Netra™ CT Server Installation Guide

For the Netra CT 810 Server and Netra CT 410 Server

Adobe PostScript

Contents

Figures

Tables

Preface

The *Netra CT Server Installation Guide* describes how to perform the initial installation of the Netra CT server. Upon completion of the procedures in this document, your server will be functional.

The intended reader of this manual is an experienced system administrator who has experience installing hardware—systems and components—and has used the Solaris™ operating environment. The reader should be comfortable with LAN fundamentals and with networking concepts in general.

Before performing the procedures described this book, you should review the information in the *Netra CT Server Product Overview.*

Safety and Compliance

All Netra CT servers are shipped with the *Netra CT Server Safety and Compliance Manual*, which specifies the environmental and electrical safety requirements for the product and contains compliance certification for various countries. Review the information in the *Netra CT Server Safety and Compliance Manual* before proceeding with the instructions in this document.

How This Book Is Organized

Chapter 1 gives the documentation overview for this document.

Chapter 2 gives the information you'll need to prepare your installation site for the Netra CT server.

Chapter 3 tells how to mount the chassis into a rack.

Chapter 4 tells how to install the Netra CT server into the chassis.

Chapter 5 tells how to install I/O cards into the Netra CT server.

Chapter 6 tells how to connect the necessary cables to the Netra CT server.

Chapter 7 tells how to power the Netra CT server on and off.

Chapter 8 gives information on installing the Netra CT server software.

Appendix A gives information on connecting external SCSI devices to the Netra CT server.

Using UNIX Commands

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

■ Software documentation that you received with your system

■ Solaris™ Operating System documentation, which is at

http://docs.sun.com

Shell Prompts

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

Typographic Conventions

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

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

Related Documentation

The Netra CT server documentation is listed in the following table:

Title	Part Number
Netra CT Server Start Here	816-2479
Netra CT Server Product Overview	816-2480
Netra CT Server Installation Guide	816-2481
Netra CT Server Service Manual	816-2482
Netra CT Server System Administration Guide	816-2483
Netra CT Server Safety and Compliance Manual	816-2484
Netra CT Server Release Notes	817-0939

You may want to refer to documentation on the following software for additional information: the Solaris™ operating environment, the ChorusOS™ environment, and the Netra High Availabilty (HA) Suite.

Accessing Sun Documentation

You can view, print, or purchase a broad selection of Sun documentation, including localized versions, at:

http://www.sun.com/documentation

Third-Party Web Sites

Sun is not responsible for the availability of third-party web sites mentioned in this document. Sun does not endorse and is not responsible or liable for any content, advertising, products, or other materials that are available on or through such sites or resources. Sun will not be responsible or liable for any actual or alleged damage or loss caused by or in connection with the use of or reliance on any such content, goods, or services that are available on or through such sites or resources.

Contacting Sun Technical Support

If you have technical questions about this product that are not answered in this document, go to:

http://www.sun.com/service/contacting

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. You can submit your comments by going to:

http://www.sun.com/hwdocs/feedback

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

Netra CT Server Installation Guide, part number 816-2481-13

CHAPTER **1**

Installation Overview

This chapter provides an overview of the tasks to install the Netra CT server. Detailed instructions for each task are provided on the pages specified.

Task	Detailed Instructions
Prepare your site for installation by checking the room and rack spacing, and the AC or DC power source.	Page 3
Mount the chassis in a rack, if necessary.	Page 23
Connect the DC grounding cable, if necessary.	Page 33
Install the Netra CT server in the chassis, if necessary.	Page 35
Install optional cards, such as satellite CPU or I/O cards.	Page 43
Connect the cables to the host CPU card and/or a host CPU transition card.	Page 62 (host CPU card) Page 67 (host CPU front transition card) Page 82 (host CPU rear transition card)
Connect the cables to the alarm card or to the alarm rear transition card.	Page 73 (alarm card) Page 87 (alarm rear transition card)
Connect the cables to any additional cards you installed.	Page 81 (front-access I/O cards) Page 91 (rear-access I/O cards)
Assemble and connect the AC or DC input power cables to the server.	Page 92
Power on the server.	Page 112
Install the server software.	Page 119
Connect any optional external SCSI devices.	Page 133

Site Preparation

This chapter describes how to prepare your site for installing the Netra CT server. This chapter contains the following topics:

- "Tools Required" on page 3
- "Planning the Placement of the Rack" on page 4
- "Planning the Rackmounting Configuration" on page 6
- "Chassis and Server Physical Specifications" on page 9
- "Power Source Requirements" on page 14
- "Connecting Logic Ground and Chassis Ground" on page 17
- "Cooling Requirements" on page 19
- "Environmental Specifications" on page 21

Tools Required

You will need the following tools to perform the procedures in this document:

- No. 1 Phillips screwdriver
- No. 2 Phillips screwdriver

Planning the Placement of the Rack

The Netra CT chassis and the servers within the chassis come in two models:

- Front-access model—designed so that all the cables to the CompactPCI cards are connected from the front of the chassis. This model is used in areas where the rack is positioned in a room in such a way that the rear of the chassis is inaccessible.

- Rear-access model—designed so that all the cables to the CompactPCI cards are connected from the rear of the chassis. This model is used in areas where the rack is positioned in a room in such a way that both the front and the rear of the chassis is accessible.

Note – The AC-powered chassis and servers are available only as rear-access models.

Determining If You Have a Front-Access or Rear-Access Model

If you are not sure whether you have a front-access or a rear-access model, go to the front of the chassis and look at the top part of the chassis.

- If you see the DC connectors at the front of the chassis, you have a *front*-access model (FIGURE 2-1).

- If you do not see DC connectors at the front of the chassis, and metal filler plates fill the gaps where the DC connectors would normally be, you have a *rear*-access model (FIGURE 2-1). The DC connectors are at the rear of the chassis for the rear-access model.
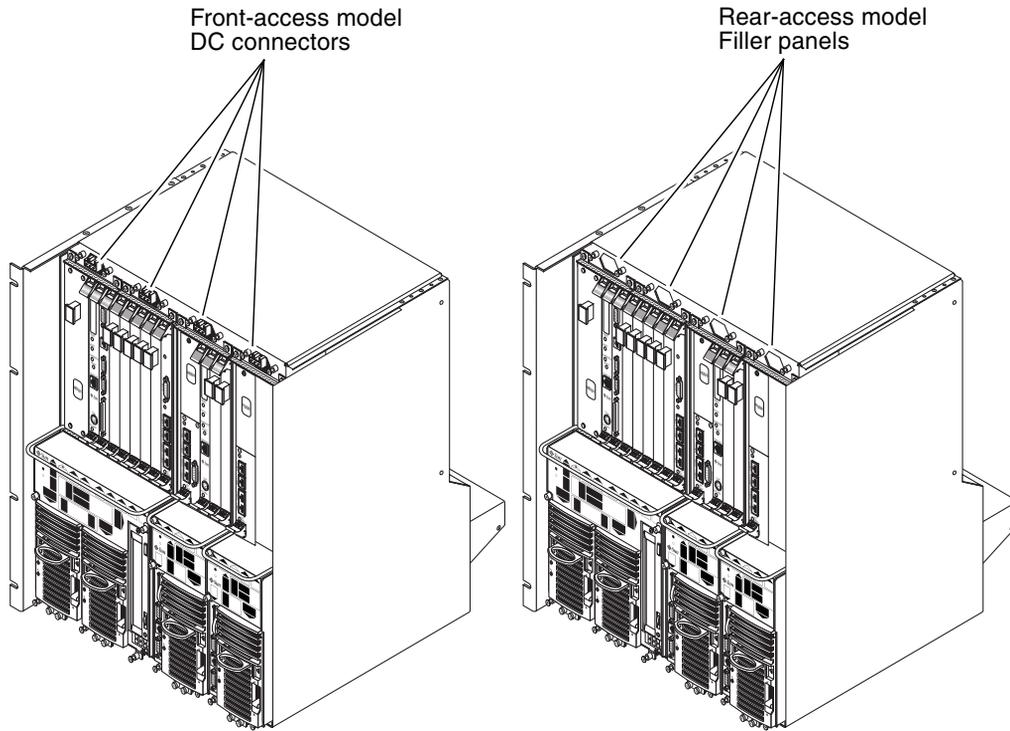
FIGURE 2-1 Front-Access and Rear-Access Models

Example of Server Room Layout

shows an example of a server room layout and how the front-access and rear-access model chassis and servers might be positioned.
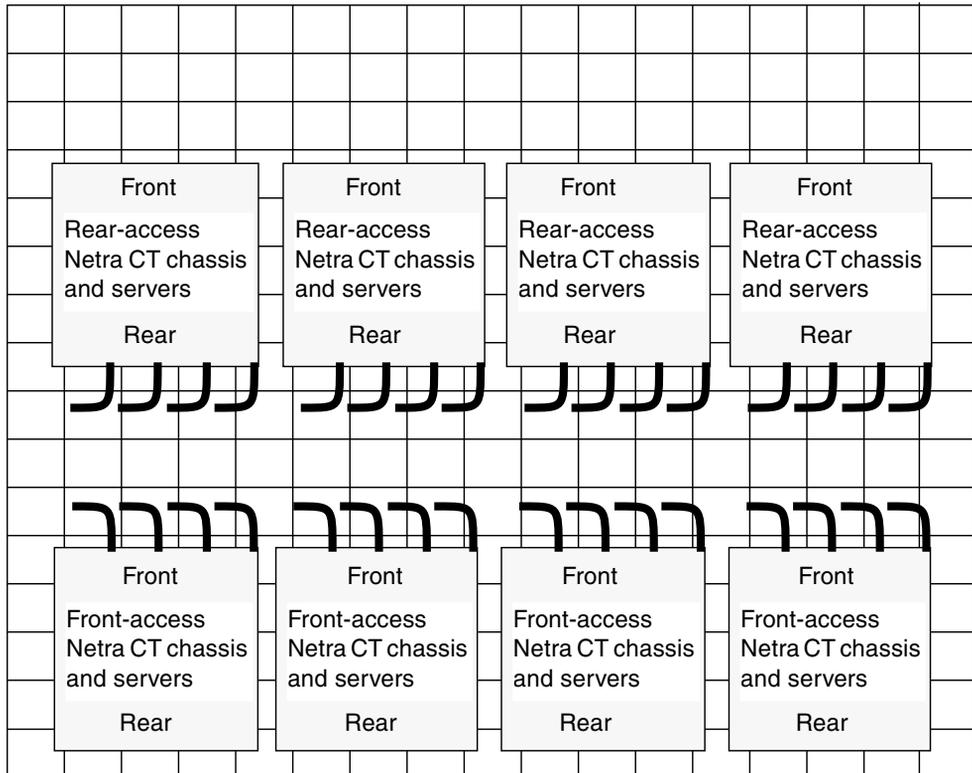
FIGURE 2-2   Example of a Server Room Layout

Planning the Rackmounting Configuration

You can mount several Netra CT chassis into a rack, depending on the size and model of the rack. For example, you could install up to three Netra CT chassis in a standard 19-inch rack, with room left over for one or more external SCSI devices, if necessary.

The following figures show how the Netra CT chassis can be installed in a rack, along with supported external SCSI devices. Note that the external SCSI device shown in the figures might be different from the one that you will be using in your configuration.

-
-

Chassis with two Netra CT 810 servers

Chassis with one Netra CT 810 server and two Netra CT 410 servers

Chassis with four Netra CT 410 servers

FIGURE 2-3   Example Configuration 1—Three Chassis, No External SCSI Devices
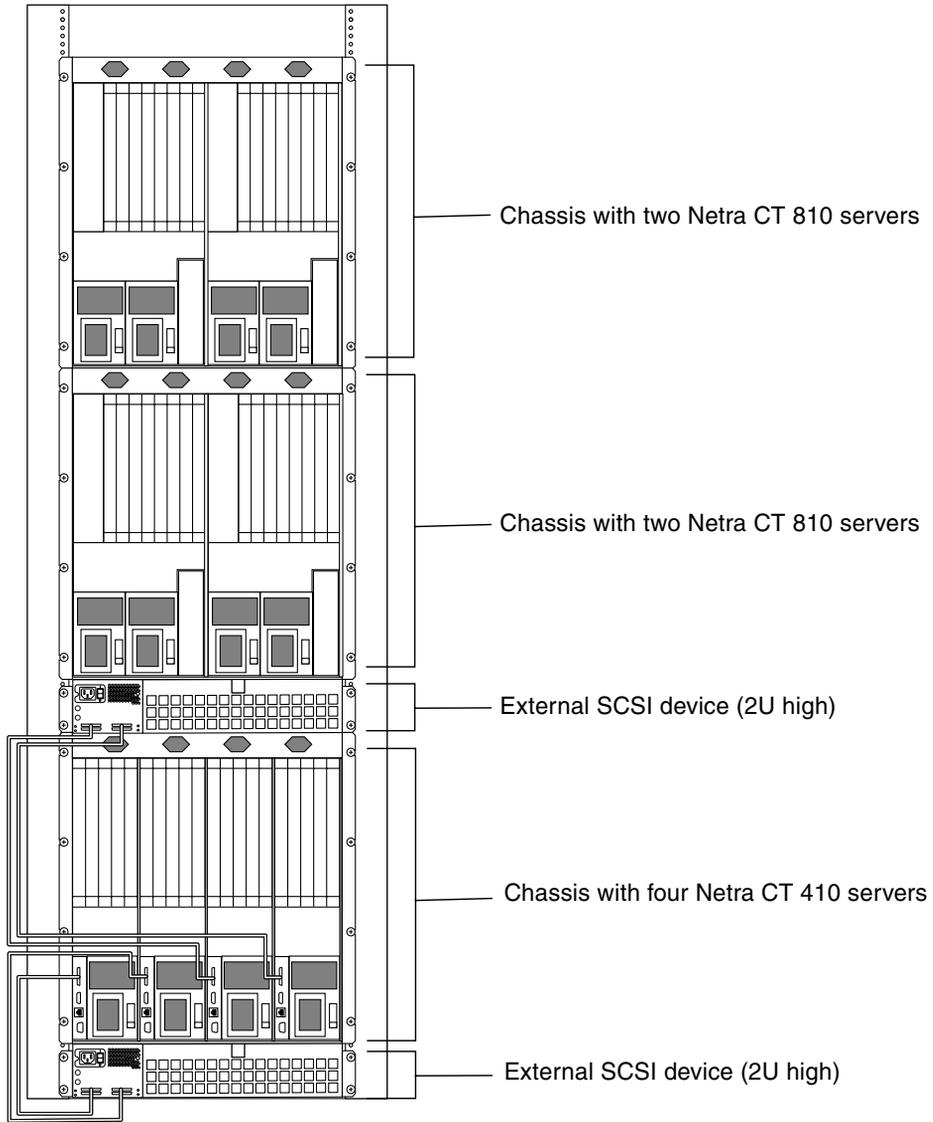
FIGURE 2-4 Example Configuration 2—Three Chassis, Two External SCSI Devices

Chassis and Server Physical Specifications

Chassis Physical Specifications

TABLE 2-1   Netra CT Server Chassis Physical Specifications

	U.S.	Metric
Width	17.5 inches	444.5 mm
Depth—DC model:		
• Default configuration, with rackmount brackets extended as shown in FIGURE 2-5	15.8 inches	400 mm
• With rackmount brackets flush against the bottom of the chassis	13.8 inches	350 mm
Depth—AC model:		
• Default configuration, with rackmount brackets extended as shown in FIGURE 2-6	18.3 inches	465 mm
• With rackmount brackets flush against the bottom of the chassis	16.3 inches	415 mm
Height	21 inches	533.6 mm
Weight (empty)	74 lbs	33.6 kg
Weight (fully-loaded)	150 lbs	68 kg

17.5 inches
444.5 mm

21 inches
533.6 mm

15.8 inches
400 mm
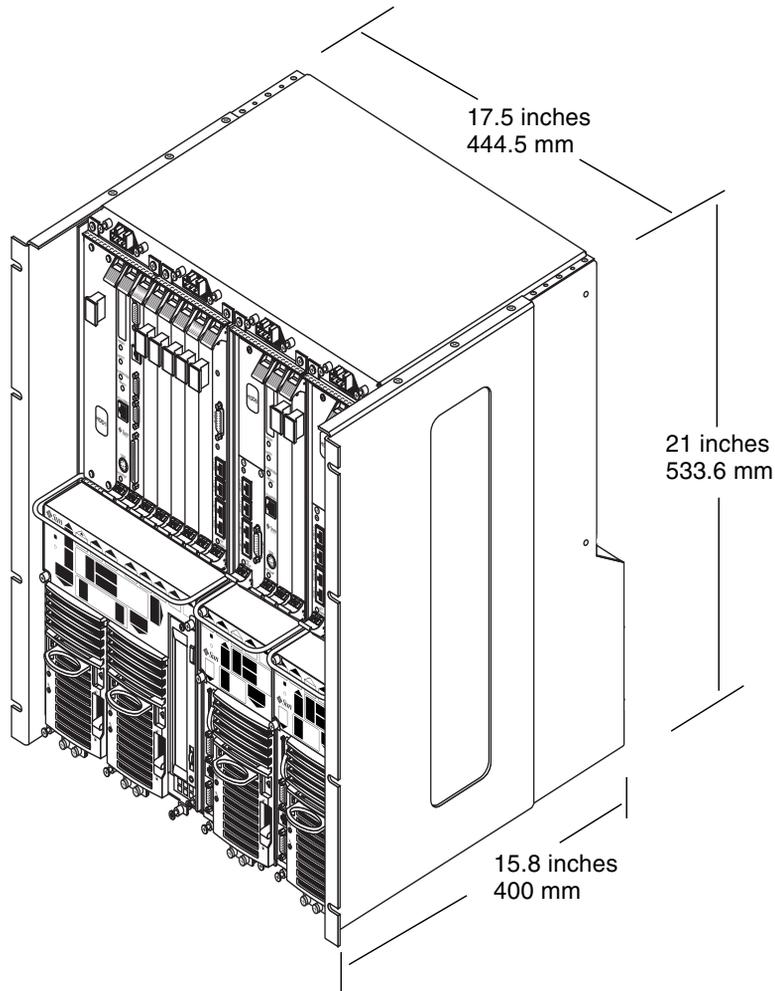
FIGURE 2-5   Physical Specifications for the Netra CT Chassis, DC model

17.5 inches
444.5 mm

21 inches
533.6 mm

18.3 inches
465 mm
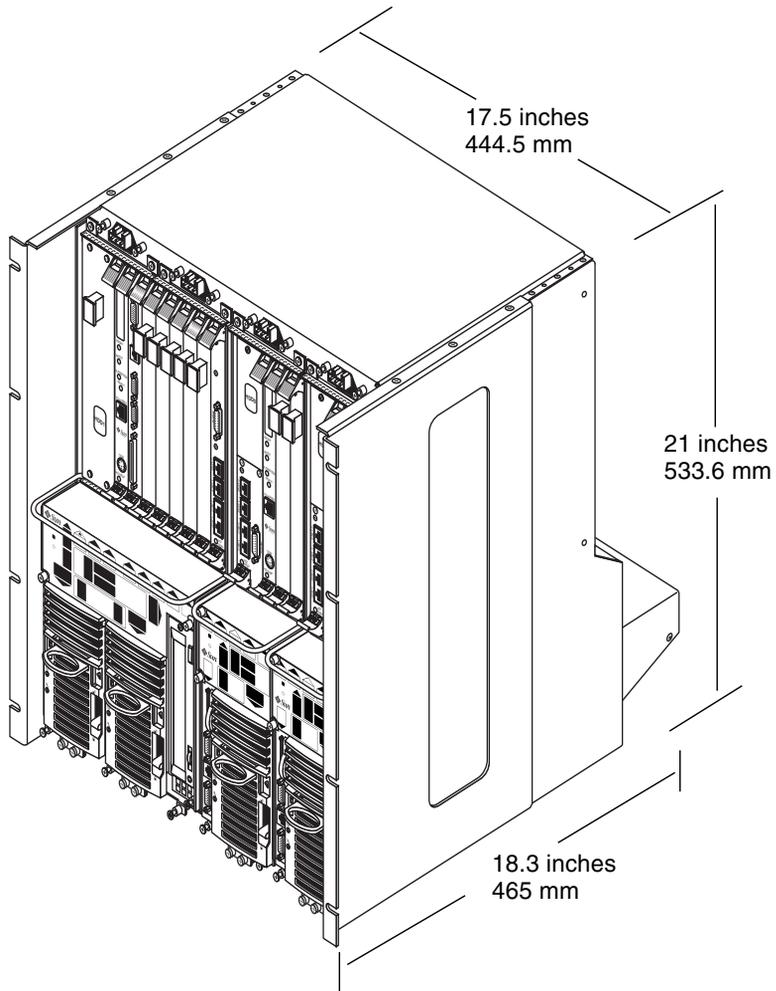
FIGURE 2-6   Physical Specifications for the Netra CT Chassis, AC model

Netra CT 810 Server Physical Specifications

TABLE 2-2 Netra CT 810 Server Physical Specifications

Measure	U.S.	Metric
Width	8.6 inches	217.5 mm
Depth—DC model	15 inches	378.3 mm
Depth—AC model	15.4 inches	391.3 mm
Height	20.2 inches	512.7 mm
Weight, fully-loaded	38 lbs	17.2 kg
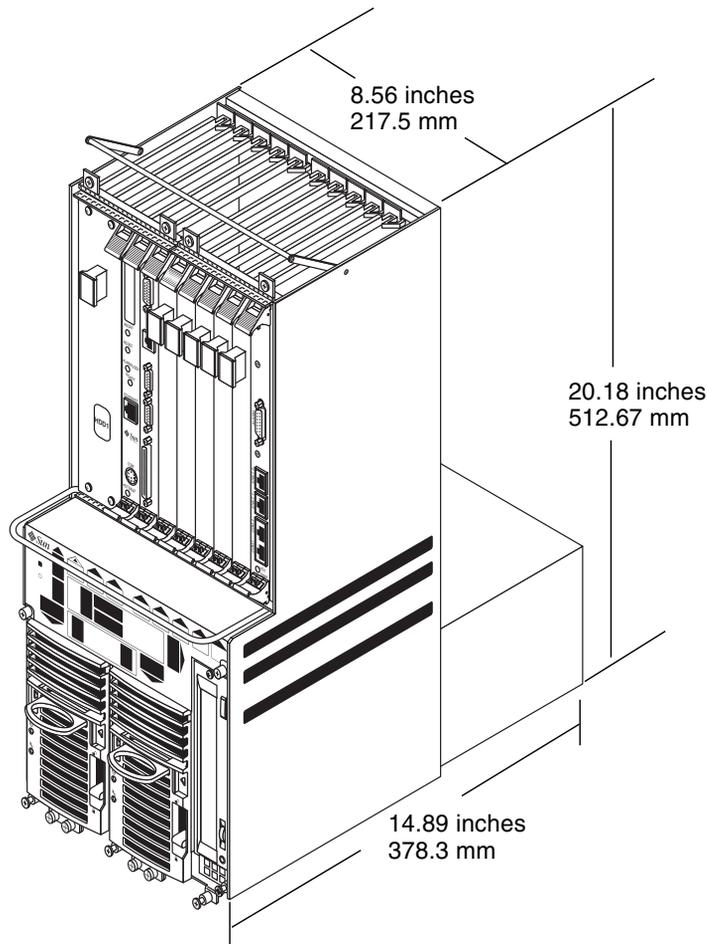
FIGURE 2-7 Netra CT 810 Server Physical Specifications

Netra CT 410 Server Physical Specifications

TABLE 2-3   Physical Specifications, Netra CT 410 Server

Measure	English	Metric
Width	4.3 inches	108 mm
Depth—DC model	14.9 inches	378.7 mm
Depth—AC model	15.4 inches	391.7 mm
Height	20.2 inches	512.7 mm
Weight, fully-loaded	22 lbs	10 kg
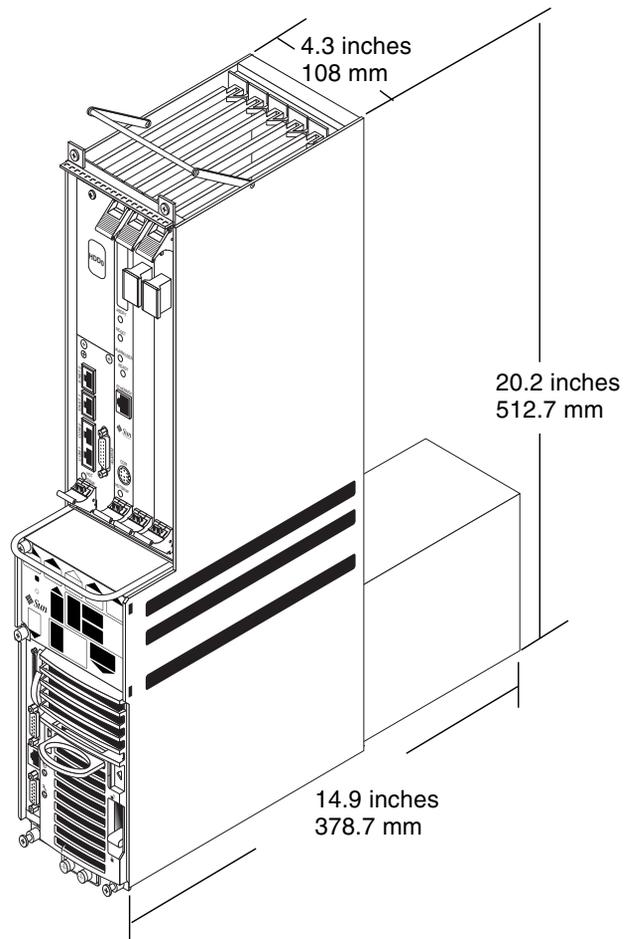
FIGURE 2-8   Netra CT 410 Server Physical Specifications

Power Source Requirements

The power source requirements for your servers are dependent on whether the servers are AC-powered or DC-powered.

DC Source Site Requirements

TABLE 2-4   DC Power Requirements

Electrical Element	Requirement
Voltage (nominal)	-48 VDC, -60 VDC
Input current (maximum)	14 A
Max. input surge current	17 A

- Reliably connected to protected earth ground (the battery positive terminal is connected to earth ground)
- May be supplied by one or two power sources, isolated from each other
- Capable of providing up to 600 W of continuous power per feed
- Limited to TNV-2 as defined by UL 1950 and IEC 60950

Note – The DC version of the Netra CT server must be installed in a *restricted-access location*. Per the intent of the National Electrical Code, a restricted-access location is an area intended for qualified or trained personnel only and has access controlled by a locking mechanism, such as a key lock or an access card system.

DC Supply and Ground Conductor Requirements

- Suitable conductor material: use copper conductors only
- Power supply connections through the input connector: 12 AWG (between the Netra CT server and the source). There are three conductors:
  - -48V (negative terminal)
  - Chassis ground connection
  - -48V Return (positive terminal)
- System ground conductor: 12 AWG (to be connected to the chassis)

- Cable insulation rating: minimum of 75°C (167°F), low smoke fume (LSF), flame retardant
- Cable type to be one of the following:
  - UL style 1028 or other UL 1581(VW-1) compliant equivalent
  - IEEE 383 compliant
  - IEEE 1202-1991 compliant
- Branch circuit cable insulation color: per applicable National Electrical Codes
- Grounding cable insulation color: green/yellow

Overcurrent Protection Requirements

- Overcurrent protection devices must be provided as part of each equipment rack.
- Circuit breakers must be located between the DC power source and the Netra CT server. Use one 20-amp, double-pole, fast trip DC-rated circuit breaker for each power supply unit.

Note – Overcurrent protection devices must meet applicable national and local electrical safety codes and be approved for the intended application.

AC Specifications

The power supplies on the AC version convert incoming AC voltage to outgoing DC voltages.

AC Source Site Requirements

TABLE 2-5   AC Power Requirements

Electrical Element	Requirement
Voltage	100 VAC to 240 VAC (nominal)
Frequency	47–63 Hz
Max. current	12 A (6.0 A per cord) 13 A (6.5 A per cord) in Japan
Max. surge current	100 A peak

Requirements

- Overcurrent protection devices must be provided as part of each host equipment rack.
- Circuit breakers are located between the AC source and the Netra CT server.
- Circuit breakers must not trip when presented with inrush current of 100 amps lasting 10 ms.

Note – Overcurrent protection devices must meet applicable national and local electrical safety codes and be approved for the intended application.

Caution – Before disconnecting power from a single power supply unit, power off the power supply unit. If disconnecting power from a server, power off the server before disconnecting the power. See instructions in Chapter 7 for powering off a server.

You can disconnect the power for servicing in any of the following ways:

- Unplug the appropriate AC cables from the AC connectors at the rear of the chassis:
  - If you want to disconnect power to all of the Netra CT servers in a chassis, unplug the AC cables from all four of the AC connectors at the rear of the chassis.
  - If you want disconnect power only to certain Netra CT servers installed in a chassis or to a specific power supply unit in a server, determine which AC connectors at the rear of the chassis supply power to the power supply unit(s) in the Netra CT servers. FIGURE 2-9 shows how to match the AC connectors at the rear of the chassis to the power supply units in the Netra CT servers. Note that if you want to disconnect all power to a Netra CT 810 server, you must determine which AC connectors supply power to the two AC power supply units in the Netra CT 810 server and unplug both of those AC cables from the AC connectors.
- Unplug the appropriate AC cables from the AC power sources.
- Turn off the circuit breakers in the rack where the enclosure is mounted.
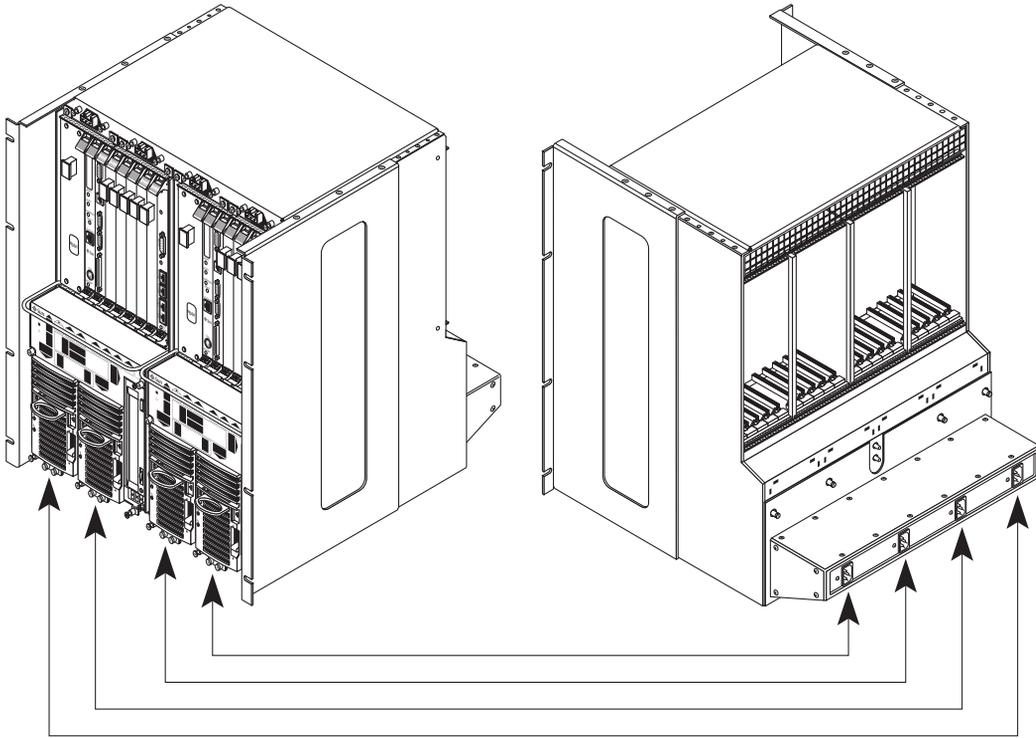
FIGURE 2-9 Matching AC Power Supply Units to AC Connectors

![Caution symbol] **Caution –** External filtering and surge suppression devices may be required on the power feeds where branch circuit electromagnetic characteristics are unknown.

Connecting Logic Ground and Chassis Ground

The Netra CT servers are shipped out of the factory with the logic ground and chassis ground isolated by default. If you want to connect the logic ground and the chassis ground, follow these instructions:

1. **Remove the Netra CT server, if you have not done so already.**

   Refer to "To Remove the Servers From the Chassis" on page 26 for those instructions.

2. **Go to the rear of the Netra CT server and locate the two M5 threaded studs on the midplane next to the ground symbols.**

3. **Remove the two screws and install a grounding plate to connect the two studs (**FIGURE 2-10**).**

   This connects the logic ground and chassis ground.
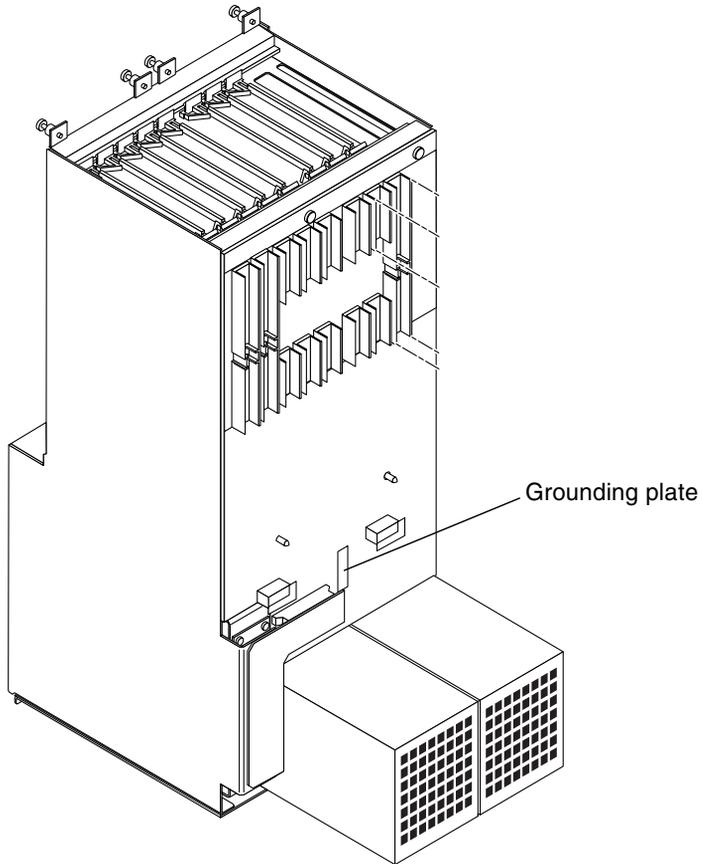
Grounding plate

FIGURE 2-10 Installing a Grounding Plate

Cooling Requirements

The Netra CT server is cooled by having air drawn in from the front of the system and exhausted out the rear. You must allow 8 inches (203.2 mm) in front and at the back of the server to ensure proper cooling. FIGURE 2-11 shows the airflow for the Netra CT 810 server, and FIGURE 2-12 shows the airflow for the Netra CT 410 server.
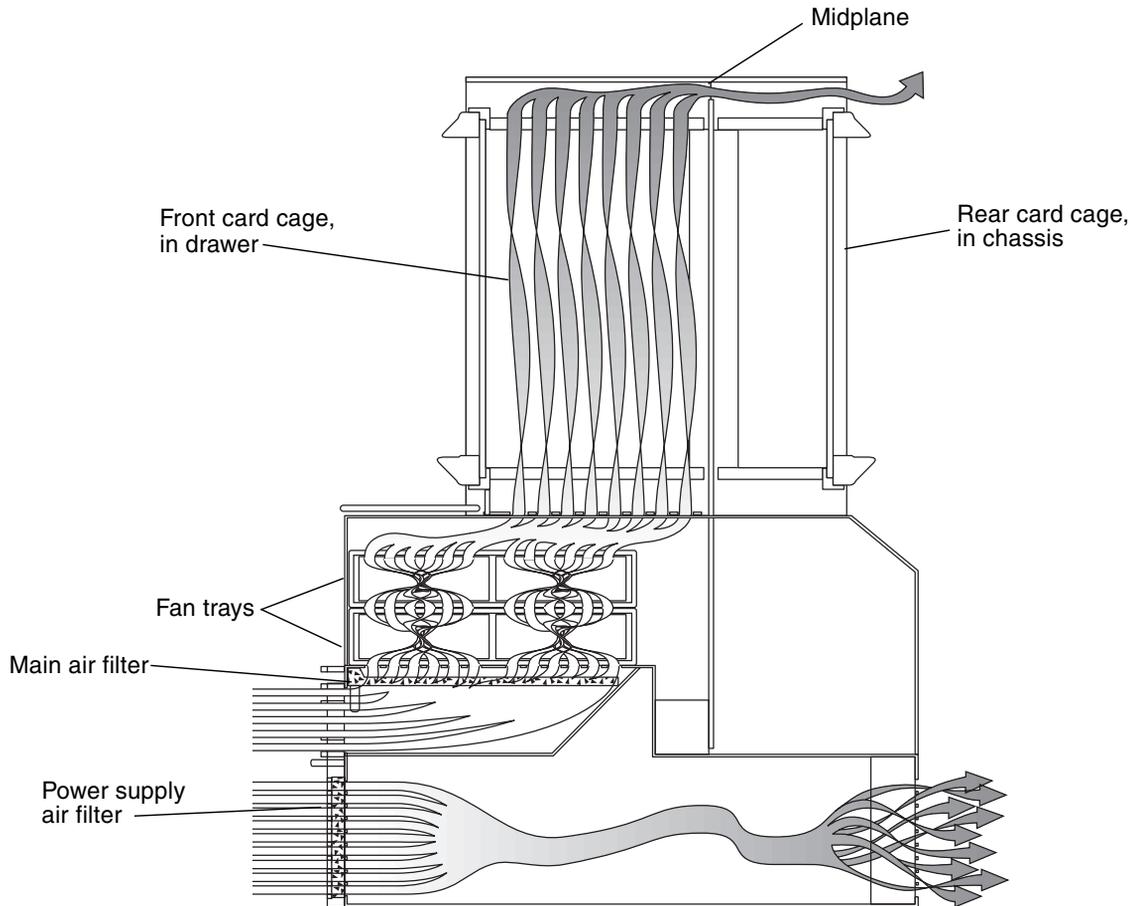
FIGURE 2-11 Airflow, Netra CT 810 Server (Side View)

Midplane

Front card cage,
in drawer

Rear card cage,
in chassis

Fan trays

Main air filter

Power supply
air filter
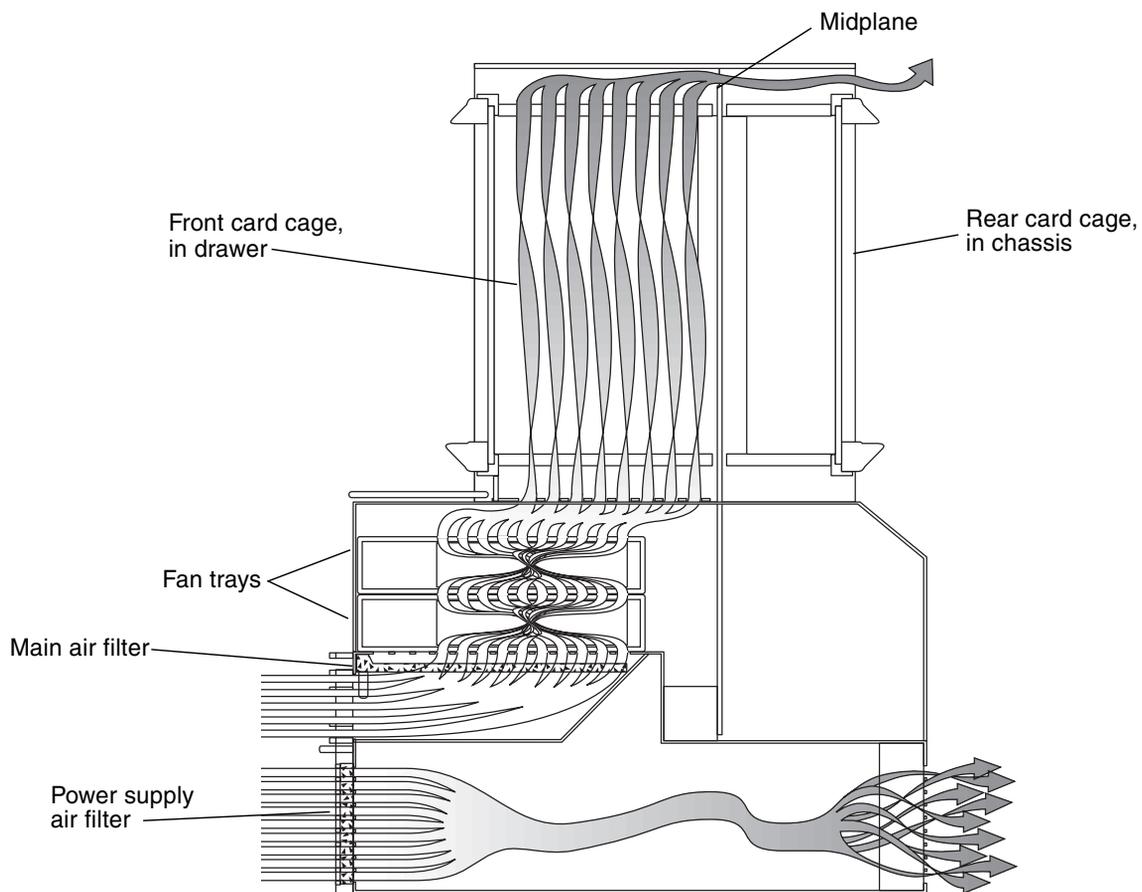
FIGURE 2-12 Airflow, Netra CT 410 Server (Side View)

Environmental Specifications

TABLE 2-6   Environmental Specifications

Type	Location	Minimum to Maximum Range
Temperature	Operating	-5˚C to 45˚C (23˚F to 113˚F)
	Nonoperating	-40˚C to 70˚C (-38˚F to 158˚F)
Short term (less than 96 consecutive hrs)	Operating	-5˚C to 55˚C (23˚F to 131˚F)
Relative humidity (noncondensing)	Operating	5% to 93% RH
	Nonoperating	93% RH max
Altitude	Operating	0 ft to 13,123 ft (0m to 4000m)
	Nonoperating	0 ft to 39,370 ft (0m to 12,000m)
Declared noise emissions in accordance with ISO 9296		
Chassis w/two Netra CT 810 servers		Sound power LWAd Operating 6.7 B (1B = 10 dB)
		Idle 6.7 B
Chassis w/four Netra CT 410 servers		Sound power LWAd Operating 7.1 B (1B = 10 dB)
		Idle 7.1 B

CHAPTER **3**

Mounting the Chassis in a Rack

The Netra CT chassis fits into a standard 19-inch width rack. Note that you can move the standard mounting brackets up to six inches (152.4 mm) backward on the Netra CT chassis to center-mount the chassis (FIGURE 3-1).
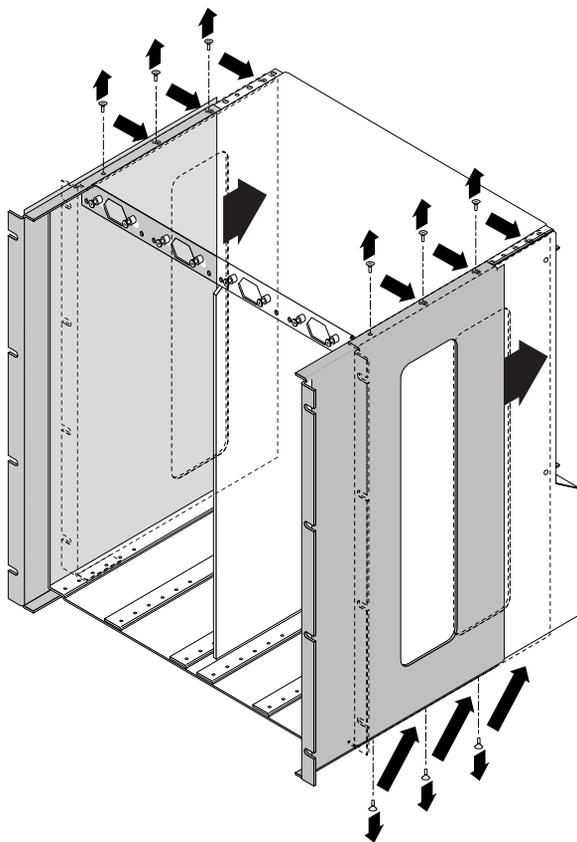
FIGURE 3-1   Center-Mounting the Chassis

You can also purchase optional adaptors that enable you to mount the chassis in 23-inch and 600-mm racks.

- If you have a *19-inch* width rack, you do not have to install any additional mounting bracket adapters. Go to .

- If you have a *23-inch* or *600-mm* width rack, you must install the mounting bracket adapters. Go to .

Attaching the Mounting Bracket Adapters to the Chassis

If you are mounting the chassis in a 23-inch or 600-mm rack, you must first attach the mounting bracket adapters to the chassis using the following procedure.

▼ To Attach the Mounting Bracket Adapters

1. **Get the mounting bracket adapters from the ship kit.**

2. **Place one of the mounting bracket adapters behind the right chassis mounting bracket, and align the holes in the adapter with the mounting bracket (**FIGURE 3-2**).**

Mounting bracket adapter
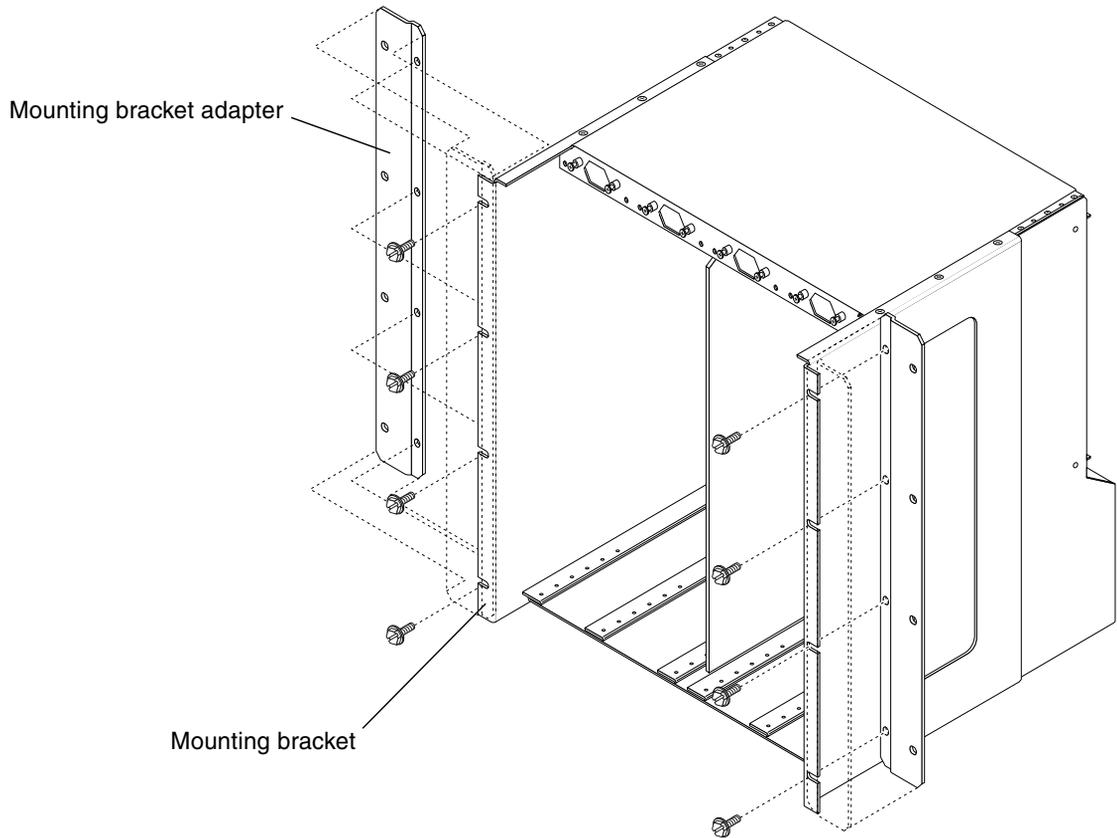
Mounting bracket

FIGURE 3-2 Installing the Mounting Bracket Adapters

3. **Secure the mounting bracket adapter to the mounting bracket using four screws from the ship kit.**

4. **Repeat Step 2 and Step 3 to secure the left mounting bracket adapter to the chassis.**

Mounting the Chassis in a Rack

The Netra CT chassis is shipped out one to four Netra CT servers installed inside. A fully loaded Netra CT chassis, including the rackmounting brackets, weighs 150 pounds (68 kg). If you are going to mount a fully loaded chassis into a rack, you must use a lifting device, or two people, to lift the chassis.

Alternatively, you can remove all the servers from the chassis to make the chassis lighter before you mount it in the rack. An empty chassis (with all servers removed) weighs 74 pounds (33.6 kg).

- If you want to remove the servers from the chassis before you mount it in the rack, go to "To Remove the Servers From the Chassis" on page 26.
- If you want to mount the chassis in the rack without removing the servers, go to "To Mount the Chassis in a Rack" on page 31.

▼ To Remove the Servers From the Chassis

Note – Individual Netra CT servers do not comprise an EMI enclosure unless they are installed in a Netra CT chassis. The chassis does not comprise an EMI enclosure unless it is full of Netra CT servers and/or blanking panels. If you remove a Netra CT server, you must install a blanking panel; if you don't, the unit will be in violation of 47CFR15.

Caution – If you have a rear-access model Netra CT server, do *not* attempt to remove the server from the chassis without first performing the next step or you might damage certain major system components. Skip to Step 2 only if you have a front-access model.

1. **If you have a *rear-access* model server, unseat all the rear transition cards from the server that you are going to remove.**

   You do not have to completely remove the rear transition cards from the chassis; just pull them out an inch or two so that they are disengaged from the back of the server that you are going to remove.

2. **Using a No. 2 Phillips screwdriver, loosen the *black* captive screws at the top of the server.**

   - If you are removing a Netra CT 810 server, loosen the *four* black captives screws at the top of the server (FIGURE 3-3).

   - If you are removing a Netra CT 410 server, loosen the *two* black captive screws at the top of the server (FIGURE 3-4).
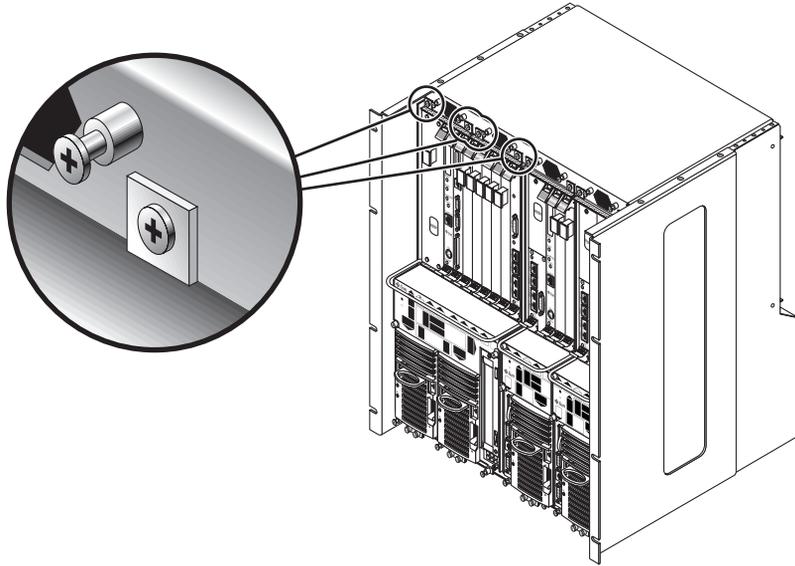
FIGURE 3-3 Loosening the Screws at the Top of a Netra CT 810 Server
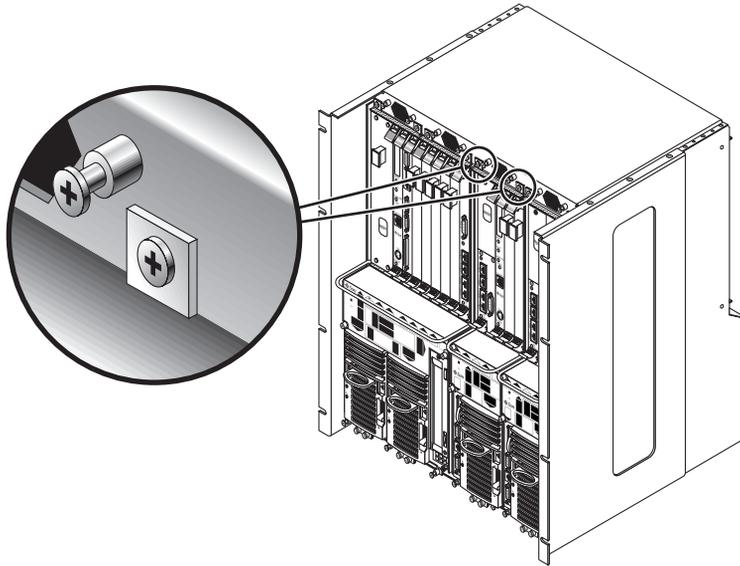
FIGURE 3-4 Loosening the Screws at the Top of a Netra CT 410 Server

3. **Using a No. 2 Phillips screwdriver, loosen the *black* captive screws at the bottom of the server.**

   - If you are removing a Netra CT 810 server, loosen the *three* black captive screws at the bottom of the server (FIGURE 3-5).

   - If you are removing a Netra CT 410 server, loosen the *two* black captive screws at the bottom of the server (FIGURE 3-6).

   Note – Do not loosen the *silver* captive screws at the base of the server; those screws hold the power supply unit in place.
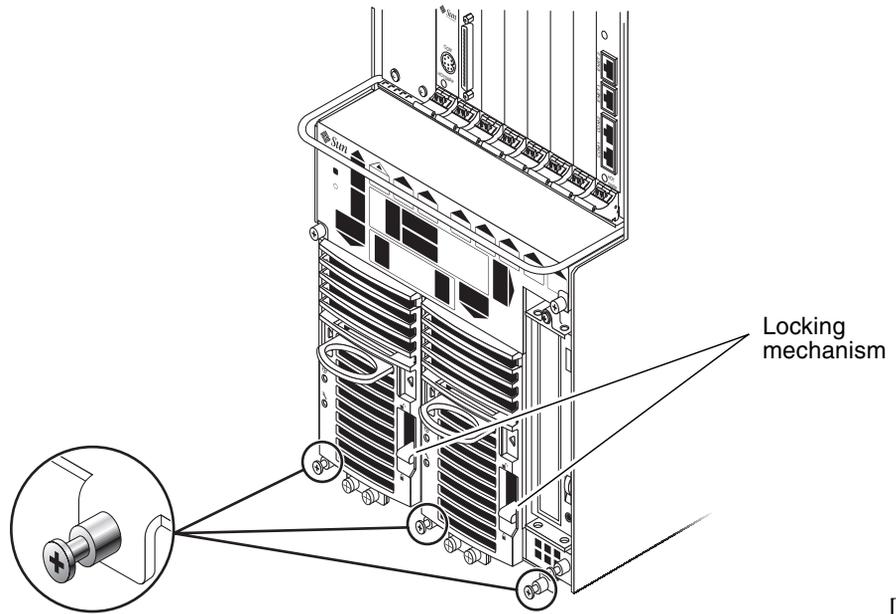
FIGURE 3-5   Loosening the Screws at the Bottom of a Netra CT 810 Server
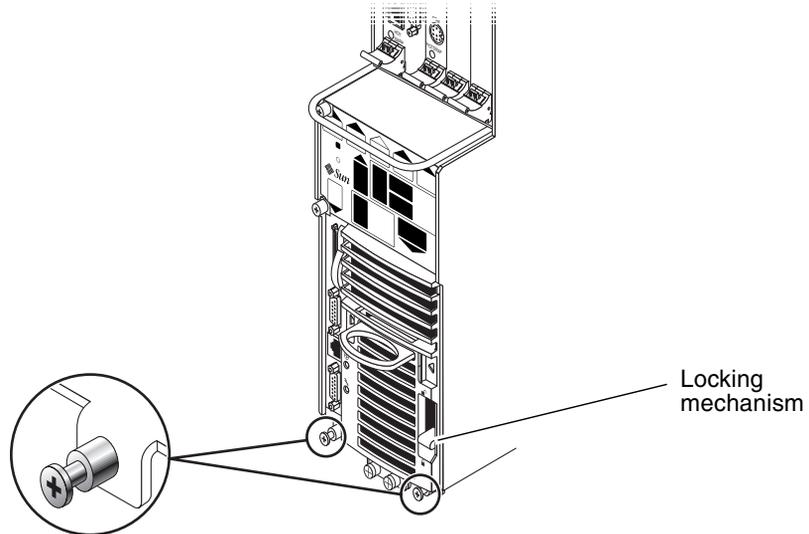
FIGURE 3-6   Loosening the Screws at the Bottom of a Netra CT 410 Server

4. **Push the power supply unit locking mechanism(s) up into the unlocked (⌓) position.**

   FIGURE 3-5 shows the location of the two power supply unit locking mechanisms on the Netra CT 810 server, and FIGURE 3-6 shows the location of the single power supply unit locking mechanism on the Netra CT 410 server. Make sure you unlock *both* power supply units if you are replacing an Netra CT 810 server, or you will not be able to remove the server from the chassis.

5. **With your left hand, grasp the bar in front and slowly pull the server out of the chassis until the purple handle at the top of the server is visible.**

6. **With your right hand, grasp the purple handle at the top of the server, and completely pull the server out of the chassis using both the bar in front and the handle at the top.**

   FIGURE 3-7 shows how to remove a Netra CT 810 server from the chassis, and FIGURE 3-8 shows how to remove a Netra CT 410 server from the chassis.
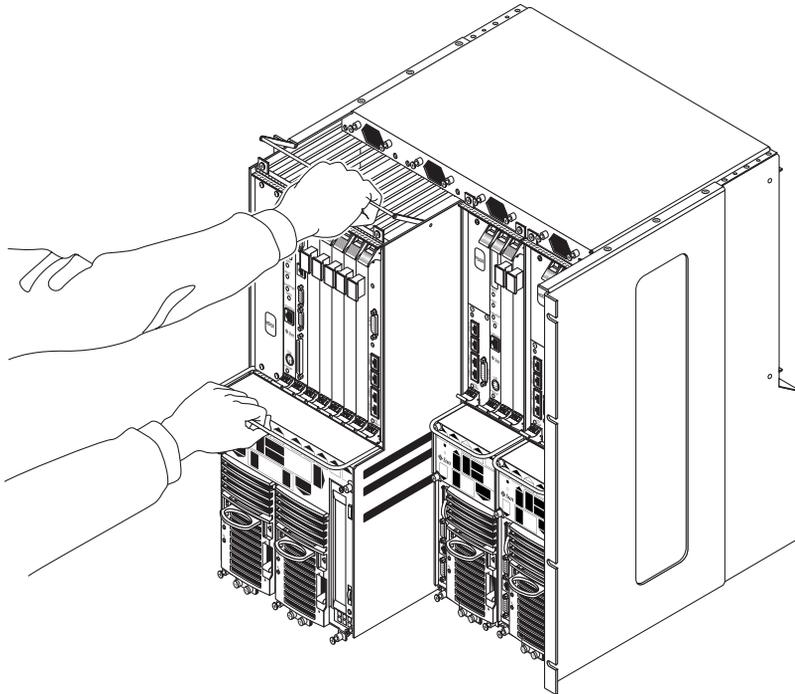
FIGURE 3-7 Removing a Netra CT 810 Server From the Chassis
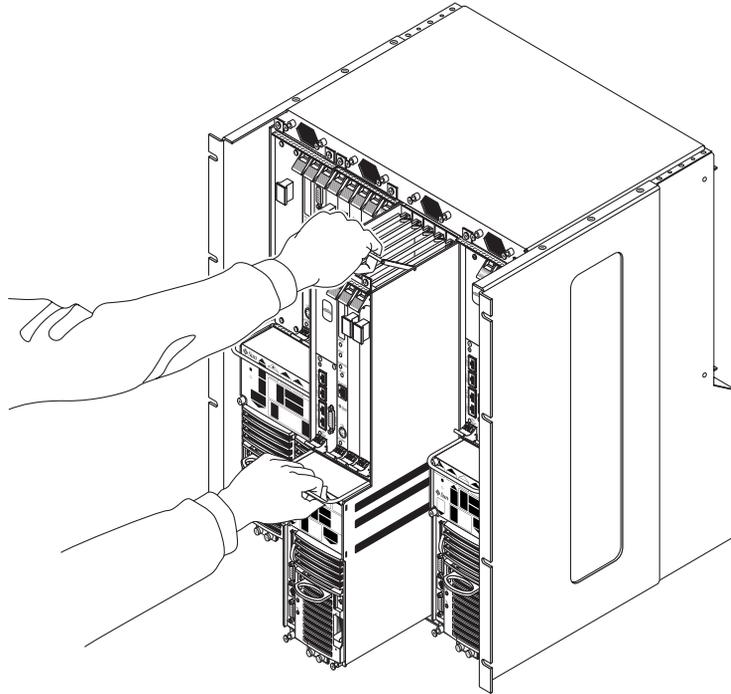
FIGURE 3-8   Removing a Netra CT 410 Server From the Chassis

7. **Place the server on a flat level surface, taking care not to damage the metal lip that extends from the bottom of the server.**

▼ To Mount the Chassis in a Rack

⚠️

Caution – Ensure that the rack is bolted to the floor before you install the chassis in the rack.

1. **Raise the Netra CT chassis to the appropriate height in the rack and align the mounting holes on the sides of the chassis with the mounting holes in the rack rails (**FIGURE 3-9**).**
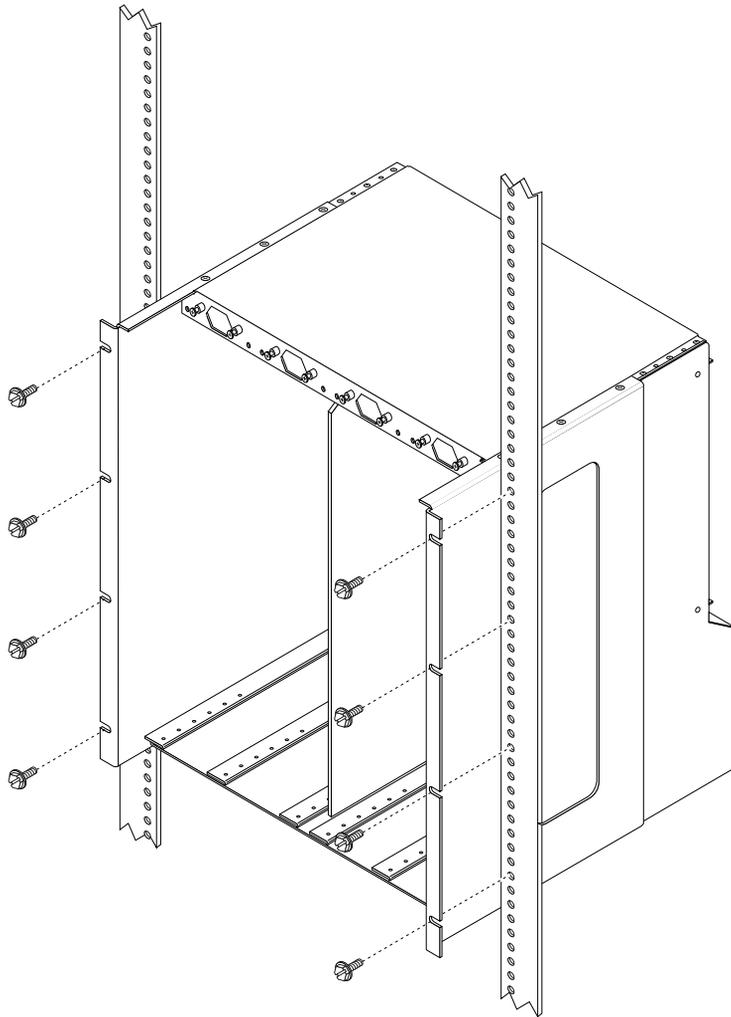
FIGURE 3-9   Mounting the Netra CT Chassis in a Rack

2. Secure the chassis to the rack using eight screws (four on each side).

▼ To Connect the DC Grounding Cable

Note – Do not connect the DC grounding cable if you have an AC system.

Refer to "DC Supply and Ground Conductor Requirements" on page 14 for the site requirements for this section.

1. **Get a DC grounding cable and two M5 nuts with lock washers.**

2. **Go to the back of the chassis and locate the two DC grounding studs.**
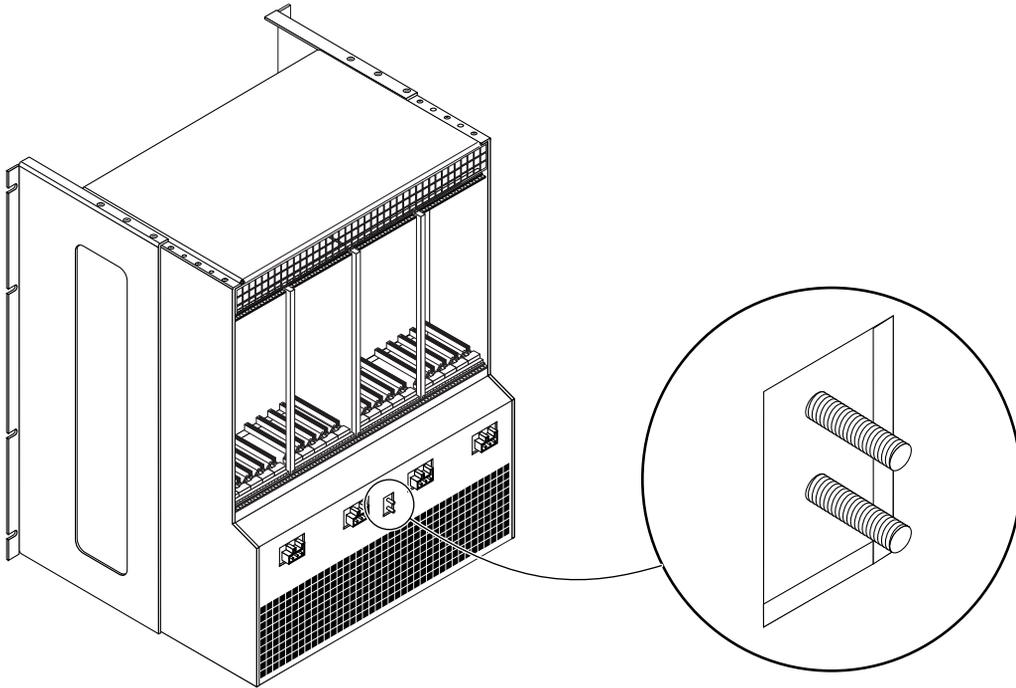
FIGURE 3-10 Connecting the DC Grounding Cable to the DC Grounding Studs

3. **Remove the plastic shielding from the DC grounding studs.**

4. **Position and align the DC grounding cable against the two DC grounding studs at the rear of the chassis.**

5. **Place the star washers between the DC grounding cable and the two nuts that you will use to secure one end of the grounding cable to the two studs.**

6. **Tighten the two nuts to secure the grounding cable to the two studs.**

7. **Secure the other end of the grounding cable to the earth ground in the building.**

   You can secure the grounding cable to a proper grounding point on the rack, as long as the rack is properly grounded to the earth ground in the building.

   Caution – If energized units are not properly grounded, an energy hazard is present.

8. **Install the servers in the Netra CT chassis, if necessary.**

   - If you removed the servers before you installed the chassis in the rack, go to Chapter 4.
   - If you did *not* remove the servers from the chassis before you installed the chassis in the rack, go to Chapter 5.

Installing a Server Into a Chassis

This chapter describes how to install a Netra CT server into a chassis.

- If you are installing a *new* Netra CT server into a chassis, go to "To Unpack a Netra CT Server" on page 35.
- If you removed an *existing* Netra CT server before you installed the chassis in the rack, go to "To Install a Netra CT Server in the Chassis" on page 37.

▼ To Unpack a Netra CT Server

1. **Use the box handles to lift the Netra CT server and place it on a large, flat, secure surface.**

2. **Lift the lid of the box straight up to remove the lid (FIGURE 4-1).**

Note – The following figure shows a Netra ct 800 server being removed from a box. The procedure is the same for the Netra CT 810 and Netra CT 410 servers.
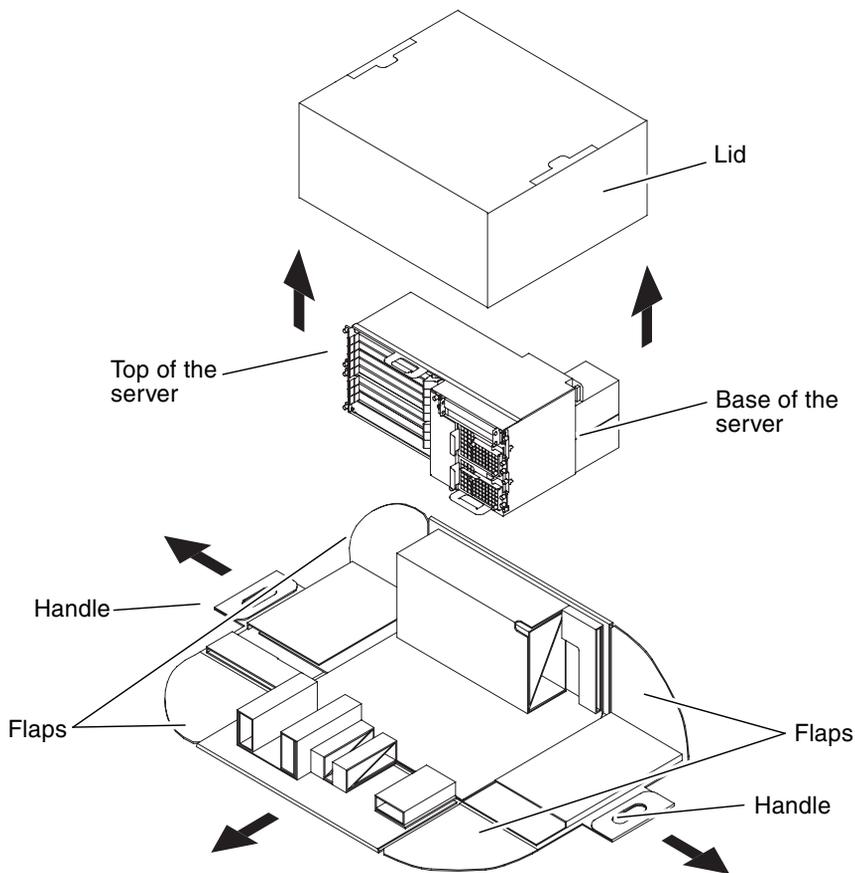
FIGURE 4-1 Unpacking a Netra CT Server

3. **Grasp one of the handles and pull the handle down and away from the box until both flaps come completely free from the box sides (**FIGURE 4-1**).**

   Repeat this step for the handle on the opposite side of the box.

4. **Press down on the remaining sides of the box so that all four sides are flattened down.**

5. **Grasp the top of the server and tip the server up until it is resting on its base (**FIGURE 4-1**).**

⚠️ **Caution –** Use extreme caution in the rest of this procedure to avoid touching the midplane. The pins on the midplane are very sensitive and could be damaged if handled improperly.

6. **Carefully remove the plastic wrapping from the Netra ct server and, using the handle at the top of the server, lift it up and completely away from the box.**

7. **If there are covers over the midplane at the rear of the server, carefully remove the covers from the midplane.**

▼ To Install a Netra CT Server in the Chassis

Caution – If any slots are left unfilled in the chassis, an energy hazard is present.

Caution – If you have a *rear-access* model server, you must verify that all the rear transition cards have been completely unseated before proceeding with these procedures. If you attempt to insert a server without unseating the rear transition cards, you will damage the connector pins on the midplane when you insert the server.

1. **With your left hand, grasp the server bar in front.**

2. **With your right hand, grasp the purple server handle at the top of the server and insert the server into the chassis.**

   FIGURE 4-2 shows how to insert a Netra CT 810 server into the chassis and FIGURE 4-3 shows how to insert a Netra CT 410 server into the chassis.
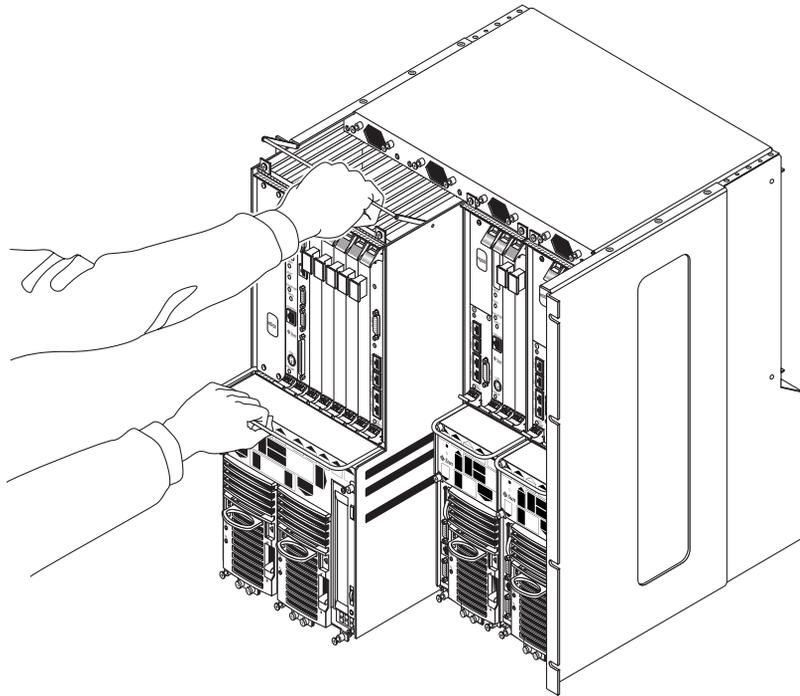
FIGURE 4-2   Installing a Netra CT 810 Server in the Chassis
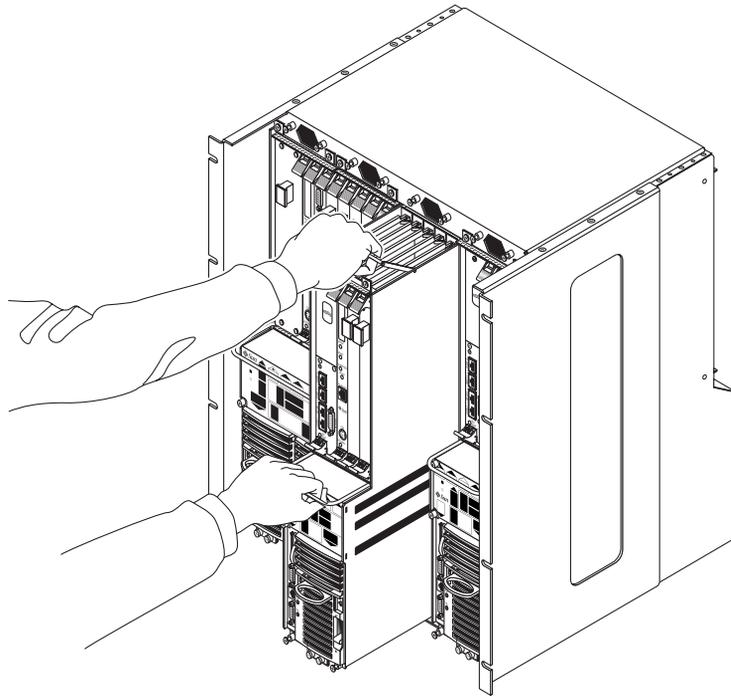
FIGURE 4-3   Installing a Netra CT 410 Server in the Chassis

3. **Push the purple server handle at the top of the server down and gently push the server the remaining distance into the chassis.**

4. **Using a No. 2 Phillips screwdriver, tighten the black captive screws at the *top* of the server.**

   Tighten the screws on the server to a torque of 0.45 - 0.68 N.m (4 - 6 in.-lb.).

   - If you are installing a Netra CT 810 server, tighten the *four* black captives screws at the top of the server (FIGURE 4-4).

   - If you are installing a Netra CT 410 server, tighten the *two* black captive screws at the top of the server (FIGURE 4-5).
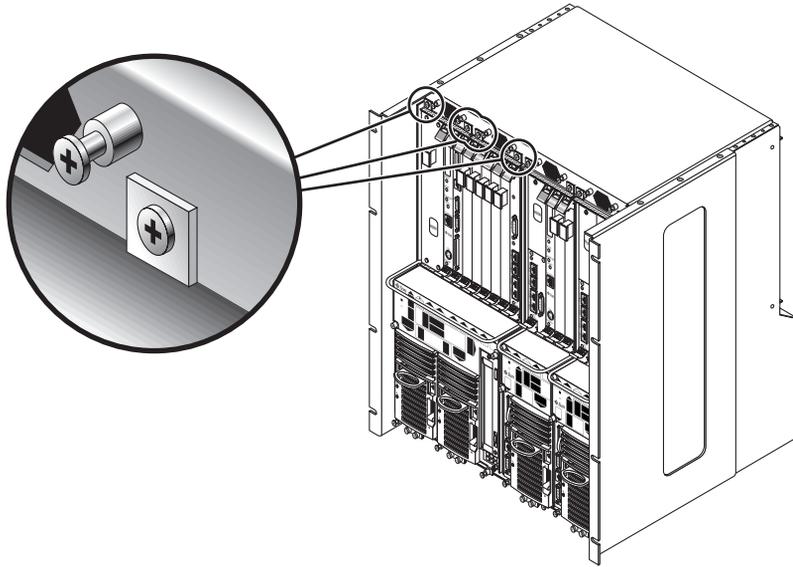
FIGURE 4-4   Tightening the Screws at the Top of a Netra CT 810 Server
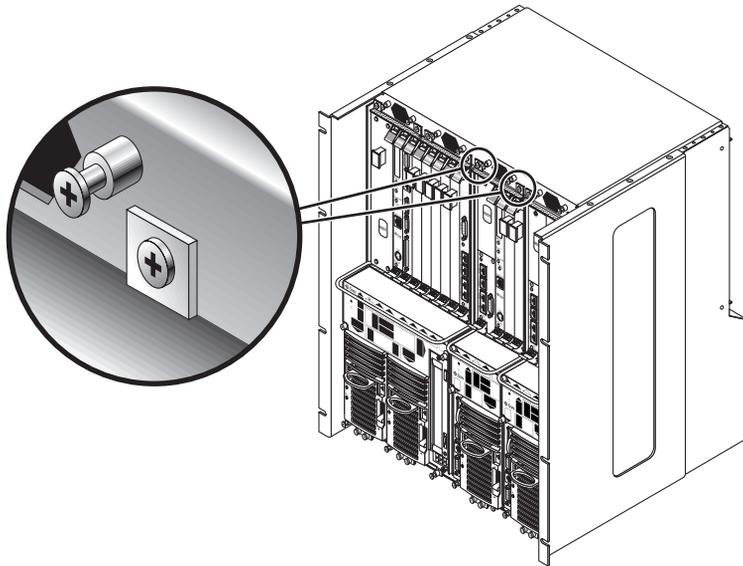
FIGURE 4-5   Tightening the Screws at the Top of a Netra CT 410 Server

5. Using a No. 2 Phillips screwdriver, tighten the black captive screws at the *bottom* of the server.

Tighten the screws on the server to a torque of 0.45 - 0.68 N.m (4 - 6 in.-lb.).

- If you are installing a Netra CT 810 server, tighten the *three* black captive screws at the bottom of the server (FIGURE 4-6).
- If you are installing a Netra CT 410 server, tighten the *two* black captive screws at the bottom of the server (FIGURE 4-7).
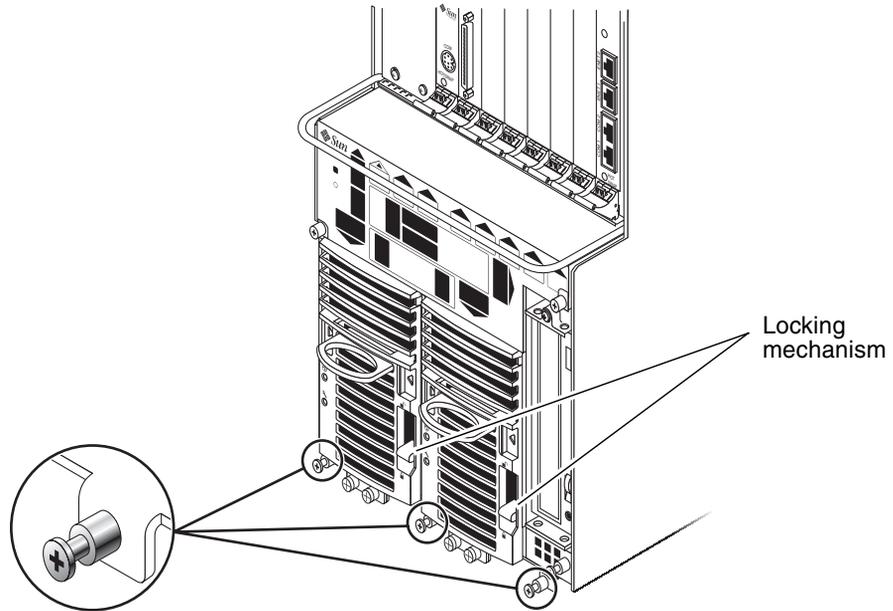
FIGURE 4-6   Tightening the Screws at the Bottom of a Netra CT 810 Server
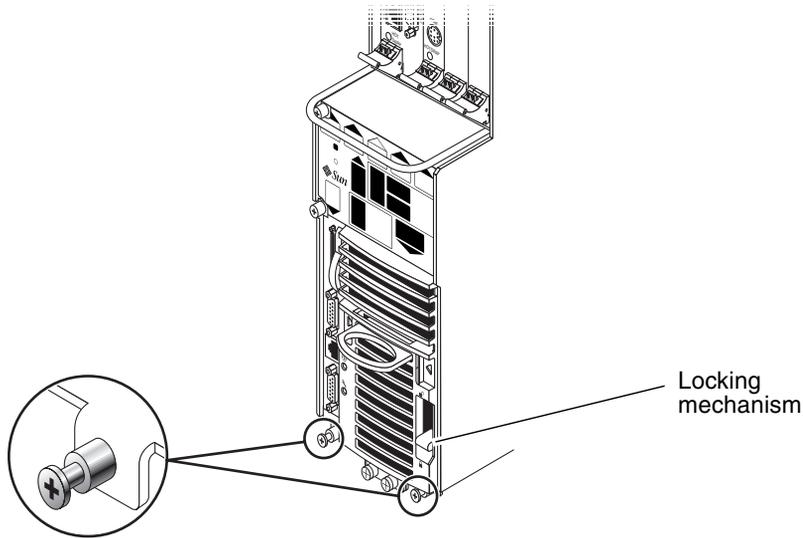
FIGURE 4-7 Tightening the Screws at the Bottom of a Netra CT 410 Server

6. **Push the power supply unit locking mechanism(s) down into the locked (⊟) position.**

   FIGURE 4-6 shows the location of the two power supply unit locking mechanisms on the Netra CT 810 server, and FIGURE 4-7 shows the location of the single power supply unit locking mechanism on the Netra CT 410 server. Make sure you lock *both* power supply units if you are replacing a Netra CT 810 server.

7. **If you have a *rear-access* model server, reseat all the rear transition cards into the server that you just installed.**

8. **Repeat Step 1 through Step 7 for every server that you need to install into the Netra CT chassis.**

9. **Determine if you have additional cards to install in the Netra CT server.**

   Every Netra CT server comes with a host CPU card and an alarm card installed by default. If you ordered additional cards (for example, I/O or satellite CPU cards), then you will have to install them into the Netra CT server separately.

   - If you have additional cards to install in the Netra CT server, go to Chapter 5 for instructions for installing the additional cards.
   - If you do not have additional cards to install in the Netra CT server, go to Chapter 6 for instructions for cabling the Netra CT server.

Installing Additional Cards into the Netra CT Server

Note – The instructions in this chapter are for installing additional cards into a server as part of the overall installation process where the server is powered *off*. If you are installing additional cards into a server that is powered *on*, follow the instructions in the *Netra CT Server Service Manual*.

Every Netra CT server comes with a host CPU card and, if you have the front-access model, the host CPU front transition card already installed. Every Netra CT server also comes with an alarm card factory-installed. In addition, you may have additional cards installed at the factory, such as satellite CPU or I/O cards, if you ordered the Netra CT server configured in that fashion.

If you have any additional cards to install in the server, follow the instructions in this chapter. If you do not have any additional cards to install, go to Chapter 6.

Card slots designated for satellite CPU, I/O cards and alarm cards have black rails; card slots with red rails are reserved for the host CPU card. There are also labels at the front of the servers and the rear of the chassis that show the I/O slot numbers for front-access and rear-access models, as well as the cards that are supported in each slot. For front-access models, you can also determine the I/O slot numbers for your servers by using the I/O slot numbers shown on the system status panels.

Antistatic Precautions

Before you can install any additional cards into your system, you must first take the necessary antistatic precautions.

▼ To Attach the Antistatic Wrist Strap

1. **Get the antistatic wrist strap from the ship kit.**

2. **Unwrap the first two folds of the wrist strap and wrap the adhesive side firmly against your wrist.**

3. **Peel the liner from the copper foil at the opposite end of the wrist strap and attach the copper end of the strap to a bare metal area on the Netra CT server or on the chassis.**
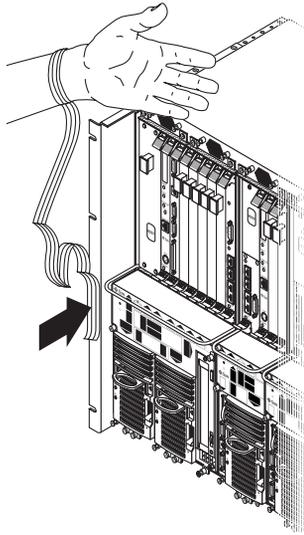
FIGURE 5-1   Attaching the Antistatic Wrist Strap

4. **Place an electrostatic discharge mat close to the system.**

5. **Install the card into your server.**

The instructions for installing the additional cards into your Netra CT server will vary depending on the model that you have.

- If you have the *front-access* model, go to "Installing Additional Cards in the Front-Access Model Server" on page 45.

- If you have the *rear-access* model, go to "Installing Cards in the Rear-Access Model Server" on page 52.

Installing Additional Cards in the Front-Access Model Server

Caution – An energy hazard is present if any I/O slots are left uncovered. If you remove a card from an I/O slot, you must fill it with either a replacement card or a filler panel.

The term *I/O slot* refers to any slot into which you can install a satellite CPU or I/O card. An I/O slot is distinguished from the slots occupied by the host CPU card or alarm card. A satellite CPU or I/O card *cannot* be installed in the slots meant for the host CPU card or alarm card. All the slots for satellite CPU or I/O cards in the Netra CT server support hot swap.

The following figures show the slots available for satellite CPU or I/O cards in the Netra CT servers:

- Netra CT 810 server—FIGURE 5-2
- Netra CT 410 server—FIGURE 5-3

Slots for I/O cards or
satellite CPU cards
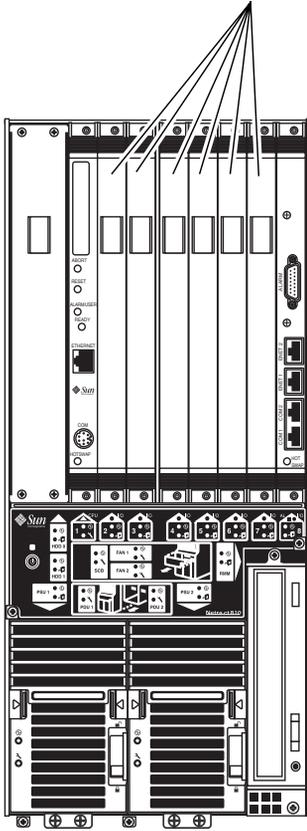
FIGURE 5-2 Supported Locations for Satellite CPU or I/O Cards in a Netra CT 810 Server

Slots for I/O cards or
satellite CPU cards

Slots for I/O cards or
satellite CPU cards
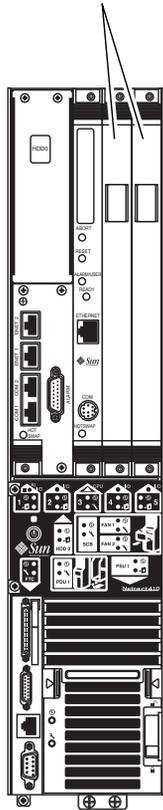
Diskfull
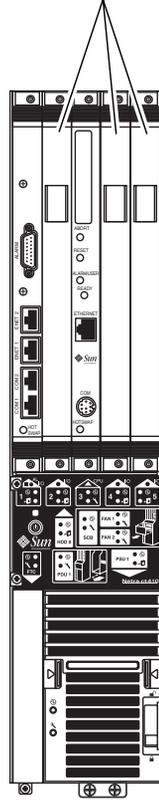
Diskless

FIGURE 5-3   Supported Locations for Satellite CPU or I/O Cards in a Netra CT 410 Server

FIGURE 5-4 shows the buses on a Netra CT 810 server and FIGURE 5-5 shows the buses on a Netra CT 410 server.
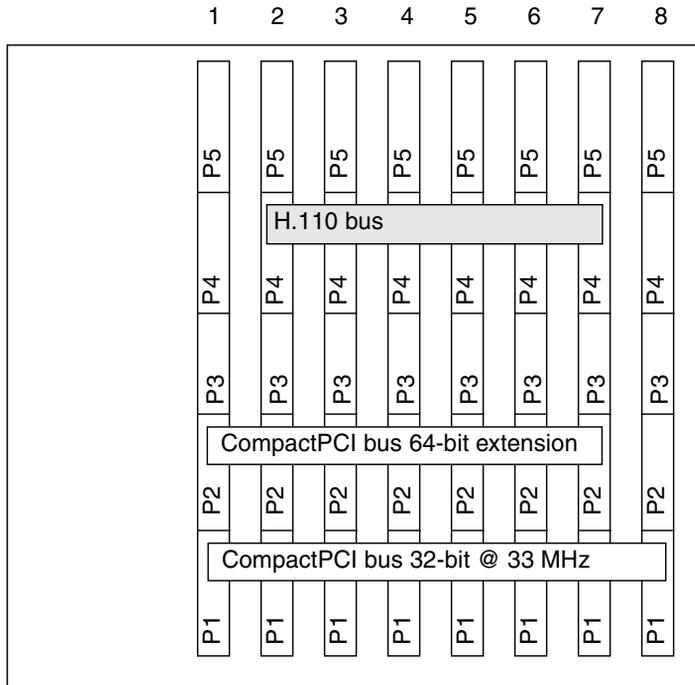
FIGURE 5-4   Buses for the Netra CT 810 Server (Front View)
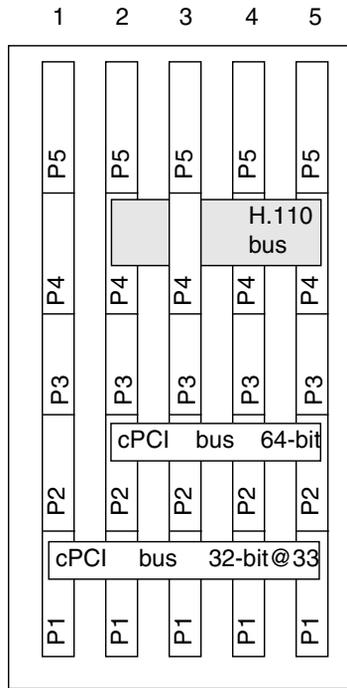
FIGURE 5-5   Buses for the Netra CT 410 Server (Front View)

▼ To Install Additional Satellite CPU or I/O Cards

1. **Verify that you've taken the necessary antistatic precautions.**

   Refer to "To Attach the Antistatic Wrist Strap" on page 44 for those instructions.

2. **Locate the card slot where you will be installing the satellite CPU or I/O card.**

   - FIGURE 5-2 shows the satellite CPU or I/O card slots in a Netra CT 810 server.
   - FIGURE 5-3 shows the satellite CPU or I/O card slots in a Netra CT 410 server.

3. **Remove the slot filler panel, if necessary.**

   The slot filler panel is secured to the card cage using two screws, one at the top of the filler panel, the other at the bottom. Store the slot filler panel in a safe place; you may have to use it again if you have to remove a satellite CPU or I/O card for an extended period of time.

4. **Get the replacement satellite CPU or I/O card from the ship kit.**

5. **Perform any card-specific hardware procedures, if necessary.**

   For example, you may want to install a PMC into the satellite CPU or I/O card at this time, if necessary. Refer to the documentation that you received with your satellite CPU or I/O card for more information.

6. **Keeping the card vertical, slide the card into the slot between the two guides.**

   The cuts in the handle of the card must align with the square cutouts in the I/O slot. When the card is completely seated in the card cage, the two ejection levers should flip inward, and the notches in the ejection levers should fit smoothly in the rectangular cutouts in the bottom and top plates.
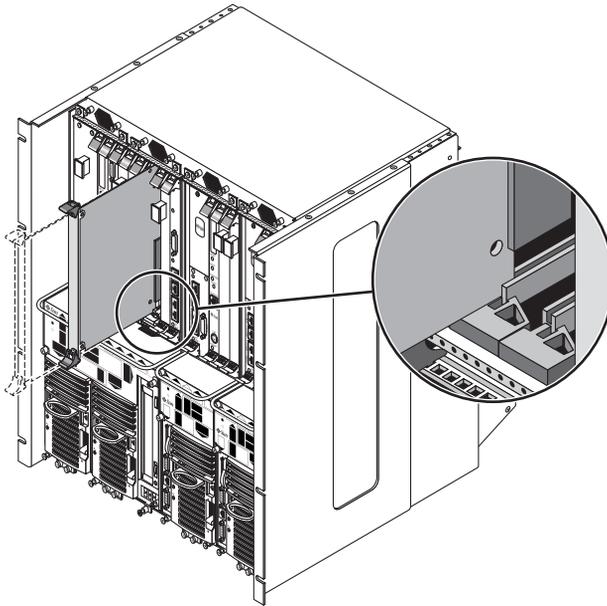
FIGURE 5-6   Aligning the Card with the Card Cage Cutouts

7. **Lock the ejection levers.**

   There are several different models of locking ejection levers, so the method you would use to lock the ejection levers will vary depending on the model of the ejection lever used on the card. Refer to the documentation that came with the satellite CPU or I/O card for instructions on locking the ejection levers.

8. Using a No. 2 Phillips screwdriver, tighten the two captive screws inside the card's ejection levers, one on top and one on the bottom.

Tighten the screws to a torque of 0.28 N.m (2.5 in.-lb.).
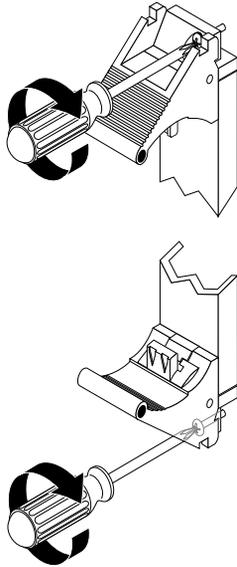
FIGURE 5-7 Tightening the Ejection Lever Captive Screws

Installing Cards in the Rear-Access Model Server

Caution – An energy hazard is present if any I/O slots are left uncovered. If you remove a card from an I/O slot, you must fill it with either a replacement card or a filler panel.

Rear Transition Card Sets

Every rear transition card set consists of two separate cards:

- A main card, installed in the front of the server:
  - Host CPU card
  - Alarm card
  - I/O card
  - Satellite CPU card
- A rear transition card, installed in the rear of the chassis

The main card is installed in the front of the Netra CT server; however, in a rear-access system, no cables are connected to the main card. It is the same main card that is used in the front-access models of the Netra CT server.

The rear transition card extends the ports from the main card to the ports on the rear transition card. The main card must be installed in the same slot at the front of the server in order for the rear transition card to work. For example, if you install a rear transition card in slot 3 at the rear of the chassis, you must also install the corresponding main card in slot 3 at the front of the server.

The system status panel gives the status for cards installed in the slots in the Netra CT server. However, if either the main card or the rear transition card fails, the system status panel can only tell you that a card in a particular slot has failed; it cannot tell you whether it was the main card or the rear transition card in that slot that has failed. Since most or all of the ASICs are on the main card, it is most likely that the main card has failed and should be replaced.

FIGURE 5-8 and FIGURE 5-9 show how the main cards should align with the rear transition cards (RTCs). Note that, if you are facing the *front* of the server, the slots read from *left to right*, whereas they read from *right to left* if you are facing the *rear* of the server.

```
Front of                                  Midplane
chassis
                  ┌────────────────────────┐
                  │                        │          Rear of
                  │  Hard disk drives      │          chassis
                  │                        │
Slot 1            │  Host CPU card         │  Host CPU RTC    Slot 1
Slot 2            │  Satellite CPU or I/O card │  CPU or I/O RTC    Slot 2
Slot 3            │  Satellite CPU or I/O card │  CPU or I/O RTC    Slot 3
Slot 4            │  Satellite CPU or I/O card │  CPU or I/O RTC    Slot 4
Slot 5            │  Satellite CPU or I/O card │  CPU or I/O RTC    Slot 5
Slot 6            │  Satellite CPU or I/O card │  CPU or I/O RTC    Slot 6
Slot 7            │  Satellite CPU or I/O card │  CPU or I/O RTC    Slot 7
Slot 8            │  Single-wide 6U alarm card │  Alarm RTC       Slot 8
                  └────────────────────────┘
```

FIGURE 5-8   Supported Locations for Rear Transition Card Sets in a Netra CT 810 Server (Top View)

```
Front of                                  Midplane
chassis
                                                      Rear of
                  ┌────────────────────────┐          chassis
Slot 1            │  Alarm card            │ Alarm RTC
Slot 2            │  Satellite CPU or I/O card │ CPU or I/O RTC
Slot 3            │  Host CPU card         │ Host CPU RTC
Slot 4            │  Satellite CPU or I/O card │ CPU or I/O RTC
Slot 5            │  Satellite CPU or I/O card │ CPU or I/O RTC
                  └────────────────────────┘
```
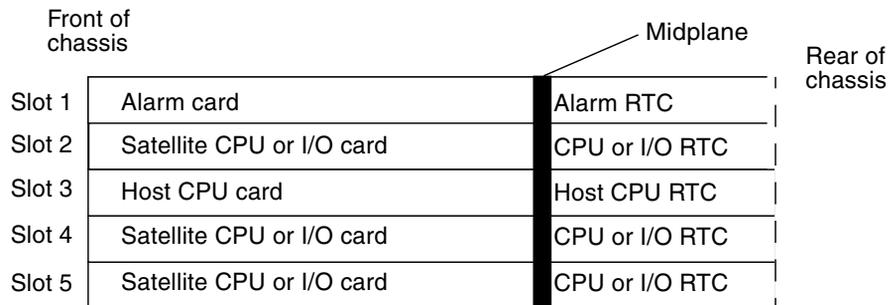
FIGURE 5-9   Supported Locations for Rear Transition Card Sets in a Netra CT 410 Server (Top View)

For the host CPU rear transition card, use only the Netra CT-supported host CPU rear transition card in the Netra CT server; do not use the XCP2040-TRN I/O transition card that is available with the Netra CP2140 board. Refer to FIGURE 5-10 to determine if the host CPU rear transition card you have is supported or unsupported on a Netra CT server.

SCSI connector

TTY A
serial port

TTY B
serial port

Ethernet
channel A

Ethernet
channel B

Cutout for
PIM connector

USB B connector

SCSI A connector

SCSI B connector

USB A connector

Ethernet channel A

Ethernet channel B

TTY A serial port

TTY B serial port

Cutout for PIM
Connector
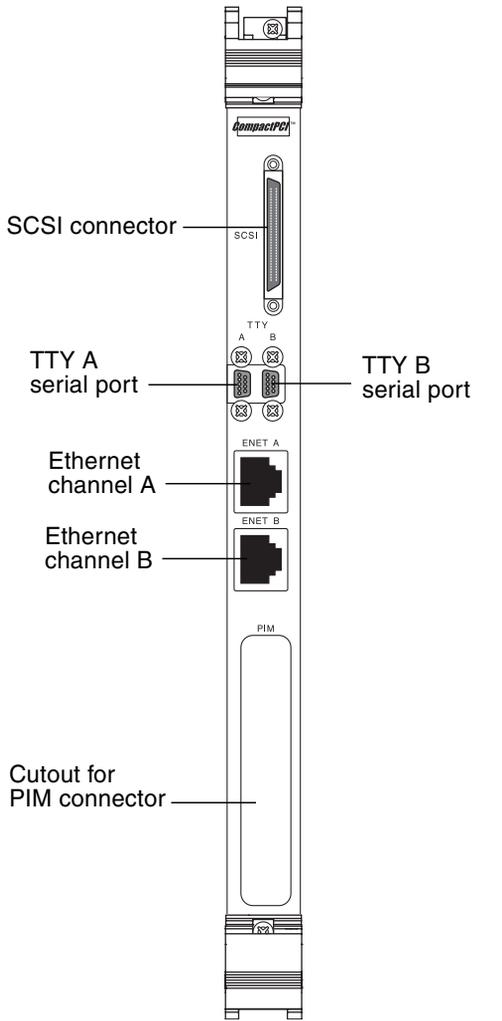
Netra CT host CPU rear transition card
Supported for Netra CT servers
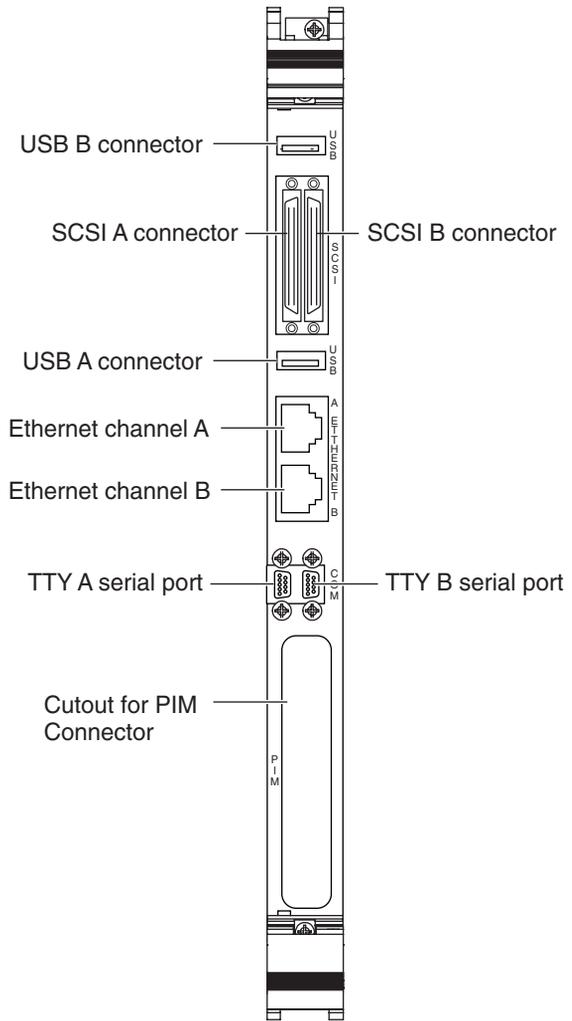
XCP2040-TRN I/O transition card
Unsupported for Netra CT servers

FIGURE 5-10 Supported and Unsupported Host CPU Rear Transition Card for a Netra CT
Server

▼ To Install Rear Transition Card Sets

1. **Verify that you've taken the necessary antistatic precautions.**

   Refer to "To Attach the Antistatic Wrist Strap" on page 44 for those instructions.

2. **Go to the rear of the chassis and remove the slot filler panel from the appropriate slot, if necessary.**

   FIGURE 5-8 shows the slots for the rear transition cards in a Netra CT 810 server and FIGURE 5-9 shows the slots for the rear transition cards in a Netra CT 410 server. The slot filler panel is secured to the card cage using two screws, one at the top of the filler panel, the other at the bottom.

3. **Get the rear transition card from the ship kit.**

4. **Perform any card-specific hardware procedures, if necessary.**

   For example, you may want to install a PIM into a rear transition card at this time, if necessary. Refer to the documentation that you received with your card for more information.

5. **Verify that the ejection levers are unlocked.**

   You will not be able to install the card properly if the ejection levers are locked.

6. **Keeping the card vertical, slide the rear transition card in between the two guides into the slot (**FIGURE 5-11**).**

   The teeth in the handle of the card must align with the square cutouts in the I/O slot. When the card is completely seated in the card cage, the two ejection levers should flip inward, and the teeth in the ejection levers should fit smoothly in the rectangular cutouts in the bottom and top plates.
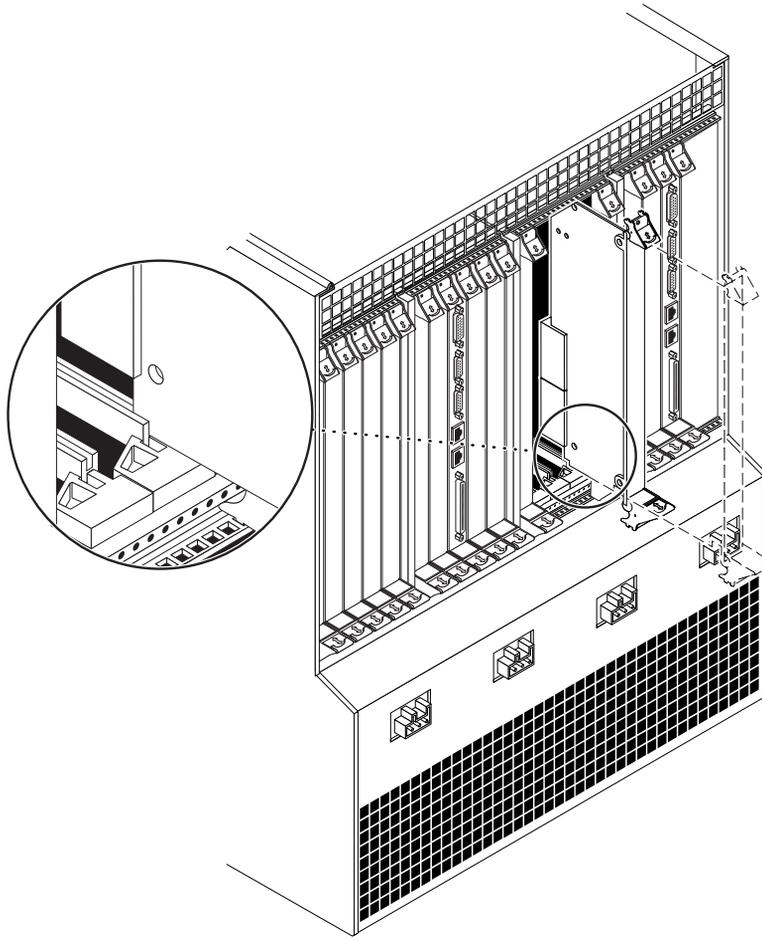
FIGURE 5-11 Aligning the Card With the Rear Card Cage Cutouts

7. Lock the ejection levers.

The method you use to lock the ejection levers varies depending on the model of the ejection lever used on the card. Refer to the documentation that came with the I/O card for instructions on locking the ejection levers.

8. Using a No. 2 Phillips screwdriver, tighten the two captive screws inside the card's ejection levers, one on top and one on the bottom.

Tighten the screws to a torque of 0.28 N.m (2.5 in.-lb.).

9. **Determine if need to install the corresponding main card in the front of the Netra CT server.**

■ If the corresponding main card is a host CPU card or an alarm card, then those cards should already be installed in the server by default. Go to Chapter 6 for instructions on cabling the system.

■ If the corresponding main card is an I/O card or a satellite CPU card, get the card from the ship kit, go to the front of the server and install the satellite CPU or I/O card in the Netra CT server. Refer to "Installing Additional Cards in the Front-Access Model Server" on page 45 for those instructions. After you have installed the corresponding main card, go to Chapter 6 for instructions on cabling the system.

Cabling the System

This chapter gives instructions for connecting cables to the CompactPCI cards. It also gives instructions for assembling and connecting the DC input power cable. It is divided into the following sections:

- "Installing the Cable Management Brackets" on page 59
- "Connecting Cables to the CompactPCI Cards" on page 61
- "Connecting the Power Cables" on page 92

Installing the Cable Management Brackets

The purple cable management brackets for the chassis are located in the Netra CT server ship kit. The cable management brackets are used to keep the various cables connected to the rear of the chassis bundled together. The Netra CT chassis comes with four cable management brackets.

FIGURE 6-1 shows where the brackets should be installed for the front-access and rear-access models.

Cable management brackets

Front-access model   Rear-access model
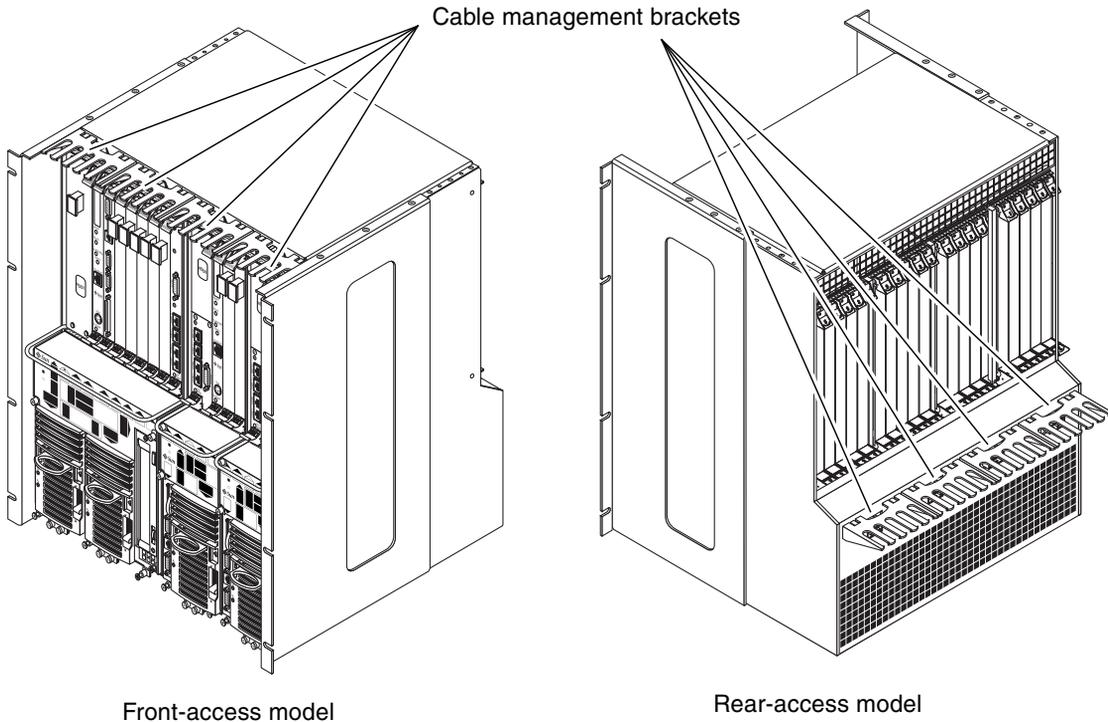
FIGURE 6-1   Cable Management Brackets

1. **Align the notches at on the sides of the bracket to the chassis holes.**

   FIGURE 6-1 shows where the brackets should be installed at the rear of the chassis.

2. **Push the bracket straight into the chassis holes until it engages with the chassis.**

   If necessary, push down slightly on the top notches to get them to engage with the holes in the chassis.

3. **Repeat Step 1 and Step 2 until all four cable management brackets are installed.**
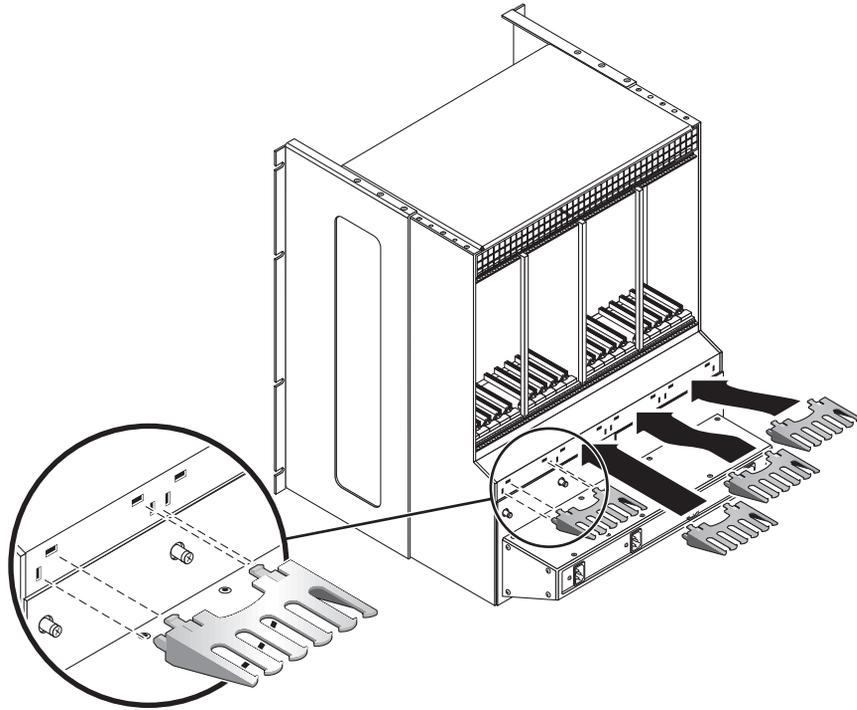
FIGURE 6-2 Installing the Cable Management Brackets

Connecting Cables to the CompactPCI Cards

The instructions for cabling your Netra CT server vary depending on the model that you have.

- If you have the *front-access* model, go to "Cabling for the Front-Access Model" on page 62.
- If you have the *rear-access* model, go to "Cabling for the Rear-Access Model" on page 81.

Cabling for the Front-Access Model

The cabling connections that you must make differ depending on the cards that you have installed in your server:

- "To Connect Cables to the CPU Card" on page 62
- "To Connect Cables to the CPU Front Transition Card" on page 67
- "To Connect Cables to the Alarm Card (Front-Access Models Only)" on page 73
- "To Connect Cables to the Front-Access Satellite CPU or I/O Cards" on page 81

▼ To Connect Cables to the CPU Card

1. **Locate the host CPU card.**

   In the Netra CT 810 server, the host CPU card will be installed in slot 1. In the Netra CT 410 server, the host CPU card will be installed in slot 3. Refer to FIGURE 6-3.

Host CPU card

Netra CT 810 server

Netra CT 410 server
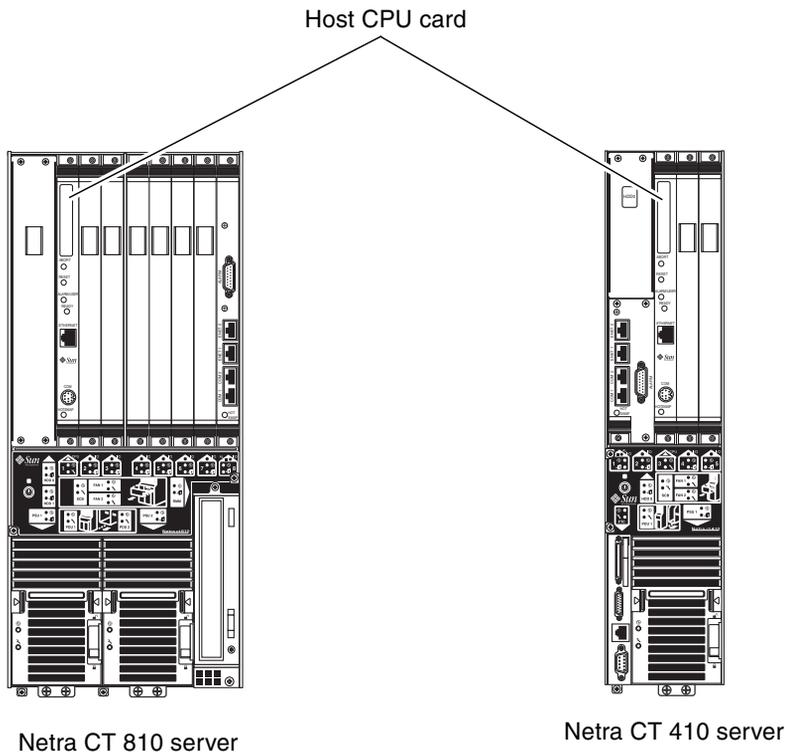
FIGURE 6-3   Host CPU Card Locations

2. Make the necessary cable connections to the host CPU card.

Tighten the screws on the cable to a torque of 0.23 N.m (2 in.-lb.).

There are two ports on the CPU card: the COM (TTY A) port and the Ethernet A port. However, depending on the model and type of server you have, you may have to use the TTY A and Ethernet A ports on the CPU front or rear transition cards instead. See TABLE 6-1 and TABLE 6-2 for information for your server model.

TABLE 6-1   Ethernet A Port

Server Model	Front-Access	Rear-Access
Netra CT 810 server	N/A	Use the Ethernet A port on the CPU rear transition card. See "To Connect Cables to the CPU Rear Transition Card" on page 82.
Netra CT 410 server	Use the Ethernet A port on the host CPU card. See "Ethernet A Port" on page 65.	Use the Ethernet A port on the CPU rear transition card. See "To Connect Cables to the CPU Rear Transition Card" on page 82.

TABLE 6-2   TTY A Port

Server Model	Front-Access	Rear-Access
Netra CT 810 server	N/A	Use the TTY A port on the CPU rear transition card. See "To Connect Cables to the CPU Rear Transition Card" on page 82.
Netra CT 410 server	Use the COM port on the host CPU card. See "TTY A Port" on page 66.	Use the TTY A port on the CPU rear transition card. See "To Connect Cables to the CPU Rear Transition Card" on page 82.

FIGURE 6-4 shows the connectors on the CPU card for the Netra CT 810 server and Netra CT 410 server.

Ethernet A port
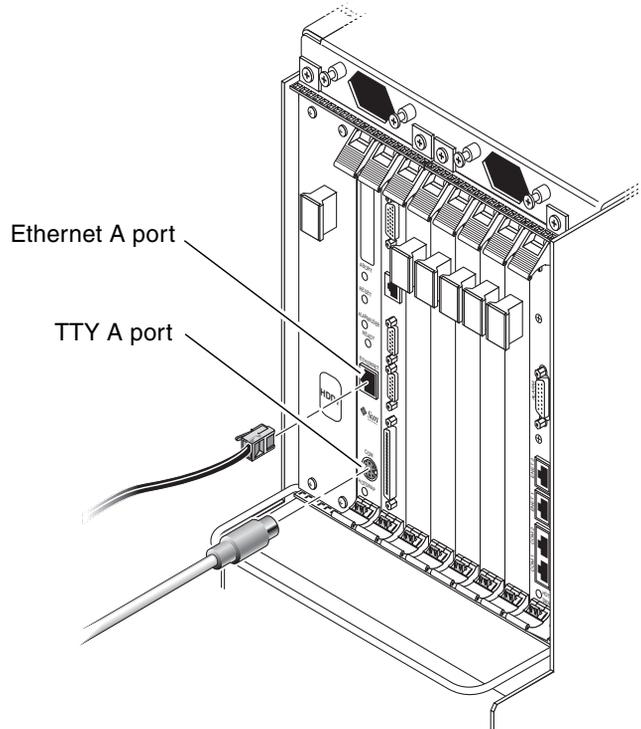
TTY A port

FIGURE 6-4 Connectors on the Host CPU Card

The following sections give the pinouts for each connector on the host CPU card:

- "Ethernet A Port" on page 65
- "TTY A Port" on page 66

Ethernet A Port

The twisted pair Ethernet connector is an R-J45 connector. The controller auto-negotiates to either 10BASE-T or 100 BASE-T.
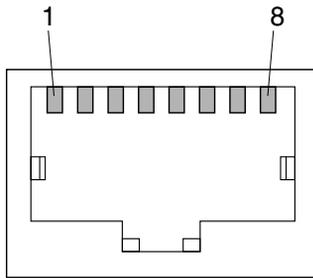
FIGURE 6-5   RJ-45 Ethernet Connector Diagram

TABLE 6-3   Ethernet Connector Pinouts, CPU Card (J2301)

Pin No.	Description
1	TXD+
2	TXD-
3	RXD+
4	4T_D3P
5	4T_D3P
6	RXD-
7	4T_D4P
8	4T_D4P

TTY A Port

This port is connected logically to serial port A. It is intended to be used only for serial output to a terminal.

⚠️ **Caution –** Serial port A is also connected through the rear cPCI connectors. No mechanism is provided to disable simultaneous input from the front panel and the rear cPCI connectors. Attempts to input data from both ports will place the board in an unknown state.
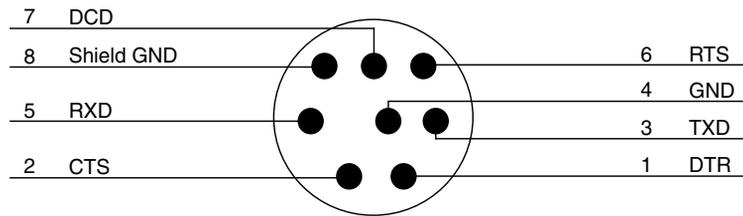
FIGURE 6-6   CPU Card Front Panel TTY A Diagram

TABLE 6-4 shows the TTY A connector pinouts.

TABLE 6-4   TTY A Connector Pinouts

Pin	Signal Name	Pin	Signal Name
1	FP_SER_A_DTR	5	FP_SER_A_RXD
2	FP_SER_A_CTS	6	FP_SER_A_RTS
3	FP_SER_A_TXD	7	FP_SER_A_DCD
4	FP_SER_A_GND	8	Shield GND

▼ To Connect Cables to the CPU Front Transition Card

1. **Locate the host CPU front transition card.**

   FIGURE 6-7 shows the location of the host CPU front transition card in a Netra CT 410 server.
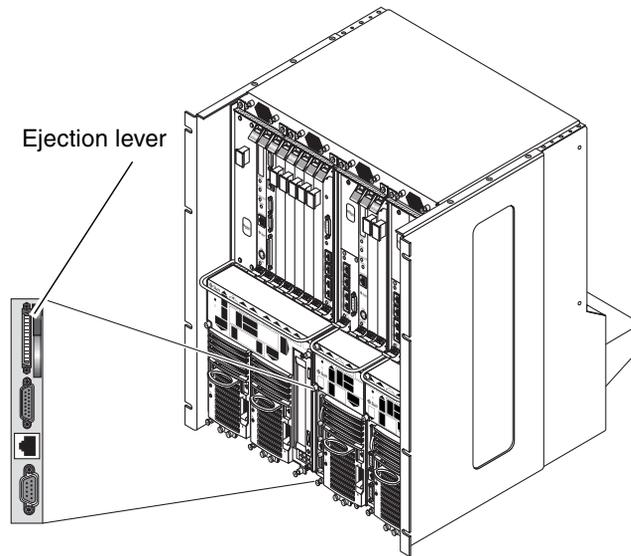
FIGURE 6-7   Host CPU Front Transition Card Location in a Netra CT 410 Server

2. **Make the necessary cable connections to the host CPU front transition card.**

   Tighten the screws on the cable to a torque of 0.23 N.m (2 in.-lb.).

   FIGURE 6-8 shows the connectors on the host CPU front transition card for the Netra CT 410 server. Note that the TTY A port is located on the host CPU card itself (COM port) for the Netra CT 410 server.
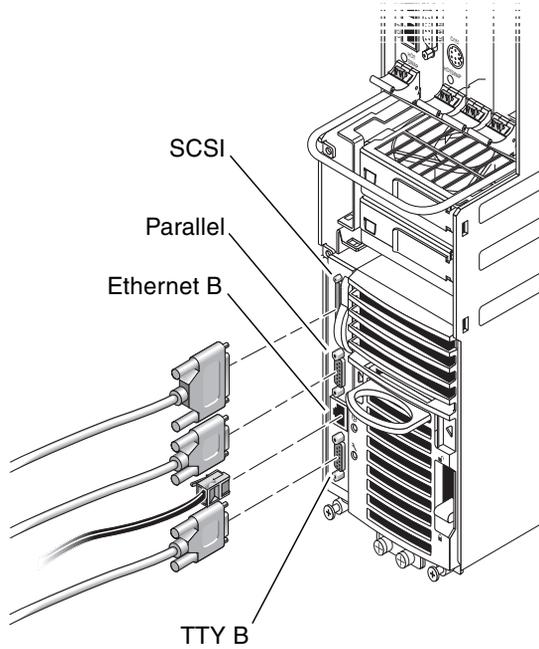
FIGURE 6-8 Connectors on the Host CPU Front Transition Card (Netra CT 410 Server)

CPU Front Transition Card Connector Pinouts, Netra CT 410 Server

The following sections give the pinouts for each connector on the CPU front transition card for the Netra CT 410 server:

- "SCSI (VHDC)" on page 69
- "Parallel Port" on page 70
- "Ethernet B Port" on page 71
- "TTY B" on page 72

SCSI (VHDC)

The SCSI port on the CPU FTC for the Netra CT 410 server is a 68-pin CHAMP very high-density connector (VHDC). A VHDC-to-SCSI 3 cable is available through Sun, if necessary (part number 530-2453-xx, X3832A).

TABLE 6-5   SCSI Port Pinouts, CPU FTC for the Netra CT 410 Server

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	GND	24	GND	47	DATA 7
2	PRES_L	25	GND	48	PL_L
3	GND	26	GND	49	PRES_L
4	GND	27	GND	50	GND
5	GND	28	GND	51	TERM PWR
6	GND	29	GND	52	TERM PWR
7	GND	30	GND	53	GND
8	GND	31	GND	54	GND
9	GND	32	GND	55	ATN_L
10	GND	33	GND	56	GND
11	GND	34	GND	57	BSY_L
12	GND	35	DATA 12	58	ACK_L
13	GND	36	DATA 13	59	RST_L
14	GND	37	DATA 14	60	MSG_L
15	GND	38	DATA 15	61	DEL_L
16	GND	39	PH_L	62	CD_L
17	TERM PWR	40	DATA 0	63	REQ_L
18	TERM PWR	41	DATA 1	64	IO_L
19	GND	42	DATA 2	65	DATA 8
20	GND	43	DATA 3	66	DATA 9
21	GND	44	DATA 4	67	DATA 10
22	GND	45	DATA 5	68	DATA 11
23	GND	46	DATA 6		

Parallel Port

The parallel port on the CPU FTC for the Netra CT 410 server is an AMPLIMITE SLIMLINE female receptacle.
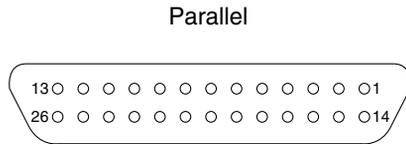
Parallel

FIGURE 6-9 Parallel Connector

TABLE 6-6 Parallel Port Pinouts, CPU FTC for the Netra CT 410 Server

Pin No.	Signal	Pin No.	Signal
1	STB	14	AFD
2	PD0	15	ERR
3	PD1	16	INIT
4	PD2	17	SLIN
5	PD3	18	DGND
6	PD4	19	DGND
7	PD5	20	DGND
8	PD6	21	DGND
9	PD7	22	DGND
10	ACK	23	DGND
11	BUSY	24	DGND
12	PE	25	DGND
13	SLCT	26	DGND

Ethernet B Port

The Ethernet B port on the CPU FTC for the Netra CT 410 server is an RJ-45 connector for 10/100.
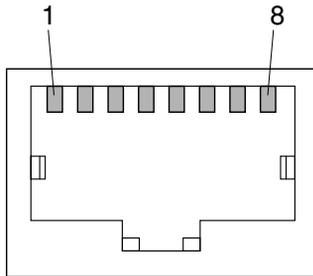
FIGURE 6-10 RJ-45 Ethernet B Connector Diagram

TABLE 6-7   Ethernet B Connector Pinouts, CPU FTC for the Netra CT 410 Server

Pin No.	Description
1	TXD+
2	TXD-
3	RXD+
4	Not used
5	Not used
6	RXD-
7	Not used
8	Not used

TTY B

The TTY B port on the CPU FTC for the Netra CT 410 server is a DB-9 male connector.
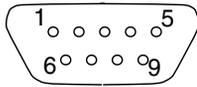
FIGURE 6-11 TTY B Connector

TABLE 6-8   TTY B Port Pinouts, CPU FTC for the Netra CT 410 Server

Pin No.	Signal Name
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

▼ To Connect Cables to the Alarm Card (Front-Access Models Only)

Note – If you have a rear-access model server, do *not* connect any cables to the alarm card at the front of the server; all cables should be connected to the alarm rear transition card for a rear-access model server. Go to "To Connect Cables to the Alarm Rear Transition Card (Rear-Access Models Only)" on page 87 for those instructions.

1. **Locate the alarm card for the Netra CT server.**

   FIGURE 6-12 shows the slot available for the single-wide 6U alarm card in a Netra CT 810 server or a diskless Netra CT 410 server, and FIGURE 6-13 shows the slot available for the double-wide 3U alarm card in a diskfull Netra CT 410 server.

Single-wide 6U alarm card

Netra CT 810 server

Netra CT 410 server, diskless
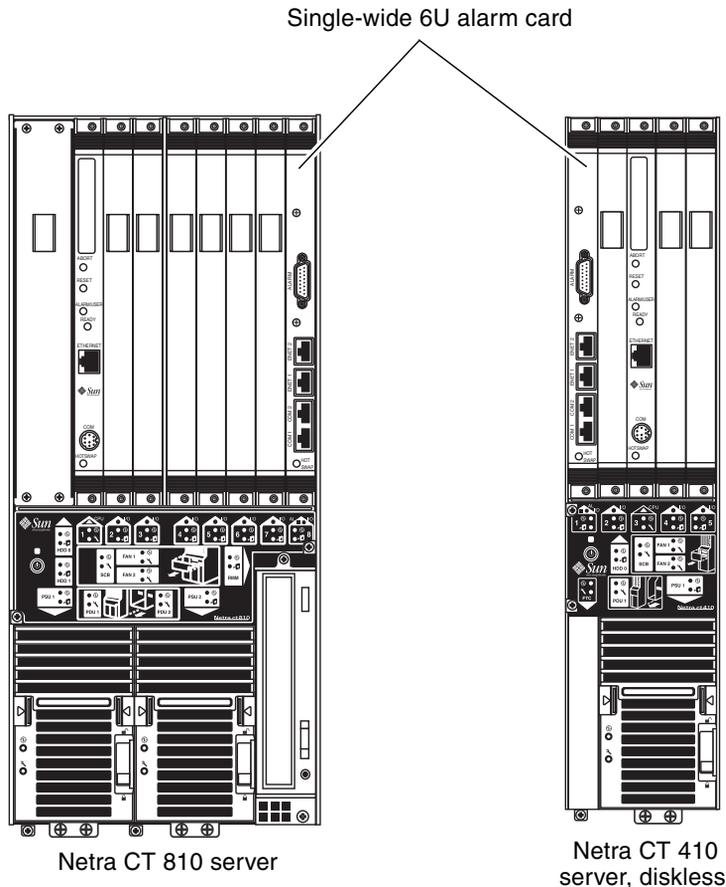
FIGURE 6-12 Supported Locations for a Single-Wide 6U Alarm Card

Double-wide
3U alarm card
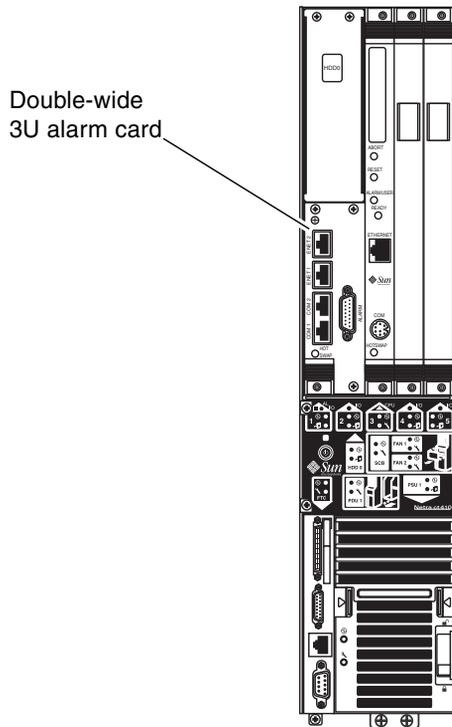
FIGURE 6-13 Location of Double-Wide 3U Alarm Card

2. Make the necessary cable connections to the alarm card.

Tighten the screws on the cable to a torque of 0.23 N.m (2 in.-lb.).

FIGURE 6-14 shows the connectors for the single-wide 6U alarm card installed in a Netra CT 810 server, FIGURE 6-15 shows the connectors for the single-wide 6U alarm card installed in a diskless Netra CT 410 server, and FIGURE 6-16 shows the connectors for the double-wide 3U alarm card installed in a diskfull Netra CT 410 server.
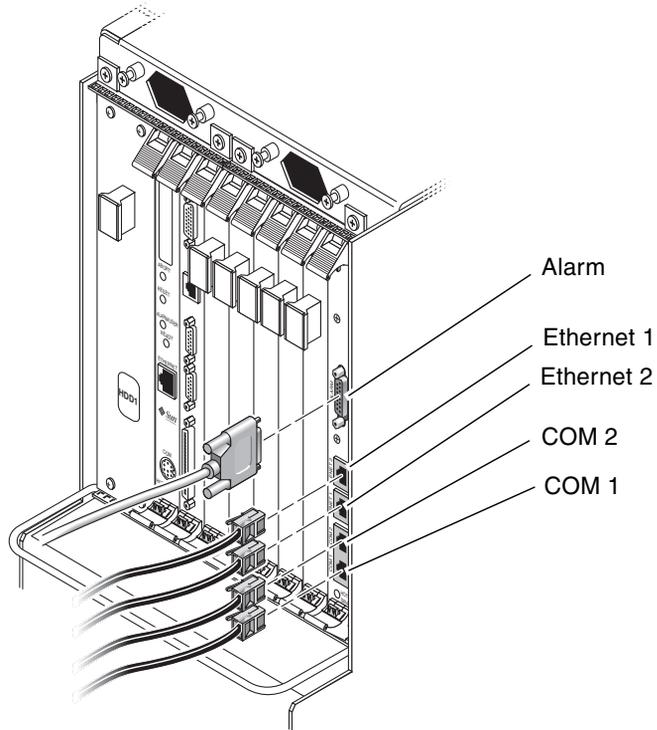
FIGURE 6-14 Plugging in Cables in Alarm Card in Netra CT 810 Server
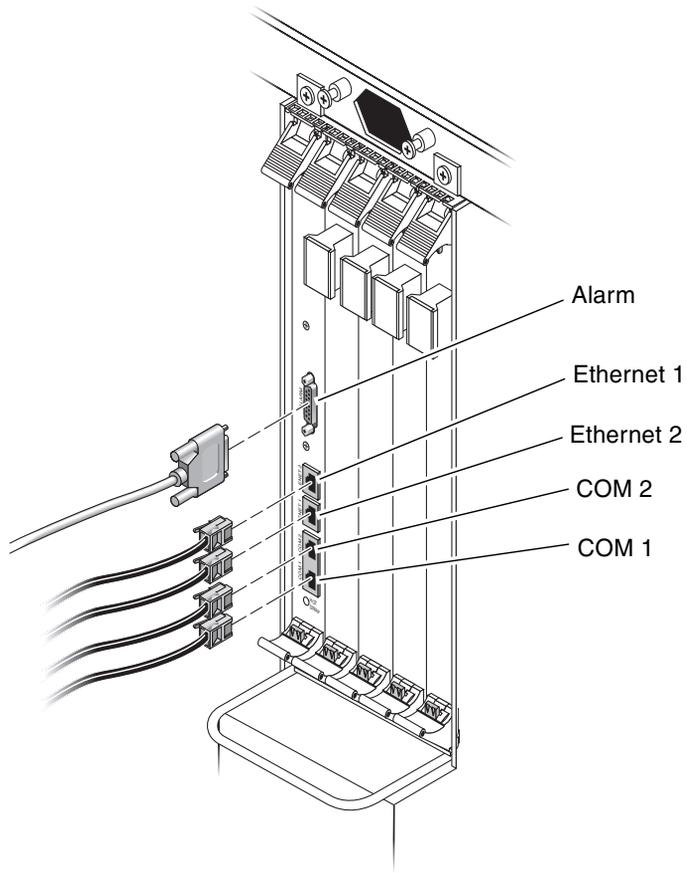
FIGURE 6-15 Plugging in Cables in Alarm Card in Diskless Netra CT 410 Server
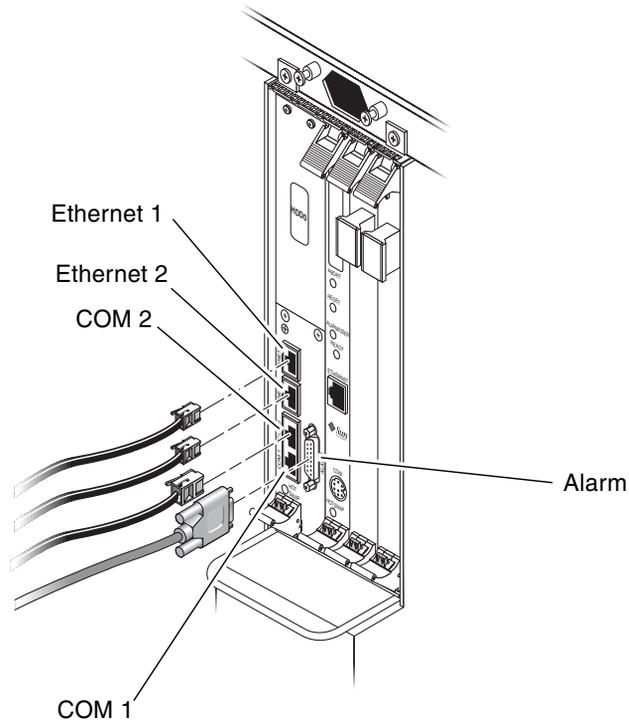
FIGURE 6-16 Connectors on the Alarm Card in Diskfull Netra CT 410 Server

The following sections give the pinouts for the connectors on both the single-wide 6U alarm card and the double-wide 3U alarm card:

- "Alarm Port" on page 78
- "Ethernet Ports 1 and 2" on page 79
- "COM Ports 1 and 2" on page 80

Alarm Port

The alarm port on the alarm cards uses a standard male DB-15 connector.
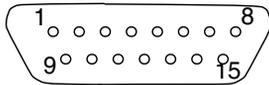
FIGURE 6-17 Alarm Port

TABLE 6-9 Alarm Port Pinouts

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	RESET0 +	6	ALARM0_NC	11	ALARM2_NO
2	RESET0 -	7	ALARM0_COM	12	ALARM2_NC
3	RESET1 +	8	ALARM1_NO	13	ALARM2_COM
4	RESET1 -	9	ALARM1_NC	14	ALARM3_NO
5	ALARM0_NO	10	ALARM1_COM	15	ALARM3_COM

Ethernet Ports 1 and 2

Ethernet ports 1 and 2 on the alarm cards use standard RJ-45 connectors. Ethernet port 1 is a 10 Mbps Ethernet port, and Ethernet port 2 is a 10/100 Mbps Ethernet port.

FIGURE 6-18 RJ-45 Ethernet Connector Diagram

TABLE 6-10 Ethernet Ports 1 and 2 Pinouts

Pin No.	Description	Pin No.	Description
1	TX+	5	Not used
2	TX-	6	RX-
3	RX+	7	Not used
4	Not used	8	Not used

COM Ports 1 and 2

COM ports 1 and 2 on the alarm cards use standard RJ-45 connectors.
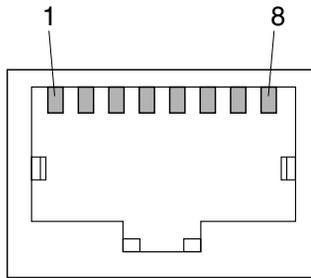
FIGURE 6-19 RJ-45 Ethernet Connector Diagram

TABLE 6-11 COM Port 1 Pinouts

Pin No.	Description	Pin No.	Description
1	RTS1	5	DCD1
2	DTR1	6	RXD1
3	TXD1	7	DSR1
4	GND	8	CTS1

TABLE 6-12 COM Port 2 Pinouts

Pin No.	Description	Pin No.	Description
1	RTS2	5	DCD2
2	DTR2	6	RXD2
3	TXD2	7	DSR2
4	GND	8	CTS2

▼ To Connect Cables to the Front-Access Satellite CPU or I/O Cards

1. **Locate the satellite CPU or I/O card.**

   FIGURE 5-2 shows the possible locations for the satellite CPU or I/O cards in the Netra CT 810 server and FIGURE 5-3 shows the possible locations for the satellite CPU or I/O cards in the Netra CT 410 server.

2. **Make the necessary cable connections to the cards.**

   Tighten the screws on the cable to a torque of 0.23 N.m (2 in.-lb.).

   Refer to the documentation that you received with the satellite CPU or I/O cards for more information.

Cabling for the Rear-Access Model

- "To Connect Cables to the CPU Rear Transition Card" on page 82
- "To Connect Cables to the Alarm Rear Transition Card (Rear-Access Models Only)" on page 87
- "To Connect Cables to the Rear-Access Satellite CPU or I/O Cards" on page 91

▼ To Connect Cables to the CPU Rear Transition Card

1. Go to the rear of the chassis and locate the CPU rear transition card.

FIGURE 6-20 shows the location of the CPU rear transition card in the Netra CT 810 server, and FIGURE 6-21 shows the location of the CPU rear transition card in the Netra CT 410 server.
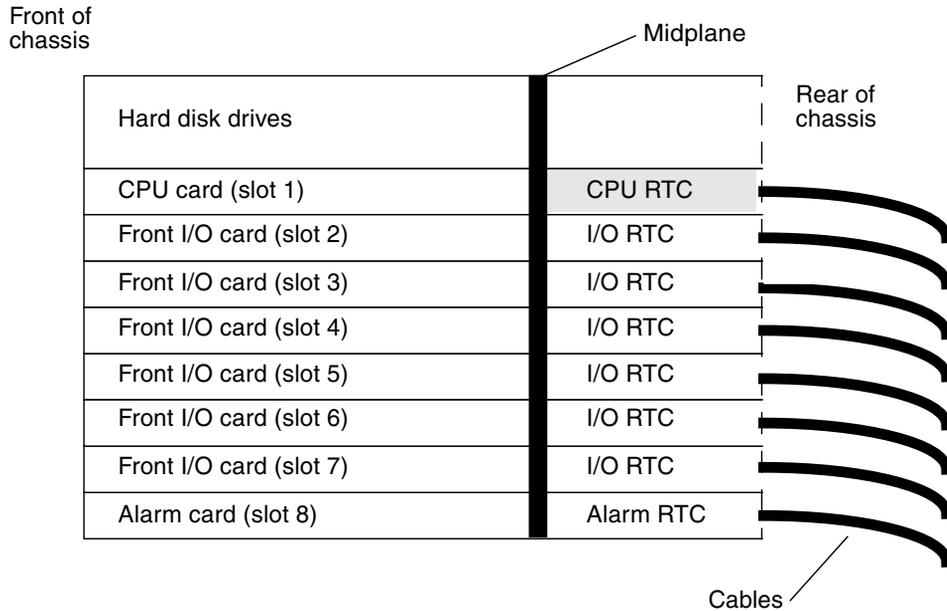
FIGURE 6-20 CPU Rear Transition Card (CPU RTC) in a Netra CT 810 Server (Top View)
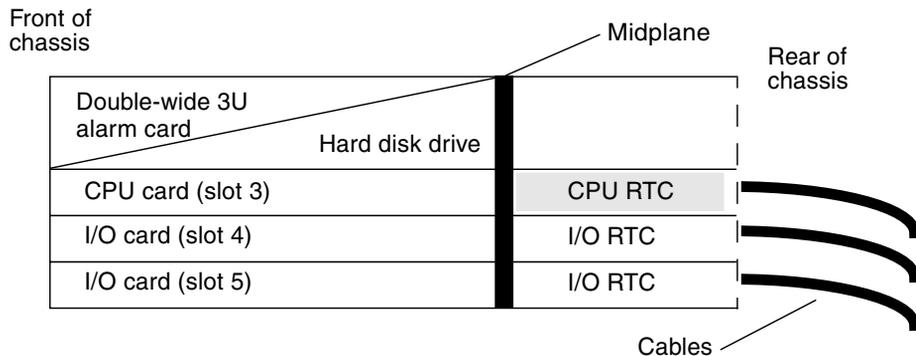
FIGURE 6-21 CPU Rear Transition Card (CPU RTC) in a Netra CT 410 Server (Top View)

2. Make the necessary cable connections to the CPU rear transition card.

Tighten the screws on the cable to a torque of 0.23 N.m (2 in.-lb.).

FIGURE 6-22 shows the connectors on the CPU rear transition card. The CPU rear transition card is the same for both the Netra CT 810 server and the Netra CT 410 server; only the location in the rear card cage differs.
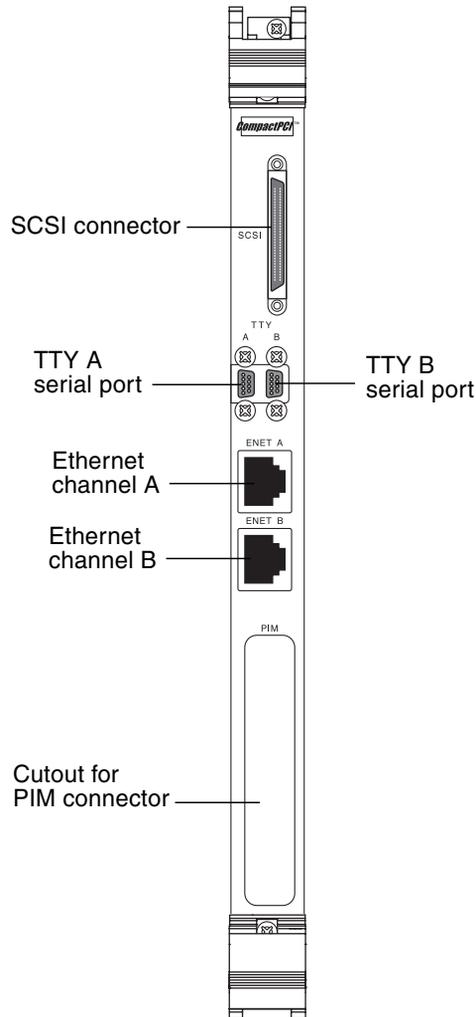
FIGURE 6-22 Connectors on the CPU Rear Transition Card

The following sections give the pinouts for the connectors on the CPU rear transition card:

SCSI (VHDC)

The SCSI port on the CPU RTC is a 68-pin CHAMP very high-density connector (VHDC). A VHDC-to-SCSI 3 cable is available through Sun, if necessary (part number 530-2453-xx, X3832A).

TABLE 6-13 SCSI Port Pinouts, CPU RTC

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	GND	24	GND	47	DATA 7
2	PRES_L	25	GND	48	PL_L
3	GND	26	GND	49	PRES_L
4	GND	27	GND	50	GND
5	GND	28	GND	51	TERM PWR
6	GND	29	GND	52	TERM PWR
7	GND	30	GND	53	GND
8	GND	31	GND	54	GND
9	GND	32	GND	55	ATN_L
10	GND	33	GND	56	GND
11	GND	34	GND	57	BSY_L
12	GND	35	DATA 12	58	ACK_L
13	GND	36	DATA 13	59	RST_L
14	GND	37	DATA 14	60	MSG_L
15	GND	38	DATA 15	61	DEL_L
16	GND	39	PH_L	62	CD_L
17	TERM PWR	40	DATA 0	63	REQ_L
18	TERM PWR	41	DATA 1	64	IO_L
19	GND	42	DATA 2	65	DATA 8
20	GND	43	DATA 3	66	DATA 9

TABLE 6-13   SCSI Port Pinouts, CPU RTC *(Continued)*

Pin No.	Signal		Pin No.	Signal		Pin No.	Signal
21	GND		44	DATA 4		67	DATA 10
22	GND		45	DATA 5		68	DATA 11
23	GND		46	DATA 6			

TTY A and B Ports

The TTY A and B ports are stacked mini 9-pin connectors. The signal interface of the connector is as follows:

TTY A of Dual Connector		TTY B of Dual Connector	
Pin	**Signal**	**Pin**	**Signal**
P1A	DCDA	P1B	DCDB
P2A	RXDA	P2B	RXDB
P3A	TXDA	P3B	TXDB
P4A	DTRA	P4B	DTRB
P5A	DGNDA	P5B	DGNDB
P6A	DSRA	P6B	DSRB
P7A	RTSA	P7B	RTSB
P8A	CTSA	P8B	CTSB
P9A	RIA	P9B	RIB

Note – The two TTY ports require the use of specific adapter cables. Use the Serial Cable Adapter, MDSM-9F to DB9M, (6 inch 9 wires), P/N C-CEL-10110-10. The manufacturer is Computer Cable Makers Inc. and can be ordered directly through them.

Ethernet A and B Ports

The Ethernet A and B ports on the CPU RTC are RJ-45 connectors for 10/100.
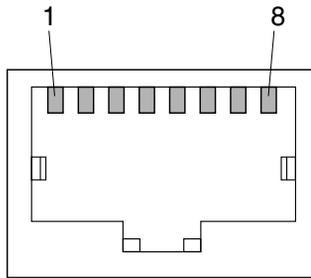
FIGURE 6-23 RJ-45 Ethernet Connector Diagram

TABLE 6-14 Ethernet A and B Connector Pinouts, CPU RTC

Pin No.	Description
1	TXD+
2	TXD-
3	RXD+
4	Not used
5	Not used
6	RXD-
7	Not used
8	Not used

PIM Card Interface

The host CPU rear transition card supports a PMC I/O module (PIM). A PIM is generally located on a transition card to enable rear I/O from the CompactPCI bus chassis. Custom PIMs provide additional I/Os that do not fit on the standard transition card rear panel. (For more information on PIM slot mechanics, electrical and logical information, see *VITA 36 - PMC I/O Module Standard* available *http://www.vita.com* and the *IEEE P1386 Standard*). The single-sized PIM measures 2.92 inches (74 mm) wide and 2.72 inches (69 mm) deep.

The PIM card must be mounted on the host CPU rear transition card *before* the rear transition card is inserted in a Netra CT server.

Caution – A PIM card must be used with its matching PMC. Any other combination could lead to damage of the PIM or PMC.

▼ To Connect Cables to the Alarm Rear Transition Card (Rear-Access Models Only)

1. Go to the rear of the chassis and locate the alarm rear transition card (RTC).

FIGURE 6-24 shows the slot available for the alarm rear transition card in a Netra CT 810 server and FIGURE 6-25 shows the slot available for the alarm rear transition card in a Netra CT 410 server.

	Front of chassis		Midplane	
	Hard disk drives		Hard disk drives	Rear of chassis
Slot 1	Host CPU card		Host CPU RTC	Slot 1
Slot 2	Satellite CPU or I/O card		CPU I/O RTC	Slot 2
Slot 3	Satellite CPU or I/O card		CPU I/O RTC	Slot 3
Slot 4	Satellite CPU or I/O card		CPU I/O RTC	Slot 4
Slot 5	Satellite CPU or I/O card		CPU I/O RTC	Slot 5
Slot 6	Satellite CPU or I/O card		CPU I/O RTC	Slot 6
Slot 7	Satellite CPU or I/O card		CPU I/O RTC	Slot 7
Slot 8	Single-wide 3U alarm card		Alarm RTC	Slot 8

FIGURE 6-24 Supported Location for the Alarm Rear Transition Card in a Netra CT 810 Server (Top View)

Front of chassis | | Midplane | Rear of chassis
Slot 1 | 3U or 6U alarm card | Alarm RTC
Slot 2 | Satellite CPU or I/O card | CPU I/O RTC
Slot 3 | Host CPU card | Host CPU RTC
Slot 4 | Satellite CPU or I/O card | CPU I/O RTC
Slot 5 | Satellite CPU or I/O card | CPU I/O RTC
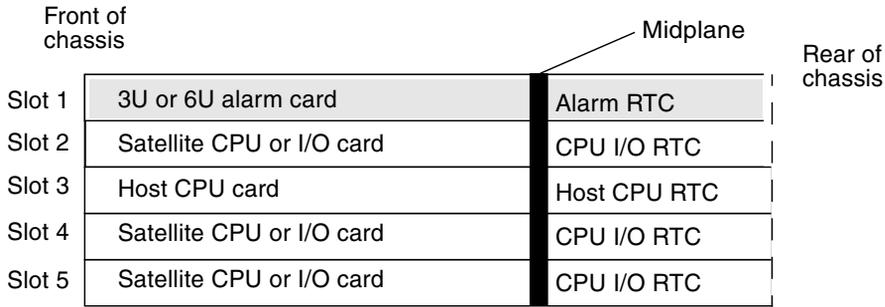
FIGURE 6-25 Supported Location for the Alarm Rear Transition Card in a Netra CT 410 Server (Top View)

2. Make the necessary cable connections to the alarm rear transition card.

Tighten the screws on the cable to a torque of 0.23 N.m (2 in.-lb.).

FIGURE 6-26 shows the connectors on the alarm rear transition card.
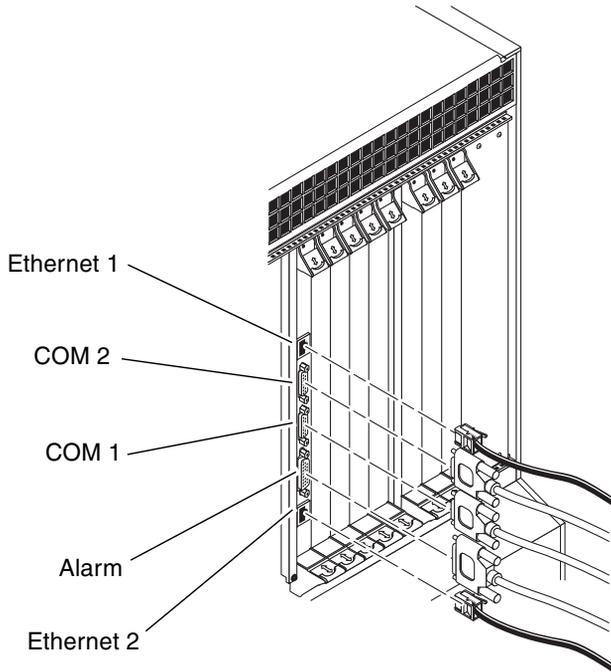
FIGURE 6-26 Connectors on the Alarm Rear Transition Card

The following sections give the pinouts for the connectors on the alarm rear transition card:

- "Ethernet Ports 1 and 2" on page 89
- "COM Ports 1 and 2" on page 90
- "Alarm Port" on page 91

Ethernet Ports 1 and 2

Ethernet ports 1 and 2 on the alarm rear transition card use standard RJ-45 connectors. Ethernet port 1 is a 10Mbps Ethernet port, and Ethernet port 2 is a 10/100 Mbps Ethernet port.
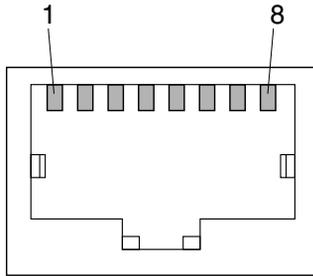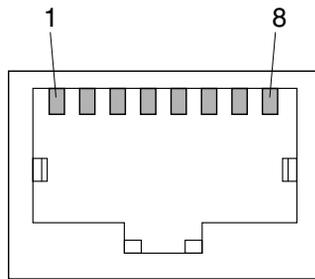

FIGURE 6-27 RJ-45 Ethernet Connector Diagram

TABLE 6-15 Ethernet Ports 1 and 2 Pinouts

Pin No.	Description	Pin No.	Description
1	TX+	5	Not used
2	TX-	6	RX-
3	RX+	7	Not used
4	Not used	8	Not used

COM Ports 1 and 2

COM ports 1 and 2 on the alarm rear transition card use standard DB-9 male connectors.
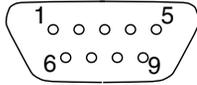
FIGURE 6-28 COM Ports 1 and 2

TABLE 6-16 COM Ports 1 and 2 Connector Pinouts, Alarm Rear Transition Card

Pin No.	Description
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Alarm Port

The alarm port on the alarm rear transition card uses a standard male DB-15 connector.
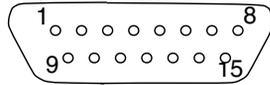
FIGURE 6-29 Alarm Port

TABLE 6-17 Alarm Port Pinouts

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	RESET0 +	6	ALARM0_NC	11	ALARM2_NO
2	RESET0 -	7	ALARM0_COM	12	ALARM2_NC
3	RESET1 +	8	ALARM1_NO	13	ALARM2_COM
4	RESET1 -	9	ALARM1_NC	14	ALARM3_NO
5	ALARM0_NO	10	ALARM1_COM	15	ALARM3_COM

▼ To Connect Cables to the Rear-Access Satellite CPU or I/O Cards

1. Locate the satellite CPU or I/O card.

FIGURE 5-2 shows the possible locations for the satellite CPU or I/O cards in the Netra CT 810 server and FIGURE 5-3 shows the possible locations for the satellite CPU or I/O cards in the Netra CT 410 server.

2. Make the necessary cable connections to the rear-access I/O cards.

Tighten the screws on the cable to a torque of 0.23 N.m (2 in.-lb.).

For information on connectors on satellite CPU or I/O rear transition cards, refer to the documentation that you received with those cards.

Connecting the Power Cables

All of the Netra CT servers installed in a chassis will either be DC-powered or AC-powered. You cannot have a mixture of DC- and AC-powered servers in the same chassis.

- "Assembling and Connecting the DC Input Power Cable" on page 92
- "Connecting the AC Power Cables" on page 102

Assembling and Connecting the DC Input Power Cable

> **Caution –** Verify that your site meets the source site requirements given in "Power Source Requirements" on page 14 before proceeding with these instructions.

▼ To Assemble the DC Input Power Cable

> **Note –** If you have already assembled the DC input power cables, skip to "Connecting the DC Input Power Cable to the Server" on page 98.

1. **Identify the parts that you will use to assemble the DC input power cable** (FIGURE 6-30).

   The following DC connection parts are provided in this kit so that you can assemble one or more DC power input cables. These cables are used to connect the -48V DC input source(s) to the power supply units in your:

   - DC input plugs
   - Strain relief housings
   - Cage clamp operating lever
   - Tie wraps
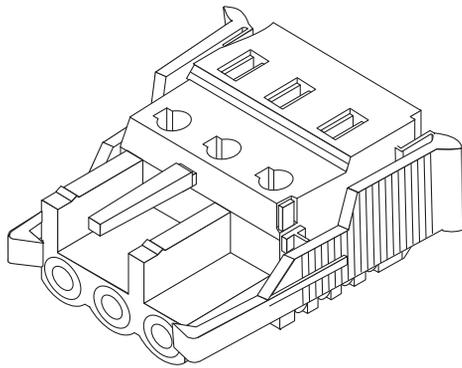
DC input plug
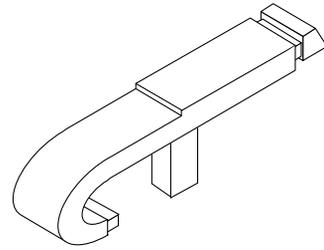
Cage clamp operating lever
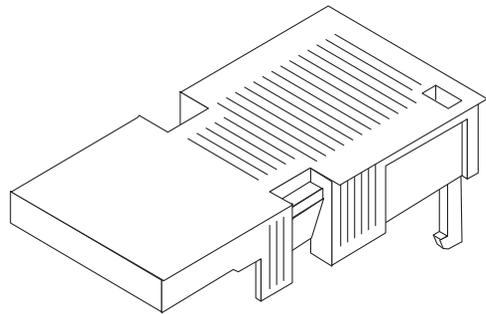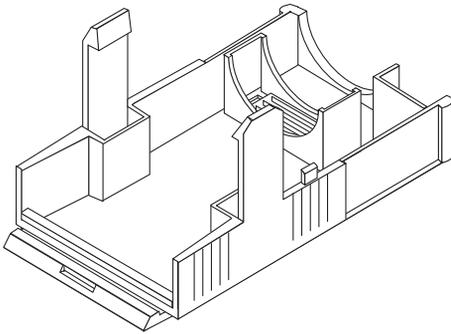
Strain relief housing

FIGURE 6-30 DC Connection Parts

2. **Turn off power from the DC power source through the circuit breakers.**

Caution – Do *not* proceed with these instructions until you have turned off the power from the DC power source through the circuit breakers.

3. **Get a DC input plug from the ship kit.**

4. **Locate the three wires coming from the DC power source that will be used in the connection to your unit:**
   - -48V (negative terminal)
   - Chassis ground
   - -48V Return (positive terminal)

5. **Strip 5/16 inches (8 mm) of insulation from each of the wires coming from the DC power source.**

   Do not strip more than 5/16 inches (8 mm) from each wire. Doing so will leave uninsulated wire exposed from the DC connector after the assembly is complete.
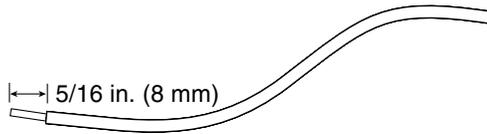
   FIGURE 6-31 Stripping the Insulation From the Wire

6. **Insert the tip of the cage clamp operating lever into the rectangular hole directly above the hole in the DC input plug where you want to insert the first wire and press down on the cage clamp operating lever.**

   This opens the cage clamp for this section of the DC input plug.

   Top of input plug
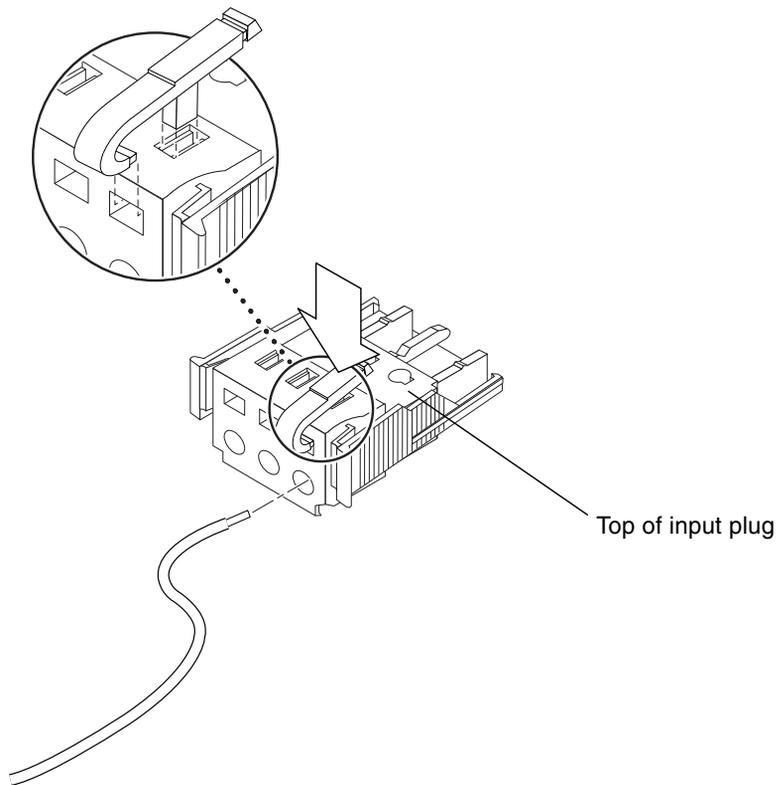
   FIGURE 6-32 Opening the DC Input Plug Cage Clamp Using the Cage Clamp Operating Lever

You can also open the cage clamp by inserting a small slotted screwdriver into the rectangular hole directly above the hole in the DC input plug where you want to insert the first wire and pressing down on the screwdriver.

Top of input plug
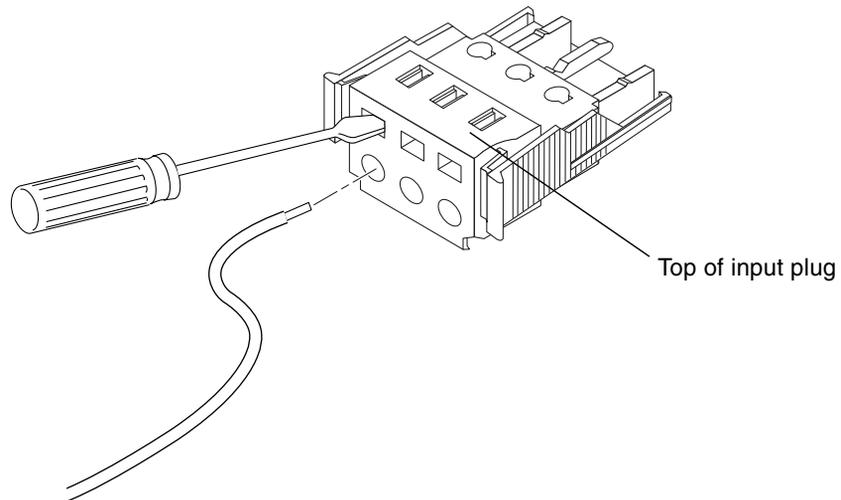
FIGURE 6-33 Opening the Cage Clamp Using a Screwdriver

7. **Feed the exposed section of the appropriate wire into that hole in the DC input plug.**

FIGURE 6-34 shows which wires should be inserted into each hole in the DC input plug.

Top of connector

From -48V Return

From chassis ground (green/yellow)

From -48V
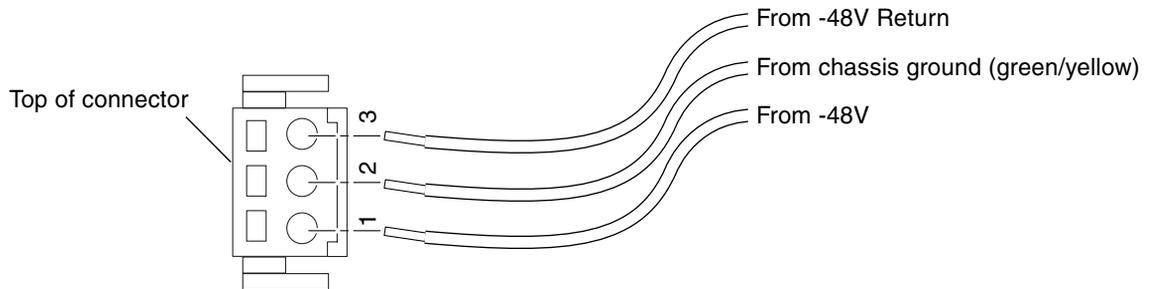
FIGURE 6-34 Assembling the DC Input Power Cable

8. **Repeat Step 6 and Step 7 for the other two wires to complete the assembly of the DC input power cable.**

9. **Repeat Step 4 through Step 8 to create as many DC input power cables as you need for your unit.**

You will need one DC input power cable for every power supply that you have in the Netra CT server chassis.

If you need to remove a wire from the DC input plug, insert the cage clamp operating lever or a small screwdriver into the slot directly above the wire and press down (FIGURE 6-32 and FIGURE 6-33), then pull the wire from the DC input plug.

▼ To Install the Strain Relief Housings

1. **Take the DC input plug and insert the bottom portion of the strain relief housing into the notch on the DC input plug until it snaps into place.**

Make sure the strain relief housing snaps into place on the DC input plug; you will not be able to complete the assembly correctly if the strain relief housing is not snapped into place.
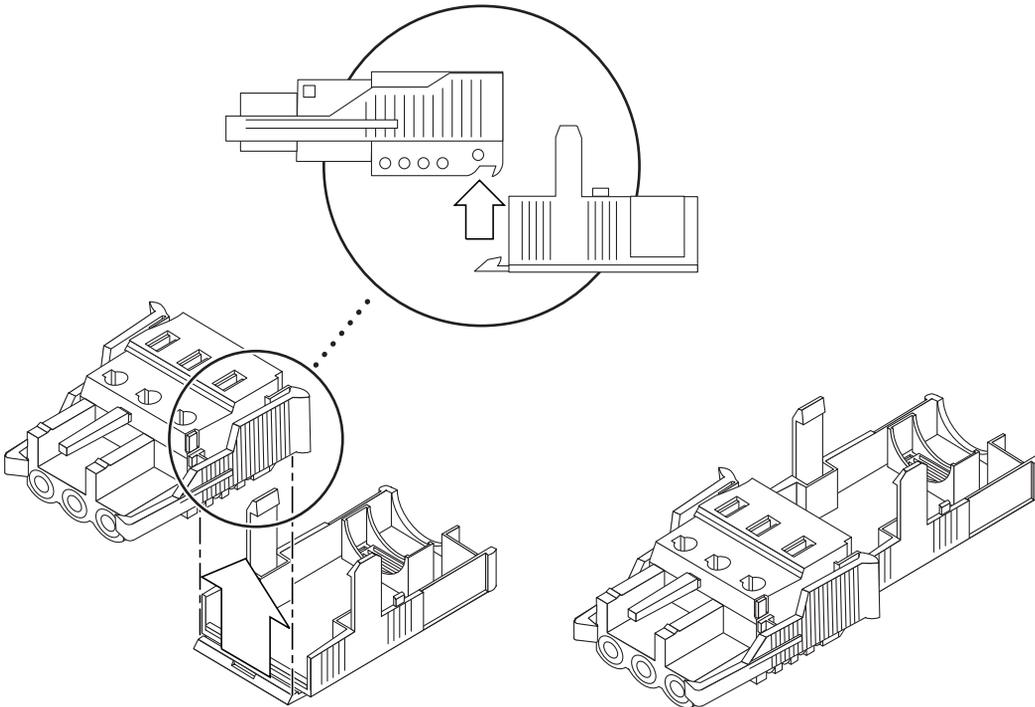
FIGURE 6-35 Inserting the Bottom Portion of the Strain Relief Housing

2. **Route the three wires coming from the DC power source through the opening at the end of the bottom portion of the strain relief housing.**
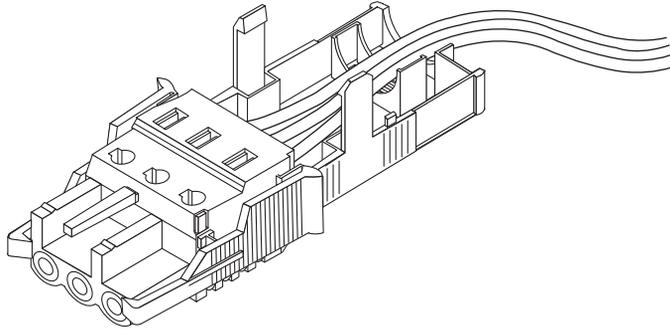
FIGURE 6-36 Routing the Wires Out of the Bottom Portion of the Strain Relief Housing

3. **Get the tie wrap and insert it into the bottom portion of the strain relief housing.**
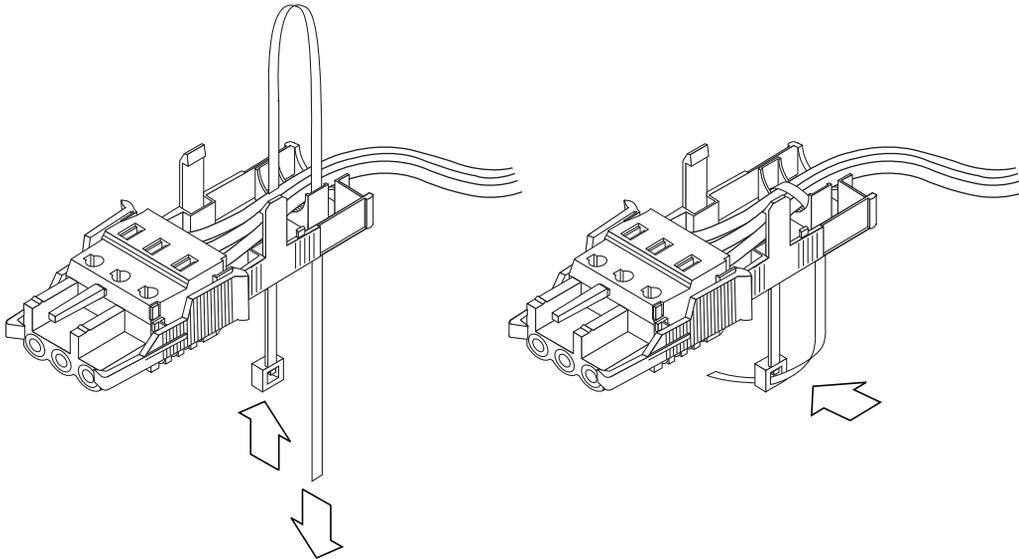
FIGURE 6-37 Securing the Wires to the Strain Relief Housing

4. **Loop the tie wrap over the wires and back out of the strain relief housing and tighten the tie wrap to secure the wires to the strain relief housing (**FIGURE 6-37**).**

5. Lower the top portion of the strain relief housing so that the three prongs on the top portion insert into the openings in the DC input plug, and push the top and bottom portions of the strain relief housing together until they snap into place.
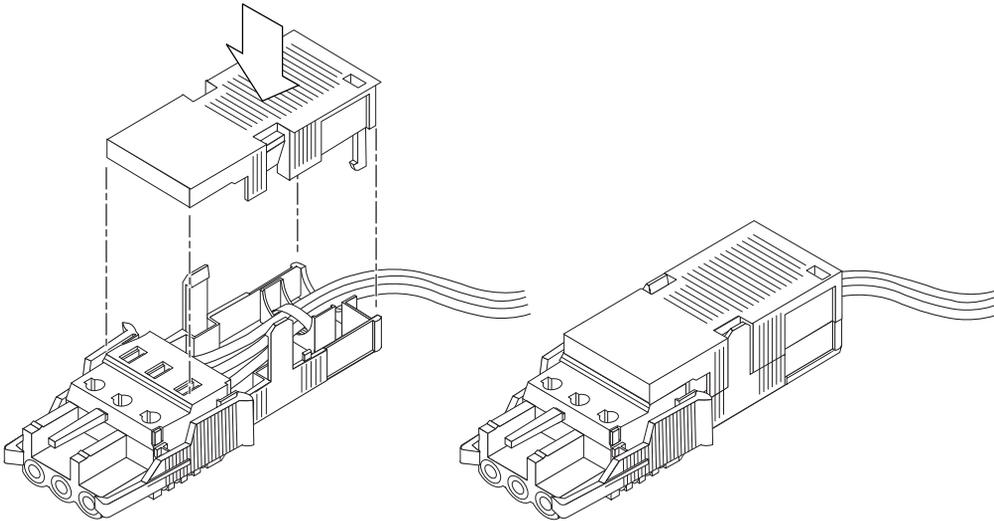
FIGURE 6-38 Assembling the Strain Relief Housing

Connecting the DC Input Power Cable to the Server

⚠ **Caution –** An energy hazard is present when energized units are not properly earthed.

The instructions for connecting the power cable to your Netra CT server vary depending on the model that you have.

- If you have the *front-access* model, go to "To Connect the DC Power Cable to the Front-Access Model" on page 99.
- If you have the *rear-access* model, go to "To Connect the DC Power Cable to the Rear-Access Model" on page 101.

▼ To Connect the DC Power Cable to the Front-Access Model

1. **Go to the front of the chassis and locate the DC connectors.**
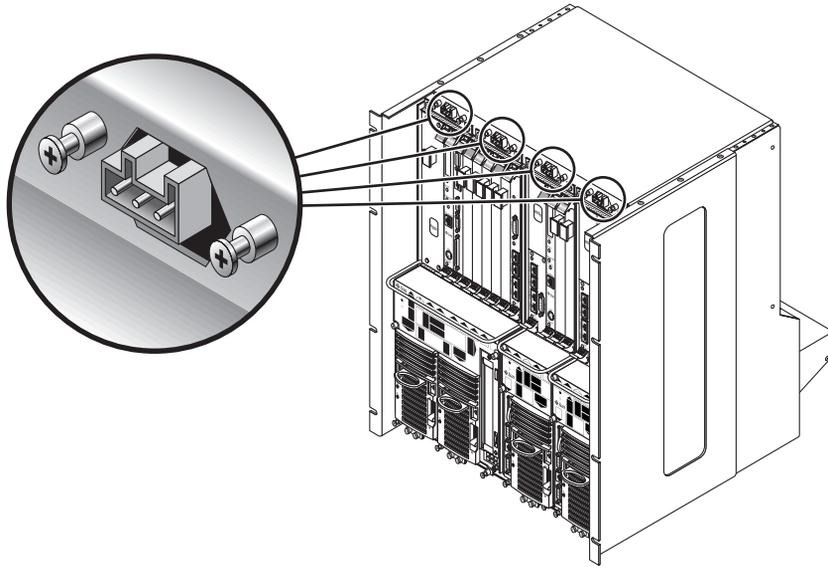
FIGURE 6-39 DC Connector Locations, Front-Access Model

2. **Connect the DC input power cables to the DC connectors.**
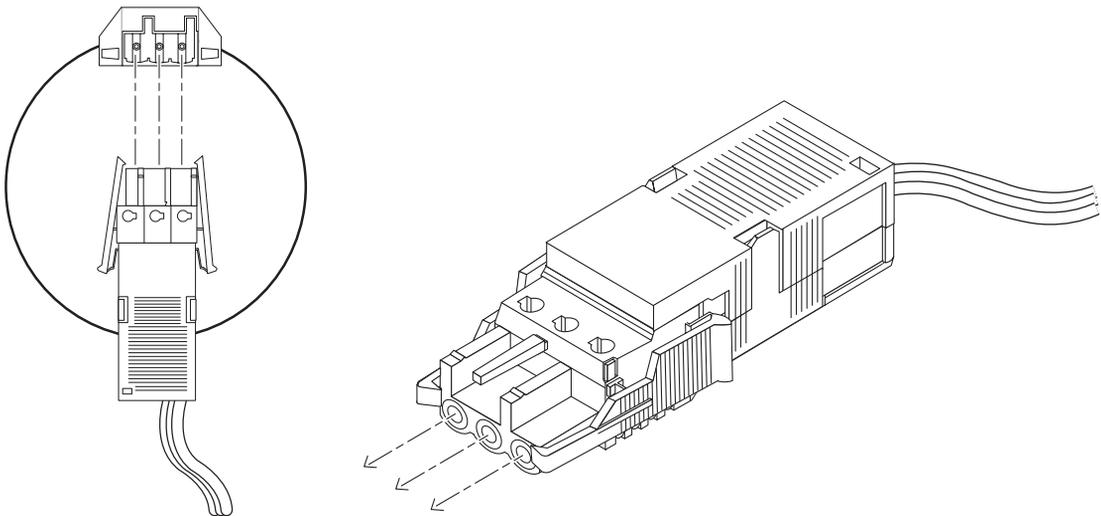
FIGURE 6-40 Connecting the DC Input Power Cable to the DC Connectors

3. Turn on the circuit breakers to provide power to the servers.

If you want to disconnect the DC input power cable from the DC connector at some point in the future, turn the circuit breakers off, then squeeze the two tabs on the sides of the DC input power cable and gently disconnect the DC input power cable from the DC power supply.

Caution – Do *not* attempt to disconnect the DC input power cable from the DC connector until you have turned off the power from the DC power source through the circuit breakers.
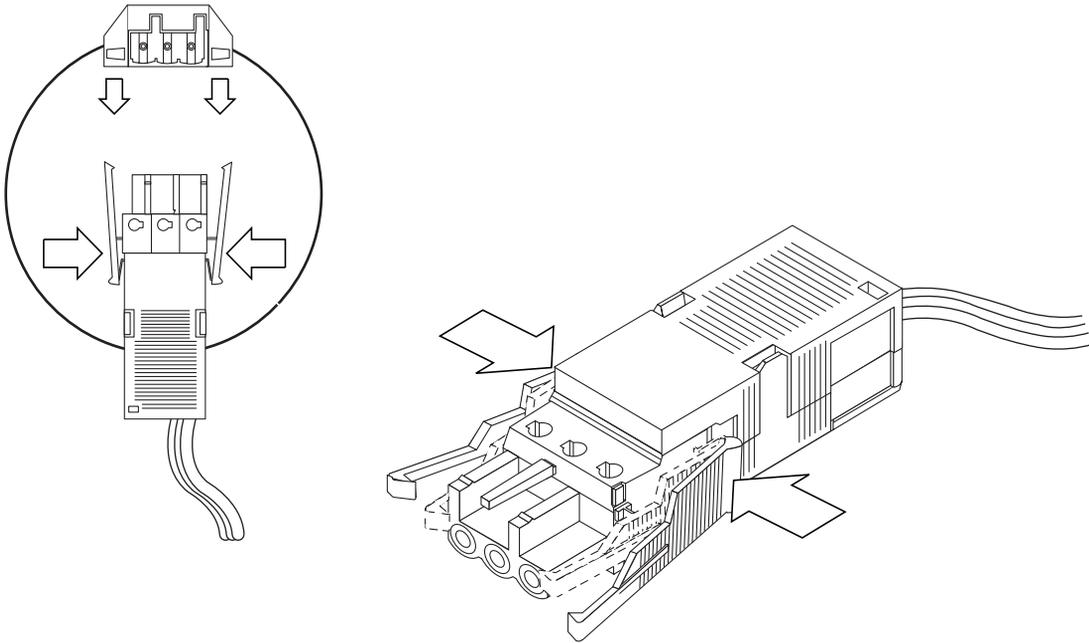
FIGURE 6-41 Disconnecting the DC Input Power Cable From the DC Connector

▼ To Connect the DC Power Cable to the Rear-Access Model

1. Go to the rear of the chassis and locate the DC connectors.
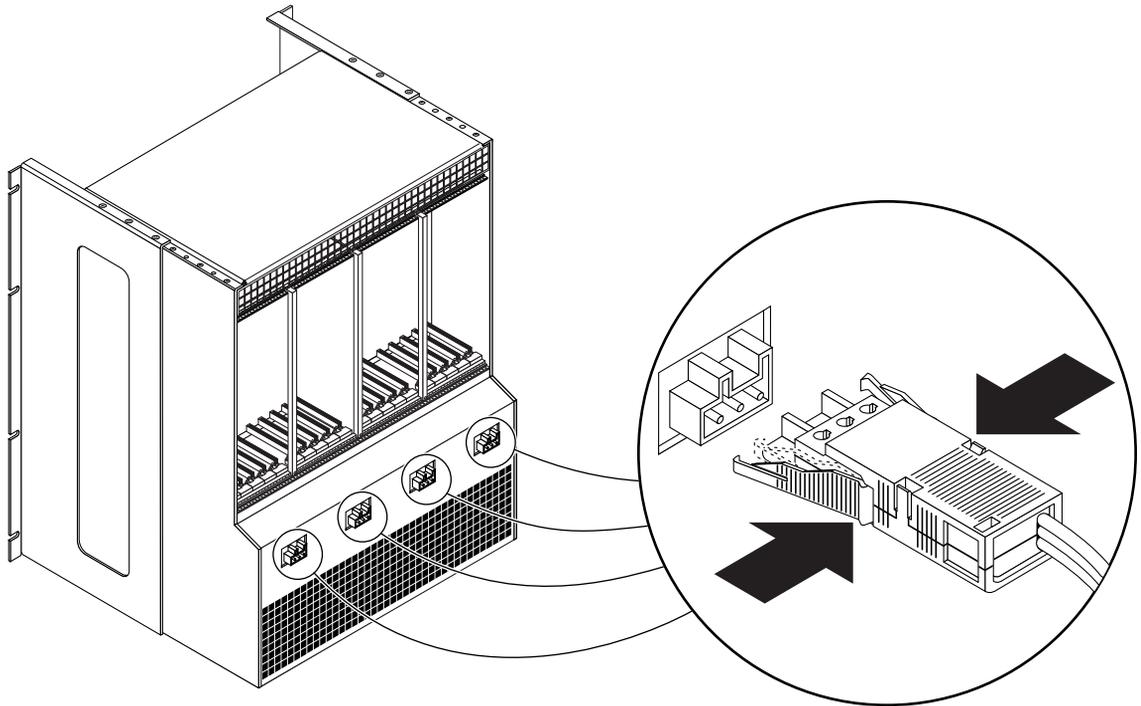
FIGURE 6-42 Locating the DC Connectors

2. Connect the DC input power cables to the DC connectors.

FIGURE 6-40 shows how the DC input power cable is connected to the DC connectors.

3. Turn on the circuit breakers to provide power to the server.

If you want to disconnect the DC input power cable from the DC connector at some point in the future, turn the circuit breakers off, then squeeze the two tabs on the sides of the DC input power cable and gently disconnect the DC input power cable from the DC power supply (FIGURE 6-41).

Connecting the AC Power Cables

The two AC power supply units in each Netra CT 810 server allow for power redundancy. If one power supply unit fails, then the system will continue to operate using the remaining power supply unit. In order to ensure true AC line input redundancy for the Netra CT 810 server, you should connect each AC power cable to a different AC power source. You can also connect an uninterruptible power supply (UPS) between each AC power source and the Netra CT chassis to increase the availability of the system.

Caution – Ensure that the connection of multiple units to the supply circuit does not overload the supply overcurrent protection. Refer to the Netra CT server nameplate electrical ratings when determining the correct branch circuit rating for your installation.

Note – The Netra CT server uses nominal input voltages from 100 VAC to 240 VAC. Sun products are designed to work with power systems having a grounded neutral conductor. To reduce the risk of electrical shock, do not plug Sun products into another type of power source. Contact your facilities manager or a qualified electrician if you are unsure what type of power is supplied to your building.

1. **Ensure that the power supply that you are connecting the cable to is in the off or unlocked position.**

2. **Plug one end of each AC power cable into the AC wall outlets.**

3. **Plug the other end of the AC power cables into the AC power connectors at the rear of the chassis.**

   See FIGURE 6-43 for the location of the AC connectors at the rear of the Netra CT chassis. Plug each AC power cable to a different AC power source if you want AC line input power redundancy.

   Ensure that all methods of disconnecting the power remain accessible after installation.
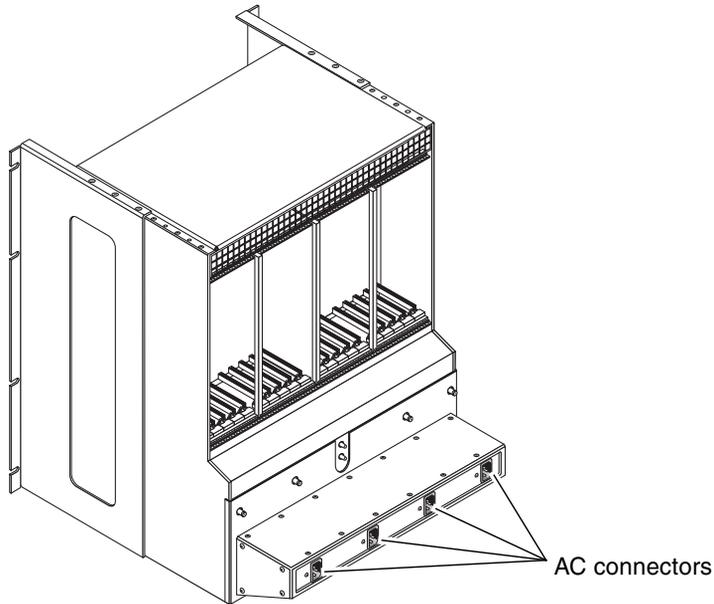
AC connectors

FIGURE 6-43 AC Connectors on a Netra CT Chassis

Powering the Server On and Off

This chapter gives instructions on powering the Netra CT server on and off.

Note – Whenever you reboot or power your server on and off, the hot swap states revert back to the default *full* hot swap state for all I/O slots. If you want *basic* hot swap on an I/O slot, you must manually reset the I/O slot to basic hot swap after rebooting or powering your server on and off.

Note – You can also power the Netra CT server on and off through the alarm card using software commands. Refer to the *Netra CT Server System Administration Manual* for more information.

Connecting a Terminal Console to the Server

One way to power on and off your server is to log in to the server either remotely, where you would log in to the Netra CT server as root through another server on the network, or directly, where you would connect a terminal console directly to your Netra CT server. A terminal console can be an ASCII terminal, workstation, or PC laptop.

For a direct login, the connection you use varies depending on the Netra CT server model you have, the type of terminal console you are using, and the card that you are connecting to:

- If you are using an ASCII terminal to power on and off the Netra CT server, go to "To Use an ASCII Terminal" on page 106.
- If you are using a Solaris workstation to power on and off the Netra CT server, go to "To Use a Solaris Workstation" on page 108.
- If you are using a PC laptop to power on and off the Netra CT server, go to "To Use a PC Laptop" on page 110.

▼ To Use an ASCII Terminal

1. Get the appropriate cable(s) and adapter(s) and make the necessary connections.

You may need one or more cables and adapters in order to connect the ASCII terminal to the server. The cables and adapters you need varies, depending on the model server you have and the card that you are connecting to.

- If you are connecting an ASCII terminal to a *CPU or CPU transition card*, use the information in TABLE 7-1 to make the necessary connections.
- If you are connecting an ASCII terminal to an *alarm card or alarm rear transition card*, use the information in TABLE 7-2 to make the necessary connections.

TABLE 7-1 Connecting an ASCII Terminal to a CPU or CPU Transition Card

Server Type	TTY A Port on Netra CT Server	Adapter	Cable	Adapter	Serial Port on Terminal
Netra CT 810 server	• *Rear-access* model: DB-9 male on the CPU rear transition card. See "To Connect Cables to the CPU Rear Transition Card" on page 82.	Not needed.	DB-9 female-to-DB-25 male straight-through	DB-25 female-to-DB-25 female gender changer	DB-25 male
Netra CT 410 server	• *Front-access* model: DIN-8 female on the CPU card. See "To Connect Cables to the CPU Card" on page 62. • *Rear-access* model: DB-9 male on the CPU rear transition card. See "To Connect Cables to the CPU Rear Transition Card" on page 82.	Not needed.	• *Front-access* model: DIN-8 male-to-DB-25 male • *Rear-access* model: DB-9 female-to-DB-25 male straight-through	DB-25 female-to-DB-25 female gender changer	DB-25 male

TABLE 7-2 Connecting an ASCII Terminal to an Alarm or Alarm Rear Transition Card

Server Type	COM 1 Port on Netra CT Server	Adapter	Cable	Adapter	Serial Port on Terminal
Netra CT 810 server	• *Front-access* model: RJ-45 on the alarm card. See "To Connect Cables to the Alarm Card (Front-Access Models Only)" on page 73. • *Rear-access* model: DB-9 male on the alarm rear transition card. See "To Connect Cables to the Alarm Rear Transition Card (Rear-Access Models Only)" on page 87.	• *Front-access* model: RJ-45-to-DB-9 male • *Rear-access* model: Not needed	DB-9 female-to-DB-25 male straight-through	DB-25 female-to-DB-25 female gender changer	DB-25 male
Netra CT 410 server	• *Front-access* model: RJ-45 on the alarm card. See "To Connect Cables to the Alarm Card (Front-Access Models Only)" on page 73. • *Rear-access* model: DB-9 male on the alarm rear transition card. See "To Connect Cables to the Alarm Rear Transition Card (Rear-Access Models Only)" on page 87.	• *Front-access* model: RJ-45-to-DB-9 male • *Rear-access* model: Not needed	DB-9 female-to-DB-25 male straight-through	DB-25 female-to-DB-25 female gender changer	DB-25 male

2. **Access the "Set Up Menu" of the ASCII terminal and bring up the Serial Communications section.**

3. **Set up the serial port communications parameters.**

   The default settings should match the values reported on the host serial port.

   - Hardwired modem connection
   - No parity
   - 9600 baud
   - 1 stop bit
   - 8 bit data

4. **Test the connection.**

   Verify that communication has been established to the server and the keyboard/display of the ASCII terminal.

▼ To Use a Solaris Workstation

1. **Get the appropriate cable(s) and adapter(s) and make the necessary connections.**

   You may need one or more cables and adapters in order to connect a Solaris workstation to the server. The cables and adapters you need varies, depending on the model server you have and the card that you are connecting to.

   - If you are connecting a Solaris workstation to a *CPU or CPU transition card*, use the information in TABLE 7-3 to make the necessary connections.
   - If you are connecting a Solaris workstation to an *alarm card or alarm rear transition card*, use the information in TABLE 7-4 to make the necessary connections.

TABLE 7-3   Connecting a Solaris Workstation to a CPU or CPU Transition Card

Server Type	TTY A Port on Netra CT Server	Adapter	Cable	Adapter	Serial Port on Workstation
Netra CT 810 server	• *Rear-access* model: DB-9 male on the CPU rear transition card. See "To Connect Cables to the CPU Rear Transition Card" on page 82.	Not needed.	DB-9 female-to-DB-25 male null modem	Not needed.	DB-25 female
Netra CT 410 server	• *Front-access* model: DIN-8 female on the CPU card. See "To Connect Cables to the CPU Card" on page 62. • *Rear-access* model: DB-9 male on the CPU rear transition card. See "To Connect Cables to the CPU Rear Transition Card" on page 82.	Not needed.	• *Front-access* model: DIN-8 male-to-DB-25 male • *Rear-access* model: DB-9 female-to-DB-25 male null modem	Not needed.	DB-25 female

TABLE 7-4   Connecting a Solaris Workstation to an Alarm or Alarm Rear Transition Card

Server Type	COM 1 Port on Netra CT Server	Adapter	Cable	Adapter	Serial Port on Workstation
Netra CT 810 server	• *Front-access* model: RJ-45 on the alarm card. See "To Connect Cables to the Alarm Card (Front-Access Models Only)" on page 73. • *Rear-access* model: DB-9 male on the alarm rear transition card. See "To Connect Cables to the Alarm Rear Transition Card (Rear-Access Models Only)" on page 87.	• *Front-access* model: RJ-45-to-DB-9 male • *Rear-access* model: Not needed.	DB-9 female-to-DB-25 male null modem	Not needed.	DB-25 female
Netra CT 410 server	• *Front-access* model: RJ-45 on the alarm card. See "To Connect Cables to the Alarm Card (Front-Access Models Only)" on page 73. • *Rear-access* model: DB-9 male on the alarm rear transition card. See "To Connect Cables to the Alarm Rear Transition Card (Rear-Access Models Only)" on page 87.	• *Front-access* model: RJ-45-to-DB-9 male • *Rear-access* model: Not needed	DB-9 female-to-DB-25 male null modem	Not needed.	DB-25 female

2. **Check the** `/etc/remote` **file for the appropriate line.**

   To connect to the *TTY A or COM 1* port on the workstation, check for this line:

   ```
   tip -9600 /dev/ttya
   ```

3. **Type** `tip hardwire` **at the prompt.**

   You should see the word `connected` as the response.

   To disconnect the tip window, type ~ . (tilde period) at the prompt.

▼ To Use a PC Laptop

1. **Get the appropriate cable(s) and adapter(s) and make the necessary connections.**

   You may need one or more cables and adapters in order to connect a PC laptop to the server. The cables and adapters you need varies, depending on the model server you have and the card that you are connecting to.

   - If you are connecting a PC laptop to a *CPU or CPU transition card*, use the information in TABLE 7-5 to make the necessary connections.

   - If you are connecting a PC laptop to an *alarm card or alarm rear transition card*, use the information in TABLE 7-6 to make the necessary connections.

TABLE 7-5   Connecting a PC Laptop to a CPU or CPU Transition Card

Server Type	TTY A Port on Netra CT Server	Adapter	Cable	Adapter	Serial Port on PC Laptop
Netra CT 810 server	• *Rear-access* model: DB-9 male on the CPU rear transition card. See "To Connect Cables to the CPU Rear Transition Card" on page 82.	Not needed.	DB-9 female-to-DB-9 female null modem	Not needed.	DB-9 male
Netra CT 410 server	• *Front-access* model: DIN-8 female on the CPU card. See "To Connect Cables to the CPU Card" on page 62. • *Rear-access* model: DB-9 male on the CPU rear transition card. See "To Connect Cables to the CPU Rear Transition Card" on page 82.	Not needed.	• *Front-access* model: DIN-8 male-to-DB-25 male • *Rear-access* model: DB-9 female-to-DB-9 female null modem	• *Front-access* model: DB-25 female-to-DB-9 female • *Rear-access* model: Adapter not needed.	DB-9 male

TABLE 7-6 Connecting a PC Laptop to an Alarm or Alarm Rear Transition Card

Server Type	COM 1 Port on Netra CT Server	Adapter	Cable	Adapter	Serial Port on PC Laptop
Netra CT 810 server	• *Front-access* model: RJ-45 on the alarm card. See "To Connect Cables to the Alarm Card (Front-Access Models Only)" on page 73. • *Rear-access* model: DB-9 male on the alarm rear transition card. See "To Connect Cables to the Alarm Rear Transition Card (Rear-Access Models Only)" on page 87.	• *Front-access* model: RJ-45-to-DB-9 male • *Rear-access* model: Not needed	DB-9 female-to-DB-9 female null modem	Not needed	DB-9 male
Netra CT 410 server	• *Front-access* model: RJ-45 on the alarm card. See "To Connect Cables to the Alarm Card (Front-Access Models Only)" on page 73. • *Rear-access* model: DB-9 male on the alarm rear transition card. See "To Connect Cables to the Alarm Rear Transition Card (Rear-Access Models Only)" on page 87.	• *Front-access* model: RJ-45-to-DB-9 male • *Rear-access* model: Not needed	DB-9 female-to-DB-9 female null modem	Not needed	DB-9 male

2. Set the following connection parameters:

- No parity
- 9600 baud
- 1 stop bit
- 8 bit data

Powering On the Server

Note – You must have the host CPU card, alarm card and system controller board installed in the Netra CT server before you can power it on; the server will not power on properly if all three of these components are not installed. Once the system is powered on and running, then you can hot-swap any of the three components as documented in the *Netra CT Server Service Manual*. Also, do not reboot the server if the alarm is in the process of resetting.

1. **Verify that the power supply locking mechanism(s) on the server you are about to power on are in the locked (⊟), or down, positions (**FIGURE 7-1**).**

   Make sure you lock *both* power supplies if you are powering on a Netra CT 810 server.
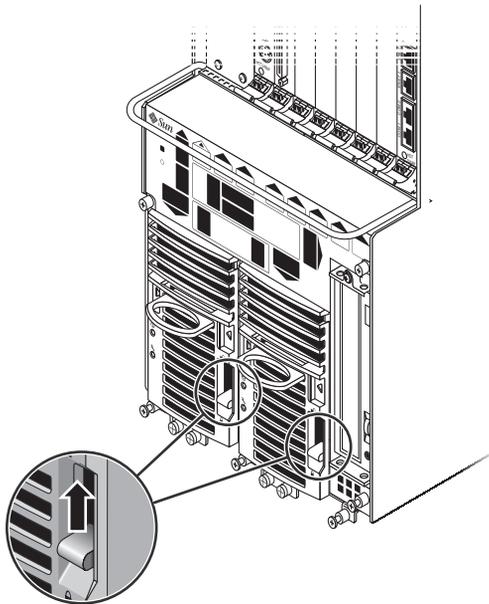
FIGURE 7-1   Locating the Power Supply Locking Mechanism on the Netra CT 810 Server

When the power supply locking mechanism is locked, the green LED on the power suppl(ies) flash, indicating that the power suppl(ies) are powered on, but the server has not been powered on yet. Also, the PDU LEDs on the system status panel should be in this state:

Green LED ($\bigoplus$) is ON

Amber LED ($\multimap$) is OFF

This tells you that the power supply locking mechanism(s) are in the locked (down) position and the power distribution unit(s) are receiving power and functioning properly.

2. **Locate the system status panel.**

The location of the system status panel in the Netra CT 810 server and Netra CT 410 server is illustrated in FIGURE 7-2.

FIGURE 7-2   System Status Panel Locations

3. Locate the system power button on the system status panel and press the system power button to power on the server.

FIGURE 7-3 shows the system power button location for the Netra CT 810 server, and FIGURE 7-4 shows the system power button location for the Netra CT 410 server.

When you first power-on the Netra CT server, some or all of the green Power LEDs on the system status panel flash on and off for several moments.
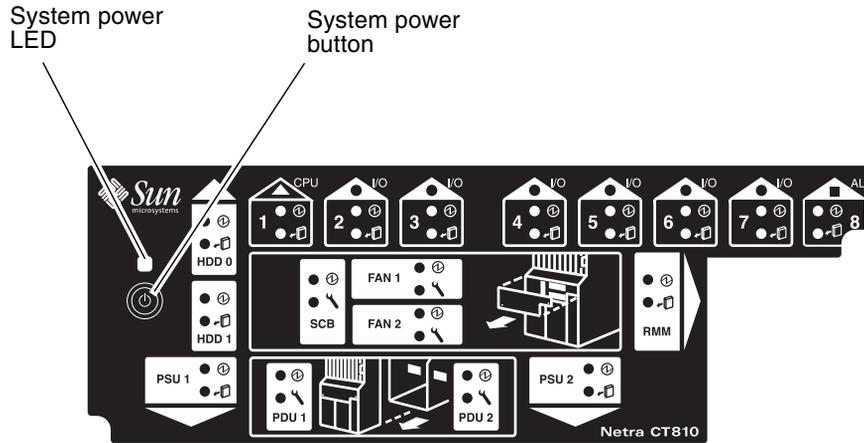
FIGURE 7-3   System Power Button and System Power LED Locations (Netra CT 810 Server)
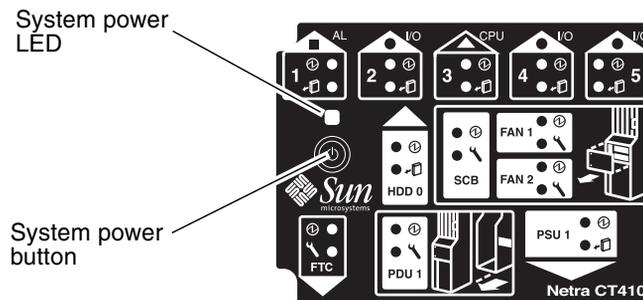
FIGURE 7-4   System Power Button and System Power LED Locations (Netra CT 410 Server)

4. Verify that the system power LED on the system status panel is on, indicating that the system is completely powered on.

FIGURE 7-3 shows the system power LED location for the Netra CT 810 server, and FIGURE 7-4 shows the system power LED location for the Netra CT 410 server.

5. Verify that the green power (⏻) LED on the power supplies are on, indicating that they are powered on and functioning properly.

6. **If you have a Netra CT 410 server, connect an external DVD drive to your server.**

   Refer to Appendix A for more information.

7. **Insert the Solaris operating environment DVD into the DVD drive.**

8. **Log into your server.**

   Refer to "Connecting a Terminal Console to the Server" on page 106 for instructions on connecting a terminal to your server, if necessary.

9. **Boot up the server through the DVD drive.**

   As root, enter:

```
# boot cdrom
```

Powering Off the Server

You can power off the Netra CT server one of three ways, depending on the terminal hookup and the state of the host CPU:

- If you have a terminal hookup to your server and your host CPU is functioning normally, you should go through a *graceful software* power-down for your server. A graceful software power-down is a normal power-down using a terminal connected to your server, where you would log onto the server as root, then execute a software command to bring the server down safely. Go to "To Perform a Graceful Software Power-Down" on page 116 for those procedures.

- If you do *not* have a terminal hookup to your server but your CPU is functioning normally, you should go through a *graceful hardware* power-down for your server. For a graceful hardware power-down, you would press the system power button for *less* than four seconds. This will start the orderly power-down sequence in a manner that no persistent OS data structures are corrupted. In the orderly power-down, applications in service may be abnormally terminated and no further services will be invoked by the CPU. Go to "To Perform a Graceful Hardware Power-Down" on page 117 for those procedures.

- If you do *not* have a terminal hookup to your server and your CPU is *not* functioning normally, you will not be able to go through a graceful hardware power-down; you will have to go through an *ungraceful hardware* power-down instead. For an ungraceful hardware power-down, press the system power button for *more* than four seconds. This will immediately shut the system down without making any attempts to keep the persistent OS data structures from being corrupted.

To Perform a Graceful Software Power-Down

1. **In preparation for bringing down the operating system and powering down the server, ensure that all significant application activity is quiesced on the server.**

2. **Log into your server.**

   Refer to "Connecting a Terminal Console to the Server" on page 106 for more information.

3. **Determine if you are at the OpenBoot (**ok**) prompt.**

   - If you are at the ok prompt, go to Step 4.

   - If you are not at the ok prompt, at the system console, and enter:

   ```
   # cd /
   # shutdown -i0 -g0 -y
   ```

   When the server is finished shutting down, the ok prompt is displayed.

4. **At the** ok **prompt, enter:**

   ```
   ok power-off
   ```

5. **Go to the front of the Netra CT server and locate the power supply unit(s).**

6. **Determine if the green power (①) LED on the power supply unit(s) are blinking.**

   - If the green power LED on the power supply unit(s) are blinking, then the system is in standby mode. Go to Step 7.

   - If the green power LED on the power supply unit(s) are *not* blinking, then the system did not respond to the graceful power-down; you must go through an ungraceful hardware power-down instead. Press the system power button for *more* than four seconds. This will immediately shut the system down without making any attempts to keep the persistent OS data structures from being corrupted.

7. **If you want to completely power off the Netra CT server, push the purple power supply unit locking mechanism(s) up into the unlocked ( ) position (see FIGURE 7-1).**

   Note – You must unlock the locking mechanism on *both* power supply units on the Netra CT 810 server in order to completely power off that server.

   The green power (①) LED(s) on the power supply unit(s) should go off (unlit), indicating that the system is now completely powered off.

To Perform a Graceful Hardware Power-Down

1. **In preparation for bringing down the operating system and powering off the server, ensure that all significant application activity is quiesced on the server.**

2. **Go to the front of the Netra CT server and locate the system status panel.**

   The location of the system status panels in the Netra CT 810 server and Netra CT 410 server is illustrated in FIGURE 7-2.
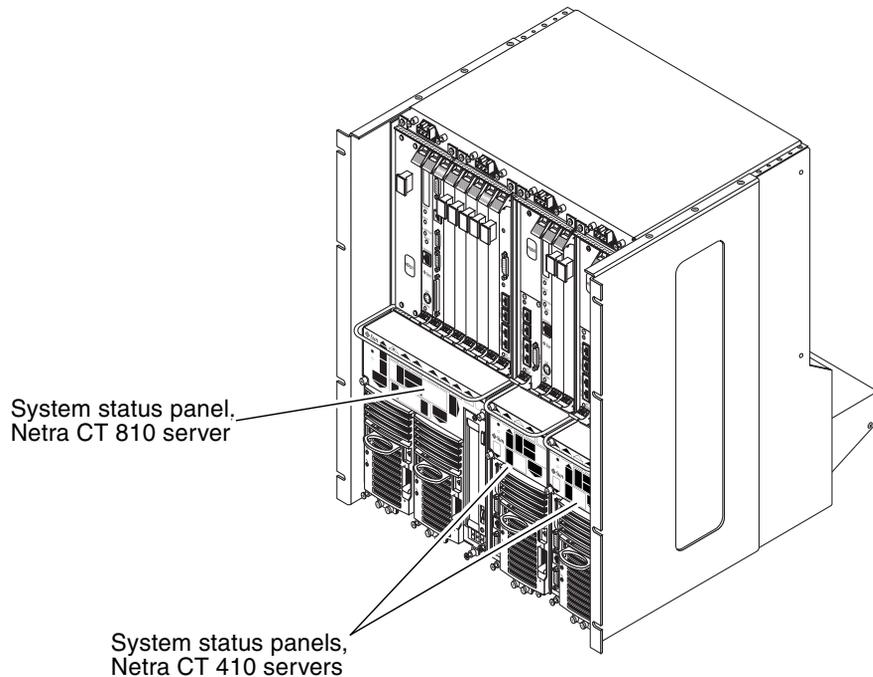
3. **Locate the system power button on the system status panel.**

   FIGURE 7-3 shows the system power button location for the Netra CT 810 server, and FIGURE 7-4 shows the system power button location for the Netra CT 410 server.

4. **Press the system power button and release it to go through a graceful hardware power-down.**

   This will start the orderly power-down sequence in a manner that no persistent OS data structures are corrupted. In the orderly power-down, applications in service may be abnormally terminated and no further services will be invoked by the CPU. The system power LED will blink for several seconds, then it will go off.

5. **Wait for several moments, then verify that the green power (⏻) LED(s) on the power supply unit(s) are blinking, indicating that the system is in the standby mode.**

   FIGURE 7-3 shows the system power LED location for the Netra CT 810 server, and FIGURE 7-4 shows the system power LED location for the Netra CT 410 server.

6. **If you want to completely power off the Netra CT server, push the purple power supply unit locking mechanism(s) up into the unlocked (⬚) position (see FIGURE 7-1).**

Note – You must unlock the locking mechanism on *both* power supply unit(s) on the Netra CT 810 server in order to completely power off that server.

The green power (⏻) LED(s) on the power supply unit(s) should go off (unlit), indicating that the system is now completely powered off.

Installing the Software

This chapter gives instructions on installing the Solaris operating environment and the Netra CT server software on a Netra CT server. You will be installing software from the Solaris operating environment CDs or DVD.

Note – The Solaris operating environment is ordered and shipped separately from the Netra CT server.

If you have a Netra CT 810 server and you have a DVD-ROM drive installed in or connected to your server, you can install the software using the instructions in "To Install the Solaris Operating Environment" on page 119. You can also install the software onto a Netra CT 410 server using these instructions, but only if you have an external DVD-ROM drive connected to your server; there is no internal DVD-ROM drive available for the Netra CT 410 server.

Note – You must install the Solaris operating environment using the Solaris CDs or DVD; do not attempt to install the Solaris operating environment onto your Netra CT server using JumpStart.

▼ To Install the Solaris Operating Environment

1. **Power on the Netra CT server.**

   Refer to "Powering On the Server" on page 112 for those instructions.

2. **Make the necessary connections to the TTY A port on the host CPU or CPU transition card on your server.**

   Refer to "Connecting a Terminal Console to the Server" on page 106.

> **Note –** Do not install the Solaris operating environment through the alarm card or alarm transition card.

3. **Verify that you are at the OpenBoot (ok) prompt.**

   ■ If you are at the ok prompt, go to Step 4.

   ■ If you are not at the ok prompt, at the system console, and enter:

   ```
   # cd /
   # shutdown -i0 -g0 -y
   ```

   When the server is finished shutting down, the ok prompt is displayed.

4. **Insert the Solaris operating environment DVD or CD 1 of 2 into the DVD-ROM drive.**

5. **At the ok prompt, enter the following command to boot from the Solaris operating environment CD:**

   ```
   ok boot cdrom
   ```

6. **Through the TTY A port on the host CPU or CPU transition card, install the Solaris operating environment on every server in the chassis.**

   You must install the Solaris operating environment on every Netra CT server that you have installed in the chassis in order for that server to function. Refer to the documentation that you received with the Solaris operating environment for those installation instructions. If you are installing Solaris using the Solaris CDs, you may have to insert several CDs into the DVD-ROM drive in order to completely install the Solaris operating environment.

   When installing the Solaris operating environment onto your Netra CT servers, you must keep the following things in mind:

   1. At the beginning of the installation process, you will be asked if you want to go through a Default Install or a Custom Install. Choose Custom Install in this screen.

2. At the product selection portion of the installation process, you will see the following screen:

```
Select the products you would like to install.

 [ ]  0  Solaris 9 Documentation 1of2     0.0 MB
 [ ]  1  Solaris 9 Documentation 2of2     0.0 MB
 [ ]  2  Solaris 9 Extra Value Software    0.0 MB
 [ ]  3  Solaris 9 Software Supplement CD    0.0 MB
 [ ]  4  Solaris Software Companion CD     0.0 MB
```

Choose *at least* the Solaris 9 Software Supplement CD selection in this screen. You can choose any of the remaining selections in this screen as well, if you wish.

3. At the product component portion of the installation process, you will see the following screen:

```
Select which product components to install with the system.
Components marked with an [X] will be installed.

 [ ]  3      Solaris 9 Software Supplement CD    0.0 MB
 [ ]  3.0    Java3D 1.2.1_04    18.3 MB
 [ ]  3.1    OpenGL 1.2.2     88.2 MB
 [ ]  3.2    PC launcher 1.0.1/PC file viewer 1.0.1     8.6 MB
 [ ]  3.3    RSC 2.2.1     8.8 MB
 [ ]  3.4    Solaris On Sun Hardware Documentation     70.8 MB
 [ ]  3.5    ShowMe TV 1.3     22.4 MB
 [ ]  3.6    SunATM 5.1     9.1 MB
 [ ]  3.7    SunFDDI PCI 3.0     1.4 MB
 [ ]  3.8    SunFDDI SBus 7.0     1.5 MB
 [ ]  3.9    Sun Fire 880 FC-AL Backplane Firmware 1.0     0.6 MB
 [ ]  3.10   System Management Services 1.2     45.0 MB
 [ ]  3.11   SunForum 3.1     19.2 MB
 [ ]  3.12   SunHSI PCI 3.0     0.5 MB
 [ ]  3.13   SunHSI SBus 3.0     0.5 MB
 [ ]  3.14   SunVTS 5.0     59.3 MB
 [ ]  3.15   SSP 3.5     32.5 MB
 [ ]  3.16   Capacity on Demand 1.0     1.1 MB
 [ ]  3.17   Netra ct Platform 1.0     4.1 MB
 [ ]  3.18   Lights Out Management 2.0     0.7 MB
 [ ]  3.19   Netra t11xx Alarms 2.0     0.3 MB

   Enter the number corresponding to a component to view its information.
   Enter n when finished [n]
```

- Choose *at least* 3.14 (`SunVTS 5.0`) and 3.17 (`Netra ct Platform 1.0`) in this screen.
- Do *not* choose 3.7 (`SunFDDI PCI 3.0`) or 3.8 (`SunFDDI SBus 7.0`) in this screen.

You do not need any of the remaining product components for the Netra CT server, but you can choose any of the remaining components, if you wish.

4. At the available Solaris software groups portion of the installation process, you will see the following screen:

```
Available Solaris Software groups:

1. Entire Group Plus OEM (1251.5 MB)
2. Entire Group (1214.6 MB)
3. Developer Group (1058.2 MB)
4. End User Group (674.0 MB)
5. Core Group (200.0 MB)

   Select the number corresponding to the desired Solaris software group [2]:
```

Choose the first selection (`Entire Group plus OEM`) in this screen.

5. After you choose the `Entire Group plus OEM` selection, you will see the following screen:

```
The Entire Solaris Software Group Plus OEM Support consists of the Entire
Solaris Software Group plus additional hardware drivers, including drivers for
hardware not present at the time of installation.

Please indicate if you want the Default Packages for the Entire Group Plus OEM
or if you want to select Custom Packages. Selecting Custom Packages allows you
to add or remove packages from the selected Solaris Software Group. When
selecting which packages to add or remove, you will need to know about software
dependencies and how Solaris software is packaged.

1. Default Packages
2. Custom Packages

   Default Packages or Custom Packages [1]
```

Choose the first selection (`Default Packages`) in this screen.

7. **Download and install additional patches.**

Refer to the *Netra CT Server Release Notes* (817-0939-*xx*) for the latest information on the patches available for the Netra CT server. The document can be downloaded from the following web site:

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

Follow the instructions in the "Applying Patches to a Boot Disk" section of the *Netra CT Server Release Notes* to download and install the patches.

Note – You *must* install the patches listed in the most recent version of the *Netra CT Server Release Notes* document. The "Applying Patches to a Boot Disk" section in the release notes lists the latest ID numbers of the required patches needed. Since the release of this installation document, new patches might have been added and existing patches might have been revised.

Preparing Network Installations of the Solaris Operating Environment

The following procedures describe how to create a network installation server.

Note – If you are planning to use the network installation server as a boot server for diskless clients, make sure that you have allocated enough space for the diskless server and clients. As a general rule, you need roughly 1.7 GBytes of space for the diskless server and around 300 MBytes for each diskless client in the directory where the diskless clients will be installed (by convention, this directory is in the server's `/export` directory.)

Note – The following procedures assume that your system will mount the DVD and CD media using the Solaris Volume Manager software. If you have disabled the Volume Manager software, you will need to mount the media using the `mount`(1M) command. Refer to the Solaris documentation for more information.

- If you are creating a patched network image using the Solaris *DVD*, go to "To Create a Network Installation Image Using the Solaris 9 DVD" on page 124.
- If you are creating a patched network image using the Solaris *CDs*, go to "To Create a Network Installation Image Using the Solaris 9 CDs" on page 125.

▼ To Create a Network Installation Image Using the Solaris 9 DVD

1. **Become superuser.**

2. **Insert the Solaris 9 DVD in a DVD-ROM drive accessible to the installation server.**

3. **Change directories to the** `Tools` **directory on the Solaris 9 DVD.**

   ```
   # cd /cdrom/cdrom0/s0/Solaris_9/Tools
   ```

4. **Run the** `setup_install_server` **script to create an install image on the server:**

   ```
   # ./setup_install_server image_directory
   ```

   Replace *image_directory* with the directory on the server where you want to create the Solaris 9 installation image.

5. **Change directories to the root directory.**

   ```
   # cd /
   ```

6. **Eject the Solaris 9 DVD.**

7. **Continue to perform the standard Solaris network installation procedure.**

   Note – If you will be installing diskless clients, follow the procedures in "Installing Diskless Clients" on page 126 to set up the boot server and to add diskless clients.

   For more information, see the "Preparing to Install Solaris Software Over the Network" chapter in the *Solaris Advanced Installation Guide*, which is included in the Solaris Media Kit and can be viewed on the Solaris documentation web site:

   http://docs.sun.com

▼ To Create a Network Installation Image Using the Solaris 9 CDs

1. **Become superuser.**

2. **Insert the Solaris 9 Software 1 of 2 CD in a CD-ROM or DVD-ROM drive accessible to the installation server.**

3. **Change directories to the** `Tools` **directory on the Solaris 9 CD 1 of 2.**

   ```
   # cd /cdrom/cdrom0/s0/Solaris_9/Tools
   ```

4. **Run the** `setup_install_server` **script to create an install image on the server:**

   ```
   # ./setup_install_server image_directory
   ```

   Replace *image_directory* with the directory on the server where you want to create the Solaris 9 installation image.

5. **Change directories to the root directory.**

   ```
   # cd /
   ```

6. **Eject the Solaris 9 Software 1 of 2 CD.**

   ```
   # eject cdrom
   ```

7. **Insert the Solaris 9 Software 2 of 2 CD in a CD-ROM or DVD-ROM drive accessible to the installation server.**

8. **Change directories to the** `Tools` **directory on the Solaris 9 CD 2 of 2.**

   ```
   # cd /cdrom/cdrom0/s0/Solaris_9/Tools
   ```

9. **Run the** `add_to_install_server` **script to add the Solaris 9 Software 2 of 2 CD software to the install image:**

```
# ./add_to_install_server image_directory
```

Replace *image_directory* with the Solaris 9 install image directory.

10. **Change directories to the root directory of the CD.**

```
# cd /
```

11. **Eject the Solaris 9 Software 2 of 2 CD.**

```
# eject cdrom
```

12. **Continue to perform the standard Solaris network installation procedure.**

Installing Diskless Clients

The following procedures describes how to create a boot server for diskless clients and how to add new diskless clients to the patched boot server. For additional instructions on installing diskless clients, refer to the Solaris 9 documentation, which you can find on the `http://docs.sun.com` web site.

Note – You must have a root password on your diskless server to perform the following tasks.

▼ To Create a Boot Server For Diskless Clients

Note – This procedure will set up a boot server by starting the operating systems services required for diskless clients. Once you have set up the boot server, see "To Add a Diskless Client" on page 130 for instructions on adding diskless clients to the boot server.

1. **Prepare a patched network installation server using the Solaris 9 Media Kit software.**

   Follow the procedures in "Preparing Network Installations of the Solaris Operating Environment" on page 123 to create a patched network installation server.

   Note – When setting up the boot server for diskless clients, make sure that you have allocated enough space for the diskless clients. You need roughly 1.7 GBytes of space for the diskless server and around 300 MBytes for each diskless client in the directory where the diskless clients will be installed (by convention, this directory is in the server's /export directory.)

   ---

2. **Log into the network server as superuser and change directories to the** /usr/sadm/bin **directory.**

   ```
   # cd /usr/sadm/bin
   ```

3. **Use the** smosservice **command to add boot services to the installation server.**

   Note – The following command is a single long entry. Do not press the Return key until you have typed the entire text string shown in the following command.

   ```
   # ./smosservice add -u root -p root_password -- -x mediapath=image_directory
   -x platform=sparc.sun4u.Solaris_9 -x cluster=SUNWCXall -x locale=locale
   ```

   Where:
   - *root_password* is the root password for the installation server
   - *image_directory* is the path to the directory where the Solaris 9 install image is stored
   - *locale* is the locale that you want to use

   Refer to the smosservice(1M) man page for more information and options.

   For example, if the following entries were used for each variable, the command would appear as follows.
   - *root_password* = root_password
   - *image_directory* = /export/install
   - *locale* = en_US

   ```
   # ./smosservice add -u root -p root_password -- -x mediapath=/export/install
   -x platform=sparc.sun4u.Solaris_8 -x cluster=SUNWCXall -x locale=en_US
   ```

4. **Place the Solaris Supplement CD in the DVD-ROM drive again.**

5. **Create the file** `/tmp/usr_admin` **with the following contents for the usr space package:**

   ```
   mail=
   instance=unique
   partial=nocheck
   runlevel=nocheck
   idepend=nocheck
   rdepend=nocheck
   space=nocheck
   setuid=nocheck
   conflict=nocheck
   action=nocheck
   basedir=/usr_sparc.all
   ```

6. **Enter the following command to add the usr space package to the** `usr` **area of the boot service.**

   Note – The following command is a single long entry. Do not press the Return key until you have typed the entire text string shown in the following command.

   ```
   # /usr/sbin/pkgadd -S -M -R /export/Solaris_9 -d
   /cdrom/cdrom0/s0/SW_Supp_CD/Netra_ct_Platform_1.0/Product -a /tmp/usr_admin -n SUNWctac
   ```

7. **Create the file** `/tmp/root_admin` **with the following contents for the root space packages:**

   ```
   mail=
   instance=unique
   partial=nocheck
   runlevel=nocheck
   idepend=nocheck
   rdepend=nocheck
   space=nocheck
   setuid=nocheck
   conflict=nocheck
   action=nocheck
   basedir=/opt
   ```

8. **Enter the following commands to add the root space packages to the clone area:**

> **Note –** The two commands beginning with `tar cvf` are both single long entries. Do not press the Return key until you have typed the entire text string shown in both commands.

```
# mkdir '/export/root/templates/Solaris_9/SUNWctmgx_1.0,REV=2000.11.22.10.47_sparc.all'

# mkdir '/export/root/templates/Solaris_9/SUNW2jdrt_4.1_all'

# cd /cdrom/cdrom0/s0/SW_Supp_CD/Netra_ct_Platform_1.0/Product

# tar cvf - ./SUNW2jdrt | ( cd '/export/root/templates/Solaris_9/SUNW2jdrt_4.1_all' ; tar
xvf - )

# tar cvf - ./SUNWctmgx | ( cd '/export/root/templates/Solaris_9/SUNWctmgx_1.0,REV=
2000.11.22.10.47_sparc.all' ; tar xvf - )
```

9. **Apply the root space packages to the clone area:**

> **Note –** The two commands beginning with `/usr/sbin/pkgadd` are both single long entries. Do not press the Return key until you have typed the entire text string shown in both commands.

```
# /usr/sbin/pkgadd -S -n -a /tmp/root_admin -R /export/root/clone/Solaris_9/sun4u -d
/cdrom/cdrom0/s0/SW_Supp_CD/Netra_ct_Platform_1.0/Product SUNW2jdrt

# /usr/sbin/pkgadd -S -n -a /tmp/root_admin -R /export/root/clone/Solaris_9/sun4u -d
/cdrom/cdrom0/s0/SW_Supp_CD/Netra_ct_Platform_1.0/Product SUNWctmgx
```

10. **Download and install additional patches.**

    Refer to the *Netra CT Server Release Notes* (817-0939-*xx*) for the latest information on the patches available for the Netra CT server. The document can be downloaded from the following web site:

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

    Follow the instructions in the "Applying Patches to a Diskless Service" section of the *Netra CT Server Release Notes* (817-0939-*xx*) to download and install the patches.

11. **After the patches are installed, follow the procedure in "To Add a Diskless Client" on page 130.**

▼ To Add a Diskless Client

1. **Prepare a boot server for the diskless clients.**

    If you have not yet created a boot server for the diskless clients, follow the steps in before continuing with this procedure.

2. **Log into the patched boot server as superuser.**

3. **Verify that the IP addresses for all other network interfaces on the boot server have corresponding hostnames in the hosts database.**

    The `smdiskless` command will fail if IP addresses of any network interfaces on the boot server do not have a corresponding hostname in the `hosts` databases.

4. **Collect the following information for the diskless client you are adding:**

    - the client's IP address
    - the client's Ethernet address
    - the client's host name

5. **Change directories to the** `/usr/sadm/bin` **directory.**

    ```
    # cd /usr/sadm/bin
    ```

6. **Set up the diskless clients.**

    For each diskless client, type the following command as superuser (root):

    ```
    # ./smdiskless add -- -i ip_address -e ethernet_address -n host_name -x os=
    sparc.sun4u.Solaris_8 -x root=/export/root/host_name -x swap=
    /export/swap/host_name -x swapsize=swap_size -x tz=time_zone -x locale=locale -x ns=
    name_service -x nameserver=name_server
    ```

    Where:

    - *ip_address* is the client's IP address
    - *ethernet_address* is the client's Ethernet address
    - *host_name* is the client's host name
    - *swap_size* is the size of the swap space that you will be using. The default is 24, however, your swap space should be the same amount as your memory. The maximum is 999.
    - *time_zone* is the client's time zone
    - *locale* is the client's locale
    - *name_service* is the client's nameservice
    - *name_server* is the nameserver's hostname

    Refer to the `smdiskless(1m)` man page for more information and options.

For example, if the following entries were used for each variable, the command would appear as follows.

- *ip_address* = 129.144.214.999
- *ethernet_address* = 8:0:20:22:b3:aa
- *host_name* = client_host
- *swap_size* = 128
- *time_zone* = US/Pacific
- *locale* = en_US
- *name_service* = NIS
- *name_server* = nameserver_host:

```
# ./smdiskless add -- -i 129.144.214.999 -e 8:0:20:22:b3:aa -n client_host -x
os=sparc.sun4u.Solaris_8 -x root=/export/root/client_host -x swap=
/export/swap/client_host -x swapsize=128 -x tz=US/Pacific -x locale=en_US -x
ns=NIS -x nameserver=nameserver_host
```

You have to type your superuser password again after typing this command. The installation process should take roughly 5 minutes per client and about 15-30 minutes for the operating environment service to install; however, no progress is displayed on screen while the process is running. Do not cancel or kill the process until the process has successfully completed.

You should see messages similar to the following after a few moments, confirming that the command went through successfully the second time:

```
Login to client_host as user root was successful.
Download of com.sun.admin.osservermgr.cli.OsServerMgrCli from client_host was
successful.
```

7. **Boot the diskless client.**

▼ To Install Additional Software

1. **If you installed I/O cards, perform any card-specific software configuration procedures, if necessary.**

   Refer to the documentation that came with your I/O card for more information.

2. **Install and configure any additional disk management software, if necessary.**

   Refer to the documentation that came with your disk management software for more information.

Connecting External SCSI Devices

▼ To Connect an External SCSI Device

1. **Locate the SCSI port on your Netra CT server.**

   You can connect an external SCSI device to the SCSI port on an I/O card, satellite CPU or host CPU transition card.

   - If you are connecting an external SCSI device to the SCSI port on an I/O card or satellite CPU card, refer to the documentation that came with that card for the location and type of the SCSI port on the card.

   - If you are connecting an external SCSI device to the SCSI port on the host CPU transition card, the location of the SCSI port on your Netra CT server will vary, depending on the type and model server you have:

     - If you have a *front-access model* Netra CT 410 server, the SCSI port is located on the host CPU front transition card to the left of the power supply (FIGURE A-1).
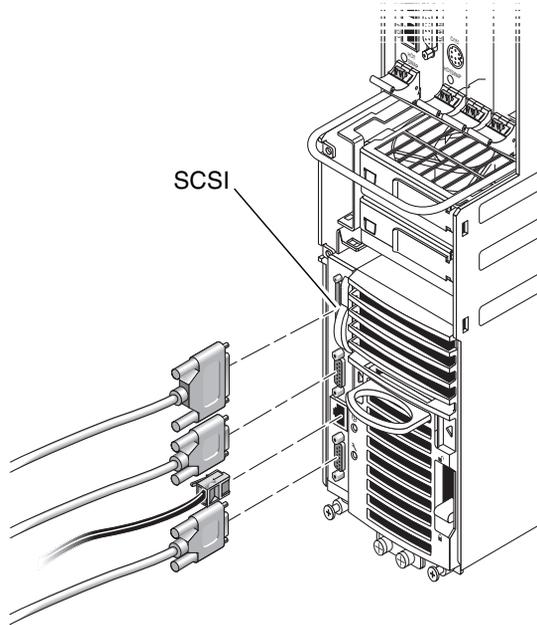
FIGURE A-1 Locating the SCSI Port on the Host CPU Front Transition Card (Netra CT 410 Server)

■ If you have a *rear-access model* of either the Netra CT 810 server or the Netra CT 410 server, the SCSI port is located on the host CPU rear transition card installed at the rear of the chassis in I/O slot 1 for the Netra CT 810 server or I/O slot 3 for the Netra CT 410 server. FIGURE A-2 shows the locations of the connectors on the host CPU rear transition card. The host CPU rear transition card is the same for both the Netra CT 810 server and the Netra CT 410 server; only the location in the rear card cage differs.
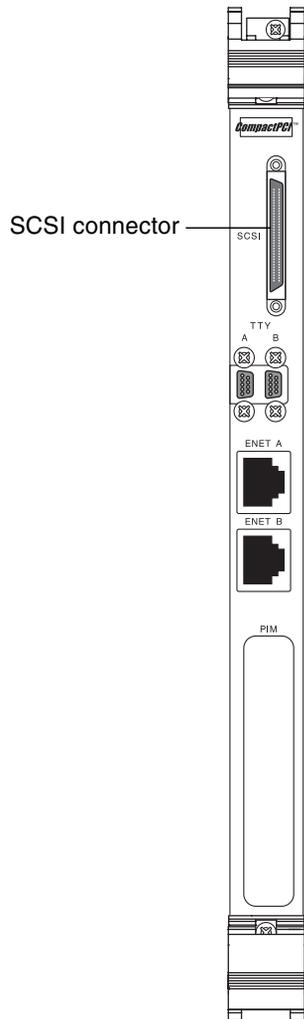
SCSI connector

FIGURE A-2 SCSI Connector on the CPU Rear Transition Card

2. **Determine if you need to use the VHDC-to-SCSI 3 adapter cable included in the Netra CT server ship kit.**

   - If you are connecting an external SCSI device to the host CPU front transition card for the Netra CT 410 server or the host CPU rear transition card for either Netra CT server, connect the VHDC side of the VHDC-to-SCSI 3 adapter cable to the SCSI port on the transition card (see FIGURE A-1 or FIGURE A-2).

   - If you are connecting an external SCSI device to the SCSI port on an I/O card or satellite CPU card, refer to the documentation that came with that card to determine if the card uses a VHDC (Very High Density) SCSI connector.

3. **Get the SCSI cable from the external SCSI device's ship kit.**

4. **Connect one end of the SCSI cable to the SCSI connector on your Netra CT server.**

   - If you are connecting an external SCSI device to the host CPU front transition card for the Netra CT 410 server or the CPU rear transition card for either Netra CT server, connect the SCSI cable to the SCSI 3 end of the VHDC-to-SCSI 3 adapter cable.

   - If you are connecting an external SCSI device to the SCSI port on an I/O card or satellite CPU card, refer to the documentation that came with that card to connect the SCSI cable to the SCSI port on that card.

5. **Connect the other end of the SCSI cable to the appropriate SCSI port on the external SCSI device.**

   Refer to the documentation that you received with the external SCSI device for more information.

6. **Set the SCSI ID on the external SCSI device to a SCSI ID that is *not* being used already by an internal SCSI device in your Netra CT server.**

   Refer to the documentation that came with your external SCSI device for instructions on setting the SCSI ID on the device.

   - If you are connecting the external SCSI device to the CPU rear transition card in the *Netra CT 810 server*, then you will be adding the external SCSI device to the first SCSI chain in the system (c0). Following are the addresses for the SCSI devices on the first SCSI chain in the Netra CT 810 server:

     - Upper hard disk drive (HDD0)—SCSI ID 0 (c0t0d0)
     - CD-ROM drive—SCSI ID 6 (c0t6d0)
     - DAT drive—SCSI ID 5

     Note that the lower hard disk drive (HDD1) is on a separate secondary SCSI chain.

   - If you are connecting the external SCSI device to either of the CPU transition cards in the *Netra CT 410 server*, then the only internal SCSI device you would have installed in your Netra CT 410 server would be a hard disk drive, which would be set to SCSI ID 0 (c0t0d0).

   - If you are connecting the external SCSI device to the SCSI port on an I/O card or satellite CPU card, verify that the SCSI address for the new SCSI drive is different from the SCSI addresses for any other drives daisy-chained off that SCSI port.

7. **Power on the external SCSI device.**

   Refer to the documentation that you received with the external SCSI device for those instructions.

8. **Determine if your Netra CT server is powered off or on.**

   ■ If the Netra CT server is powered *off*, proceed to the next appropriate section (either or).

   ■ If the Netra CT server is powered *on*, follow these instructions to enable the server to recognize the external SCSI device:

9. **Log in to the Netra CT server as superuser.**

   Refer to .

10. **Use the** cfgadm **command to list all of the attachment point ID names, including the SCSI controllers.**

    From this list, find the attachment-point ID name of the SCSI controller where you connected the external SCSI device. The following example is from a Netra CT 410 server with two SCSI controllers (c0 and c2). The c0 attachment point ID name is for the SCSI controller on the system's CPU card and the c0 name is for a SCSI controller on an I/O card installed in the system.

```
# cfgadm
Ap_Id                 Type          Receptacle    Occupant      Condition
AL-1                  mcd/fhs       connected     configured    ok
CPU                   bridge/fhs    connected     configured    ok
IO-2                  unknown       empty         unconfigured  unknown
IO-4                  unknown       empty         unconfigured  unknown
IO-5                  unknown       disconnected  unconfigured  ok
c0                    scsi-bus      connected     configured    unknown
c0::dsk/c0t0d0        disk          connected     configured    unknown
c2                    scsi-bus      connected     configured    unknown
usb0/1                unknown       empty         unconfigured  ok
usb0/2                unknown       empty         unconfigured  ok
usb0/3                unknown       empty         unconfigured  ok
usb0/4                unknown       empty         unconfigured  ok
usb1/1                unknown       empty         unconfigured  ok
usb1/2                unknown       empty         unconfigured  ok
usb1/3                unknown       empty         unconfigured  ok
usb1/4                unknown       empty         unconfigured  ok
```

11. **Use the** cfgadm **command to configure the external SCSI device to the host system.**

Replace *controller-ap-id* with the SCSI controller's attachment-point ID name.

```
# cfgadm -c configure controller-ap-id
```

For example, if the attachment-point ID is c2, you would type:

```
# cfgadm -c configure c2
```

12. **Use the** devfsadm **command to rebuild the** /dev **and** /devices **directories.**

■ If you have attached a hard disk, CD-ROM, or DVD-ROM drive to the system, type:

```
# devfsadm -c disk
```

■ If you have attached a tape drive to the system, type:

```
# devfsadm -c tape
```

After using the devfsadm command, you will be able to use the devices you connected to the adapter's SCSI controller. Refer to the devfsadm(1M) man page for more information.

13. **Use the** `cfgadm` **command to verify that the external SCSI device is connected to the system.**

The following example shows a media tray CD-ROM drive, which has an attachment-point ID name of `c2::dsk/c2t4d0`, configured to the system.

```
# cfgadm
Ap_Id                Type            Receptacle      Occupant        Condition
AL-1                 mcd/fhs         connected       configured      ok
CPU                  bridge/fhs      connected       configured      ok
IO-2                 unknown         empty           unconfigured    unknown
IO-4                 unknown         empty           unconfigured    unknown
IO-5                 unknown         disconnected    unconfigured    ok
c0                   scsi-bus        connected       configured      unknown
c0::dsk/c0t0d0       disk            connected       configured      unknown
c2                   scsi-bus        connected       configured      unknown
c2::dsk/c2t4d0       CD-ROM          connected       configured      unknown
usb0/1               unknown         empty           unconfigured    ok
usb0/2               unknown         empty           unconfigured    ok
usb0/3               unknown         empty           unconfigured    ok
usb0/4               unknown         empty           unconfigured    ok
usb1/1               unknown         empty           unconfigured    ok
usb1/2               unknown         empty           unconfigured    ok
usb1/3               unknown         empty           unconfigured    ok
usb1/4               unknown         empty           unconfigured    ok
```

Refer to the Solaris documentation for instructions on how to use the devices.

Glossary

Knowledge of the following terms and acronyms is useful in the administration of the Netra CT server.

A

alarm card   A card that occupies a slot in the Netra CT server. The alarm card responds to events, such as I/O card failures or excessive heat. Software that resides on the card can take action in response to such events.

B

basic hot swap   One of the hot swap methods. In the basic hot swap model, the hardware connection process can be performed automatically by the hardware, while the software connection process requires operator assistance. See *hot swap*, *full hot swap*

C

CompactPCI   A standard for computer boards and buses. CompactPCI is adapted from the *Peripheral Component Interconnect (PCI) Specification* for industrial and/or embedded applications requiring a more robust mechanical form factor than

desktop PCI. CompactPCI is supported by the PCI Industrial Computer Manufacturers Group (PICMG), a consortium that uses PCI for embedded applications.

F

field replaceable unit (FRU) From a service point of view, the smallest irreducible elements of a server, such as the Netra CT server. Examples of FRUs are disk drives, I/O cards, and power supplies. Note that a server, with all of its cards and other components, is not a FRU. However, an empty server is.

front-access The model of the Netra CT server that is configured so that all of the cables come out from the front of the chassis.

front transition card Used only for the CPU in the front access model of the Netra CT 410 server. The CPU front transition card allows for CPU cabling from the front of the chassis.

full hot swap One of the hot swap methods. In the full hot swap model, both the hardware and the software connection process are performed automatically.

See *hot swap*, *basic hot swap*

H

hot swap Implies the ability to remove and replace cards from and in a running server. See *full hot swap*, *basic hot swap*

M

midplane The functional equivalent of a backplane. The midplane is secured to the back of the server. The CPU card, I/O cards and storage devices plug into the midplane from the front, and the rear transition cards plug into the midplane from the rear.

N

NEBS An acronym for Network Equipment/Building System. A set of requirements for equipment installed in telco offices. These requirements cover personnel safety, protection of property, and operational continuity. "NEBS testing" involves subjecting equipment to various vibration stresses, fire, and other environmental insults. There are three levels of NEBS compliance, each a superset of the preceding. NEBS level 3, the highest level, certifies that a piece of equipment can be safely deployed in an "extreme environment." A telco central office is considered an extreme environment.

The NEBS standards are maintained by Telcordia Technologies, Inc., formerly Bellcore.

P

PICMG Acronym for the PCI Inductrial Computer Manufacturers Group. (PCI stands for Peripheral Component Interconnect.) PICMG is the group that promulgates the CompactPCI standard.

See *CompactPCI*.

R

rear-access The model of the Netra CT server that is configured so that all of the cables come out from the rear of the chassis.

rear transition card Used only on the rear access models of the Netra CT server. The rear transition cards extend the connectors to the rear of the chassis.

Reliability, Availability, Serviceability (RAS) Refers to hardware and software features that implement or improve the reliability, availability and serviceability of a server.

S

system status panel   A module that uses LEDs to indicate the status of key components within the Netra CT servers. The system status panel has one set of LEDs for each component within that particular server.

system controller board   A hot-swappable component located behind the system status panel. It feeds system status information to the system status panel, where LEDs give feedback on the status of the key components within the Netra CT servers.

U

U   A unit of measure equal to 1.75 inches.

Index