



Netra™ CT Server Installation Guide

For the Netra CT 810 Server and Netra CT 410 Server

Sun Microsystems, Inc.
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Preface

The *Netra CT Server Installation Guide* describes how to perform the initial installation of a Netra™ CT server.

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 System (Solaris OS). The reader should be comfortable with LAN fundamentals and with networking concepts in general.

Before performing the procedures described in this book, 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

[Glossary 1](#) provides an installation overview.

[Glossary 2](#) contains information needed to prepare your installation site for the Netra CT server.

[Glossary 3](#) describes how to mount the chassis into a rack.

[Glossary 4](#) describes how to install a Netra CT server into the chassis.

[Glossary 5](#) explains how to install I/O boards into a Netra CT server.

[Glossary 6](#) illustrates how to connect the necessary cables to a Netra CT server.

[Glossary 7](#) tells how to power the Netra CT server on and off.

[Glossary 8](#) provides information on installing Netra CT server software.

[Appendix A](#) contains information about connecting external SCSI devices to a Netra CT server.

[Glossary](#) contains terms and acronyms useful in the administration of Netra CT servers.

Using UNIX Commands

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

- Software documentation that you received with your system
- Solaris OS documentation, which is at <http://docs.sun.com>

Shell Prompts

Shell	Prompt
C shell	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

Typographic Conventions

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

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

The documents listed as online are available at:

Application	Title	Part Number	Format	Location
Installation	<i>Netra CT Server Release Notes</i>	819-2739-xx	PDF HTML	Online
Installation	<i>Netra CT Server Installation Guide</i>	819-2740-xx	PDF HTML	Online
Service	<i>Netra CT Server Service Manual</i>	819-2741-xx	PDF HTML	Online
Introduction	<i>Netra CT Product Overview</i>	819-2742-xx	PDF HTML	Online
System Admin	<i>Netra CT Server System Administration Guide</i>	819-2743-xx	PDF HTML	Online
Safety	<i>Netra CT Server Safety and Compliance Manual</i>	819-2746-xx	PDF HTML	Online
Installation	<i>Netra CP2500 Board Release Notes</i>	819-1748-xx	PDF HTML	Online
Installation	<i>Netra CP2500 Board Installation and Technical Reference Manual</i>	819-1747-xx	PDF HTML	Online
Installation	<i>Netra CP2500 Board Programming Guide</i>	819-1749-xx	PDF HTML	Online
Safety	<i>Netra CP2500 Board Safety and Compliance Guide</i>	819-1750-xx	PDF HTML	Online
Installation	<i>Netra CP2500 RTM Release Notes</i>	819-1752-xx	PDF HTML	Online
Installation	<i>Netra CP2500 RTM Installation and Reference Guide</i>	819-1753-xx	PDF HTML	Online

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

Netra CT Server Installation Guide, part number 819-2740-10

Installation Overview

This chapter provides an overview of the tasks necessary to install a 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 power source.	Page 3
Mount the chassis in a rack, if necessary.	Page 19
Connect the grounding cable, if necessary.	Page 29
Install the Netra CT server in the chassis, if necessary.	Page 32
Install optional boards, such as satellite CPU or I/O boards.	Page 39
Connect the cables to the host CPU board and a host rear transition module.	Page 52 (host CPU RTM)
Connect the cables to the alarm card or to the alarm rear transition module.	Page 59 (alarm RTM)
Connect the cables to any additional boards you installed.	Page 63 (I/O boards)
Assemble and connect the input power cables to the server.	Page 64
Power on the server.	Page 81
Install the server software.	Page 90
Connect any optional external SCSI devices.	Page 103

Site Preparation

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

- [“Tools Required” on page 4](#)
- [“Planning the Placement of the Rack” on page 4](#)
- [“Planning the Rackmounting Configuration” on page 5](#)
- [“Chassis and Server Physical Specifications” on page 8](#)
- [“Power Source Requirements” on page 12](#)
- [“Connecting Logic Ground and Chassis Ground” on page 13](#)
- [“Cooling Requirements” on page 15](#)
- [“Environmental Specifications” on page 18](#)

Tools Required

Obtain 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 server is designed so that all cables to the CompactPCI boards are connected from the rear of the chassis. The servers are 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 are accessible.

[FIGURE 2-1](#) shows an example of a server room layout and how servers might be positioned.

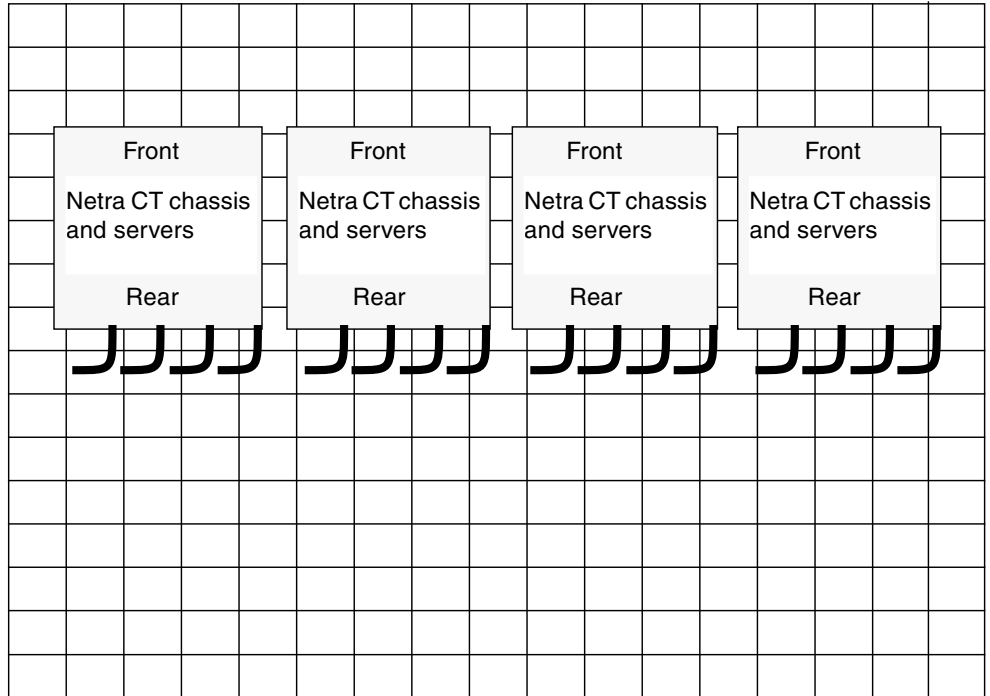


FIGURE 2-1 Example of a Server Room Layout

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.

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

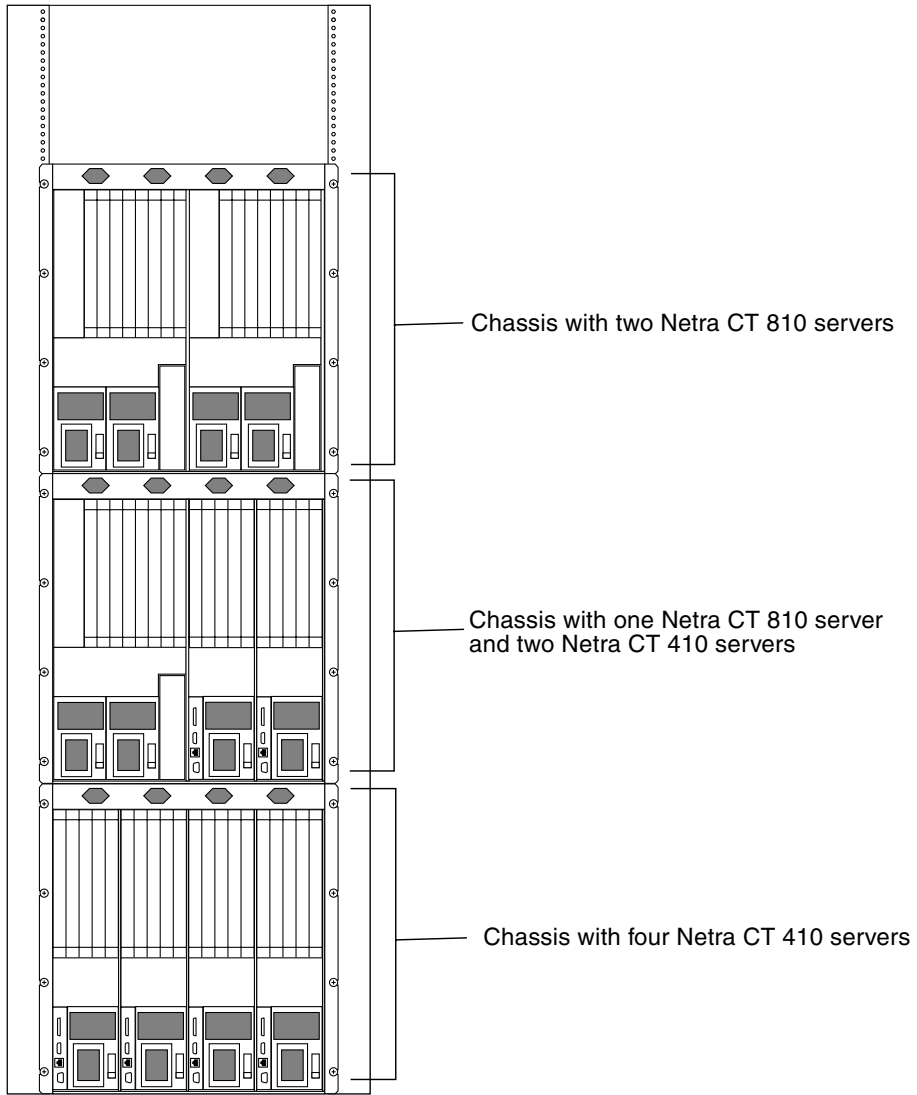


FIGURE 2-2 Example Configuration 1: Three Chassis, No External SCSI Devices

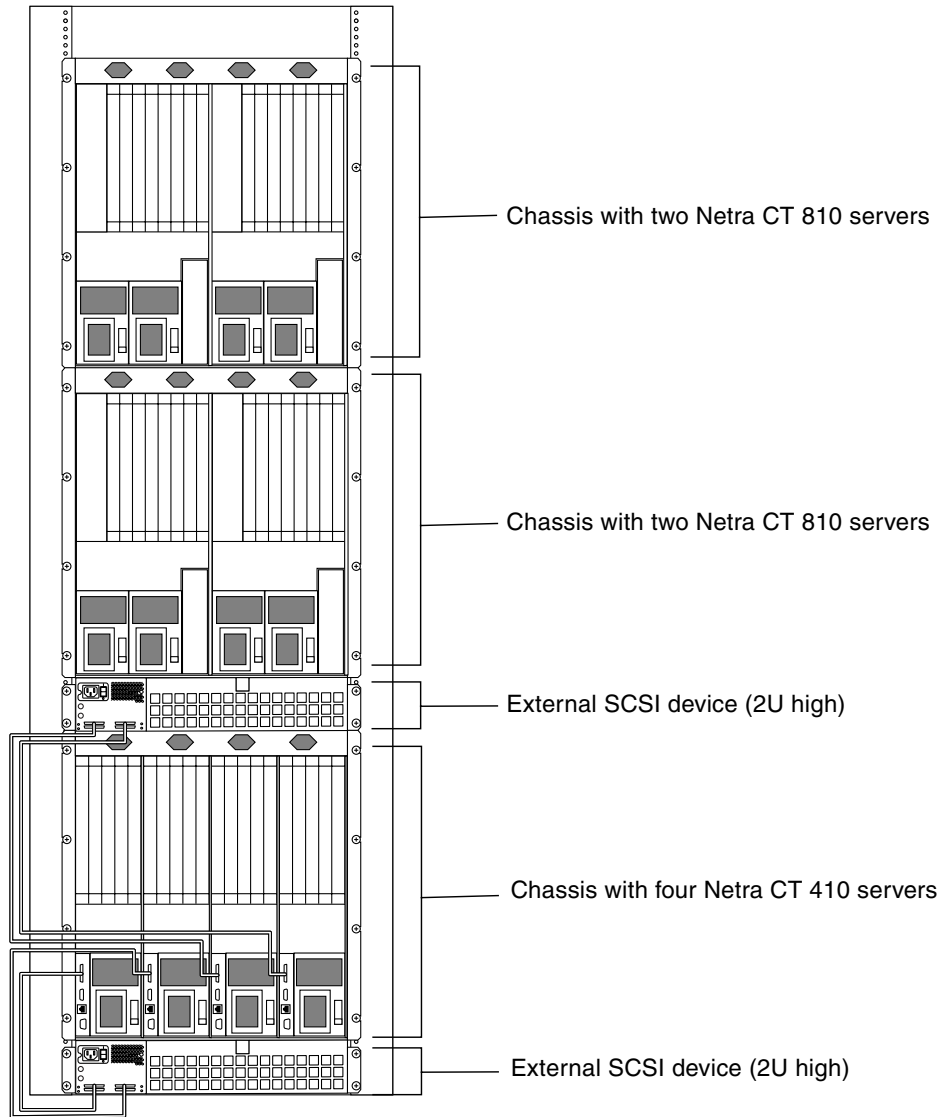


FIGURE 2-3 Example Configuration 2: Three Chassis, Two External SCSI Devices

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:		
• Default configuration, with rackmount brackets extended as shown in FIGURE 2-4	15.8 inches	400 mm
• With rackmount brackets flush against the bottom of the chassis	13.8 inches	350 mm
Height	21 inches	533.6 mm
Weight (empty)	74 lb	33.6 kg
Weight (fully loaded)	150 lb	68 kg

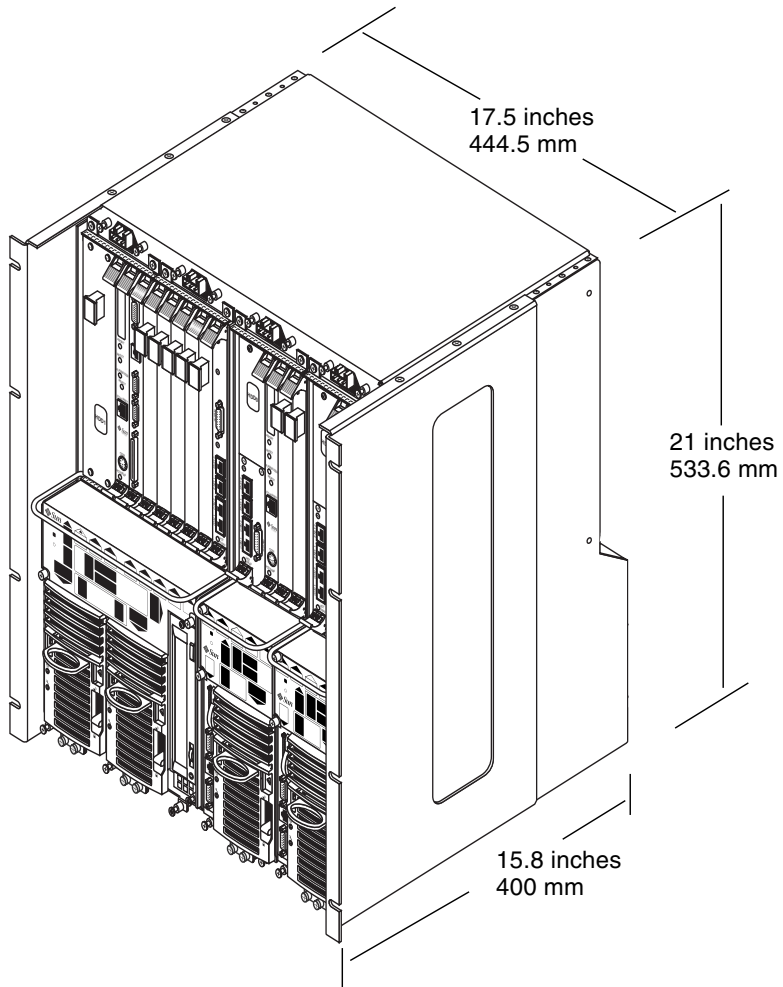


FIGURE 2-4 Physical Specifications for the Netra CT Chassis

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	15 inches	378.3 mm
Height	20.2 inches	512.7 mm
Weight, fully loaded	38 lb	17.2 kg

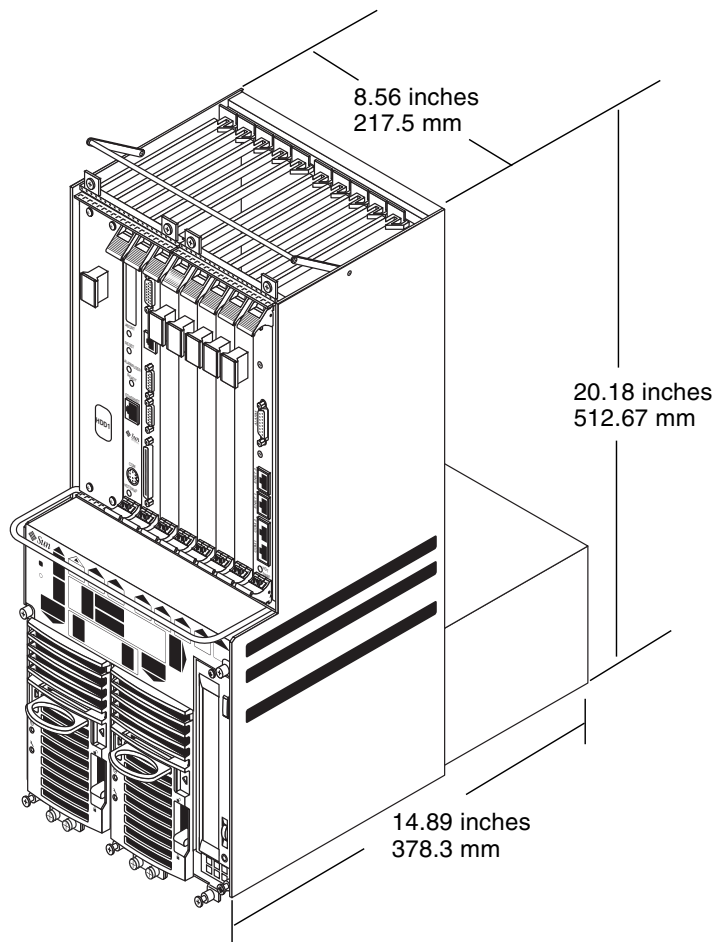


FIGURE 2-5 Netra CT 810 Server Physical Specifications

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	14.9 inches	378.7 mm
Height	20.2 inches	512.7 mm
Weight, fully loaded	22 lb	10 kg

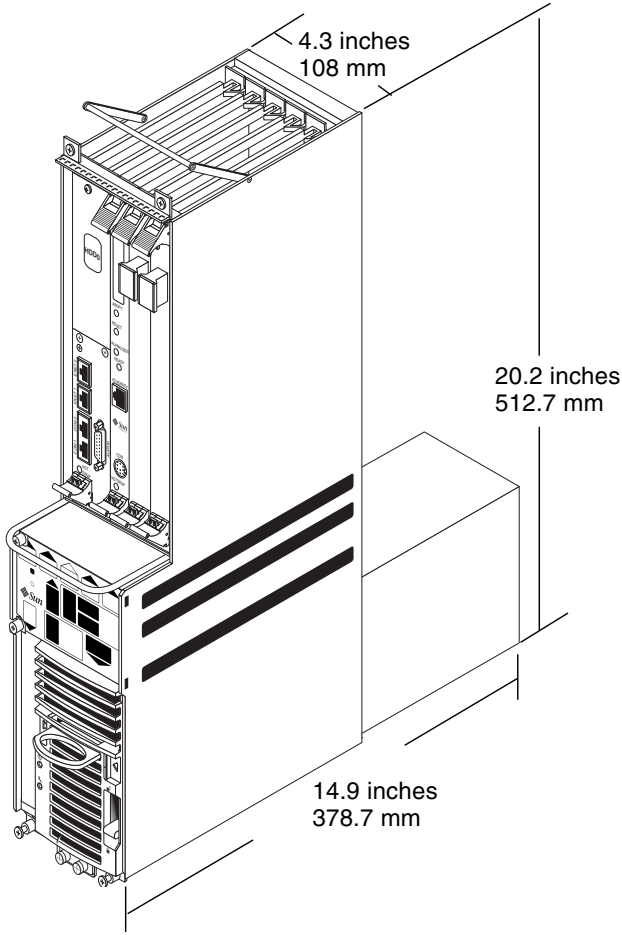


FIGURE 2-6 Netra CT 410 Server Physical Specifications

Power Source Requirements

This section provides the power source requirements for your servers.

TABLE 2-4 Power Requirements

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

The following are requirements and restrictions apply:

- Must be reliably connected to protected earth ground (the battery positive terminal is connected to earth ground)
- Can be supplied by one or two power sources, isolated from each other
- Must be capable of providing up to 600 watts of continuous power per feed
- Is limited to TNV-2, as defined by UL 1950 and IEC 60950

Note – 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 that has access controlled by a locking mechanism, such as a key lock or an access-card system.

Supply and Ground Conductor Requirements

The following describes the 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). 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

The following are the overcurrent protection requirements.

- Overcurrent protection devices must be provided as part of each equipment rack.
- Circuit breakers must be located between the 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.



Caution – External filtering and surge suppression devices might 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, perform the following steps.

▼ To Connect Logic and Chassis Ground

1. Remove the Netra CT server from the chassis, if you have not done so already.
See [“To Remove Servers From the Chassis”](#) on page 22 for 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 2-7](#)).

This connects the logic ground and chassis ground.

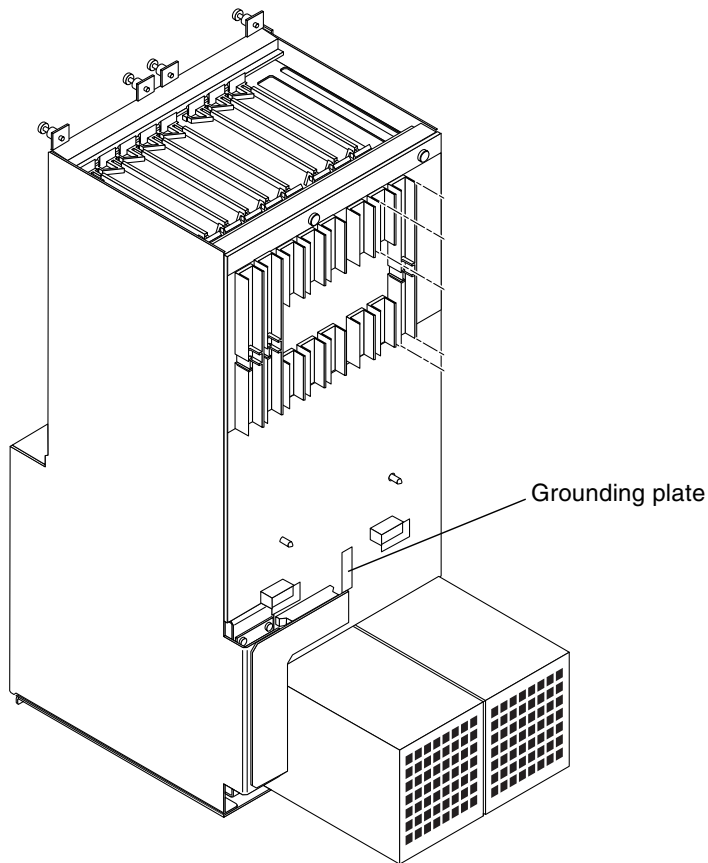


FIGURE 2-7 Installing a Grounding Plate

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 rear of the server to ensure proper cooling. [FIGURE 2-8](#) shows the airflow for the Netra CT 810 server, and [FIGURE 2-9](#) shows the airflow for the Netra CT 410 server.

Both the Netra CT 810 servers and the Netra CT 410 servers have two fan trays. The fan tray for the Netra CT 810 server has a single large fan in each tray, while the fan tray for the Netra CT 410 server has two smaller fans. The fan tray is designed to be hot-swappable. High-speed fans are required to support Netra CP2500 boards.

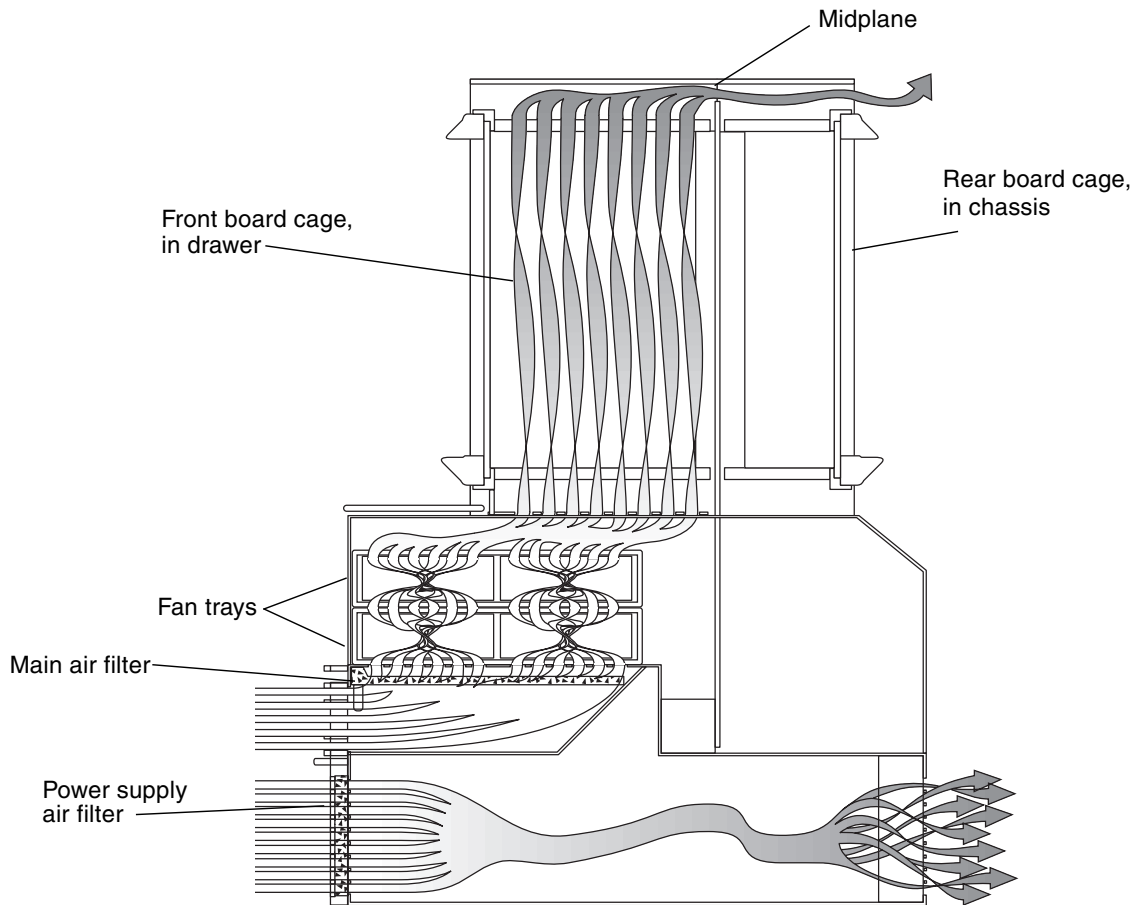


FIGURE 2-8 Airflow, Netra CT 410 Server (Side View)

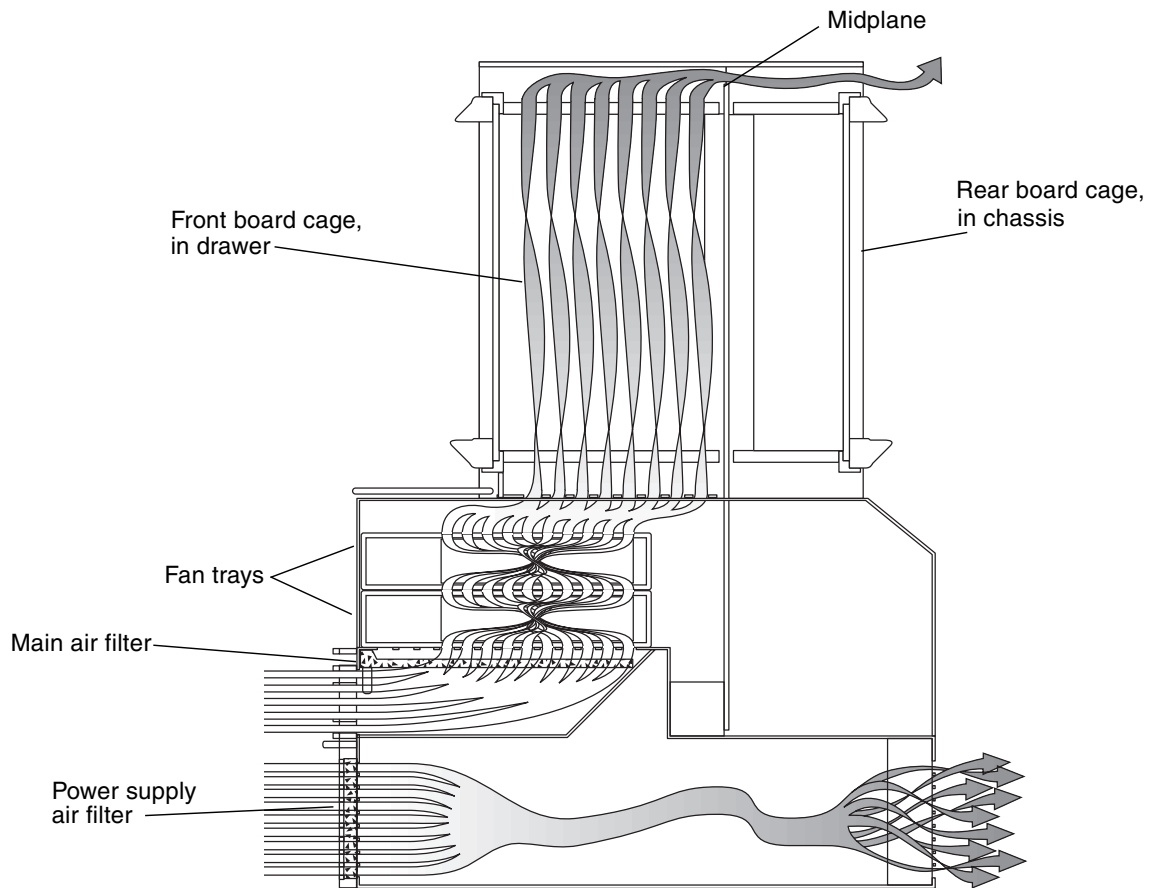


FIGURE 2-9 Airflow, Netra CT 810 Server (Side View)

Environmental Specifications

TABLE 2-5 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 (0 m to 4000 m)
	Nonoperating	0 ft to 39,370 ft (0 m to 12,000 m)
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

Mounting the Chassis in a Rack

This chapter provides instructions for mounting the chassis in a rack. This chapter contains the following topics:

- [“Attaching the Mounting Bracket Adapters to the Chassis”](#) on page 20
- [“Mounting the Chassis in a Rack”](#) on page 22

Attaching the Mounting Bracket Adapters to the Chassis

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](#)).

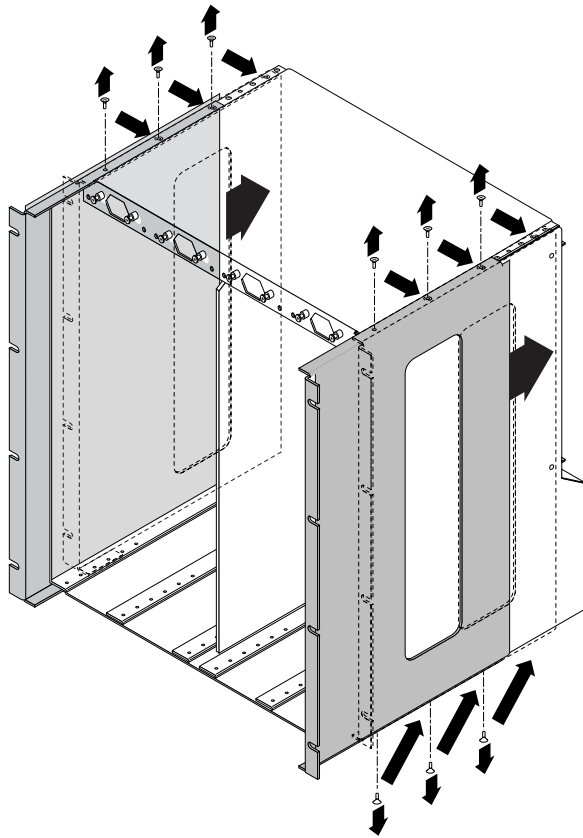


FIGURE 3-1 Center-Mounting the Chassis

Determine the appropriate action:

- If you have a 19-inch width rack, you do not have to install any additional mounting bracket adapters. Go to [“Mounting the Chassis in a Rack”](#) on page 22.
- If you have a 23-inch or 600-mm width rack, you must install the mounting bracket adapters.

▼ To Attach the Mounting Bracket Adapters

1. Obtain the mounting bracket adapters from the shipping 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](#)).

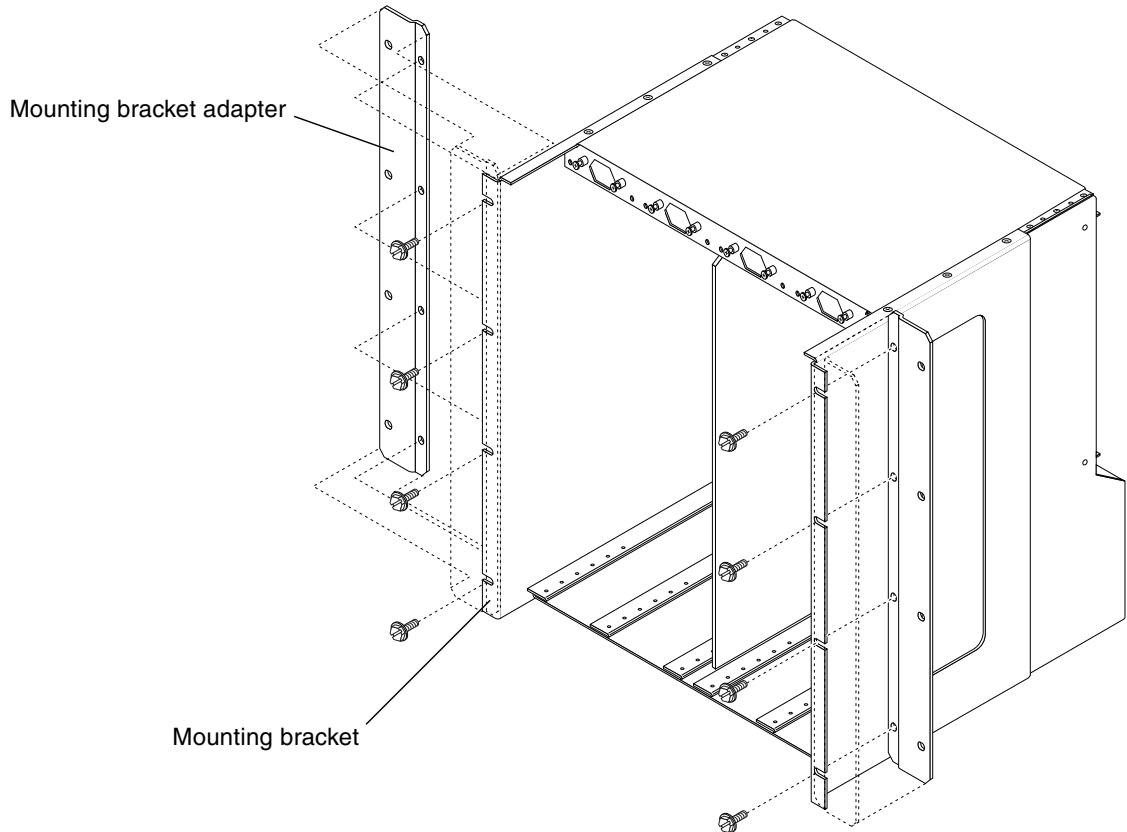


FIGURE 3-2 Installing the Mounting Bracket Adapters

3. Secure the mounting bracket adapter to the mounting bracket using four screws from the shipping 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 with one to four Netra CT servers installed inside. A fully loaded Netra CT chassis, including the rackmounting brackets, weighs 150 pounds (68 kg). To mount a fully loaded chassis into a rack, you must use a lifting device, or two persons, 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 Servers From the Chassis”](#) on page 22.
- 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 28.

▼ To Remove Servers From the Chassis

Note – Individual Netra CT servers do not make up an EMI enclosure unless they are installed in a Netra CT chassis. The chassis is not 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 – Do *not* attempt to remove a server from the chassis without first performing the next step or you might damage major system components.

1. Unseat all the rear transition modules (RTMs) from the server that you are going to remove.

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

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).

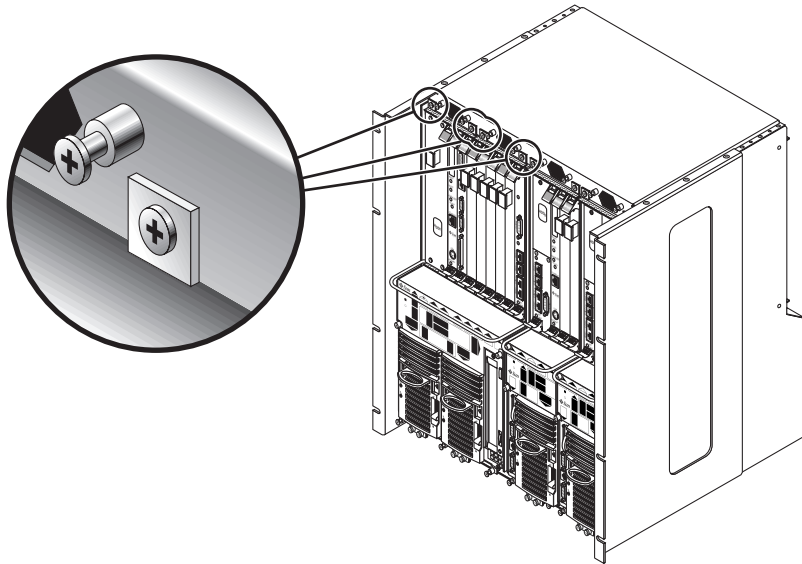


FIGURE 3-3 Loosening the Screws at the Top of a Netra CT 810 Server

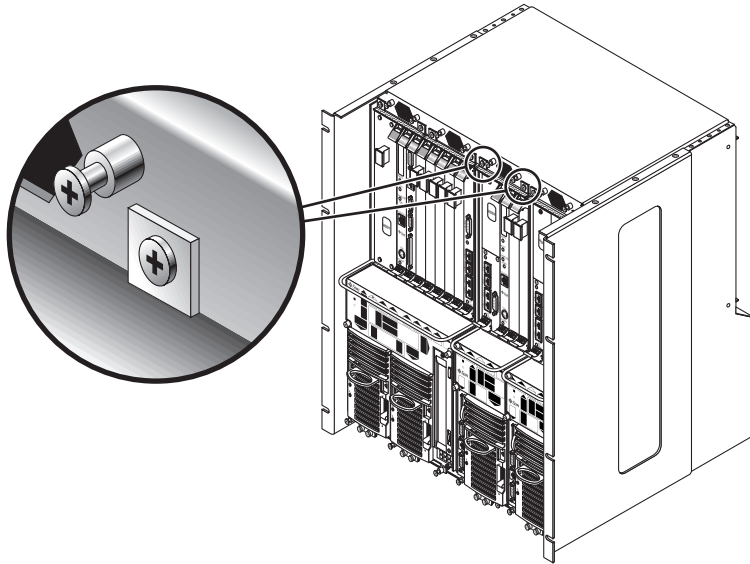


FIGURE 3-4 Loosening the Screws at the Top of a Netra CT 410 Server

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).



Caution – Do not loosen the *silver* captive screws at the base of the server; those screws hold the power supply unit in place.

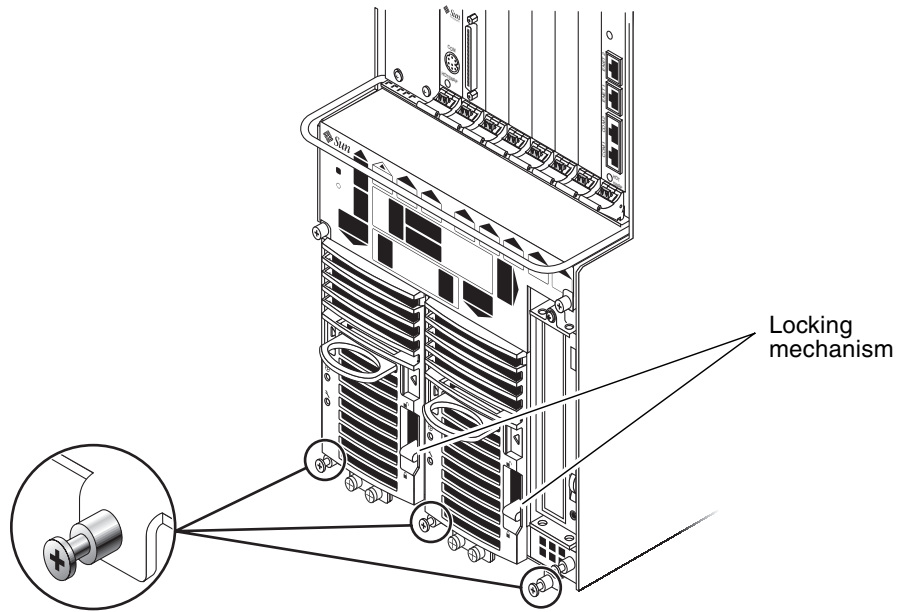


FIGURE 3-5 Loosening the Screws at the Bottom of a Netra CT 810 Server

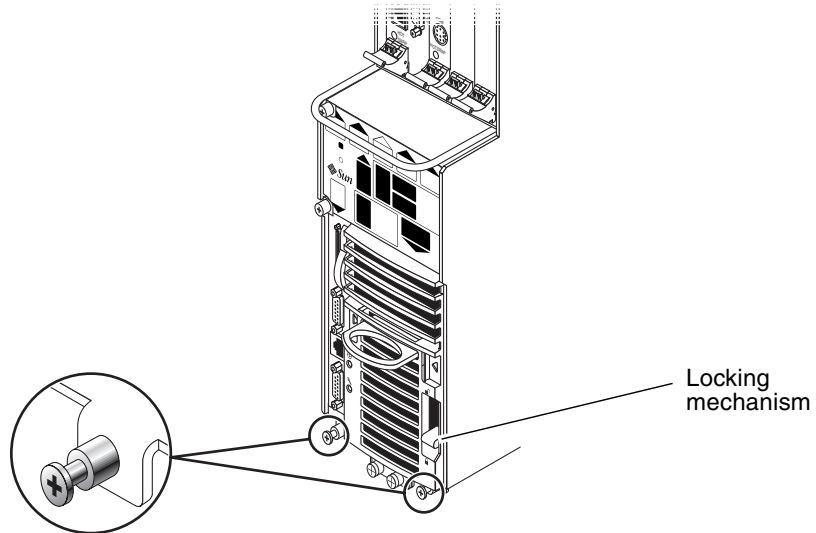


FIGURE 3-6 Loosening the Screws at the Bottom of a Netra CT 410 Server

4. Push the power supply unit locking mechanism 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.

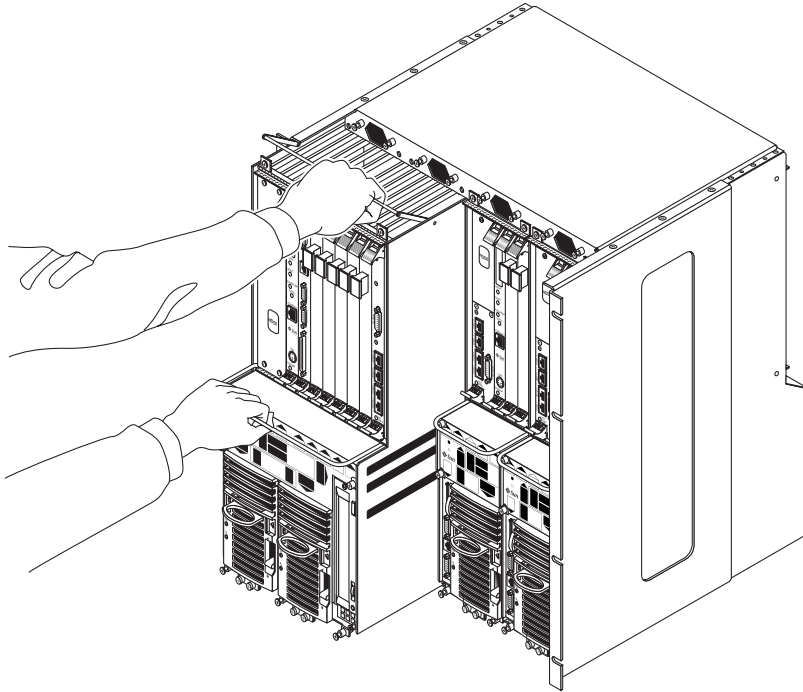


FIGURE 3-7 Removing a Netra CT 810 Server From the Chassis

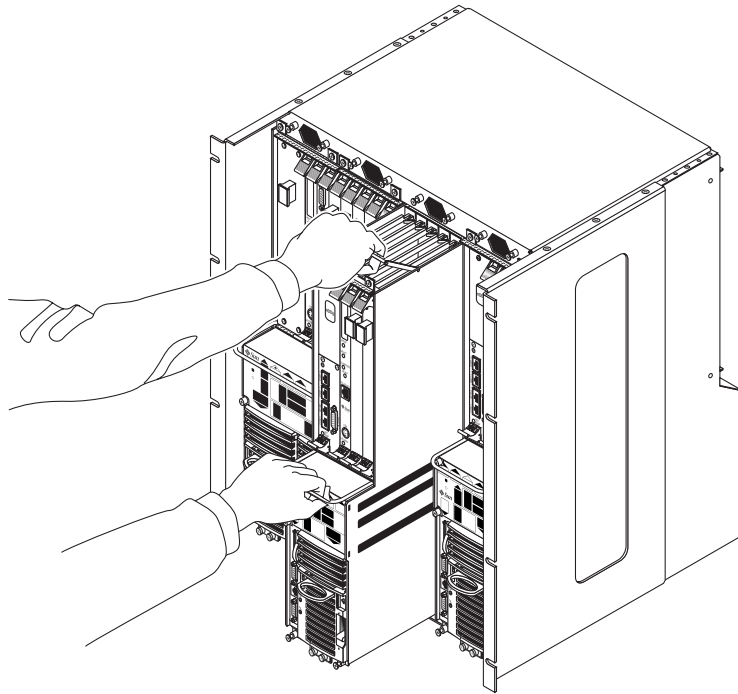


FIGURE 3-8 Removing a Netra CT 410 Server From the Chassis

- 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, then align the mounting holes on the sides of the chassis with the mounting holes in the rack rails (FIGURE 3-9).

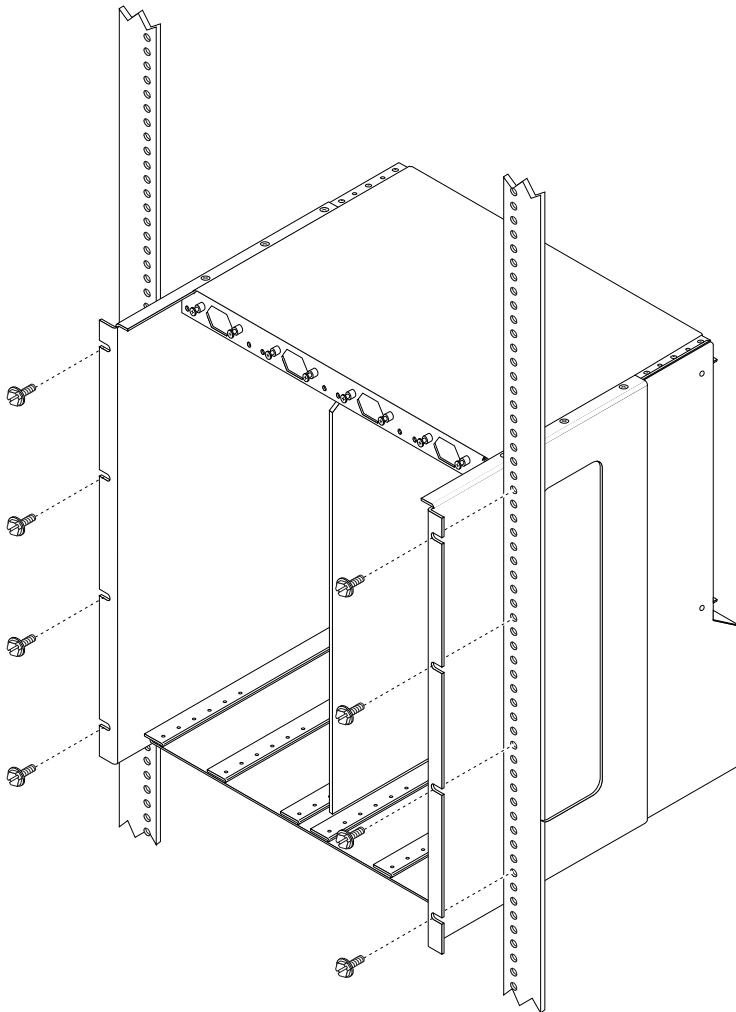


FIGURE 3-9 Mounting the Netra CT Chassis in a Rack

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

▼ To Connect the Grounding Cable

See “[Supply and Ground Conductor Requirements](#)” on page 12 for the site requirements.

1. Get a DC grounding cable and two M5 nuts with lock washers.
2. Go to the rear of the chassis and locate the two DC grounding studs.

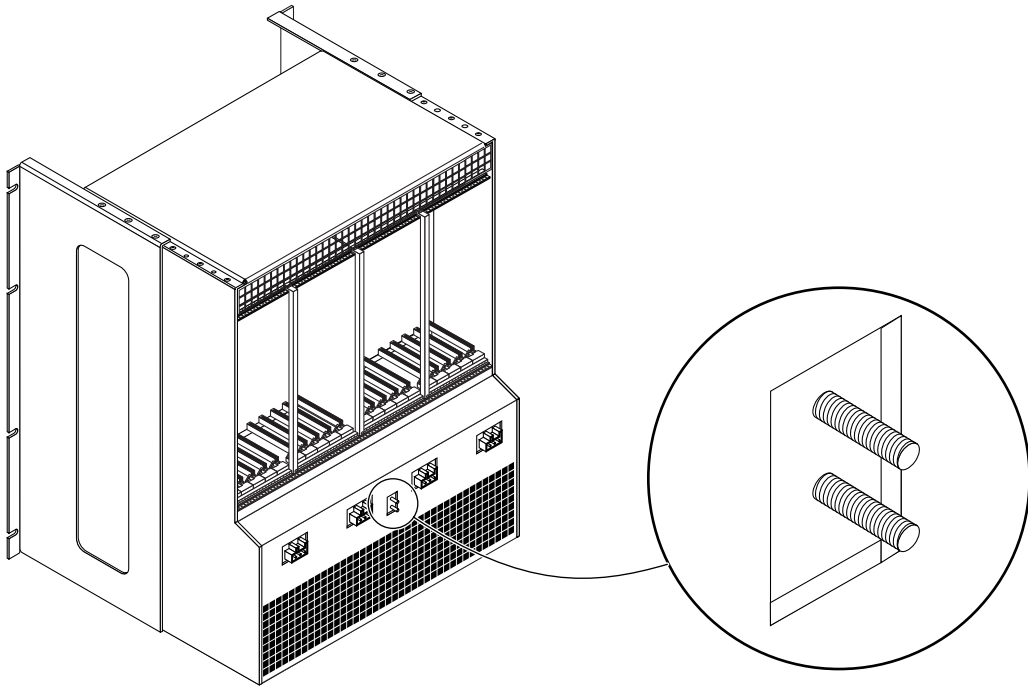


FIGURE 3-10 DC Grounding Studs

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 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 servers before you installed the chassis in the rack, go to [Chapter 4](#).
- If you did *not* remove 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 32](#).
- 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 a Chassis” on page 33](#).

▼ To Unpack a Netra CT Server

1. Use the box handles to lift the Netra CT server, then 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.

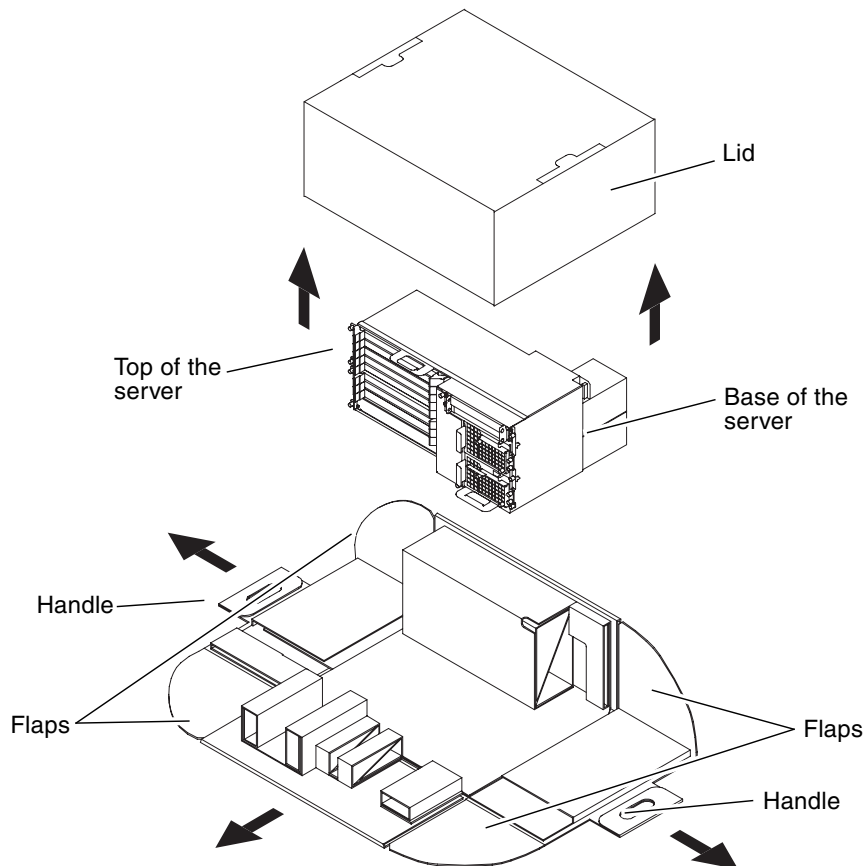


FIGURE 4-1 Unpacking a Netra CT Server

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 server, then 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 a Chassis



Caution – If any slots are left open in the chassis, an energy hazard is present. Close the slots with filler panels.



Caution – You must verify that all the rear transition modules (RTMs) are completely unseated before proceeding with the following procedures. If you attempt to insert a server without unseating the RTMs, 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.

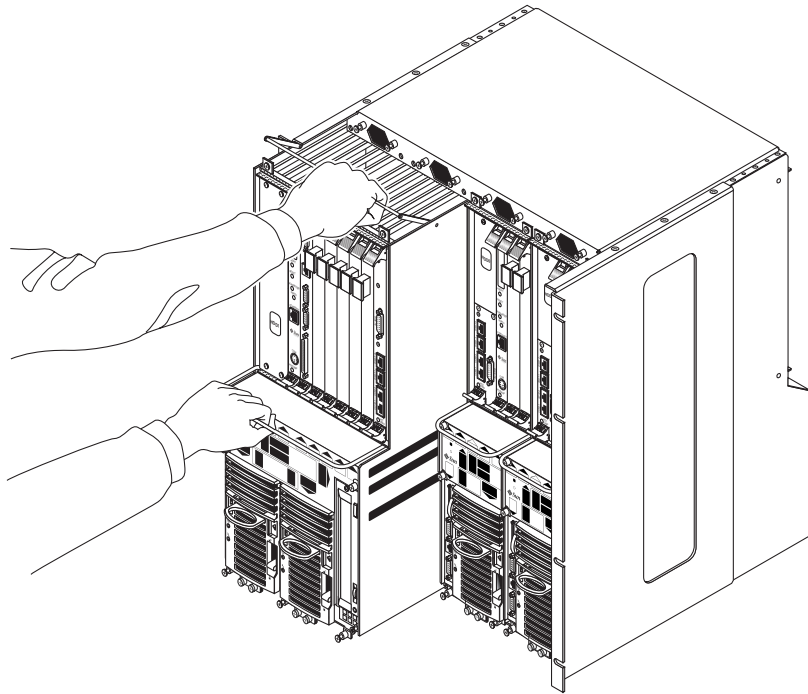


FIGURE 4-2 Installing a Netra CT 810 Server in the Chassis

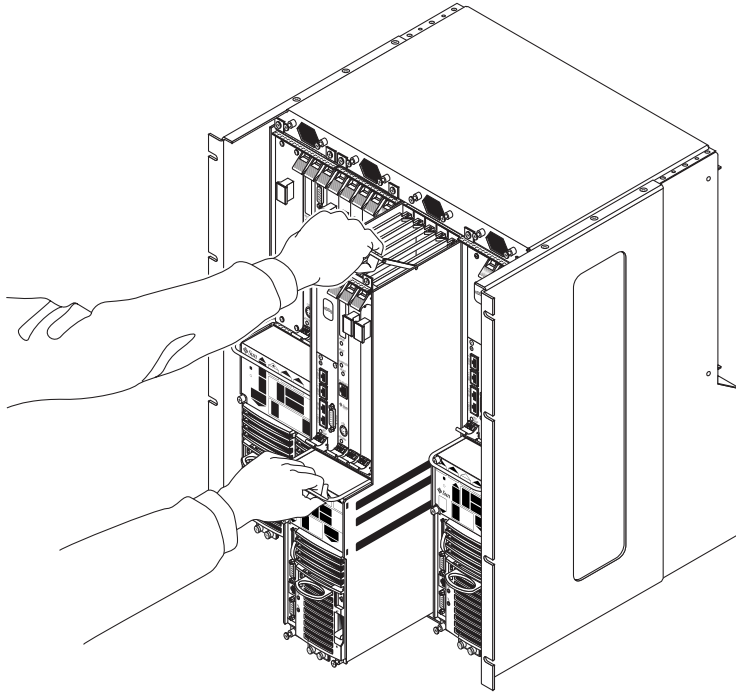


FIGURE 4-3 Installing a Netra CT 410 Server in the Chassis

- 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](#)).

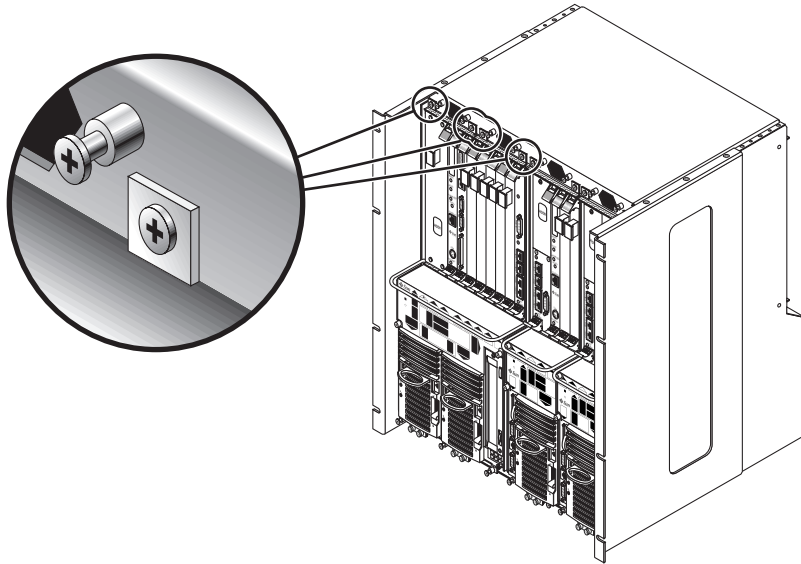


FIGURE 4-4 Tightening the Screws at the Top of a Netra CT 810 Server

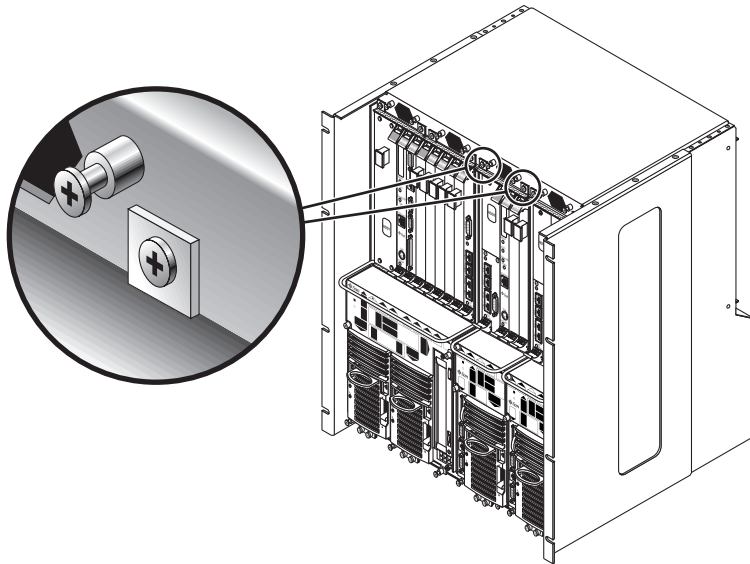


FIGURE 4-5 Tightening the Screws at the Top of a Netra CT 410 Server

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).

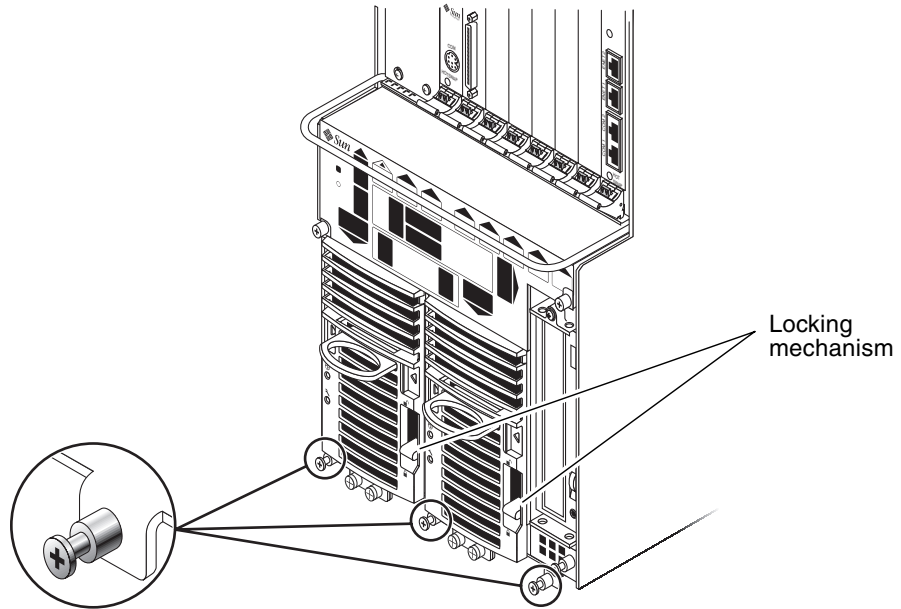


FIGURE 4-6 Tightening the Screws at the Bottom of a Netra CT 810 Server

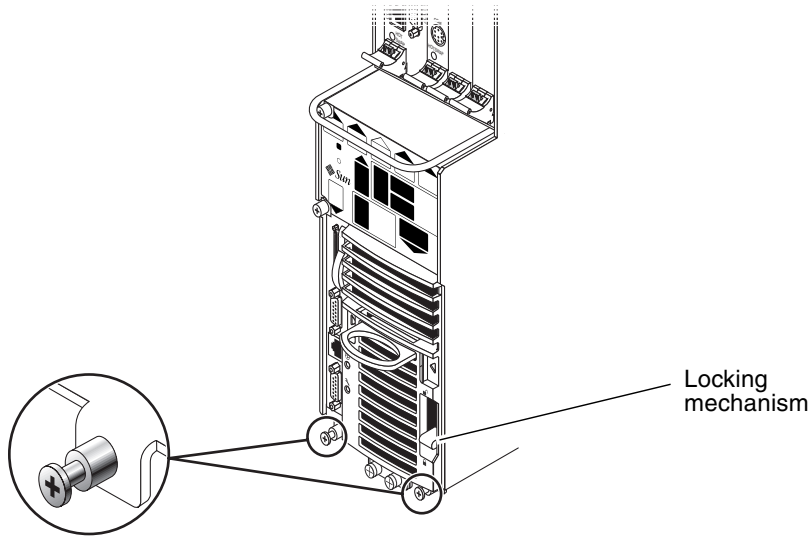



FIGURE 4-7 Tightening the Screws at the Bottom of a Netra CT 410 Server

6. Push the power supply unit locking mechanism 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. Reseat all the RTMs 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 boards to install in the Netra CT server.

Every Netra CT server comes with a host CPU board and corresponding RTM and an alarm card and alarm RTM installed by default. If you ordered additional boards (for example, I/O or satellite CPU boards), install them into the Netra CT server.

- If you have additional boards to install in the Netra CT server, go to [Chapter 5](#).
- If you do not have additional boards to install in the Netra CT server, go to [Chapter 6](#) for instructions on cabling the Netra CT server.

Installing Additional Boards

Every Netra CT server comes with a host CPU board and corresponding host rear transition module (RTM) and an alarm card and alarm RTM factory-installed.

If you have additional boards to install in the server, follow the instructions in this chapter. If you do not have additional boards to install, skip to [Chapter 6](#).

This chapter provides the following procedures for installing additional boards and corresponding rear transition modules:

- [“Antistatic Precautions” on page 40](#)
- [“Installing Boards and Rear Transition Modules” on page 41](#)

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

Antistatic Precautions

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

▼ To Attach the Antistatic Wrist Strap

1. Obtain the antistatic wrist strap from the shipping 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.

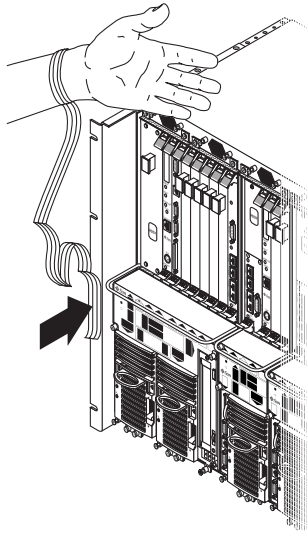


FIGURE 5-1 Attaching the Antistatic Wrist Strap

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

You are now ready to install the board into your server; for instructions, go to [“Installing Boards and Rear Transition Modules”](#) on page 41.

Installing Boards and Rear Transition Modules



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



Caution – The maximum number of Netra CP2500 boards that you can install on any Netra CT 410/810 system is three. Do not exceed this maximum. The number of boards you can install could be fewer than three if your system has boards in the I/O slots.

Board slots designated for satellite CPU boards and corresponding RTMs, I/O boards, and alarm cards have black rails; slots with red rails are reserved for the host CPU board. Labels at the front of the servers and the rear of the chassis show the I/O slot numbers, as well as the boards that are supported in each slot.

Board and Rear Transition Module Sets

A board and rear transition module (RTM) set consists of two components:

- A main board, installed in the front of the server:
 - Host CPU board
 - Satellite CPU board
 - Alarm card
 - I/O board
- A corresponding rear transition module (RTM), installed in the rear of the chassis

The main board is installed in front of the Netra CT server; however, no cables are connected to a main board.

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

The system status panel provides the status for boards installed in a Netra CT server. However, if either the main board or the RTM fails, the system status panel can only tell you that a board in a particular slot has failed; it cannot tell you

whether it was the main board or the RTM that failed. Because most or all of the ASICs are on the main board, it is most likely that the main board failed and should be replaced.

FIGURE 5-2 and FIGURE 5-3 show how main boards align with the RTMs. 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 chassis		Midplane		Rear of chassis
		Hard drives			
Slot 1		Host CPU board		CTC or RTM	Slot 1
Slot 2		Satellite or I/O board		CPU or I/O RTM	Slot 2
Slot 3		Satellite or I/O board		CPU or I/O RTM	Slot 3
Slot 4		Satellite or I/O board		CPU or I/O RTM	Slot 4
Slot 5		Satellite or I/O board		CPU or I/O RTM	Slot 5
Slot 6		Satellite or I/O board		CPU or I/O RTM	Slot 6
Slot 7		Satellite or I/O board		CPU or I/O RTM	Slot 7
Slot 8		Single-wide 6U alarm card		Alarm RTM	Slot 8

FIGURE 5-2 Supported Locations for RTM Sets in a Netra CT 810 Server (Top View)

	Front of chassis		Midplane		Rear of chassis
Slot 1		Alarm card		Alarm RTM	
Slot 2		Empty (not supported)		Empty	
Slot 3		Host board		CTC or RTM	
Slot 4		Satellite or I/O board		I/O RTM	
Slot 5		Satellite or I/O board		I/O RTM	

FIGURE 5-3 Supported Locations for RTM Sets in a Netra CT 410 Server (Top View)

Host Board and Rear Transition Module Sets

The following are the possible pairings of host boards with rear transition modules:

- Netra CP2140 host board and Netra CT CPU transition card (CTC). With the Netra CP2140, use *only* the Netra CT CPU transition card (CTC, hereafter referred to as rear transition module) in the Netra CT server; do not use the XCP2040-TRN I/O transition module that is available with the Netra CP2140 board. See [FIGURE 5-4](#) for supported and unsupported Netra CP2140 host RTMs.
- Netra CP2500 host board and Netra CP2500 RTM-H (rear transition module-host). See [FIGURE 5-5](#) for supported Netra CP2500 host RTM.

Satellite Board and Rear Transition Module Sets

The following are the possible pairings of satellite boards with rear transition modules:

- Netra CP2160 satellite board and XCP2060-TRN I/O rear transition module.
- Netra CP2500 satellite board and Netra CP2500 RTM-S (rear transition module-satellite).

Note – For the Netra CP2500 board, the RTM is different for the host and satellite boards. Be sure to pair them correctly. On the faceplate, look for “RTM-H” or “RTM-S” to identify which RTM you have.

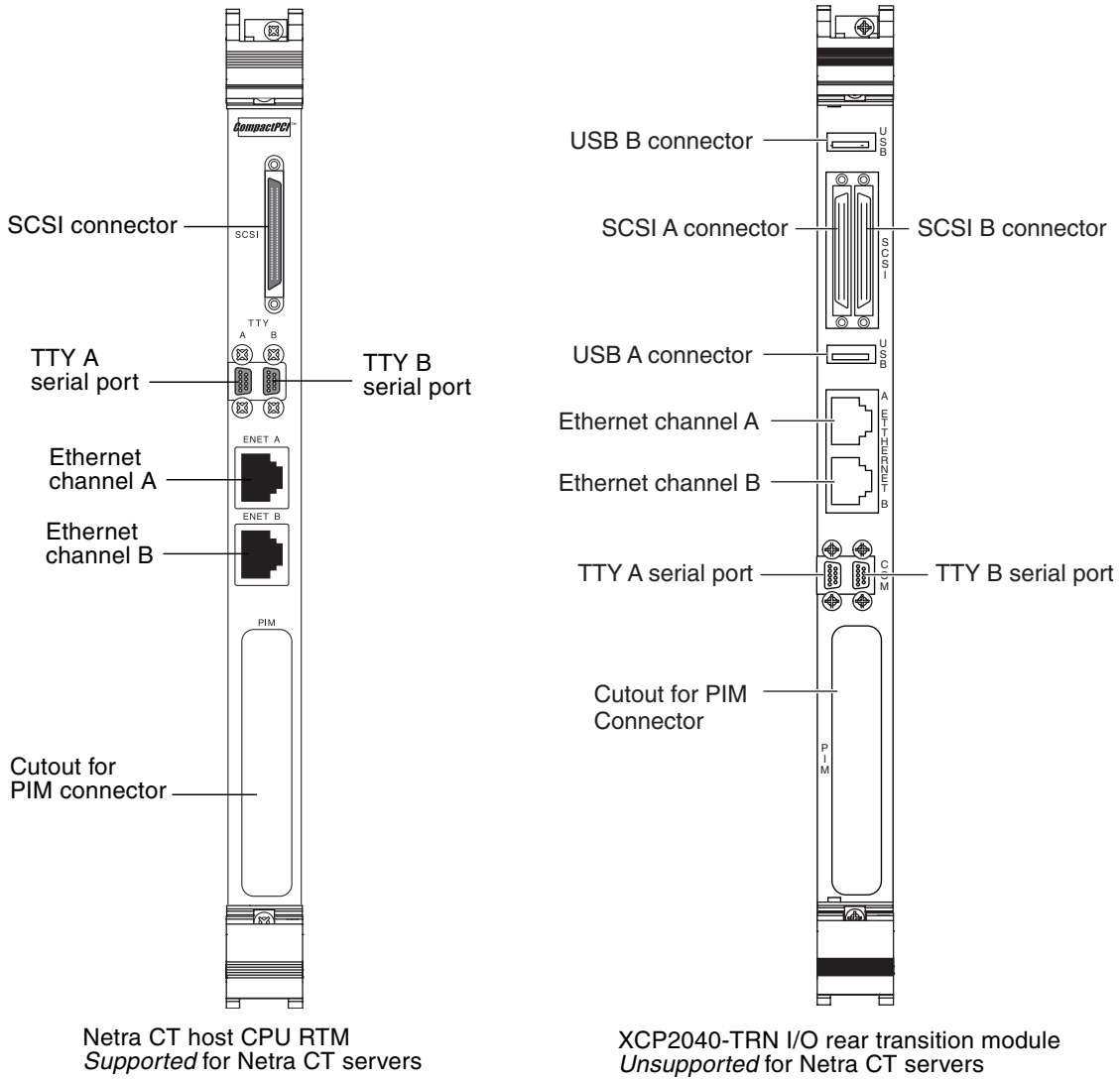


FIGURE 5-4 Supported and Unsupported Netra CP2140 Host CPU RTM for a Netra CT Server

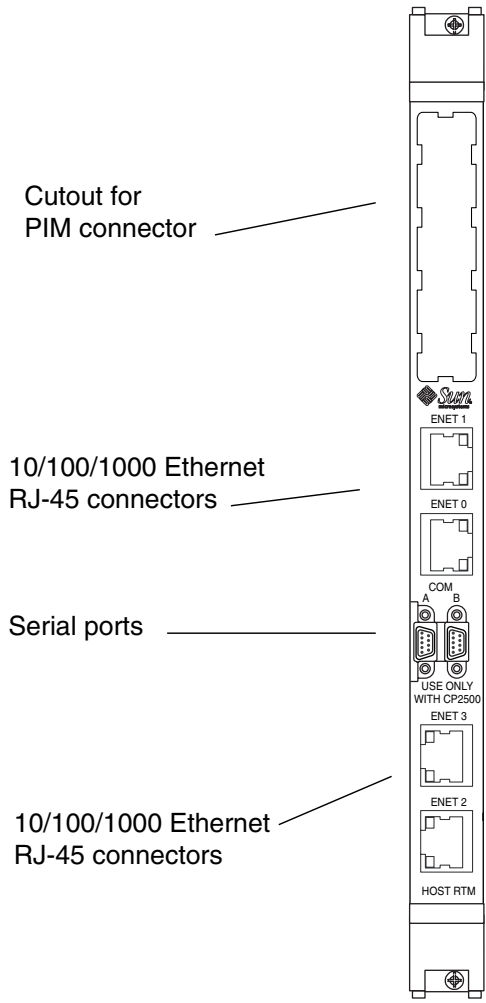


FIGURE 5-5 Supported Netra CP2500 Host RTM for a Netra CT Server

▼ To Install Rear Transition Modules and Boards

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

See ["To Attach the Antistatic Wrist Strap"](#) on page 40 for those instructions.

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

[FIGURE 5-2](#) lists the slots for the RTMs in a Netra CT 810 server and [FIGURE 5-3](#) lists the slots for the RTMs in a Netra CT 410 server. The slot filler panel is secured to the board cage using two screws, one at the top of the filler panel, the other at the bottom.

3. **Get the RTM from the shipping kit.**

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

For example, you might want to install a PMC I/O module (PIM) onto the RTM at this time. Refer to the documentation that you received with your board for more information.

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

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

6. **Keeping the module vertical, slide the RTM in between the two guides into the slot ([FIGURE 5-6](#)).**

The teeth in the handle of the module must align with the square cutouts in the slot. When the module is completely seated in the board cage, the two ejection levers flip inward, and the teeth in the ejection levers fit smoothly in the rectangular cutouts in the bottom and top plates.

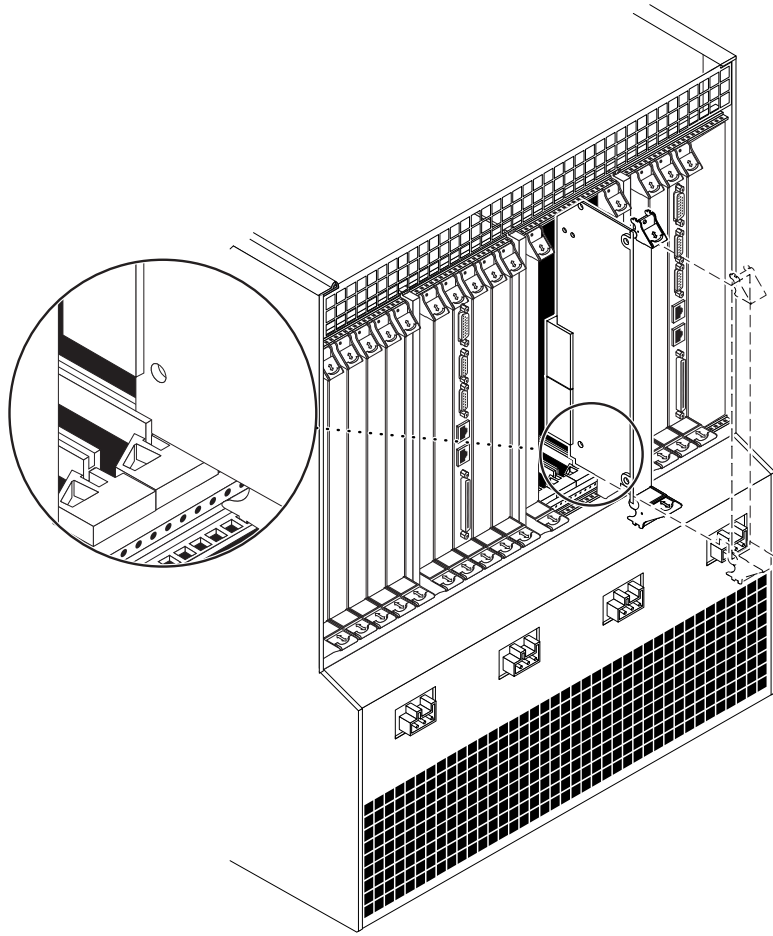


FIGURE 5-6 Aligning the Board With the Rear Board Cage Cutouts

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 board. Refer to the documentation that came with the module for instructions on locking the ejection levers.

8. Using a No. 2 Phillips screwdriver, tighten the two captive screws inside the module'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. Install the corresponding main board in the front of the Netra CT server.
10. After you install the corresponding main board, go to [Chapter 6](#) for instructions on cabling the system.

Cabling the System

This chapter provides instructions for connecting cables to CompactPCI boards and instructions for assembling and connecting the input power cable. This chapter contains the following topics:

- [“Installing Cable Management Brackets” on page 50](#)
- [“Connecting Cables” on page 52](#)
- [“Assembling and Connecting Input Power Cable” on page 64](#)

Installing Cable Management Brackets

The purple cable management brackets for the chassis are located in the Netra CT server shipping kit. The cable management brackets bundle the various cables connected to the rear of the chassis. The Netra CT chassis comes with four cable management brackets.

▼ To Install the Cable Management Brackets

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

[FIGURE 6-1](#) shows where the brackets are 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 until they engage with the holes in the chassis. See [FIGURE 6-1](#).

3. **Repeat [Step 1](#) and [Step 2](#) until all four cable management brackets are installed.**

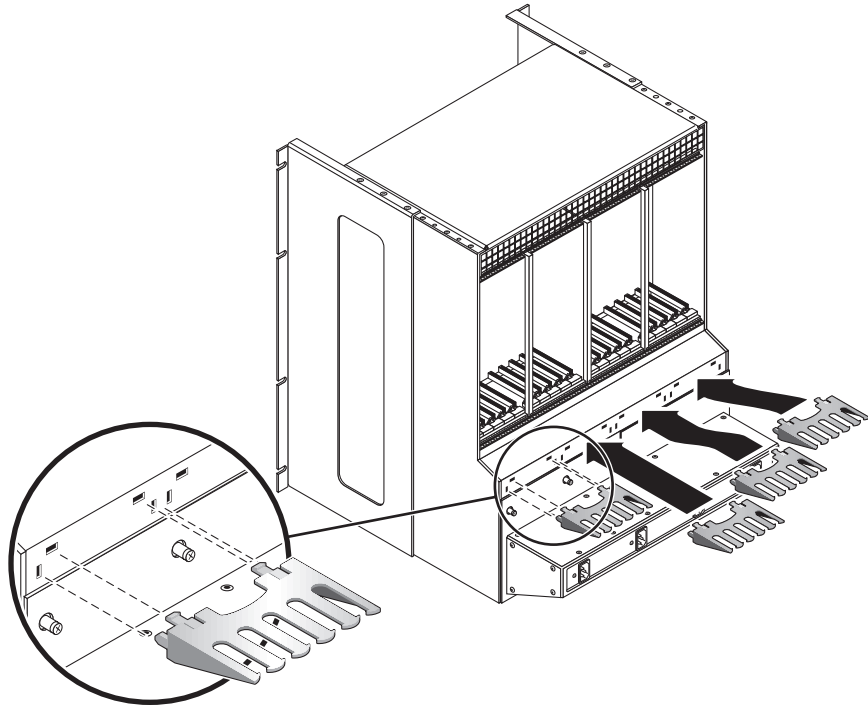


FIGURE 6-1 Installing the Cable Management Brackets

Connecting Cables

This section provides instructions for connecting cables to host rear transition modules (RTMs), alarm RTMs, and satellite and I/O RTMs.

▼ To Connect Cables to Host Rear Transition Modules

1. Go to the rear of the chassis and locate the RTM corresponding to the host board.

[FIGURE 6-2](#) shows the location of RTMs in a Netra CT 810 server, and [FIGURE 6-3](#) shows the location of RTMs in a Netra CT 410 server.

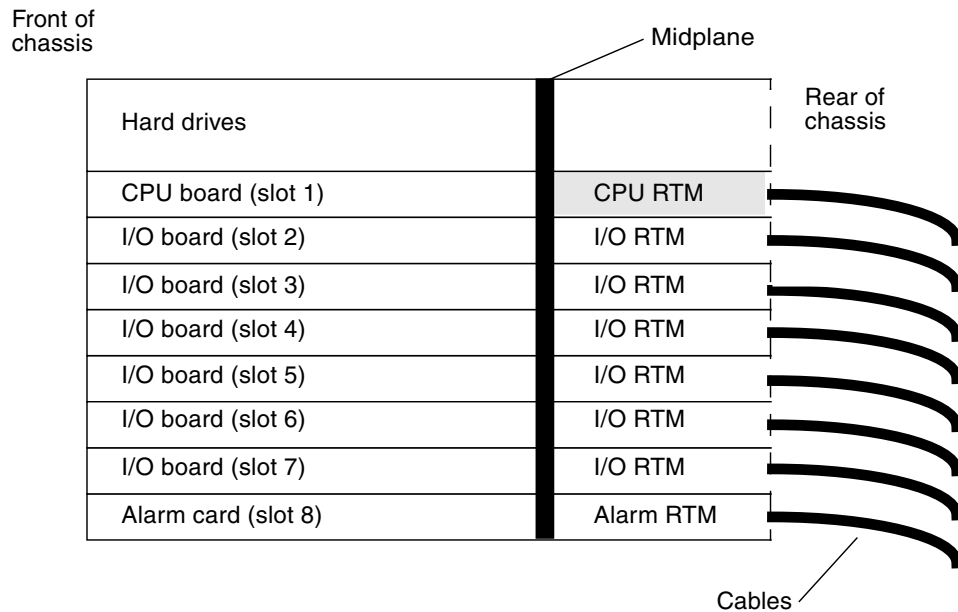


FIGURE 6-2 Host CPU RTM in a Netra CT 810 Server (Top View)

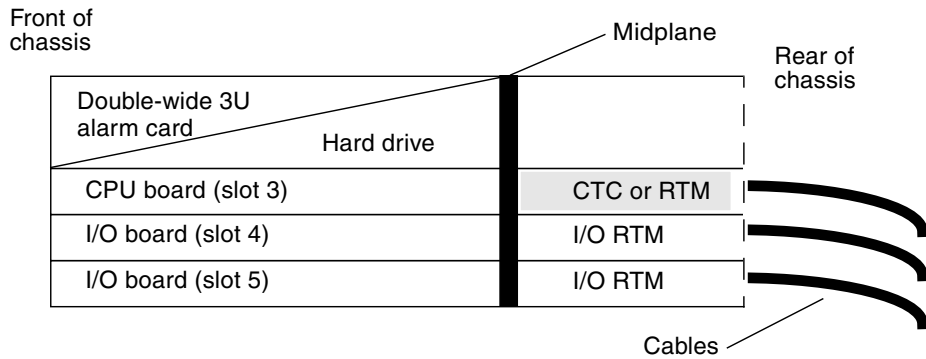


FIGURE 6-3 Host CPU RTM in a Netra CT 410 Server (Top View)

2. Make the necessary cable connections to the RTM.

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

[FIGURE 6-4](#) shows the connectors on RTMs. The RTMs are the same for both the Netra CT 810 server and Netra CT 410 servers; only the locations in the rear board cages differ.

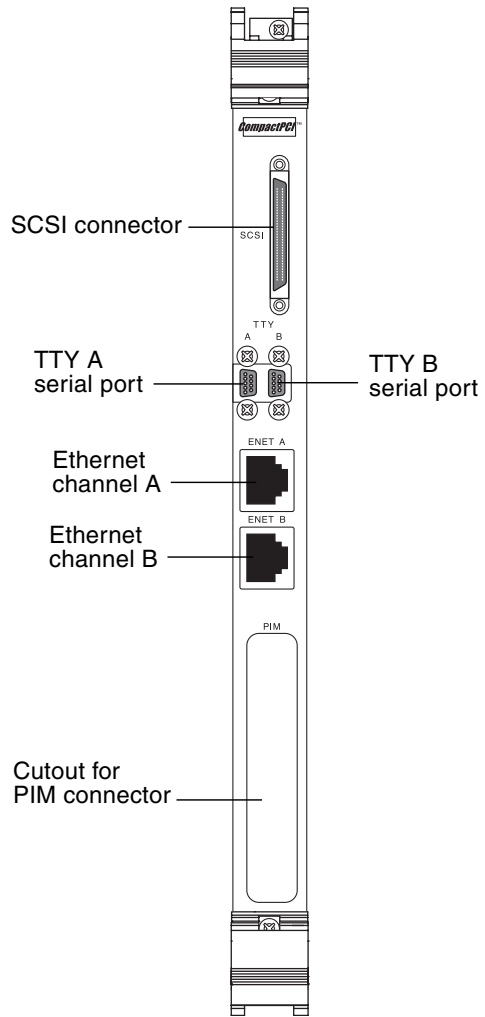


FIGURE 6-4 Connectors on the Netra CP2140 host RTM

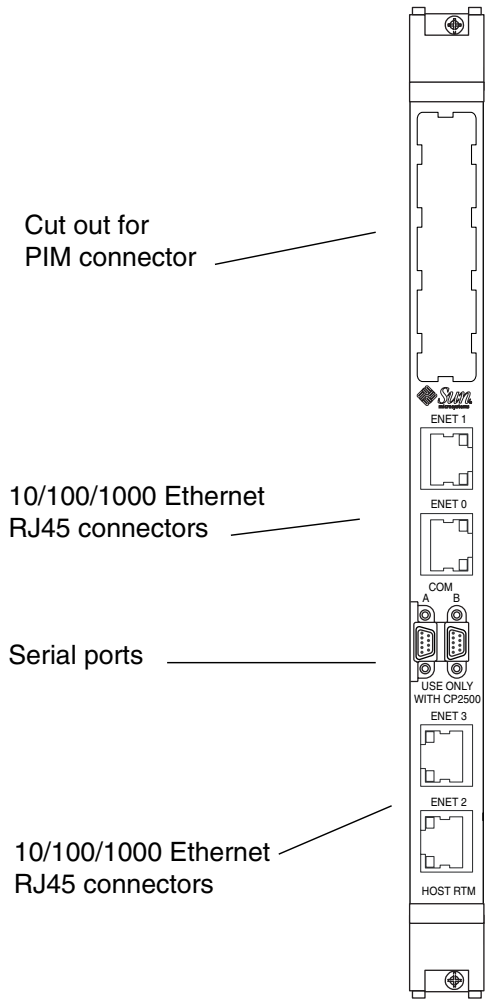


FIGURE 6-5 Supported Netra CP2500 Host RTM

The following sections provide the pinouts for the connectors on RTMs:

- [“SCSI \(VHDC\)” on page 56](#)
- [“TTY A and B Ports” on page 57](#)
- [“Ethernet A and B Ports” on page 58](#)
- [“PMC I/O \(PIM\) Board Interface” on page 58](#)

SCSI (VHDC)

The SCSI port on the RTM paired with a Netra CP2140 host board is a 68-pin CHAMP very high density connector (VHDC). A VHDC-to-SCSI 3 cable is available through Sun.

TABLE 6-1 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 6-1 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:

TABLE 6-2 Signal Interface of TTY A and B Port Connectors

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 adapter cables. Use the serial cable adapter, MDSM-9F to DB9M, (6 inch 9 wires), P/N C-CEL-10110-10. Order the cables directly from the manufacturer, Computer Cable Makers Inc.

Ethernet A and B Ports

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

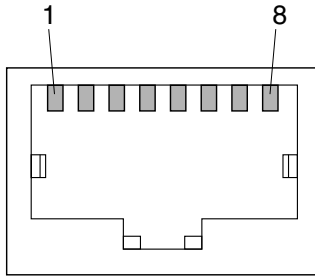


FIGURE 6-6 RJ-45 Ethernet Connector Diagram

TABLE 6-3 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

PMC I/O (PIM) Board Interface

The host CPU RTM supports a PMC I/O module (PIM). A PIM is generally located on a rear transition module to enable rear I/O from the CompactPCI bus chassis. Custom PIMs provide additional I/Os that do not fit on the standard rear transition module panel. (For more information on PIM slot mechanics and electrical and logical information, refer to *VITA 36 - PMC I/O Module Standard* available at <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 board must be mounted on the host CPU RTM *before* the RTM is inserted in a Netra CT server.



Caution – A PIM board must be used with its matching PCI mezzanine card (PMC). Any other combination could lead to damage of the PMC or the PCI mezzanine card (PMC) I/O module (PIM).

▼ To Connect Cables to Alarm Rear Transition Module

1. Go to the rear of the chassis and locate the alarm RTM.

FIGURE 6-7 shows the slot available for the alarm RTM in a Netra CT 810 server, and FIGURE 6-8 shows the slot available for the alarm RTM in a Netra CT 410 server.

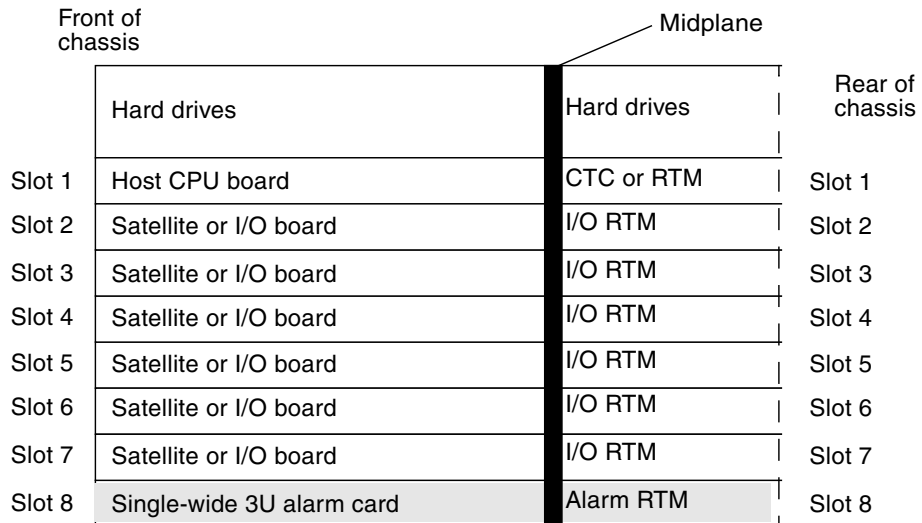


FIGURE 6-7 Supported Location for the Alarm RTM in a Netra CT 810 Server (Top View)

	Front of chassis	Midplane	Rear of chassis
Slot 1	3U or 6U alarm card	Alarm RTM	
Slot 2	Empty (not supported)	Empty	
Slot 3	Host CPU board	CTC or RTM	
Slot 4	Satellite or I/O board	I/O RTM	
Slot 5	Satellite or I/O board	I/O RTM	

FIGURE 6-8 Supported Location for the Alarm RTM in a Netra CT 410 Server (Top View)

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

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

[FIGURE 6-9](#) shows the connectors on the alarm RTM.

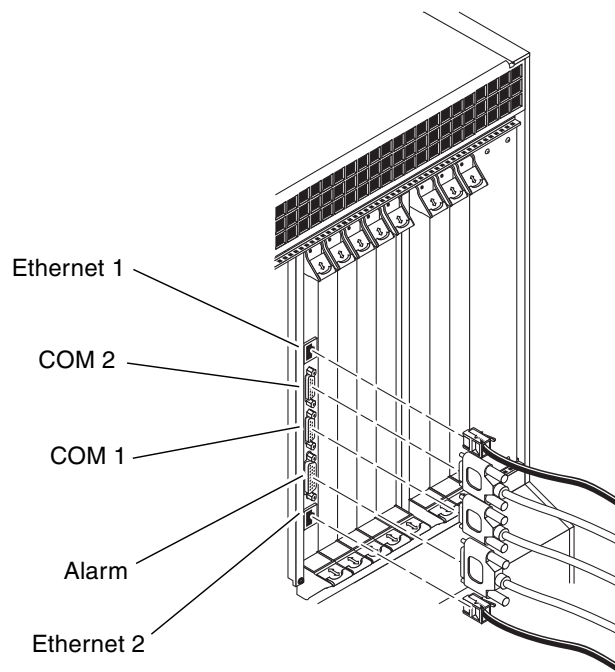


FIGURE 6-9 Connectors on the Alarm RTM

The following sections provide the pinouts for the connectors of the alarm RTM:

- “Ethernet Ports 1 and 2” on page 61
- “COM Ports 1 and 2” on page 62
- “Alarm Port” on page 63

Ethernet Ports 1 and 2

Ethernet ports 1 and 2 on the alarm RTM 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.

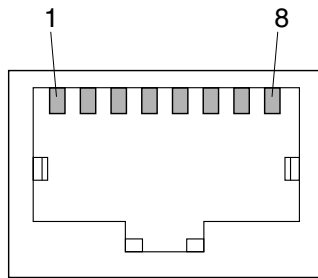


FIGURE 6-10 RJ-45 Ethernet Connector Diagram

TABLE 6-4 Ethernet Port 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 RTM use standard DB-9 male connectors.

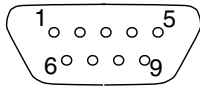


FIGURE 6-11 COM Ports 1 and 2

TABLE 6-5 COM Port 1 and 2 Connector Pinouts, Alarm RTM

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 RTM uses a standard male DB-15 connector.

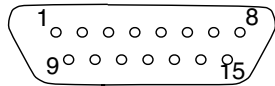


FIGURE 6-12 Alarm Port

TABLE 6-6 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 Satellite or I/O Rear Transition Modules

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

[FIGURE 5-2](#) shows the possible locations for the satellite CPU or I/O boards in a Netra CT 810 server, and [FIGURE 5-3](#) shows possible locations for the satellite CPU or I/O boards in a Netra CT 410 server.

2. Make the necessary cable connections to the RTM.

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 RTMs, refer to the documentation that you received with the modules.

Assembling and Connecting Input Power Cable



Caution – Verify that your site meets the source site requirements outlined in [“Power Source Requirements” on page 12](#) before proceeding with the following instructions.

Assembling the Input Power Cable

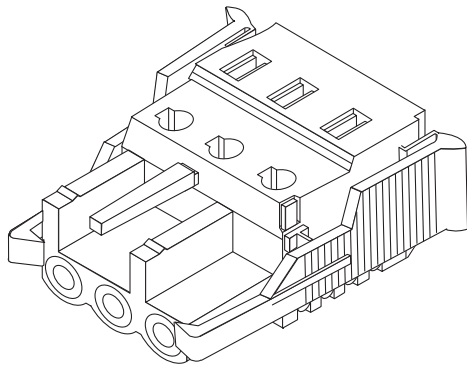
▼ To Assemble the Input Power Cable

Note – If you already assembled the input power cables, skip to [“Connecting the Power Cable” on page 71](#).

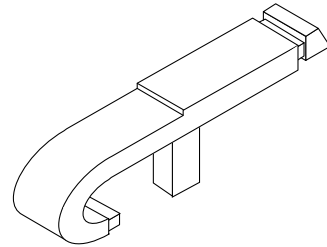
1. Identify the parts that you need to assemble the input power cable (FIGURE 6-13).

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

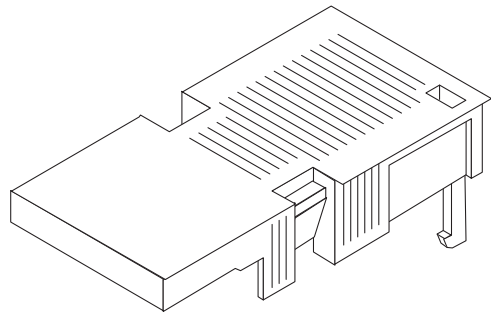
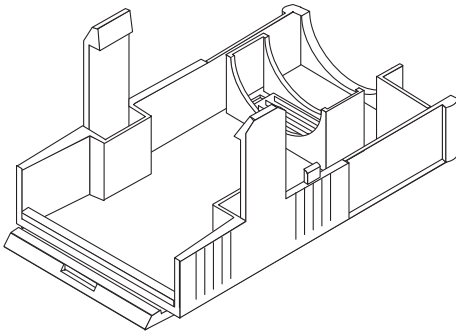
- input plugs
- Strain relief housings
- Cage clamp operating lever
- Tie wraps



Power input plug



Cage clamp operating lever



Strain relief housing

FIGURE 6-13 Connection Parts

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



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

3. Get a DC input plug from the shipping kit.
4. Locate the three wires coming from the DC power source that you will use to connect 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 power source.

Do not strip more than 5/16 inches (8 mm) from each wire. Doing so leaves uninsulated wire from the connector exposed after the assembly is complete.

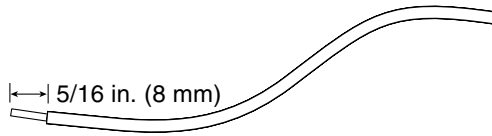


FIGURE 6-14 Stripping the Insulation From the Wire

6. Open the cage clamp in one of the following ways:
 - a. Open the cage clamp by inserting the tip of the cage clamp operating lever into the rectangular hole directly above the hole in the input plug where you want to insert the first wire, then press down on the cage clamp operating lever.

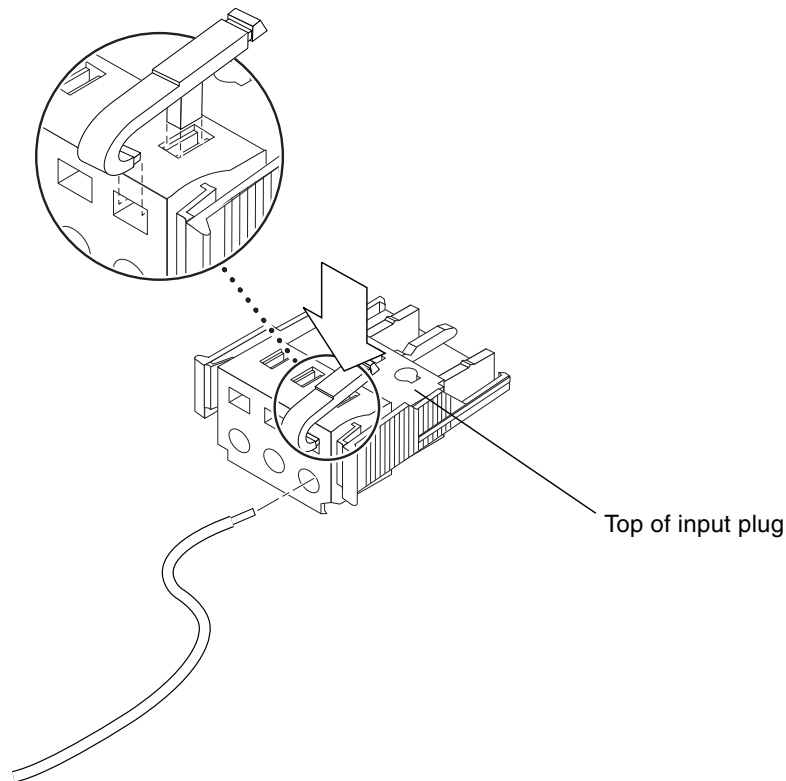


FIGURE 6-15 Opening the Input Plug Cage Clamp Using the Cage Clamp Operating Lever

- b. Open the cage clamp by inserting a small slotted screwdriver into the rectangular hole directly above the hole in the input plug where you want to insert the first wire, then by press down on the screwdriver.

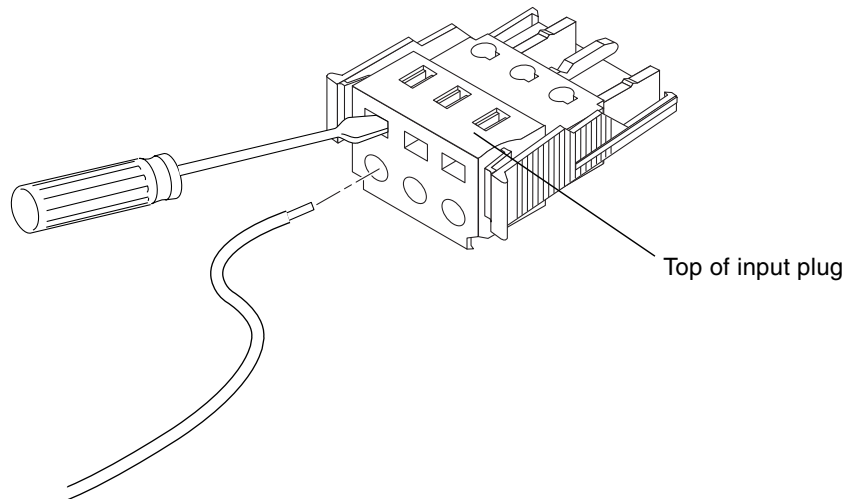


FIGURE 6-16 Opening the Cage Clamp Using a Screwdriver

7. Feed the exposed section of the appropriate wire into that hole in the input plug. **FIGURE 6-17** shows which wires should be inserted into each hole in the input plug.

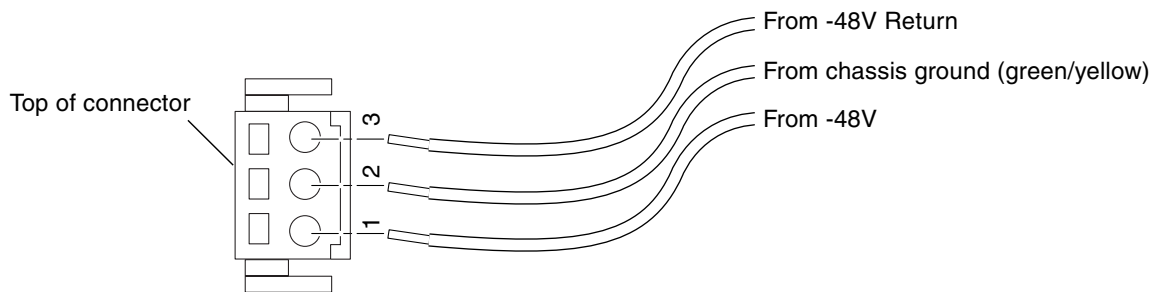


FIGURE 6-17 Assembling the Input Power Cable

8. Repeat **Step a** and **Step 7** for the other two wires to complete the assembly of the input power cable.
9. Repeat **Step 4** through **Step 8** to create as many input power cables as you need for your unit.

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

If you need to remove a wire from the input plug, insert the cage clamp operating lever or a small screwdriver into the slot directly above the wire, then press down ([FIGURE 6-15](#) and [FIGURE 6-16](#)), and pull the wire from the input plug.

▼ To Install the Strain Relief Housings

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

Make sure the strain relief housing snaps into place on the input plug; you cannot complete the assembly correctly until the strain relief housing is snapped into place.

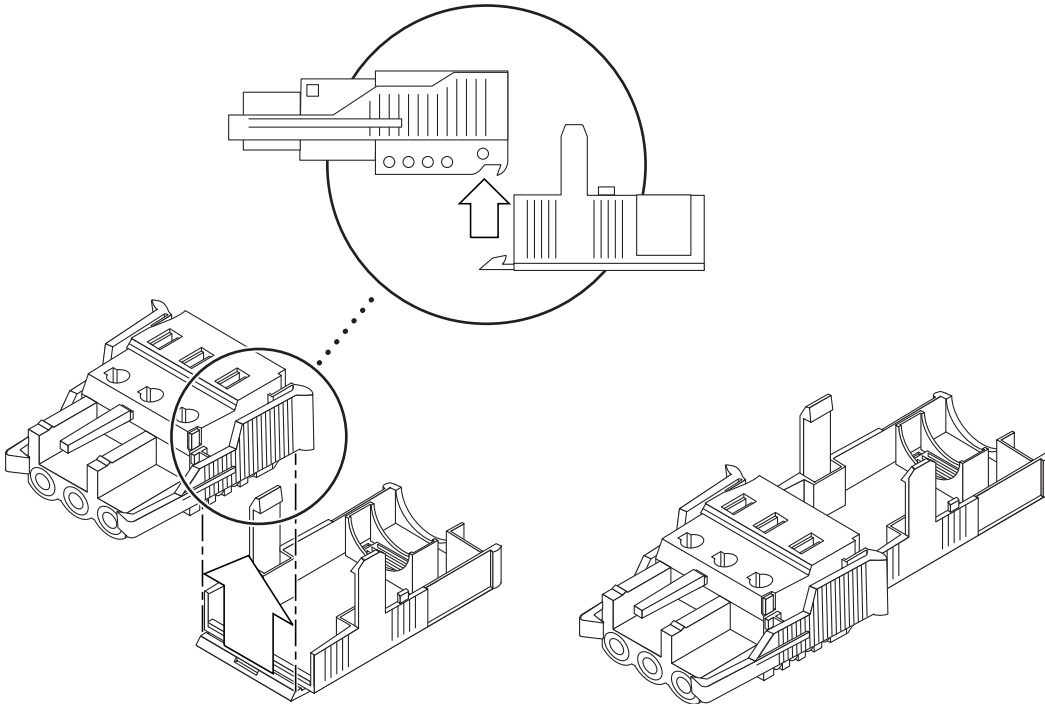


FIGURE 6-18 Inserting the Bottom Portion of the Strain Relief Housing

2. Route the three wires coming from the power source through the opening at the end of the bottom portion of the strain relief housing.

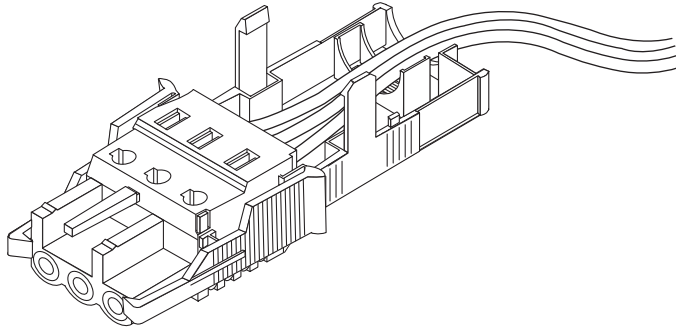


FIGURE 6-19 Routing the Wires Out of the Bottom Portion of the Strain Relief Housing

3. Get the tie wrap and insert it into the bottom portion of the strain relief housing.

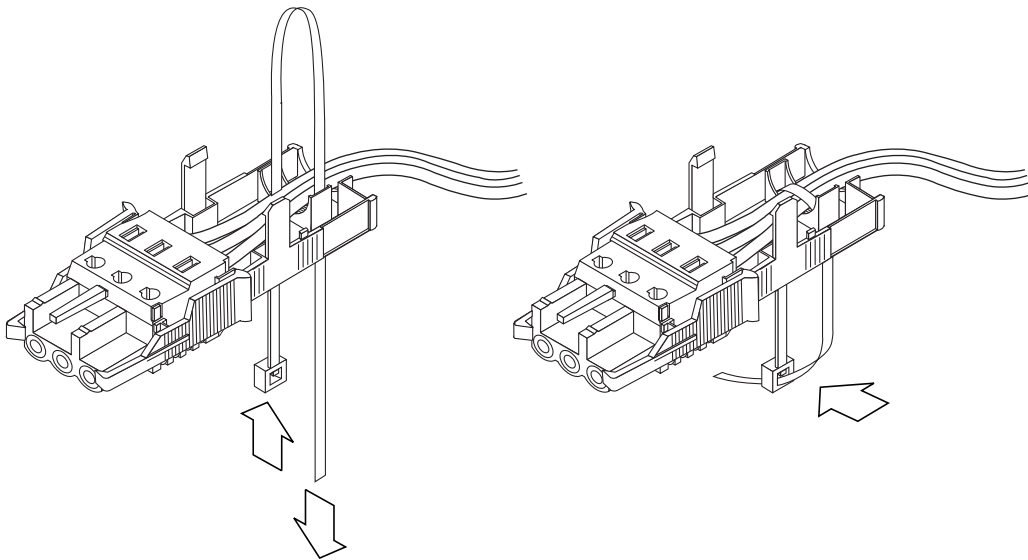


FIGURE 6-20 Securing the Wires to the Strain Relief Housing

4. Loop the tie wrap over the wires and back out of the strain relief housing, then tighten the tie wrap to secure the wires to the strain relief housing (**FIGURE 6-20**).

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 input plug, then push the top and bottom portions of the strain relief housing together until they snap into place.

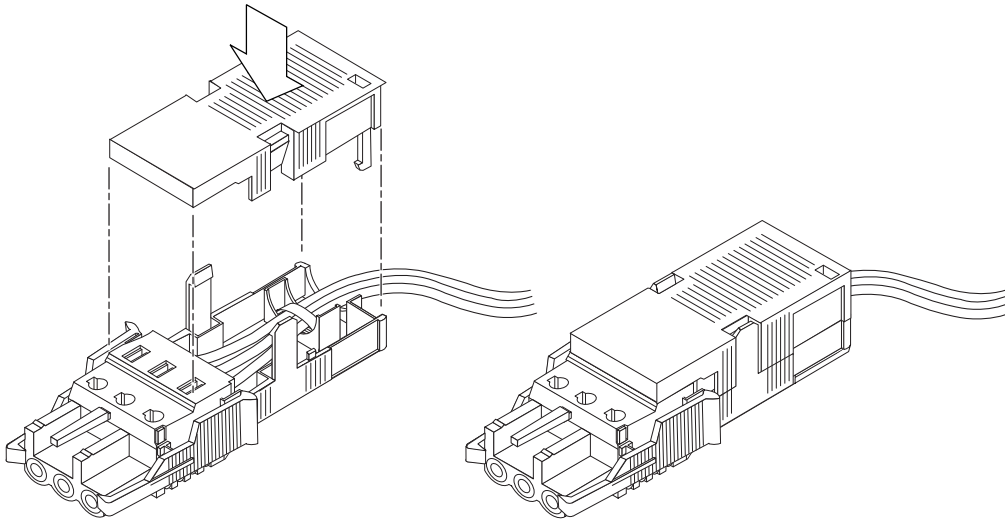


FIGURE 6-21 Assembling the Strain Relief Housing

Connecting the Power Cable

▼ To Connect the Power Cable



Caution – An energy hazard is present when energized units are not properly earth grounded.

1. Go to the rear of the chassis and locate the connectors.

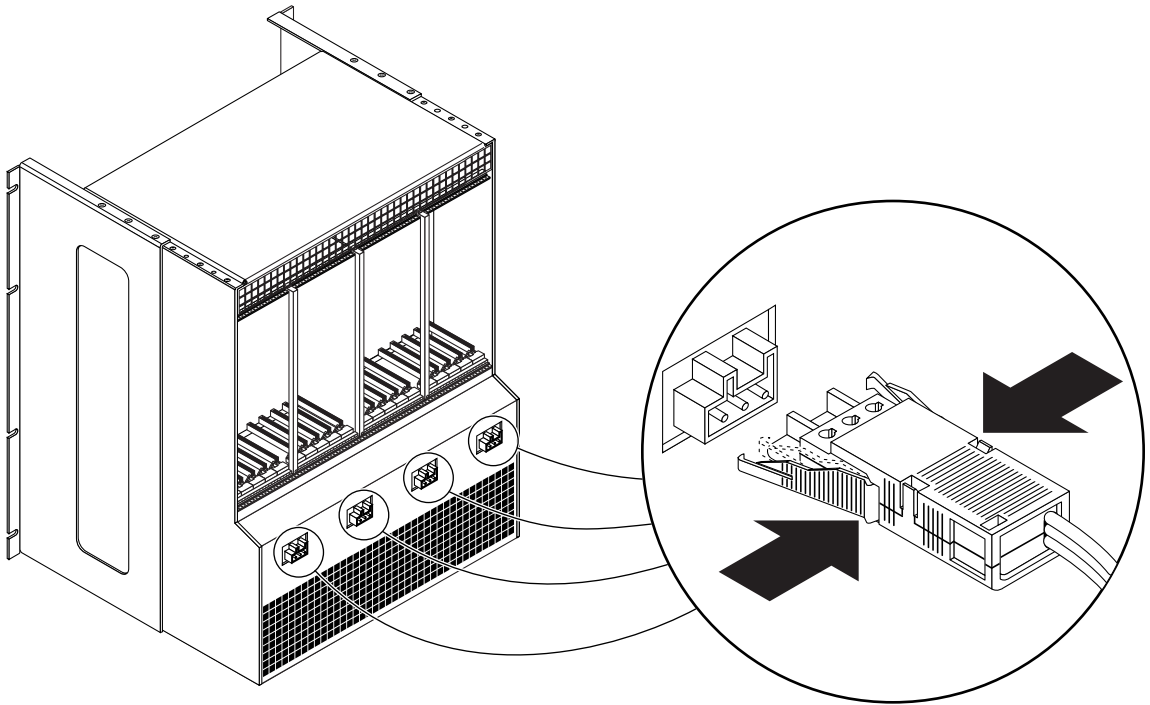


FIGURE 6-22 Locating the Connectors

2. Connect the input power cables to the connectors.

FIGURE 6-23 shows how the input power cable is connected to the connectors.

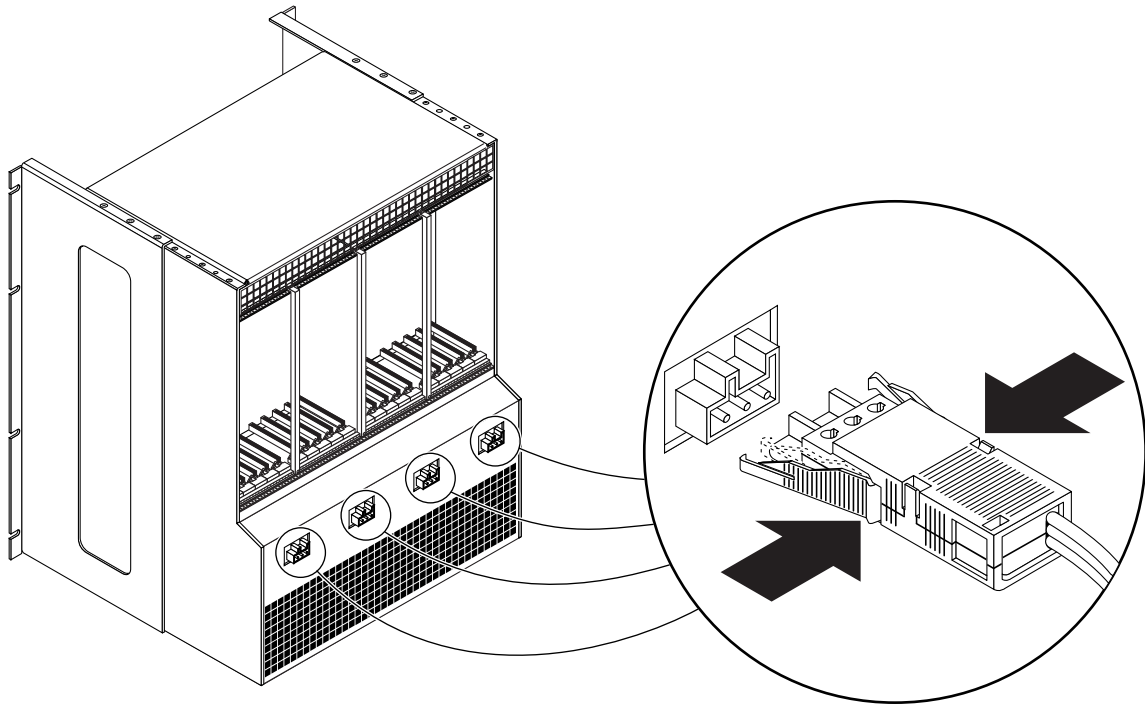


FIGURE 6-23 Connecting the Input Power Cable to the Connectors

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



Caution – Do *not* attempt to disconnect the input power cable from the connector until you have turned off the power from the power source through the circuit breakers.

After completing the cabling, if you want to disconnect the input power cable from the connector at some point in the future, turn the circuit breakers off, then squeeze the two tabs on the sides of the input power cable and gently disconnect the input power cable from the power supply (FIGURE 6-24).

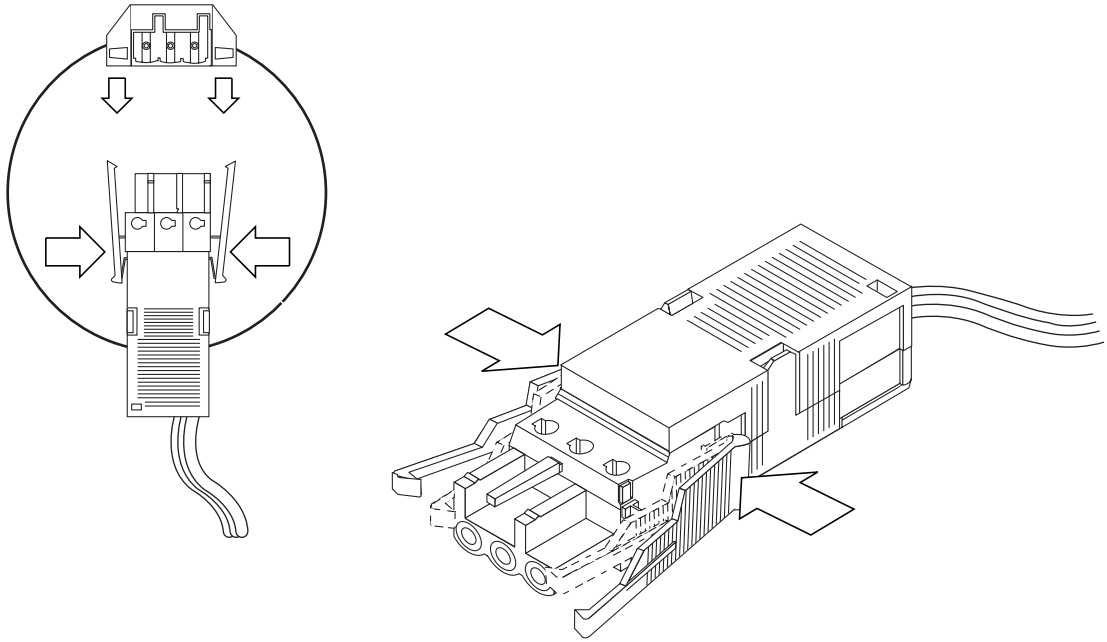


FIGURE 6-24 Disconnecting the Input Power Cable From the Connector

Powering a Server On and Off

This chapter provides instructions for powering a Netra CT server on and off, and it contains the following topics.

- [“Connecting a Terminal Console to a Server” on page 76](#)
- [“Powering On a Server” on page 81](#)
- [“Powering Off the Server” on page 84](#)

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 power a Netra CT server on and off through the alarm card using software commands. Refer to the *Netra CT Server System Administration Manual* for information.

Connecting a Terminal Console to a Server

One way to power your server on and off is to log in to the server either remotely, where you would log in to the Netra CT server as superuser 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 board that you are connecting to:

- If you are using an ASCII terminal to power the Netra CT server on and off, go to [“To Connect Using an ASCII Terminal” on page 76](#).
- If you are using a Solaris workstation to power the Netra CT server on and off, go to [“To Use a Solaris Workstation” on page 78](#).
- If you are using a PC laptop to power the Netra CT server on and off, go to [“To Connect Using a PC Laptop” on page 79](#).

▼ To Connect Using an ASCII Terminal

1. Get the appropriate cable and adapter, then make the necessary connections.

You might need one or more cables and adapters to connect the ASCII terminal to the server. The cables and adapters you need vary, depending on the model server you have and the board that you are connecting to.

- If you are connecting an ASCII terminal to a *CPU board or RTM*, 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 RTM*, use the information in [TABLE 7-2](#) to make the necessary connections.

TABLE 7-1 Connecting an ASCII Terminal to a Board or Rear Transition Module

Server Type	TTY A Port on Netra CT Server	Adapter	Cable	Adapter	Serial Port on Terminal
Netra CT 810 server	DB-9 male on the CPU RTM. See “To Connect Cables to Host Rear Transition Modules” on page 52.	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	DB-9 male on the CPU RTM. See “To Connect Cables to Host Rear Transition Modules” on page 52.	Not needed	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 RTM

Server Type	COM 1 Port on Netra CT Server	Adapter	Cable	Adapter	Serial Port on Terminal
Netra CT 810 server	DB-9 male on the alarm RTM. See “To Connect Cables to Alarm Rear Transition Module” on page 59.	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	DB-9 male on the alarm RTM. See “To Connect Cables to Alarm Rear Transition Module” on page 59.	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.

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

4. Test the connection.

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

▼ To Use a Solaris Workstation

1. Obtain the cable and adapter and make the necessary connections.

You might need one or more cables and adapters to connect a Solaris workstation to a server. The cables and adapters you need vary, depending on the model server you have and the board that you are connecting to.

- If you are connecting a Solaris workstation to a *CPU board or RTM*, 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 RTM*, use the information in [TABLE 7-4](#) to make the necessary connections.

TABLE 7-3 Connecting a Solaris Workstation to a Board or Rear Transition Module

Server Type	TTY A Port on Netra CT Server	Adapter	Cable	Adapter	Serial Port on Workstation
Netra CT 810 server	DB-9 male on the CPU RTM. See “To Connect Cables to Host Rear Transition Modules” on page 52.	Not needed	DB-9 female-to-DB-25 male null modem	Not needed	DB-25 female
Netra CT 410 server	DB-9 male on the CPU RTM. See “To Connect Cables to Host Rear Transition Modules” on page 52.	Not needed	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 RTM

Server Type	COM 1 Port on Netra CT Server	Adapter	Cable	Adapter	Serial Port on Workstation
Netra CT 810 server	DB-9 male on the alarm RTM. See “To Connect Cables to Alarm Rear Transition Module” on page 59.	Not needed	DB-9 female-to-DB-25 male null modem	Not needed	DB-25 female
Netra CT 410 server	DB-9 male on the alarm RTM. See “To Connect Cables to Alarm Rear Transition Module” on page 59.	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:

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

3. Type `tip hardware` at the prompt.

The word `connected` is displayed as the response.

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

▼ To Connect Using a PC Laptop

1. Obtain the cable and adapter, then make the necessary connections.

You might need one or more cables and adapters to connect a PC laptop to a server. The cables and adapters you need vary, depending on the model server you have and the board that you are connecting to.

- If you are connecting a PC laptop to a *CPU board or RTM*, 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 RTM*, use the information in [TABLE 7-6](#) to make the necessary connections.

TABLE 7-5 Connecting a PC Laptop to a Board or Rear Transition Module

Server Type	TTY A Port on Netra CT Server	Adapter	Cable	Adapter	Serial Port on PC Laptop
Netra CT 810 server	DB-9 male on the CPU RTM. See “To Connect Cables to Host Rear Transition Modules” on page 52.	Not needed	DB-9 female-to-DB-9 female null modem	Not needed	DB-9 male
Netra CT 410 server	DB-9 male on the CPU RTM. See “To Connect Cables to Host Rear Transition Modules” on page 52.	Not needed	DB-9 female-to-DB-9 female null modem	Not needed	DB-9 male

TABLE 7-6 Connecting a PC Laptop to an Alarm or Alarm RTM

Server Type	COM 1 Port on Netra CT Server	Adapter	Cable	Adapter	Serial Port on PC Laptop
Netra CT 810 server	DB-9 male on the alarm RTM. See “To Connect Cables to Alarm Rear Transition Module” on page 59.	Not needed	DB-9 female-to-DB-9 female null modem	Not needed	DB-9 male
Netra CT 410 server	DB-9 male on the alarm RTM. See “To Connect Cables to Alarm Rear Transition Module” on page 59.	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 a Server

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

▼ To Power On a Server

1. Verify that the power supply locking mechanisms 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.

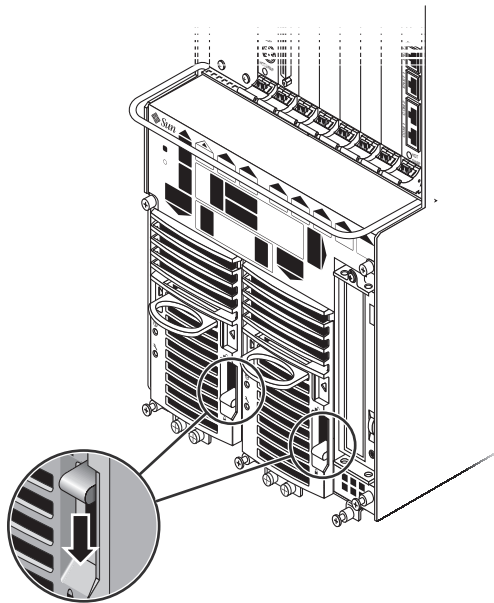


FIGURE 7-1 Locating the Power Supply Locking Mechanism on the Netra CT 810 Server

When the power supply locking mechanism is locked, the green LED on the power supply flashes, indicating that the power supply is powered on; however, the server is not powered on yet. The PDU LEDs on the system status panel should be as follows:

Green LED (Ⓢ) is ON

Amber LED (Ⓢ) is OFF

These states indicate that the power supply locking mechanisms are in the locked (down) position, and that the power distribution units are receiving power and functioning properly.

2. Locate the system status panel.

The location of the system status panel in a Netra CT 810 server and Netra CT 410 server are illustrated in [FIGURE 7-2](#).

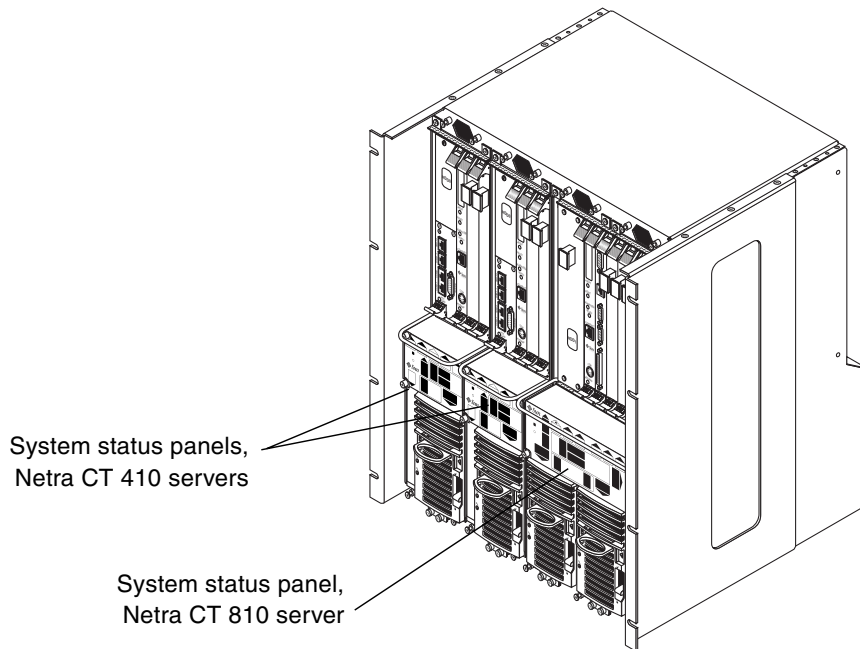


FIGURE 7-2 System Status Panel Locations

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

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

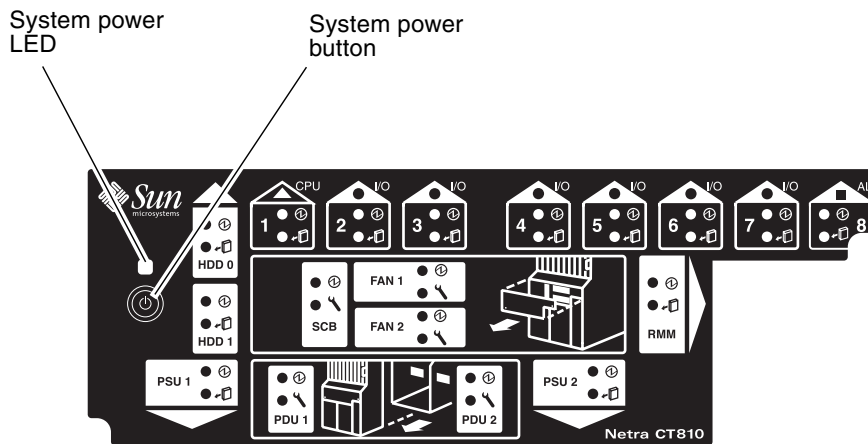


FIGURE 7-3 System Power Button and System Power LED Locations (Netra CT 810 Server)

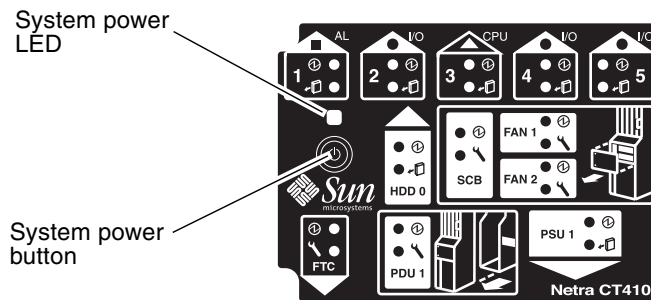


FIGURE 7-4 System Power Button and System Power LED Locations (Netra CT 410 Server)

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

5. Verify that the green power (Ⓢ) LEDs 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. See [Appendix A](#) for information.
7. Insert the Solaris OS DVD into the DVD drive.
8. Log in to your server. See “[Connecting a Terminal Console to a Server](#)” on page 76 for instructions on connecting a terminal to your server, if necessary.
9. Boot up the server through the DVD drive. As superuser, 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 board:

- If you have a terminal hookup on your server and the host CPU is functioning normally, 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 superuser, then execute a software command to bring the server down safely. Go to “[To Perform a Graceful Software Power-Down](#)” on page 85 for those procedures.
- If you do *not* have a terminal hookup to your server but your host CPU board is functioning normally, go through a *graceful hardware* power-down for your server. For a graceful hardware power-down, press the system power button for *less* than four seconds. This action starts an orderly power-down sequence in such a manner that no persistent OS data structures are corrupted. Applications in service might be abnormally terminated and no further services are invoked by the host CPU. Go to “[To Perform a Graceful Hardware Power-Down](#)” on page 86 for procedures.
- If you do *not* have a terminal hookup to your server and your host CPU board is *not* functioning normally, go through an *ungraceful hardware* power-down. For an ungraceful hardware power-down, press the system power button for *more* than four seconds. This action immediately shuts the system down without making any attempts to keep 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 stopped on the server.
2. Log in to your server as root.
See “[Connecting a Terminal Console to a Server](#)” on page 76 for 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, 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 units.
6. Determine if the green power (Ⓛ) LED on the power supply units are blinking.
 - If the green power LEDs on the power supply units are blinking, then the system is in standby mode. Go to [Step 7](#).
 - If the green power LEDs on the power supply units 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 action immediately shuts the system down without making any attempts to keep 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 mechanisms 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 to completely power off the server.

The green power (Ⓛ) LEDs on the power supply units 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 stopped on the server.**

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

The locations of the system status panels in the Netra CT 810 server and Netra CT 410 server are 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 a Netra CT 810 server, and [FIGURE 7-4](#) shows the system power button location for a Netra CT 410 server.

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

This action starts the orderly power-down sequence in such a manner that no persistent OS data structures are corrupted. Applications in service might be abnormally terminated and no further services are invoked by the host CPU. The system power LED blinks for several seconds, then goes off.

5. **Wait for several moments, then verify that the green power (Ⓛ) LEDs on the power supply units are blinking, indicating that the system is in the standby mode.**

[FIGURE 7-3](#) shows the system power LED location for a Netra CT 810 server, and [FIGURE 7-4](#) shows the system power LED location for a Netra CT 410 server.

6. **If you want to completely power off the Netra CT server, push the purple power supply unit locking mechanisms 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 to completely power off the server.

The green power (Ⓛ) LEDs on the power supply units go off (unlit), indicating that the system is now completely powered off.

Installing the Software

This chapter provides instructions for installing the Solaris OS and Netra CT server software on a Netra CT server. You will be installing software from Solaris OS CDs or DVD.

This chapter contains the following topics:

- [“Installing the Solaris Operating System” on page 88](#)
- [“Preparing Network Installations of the Solaris Operating System” on page 93](#)
- [“Installing Diskless Clients” on page 96](#)

Note – The Solaris OS is ordered and shipped separately from a Netra CT server.

If you have a Netra CT 810 server and a DVD-ROM drive installed in or connected to the server, you can install the software using the instructions in [“To Install the Solaris Operating System” on page 90](#). Also, you can 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 a Netra CT 410 server.

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

Installing the Solaris Operating System

This section explains how:

- [“To Prepare for the Solaris Operating System Installation” on page 88](#)
- [“To Install the Solaris Operating System” on page 90](#)

▼ To Prepare for the Solaris Operating System Installation

Before installing the Solaris OS, review [TABLE 1](#) to prepare for the installation.

TABLE 1 Solaris Operating System Installation Preparation

Required for Installation	Information
Solaris 9 Operating System Media Kit (09/05)	You will need a copy of Solaris 9 Operating System Media Kit that was released in September 2005. You will use the Solaris installation CDs and the Solaris Supplement CDs for the installation.
Answers to Solaris installation questions	<p>During the Solaris OS installation, you will be prompted to enter data for the following:</p> <ul style="list-style-type: none">• Network connectivity• DHCP• Host name• IP address• Net mask (255.255.255.0 is the default)• IPv6• Default router• Kerberos• Time zone• Name service (NIS+, NIS, DNS, LDAP or None)• Domain name• Name server• Date and time• Root password <p>Note – Refer to the Solaris installation documentation for information about these installation questions.</p>
Solaris installation documentation	<p>For specific details about installing the Solaris OS, refer to:</p> <ul style="list-style-type: none">• <i>Solaris 9 Installation Guide</i> (806-5205)• <i>System Administration Guide: Basic Administration</i> (806-4073)• <i>System Administration Guide: Advanced Administration</i> (806-4074). <p>These manuals shipped with your Solaris Media Kit and can be viewed on the Solaris documentation web site: http://docs.sun.com/</p>
Latest OS software and board firmware patches	Download any required software and firmware patches. Refer to the <i>Netra CT Server Release Notes</i> (819-2739) for the latest patches.
A server accessible from the network	To install the software, you will need to prepare a patched network installation server. You will need a server with adequate disk space that is accessible to the Netra CP2500 board over the network.

▼ To Install the Solaris Operating System

1. Power on the Netra CT server.

See “[Powering On a Server](#)” on page 81 for instructions.

2. Make the necessary connections to the TTY A port on the host rear transition module on your server.

See “[Connecting a Terminal Console to a Server](#)” on page 76.

Note – Do not install the Solaris OS through the alarm card or alarm rear transition module.

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, enter:

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

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

4. Insert the Solaris OS DVD or CD 1 of 2 into the applicable drive.

5. At the ok prompt, enter the following command to boot from the Solaris OS DVD or CD:

```
ok boot cdrom
```

6. If the boot cdrom command does not work on your system (device cannot be located), use the probe command to locate the device, then enter the boot command with the device name and path, as in the following example.

```
ok probe-scsi-all  
  
/pci@1f,700000/scsi@2  
  
Target 6  
  
Unit 0 Removable Read Only device  
  
ok boot /pci@1f,700000/scsi@2/disk@6,0:f
```

7. Follow the prompts and enter your system information.

After entering configuration information, you are asked if you want to go through a Default Install or a Custom Install.

8. Choose Custom Install.

At the product selection portion of the installation process, you 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
```

9. 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.

At the product component portion of the installation process, you see a screen display such as the following:

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

[ ] 1 Solaris 9 Software Supplement CD 0.0 MB
[ ] 1.0 Java3D 1.3.1 24.7 MB
[ ] 1.1 OpenGL 1.3 105.7 MB
[ ] 1.2 RSC 2.2.3 8.8 MB
[ ] 1.3 Solaris On Sun Hardware Documentation 91.6 MB
[ ] 1.4 SunATM 5.1 9.1 MB
[ ] 1.5 Sun Fire B10n Load Balancing Blade 1.1 0.2 MB
[ ] 1.6 SunForum 3.2 27.3 MB
[ ] 1.7 SunHSI PCI 3.0 0.5 MB
[ ] 1.8 SunVTS 5.1 PS10 122.4 MB
[ ] 1.9 SSP 3.5 32.5 MB
[ ] 1.10 Capacity on Demand 1.0 1.1 MB
[ ] 1.11 Netra ct Platform 1.0 4.1 MB
[ ] 1.12 Lights Out Management 2.0 0.7 MB
[ ] 1.13 Netra t1lxx Alarms 2.0 0.3 MB
Enter the number corresponding to a component to view its information.
Enter n when finished [n]
```

10. Choose *at least* 1.8 (SunVTS 5.1) and 1.11 (Netra ct Platform 1.0) from this screen.

The remaining product components listed for the Netra CT server are optional.

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

```
Available Solaris Software groups:
```

1. Entire Group Plus OEM (2005.8 MB)
2. Entire Group (1935.9 MB)
3. Developer Group (1513.1 MB)
4. End User Group (1068.0 MB)
5. Core Group (308.5 MB)

```
Select the number corresponding to the desired Solaris software group [1]
```

11. Choose the first selection (Entire Group plus OEM) on this screen.

After you choose the Entire Group plus OEM selection, you 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]
```

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

13. Through the TTY A port on the host rear transition module, install the Solaris OS on every server in the chassis.

You must install the Solaris OS on every Netra CT server that is installed in the chassis, for each server to function. Refer to the documentation that you received with the Solaris OS for installation instructions.

14. Download and install additional patches.

Refer to the *Netra CT Server Release Notes* (819-2739) for the latest information on the patches available for the Netra CT server and the board firmware. You can download the document 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 be added and existing patches might be revised.

Preparing Network Installations of the Solaris Operating System

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 allocate 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 are installed (by convention, this directory is in the server’s `/export` directory.)

Note – The following procedures assume that your system mounts the DVD and CD media using the Solaris™ Volume Manager software. If you disabled the Volume Manager software, 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, continue with [“To Create a Network Installation Image Using the Solaris 9 DVD” on page 94.](#)
- If you are creating a patched network image using the Solaris CDs, continue with [“To Create a Network Installation Image Using the Solaris 9 CDs” on page 95.](#)

▼ 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
```

In place of *image_directory*, enter 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 with the standard Solaris network installation procedure.

Note – If you install diskless clients, follow the procedures in [“Installing Diskless Clients” on page 96](#) to set up the boot server and to add diskless clients.

For more information, refer to 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 at 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
```

In place of *image_directory*, enter 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
```

In place of *image_directory*, enter 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 with the standard Solaris network installation procedure.

Installing Diskless Clients

The following procedures describe 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 superuser password on your diskless server to perform the following tasks.

▼ To Create a Boot Server For Diskless Clients

Note – This procedure sets up a boot server by starting the operating system services required for diskless clients. Once you set up the boot server, see [“To Add a Diskless Client” on page 100](#) 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 System” on page 93](#) to create a patched network installation server.

Note – When setting up the boot server for diskless clients, make sure that you allocate 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 are 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 `smossservice` 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 type the entire text string shown.

```
# ./smossservice 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 superuser 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 `smossservice(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 type the entire text string shown.

```
# /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 type the entire text string shown.

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

# mkdir '/export/root/templates/Solaris_9/SUNW2jdrdt_4.1_all'

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

# tar cvf - ./SUNW2jdrdt | ( cd '/export/root/templates/Solaris_9/SUNW2jdrdt_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 type the entire text string shown.

```
# /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 SUNW2jdrdt

# /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* 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* to download and install the patches.

11. After the patches are installed, follow the procedure in [“To Add a Diskless Client” on page 100](#).

▼ To Add a Diskless Client

1. Prepare a boot server for the diskless clients.

If you have not created a boot server for the diskless clients, follow the steps in [“To Create a Boot Server For Diskless Clients” on page 97](#) before continuing with the following 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 fails 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:

```
# ./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 swappsize=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 are 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* = 192.168.1.2
- *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 192.168.1.2 -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 must type your superuser password again after typing this command. The installation process takes about 5 minutes per client and about 15-30 minutes for the OS 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 is successfully completed.

Messages similar to the following are displayed 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 boards, perform any board-specific software configuration procedures.**

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

2. **Install and configure any additional disk management software.**

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

Connecting External SCSI Devices

This appendix describes how to connect external SCSI devices to your server.

▼ 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 board, satellite CPU board, or host rear transition module (RTM).

- If you are connecting an external SCSI device to the SCSI port on an I/O board or satellite CPU board, refer to the documentation that came with that board for the location and type of the SCSI port on the board.
- If you are connecting an external SCSI device to the SCSI port on the host CPU RTM, the SCSI port is located on the host CPU RTM 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-1](#) shows the locations of the connectors on the host RTM. The host RTM is the same for both the Netra CT 810 server and the Netra CT 410 server; only the location in the rear board cage differs.

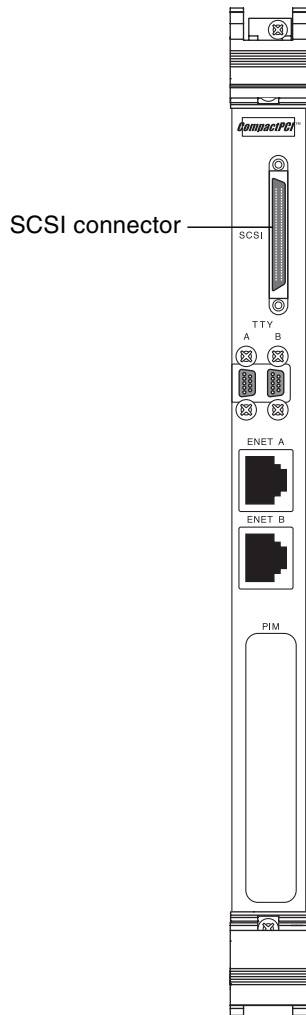


FIGURE A-1 SCSI Connector on the Netra CP2140 Host RTM

2. Determine if you need to use the very high density (VHDC) to SCSI 3 adapter cable included in the Netra CT server shipping kit.

- If you are connecting an external SCSI device to the host RTM, connect the VHDC side of the VHDC-to-SCSI 3 adapter cable to the SCSI port on the RTM (see [FIGURE A-1](#)).
- If you are connecting an external SCSI device to the SCSI port on an I/O board or satellite CPU board, refer to the documentation that came with the board to determine if the board uses a VHDC SCSI connector.

3. Obtain the SCSI cable from the external SCSI device's shipping 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 RTM, 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 board or satellite CPU board, refer to the documentation that came with the board to connect the SCSI cable to the SCSI port on that board.

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 RTM in a *Netra CT 810 server*, add 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 a Netra CT 810 server:
 - Upper hard 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 the RTM in the *Netra CT 410 server*, the only internal SCSI device you would have installed in your Netra CT 410 server would be a hard 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 board or satellite CPU board, 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 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 “[Assembling and Connecting Input Power Cable](#)” on page 64 or “[Powering On a Server](#)” on page 81).
- If the Netra CT server is powered *on*, perform the following instructions to enable the server to recognize the external SCSI device:

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

See “[Connecting a Terminal Console to a Server](#)” on page 76.

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

From the `cfgadm` list output, 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 board, and the `c2` name is for a SCSI controller on an I/O board installed in the system.

```
# cfgadm
Ap_Id          Type      ReceptacleOccupantCondition
AL-1           mcd/fhs  connectedconfiguredok
CPU            bridge/fhsconnectedconfiguredok
IO-2           unknown  empty      unconfiguredunknown
IO-4           unknown  empty      unconfiguredunknown
IO-5           unknown  disconnectedunconfiguredok
c0             scsi-busconnectedconfiguredunknown
c0::disk/c0t0d0 disk     connectedconfiguredunknown
c2            scsi-busconnectedconfiguredunknown
usb0/1         unknown  empty      unconfiguredok
usb0/2         unknown  empty      unconfiguredok
usb0/3         unknown  empty      unconfiguredok
usb0/4         unknown  empty      unconfiguredok
usb1/1         unknown  empty      unconfiguredok
usb1/2         unknown  empty      unconfiguredok
usb1/3         unknown  empty      unconfiguredok
usb1/4         unknown  empty      unconfiguredok
```

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

```
# devfsadm -c disk
```

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

```
# devfsadm -c tape
```

After using the `devfsadm` command, you can use the devices you connected to the adapter's SCSI controller. Refer to the `devfsadm(1M)` man page for 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      ReceptacleOccupantCondition
AL-1           mcd/fhs  connectedconfiguredok
CPU            bridge/fhsconnectedconfiguredok
IO-2           unknown  empty      unconfiguredunknown
IO-4           unknown  empty      unconfiguredunknown
IO-5           unknown  disconnectedunconfiguredok
c0             scsi-busconnectedconfiguredunknown
c0::dsk/c0t0d0 disk     connectedconfiguredunknown
c2             scsi-busconnectedconfiguredunknown
c2::dsk/c2t4d0 CD-ROM   connectedconfiguredunknown
usb0/1         unknown  empty      unconfiguredok
usb0/2         unknown  empty      unconfiguredok
usb0/3         unknown  empty      unconfiguredok
usb0/4         unknown  empty      unconfiguredok
usb1/1         unknown  empty      unconfiguredok
usb1/2         unknown  empty      unconfiguredok
usb1/3         unknown  empty      unconfiguredok
usb1/4         unknown  empty      unconfiguredok
```

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.

alarm rear transition module A module that extends the alarm card connectors to the rear of the chassis.

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 (cPCI) 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 drives, I/O boards, and power supplies. Note that a server, with all of its boards and other components, is not a FRU. However, an empty server is.

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 boards from and replace boards 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 rear of the server. The CPU board, I/O boards and storage devices plug into the midplane from the front, and the RTMs 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

PCI Acronym for the Peripheral Component Interconnect. See *CompactPCI (cPCI)*.

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

PIM Acronym for the PCI mezzanine card (PMC) I/O module (PIM).

PMC Acronym for the PCI mezzanine card (PMC).

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 module (RTM) The rear transition modules 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.

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