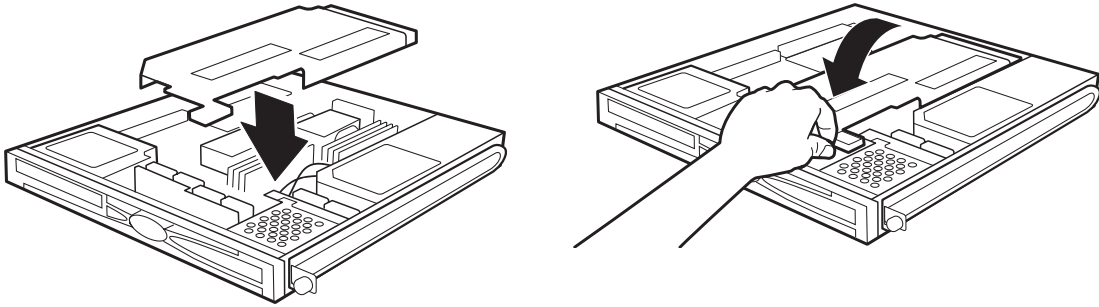


FIGURE 5-1 Installing the Air Duct

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](#).

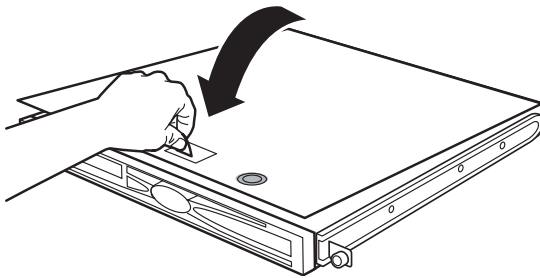


FIGURE 5-2 Lowering the Top Cover

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

See [FIGURE 5-3](#).

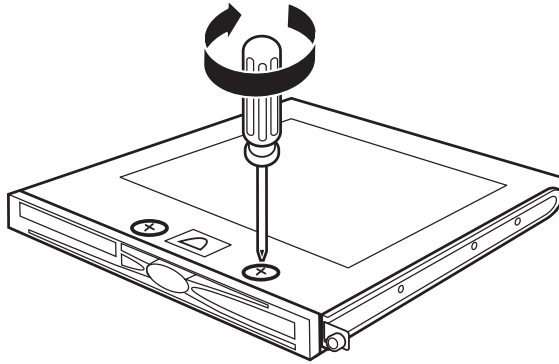


FIGURE 5-3 Securing the Top Cover

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](#).

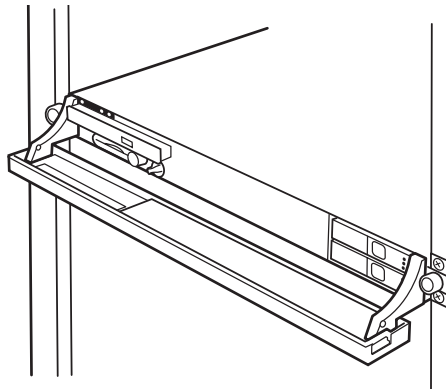


FIGURE 5-4 Holding the Bezel

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

See [FIGURE 5-5](#).

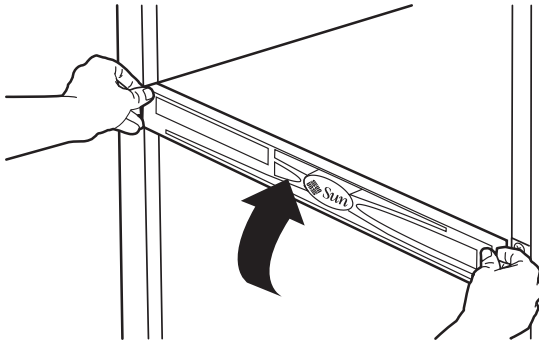


FIGURE 5-5 Closing the Bezel

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](#).

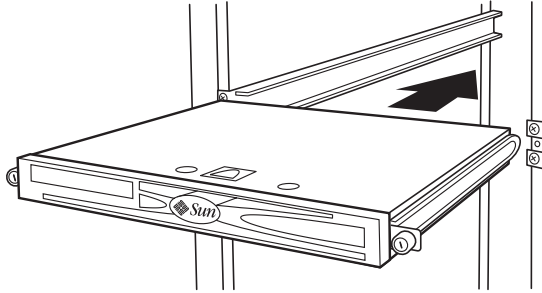


FIGURE 5-6 Beginning to Slide the Server In

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](#).

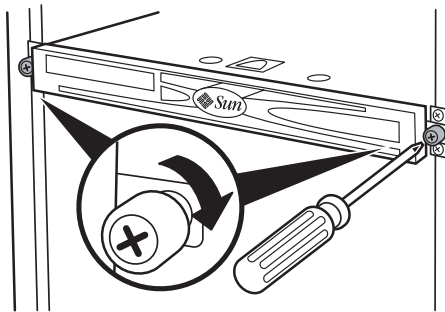


FIGURE 5-7 Securing the Server

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](#).

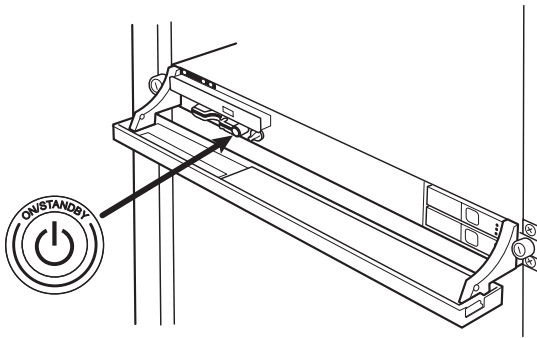


FIGURE 5-8 Powering On the Server

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 <i>Netra 210 Server System Administration Guide</i> , 819-2749.		
Step 7	Done		

Specifications

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

- [Section A.1, “Physical Specifications” on page A-1](#)
- [Section A.2, “Environmental Requirements” on page A-2](#)
- [Section A.3, “Acoustic Noise Emissions” on page A-2](#)
- [Section A.4, “Electrical Specifications” on page A-2](#)
- [Section A.5, “NEBS Level 3 Compliance” on page A-3](#)

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.

Signal Pinouts

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

- [Section B.1, “Gigabit Ethernet Ports” on page B-1](#)
- [Section B.2, “Network Management Port” on page B-2](#)
- [Section B.3, “Serial Ports” on page B-3](#)
- [Section B.4, “Alarm Port” on page B-6](#)
- [Section B.5, “USB Ports” on page B-7](#)
- [Section B.6, “SCSI Port” on page B-8](#)

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

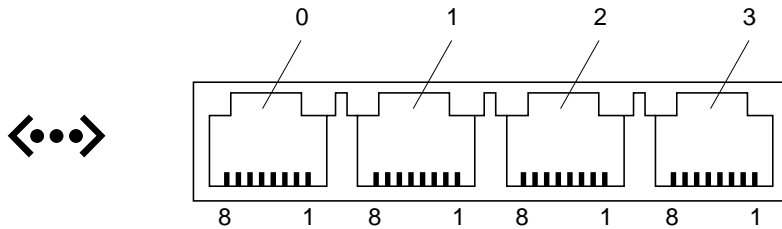


FIGURE B-1 Gigabit Ethernet Port Pin Numbering

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.

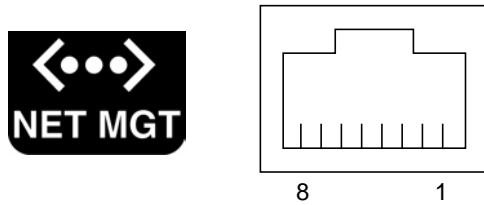


FIGURE B-2 Network Management Port Pin Numbering

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 I/OI. [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 I/OI
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.

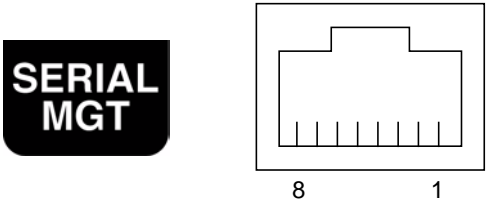


FIGURE B-3 Serial Management Port Pin Numbering

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 (I/OI/OI)

The port labeled I/OI/OI 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.

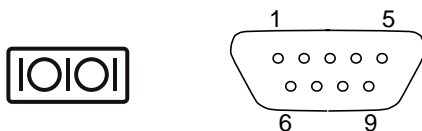


FIGURE B-4 Serial Port (I/O) Pin Numbering

TABLE B-8 Serial Port (I/O) 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.

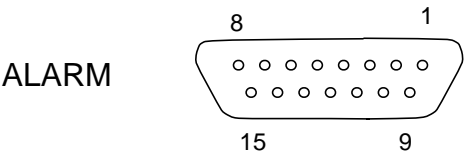


FIGURE B-5 Alarm Port Pin Numbering

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.

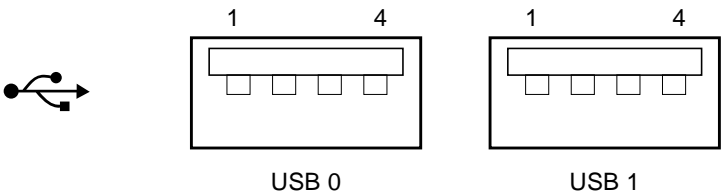


FIGURE B-6 USB Ports Pin Numbering

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.

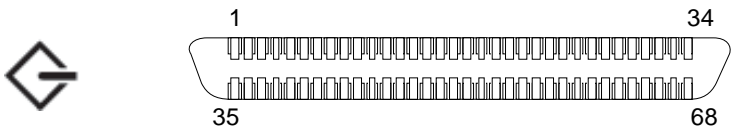


FIGURE B-7 SCSI Port Pin Numbering

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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