



Netra™ CT Server Hardware Upgrade Guide

For the Netra CT 410 Server and Netra CT 810 Server

Sun Microsystems, Inc.
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Preface

This guide contains procedures and important information for upgrading a Netra™ CT 410 server or Netra™ CT 810 server with the new Netra™ CP2500 board. This guide provides high-level processes and procedures for replacing an operational:

- Netra™ CP2140 cPCI host board and rear transition module
- Netra™ CP2160 cPCI satellite board and rear transition module

If you want to use the Netra CP2500 board as a node processor in a third-party cPSB chassis, refer to the *Netra CP2500 Board Installation and Technical Reference Manual*.

If you want to add a Netra CP2500 board to a new system, refer to the *Netra CT Server Service Manual*. New systems have the required software and hardware preinstalled, and the Netra CP2500 board hardware is preconfigured. New systems are shipped with one Netra CP2500 board installed in the host slot.

Before You Read This Document

The intended reader of this guide is an experienced system administrator or service technician 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.

This guide assumes that you have read other documentation and marketing materials and have determined that the Netra CP2500 board is an appropriate upgrade for your systems.

How This Document Is Organized

- [Chapter 1](#) provides important information, including configurations and limitations, for upgrading your systems. Before you upgrade your systems, read this chapter.
- [Chapter 3](#) describes how to upgrade the firmware and software in preparation for installing a Netra CP2500 board in a Netra CT 410 or Netra CT 810 server.
- [Chapter 2](#) describes how to hot-swap hardware in a Netra CT 410 or Netra CT 810 server to support one or more Netra CP2500 boards.

Using UNIX Commands

This document is a high-level guide for upgrading existing systems and does not contain detailed information about basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

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

<http://docs.sun.com>

Shell Prompts

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

Typographic Conventions

Typeface*	Meaning	Examples
<i>AaBbCc123</i>	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.

Related Documentation

The documents listed as online are available at:

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

Application	Title	Part Number	Format	Location
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

Documentation, Support, and Training

Sun Function	URL	Description
Documentation	http://www.sun.com/documentation/	Download PDF and HTML documents, and order printed documents
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Netra CT Server Hardware Upgrade Guide, part number 819-2745-10

Planning Your Upgrade

This chapter provides important information, including requirements, configurations, and limitations for upgrading your systems. Before you upgrade your systems, read this chapter.

This chapter contains the following topics:

- [“Netra CP2500 Board Features” on page 2](#)
- [“System Requirements” on page 2](#)
- [“Configurations” on page 7](#)

Netra CP2500 Board Features

The Netra CP2500 board is the next-generation processor board for use in Netra CT 410/810 servers.

The Netra CP2500 board and the corresponding rear transition modules (RTMs) are compatible (will not cause damage) with installations of the Netra CP2140 board or Netra CP2160 board. Some features and functions of the Netra CP2500, however, are not available or usable in these installations. In addition to the board and RTM, other hardware upgrades are required to use the Netra CP2500 board.

The Netra CP2500 board is not designed to be a one-to-one feature-compatible hardware replacement for the host Netra CP2140 cPCI board or satellite Netra CP2160 cPCI board. Before replacing a host Netra CP2140 cPCI board or satellite Netra CP2160 cPCI board, compare the features to ensure that the Netra CP2500 board provides the features you want for your system.

The Netra CP2500 board software is fully feature-compatible with other boards when installed in a Netra 810 server or Netra 410 server chassis. All applications you currently run can be run in a server upgraded with the Netra CP2500 board. Software and firmware upgrades are necessary. For information about the software and firmware upgrades that are necessary, refer to *Netra CT410/810 Server Release Notes* (819-2739).

System Requirements

This section describes the minimum power-supply availability, firmware, software, and hardware requirements necessary to install a Netra CP2500 board in a system that has no other Netra CP2500 boards installed.

After upgrading the firmware and software, you can replace a host or satellite board with a Netra CP2500 board.



Caution – The *maximum* capacity of any Netra CT server is three Netra CP2500 boards; this maximum includes the host board. Do not install more than three Netra CP2500 boards, even in a Netra 810 server, which has additional slots.

Firmware and Software Requirements

Regardless of whether your system replaces a Netra CP2140 board or Netra CP2160 board with a Netra CP2500 board, the same Solaris OS version is required.

The following software upgrades are necessary:

- CPU and alarm card firmware
- Solaris 9 OS
- Solaris 9 OS patches

Optionally, you might want to include the `Acceptable_Fru_Types` configuration from the alarm card command line interface (CLI).

For instructions on upgrading the software and firmware, refer to *Netra CT410/810 Server Release Notes* (819-2739).

Note – Upgrade the hardware before upgrading the software and firmware.

CPU Board Firmware Rules

Different boards can be mixed within a Netra CT 410/810 system. However, a board might fail to function if the following rules are not followed:

- The firmware on all boards in the systems must be at the same level.
- If different versions of boards are used in a system, the firmware level for all must be equal to or greater than the highest *minimum* required by any board in the system.

Hardware Requirements



Caution – The maximum number of Netra CP2500 boards that you can install on a 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 systems are customized or configured with third-party components. To support the maximum number of boards, your system must have enough power supply. To calculate power-supply requirements, see [“Power Supply Requirements” on page 5](#).

Host Requirements

The following hardware components are required and included in the host upgrade kits, based on your server chassis:

- Netra CP2500 board motherboard with 2 gigabytes of SDRAM memory
- Netra CP2500 rear transition module (RTM-H)
- High-speed fan trays

Note – The high-speed fan trays for the Netra CT 410 are different from the high-speed fan trays for the Netra CT 810. When ordering host upgrade kits, be sure to order the correct kit to match your server.

Satellite Requirements

The following hardware components are required to install a satellite board:

- Netra CP2500 board with 2 gigabytes of SDRAM memory
- Netra CP2500 rear transition module (RTM-S)
- High-speed fan trays, if fan trays have not been upgraded

Optional Components

After you upgrade your systems with a Netra CP2500 board and required components, you might want to add boards immediately or later to increase performance. After you have upgraded the required hardware components, you can add boards up to the maximum allowed. The following are the requirements for adding each board.

- Netra CP2500 board with 2 gigabytes of SDRAM memory
- Satellite Netra CP2500 RTM-S board
- High-speed fan trays
- Air-blocking filler panels

Note – Netra CP2500 host boards and rear transition modules for host boards (RTM-H) are not provided as optional components because they are available in the host upgrade kits.

Power Supply Requirements

For standard and supported configurations of the Netra 410/810 servers, the power supply is sufficient to accommodate up to three Netra CP2500 boards.

If your systems are customized or configured with third-party components, the number of boards you can install could be fewer than three, based upon the power supply. In this case, calculate your system's power requirements to verify you have sufficient power for the number of boards you want to install in your system. Contact your original equipment manufacturer's (OEM) customer support for information about their components.

▼ To Calculate the Power Supply Requirements

1. Compute the total cPCI power requirements of your planned configuration.

TABLE 1-1 shows the power requirements of Sun components; use the manufacturer's peak power data for any third-party components. Make sure that you include all add-in components, such as memory configurations, PCI mezzanine card (PMC) add-on boards, and RTMs.

2. Compare your configuration's power requirements with the power available in TABLE 1-2 (Netra 810 server) or TABLE 1-3 (Netra 410 server).

- If the required power for your configuration is less than the power available, your configuration can be supported in the system.
- If the required power for your configuration exceeds the power available, your configuration cannot be supported. Modify the configuration.

Refer to the *Netra CP2500 Board Installation and Technical Reference Manual* for additional information about power requirements.

Power Required by Sun cPCI Components

The following table shows the power required for Sun-supplied cPCI components.

TABLE 1-1 Sun cPCI Component Power Requirements

cPCI Component	3.3 V	5.0 V	+12 V	-12 V	Notes
CP2500 with 2GB memory	5.5 A	8.1 A	0.45 A	-	
CP2500 RTM-H	-	1.7 A	-	-	
CP2500 RTM-S	-	1.0 A	-	-	
PMC/PIM on CP2500	-	2.0 A	-	-	

TABLE 1-1 Sun cPCI Component Power Requirements (*Continued*)

cPCI Component	3.3 V	5.0 V	+12 V	-12 V	Notes
CP2140 + CPU Transistion Card (CTC)	3.4 A	3.0 A	-	-	
CP2160 + RTM	3.4 A	3.0 A	-	-	
PMC on CP2140 or CP2160	2.27 A	1.5 A	-	-	
Ethernet/SCSI Adapter I/O board	1.5 A	1.5 A	-	-	Estimate
PMC on CP2500	-	1.33 A	-	-	

Power Available to Slots

Installed cPCI boards must not exceed the power available to the slots. [TABLE 1-2](#) and [TABLE 1-3](#) show power availability for cPCI boards in Netra CT 810 servers and Netra CT410 servers.

TABLE 1-2 Netra CT 810 cPCI Slot Power Availability

Power Measurement	3.3 V	5.0 V	+12 V	-12 V	Notes
cPCI power available to all boards, excluding the alarm card	36 A	36 A	4.8 A	700 mA	Total power requirements of cPCI boards must not exceed this line
Per-slot constraints	12 A	22.6 A	1.2 A	100 mA	Maximum current per slot

TABLE 1-3 Netra CT 410 cPCI Slot Power Availability

Power Measurement	3.3 V	5.0 V	+12 V	-12 V	Notes
cPCI power available	18 A	36 A	4.8 A	400 mA	Total power requirements of cPCI boards must not exceed this line
Per-slot constraints	12 A	22.6 A	1.2 A	100 mA	

Configurations

This section describes supported configurations. Use the information in this section to determine which allowable configuration matches your system and upgrade needs.

Note – You can install up to three Netra CP2500 boards. This maximum is set due to power-supply limitations. For more information, see [“Power Supply Requirements” on page 5](#).

CPU Role

The following sections describe the roles of the Netra CP2500 board when used as a host or a satellite CPU.

Host Board

When a Netra CP2500 board is in the host slot in a Netra CT 410 or Netra CT 810, it acts as the system host CPU. In this role, it is a performance upgrade for the Netra CP2140 host board. All applications that run on the Netra CP2140 board run on a Netra CP2500 host board.

As a host, the Netra CP2500 board manages local resources including the field-replacable units (FRUs) connected to the host’s own SCSI interfaces. With the alarm card, the host board acts as the hot-swap controller and manages the dynamic reconfiguration of the following FRUs on the cPCI bus:

- Alarm card
- Netra CP2160 board in a non-host I/O slot
- Netra CP2500 board in the host slot and in a non-host slot
- Nonintelligent cPCI I/O boards

Satellite Board

When a Netra CP2500 board is in a non-host slot, it acts as a satellite. In this role, it is a performance upgrade for the Netra CP2160 satellite board. The Netra CP2500 board can be managed by either a host Netra CP2140 or a host Netra CP2500 board. All applications that run on the Netra CP2160 run on a Netra CP2500.

Netra CT 810 Server Configurations

The Netra CT 810 server rear access is supported. You can install a maximum of three Netra CP2500 boards. [TABLE 1-4](#) lists the supported configurations.

For new Netra CT 810 servers ordered from Sun, one Netra CP2500 board is preinstalled in the host slot.

TABLE 1-4 Netra CT 810 Server Configurations with Netra CP2500 Boards

Slot 1 (Host)	Slots 2 through 5	Slots 6 and 7	Slot 8
CP2140 + CTC	CP2160 + RTM	CP2160 + RTM	Alarm card
<i>or</i>	CP2500 + RTM-S		
CP2500 + RTM-H	cPCI I/O board	cPCI I/O board	



Caution – In the Netra CT 810, the Netra CP2500 board is not supported in slot 6 or slot 7. This configuration results in higher operating temperatures that trigger equipment shut down.

Netra CT 410 Server Configurations

The Netra CT 410 server rear access (diskfull) is supported. You can install up to three Netra CP2500 boards. [TABLE 1-5](#) lists the supported configurations.

For new Netra CT 410 servers ordered from Sun, one Netra CP2500 board is preinstalled in the host slot.

TABLE 1-5 Netra CT 410 Server Configurations with Netra CP2500 Boards

Slots 1 and 2	Slot 3 (Host)	Slot 4	Slot 5
Alarm card	CP2140 cPCI board + CTC	CP2160 + RTM	CP2160 + RTM
	<i>or</i>	<i>or</i>	<i>or</i>
	CP2500 + RTM-H	CP2500 + RTM-S	CP2500 + RTM-S

Upgrading the Hardware

This chapter describes how to upgrade the hardware in a Netra CT 810/410 server to support one or more Netra CP2500 board boards.

This chapter contains the following topics:

- [“Preparing to Upgrade the Hardware” on page 10](#)
- [“Upgrading the Hardware” on page 10](#)
- [“Configuring the Hardware” on page 37](#)
- [“Troubleshooting” on page 39](#)

Preparing to Upgrade the Hardware

Before upgrading hardware, make sure the following steps are completed:

1. Make sure your system meets the minimum requirements, as detailed in [Chapter 1](#).
2. Obtain all of the required hardware; inspect the shipment to ensure all components are present and undamaged.
3. Obtain or access online the following related documentation:
 - *Netra CT Server Service Manual* (819-2741)
 - *Netra CP2500 Board Release Notes* (819-1748)
 - *Netra CP2500 Board Installation and Technical Reference Manual* (819-1747)
 - *Netra CP2500 RTM Release Notes* (819-1752)
 - *Netra CP2500 RTM Installation and Technical Reference Manual* (819-1753)

Upgrading the Hardware

The following information provides instructions for upgrading hardware components to install new fan trays, to replace host Netra CP2140 boards and satellite Netra CP2160 boards with Netra CP2500 boards, and to replace the rear transition modules.

The following procedures assume that you are performing the upgrades in hot-swap mode. Be sure to observe the rules and restrictions for hot-swapping boards and their corresponding rear transition modules. For these, refer to the *Netra CT Server Service Manual*.

After you complete the hardware upgrades and replace a host or satellite board in a system with a Netra CP2500 board, you can install additional boards, up to the maximum per system, immediately or at a later date. To add Netra CP2500 boards to a system that has already been upgraded and can support additional Netra CP2500 boards, refer to the *Netra CT Server Service Manual*.



Caution – Installed boards must not exceed power available to the slots. If you have a customized system that contains third-party components, see [“Power Supply Requirements” on page 5](#) for important information.

For detailed instructions, including illustrations and safety precautions, refer to the following documentation:

- *Netra CP2140 Technical Reference and Installation Manual* (816-4908)
- *Netra CP2160 Technical Reference and Installation Manual* (816-5772)
- *Netra CP2500 Technical Reference and Installation Manual* (819-1747)

Installing New Fan Trays

New high-speed fan trays are required to meet cooling requirements for Netra CP2500 boards. The fan trays for the Netra CT 810 are different from those required in the Netra CT 410. Make sure you install the correct trays in the corresponding server.



Caution – *Do not* use other fan trays with the Netra CP2500 board. Overheating can cause the server to shut down, resulting in downtime.

If you are upgrading a host board to a Netra CP2500, the fan trays are included with the host upgrade kit.

To upgrade the fans, remove each existing fan tray and install each new high-speed fan tray individually as detailed in the following steps.

▼ To Remove an Existing Fan Tray

1. **Establish a connection and log in to the drawer alarm card.**
2. **To check the fan trays to determine if they were previously upgraded to accommodate Netra CP2500 boards, enter the `showfru` command at the alarm card CLI prompt.**

```
cli> showfru fan number Sun-part-number
```

where *number* is either number 1 or 2 fan tray and *Sun-part number* is the part number (FRU ID).

The new fan tray part numbers are as follows:

- 540-6419 for the Netra CT 810 servers
- 540-7115 for the Netra CT 410 servers

If the correct high-speed fan tray part number displays, and the part numbers on the fan trays match, skip the procedures for upgrading the fan trays and continue with the steps in “[Removing a Host or Satellite Board](#)” on page 18.

3. Attach the antistatic wrist strap.

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

The location of the system status panel in the Netra CT 810 server and Netra CT 410 server is illustrated in [FIGURE 2-1](#).

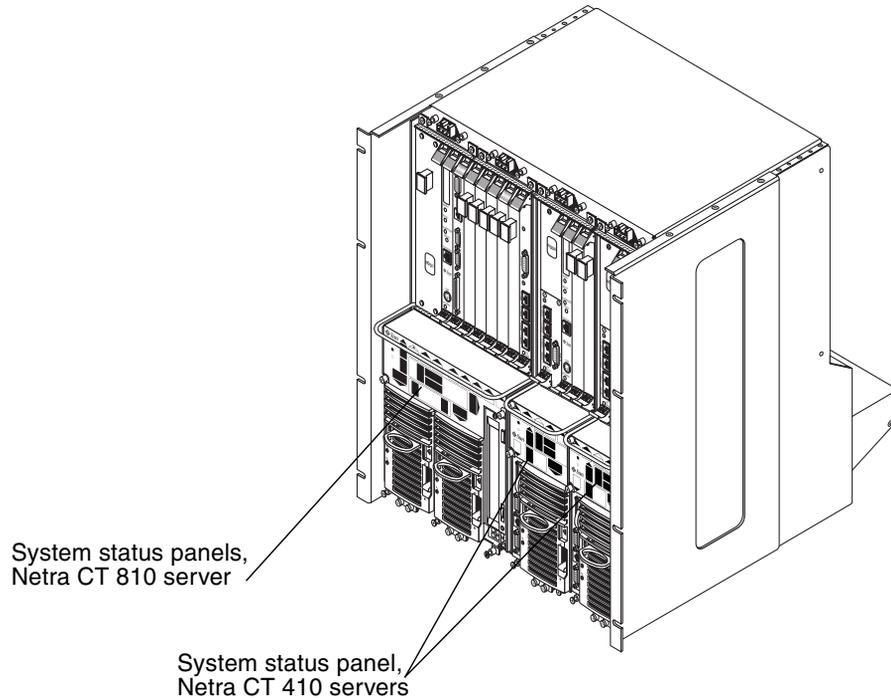


FIGURE 2-1 System Status Panel Locations

5. Using a No. 2 Phillips screwdriver, loosen the two captive screws that hold the system status panel in place.

[FIGURE 2-2](#) shows the location of the captive screws on the Netra CT 810 server, and [FIGURE 2-3](#) shows the location of the captive screws on the Netra CT 410 server.

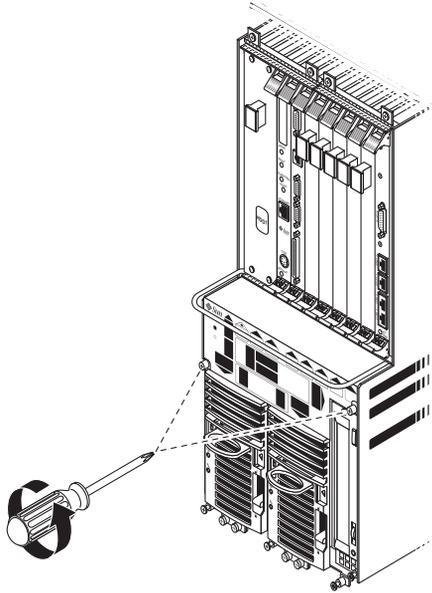


FIGURE 2-2 Removing the System Status Panel (Netra CT 810 Server)

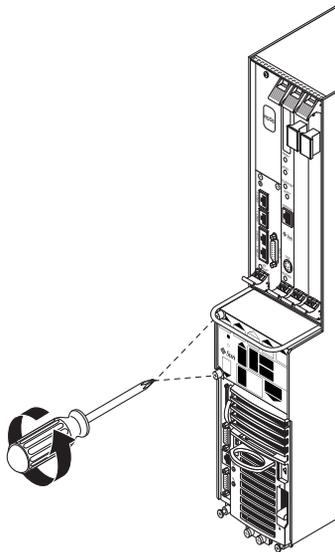


FIGURE 2-3 Removing the System Status Panel (Netra CT 410 Server)

6. Pull the system status panel away from the Netra CT server and place it on the electrostatic discharge mat.

You might need to pull on the screws to remove the system status panel from the server.



Caution – Remove and replace one fan tray at a time, so that cooling is provided to the server.

7. Remove the fan tray from the system.

- If you are removing a fan tray from a Netra CT 810 server, squeeze on the tabs on the sides of the fan tray handle to disengage the tray from the server (FIGURE 2-4).
- If you are removing a fan tray from a Netra CT 410 server, pull on the fan tray handle to disengage the tray from the server (FIGURE 2-5).

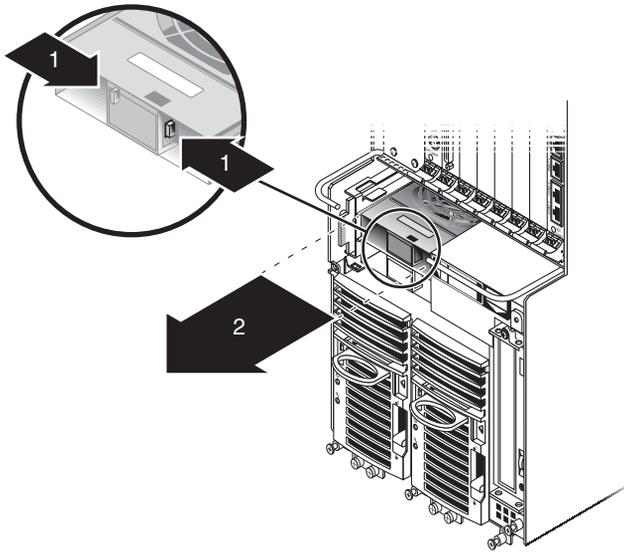


FIGURE 2-4 Removing a Fan Tray from a Netra CT 810 Server

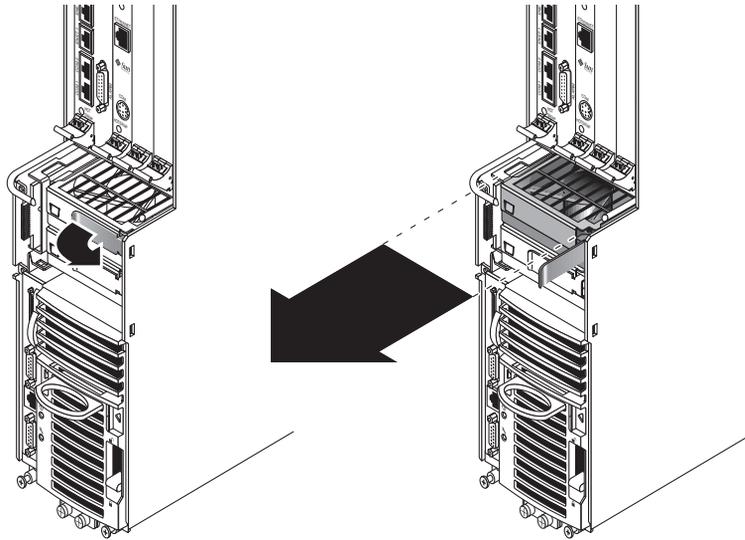


FIGURE 2-5 Removing a Fan Tray from a Netra CT 410 Server

▼ To Install a New Fan Tray

1. Insert the fan tray into the system:

- If you are installing a fan tray into a Netra CT 810 server, press the fan tray into place until it clicks into place ([FIGURE 2-4](#)).
- If you are installing a fan tray into a Netra CT 410 server, make sure the handle on the fan tray is flush against the fan tray, and press the fan tray handle to lock the tray into place ([FIGURE 2-5](#)).

2. Carefully position the system status panel into place on the system.

[FIGURE 2-6](#) shows how to position the panel into place on the Netra CT 810 server and [FIGURE 2-7](#) shows how to position the panel into place on the Netra CT 410 server.

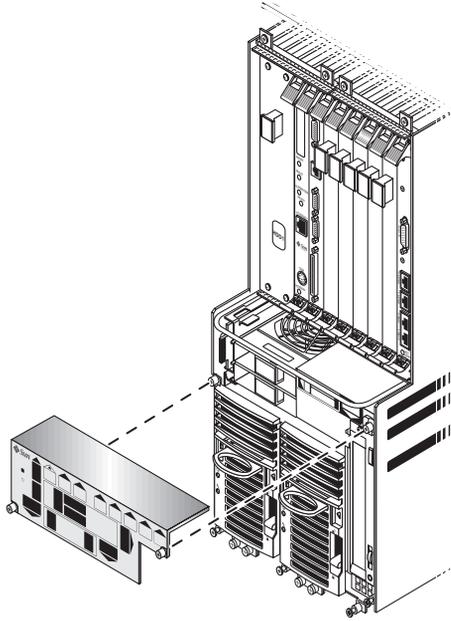


FIGURE 2-6 Positioning the System Status Panel (Netra CT 810 Server)

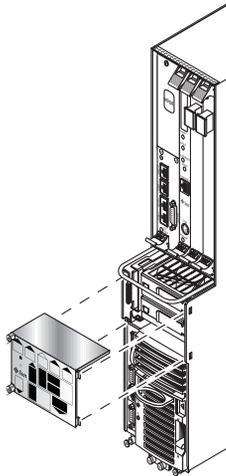


FIGURE 2-7 Positioning the System Status Panel (Netra CT 410 Server)

- 3. Push the system status panel into place against the server, paying special attention to the connector on the left side of the panel, making sure that the connector on the left rear of the system status panel mates fully with the system controller board.**

Note – Be careful not to press the power switch when you are pressing the left side of the system status panel into place.

- Using a No. 2 Phillips screwdriver, tighten the two captive screws to secure the system status panel to the system.

FIGURE 2-2 shows the location of the captive screws on the Netra CT 810 server, and FIGURE 2-3 shows the location of the captive screws on the Netra CT 410 server.

- Verify that the fan tray LEDs are lit properly.

FIGURE 2-8 shows the locations of the fan tray LEDs on the Netra CT 810 server and FIGURE 2-9 shows the locations of the fan tray LEDs on the Netra CT 410 server.

A fan tray is functioning properly if the amber Fault LED (🔌) on the system status panel is OFF and the green Power LED (🔌) is ON.

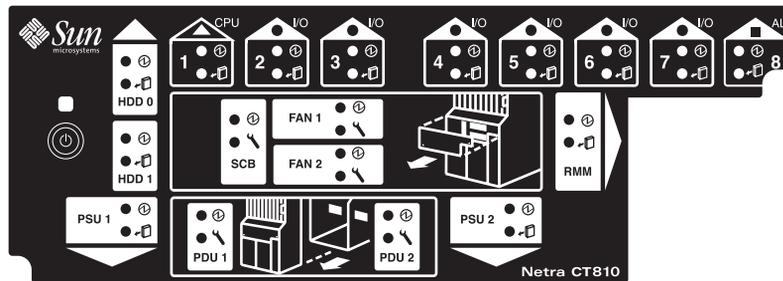


FIGURE 2-8 LEDs on the System Status Panel (Netra CT 810 Server)

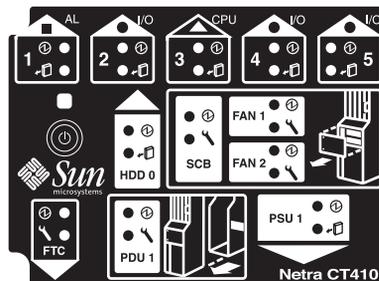


FIGURE 2-9 LEDs on the System Status Panel (Netra CT 410 Server)

Removing a Host or Satellite Board

If you are upgrading a host board *and* one or more satellite boards on the same system, perform the procedures first on the host board, then repeat the procedures for the satellite boards.



Caution – If a Netra CP2140 board is being used as host and not functioning as an I/O board, it cannot be hot-swapped.

Note – Only remove the existing board at this time; do not install the new board until after you install the new rear transition module.

[FIGURE 2-10](#) shows the locations of boards in the Netra CT 810 server. [FIGURE 2-11](#) shows the locations of boards in the Netra CT 410 server.

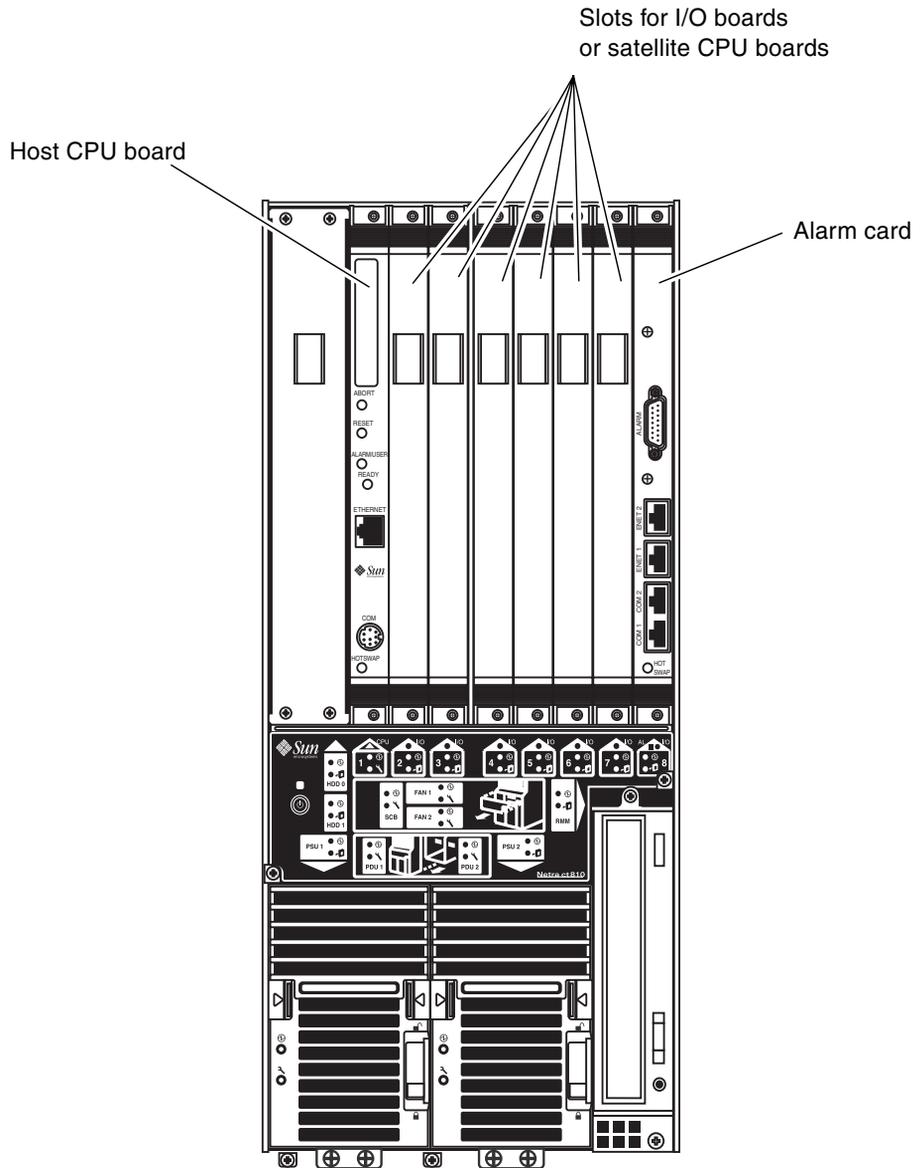


FIGURE 2-10 Slots for Boards in a Netra CT 810 Server

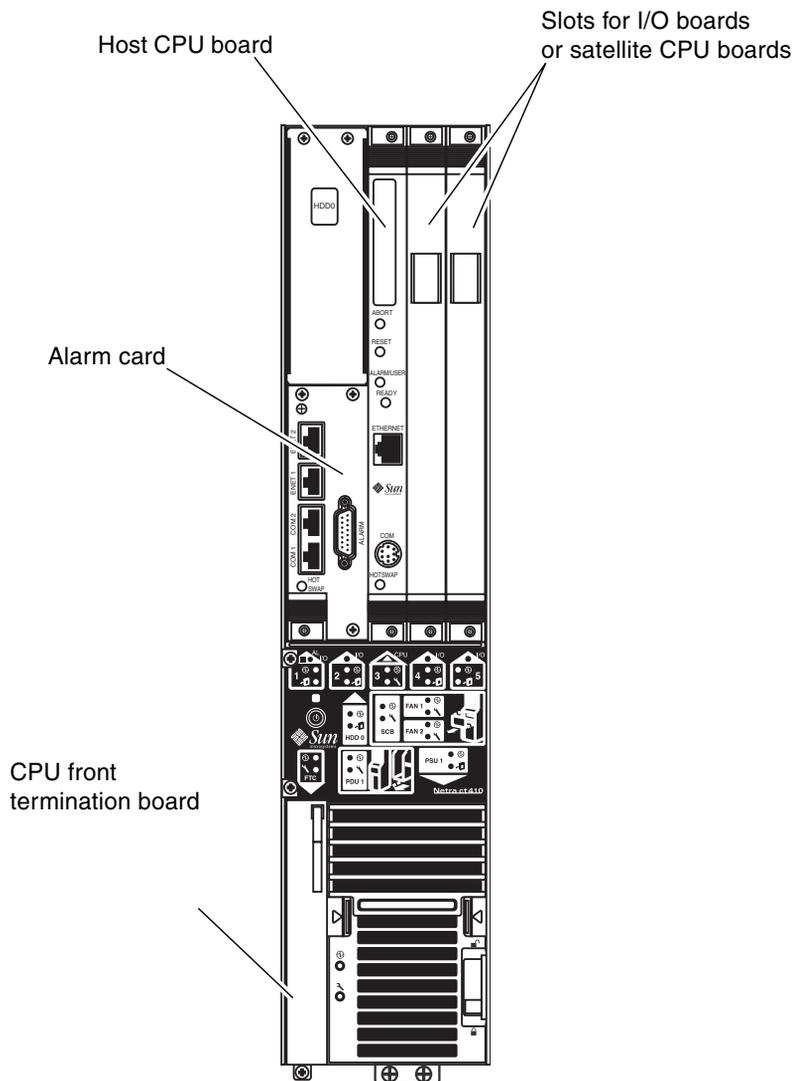


FIGURE 2-11 Slots for Boards in a Netra CT 410 Server

▼ To Remove a Board

1. Locate the board that you want to remove from the server.
2. Log in to the Netra CT server.

3. Determine the hot-swap state for the slot that holds the board you are about to remove.

To determine the current hot-swap state for the slots in your server, as superuser, enter:

```
# prtconf -v -P
```

- If in the output you see value 'basic' following the default-hotswap-mode line, then *all* of the slots in the Netra CT server have been set to *basic* hot-swap. You should see value 'disabled' for every slot in the system in this situation. Go to [Step 4](#) to manually disconnect the board before removing it.
- If in the output you see value 'full' following the default-hotswap-mode line, then *at least one* of the slots in the Netra CT server has been set to *full* hot-swap. You must look at the entries for individual slots to determine if they have been set to basic or full hot-swap mode in this situation:
 - If you see value 'enabled' following a <slot#-autoconfig> line, then that slot is set to *full* hot-swap. Skip to [Step 6](#) to remove the board.
 - If you see value 'disabled' following a <slot#-autoconfig> line, then that slot is set to *basic* hot-swap. Continue with [Step 4](#) to manually disconnect the board before removing it.

4. Identify the attachment-point ID that corresponds to the slot where you will be removing the board.

As superuser, enter:

```
# cfgadm
```

The attachment-point ID is shown in the first column of the readout; for example, the attachment-point ID for slot 4 in a Netra CT 810 server would be IO-4.

5. Use the `cfgadm(1M)` utility to disconnect power to the board:

```
# cfgadm -c unconfigure ap_id  
# cfgadm -c disconnect ap_id
```

where *ap_id* is the attachment-point ID. For example, to deactivate the board in slot 4, as superuser, enter:

```
# cfgadm -c unconfigure IO-4  
# cfgadm -c disconnect IO-4
```

6. Attach the antistatic wrist strap.
7. Using a No. 2 Phillips screwdriver, loosen the two captive screws inside the board's ejection levers, one on top and one on the bottom (FIGURE 2-12).

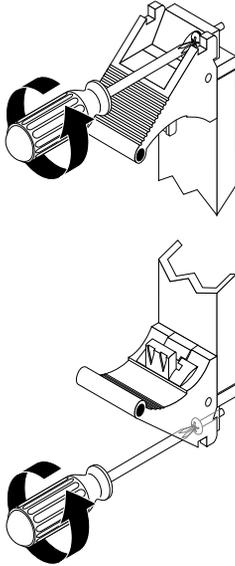


FIGURE 2-12 Loosening the Ejection-Lever Captive Screws

8. Unlock the ejection levers.



Caution – Only unlock the ejection levers at this point; do *not* unseat the board.

Note – If the server is set to the default full hot-swap mode, unlocking the ejection levers automatically starts the `cfgadm unconfigure` operation. If you decide that you do *not* want to remove the board, you must wait until the LEDs are in the correct state (as shown in [Step 10](#)), completely unseat the board, reseat it, then lock the ejection levers again to start the `cfgadm configure` operation. Simply locking the ejection levers after unlocking them will not start the driver attachment process.

9. Locate the LEDs on the system status panel for the board that you want to remove.

The system status panel on each server has LEDs that show the status of the board installed in each of the slots in the server. [FIGURE 2-13](#) shows the LEDs on the Netra CT 810 server and [FIGURE 2-14](#) shows the LEDs on the Netra CT 410 server.

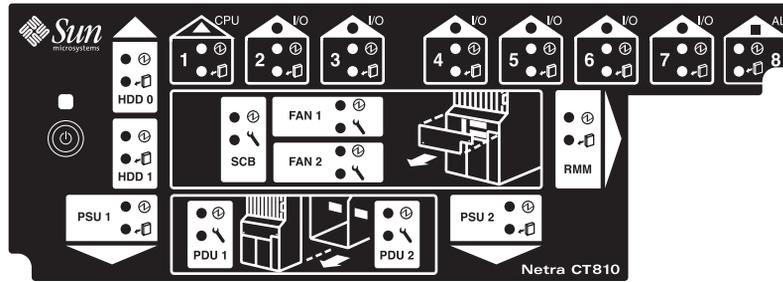


FIGURE 2-13 LEDs on the System Status Panel (Netra CT 810 Server)

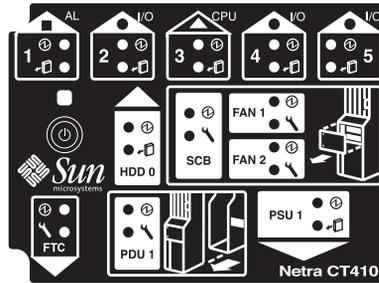


FIGURE 2-14 LEDs on the System Status Panel (Netra CT 410 Server)

10. Determine if you can remove the board safely at this time.

You can remove the board only if *all* of the LEDs are in the following states:

- Amber Okay to Remove LED on the system status panel is *on*
- Green Power LED on the system status panel is *off*
- Blue Hot-swap LED on the board is *on*



Caution – Do *not* remove a board unless all of the LEDs are in the proper states. It might take several seconds or minutes for the LEDs to transition to the proper states. If you remove a board when any of the LEDs are not in the proper state, the action could lead to unpredictable results.



Caution – Do not attempt to hot-swap any other boards until you see that the first board has been fully deactivated. In some situations, it could take several minutes for the board to completely deactivate. Hot-swapping more than one board at the same time could lead to unpredictable results.

11. When it is safe to remove the board, disconnect any cables connected to the board.

Note – Satellite boards have no cables attached.

12. Press outward on the two ejection levers on the board to unseat the board from the board cage.
13. Carefully slide the board out of the slot and place it on the electrostatic discharge mat.
14. Remove and replace the rear transition module as described in the following section.

Removing and Replacing the Rear Transition Module

The Netra CP2500 board requires a corresponding host or satellite rear transition module. If you are replacing a host board, the host rear transition module (RTM-H) is included in the upgrade kit.

[FIGURE 2-15](#) shows the location of rear transition modules on the Netra CT 810 server, and [FIGURE 2-16](#) shows the location of rear transition modules on the Netra CT 410 server.

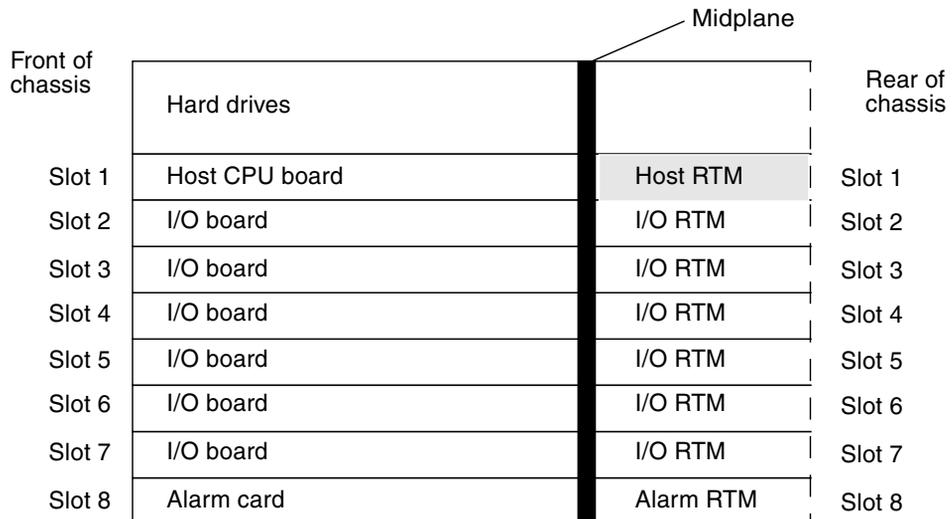


FIGURE 2-15 Locating a Rear Transition Module in a Netra CT 810 Server (Top View)

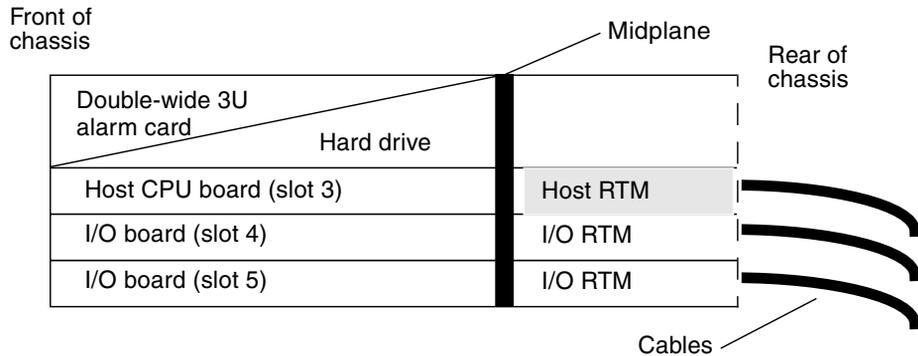


FIGURE 2-16 Locating a Rear Transition Module in a Netra CT 410 Server (Top View)

▼ To Upgrade a Rear Transition Module

1. With the antistatic wriststrap attached to you, locate the host rear transition module that you want to remove.
2. Unplug any cables attached to the rear transition module.
3. Using a No. 2 Phillips screwdriver, loosen the two captive screws inside the board or module's ejection levers, one on top and one on the bottom (FIGURE 2-12).
4. Press out on the ejection levers to unseat the module.
5. Slide the module out of the slot and place it on the electrostatic discharge mat.
6. Obtain the new rear transition module.

Make sure that you have the corresponding rear transition module:

- For a host Netra CP2500 board, obtain a host rear transition module (RTM-H).
- For a satellite Netra CP2500 board, obtain a satellite rear transition module (RTM-S).

These components have different part numbers, and the faceplates clearly indicate the RTM type.

7. If installing an RTM-S, confirm that the dip switch settings are all set to On.

The Netra CP2500 RTM-S module has two DIP switch banks (S1301 and S1302) that control the Ethernet network traffic through the RTM-S module. By default, the switches on these banks are all set to the ON position. In the ON position, all

network traffic gets routed out through the module's RJ-45 connectors. When these switches are set to the Off position, all network traffic is routed to the cPSB backplane network.

FIGURE 2-17 shows the location of the S1301 DIP switch bank, which is located on the component side of the RTM-S. FIGURE 2-18 shows the location of the S1302 DIP switch bank, which is located on the solder side of the RTM-S.



Caution – Never set the DIP switches on a Netra CP2500 RTM-H module. Sun does not support changing the RTM-H DIP switches from their default settings.

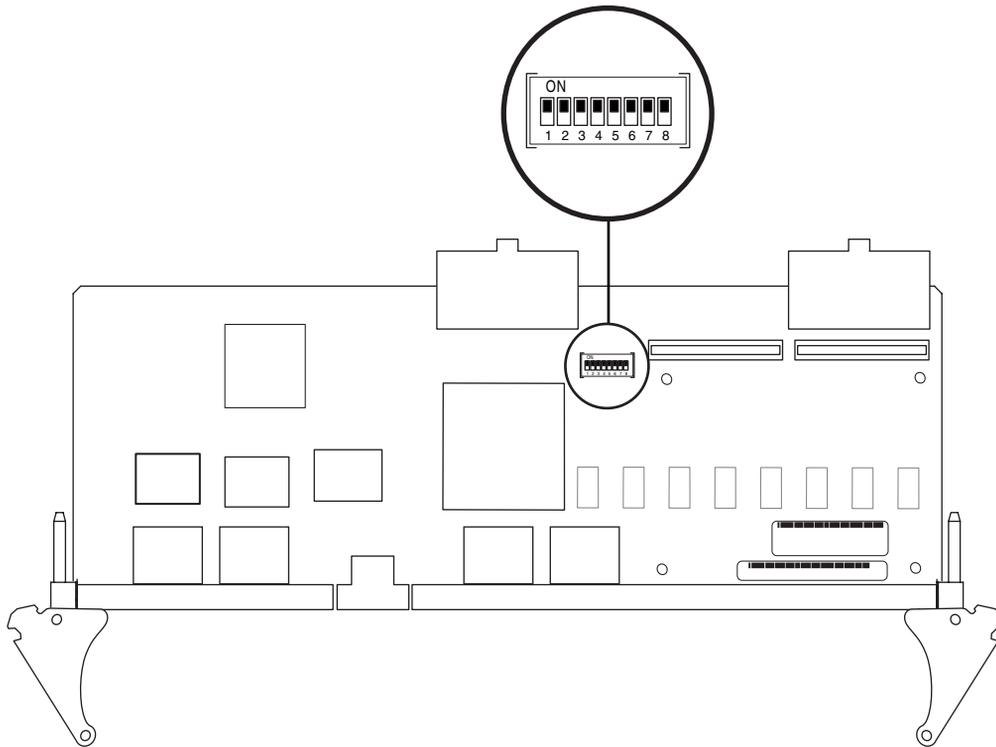


FIGURE 2-17 S1301 DIP Switch Bank Location on the RTM-S (Component Side)

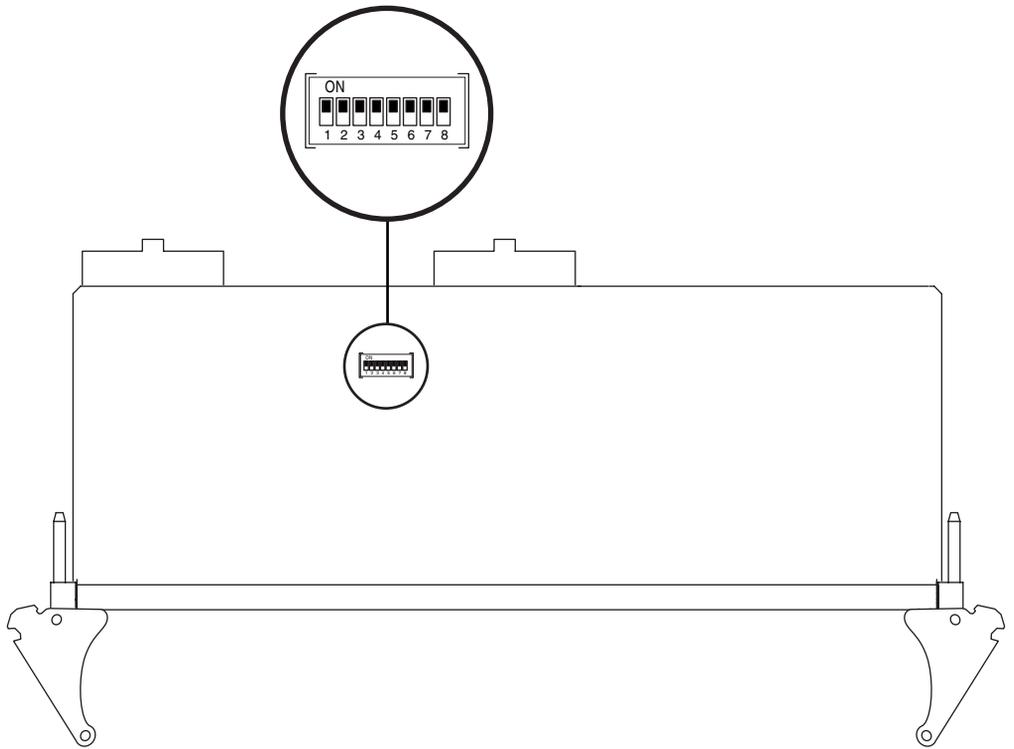


FIGURE 2-18 S1302 DIP Switch Bank Location on the RTM-S (Solder Side)

- 8. Keeping the new rear transition module vertical, slide the module into the slot in between the two guides (FIGURE 2-19).**

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 cage, the two ejection levers should flip inward, and the teeth in the ejection levers should fit smoothly in the rectangular cutouts in the bottom and top plates.

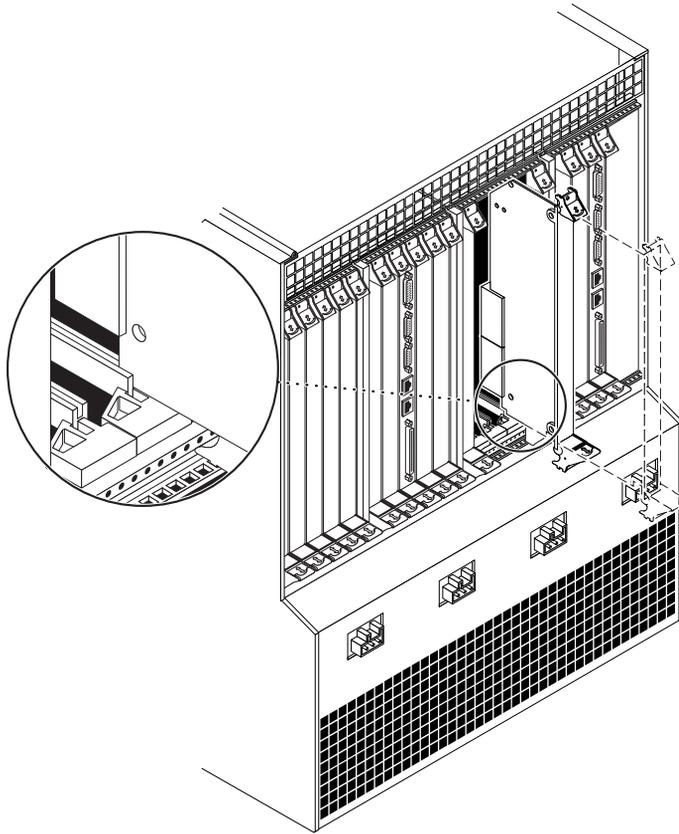


FIGURE 2-19 Aligning the Rear Transition Module with the Rear Cage Cutouts

9. 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 (FIGURE 2-22). Tighten the screws to a torque of 0.28 N.m (2.5 in.-lb).
10. Make the necessary cable connections to the rear transition module. Tighten the screws on the cable to a torque of 0.23 N.m (2 in.-lb). FIGURE 2-20 shows the connectors on the host rear transition module.

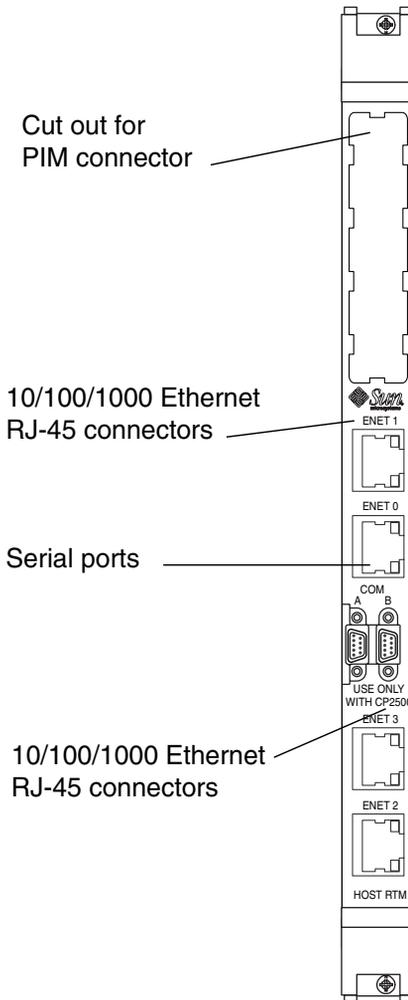


FIGURE 2-20 Connectors on the Netra CP2500 Host Rear Transition Module (RTM-H)

11. After you replace the rear transition module, obtain the new Netra CP2500 board.
12. Go to the front of the server and install the new board, as described in the following section.

Installing a Netra CP2500 Board

After removing the old board and replacing the rear transition module, install the new board as follows.

▼ To Install a Netra CP2500 Board

1. **With the antistatic wrist strap attached to you, locate the slot where you will be installing the new board.**

[FIGURE 2-10](#) shows the locations of boards in the Netra CT 810 server. [FIGURE 2-11](#) shows the locations of boards in the Netra CT 410 server.

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

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. Store the slot filler panel in a safe place; you might need it later.

3. **Obtain the new Netra CP2500 board.**

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

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

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

6. **Keeping the new board vertical, slide it into the slot between the two guides.**

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



Caution – In the Netra CT 810, do not install Netra CP2500 boards in slots 6 and 7. Increased temperatures might cause a server power down.

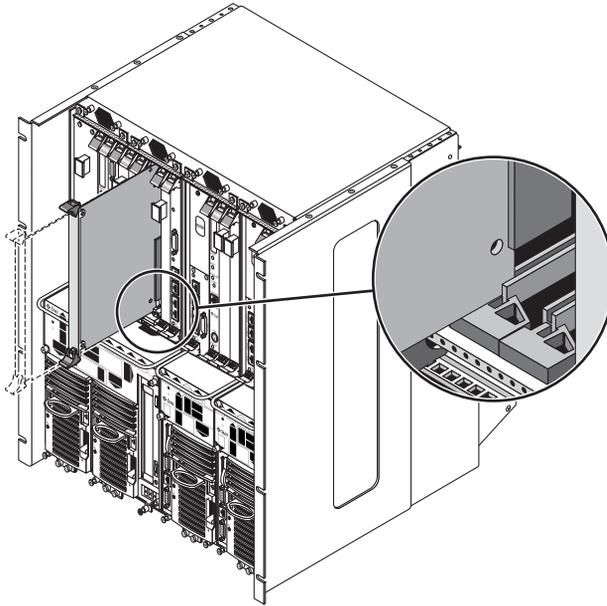


FIGURE 2-21 Aligning the Board with the Board Cage Cutouts

7. Lock the ejection levers.
8. Using a No. 2 Phillips screwdriver, tighten the two captive screws inside the board's ejection levers, one on top and one on the bottom.
Tighten the screws to a torque of 0.28 N.m (2.5 in.-lb).

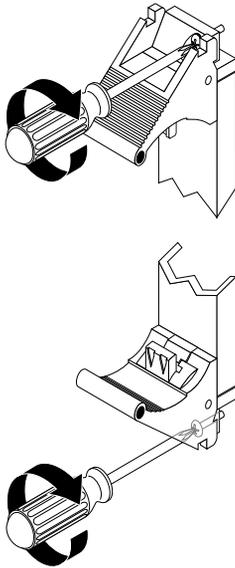


FIGURE 2-22 Tightening the Ejection Lever Captive Screws

9. Log in to the Netra CT server.
10. Determine the hot-swap state for the slot that holds the board you just installed.

To determine the current hot-swap state for the slots in your server, as superuser, enter:

```
# prtconf -v -P
```

11. Identify the attachment-point ID that corresponds to the slot where you inserted the board.

As superuser, enter:

```
# cfgadm
```

12. Connect the board with the `cfgadm` dynamic reconfiguration software:

```
# cfgadm -c connect ap_id
```

where *ap_id* is the attachment-point ID. For example, to connect the board in slot 4, as superuser, enter:

```
# cfgadm -c connect IO-4
```

13. Activate the board with the `cfgadm (1M)` utility:

```
# cfgadm -c configure ap_id
```

where *ap_id* is the attachment-point ID. For example, to activate the board in slot 4, as superuser, enter:

```
# cfgadm -c configure IO-4
```

14. Locate the LEDs on the system status panel for the board that you just inserted.

[FIGURE 2-13](#) shows the LEDs on the Netra CT 810 server and [FIGURE 2-14](#) shows the LEDs on the Netra CT 410 server.

15. Determine if the board is activated.

16. If the board activated successfully, perform any necessary board-specific software configuration.

Refer to the documentation that you received with the board for any board-specific procedures.

17. Connect the cables to the board's corresponding rear transition module.

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

The following figures show the connectors for host boards for Netra CT servers.

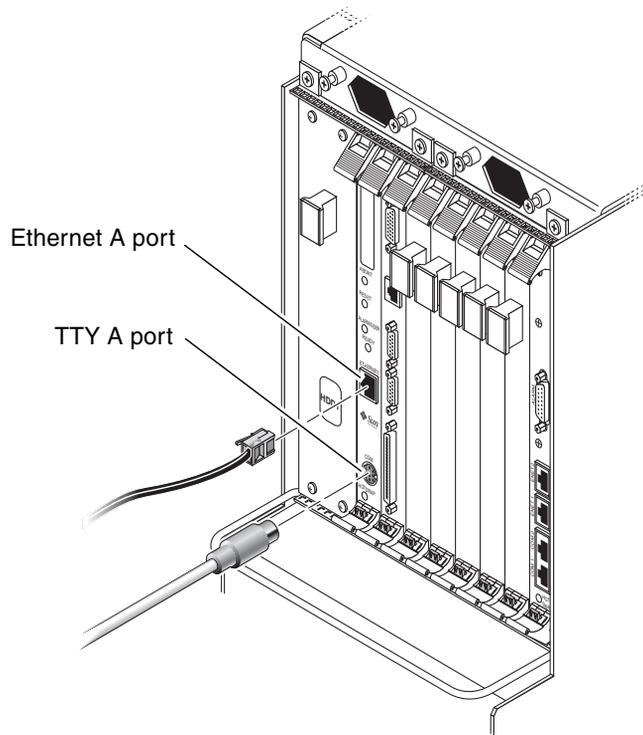


FIGURE 2-23 Connectors on the Netra CP2140 Host CPU Board

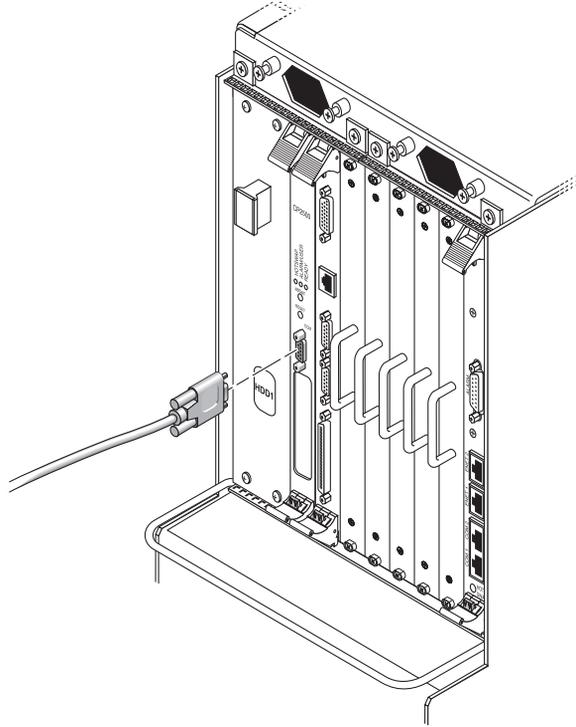


FIGURE 2-24 Connectors on the Netra CP2500 Host CPU Board

Blocking Air From Open Slots

In most cases, you are replacing a board with a new board, and no opening will result. However, if you are changing the configuration of your server's slots while performing the upgrade and open slots result, close the slots with filler panels.



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

▼ To Block Open Filler Panel Openings

- **If any panel openings resulted from the upgrade, install air-blocking filler panels.**
The slot filler panel is secured to the cage using two screws, one at the top of the filler panel, the other at the bottom.

Performing Diagnostics

After you install the fan trays, new rear transition module, new board, and any other hardware components, verify that the new hardware is operating correctly.

▼ To Perform Diagnostics

1. Use the `tip` utility to establish a full-duplex-terminal connection between a Sun workstation and the new board.
2. At the UNIX prompt in a command or shell tool window, enter:

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

3. Perform the following diagnostic steps.

a. **Verify that the following information is accurate:**

- Valid memory configuration is displayed on the banner.
- Valid Ethernet address is displayed on the banner.

b. **At the `ok` prompt, enter:**

```
ok probe-scsi-all
```

- Make sure all devices are recognized by the system.
- Ensure that the hard drive is recognized as target 0, and that the CD-ROM drive is recognized as target 6.

c. **At the `ok` prompt, enter:**

```
ok .version
```

4. Run related applications.

5. Use the `prtconf -D` command to display the device tree.

It should show the PCI bus instances #0 and #1 for the two PCI buses. There are instances of various PCI boards connected to each one. A PCI board might show up as `pciVVVV, DDDD`, where `VVVV` is the vendor ID, for example, `1011` and `DDDD` is the device ID, for example `008e`. If the driver for the board is already loaded, then you might see the device name supplied by the driver in the device tree.

6. Log in to the server console and, as superuser, enter the `prtdiag` command to ensure that no faults are generated and that the chassis state is configured.

```
# prtdiag -v
```

Configuring the Hardware

For existing servers that you upgraded, configure the hardware components as follows.

Note – For new servers that have the required software and hardware preinstalled, the Netra CP2500 board hardware is preconfigured. New systems are shipped with one Netra CP2500 board installed in the host slot.

▼ To Reset the Platform Name

The Netra CP2500 has two platform names, one for the host role and one for the satellite role. You can use Solaris commands `uname -i` to derive the platform name. The names are as follows:

- SUNW, NetraCT-810 or SUNW, NetraCT-410 if it is a host
- SUNW, Netra-CP2500 if it is a satellite

When you install a Netra CP2500 board, the platform name will change from the Netra CP2140 host board to the new Netra CP2500 board.

- If you created a custom script that uses the platform name to find out if a satellite is plugged into a Netra CT Server, change the `ChassisType` property defined in the PICL FRU tree by running the `prtpicl (1M)` command as follows:

```
# prtpicl -v -c fru | cut -f2 | tr -d ` `
```

▼ To Configure the Board and RTM

1. (Optional) At the alarm card CLI prompt, enter the following:

```
cli> setfru slot 2 Acceptable_Fru_Types  
CP2500_Front_Board_Vendor_Name  
CP2500_Front_Board_Part_No:CP2500_RTM_Part_No
```

2. If you want to configure a slot *not* to power on any boards, enter the following:

```
cli> setfru slot 2 Acceptable_Fru_Types none
```

▼ To Configure Fan Trays and Power Supplies

The following procedure is optional.

- At the alarm card CLI prompt, use the `Acceptable_Fru_Types` command to configure the fan trays and power supplies (PS).

The following are examples:

```
cli> setfru fan 1 Acceptable_Fru_Types  
FAN_Vendor_Name:FAN_Part_No
```

```
cli> setfru fan 2 Acceptable_Fru_Types  
FAN_Vendor_Name:FAN_Part_No
```

```
cli> setfru ps 1 Acceptable_Fru_Types PS_Vendor_Name:PS_Part_No
```

```
cli> setfru ps 2 Acceptable_Fru_Types PS_Vendor_Name:PS_Part_No
```

Troubleshooting

If you encounter any unusual system behavior, refer to the *Netra CT Server Service Manual* (819-2741) for troubleshooting information.

Firmware and Software Upgrade Process

This chapter describes how to upgrade the firmware and software in preparation for installing a Netra CP2500 board and associated hardware in a Netra CT 410 or Netra CT 810 server.

You can upgrade the firmware and software well in advance of installing the hardware. When upgrading multiple systems, it may be preferable to first upgrade the firmware and software, then perform testing to ensure that the upgrade is successful before upgrading the hardware.

This chapter contains the following topics:

- [“Preparing to Upgrade Software and Firmware” on page 42](#)
- [“Upgrading the Firmware” on page 42](#)
- [“Upgrading the Solaris Operating System” on page 44](#)
- [“Validating the Upgrades” on page 46](#)

Preparing to Upgrade Software and Firmware

Before upgrading the firmware and software, perform the tasks detailed in this section. The information in this section assumes your starting condition is a Netra CT 410 or Netra CT 810 server with either a Netra CP2140 or CP2160 board.

1. Back up the system configurations (host, satellite, or both) to another system.
2. Obtain the required versions of the firmware and software.

Upgrading the Firmware

The required versions of the CPU and alarm card firmware are provided in [Chapter 1](#) and might be superseded by versions documented in the Release Notes. Perform the following procedures to upgrade the firmware.

▼ To Determine Firmware Versions

1. To display the OpenBoot™ PROM version, SMC firmware, PLD, and SMC FPGA information, type at the `ok` prompt:

```
ok .version
```

2. To determine the current alarm card firmware version on the system, use the `version` command at the alarm card CLI prompt.

```
cli> version
```

▼ To Obtain Newer Firmware Versions

- **If you do not have the most current versions of the CPU and alarm card firmware, go to the SunSolveSM Web site, <http://www.sun.com/sunsolve>, and download the most recent versions of the following firmware patches:**
 - 116345 (OpenBoot PROM and SMC firmware for Netra CP2140)
 - 116346 (OpenBoot PROM and SMC firmware for Netra CP2160)

▼ To Update the OpenBoot PROM Firmware

Refer to the following documentation:

- Readme file in the patch, for any special installation instructions
- *Netra CP2140 Technical Reference and Installation Manual* (816-4908) or *Netra CP2160 Technical Reference and Installation Manual* (816-5772) for instructions on upgrading the firmware
- *Netra CP2500 Installation and Technical Reference Manual* (819-1747)

▼ To Update the Alarm Card Firmware

Refer to the Readme file in the patch for any special installation instructions, and to the *Netra CT Server System Administration Guide* (819-2743) for instructions on upgrading the firmware on the alarm card.

Upgrading the Solaris Operating System

The following information provides instructions for upgrading to the minimum required software operating system. The software requirements are detailed in [Chapter 1](#).

▼ To Determine Software Version

To determine the release number of Solaris OS, at the *machinename* prompt type:

```
machine-name% uname -r
```

The Solaris version displays in the following format: *X.XX* or *X.X*

▼ To Upgrade the Operating System

The Netra CP2500 board requires the Solaris 9 FCS Operating System (Solaris 9 FCS OS) with patches for the Netra CT810 and Netra CT410 servers.

To obtain the Solaris 9 FCS OS, contact either your sales representative or field service technician. This OS version is available only by special order (part number SOLZS-09AC9AYM) through a qualified Sun representative.

Upgrade the OS as follows. For detailed instructions, refer to the *Solaris 9 Operating System Collection* documentation.

1. Install the software by one of the following methods:

- To install the system from the CD, at the *ok* prompt, enter:

```
ok boot cdrom
```

The system boots from the CD and the Solaris OS installation begins. Provide appropriate answers to various prompts that are displayed as the software is installed.

- To install the system from a server, obtain the boot client Ethernet address (the system being built).

- a. At the `ok` prompt (on the system being built), enter:

```
ok banner
```

The Ethernet address is displayed in the following format: `X:X:XX:XX:XX:XX`, for example: `8:0:20:7e:f6:dc`.

- b. Type the Ethernet address obtained in [Step a](#) into the install server as a boot client.

Refer to the Solaris software documentation to set up an install server.

- c. At the `ok` prompt on the client (of the system being built), enter:

```
ok boot net
```

The system boots from the network and the Solaris software is installed from the network. Various prompts are displayed as the system is installed; answer them as appropriate.

2. After the Solaris OS is installed, at the `ok` prompt, enter:

```
ok boot disk -rv
```

The system configures itself after the installation. If the installation is successful, the system boots to a Solaris login prompt.

▼ To Download and Install Patches

Download the patches from the SunSolve web sites, then apply them. For the latest listing of patches and detailed instructions for downloading and applying them, refer to the *Netra CT Server Release Notes* (819-2739).

Validating the Upgrades

After installing the firmware, software, and patches, validate that the upgraded versions were installed correctly.

▼ To Validate the Upgrades

1. To display the OpenBoot PROM version, SMC firmware, PLD, and SMC FPGA information, type the `version` command at the `ok` prompt:

```
ok .version
```

2. To display the alarm card firmware version on the system, type the `version` command at the alarm card CLI prompt.

```
cli> version
```

3. To display the patch versions, enter the following command:

```
#> showrev -p
```

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