



Netra™ CT 820 Server Service Manual

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Contents

- 1. Preparing for FRU Installation and Replacement 1-1**
 - 1.1 Tools Required 1-1
 - 1.2 Attaching the Antistatic Wrist Strap 1-2

- 2. Powering the Server On and Off 2-1**
 - 2.1 Powering On the Server or Boards 2-1
 - 2.1.1 Performing a Hardware Power-On 2-2
 - 2.1.2 Performing a Software Power-On 2-3
 - 2.2 Powering Off the Server 2-3
 - 2.2.1 Performing a Hardware Power-Off 2-4
 - 2.2.2 Performing a Software Power-Off 2-4

- 3. Handling Cards and Assemblies 3-1**
 - 3.1 Handling cPSB Cards 3-1
 - 3.2 Handling Assemblies 3-2

- 4. Troubleshooting the System 4-1**
 - 4.1 Understanding the DMC Diagnostics Tests 4-1
 - 4.1.1 Ethernet Test 4-2
 - 4.1.2 Flash Test 4-2
 - 4.1.3 Alarm Port Test 4-2

- 4.1.4 Health Test 4-2
- 4.1.5 IPMI Test 4-3
- 4.1.6 Real Time Clock (RTC) Test 4-3
- 4.1.7 Fan Status Test 4-3
- 4.1.8 Fan Tachometer Test 4-3
- 4.1.9 FRU Presence Test 4-3
- 4.1.10 FRUID Checksum Test 4-4
- 4.1.11 I2C Temperature Test 4-5
- 4.1.12 Power Supply Status Test 4-5
- 4.1.13 Power Supply On/Off Test 4-5
- 4.2 Running the DMC Diagnostics Tests 4-6
 - 4.2.1 Running the DMC Diagnostics Test through the DMC Command Line Interface 4-6
 - 4.2.2 Running the Diagnostics Tests through SunVTS 4-10

5. Removing and Replacing Hot-Swappable Cards 5-1

- 5.1 Removing and Installing Distributed Management Cards 5-2
 - 5.1.1 Rules and Restrictions for Distributed Management Cards 5-2
 - 5.1.2 Removing a Distributed Management Card 5-3
 - 5.1.3 Installing a Distributed Management Card 5-5
- 5.2 Removing and Installing Switching Fabric Boards 5-6
 - 5.2.1 Removing a Switching Fabric Board Set 5-7
 - 5.2.2 Installing a Switching Fabric Board Set 5-10
- 5.3 Removing and Installing Node Boards 5-11
 - 5.3.1 Removing a Node Board Set 5-12
 - 5.3.2 Installing a Node Board Set 5-15

6. Removing and Replacing Hot-Swappable Subassemblies 6-1

- 6.1 Removing and Installing Power Supplies 6-1
 - 6.1.1 Removing a Power Supply 6-2

- 6.1.2 Installing a Power Supply 6-3
- 6.2 Removing and Installing Fan Trays 6-4
 - 6.2.1 Removing a Fan Tray 6-4
 - 6.2.2 Installing a Fan Tray 6-5
- 6.3 Removing and Installing the Air Filter 6-6
 - 6.3.1 Removing the Air Filter 6-6
 - 6.3.2 Installing the Air Filter 6-7
- 7. Removing and Replacing Cold-Swappable Subassemblies 7-1**
 - 7.1 Removing and Installing the Rear Transition Card for the Distributed Management Card 7-1
 - 7.1.1 Removing a Rear Transition Card for the Distributed Management Card 7-1
 - 7.1.2 Installing the Rear Transition Card for the Distributed Management Card 7-3
 - 7.2 Removing and Installing the Midplane 7-4
 - 7.2.1 Removing the Midplane Assembly 7-4
 - 7.2.2 Installing the Midplane Assembly 7-6
- 8. Illustrated Parts Breakdown 8-1**
 - 8.1 FRUs Located at the Front of the System 8-1
 - 8.2 FRUs Located at the Rear of the System 8-3
- A. Board Connector Pinouts A-1**
 - A.1 Distributed Management Card Pinouts A-2
 - A.1.1 Console Port Pinouts A-3
 - A.2 Rear Transition Module for the Distributed Management Card Pinouts A-4
 - A.2.1 Console Ports 1A and 1B Pinouts A-5
 - A.2.2 Alarm Ports 1A and 1B Pinouts A-6
 - A.2.3 Ethernet Ports 1A and 1B Pinouts A-7

- A.3 Switching Fabric Board A-8
 - A.3.1 Console Port A-9
 - A.3.2 Management Port A-10
- A.4 Rear Transition Module for the Switching Fabric Board Pinouts A-11
 - A.4.1 10/100 Mbps Ethernet Ports (20-23) Pinouts A-12
 - A.4.2 1000 Mbps Ethernet Ports (25 and 26) A-13
 - A.4.3 Console Port A-14
- A.5 Netra CP2300 Board Pinouts A-15
 - A.5.1 Serial Connector A-16
 - A.5.2 PMC Connectors A-17
 - A.5.3 PMC A Connector Interfaces A-18
 - A.5.4 PMC B Connector Interfaces A-20
- A.6 Rear Transition Module for the Netra CP2300 Board Pinouts A-24
 - A.6.1 PIM Connectors Pinouts A-25
 - A.6.2 USB Port Pinouts A-31
 - A.6.3 Serial Port Pinouts A-31
 - A.6.4 Fast Ethernet Connector Pinouts A-32

- B. Connecting a Terminal Console to the Server B-1**
 - B.1 Using an ASCII Terminal B-2
 - B.2 Using a Solaris Workstation B-3
 - B.3 Using a PC Laptop B-4

- C. System Specifications C-1**
 - C.1 Electrical Specifications C-1
 - C.2 Environmental Specifications C-2

Figures

FIGURE 1-1	Location of ESD Ground Jack on Netra CT 820 Server (Front)	1-2
FIGURE 1-2	Location of ESD Ground Jack on Netra CT 820 Server (Rear)	1-3
FIGURE 2-1	DC Power Input Panel	2-2
FIGURE 4-1	Main SunVTS Window	4-10
FIGURE 4-2	<code>ipmitest</code> Dialog Box	4-11
FIGURE 4-3	Top Half of the DMC-Active(<code>dmctest</code>) Test Parameter Options Dialog Box	4-12
FIGURE 4-4	Bottom Half of the DMC-Active(<code>dmctest</code>) Test Parameter Options Dialog Box	4-13
FIGURE 4-5	Top Half of the DMC-Standby(<code>dmctest</code>) Test Parameter Options Dialog Box	4-14
FIGURE 4-6	Bottom Half of the DMC-Standby(<code>dmctest</code>) Test Parameter Options Dialog Box	4-15
FIGURE 5-1	Injector/Ejector Operation for Board-Level Components	5-2
FIGURE 5-2	Distributed Management Card Ports	5-4
FIGURE 5-3	Location of the Hot-Swap LED on the Switching Fabric Board	5-7
FIGURE 5-4	Ports on the Rear Transition Card for the Switching Fabric Board	5-9
FIGURE 5-5	Location of the Hot-Swap LED on the Netra CP2300 Board	5-13
FIGURE 5-6	Rear Transition Card for the Netra CP2300 Transition Card Connectors	5-14
FIGURE 5-7	Location and Default Settings of the SW503 DIP Switch	5-17
FIGURE 6-1	Power Supply Orientation	6-2
FIGURE 6-2	Injector/Ejector Operation (Power Supplies)	6-3
FIGURE 6-3	Fan Tray Installation and Removal	6-5
FIGURE 6-4	Intake Grill and Air Filter	6-6

FIGURE 7-1	Distributed Management Card Rear Transition Card Ports	7-2
FIGURE 7-2	Midplane Assembly Retention Screw Locations	7-5
FIGURE 7-3	Installing the Midplane Assembly	7-6
FIGURE 8-1	Netra CT 820 Server Components (Front)	8-2
FIGURE 8-2	Netra CT 820 Server Components (Rear)	8-3
FIGURE A-1	Distributed Management Card Port	A-2
FIGURE A-2	RJ-45 Console Connector Diagram	A-3
FIGURE A-3	Distributed Management Card Rear Transition Module Ports	A-4
FIGURE A-4	Console Port Connector Pins	A-5
FIGURE A-5	Alarm Port	A-6
FIGURE A-6	RJ-45 Ethernet Connector Diagram	A-7
FIGURE A-7	Switching Fabric Board Ports	A-8
FIGURE A-8	RJ-11 Console Connector Diagram	A-9
FIGURE A-9	Out-of-Band Ethernet Management Port	A-10
FIGURE A-10	Ports on the Rear Transition Module for the Switching Fabric Board	A-11
FIGURE A-11	RJ-45 Ethernet Connector Diagram	A-12
FIGURE A-12	RJ-45 Ethernet Connector Diagram	A-13
FIGURE A-13	RJ-11 Console Connector Diagram	A-14
FIGURE A-14	Netra CP2300 Board	A-15
FIGURE A-15	Front Panel Serial Port (TTYA) Diagram	A-16
FIGURE A-16	Netra CP2300 Board PMC Port Connectors	A-17
FIGURE A-17	Rear Transition Module for the Netra CP2300 Transition Card Connectors	A-24
FIGURE A-18	PIM Connector Pins	A-25
FIGURE A-19	USB Connector Port A Pins	A-31
FIGURE A-20	Serial Port Connector Pins	A-31
FIGURE A-21	Fast Ethernet Connector Pins	A-32

Tables

TABLE 8-1	FRUs Located at the Front of the System	8-1
TABLE 8-2	FRUs Located at the Rear of the System	8-3
TABLE A-1	Console Port Pinouts	A-3
TABLE A-2	Console Port 1A	A-5
TABLE A-3	Console Port 1B	A-5
TABLE A-4	Alarm Ports 1A and 1B Pinouts	A-6
TABLE A-5	Ethernet Ports 1A and 1B Pinouts	A-7
TABLE A-6	RJ11 CONSOLE Port Pinout	A-9
TABLE A-7	Ethernet Management Port Pinout	A-10
TABLE A-8	10/100Mb Switched Ethernet Port Pinout	A-12
TABLE A-9	1000Mb Switched Ethernet Port Pinout	A-13
TABLE A-10	RJ11 CONSOLE Port Pinout	A-14
TABLE A-11	Serial Mini Din 8-Pin Connector Pinouts	A-16
TABLE A-12	PMC A J5 Connector Interface	A-18
TABLE A-13	PMC A J8 Connector Interface	A-19
TABLE A-14	PMC A J7 Connector Interface	A-20
TABLE A-15	PMC B J6 Connector Interface	A-20
TABLE A-16	PMC B 12 Connector Interface	A-22
TABLE A-17	PMC B J11 Connector Interface	A-23
TABLE A-18	PIM A Connector J4	A-26

TABLE A-19	PIM A Connector J5	A-27
TABLE A-20	PIM B Connector J6	A-28
TABLE A-21	PIM B Connector J7	A-29
TABLE A-22	Universal Serial Bus Port A	A-31
TABLE A-23	Serial Port A	A-32
TABLE A-24	Serial Port B	A-32
TABLE B-1	Connecting an ASCII Terminal	B-2
TABLE B-2	Connecting a Solaris Workstation	B-3
TABLE B-3	Connecting a PC Laptop	B-4
TABLE C-1	Chassis Environmental Specifications	C-2

Preface

The *Netra CT 820 Server Service Manual* contains procedures for the removal and replacement of the field-replaceable units (FRUs) in a Netra™ CT 820 server.

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

Before performing the procedures described in this book, you should have completed the installation and setup of the Netra CT 820 server as described in the *Netra CT 820 Server Installation Guide*.

Safety and Compliance

All Netra CT 820 servers are shipped with the *Netra CT 820 Server Safety and Compliance Manual*, which specifies the environmental and electrical safety requirements for the product and contains compliance certification for various countries.

How This Book Is Organized

Chapter 1 describes the procedures you need to perform before installing, removing, or replacing field-replaceable units (FRUs) in a Netra CT 820 server.

Chapter 2 gives the hardware and software procedures for powering the Netra CT 820 server on and off.

Chapter 3 provides instructions for handling the cPSB cards and assemblies correctly.

Chapter 4 provides troubleshooting procedures for the Netra CT 820 server.

Chapter 5 gives instructions for removing and replacing hot-swappable cards.

Chapter 6 gives instructions for removing and replacing hot-swappable subassemblies.

Chapter 7 gives instructions for removing and replacing cold-replaceable subassemblies.

Chapter 8 gives the illustrated parts breakdown for the Netra CT 820 server.

Appendix A lists the connector pinouts for the cards in the Netra CT 820 server.

Appendix B provides instructions for connecting a terminal console to the server.

Appendix C gives the system specifications for the Netra CT 820 server.

Using UNIX Commands

This document contains only limited information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- *Solaris Handbook for Sun Peripherals* (shipped in AnswerBook2™ form, available in printed form as an at-cost option)
- AnswerBook online documentation for the Solaris software environment
- Other software documentation that you received with your system

Typographic Conventions

Typeface or Symbol	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% su Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized	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.
	Command-line variable; replace with a real name or value	To delete a file, type <code>rm filename</code> .

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	#

Related Documentation

The Netra CT 820 server documentation is listed in the following table:

Title	Part Number
<i>Netra CT 820 Server Product Overview</i>	817-2643
<i>Netra CT 820 Server Installation Guide</i>	817-2641
<i>Netra CT 820 Server Service Manual</i>	817-2642
<i>Netra CT 820 Server System Administration Guide</i>	817-2647
<i>Netra CT 820 Server Safety and Compliance Manual</i>	817-2645
<i>Netra CT 820 Server Product Note</i>	817-2646

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

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Preparing for FRU Installation and Replacement

This chapter describes the steps you need to take before you install, remove, or replace a field-replaceable unit (FRU) in your Netra CT 820 server. This chapter is divided into the following sections:

- Section 1.1, “Tools Required” on page 1-1
- Section 1.2, “Attaching the Antistatic Wrist Strap” on page 1-2

1.1 Tools Required

You need the following tools to install, remove, or replace most of the components in a Netra CT 820 server:

- No. 1 Phillips screwdriver
- No. 2 Phillips screwdriver
- 1/8-inch flat-blade screwdriver
- No. 15 socket/driver

1.2 Attaching the Antistatic Wrist Strap

Most field-replaceable units have sensitive electronic components that require antistatic precautions. ESD ground jacks are located at the front and rear of the system. To protect system components from static shock when handling them, wear a wrist strap plugged into the most convenient ESD jack.

1. Place an electrostatic discharge mat close to the system.
2. Connect the wrist strap to the ESD ground jack, either at the front or the rear of the Netra CT 820 server.

See FIGURE 1-1 and FIGURE 1-2 for ESD ground jack locations.

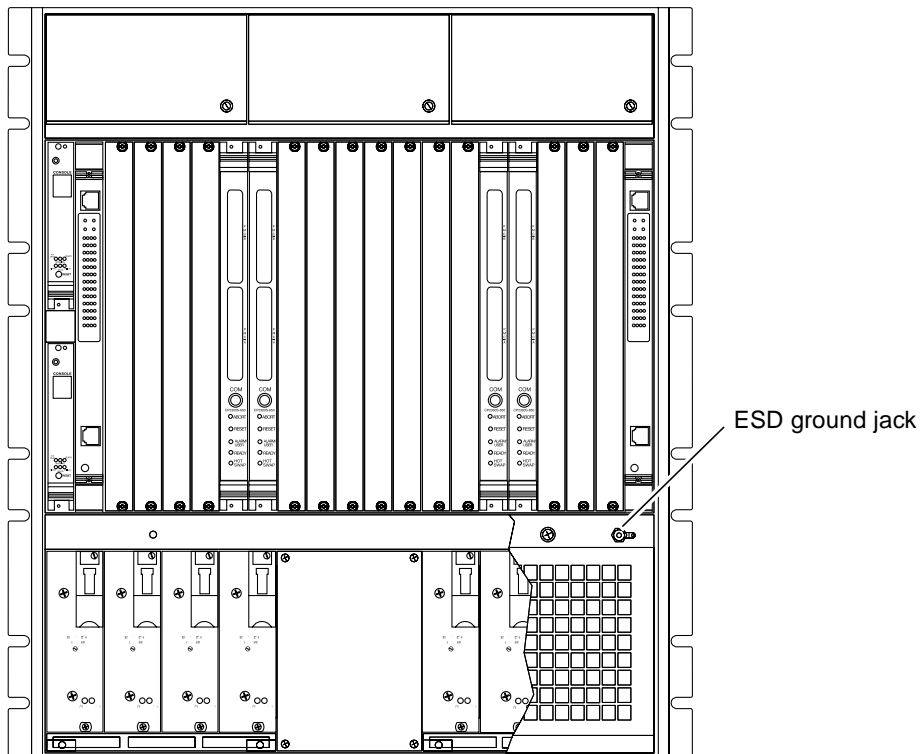


FIGURE 1-1 Location of ESD Ground Jack on Netra CT 820 Server (Front)

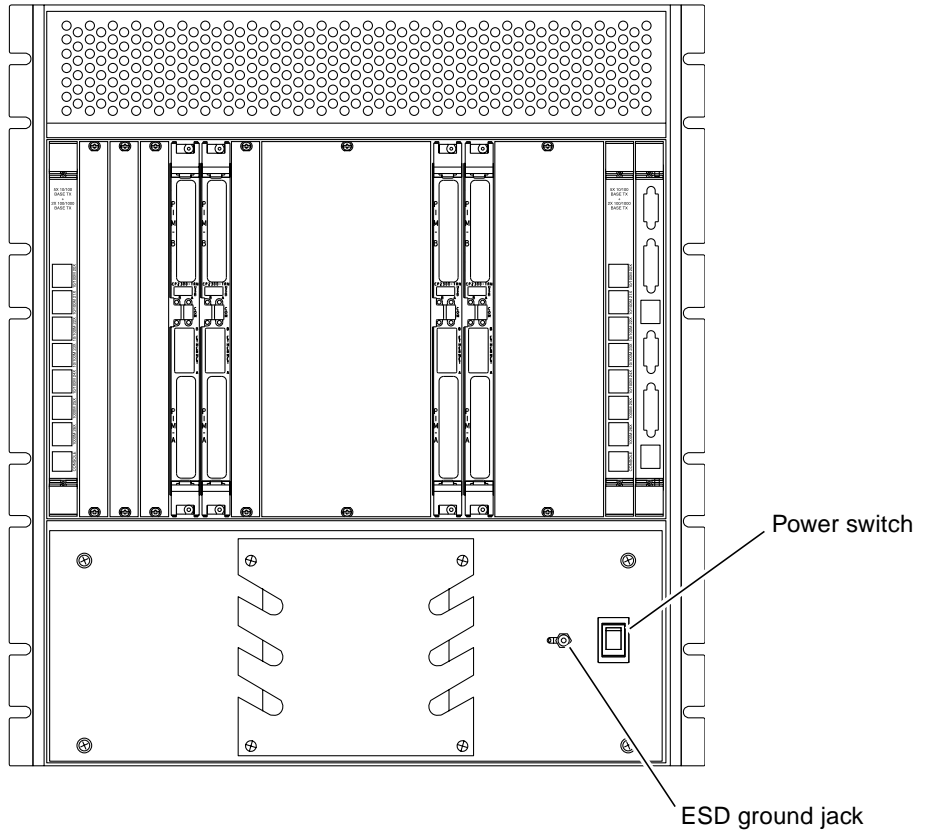


FIGURE 1-2 Location of ESD Ground Jack on Netra CT 820 Server (Rear)

Powering the Server On and Off

Note – The distributed management card does not support battery backup time-of-day because battery life cannot be monitored to predict end of life, and drift in system clocks can be common. To provide a consistent system time, set the date and time on the distributed management card using one of these methods:

- Manually, using the CLI `setdate` command. The date and time must be reset after any power cycle.
 - Configuring the distributed management card to be an NTP client, using the CLI `setntpserver` command. The Network Time Protocol (NTP) provides the correct timestamp for all systems on a network by synchronizing the clocks of all the systems. A Solaris server, called `xntp`, sets and maintains the timestamp. Refer to the online `man` pages for the `xntpd`, `ntpq`, and `ntpdate` commands for more information about NTP.
-

This chapter gives instructions on powering the Netra CT 820 server on and off.

- “Powering On the Server or Boards” on page 2-1
- “Powering Off the Server” on page 2-3

2.1 Powering On the Server or Boards

There are two ways to apply power to the Netra CT 820 server or to the boards installed in the server:

- Hardware power-on—This powers on the entire Netra CT 820 server and would be used when you first install the server; however, you must be physically located at the site with the Netra CT 820 server in order to do a hardware power-on. In addition, you should go through a hardware power-on only if you powered down the server using the hardware power-off instructions (see “Performing a Hardware Power-Off” on page 2-4).

- Software power-on—This powers on node or switching fabric slots on a slot-by-slot basis through the distributed management card. You can go through a slot-by-slot software power-on only if you powered down the individual slots using the software power-off instructions (see “Performing a Software Power-Off” on page 2-4); you cannot go through a slot-by-slot software power-on if you powered off the entire system using the hardware power-off instructions.

2.1.1 Performing a Hardware Power-On

1. At the rear of the Netra CT 820 server, verify that you have made the proper connections to the DC power input panel (FIGURE 2-1).

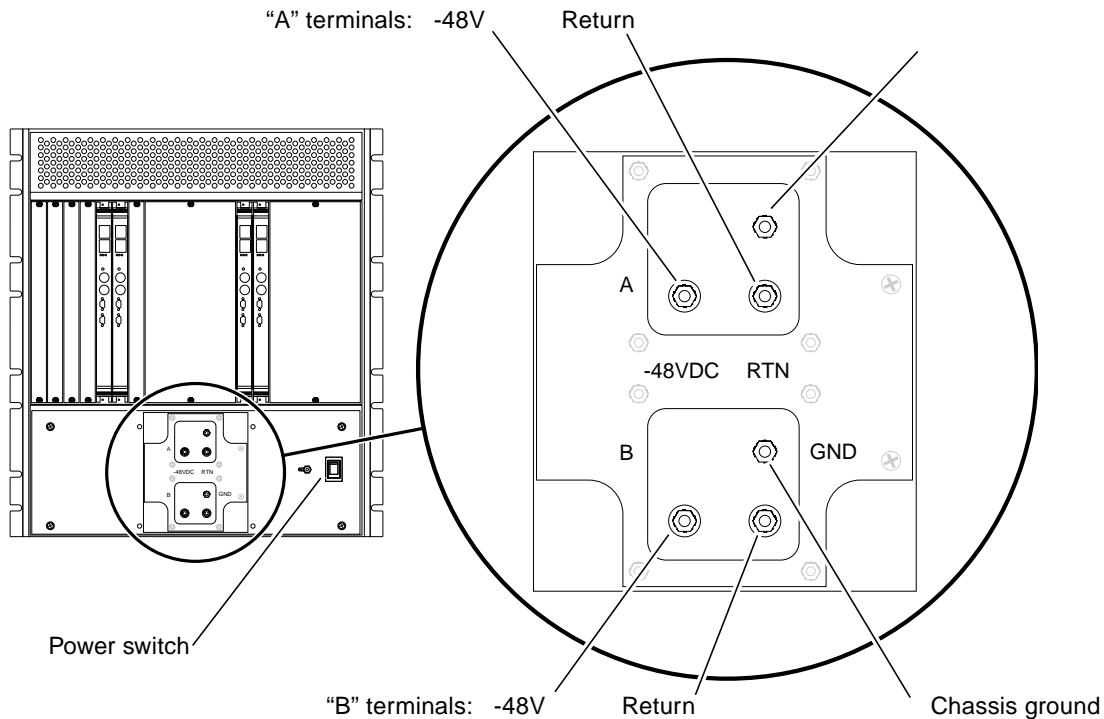


FIGURE 2-1 DC Power Input Panel

2. Locate the power switch at the rear of the server and press it to the On (I) position (FIGURE 2-1).

The distributed management card powers on first, then it powers on the switching fabric board and node boards.

2.1.2 Performing a Software Power-On

1. **Log into your Netra CT 820 server through the distributed management card or its rear transition card, and administer the system.**

See Appendix B for instructions on connecting a terminal to your server, if necessary. Refer to the *Netra CT 820 Server System Administration Guide* for detailed instructions on accessing the system through the distributed management card or its rear transition card.

2. **Power on the appropriate slots in the Netra CT 820 server using the distributed management card software:**

```
hostname cli> poweron slot_number
```

For example, to power on the node card in slot 11 in your Netra CT 820 server, enter the following command:

```
hostname cli> poweron 11
```

Refer to the *Netra CT 820 Server System Administration Guide* for more detailed instructions.

2.2 Powering Off the Server

There are two ways to power off the Netra CT 820 server or the boards installed in the server:

- **Hardware power-off**—This powers off the entire Netra CT 820 server; however, you must be physically located at the site with the Netra CT 820 server in order to do a hardware power-off. In addition, after you have performed a hardware power-off for the system, you can only power it back on again using the hardware power-on instructions; you cannot remotely power on the Netra CT 820 server using software power-on instructions if you've gone through a hardware power-off.
- **Software power-off**—This powers off node or switching fabric slots on a slot-by-slot basis through the distributed management card. Note that you will only be able to power off node or switching fabric slots using this method; the distributed management cards will remain powered on. This enables you to power-on the node or switching fabric slots remotely through the distributed management cards using the software power-on instructions.

2.2.1 Performing a Hardware Power-Off

1. **In preparation for bringing down the operating system and powering off the server, ensure that all significant application activity is quiesced on the server.**
2. **Locate the power switch at the rear of the Netra CT 820 server and press it to the Off (O) position (FIGURE 2-1).**



Caution – The power switch turns off the output of the power supplies. To completely disconnect power to the system, you must remove the input feed power going to the DC terminals at the rear of the server.

3. **If you want to completely power off the Netra CT 820 server, remove the service panel cover from the DC terminal block and disconnect the DC supply terminals from the terminal block (FIGURE 2-1).**

Note that you must disconnect the DC supply terminals from both the A terminals and the B terminals on the terminal block in order to completely remove power from the Netra CT 820 server.

2.2.2 Performing a Software Power-Off

1. **Log into your Netra CT 820 server through the distributed management card or its rear transition module, and administer the system.**

See Appendix B for instructions on connecting a terminal to your server, if necessary. Refer to the *Netra CT 820 Server System Administration Guide* for detailed instructions on accessing the system through the distributed management card or its rear transition card.

2. Power off the appropriate slots in the Netra CT 820 server using the distributed management card software:

```
hostname cli> poweroff slot_number
```

For example, to power off the node card in slot 11 in your Netra CT 820 server, enter the following command:

```
hostname cli> poweroff 11
```

Refer to the *Netra CT 820 Server System Administration Guide* for more detailed instructions.

Handling Cards and Assemblies

This chapter gives instructions on how to safely handle the cPSB cards and assemblies. This chapter is divided into the following sections:

- Section 3.1, “Handling cPSB Cards” on page 3-1
- Section 3.2, “Handling Assemblies” on page 3-2

Consult the *Netra CT 820 Server Safety and Compliance Manual* for safety information prior to performing the procedures in this chapter.

3.1 Handling cPSB Cards

All of the cards in a Netra CT 820 server are cPSB cards.



Caution – The system is sensitive to static electricity. To prevent damage to the assembly, always connect an antistatic wrist strap between you and the system.



Caution – Do not flex the cPSB cards; the surface-mounted components can break if the card is bent.

To minimize the amount of card flexing, observe the following precautions:

- When removing a card from an electrostatic discharge bag, keep it vertical until you place the card on the electrostatic discharge mat.
- Do not place a card on a hard surface. Use a cushioned antistatic mat. The card connectors and components have very thin pins that bend easily.
- Be careful of small parts located on the component side of a card.
- Do not use an oscilloscope probe on the components. The soldered pins are easily damaged or shorted by the probe point.

- Transport a card in an antistatic bag.



Caution – The heat sinks on a card can be damaged by incorrect handling. Do not touch the heat sinks while installing or removing a card. Hold a card only by the edges. If a heat sink is loose or broken, obtain a replacement card.



Caution – The heat sinks on a card can be damaged by improper packaging. When storing or shipping a card, ensure that the heat sinks have sufficient protection.



Caution – The system controller card and its modules have surface-mount components that can be broken by flexing the card.

3.2 Handling Assemblies

Assemblies have their own set of handling requirements, similar to the requirements for cPSB cards.



Caution – The system is sensitive to static electricity. To prevent damage to the board, always connect an antistatic wrist strap between you and the system.

Troubleshooting the System

This chapter gives instructions for troubleshooting the Netra CT 820 server. You will need SunVTS 5.1PS3 to perform these diagnostics tests, which is available from this web site:

<http://www.sun.com/oem/products/vts/>

4.1 Understanding the DMC Diagnostics Tests

The distributed management card (DMC) diagnostics software tests the major components in the distributed management card. Some tests are available for both the active (1A) DMC and the standby (1B) DMC, while others are available only for the active DMC.

Following are detailed descriptions of the DMC diagnostics tests:

- “Ethernet Test” on page 4-2
- “Flash Test” on page 4-2
- “Alarm Port Test” on page 4-2
- “Health Test” on page 4-2
- “IPMI Test” on page 4-3
- “Real Time Clock (RTC) Test” on page 4-3
- “Fan Status Test” on page 4-3
- “Fan Tachometer Test” on page 4-3
- “FRU Presence Test” on page 4-3
- “FRUID Checksum Test” on page 4-4
- “I2C Temperature Test” on page 4-5
- “Power Supply Status Test” on page 4-5
- “Power Supply On/Off Test” on page 4-5

4.1.1 Ethernet Test

The Ethernet test performs a test on the serial communication control (SCC) Ethernet device. The Ethernet test covers Internal, External, and Phy loopback tests. The Ping test performs a test on the fast Ethernet controller (FEC) port.

- The Internal test uses the device internal loopback feature to perform an internal-loopback test.
- You will need an external loopback connector for the External loopback test. This test sends a packet out and reads it back through the external loopback connector.
- The Phy test is similar to the internal loopback test. It loops internally through the Phy component of the Ethernet device and sends back the packet.
- The Ping test uses the IP address provided by the user. It sends packets to the designated host and performs the tests.

4.1.2 Flash Test

The Flash test reads the entire 24MB flash area and performs the checksum test.

4.1.3 Alarm Port Test

The Alarm Port test toggles all four alarm ports—Critical, Major, Minor and Warning. It reports either a Pass or Fail status.

4.1.4 Health Test

The Health test checks the health of the system and reports the state of each slot. It reports the slot status, whether the slot is healthy or not healthy, if the slot is empty or occupied, and if the slot is powered on or powered off.

Note – Do not power the boards on and off or hot-swap them while running this test.

4.1.5 IPMI Test

The IPMI test that is run from the active (1A) DMC checks for IPMI connectivity by sending IPMI commands to all slots that are occupied, then waits for their response. The IPMI command from the active DMC is sent to the 18 node cards, both switching fabric boards and the standby (1B) DMC. The test performs up to four retries whenever it fails to receive a response, in accordance with the PICMG IPMI (Intelligent Platform Management Interface) Specification. The IPMI test that is run from the standby DMC just tests the IPMI connectivity between the active DMC and the standby DMC.

4.1.6 Real Time Clock (RTC) Test

The RTC test checks the real time clock device and reports a Pass or Fail status. It then displays the time of the day that was obtained from the RTC.

4.1.7 Fan Status Test

The Fan Status test checks the status of the three fan trays, and the three fans within each fan tray, and reports if the fans are present and if the fans are operating properly.

4.1.8 Fan Tachometer Test

The Fan Tachometer test checks the tachometer of the three fan trays, and the three fans within each fan tray. It reports their rotations per minute (RPM) value and tells if they are operating at normal speed or at warning or critical speed.

4.1.9 FRU Presence Test

The FRU Presence test checks the status of all FRU devices available in a Netra CT 820 server. There are two midplane FRU devices, two DMC FRU devices, three fan FRU devices, two switching fabric board FRU devices and 18 node card FRU devices. The test reports if the FRU is present or not, if it is not responding, or if there was an execution error. The test will loop up to four retries when there is an execution failure while requesting the FRU packet, in accordance with the PICMG IPMI Specification.

4.1.10 FRUID Checksum Test

The FRUID Checksum test traverses through all available FRU devices on the Netra CT 820 server and checks for their FRU data. It reads the FRU buffer for each available FRU device, computes its checksum and compares that with the checksum that is read from the FRU device, then reports a pass or failure status. This test will loop up to four retries when it fails to read the requested FRU data, in accordance with the PICMG IPMI Specification.

The FRUID Checksum test that is run from the active DMC card runs the test on all available FRU devices on the Netra CT 820 server except the standby DMC card. The FRUID Checksum test that is run from the standby DMC card runs the test on only the standby DMC card.

4.1.10.1 Midplane FRU Devices

There are two midplane FRU devices:

- The IPMI type FRU, which has five segments— the Header Area, the Internal Info Area, the Chassis Info Area, the Board Info area, and the Product Info area. The FRUID Checksum test checks and validates all of these segments.
- The SunFRU, which consists of one segment.

4.1.10.2 DMC FRU Devices

There are two DMC FRU devices, both using the Sun FRU format and each with one segment:

- The active DMC FRU, which performs the FRUID checksum test on the active DMC card.
- The standby DMC FRU, which performs the FRUID checksum test on the standby DMC card.

4.1.10.3 Fan Tray FRU Devices

There are three fan tray FRU devices and all three have IPMI type FRU devices. Each fan tray FRU has four segments—the Header Area, the Internal Info Area, the Board Info Area and the Product Info Area. This test checks all four of these segments.

4.1.10.4 Switching Fabric Board FRU Devices

There are two switching fabric board FRU devices and both have IPMI type FRU devices. Each switching fabric board FRU device has three segments— the Header area, the Board Info Area and the Product Info Area. This test checks all three of these segments.

4.1.10.5 Node Card FRU Devices

There are 18 node card FRU devices. They all have Sun FRU format and each FRU has one segment.

4.1.11 I²C Temperature Test

The I²C Temperature test runs a test on the I²C devices. It gathers sensor temperature information and reports a status of pass, warning, or critical for each device.

There are eight midplane sensors and three fan sensors. The I²C Temperature test returns a pass status when any of the midplane or fan sensor temperatures rise from inlet to outlet at 55 C (ambient). A midplane or fan sensor will return a warning status if it reaches 75 C (20 C over the 55 C max inlet air temperature), and it will return a critical status at 85 C (30 C over the 55 C max inlet air temperature).

4.1.12 Power Supply Status Test

The Power Supply Status test reports the status of all eight power supplies. It tells whether the power supply is powered on or off, if the power supply is derating or not, or whether it is healthy or not healthy.

4.1.13 Power Supply On/Off Test

The Power Supply On/Off test toggles all eight power supplies by turning them off and on. It toggles one power supply at a time, starting from the first power supply and traversing through all eight power supplies. Enable this test for a limited number of runs, such as 5-10 passes, as this test may degrade the life cycle of the power supplies.

4.2 Running the DMC Diagnostics Tests

There are two methods available for running the DMC diagnostics tests:

- Through the DMC command line interface (CLI)—page 4-6
- Through SunVTS—page 4-10

4.2.1 Running the DMC Diagnostics Test through the DMC Command Line Interface

The `dmcdiag` utility runs at the Chorus level on either the active or the standby DMC. All `dmcdiag` commands through the DMC command line interface. Refer to the *Netra CT 820 Server System Administrator's Guide* for more information on accessing the DMC command line interface.

To display the version number of the `dmcdiag` utility, enter the following command:

```
netract (Active/Standby) cli> dmcdiag -v
```

or:

```
netract (Active/Standby) cli> dmcdiag -v
```

- To display a list of options for the `dmcdiag` utility for the *active* (1A) DMC, enter the following command:

```
netract (Active) cli> dmcdiag -u
```

The following output will appear:

```
dmcdiag options:
[enet=E|D][,epatttype=Seq+Rand][,epkts=NUMERIC|1,5][,target=[IP Addr]]
[,etest=Internal+External+Ping+Phy][,flash=E|D][,aport=E|D]
[,anum=0+1+2+3][,a0on=On|Off|Toggle][,alon=On|Off|Toggle]
[,a2on=On|Off|Toggle][,a3on=On|Off|Toggle][,health=E|D][,ipmi=E|D]
[,rtc=E|D][,fanstatus=E|D][,fantac=E|D][,frupres=E|D]
[,fruidchksum=E|D][,i2ctemp=E|D][,psupplystatus=E|D][,powersupply=D|E]]
```


- To display a list of options for the `dmcdiag` utility for the *standby* (1B) DMC, enter the following command:

```
netract (Standby) cli> dmcdiag -u
```

The following output will appear:

```
dmcdiag options:
[enet=E|D][,epattype=Seq+Rand][,epkts=NUMERIC|1,5][,target=[IP Addr]]
[,etest=Internal+External+Ping+Phy][,flash=E|D][,aport=E|D]
[,anum=0+1+2+3][,a0on=On|Off|Toggle][,alon=On|Off|Toggle]
[,a2on=On|Off|Toggle][,a3on=On|Off|Toggle][,health=E|D][,ipmi=E|D]
[,rtc=E|D][,fruidchksum=E|D]
```

TABLE 4-1 describes each option available for the `dmcdiag` utility on the active and, in most cases, the standby DMC. Note that you must enter a comma after the variable for each option when entering the information in the command line interface using the `dmcdiag` utility. All test options with enable/disable variables are set to enabled by default, except for the Power Supply On/Off test.

TABLE 4-1 Options for the `dmcdiag` Utility for the Active DMC

Supported on DMC	Options	Variables	Additional Information
Active and standby	<code>enet=</code>	E (Enable) D (Disable)	Ethernet test. Enter either Enable <i>or</i> Disable. Refer to “Ethernet Test” on page 4-2 for more information.
Active and standby	<code>epattype=</code>	Seq (Sequential) Rand (Random)	Ethernet data pattern type. Enter Sequential <i>and/or</i> Random. Use the + sign between the two variables to choose both. Refer to “Ethernet Test” on page 4-2 for more information.
Active and standby	<code>epkts=</code>	1 - 5	Number of packets. Enter a number between 1 and 5. Refer to “Ethernet Test” on page 4-2 for more information.
Active and standby	<code>target=</code>	<i>Internet protocol address</i>	Target Internet protocol address. Enter the target IP address. Refer to “Ethernet Test” on page 4-2 for more information.
Active and standby	<code>etest=</code>	Internal External Ping Phy	Ethernet test type. Enter Internal <i>and/or</i> External <i>and/or</i> Ping <i>and/or</i> Phy. Refer to “Ethernet Test” on page 4-2 for more information.

TABLE 4-1 Options for the `dmcdiag` Utility for the Active DMC (Continued)

Supported on DMC	Options	Variables	Additional Information
Active and standby	<code>flash=</code>	E (Enable) D (Disable)	Flash test. Enter either Enable <i>or</i> Disable. Refer to “Flash Test” on page 4-2 for more information.
Active and standby	<code>aport=</code>	E (Enable) D (Disable)	Alarm port test. Enter either Enable <i>or</i> Disable. Refer to “Alarm Port Test” on page 4-2 for more information.
Active and standby	<code>anum=</code>	0 - 3	Alarm number. Enter 1 <i>and/or</i> 2 <i>and/or</i> 3 <i>and/or</i> 4. Refer to “Alarm Port Test” on page 4-2 for more information.
Active and standby	<code>a0on=</code>	On Off Toggle	Alarm 0 On test. Enter either On <i>or</i> Off <i>or</i> Toggle. Refer to “Alarm Port Test” on page 4-2 for more information.
Active and standby	<code>a1on=</code>	On Off Toggle	Alarm 1 On test. Enter either On <i>or</i> Off <i>or</i> Toggle. Refer to “Alarm Port Test” on page 4-2 for more information.
Active and standby	<code>a2on=</code>	On Off Toggle	Alarm 2 On test. Enter either On <i>or</i> Off <i>or</i> Toggle. Refer to “Alarm Port Test” on page 4-2 for more information.
Active and standby	<code>a3on=</code>	On Off Toggle	Alarm 3 On test. Enter either On <i>or</i> Off <i>or</i> Toggle. Refer to “Alarm Port Test” on page 4-2 for more information.
Active and standby	<code>health=</code>	E (Enable) D (Disable)	Health test. Enter either Enable <i>or</i> Disable. Refer to “Health Test” on page 4-2 for more information.
Active and standby	<code>ipmi=</code>	E (Enable) D (Disable)	IPMI test. Enter either Enable <i>or</i> Disable. Refer to “IPMI Test” on page 4-3 for more information.
Active and standby	<code>rtc=</code>	E (Enable) D (Disable)	Real time clock test. Enter either Enable <i>or</i> Disable. Refer to “Real Time Clock (RTC) Test” on page 4-3 for more information.
Active only	<code>fanstatus=</code>	E (Enable) D (Disable)	Fan status test. Enter either Enable <i>or</i> Disable. Refer to “Fan Status Test” on page 4-3 for more information.
Active only	<code>fantac=</code>	E (Enable) D (Disable)	Fan tachometer test. Enter either Enable <i>or</i> Disable. Refer to “Fan Tachometer Test” on page 4-3 for more information.

TABLE 4-1 Options for the `dmcdiag` Utility for the Active DMC (*Continued*)

Supported on DMC	Options	Variables	Additional Information
Active only	<code>frupres=</code>	E (Enable) D (Disable)	FRU presence test. Enter either <i>Enable or Disable</i> . Refer to “FRU Presence Test” on page 4-3 for more information.
Active and standby	<code>fruidchksum=</code>	E (Enable) D (Disable)	FRU ID checksum test. Enter either <i>Enable or Disable</i> . Refer to “FRUID Checksum Test” on page 4-4 for more information.
Active only	<code>i2ctemp=</code>	E (Enable) D (Disable)	I ² C temperature test. Enter either <i>Enable or Disable</i> . Refer to “I2C Temperature Test” on page 4-5 for more information.
Active only	<code>psupplystatus=</code>	E (Enable) D (Disable)	Power supply status test. Enter either <i>Enable or Disable</i> . Refer to “Power Supply Status Test” on page 4-5 for more information.
Active only	<code>powersupply=</code>	E (Enable) D (Disable)	Power supply on/off test. Enter either <i>Enable or Disable</i> . Refer to “Power Supply On/Off Test” on page 4-5 for more information.

4.2.2 Running the Diagnostics Tests through SunVTS

There are three diagnostics tests that you can run through SunVTS:

- the `IPMI` test, which checks the IPMI connectivity between the Netra CP2300 boards and the active (1A) DMC
- the `dmctest` test, which tests the components on the active (1A) DMC
- the `dmctest` test, which tests the components on the standby (1B) DMC

All three tests are accessible from the main SunVTS window (FIGURE 4-1).

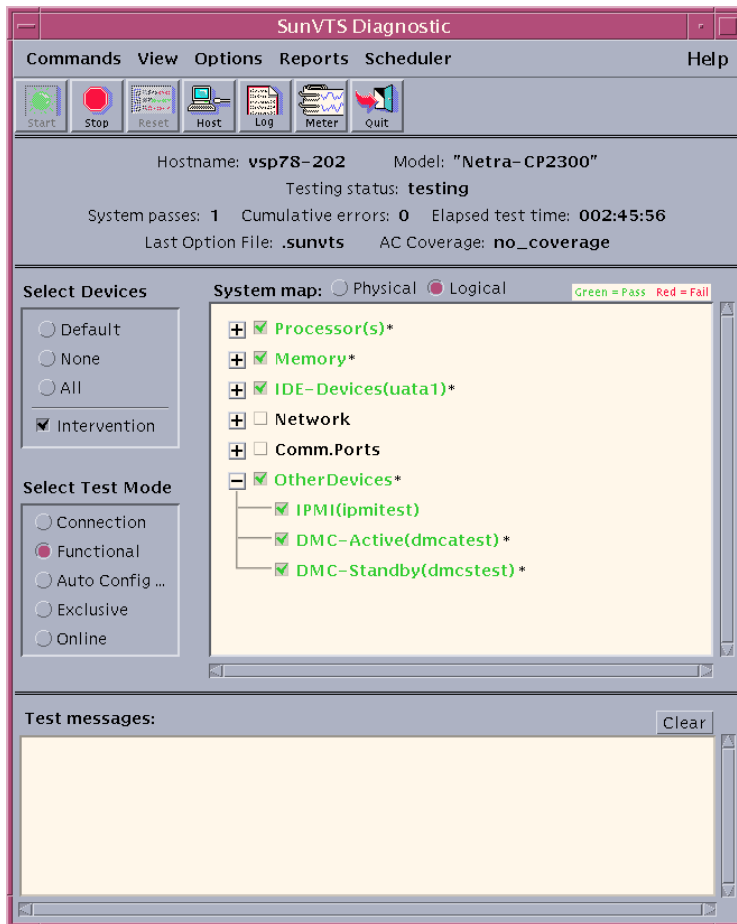


FIGURE 4-1 Main SunVTS Window

4.2.2.1 ipmitest Diagnostics SunVTS Test

The `ipmitest` checks the IPMI connectivity between the Netra CP2300 boards and the active (1A) DMC. The test send IPMI commands and wait for a response. It will retry up to four times if it fails to receive a response. FIGURE 4-2 shows the SunVTS `ipmitest` dialog box.

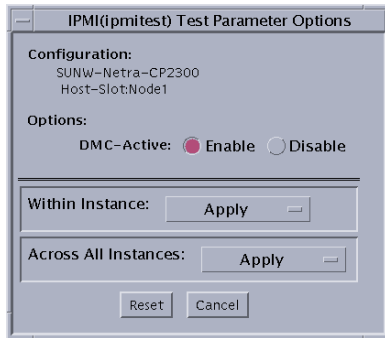


FIGURE 4-2 `ipmitest` Dialog Box

4.2.2.2 dmccatetest Diagnostics SunVTS Test

The `dmccatetest` is a Solaris level DMC diagnostics test that runs on SunVTS through the Netra CP2300 board. You must establish the communication interface between the active (1A) DMC and the Netra CP2300 board before running this test.

To test the active (1A) DMC, select the `DMC-Active(dmccatetest)` option from the main SunVTS window (FIGURE 4-1). The `DMC-Active(dmccatetest) Test Parameter Options` dialog box appears. FIGURE 4-3 shows the top half of the `DMC-Active(dmccatetest) Test Parameter Options` dialog box, and FIGURE 4-4 shows the bottom half of the `DMC-Active(dmccatetest) Test Parameter Options` dialog box.

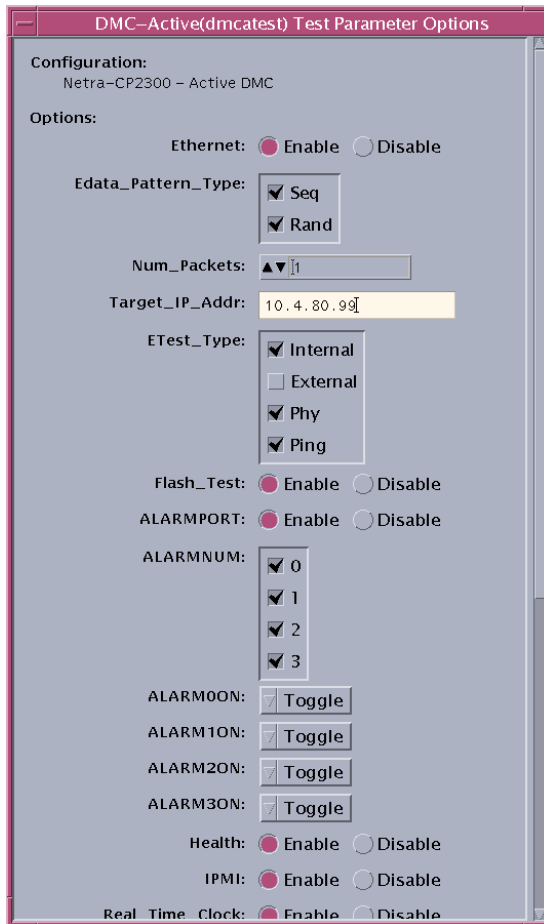


FIGURE 4-3 Top Half of the DMC-Active(dmctest) Test Parameter Options Dialog Box

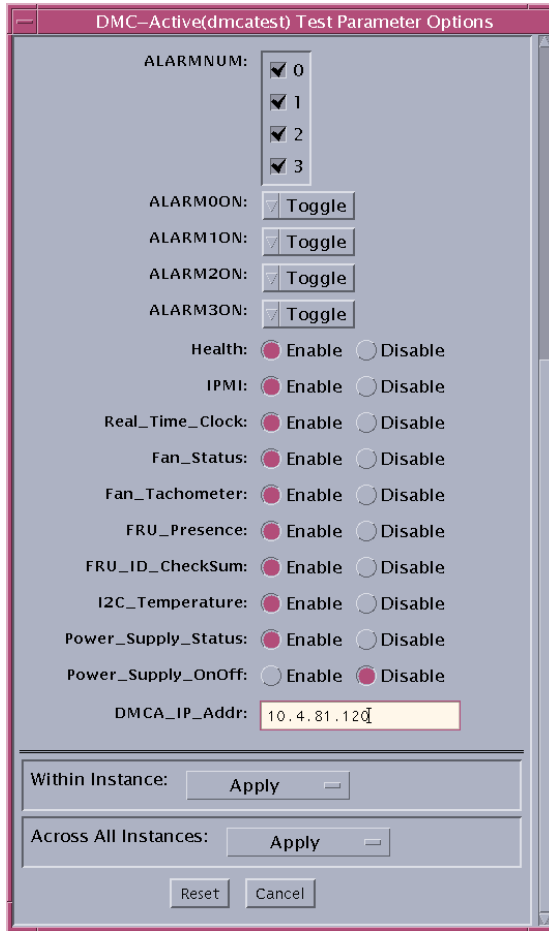


FIGURE 4-4 Bottom Half of the DMC-Active(dmccatest) Test Parameter Options Dialog Box

The options and variables for the `dmccatest` are the same as the `dmccdiag` utility for the active (1A) DMC that is run through the DMC command line interface. Refer to TABLE 4-1 for an explanation of each of the options and variables shown in DMC-Active(dmccatest) Test Parameter Options dialog box.

4.2.2.3 dmcstest Diagnostics SunVTS Test

The `dmcstest` is a Solaris level DMC diagnostics test that runs on SunVTS through the Netra CP2300 board. You must establish the communication interface between the standby (1B) DMC and the Netra CP2300 board before running this test.

To test the standby (1B) DMC, select the `DMC-Standby(dmcstest)` option from the main SunVTS window (FIGURE 4-1). The `DMC-Standby(dmcstest)` Test Parameter Options dialog box appears. FIGURE 4-5 shows the top half of the `DMC-Standby(dmcstest)` Test Parameter Options dialog box, and FIGURE 4-6 shows the bottom half of the `DMC-Standby(dmcstest)` Test Parameter Options dialog box.

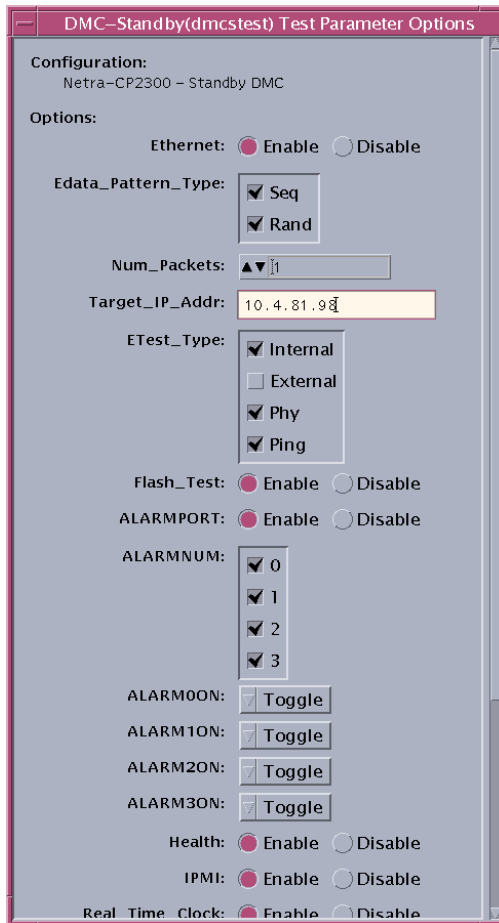


FIGURE 4-5 Top Half of the `DMC-Standby(dmcstest)` Test Parameter Options Dialog Box

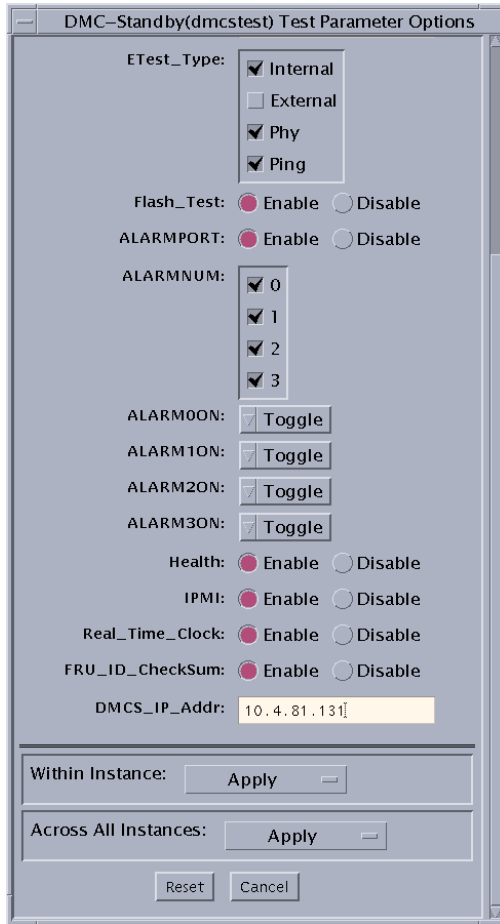


FIGURE 4-6 Bottom Half of the DMC-Standby(dmcstest) Test Parameter Options Dialog Box

The options and variables for the `dmcstest` are the same as the `dmcdiag` utility for the standby (1B) DMC that is run through the DMC command line interface. Refer to TABLE 4-1 for an explanation of each of the options and variables shown in DMC-Standby(dmcstest) Test Parameter Options dialog box.

Removing and Replacing Hot-Swappable Cards

For details about specific board products, refer to the appropriate board-level hardware manuals.



Caution – When the system is plugged in, energy hazards are present on the midplane. Do not reach into the enclosure.



Caution – Static electricity can damage electronic components. Wear a wrist strap grounded through one of the system's ESD ground jacks when removing and replacing hot-swappable cards.

This chapter gives removal and replacement instructions for the following hot-swappable cards in a Netra CT 820 server:

- Section 5.1, “Removing and Installing Distributed Management Cards” on page 5-2
- Section 5.2, “Removing and Installing Switching Fabric Boards” on page 5-6
- Section 5.3, “Removing and Installing Node Boards” on page 5-11

All hot-swappable boards use the same ejector handles to remove and install the boards into the system. FIGURE 5-1 shows the proper way to remove or insert a hot-swappable board into a system.

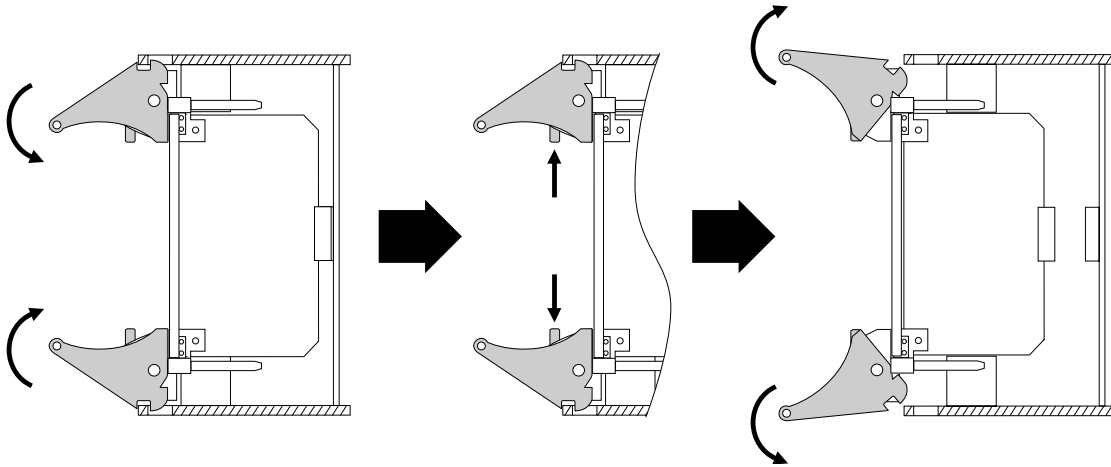


FIGURE 5-1 Injector/Ejector Operation for Board-Level Components

5.1 Removing and Installing Distributed Management Cards

The distributed management cards (DMCs) in slot 1 affect power to slots 2-21 in accordance with the PICMG 2.1 specification. PICMG 2.1 states that the power control (BD_SEL#) signals must be asserted (grounded) for the boards to power up.

5.1.1 Rules and Restrictions for Distributed Management Cards

Following are the rules and restrictions for hot-swapping the distributed management cards:

- If you are hot-swapping the *active* distributed management card (slot 1A), you *cannot* hot-swap any other component in the Netra CT 820 server while the card is removed from the system. Once you have installed the active distributed management card back into the system and it is up and running, you can then hot swap any other component in the server.
- If you are hot-swapping the *standby* distributed management card (slot 1B), you *can* hot-swap any other component in the Netra CT 820 server while the card is removed from the system, except for the active distributed management card.

Once you have installed the standby distributed management card back into the system and it is up and running, you can then hot-swap any other component in the server, including the active distributed management card.

- You cannot hot-swap both distributed management cards at the same time. The rear transition card for the distributed management card is a single card that extends ports from both distributed management cards to the rear of the server. Removing the rear transition card is essentially the same thing as removing both distributed management cards; therefore, the rear transition card for the distributed management card is not a hot-swappable component. You must fully power-off the system before removing the rear transition card for the distributed management card. Refer to Chapter 7 for those instructions.

5.1.2 Removing a Distributed Management Card

The Netra CT 820 server is available only as a rear-access server, so two distributed management cards are installed in slots 1A and 1B in the front of the server and a single rear transition card is installed in slot 1 at the rear of the server.

Because the distributed management cards control the power to every slot in the system (through BD_SEL#), if both of the system's DMCs are removed simultaneously, all the boards in the system lose power. When removing a DMC from a powered system, the card performs a controlled shutdown of itself but not the other boards in the system. Therefore, you should ensure that a second DMC is present and synchronized before removing a DMC. If a second card is not available, you should power down the server before removing a distributed management card.

Following are the instructions for removing the distributed management card.

1. **Unscrew the board retention screws that fasten the board to the enclosure (FIGURE 5-2).**

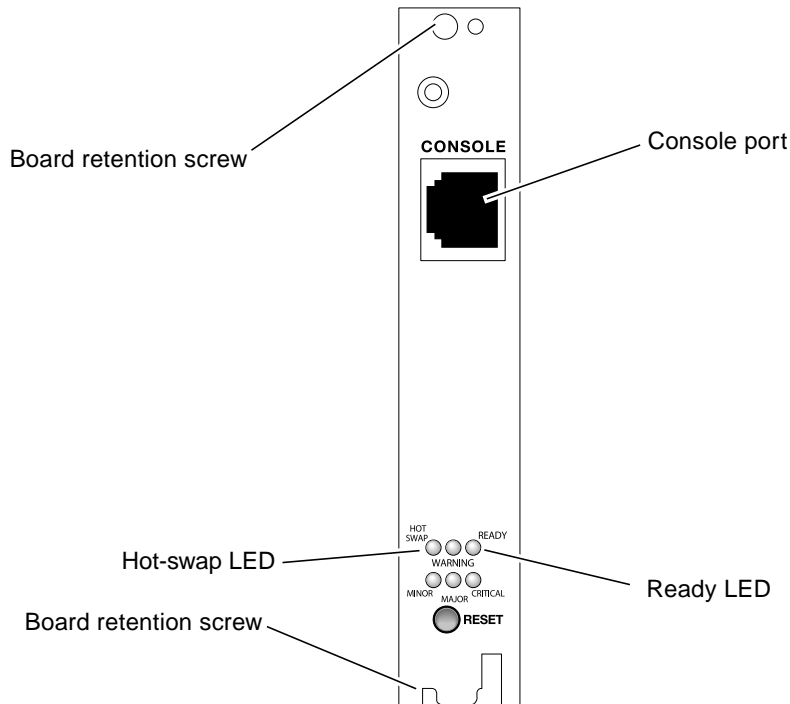


FIGURE 5-2 Distributed Management Card Ports

2. Determine if it is safe to remove the distributed management card.

- If system power is off or if the distributed management card's blue hot-swap LED is on, go to Step 3. Refer to FIGURE 5-2 for the location of the hot-swap LED.
- If system power is on and the distributed management card's blue hot-swap LED is off, follow these instructions to put the DMC into a "safe" state:

a. Partially unlatch the card's ejector.

Do not fully open the ejector as this moves the board out of the enclosure and breaks its midplane connection before the board can shut down properly.

b. Wait for the blue hot-swap LED to light.

This can take several seconds depending on the amount of data that must be synchronized.

3. Fully open the ejector handle, rotating it outward until the board disengages from the midplane (FIGURE 5-1).

4. Disconnect any cables connected to the ports on the distributed management card.

Use only the Console port on the distributed management card; all other cabling should be to the rear transition card at the rear of the server. See FIGURE 5-2 for location of the Console port on the DMC.

5. Slide the board evenly out of the enclosure.

6. Install a replacement distributed management card in the slot.

Refer to Section 5.1.3, “Installing a Distributed Management Card” on page 5-5.

Note – As long as the distributed management card is removed from the slot and the system is running with only the single remaining DMC, you will not have redundancy for that component. Both distributed management cards must be installed and running in order to have redundancy for that component.

5.1.3 Installing a Distributed Management Card

1. Locate the distributed management card slots.

The distributed management cards can only be inserted in slot 1A and 1B.

2. Prepare the distributed management card by opening its injector/ejector handle (FIGURE 5-1).

3. Carefully align the edges of the board with the card guides in the distributed management card slot.

Look into the enclosure to verify correct alignment of the rails in the guides.

4. Keeping the board aligned in the guides, slide the board in until the injector/ejector mechanism engages the retention bar.

5. Simultaneously push in the board and rotate the injector/ejector handle to its closed position (rotate inward) to seat the midplane connectors.

If system power is on, the distributed management card boots and its READY LED lights green (active [1A] DMC) or blinks green (standby [1B] DMC). It can take several seconds for the LED to change to solid green or blinking green.

6. Screw in the board retention screw to anchor the board in the chassis.

This screw is located at the opposite end of the faceplate from the ejector handle.

By default, the distributed management card sets its IP addresses statically. Firmware V1.01a is configured with the static IP address 10.90.90.91. Reconfigure the IP addresses for your network the first time you log on, prior to adding the distributed management card to your network.

7. Connect the cable to the Console port on the distributed management card, if necessary.

Refer to FIGURE 5-2 for the location of the Console port on the distributed management card.



Caution – Do *not* connect cables to the Console port on both the distributed management card and the rear transition card. No mechanism is provided to disable simultaneous input from the front and rear cards, so attempts to input data from both ports will place the board(s) in an unknown state.

5.2 Removing and Installing Switching Fabric Boards

The Netra CT 820 server is available only as a rear-access server. Every server is shipped with two switching fabric boards installed in slots 2 and 21 in the front of the server, and two rear transition cards for the switching fabric boards installed in slots 2 and 21 at the rear of the server.

If you are hot-swapping the rear transition card for a switching fabric board, you must remove the switching fabric board from the front of the system before removing the rear transition card from the rear of the system. Do not remove the rear transition card without first removing the accompanying switching fabric board from the front.



Caution – Processor boards might contain a socketed lithium battery. This battery is not a field-replaceable unit. There is a danger of explosion if the battery is incorrectly replaced or handled. Do not disassemble or recharge the battery. Do not dispose of the battery in fire. When the battery is replaced, the same type or an equivalent type recommended by the manufacturer must be used. Used batteries must be disposed of according to the manufacturer's instructions. Return the processor board to the Sun Microsystems for battery service.

5.2.1 Removing a Switching Fabric Board Set

Following are the instructions for removing a switching fabric board and, if necessary, the accompanying rear transition card.

5.2.1.1 Removing a Switching Fabric Board

1. Disengage the ejector to notify software that the board is about to be removed and wait for the hot-swap LED to light.

Refer to FIGURE 5-3 for the location of the hot-swap LED on the switching fabric board.

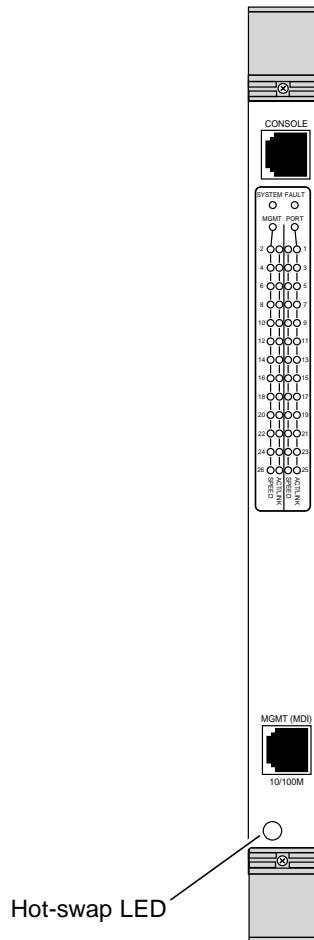


FIGURE 5-3 Location of the Hot-Swap LED on the Switching Fabric Board

2. **Unscrew any retention screws that fasten the board to the enclosure.**
3. **Open the ejectors fully, rotating the handles outward until the board disengages from the midplane (FIGURE 5-1).**
4. **Slide the board evenly out of the enclosure.**
5. **Determine if you are going to replace the rear transition card or not.**
 - If you are going to replace the rear transition card, go to “Removing a Rear Transition Card for a Switching Fabric Board” on page 5-8.
 - If you are not going to replace the rear transition card, install a replacement switching fabric board or a filler panel to maintain the enclosure's shielding and cooling performance. Refer to Section 5.2.2.2, “Installing a Switching Fabric Board” on page 5-10.

Note – As long as the switching fabric board is removed from the slot, and the system is running with only the single remaining switching fabric board, you will not have redundancy for that component. Both switching fabric boards must be installed and running in order to have redundancy for that component.

5.2.1.2 Removing a Rear Transition Card for a Switching Fabric Board

1. **Remove the switching fabric board from the front of the server, if you have not already done so.**

Refer to “Removing a Switching Fabric Board” on page 5-7 for those instructions. Do not remove the rear transition card until you have first removed the switching fabric board.

2. **Disconnect any cables connected to the rear transition card for the switching fabric board.**

Refer to FIGURE 5-4 for the ports on the rear transition card for the switching fabric board.

Note – Port 24 on the rear transition card for the switching fabric board is reserved for future use.

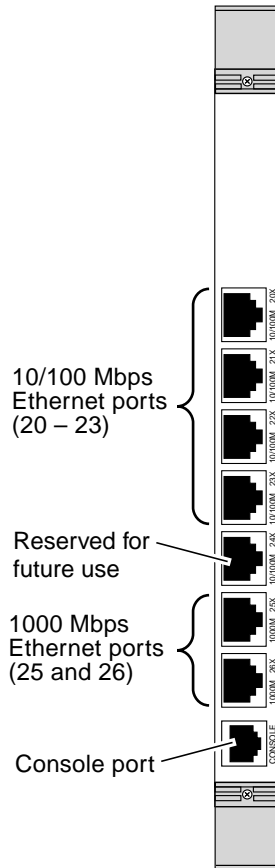


FIGURE 5-4 Ports on the Rear Transition Card for the Switching Fabric Board

3. Unscrew any retention screws that fasten the card to the enclosure.
4. Open the ejectors fully, rotating the handles outward until the board disengages from the midplane.
5. Begin to slide the card evenly out of the enclosure.
6. Install a replacement rear transition card or a filler panel to maintain the enclosure's shielding and cooling performance.

Refer to Section 5.2.2.1, “Installing the Rear Transition Card for a Switching Fabric Board” on page 5-10.



Caution – Failure to cover all rear panel slots with rear transition cards or filler panels can lead to overheating of power supplies.

5.2.2 Installing a Switching Fabric Board Set

- If you want to install the rear transition card, go to Section 5.2.2.1, “Installing the Rear Transition Card for a Switching Fabric Board” on page 5-10.
- If you want to install a switching fabric board, go to Section 5.2.2.2, “Installing a Switching Fabric Board” on page 5-10.

5.2.2.1 Installing the Rear Transition Card for a Switching Fabric Board

1. Choose an appropriate slot for the rear transition card.

Rear transition cards must be installed in-line behind the accompanying front board. For example, if the accompanying front board is installed in slot 2, its rear transition card must be installed at the back of the system in slot 2.

2. Remove the filler panel, if necessary.

3. Prepare the rear transition card by opening its injector/ejector handles.

4. Carefully align the edges of the board with the card guides in the slot.

Look into the enclosure to verify correct alignment of the rails in the guides.

5. Keeping the board aligned in the guides, slide the board in until the injector/ejector mechanisms engage the retention bar.

6. Simultaneously push in the board and rotate the injector/ejector handles to their closed positions (rotate inward) to seat the midplane connectors.

7. Install the board retention screws to anchor the board in the chassis.

8. Connect the cables to the rear transition card.

Refer to FIGURE 5-4, which indicates the ports on the rear transition card for the switching fabric board.

5.2.2.2 Installing a Switching Fabric Board

1. Locate the switching fabric board slots.

The switching fabric boards can only be inserted in slot 2 and/or 21 in the Netra CT 820 server.

2. Remove the filler panel, if necessary.

3. Prepare the switching fabric board by opening its injector/ejector handles (FIGURE 5-1).

4. **Carefully align the edges of the board with the card guides in the slot.**
Look into the enclosure to verify correct alignment of the rails in the guides.
5. **Keeping the board aligned in the guides, slide the board in until the injector/ejector mechanisms engage the retention bar.**
6. **Simultaneously push in the board and rotate the injector/ejector handles to their closed positions (rotate inward) to seat the midplane connectors.**
If system power is on, the switching fabric board hot-swap LED lights green. It can take several seconds for the LED to change to solid green or blinking green.
7. **Install the board retention screws to anchor the board in the chassis.**

5.3 Removing and Installing Node Boards

Note – The Netra CP2300 board is a Sun-standard node board that is supported in the Netra CT 820 server. Examples in this section might refer to the Netra CP2300 board; for all other node boards, refer to the documentation that came with your board.

Slots 3 through 20 in the Netra CT 820 server support PICMG 2.16-compliant node boards.

The Netra CT 820 server is available only as a rear access server, so every node board installed in the front of the server must also have an accompanying rear transition card installed in the same slot number at the rear of the server.



Caution – Some third-party cPSB boards use latches with alignment pins that insert into tapped screw holes in the chassis. Remove the alignment pins before inserting these boards into the chassis. Insertion of alignment pins into tapped screw holes can generate metal particles, resulting in product failure. Failures resulting from use of this latch type are not covered under the warranty.

Refer to the board-specific documentation to determine if the board supports hot swap. If the board does not support hot swap, power down the Netra CT 820 server before installing or removing the board.

For ease of installation when fully loading the system, fill slot 11 first, then work outward, filling each odd-numbered slot, alternating from left-to-right (first fill slot 11, then slot 9, then slot 13, and so on). Once all of the odd-numbered slots have been filled, begin filling each even-numbered slot, starting with slot 10 and alternating from left-to-right (first fill slot 10, then slot 8, then slot 12, and so on).



Caution – Processor boards might contain a socketed lithium battery. This battery is not a field-replaceable unit. There is a danger of explosion if the battery is incorrectly replaced or handled. Do not disassemble or recharge the battery. Do not dispose of the battery in fire. When the battery is replaced, the same type or an equivalent type recommended by the manufacturer must be used. Used batteries must be disposed of according to the manufacturer's instructions. Return the processor board to the manufacturer for battery service.

5.3.1 Removing a Node Board Set

Following are the instructions for removing a node board and, if necessary, the accompanying rear transition card.

5.3.1.1 Removing a Node Board

1. **Disengage the ejector to notify software that the board is about to be removed, and wait for the hot-swap LED to light.**

FIGURE 5-5 shows the location of the hot-swap LED on the Netra CP2300 board; for all other node boards, refer to the documentation that came with your board for the location of the hot-swap LED.

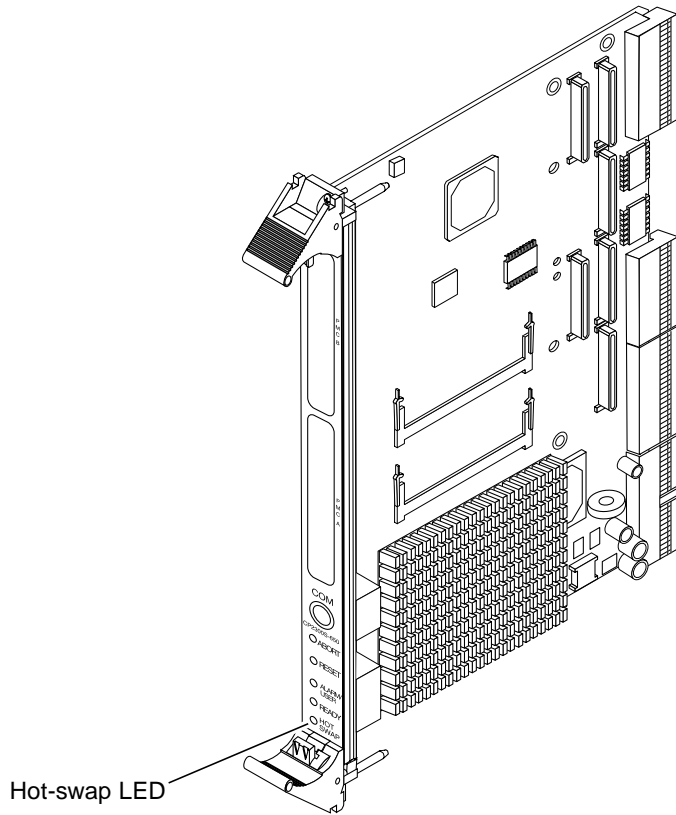


FIGURE 5-5 Location of the Hot-Swap LED on the Netra CP2300 Board

- 2. Unscrew any retention screws that fasten the board to the enclosure.**
If the board occupies multiple slots, unscrew the retention screws in each occupied slot.
- 3. Open the ejectors fully, rotating the handles outward until the board disengages from the midplane (FIGURE 5-1).**
- 4. Slide the board evenly out of the enclosure.**
- 5. Determine if you are going to replace the rear transition card or not.**
 - If you are going to replace the rear transition card, go to “Removing a Rear Transition Card for a Node Board” on page 5-14.
 - If you are not going to replace the rear transition card, install a replacement node board or a filler panel to maintain the enclosure's shielding and cooling performance. Refer to “Installing a Node Board” on page 5-16.

5.3.1.2 Removing a Rear Transition Card for a Node Board

1. Remove the node board from the front of the server, if you have not already done so.

Refer to Section 5.3.1.1, “Removing a Node Board” on page 5-12 for those instructions. Do not remove the rear transition card until you have first removed the node board.

2. Disconnect any cables connected to the rear transition card for the node board.

FIGURE 5-6 shows the ports on the rear transition card for the Netra CP2300 board; for all other node boards, refer to the documentation that came with your board’s rear transition card for the port locations.

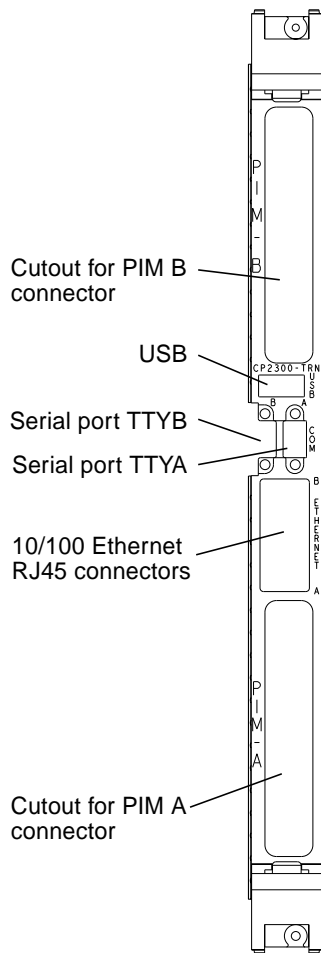


FIGURE 5-6 Rear Transition Card for the Netra CP2300 Transition Card Connectors

3. **Unscrew any retention screws that fasten the board to the enclosure.**
4. **Open the ejectors fully, rotating the handles outward until the board disengages from the midplane (FIGURE 5-1).**
5. **Begin to slide the board evenly out of the enclosure.**

Before pulling the board out entirely, check for internal cabling attached to the board that may become snagged or that needs to be disconnected before the board can be fully removed. Disconnect cabling as necessary.
6. **Install a replacement rear transition card or a filler panel to maintain the enclosure's shielding and cooling performance.**

Refer to Section 5.3.2.1, “Installing the Rear Transition Card for a Node Board” on page 5-15.



Caution – Failure to cover all rear panel slots with rear transition cards or filler panels can lead to overheating of power supplies.

5.3.2 Installing a Node Board Set

- If you want to install the rear transition card, go to Section 5.3.2.1, “Installing the Rear Transition Card for a Node Board” on page 5-15.
- If you want to install a node board, go to Section 5.3.2.2, “Installing a Node Board” on page 5-16.

5.3.2.1 Installing the Rear Transition Card for a Node Board

1. **Choose an appropriate slot for the rear transition card.**

Rear transition cards must be installed in-line behind the accompanying front node board. For example, if the accompanying node board is installed in slot 11, its rear transition card must be installed at the back of the system in slot 11.
2. **Remove the filler panel, if necessary.**
3. **Prepare the rear transition card by opening its injector/ejector handle (FIGURE 5-1).**
4. **Carefully align the edges of the board with the card guides in the slot.**

Look into the enclosure to verify correct alignment of the rails in the guides.
5. **Keeping the board aligned in the guides, slide the card in until the injector/ejector mechanisms engage the retention bar.**

6. **Simultaneously push in the card and rotate the injector/ejector handles to their closed positions (rotate inward) to seat the midplane connectors.**
7. **Screw in the board retention screw to anchor the board in the chassis.**
8. **Connect the cables to the rear transition card.**

FIGURE 5-6 shows the ports on the rear transition card for the Netra CP2300 board; for all other node boards, refer to the documentation that came with your board's rear transition card for the port locations.

5.3.2.2 Installing a Node Board

Before installing a Netra CP2300 board into the Netra CT 820 server, you must first decide whether you want the Ethernet signals routed through the Netra CP2300 board rear transition card or through the switching fabric board rear transition cards (RTCs).

Position 0 of the SW503 DIP switch on the Netra CP2300 board controls the Ethernet networking on the Netra CP2300 board and rear transition card. By default, position 0 is set to OFF, which means that the board is set for cPSB network mode and the Netra CP2300 rear transition card's RJ45 Ethernet ports are disabled. Ethernet signals are routed to the switching fabric board RTC in this case.

If you want Ethernet signals routed through the Netra CP2300 board rear transition card and *not* through the switching fabric board rear transition card, set Position 0 of SW503 to ON, so that you can use the RJ45 Ethernet connectors on the Netra CP2300 board transition card. Refer to FIGURE 5-7 for the location and settings of Position 0 on the SW503 DIP switch.

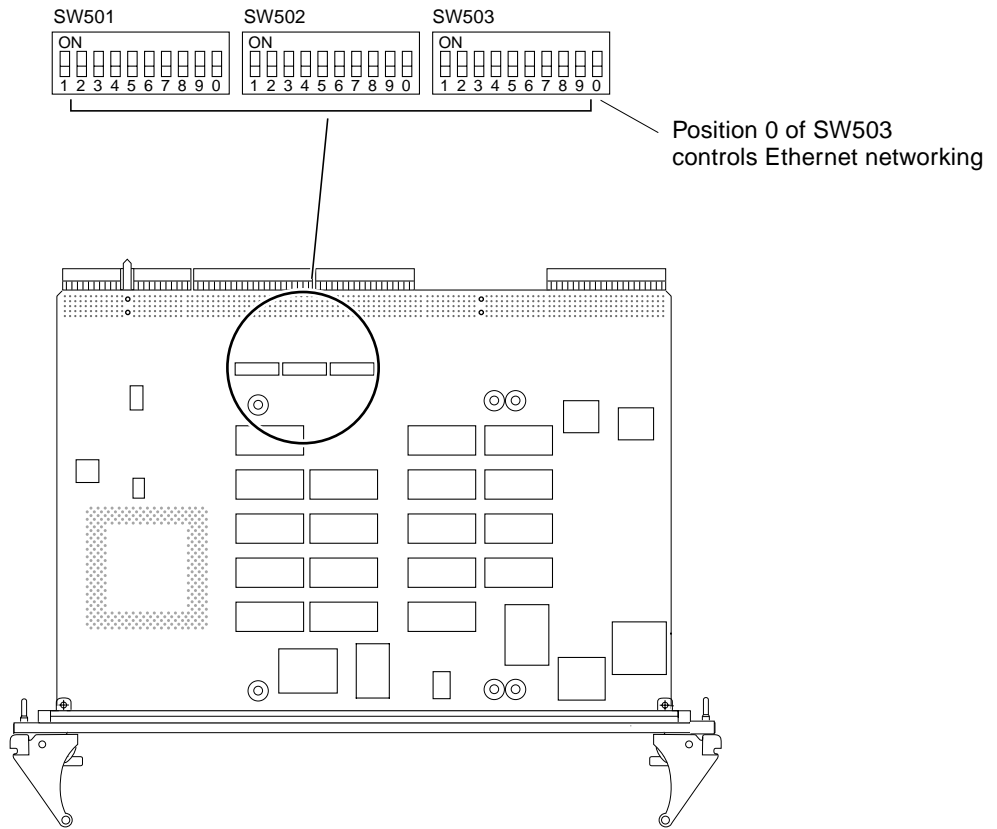


FIGURE 5-7 Location and Default Settings of the SW503 DIP Switch

- 1. Verify that you have already installed the rear transition card for the node board.**
Refer to Section 5.3.2.1, “Installing the Rear Transition Card for a Node Board” on page 5-15.
- 2. Locate the node board slots.**
The node boards can only be inserted in slots 3-20 in the Netra CT 820 server.
- 3. Remove the filler panel, if necessary.**
- 4. Prepare the node board by opening its injector/ejector handles (FIGURE 5-1).**
- 5. Carefully align the edges of the board with the card guides in the slot.**
Look into the enclosure to verify correct alignment of the rails in the guides.
- 6. Keeping the board aligned in the guides, slide the board in until the injector/ejector mechanisms engage the retention bar.**

- 7. Simultaneously push in the board and rotate the injector/ejector handles to their closed positions (rotate inward) to seat the midplane connectors.**

If system power is on, the node board hot-swap LED lights green. It can take several seconds for the LED to change to solid green or blinking green.

- 8. Screw in the board retention screws to anchor the board in the chassis.**

Removing and Replacing Hot-Swappable Subassemblies

Following are the hot-swappable subassemblies in the Netra CT 820 server:

- Section 6.1, “Removing and Installing Power Supplies” on page 6-1
- Section 6.2, “Removing and Installing Fan Trays” on page 6-4
- Section 6.3, “Removing and Installing the Air Filter” on page 6-6

6.1 Removing and Installing Power Supplies

The Netra CT 820 server accommodates up to eight 250W modular power supplies. The power supplies are load sharing, and hot-swappable, and plug directly into the power trays (FIGURE 6-1).

The number of power supplies needed in any given system depends on the load in that system. Every Netra CT 820 server is shipped out with eight power supplies; this is the suggested number of power supplies to ensure complete power supply redundancy in your system.



Caution – Power supply maintenance should only be performed by trained personnel. When the system is plugged in, energy hazards are present on the midplane. Do not reach into the enclosure.



Caution – All power supplies must be of identical make and model. If changing make or model, power must be removed from the chassis and all supplies must be replaced.



Caution – Fill all unoccupied slots with replacement power supply units. Failure to cover open slots could cause overheating of power supplies, boards, or other components, and could damage the system.

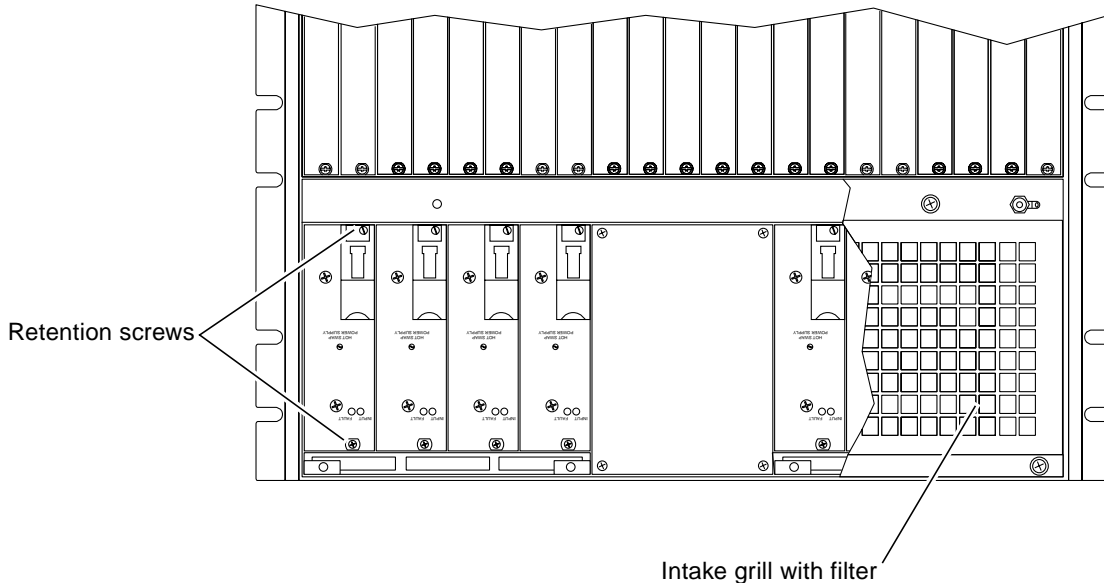


FIGURE 6-1 Power Supply Orientation

6.1.1 Removing a Power Supply

- 1. Remove the intake grill from the bottom front of the enclosure.**
See Section 6.3.1, “Removing the Air Filter” on page 6-6 for those instructions.
- 2. Unscrew the two retention screws on the front of the power supply you wish to remove.**
See FIGURE 6-1 for the location of power supply retention screws.
- 3. Push down the spring-loaded latch on the ejector and rotate the ejector away from the power supply’s faceplate.**
This levers the power supply away from the backplane (FIGURE 6-2).

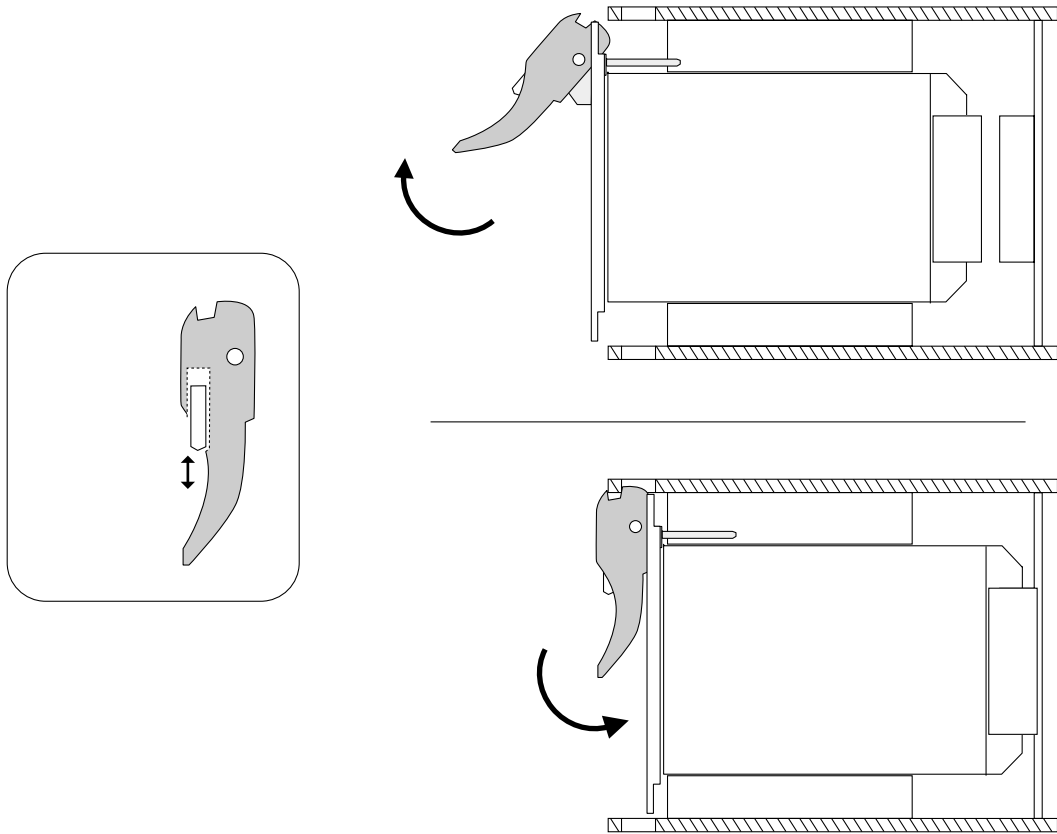


FIGURE 6-2 Injector/Ejector Operation (Power Supplies)

- 4. Pull the power supply away from its backplane connection and slide it out of the enclosure.**
- 5. Install a replacement power supply to maintain the enclosure's shielding and cooling performance.**

Go to Section 6.1.2, "Installing a Power Supply" on page 6-3.

6.1.2 Installing a Power Supply

- 1. Remove the intake grill from the bottom front of the enclosure, if you have not done so already.**

See Section 6.3.1, "Removing the Air Filter" on page 6-6 for those instructions, then return here.

2. **Select an empty power supply slot.**
3. **Prepare the power supply by opening the injector/ejector mechanisms (FIGURE 6-2).**
4. **Align the rails on the power supply with the guides in the slot.**
Look into the enclosure to verify correct alignment of the rails in the guides.
5. **Slide the power supply in the guides and press firmly to seat the connector.**
See FIGURE 6-2. The green LED on the power supply should come on when the power supply is fully inserted.
6. **Tighten the two retention screws on the front panel of the power supply.**
See FIGURE 6-1 for the location of power supply retention screws.
7. **Replace the intake grill.**

6.2 Removing and Installing Fan Trays

Nine blowers housed in three removable fan trays occupy the top of the enclosure. Each fan tray is secured by a captive screw and plugs into a blind mating receptacle in the enclosure (FIGURE 6-3).

For more information about system cooling, refer to the *Netra CT 820 Server Product Overview*.



Caution – Cooling capability is reduced when fan trays are absent from operating systems. It is important to minimize the time that a fan tray is absent from an operating system. For typical system configurations, no fan tray should be absent for more than two minutes.

6.2.1 Removing a Fan Tray

A 1/8" flat-blade screwdriver is required to remove a fan tray.

1. **Loosen (turn counterclockwise) the recessed screw latch on the front of the fan tray until it releases the tray.**
2. **Use the handle at the bottom of the tray to pull the fan tray out of the enclosure.**

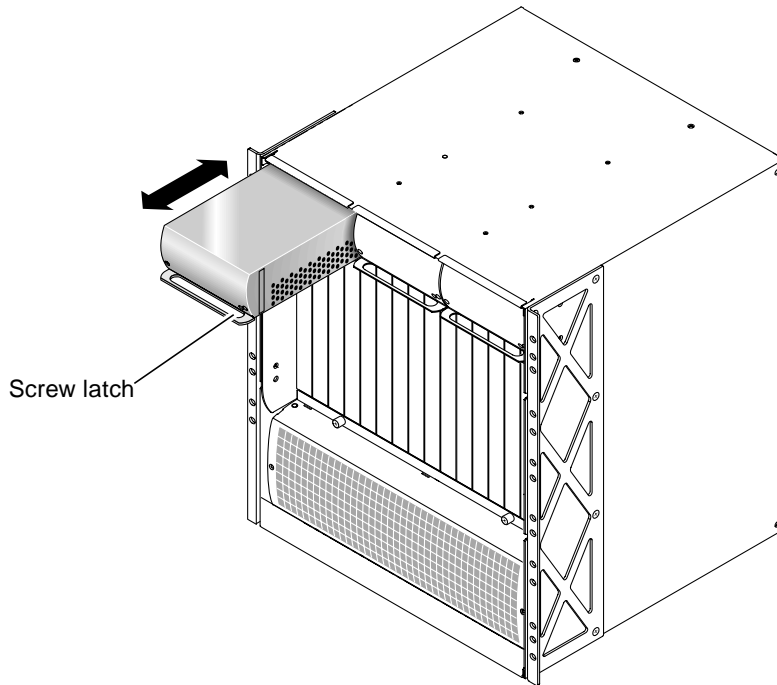


FIGURE 6-3 Fan Tray Installation and Removal

6.2.2 Installing a Fan Tray

A 1/8-in. flat-blade screwdriver is required to install a fan tray.

- 1. Select an empty fan bay at the top of the enclosure.**
- 2. Align the fan tray with the guides in the bay.**
Orient the fan tray with the handle at the bottom.
- 3. Slide the fan tray into the fan bay.**
- 4. Press the fan tray in firmly to seat its connector.**
- 5. Turn the latch clockwise to lock the fan tray into place.**
Do not overtighten the latch.

6.3 Removing and Installing the Air Filter

The system's air filter clips into the back side of the intake grill. The foam element in the filter is replaceable.

6.3.1 Removing the Air Filter

1. **Unscrew the two retention screws at the top of the air intake grill (FIGURE 6-4).**

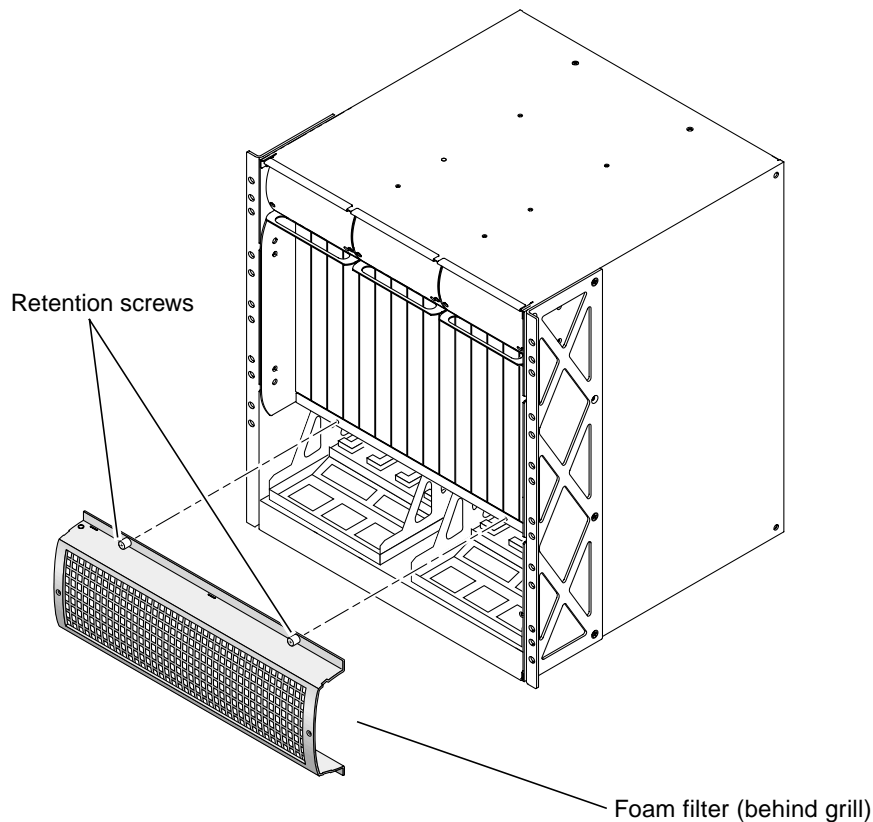


FIGURE 6-4 Intake Grill and Air Filter

2. **Pull the grill away from the enclosure.**
3. **Unclip the filter retainer to release the filter element, which is clipped onto the back of the intake grill.**

6.3.2 Installing the Air Filter

1. **Fit a new filter element into the back of the grill and clip the filter retainer into place.**
2. **Insert the intake grill tabs into the bottom into the enclosure.**
3. **Align the screws at the top of the grill with the corresponding holes on the enclosure and tighten the screws, taking care not to overtighten.**

Removing and Replacing Cold-Swappable Subassemblies

Following are the cold-swappable subassemblies for the Netra CT 820 server:

- “Removing and Installing the Rear Transition Card for the Distributed Management Card” on page 7-1
- “Removing and Installing the Midplane” on page 7-4

7.1 Removing and Installing the Rear Transition Card for the Distributed Management Card

The rear transition card for the distributed management card is not a hot-swappable component; you must fully power-off the system before removing the rear transition card. However, the distributed management card itself is a hot-swappable card, with some restrictions. Refer to Chapter 5 for more information.

7.1.1 Removing a Rear Transition Card for the Distributed Management Card

1. **Turn off the system and disconnect it from power.**

Refer to Section 2.2, “Powering Off the Server” on page 2-3.

2. Disconnect any cables connected to the rear transition card for the distributed management card.

Refer to FIGURE 7-1 for the ports on the rear transition card for the distributed management card.

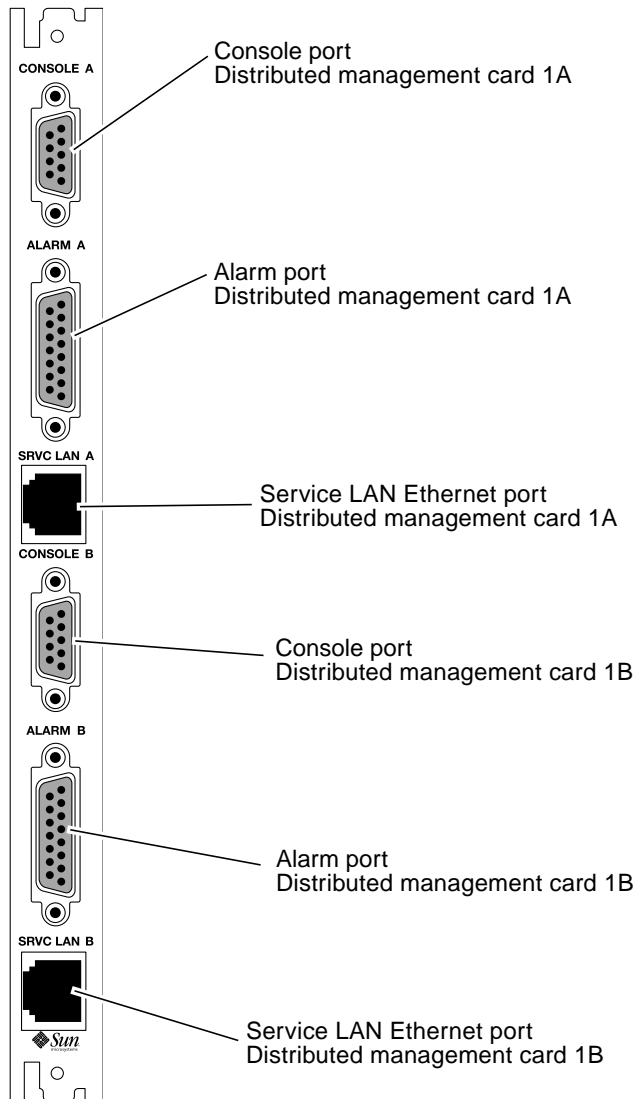


FIGURE 7-1 Distributed Management Card Rear Transition Card Ports

3. Unscrew the board retention screws that fasten the board to the enclosure.

4. **Open the ejector handles fully, rotating them outward until the board disengages from the midplane.**
5. **Slide the board evenly out of the enclosure.**
6. **Install a replacement rear transition card (see Section 7.1.2, “Installing the Rear Transition Card for the Distributed Management Card” on page 7-3).**

7.1.2 Installing the Rear Transition Card for the Distributed Management Card

1. **Locate the rear transition card slot for the distributed management card.**
The rear transition card for the DMC can only be inserted in slot 1 at the rear of the system.
2. **Prepare the rear transition card by opening its injector/ejector handles.**
3. **Carefully align the edges of the card with the card guides in the slot.**
Look into the enclosure to verify correct alignment of the rails in the guides.
4. **Keeping the board aligned in the guides, slide the board in until the injector/ejector mechanism engages the retention bar.**
5. **Simultaneously push in the board and rotate the injector/ejector handles inward to their closed position to seat the midplane connectors.**
6. **Screw in the board retention screws to anchor the card in the chassis.**
7. **Connect the cables to the rear transition card.**
Refer to FIGURE 7-1 for the ports on the rear transition card for the distributed management card.
8. **Reconnect the system to power and turn it on.**
Refer to Section 2.1, “Powering On the Server or Boards” on page 2-1.

7.2 Removing and Installing the Midplane

7.2.1 Removing the Midplane Assembly

Note – You may have to back up the FRU ID information from the midplane before removing and replacing it in the system. Refer to the *Netra CT 820 Server Release Notes* for more information.

1. Turn off the system and disconnect it from power.

Refer to Section 2.2, “Powering Off the Server” on page 2-3.

2. Remove the following components and their rear transition cards from the server:

- See Section 5.1.2, “Removing a Distributed Management Card” on page 5-3
- See Section 5.2.1, “Removing a Switching Fabric Board Set” on page 5-7
- See Section 5.3.1, “Removing a Node Board Set” on page 5-12
- See Section 6.2.1, “Removing a Fan Tray” on page 6-4

3. Remove two of the upper center card guides by pulling firmly down on the ends of each guide.

This action gives you a place to hold the top of the cage and makes it easier to pull the cage from the system. The missing guides indicate the top of the cage when reassembling the system.

4. Remove the four midplane assembly retention screws on the front of the enclosure.

FIGURE 7-2 shows the location of the two retention screws on the left side of the enclosure; the other two retention screws are in the same location on the right side of the enclosure.

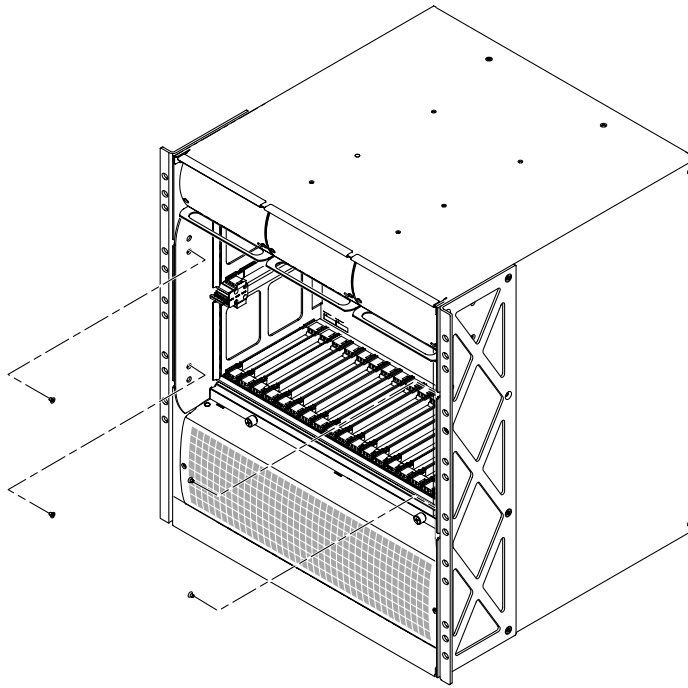


FIGURE 7-2 Midplane Assembly Retention Screw Locations

- 5. Pull forward on the cage until it disengages from the system.**

7.2.2 Installing the Midplane Assembly

1. Orient the cage so the side with the removed card guides is up.
2. Position the cage in the system so the four guide pins on the outer sides of the cage align with the four guide notches in the enclosure (FIGURE 7-3).

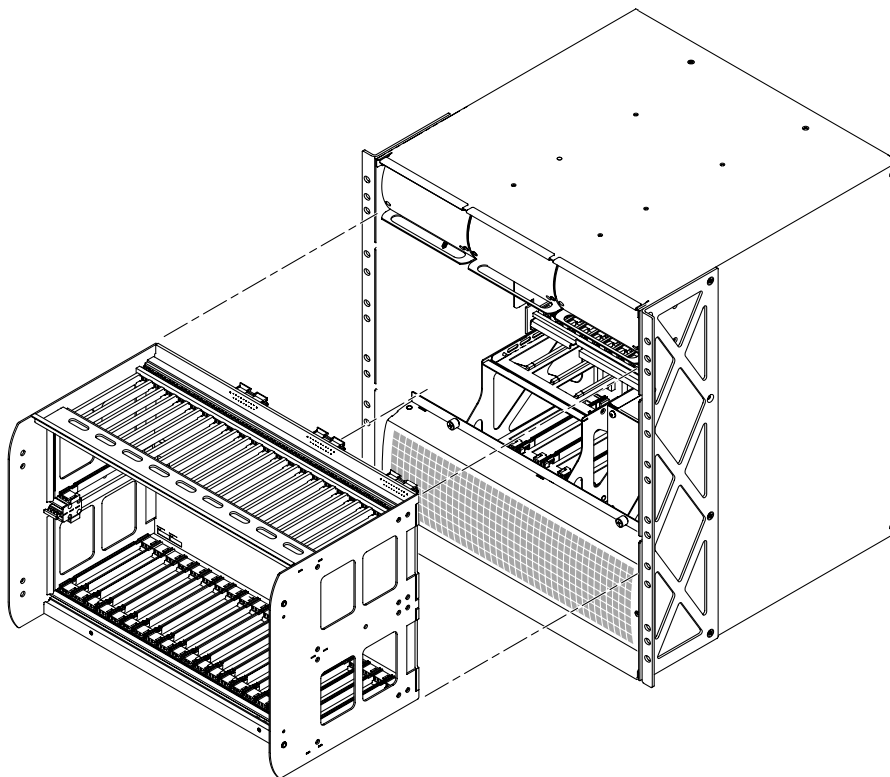


FIGURE 7-3 Installing the Midplane Assembly

3. Slide the cage into the system until the midplane connectors engage.
4. Replace the four midplane assembly retention screws on the front of the enclosure (FIGURE 7-2).
5. Replace the two upper center card guides.
6. Install all the components and rear transition cards back into the system.
 - See Section 6.2.2, “Installing a Fan Tray” on page 6-5
 - See Section 5.2.2, “Installing a Switching Fabric Board Set” on page 5-10
 - See Section 5.1.3, “Installing a Distributed Management Card” on page 5-5
 - See Section 5.3.2, “Installing a Node Board Set” on page 5-15

7. Reconnect the system to power and turn it on.

Refer to Section 2.1, “Powering On the Server or Boards” on page 2-1.

Illustrated Parts Breakdown

This chapter contains the illustrated parts breakdown and the part numbers for each field-replaceable unit (FRU) in the Netra CT 820 server.

8.1 FRUs Located at the Front of the System

TABLE 8-1 lists the FRUs located at the front of the system.

TABLE 8-1 FRUs Located at the Front of the System

	FRU	Part Number
1	Fan trays	F370-6046
2	Netra CP2300 boards	F375-3121
3	PMC hard disk drive, 40GB	F375-3163, X7252A
4	Switching fabric boards	F375-3159
5	Air filters	X7251A
6	Power supply units, 250W DC	F370-6047
7	Distributed management cards	F375-3164
	Cardcage with midplane	F370-6069
	Cable for console port on the switching fabric board	F530-3308

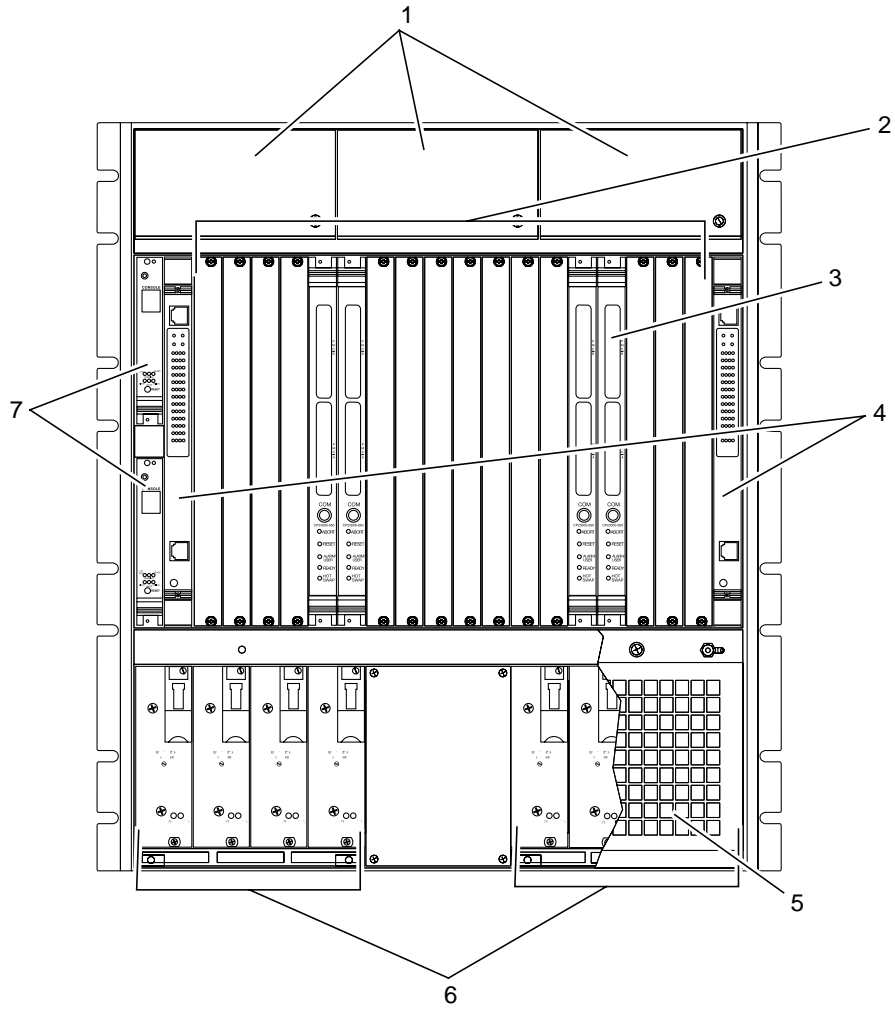


FIGURE 8-1 Netra CT 820 Server Components (Front)

8.2 FRUs Located at the Rear of the System

TABLE 8-2 lists the FRUs located at the rear of the system.

TABLE 8-2 FRUs Located at the Rear of the System

	FRU	Part Number
1	Rear transition card, Netra CP2300 board	F375-3134, XCP2300-TRN
2	Rear transition card, distributed management card	F375-3165
3	Rear transition card, switching fabric board	F375-3159
	Cable for console port on the rear transition card, switching fabric board	F530-3308

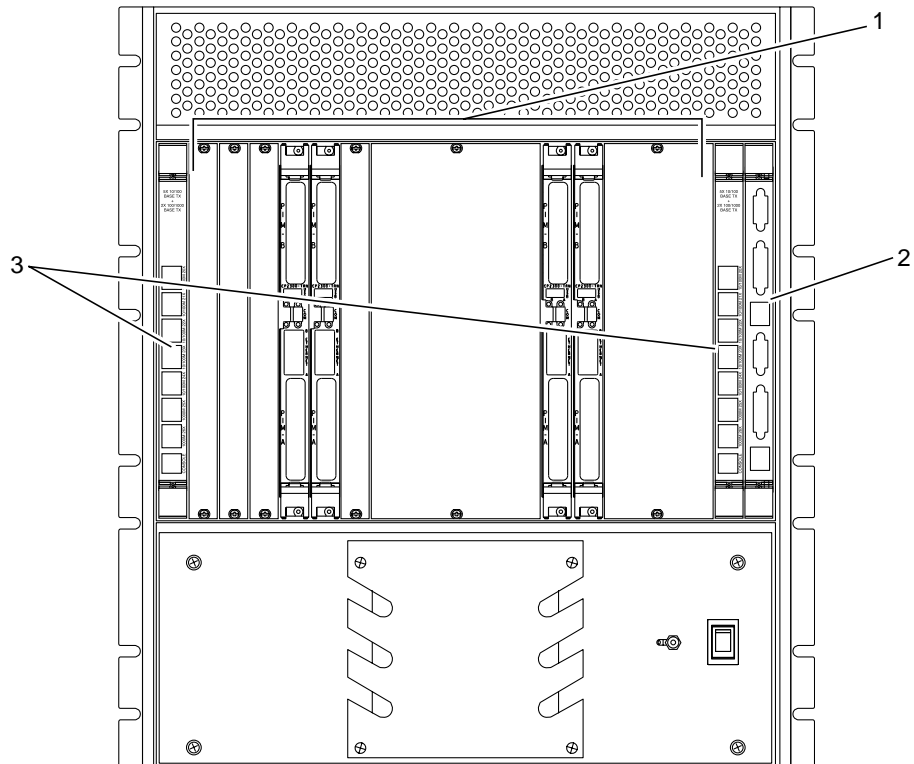


FIGURE 8-2 Netra CT 820 Server Components (Rear)

Board Connector Pinouts

This appendix contains the connector pinouts for the following Netra CT 820 server cards:

- Section A.1, “Distributed Management Card Pinouts” on page A-2
- Section A.2, “Rear Transition Module for the Distributed Management Card Pinouts” on page A-4
- Section A.3, “Switching Fabric Board” on page A-8
- Section A.4, “Rear Transition Module for the Switching Fabric Board Pinouts” on page A-11
- Section A.5, “Netra CP2300 Board Pinouts” on page A-15
- Section A.6, “Rear Transition Module for the Netra CP2300 Board Pinouts” on page A-24

A.1 Distributed Management Card Pinouts

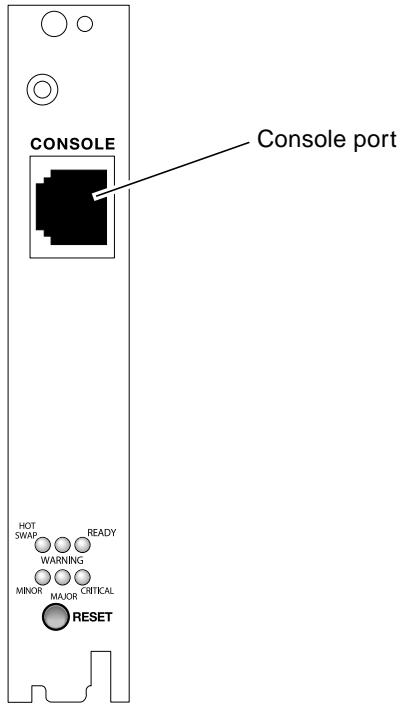


FIGURE A-1 Distributed Management Card Port

A.1.1 Console Port Pinouts

The console port on the distributed management card use a standard RJ-45 connector.

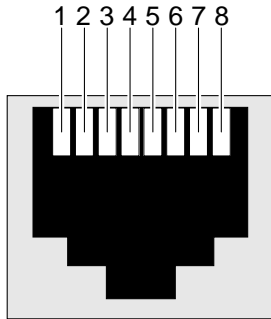


FIGURE A-2 RJ-45 Console Connector Diagram

TABLE A-1 Console Port Pinouts

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

A.2 Rear Transition Module for the Distributed Management Card Pinouts

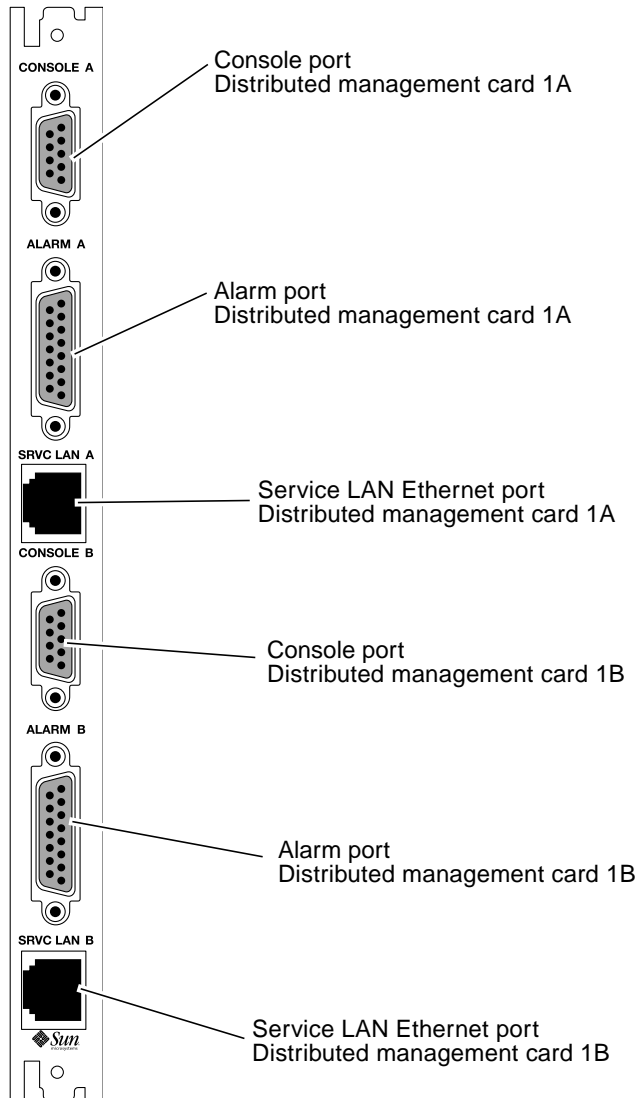


FIGURE A-3 Distributed Management Card Rear Transition Module Ports

Following are the pinouts for each of the ports on the rear transition module for the distributed management card:

- “Console Ports 1A and 1B Pinouts” on page A-5
- “Alarm Ports 1A and 1B Pinouts” on page A-6
- “Ethernet Ports 1A and 1B Pinouts” on page A-7

A.2.1 Console Ports 1A and 1B Pinouts

The console ports 1A and 1B on the rear transition module for the distributed management card use standard DB-9 connectors.

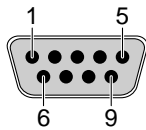


FIGURE A-4 Console Port Connector Pins

The signal interface of the connectors are described in the following two tables.

TABLE A-2 Console Port 1A

Pin No.	Signal	Pin No.	Signal
1	COM_A_DCD	6	COM_A_DSR
2	COM_A_RXD	7	COM_A_RTS
3	COM_A_TXD	8	COM_A_CTS
4	COM_A_DTR	9	COM_A_RI
5	GND_A		

TABLE A-3 Console Port 1B

Pin No.	Signal	Pin No.	Signal
1	COM_B_DCD	6	COM_B_DSR
2	COM_B_RXD	7	COM_B_RTS

TABLE A-3 Console Port 1B (Continued)

Pin No.	Signal	Pin No.	Signal
3	COM_B_TXD	8	COM_B_CTS
4	COM_B_DTR	9	COM_B_RI
5	GND_B		

A.2.2 Alarm Ports 1A and 1B Pinouts

The alarm ports 1A and 1B on the rear transition module for the distributed management card use standard male DB-15 connectors.

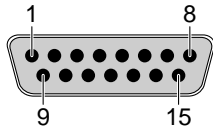


FIGURE A-5 Alarm Port

TABLE A-4 Alarm Ports 1A and 1B 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

A.2.3 Ethernet Ports 1A and 1B Pinouts

The Ethernet ports 1A and 1B on the rear transition module for the distributed management card use standard RJ-45 connectors. They are both 10 Mbit/sec Ethernet ports.

Note – The external Ethernet interface on the distributed management card and the external Ethernet interface on the switching fabric board must be connected to different subnets. If they are configured on the same subnet, `arp` messages will be displayed on the distributed management card console.

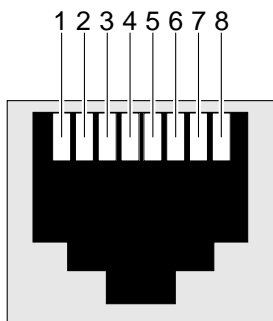


FIGURE A-6 RJ-45 Ethernet Connector Diagram

TABLE A-5 Ethernet Ports 1A and 1B Pinouts

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

A.3 Switching Fabric Board

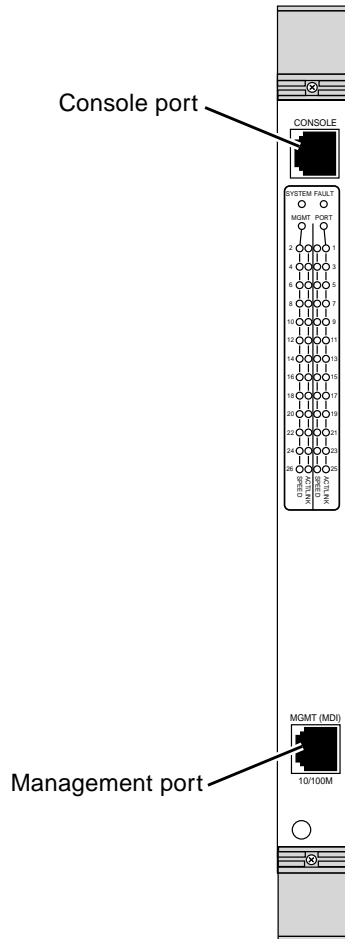


FIGURE A-7 Switching Fabric Board Ports

Following are the pinouts for each of the ports on the switching fabric board:

- “Console Port” on page A-9
- “Management Port” on page A-10

A.3.1 Console Port

The console port on the switching fabric board use a standard RJ-11 connector. A special cable for connection with the console port is included in the Netra CT 820 server ship kit.

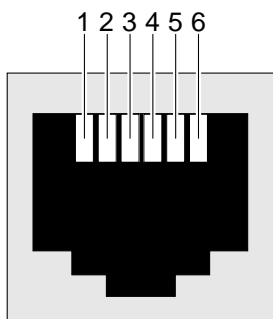


FIGURE A-8 RJ-11 Console Connector Diagram

Only the signals transmit, receive, and ground are used. The pinouts for this port are shown in TABLE A-6.

TABLE A-6 RJ11 CONSOLE Port Pinout

RJ11 Pin Number	Signal	DCE DB-9 ¹ Pin Number	DTE DB-9 Pin Number
1	—	—	—
2	GND	5	5
3	RX	3	2
4	TX	2	3
5	GND	—	—
6	—	—	—

¹ With use of null modem provided.

Note – DTE DB-9 also provides loopback of DTR (pin 4) — DSR (pin 6), and of RTS (pin 8) — CTS (pin 9).

A.3.2 Management Port

The out-of-band Ethernet management port on the switching fabric board uses an RJ-45 connector.

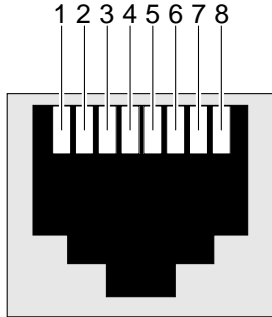


FIGURE A-9 Out-of-Band Ethernet Management Port

The pinout for the Out-of-Band Ethernet Management port (MDI) is shown in TABLE A-7.

TABLE A-7 Ethernet Management Port Pinout

Pin Number	Signal
1	TX+
2	TX-
3	RX+
4	—
5	—
6	RX-
7	—
8	—

A.4 Rear Transition Module for the Switching Fabric Board Pinouts

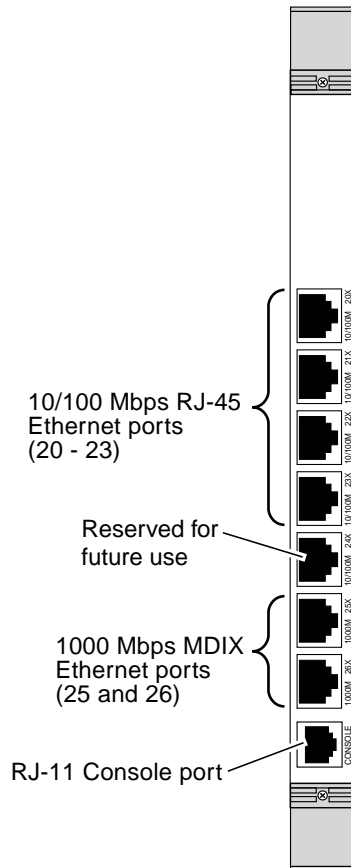


FIGURE A-10 Ports on the Rear Transition Module for the Switching Fabric Board

Note – Port 24 on the rear transition card for the switching fabric board is reserved for future use.

Note – The external Ethernet interface on the distributed management card and the external Ethernet interface on the switching fabric board must be connected to different subnets. If they are configured on the same subnet, `arp` messages will be displayed on the distributed management card console.

Following are the pinouts for each of the ports on the switching fabric board:

- “10/100 Mbps Ethernet Ports (20–23) Pinouts” on page A-12
- “1000Mb Switched Ethernet Port Pinout” on page A-13
- “Console Port” on page A-14

A.4.1 10/100 Mbps Ethernet Ports (20–23) Pinouts

The Ethernet ports 20-23 on the rear transition module for the switching fabric board use standard RJ-45 connectors. They are all 10/100 Mbps Ethernet ports.

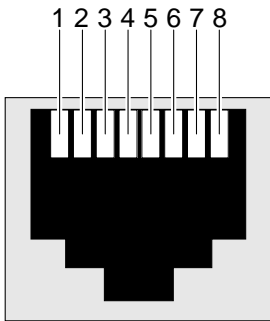


FIGURE A-11 RJ-45 Ethernet Connector Diagram

TABLE A-8 10/100Mb Switched Ethernet Port Pinout

Pin No.	Signal	Pin No.	Signal
1	RX+	5	—
2	RX-	6	TX-
3	TX+	7	—
4	—	8	—

A.4.2 1000 Mbps Ethernet Ports (25 and 26)

The Ethernet ports 25 and 26 on the rear transition module for the switching fabric board use standard RJ-45 connectors. They are both 1000 Mbps Ethernet ports.

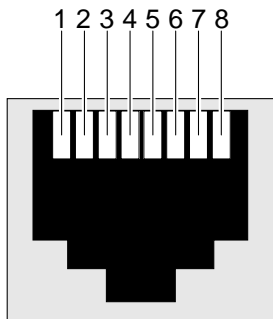


FIGURE A-12 RJ-45 Ethernet Connector Diagram

TABLE A-9 1000Mb Switched Ethernet Port Pinout

Pin No.	Signal	Pin No.	Signal
1	TRDB+	5	TRDD-
2	TRDB-	6	TRDA-
3	TRDA+	7	TRDC+
4	TRDD+	8	TRDC-

A.4.3 Console Port

The console port on the rear transition module for the switching fabric board uses a standard RJ-11 connector. A special cable for connection with the console port is included in the Netra CT 820 server ship kit.

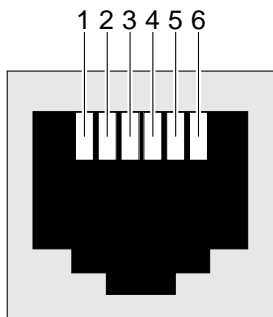


FIGURE A-13 RJ-11 Console Connector Diagram

Only the signals transmit, receive, and ground are used. The pinouts for this port are shown in TABLE A-10.

TABLE A-10 RJ11 CONSOLE Port Pinout

RJ11 Pin No.	Signal Name	DCE DB-9 ¹ Pin No.	DTE DB-9 Pin No.
1	—	—	—
2	GND	5	5
3	RX	3	2
4	TX	2	3
5	GND	—	—
6	—	—	—

¹ With use of null modem provided.

Note – DTE DB-9 also provides loopback of DTR (pin 4) — DSR (pin 6), and of RTS (pin 8) — CTS (pin 9).

A.5 Netra CP2300 Board Pinouts

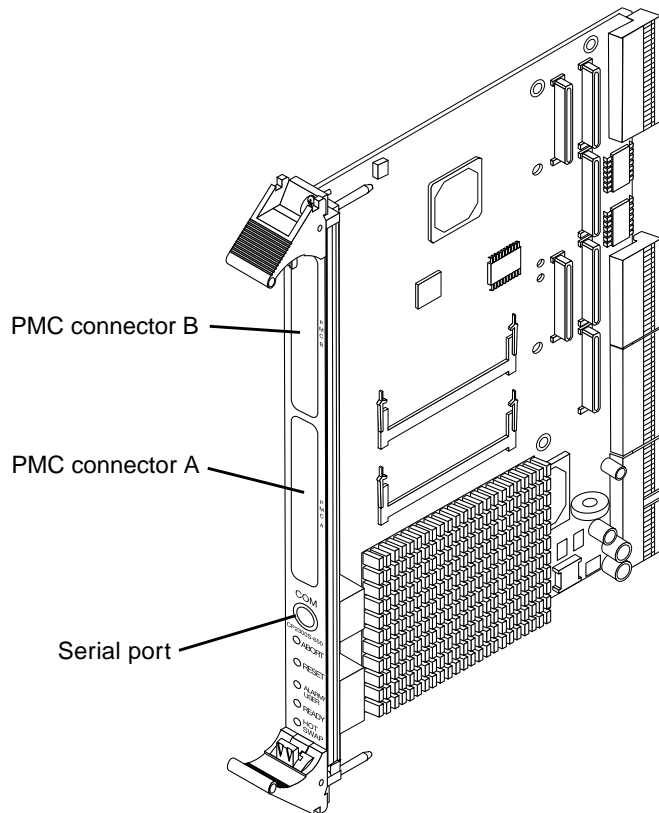


FIGURE A-14 Netra CP2300 Board

Following are the pinouts for each of the ports on the Netra CP2300 board:

- “Serial Connector” on page A-16
- “PMC Connectors” on page A-17

A.5.1 Serial Connector

FIGURE A-15 shows the serial connector on the front panel of the Netra CP2300 board.

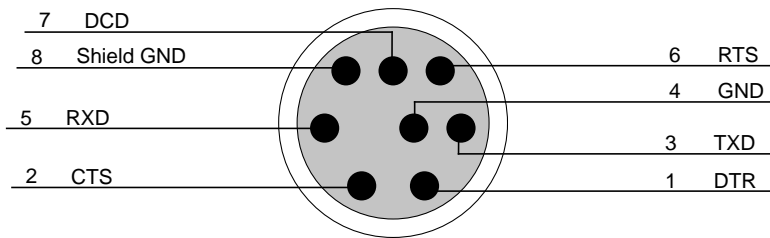


FIGURE A-15 Front Panel Serial Port (TTYA) Diagram

TABLE A-11 shows the serial port connector pin assignments.

TABLE A-11 Serial Mini Din 8-Pin Connector Pinouts

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

A.5.2 PMC Connectors

FIGURE A-16 shows the locations of PMC port connectors, and the following tables indicate contact allocations.

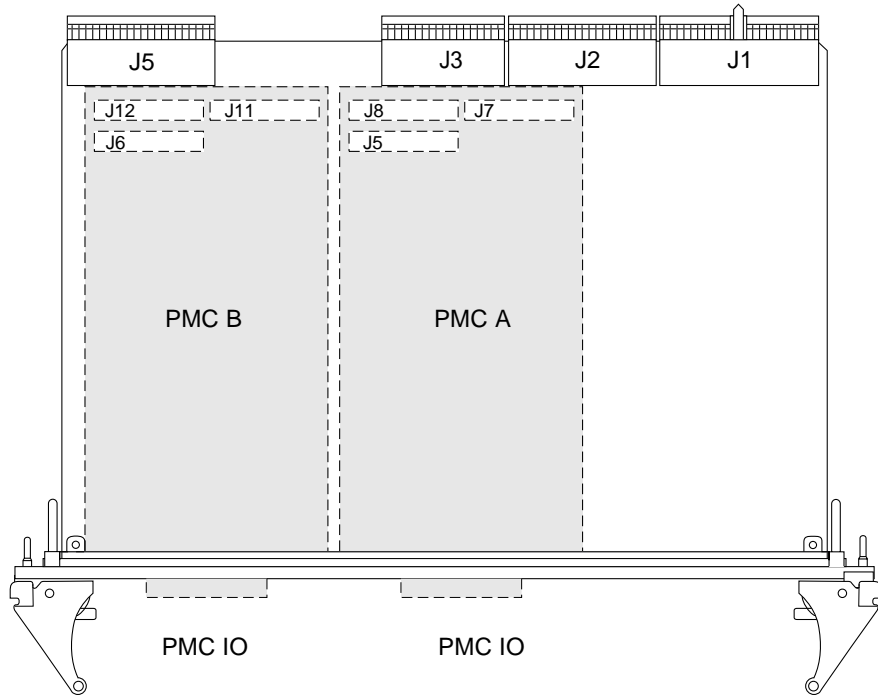


FIGURE A-16 Netra CP2300 Board PMC Port Connectors

Note – The P1386.1 standard reserves the Jn3 64-pin connector for PCI 64-bit extensions, so it is not fitted on the Netra CP2300 board.

A.5.3 PMC A Connector Interfaces

The PMC A connector interface consists of three connectors: J5, J8, and J7. These connectors conform to the Common Mezzanine Card (CMC) specification.

TABLE A-12 PMC A J5 Connector Interface

Pin	Description	Pin	Description
1	TCK; JTAG clock signal	2	-12V
3	GND	4	PMC_A_INT_A_L
5	PMC_A_INT_B_L	6	PMC_A_INT_C_L
7	PMC_BUSMODE1_L ¹	8	VCC (5V)
9	PMC_A_INT_D_L	10	NC
11	GND	12	NC
13	PMC_CLK	14	GND
15	GND	16	PMC_GNT_L
17	PMC_REQ_L	18	VCC
19	LOCAL_VIO	20	PCI_B_AD<31>
21	PCI_B_AD<28>	22	PCI_B_AD<27>
23	PCI_B_AD<25>	24	GND
25	GND	26	PCI_B_CBE3_L
27	PCI_B_AD<22>	28	PCI_B_AD<21>
29	PCI_B_AD<19>	30	VCC
31	LOCAL_VIO	32	PCI_B_AD<17>
33	PCI_B_FRAME_L	34	GND
35	GND	36	PCI_B_IRDY_L
37	PCI_B_DEVSEL_L	38	VCC
39	GND	40	PCI_B_LOCK_L
41	PMC_SDONE	42	PMC_SB0_L
43	PCI_B_PAR	44	GND
45	LOCAL_VIO	46	PCI_B_AD<15>
47	PCI_B_AD<12>	48	PCI_B_AD<11>
49	PCI_B_AD<9>	50	VCC
51	GND	52	PCI_B_CBE_L<0>
53	PCI_B_AD<6>	54	PCI_B_AD<5>

TABLE A-12 PMC A J5 Connector Interface (Continued)

Pin	Description	Pin	Description
55	PCI_B_AD<4>	56	GND
57	LOCAL_VIO	58	PCI_B_AD<3>
59	PCI_B_AD<2>	60	PCI_B_AD<1>
61	PCI_B_AD<0>	62	VCC
63	GND	64	PCI_B_REQ64_L

1 BUSMODE signals require a pull-up

TABLE A-13 PMC A J8 Connector Interface

Pin	Description	Pin	Description
1	+12V	2	JTAG_PMC_RST_L
3	TMS	4	PMC_TDO
5	PMC_TDI	6	GND
7	GND	8	NC
9	NC	10	NC
11	PMC_BUSMODE2_L	12	VDD (3.3V)
13	PCI_B_RST_L	14	PMC_BUSMODE3_L
15	VDD	16	PMC_BUSMODE4_L
17	NC	18	GND
19	PCI_B_AD<30>	20	PCI_B_AD<29>
21	GND	22	PCI_B_AD<26>
23	PCI_B_AD<24>	24	VDD
25	PCI_B_IDSEL	26	PCI_B_AD<23>
27	VDD	28	PCI_B_AD<20>
29	PCI_B_AD<18>	30	GND
31	PCI_B_AD<16>	32	PCI_B_CBE_L<2>
33	GND	34	NC
35	PCI_B_TRDY_L	36	VDD
37	GND	38	PCI_B_STOP_L
39	PCI_B_PERR_L	40	GND
41	VDD	42	PCI_B_SERR_L

TABLE A-13 PMC A J8 Connector Interface (Continued)

Pin	Description	Pin	Description
43	PCI_B_CBE_L<1>	44	GND
45	PCI_B_AD<14>	46	PCI_B_AD<13>
47	GND	48	PCI_B_AD<10>
49	PCI_B_AD<8>	50	VDD
51	PCI_B_AD<7>	52	NC
53	VDD	54	NC
55	NC	56	GND
57	NC	58	NC
59	GND	60	NC
61	PCI_B_ACK64_L	62	VDD
63	GND	64	NC

Note – The P1386.1 standard reserves the Jn3 64-pin connector for PCI 64-bit extensions. It is not fitted on these boards.

TABLE A-14 PMC A J7 Connector Interface

Pin	Description
1-64	PMC_A_IO<1-64> are user-defined I/O pins

A.5.4 PMC B Connector Interfaces

The PMC B connector interface is comprised of three connectors: J6, J12, and J11. These connectors conform to the common mezzanine card (CMC) specification.

TABLE A-15 PMC B J6 Connector Interface

Pin	Description	Pin	Description
1	TCK; JTAG clock signal.	2	-12V
3	GND	4	PMC_B_INT_A_L
5	PMC_B_INT_B_L	6	PMC_B_INT_C_L
7	PMC_BUSMODE1_L	8	VCC (5V)
9	PMC_B_INT_D_L	10	NC

TABLE A-15 PMC B J6 Connector Interface *(Continued)*

Pin	Description	Pin	Description
11	GND	12	NC
13	PMC_CLK	14	GND
15	GND	16	PMC_GNT_L
17	PMC_REQ_L	18	VCC
19	LOCAL_VIO	20	PCI_B_AD<31>
21	PCI_B_AD<28>	22	PCI_B_AD<27>
23	PCI_B_AD<25>	24	GND
25	GND	26	PCI_B_CBE3_L
27	PCI_B_AD<22>	28	PCI_B_AD<21>
29	PCI_B_AD<19>	30	VCC
31	LOCAL_VIO	32	PCI_B_AD<17>
33	PCI_B_FRAME_L	34	GND
35	GND	36	PCI_B_IRDY_L
37	PCI_B_DEVSEL_L	38	VCC
39	GND	40	PCI_B_LOCK_L
41	PMC_SDONE	42	PMC_SB0_L
43	PCI_B_PAR	44	GND
45	LOCAL_VIO	46	PCI_B_AD<15>
47	PCI_B_AD<12>	48	PCI_B_AD<11>
49	PCI_B_AD<9>	50	VCC
51	GND	52	PCI_B_CBE_L<0>
53	PCI_B_AD<6>	54	PCI_B_AD<5>
55	PCI_B_AD<4>	56	GND
57	LOCAL_VIO	58	PCI_B_AD<3>
59	PCI_B_AD<2>	60	PCI_B_AD<1>
61	PCI_B_AD<0>	62	VCC
63	GND	64	PCI_B_REQ64_L

TABLE A-16 PMC B 12 Connector Interface

Pin	Description	Pin	Description
1	+12V	2	JTAG_PMC_RST_L
3	TMS	4	PMC_TDO
5	PMC_TDI	6	GND
7	GND	8	NC
9	NC	10	NC
11	PMC_BUSMODE2_L	12	VDD (3.3V)
13	PCI_B_RST_L	14	PMC_BUSMODE3_L
15	VDD	16	PMC_BUSMODE4_L
17	NC	18	GND
19	PCI_B_AD<30>	20	PCI_B_AD<29>
21	GND	22	PCI_B_AD<26>
23	PCI_B_AD<24>	24	VDD
25	PCI_B_IDSEL	26	PCI_B_AD<23>
27	VDD	28	PCI_B_AD<20>
29	PCI_B_AD<18>	30	GND
31	PCI_B_AD<16>	32	PCI_B_CBE_L<2>
33	GND	34	NC
35	PCI_B_TRDY_L	36	VDD
37	GND	38	PCI_B_STOP_L
39	PCI_B_PERR_L	40	GND
41	VDD	42	PCI_B_SERR_L
43	PCI_B_CBE_L<1>	44	GND
45	PCI_B_AD<14>	46	PCI_B_AD<13>
47	GND	48	PCI_B_AD<10>
49	PCI_B_AD<8>	50	VDD
51	PCI_B_AD<7>	52	NC
53	VDD	54	NC
55	NC	56	GND
57	NC	58	NC

TABLE A-16 PMC B 12 Connector Interface *(Continued)*

Pin	Description	Pin	Description
59	GND	60	NC
61	PCI_B_ACK64_L	62	VDD
63	GND	64	NC

TABLE A-17 PMC B J11 Connector Interface

Pin	Description
1-64	PMC_B_IO<1-64> are user-defined IO pins

A.6 Rear Transition Module for the Netra CP2300 Board Pinouts

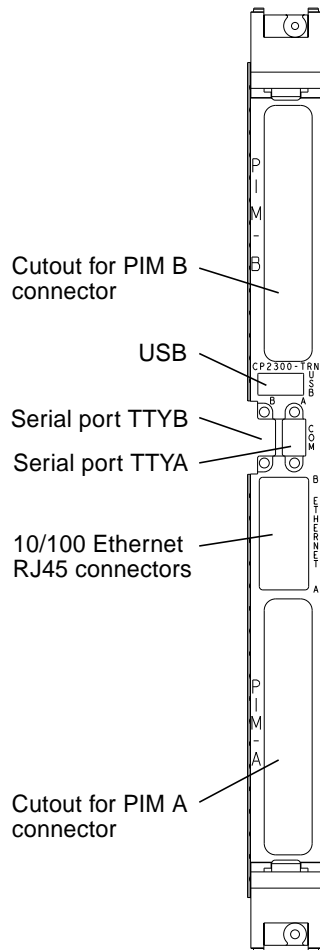


FIGURE A-17 Rear Transition Module for the Netra CP2300 Transition Card Connectors

Following are the pinouts for each of the ports on the rear transition module for the Netra CP2300 board:

- “PIM Connectors Pinouts” on page A-25
- “USB Port Pinouts” on page A-31
- “Serial Port Pinouts” on page A-31
- “Fast Ethernet Connector Pinouts” on page A-32

A.6.1 PIM Connectors Pinouts

PIM A has two 64-pin connectors at J4 and J5, and PIM B has two 64-pin connectors at J6 and J7. See FIGURE A-18 for the connector pin numbering, and see FIGURE A-17 for the location of these connectors on the transition card.

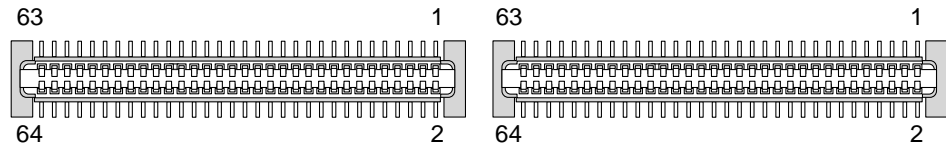


FIGURE A-18 PIM Connector Pins

A.6.1.1 PIM A Connector Pin Assignments

The PIM A connector is switch-selectable with the EIDE connector. On the back of the Netra CP2300 cPSB board, there are three DIP switches: SW501, SW502, and SW503. When all of the positions on SW501 and SW502, and positions 1 through 9 on SW503 are set to OFF, the EIDE connector is disabled and all of the PIM A connector pins are available. When these switch positions are off, the EIDE connector is active and PIM A J5 connector I/O pins 1 to 29 (signals PMC_A_IO_1 through PMC_A_IO_29) are disabled and *must* be disconnected.

Refer to the *Netra CP2300 cPSB Board Installation and Technical Reference Manual* (816-7186-xx) for more information about switch settings.

TABLE A-18 lists the pin assignments for the PIM A connector at J4, and TABLE A-19 lists the pin assignments for the PIM A connector at J5.

TABLE A-18 PIM A Connector J4

Pin No.	Signal	Pin No.	Signal
1	SMC_TX	2	+12V
3	SMC_RX	4	
5	+5V	6	
7	TXN_I2C_SDA	8	
9	TXN_I2C_SCL	10	+3.3V
11	I2C_PWR	12	
13	GND	14	
15		16	
17		18	GND
19	RSV(PCI_RST#)	20	
21	+5V	22	
23	RSV	24	
25	RSV	26	+3.3V
27		28	
29	GND	30	
31		32	
33		34	GND
35		36	
37	+5V	38	
39		40	
41		42	+3.3V
43		44	
45	GND	46	
47		48	
49		50	GND
51		52	
53	+5V	54	
55		56	
57		58	+3.3V

TABLE A-18 PIM A Connector J4 (Continued)

Pin No.	Signal	Pin No.	Signal
59		60	
61	-12V	62	
63		64	

TABLE A-19 PIM A Connector J5

Pin No.	Signal	Pin No.	Signal
1	PMC_A_IO_1	2	PMC_A_IO_2
3	PMC_A_IO_3	4	PMC_A_IO_4
5	PMC_A_IO_5	6	PMC_A_IO_6
7	PMC_A_IO_7	8	PMC_A_IO_8
9	PMC_A_IO_9	10	PMC_A_IO_10
11	PMC_A_IO_11	12	PMC_A_IO_12
13	PMC_A_IO_13	14	PMC_A_IO_14
15	PMC_A_IO_15	16	PMC_A_IO_16
17	PMC_A_IO_17	18	PMC_A_IO_18
19	PMC_A_IO_19	20	PMC_A_IO_20
21	PMC_A_IO_21	22	PMC_A_IO_22
23	PMC_A_IO_23	24	PMC_A_IO_24
25	PMC_A_IO_25	26	PMC_A_IO_26
27	PMC_A_IO_27	28	PMC_A_IO_28
29	PMC_A_IO_29	30	PMC_A_IO_30
31	PMC_A_IO_31	32	PMC_A_IO_32
33	PMC_A_IO_33	34	PMC_A_IO_34
35	PMC_A_IO_35	36	PMC_A_IO_36
37	PMC_A_IO_37	38	PMC_A_IO_38
39	PMC_A_IO_39	40	PMC_A_IO_40
41	PMC_A_IO_41	42	PMC_A_IO_42
43	PMC_A_IO_43	44	PMC_A_IO_44
45	PMC_A_IO_45	46	PMC_A_IO_46

TABLE A-19 PIM A Connector J5 (Continued)

Pin No.	Signal	Pin No.	Signal
47	PMC_A_IO_47	48	PMC_A_IO_48
49	PMC_A_IO_49	50	PMC_A_IO_50
51	PMC_A_IO_51	52	PMC_A_IO_52
53	PMC_A_IO_53	54	PMC_A_IO_54
55	PMC_A_IO_55	56	PMC_A_IO_56
57	PMC_A_IO_57	58	PMC_A_IO_58
59	PMC_A_IO_59	60	PMC_A_IO_60
61	PMC_A_IO_61	62	PMC_A_IO_62
63	PMC_A_IO_63	64	PMC_A_IO_64

A.6.1.2 PIM B Connector Pin Assignments

TABLE A-20 lists the pin assignments for the PIM B connector at J6, and TABLE A-21 lists the pin assignments for the PIM B connector at J7.

TABLE A-20 PIM B Connector J6

Pin No.	Signal	Pin No.	Signal
1	SMC_TX	2	+12V
3	SMC_RX	4	
5	+5V	6	
7	TXN_I2C_SDA	8	
9	TXN_I2C_SCL	10	+3.3V
11	I2C_PWR	12	
13	GND	14	
15		16	
17		18	GND
19	RSV(PCI_RST#)	20	
21	+5V	22	
23	RSV	24	
25	RSV	26	+3.3V
27		28	

TABLE A-20 PIM B Connector J6 (Continued)

Pin No.	Signal	Pin No.	Signal
29	GND	30	
31		32	
33		34	GND
35		36	
37	+5V	38	
39		40	
41		42	+3.3V
43		44	
45	GND	46	
47		48	
49		50	GND
51		52	
53	+5V	54	
55		56	
57		58	+3.3V
59		60	
61	-12V	62	
63		64	

TABLE A-21 PIM B Connector J7

Pin No.	Signal	Pin No.	Signal
1	PMC_B_IO_1	2	PMC_B_IO_2
3	PMC_B_IO_3	4	PMC_B_IO_4
5	PMC_B_IO_5	6	PMC_B_IO_6
7	PMC_B_IO_7	8	PMC_B_IO_8
9	PMC_B_IO_9	10	PMC_B_IO_10
11	PMC_B_IO_11	12	PMC_B_IO_12
13	PMC_B_IO_13	14	PMC_B_IO_14
15	PMC_B_IO_15	16	PMC_B_IO_16

TABLE A-21 PIM B Connector J7 (Continued)

Pin No.	Signal	Pin No.	Signal
17	PMC_B_IO_17	18	PMC_B_IO_18
19	PMC_B_IO_19	20	PMC_B_IO_20
21	PMC_B_IO_21	22	PMC_B_IO_22
23	PMC_B_IO_23	24	PMC_B_IO_24
25	PMC_B_IO_25	26	PMC_B_IO_26
27	PMC_B_IO_27	28	PMC_B_IO_28
29	PMC_B_IO_29	30	PMC_B_IO_30
31	PMC_B_IO_31	32	PMC_B_IO_32
33	PMC_B_IO_33	34	PMC_B_IO_34
35	PMC_B_IO_35	36	PMC_B_IO_36
37	PMC_B_IO_37	38	PMC_B_IO_38
39	PMC_B_IO_39	40	PMC_B_IO_40
41	PMC_B_IO_41	42	PMC_B_IO_42
43	PMC_B_IO_43	44	PMC_B_IO_44
45	PMC_B_IO_45	46	PMC_B_IO_46
47	PMC_B_IO_47	48	PMC_B_IO_48
49	PMC_B_IO_49	50	PMC_B_IO_50
51	PMC_B_IO_51	52	PMC_B_IO_52
53	PMC_B_IO_53	54	PMC_B_IO_54
55	PMC_B_IO_55	56	PMC_B_IO_56
57	PMC_B_IO_57	58	PMC_B_IO_58
59	PMC_B_IO_59	60	PMC_B_IO_60
61	PMC_B_IO_61	62	PMC_B_IO_62
63	PMC_B_IO_63	64	PMC_B_IO_64

A.6.2 USB Port Pinouts

FIGURE A-19 shows the USB connector port A on the rear transition module for the Netra CP2300 board.

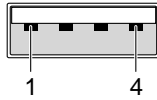


FIGURE A-19 USB Connector Port A Pins

TABLE A-22 Universal Serial Bus Port A

Pin	Signal
1	+5V POWER
2	POS
3	NEG
4	GND

A.6.3 Serial Port Pinouts

Two serial ports from the Netra CP2300 transition card are available through the rear panel with single-stacked, 9-pin connectors. One connector is assigned to Port A and the other connector to Port B (FIGURE A-20).

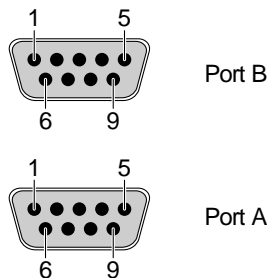


FIGURE A-20 Serial Port Connector Pins

The signal interface of the connectors are described in the following two tables.

TABLE A-23 Serial Port A

Pin No.	Signal	Pin No.	Signal
1	SER_A_DCD	6	SER_A_DSR
2	SER_A_RXD	7	SER_A_RTS
3	SER_A_TXD	8	SER_A_CTS
4	SER_A_DTR	9	SER_A_RI
5	GND_A		

TABLE A-24 Serial Port B

Pin No.	Signal	Pin No.	Signal
1	SER_B_DCD	6	SER_B_DSR
2	SER_B_RXD	7	SER_B_RTS
3	SER_B_TXD	8	SER_B_CTS
4	SER_B_DTR	9	SER_B_RI
5	GND_B		

A.6.4 Fast Ethernet Connector Pinouts

The dual-jack RJ45 (J701) AMP1116353-8 Ethernet connectors, located on the transition card's back panel, provide two 10/100 Mbps fast Ethernet ports.

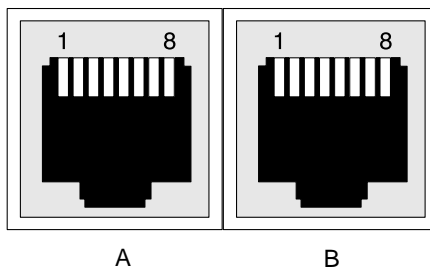


FIGURE A-21 Fast Ethernet Connector Pins

By default, these Ethernet ports are not available if the Netra CP2300 cPSB board is set to use the chassis's packet-switched backplane (PSB) Ethernet network. In order to use the transition card's Ethernet connectors, you must set the 0 position of the Netra CP2300 board SW503 DIP switch on. After setting this DIP switch to on, the PSB Ethernet network will not be available, but you will be able to use the transition card's two RJ45 connectors.

Connecting a Terminal Console to the Server

You can access the Netra CT 820 server either remotely, by logging in to the Netra CT 820 server as superuser through another server on the network, or directly, by connecting a terminal console directly to your Netra CT 820 server. A terminal console can be an ASCII terminal, workstation, or PC laptop.

You can administer your Netra CT 820 server directly through the COM port on either the distributed management card or the rear transition card for the distributed management card.

For a direct login, the connection you use varies depending on the Netra CT 820 server model you have, the type of terminal console you are using, and the card that you are connecting to:

- If you are using an ASCII terminal to access the Netra CT 820 server, go to “Using an ASCII Terminal” on page B-2.
- If you are using a Solaris workstation to access the Netra CT 820 server, go to “Using a Solaris Workstation” on page B-3.
- If you are using a PC laptop to access the Netra CT 820 server, go to “Using a PC Laptop” on page B-4.

B.1 Using an ASCII Terminal

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

Use the information in TABLE B-1 to make the necessary connections.

TABLE B-1 Connecting an ASCII Terminal

CONSOLE Port on Netra CT 820 Server Board	Adapter	Cable	Adapter	Serial Port on Terminal
RJ-45 on the distributed management card	RJ-45-to-DB-9 male	DB-9 female-to-DB-25 male straight-through	DB-25 female-to-DB-25 female gender changer	DB-25 male
DB-9 male on the rear transition card	Not needed	DB-9 female-to-DB-25 male straight-through	DB-25 female-to-DB-25 female gender changer	DB-25 male

2. Access the Set Up menu of the ASCII terminal and bring up the Serial Communications section.

3. Set up the serial port communications parameters.

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

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

4. Test the connection.

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

B.2 Using a Solaris Workstation

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

Use the information in TABLE B-2 to make the necessary connections.

TABLE B-2 Connecting a Solaris Workstation

CONSOLE Port on Netra CT 820 Server Board	Adapter	Cable	Adapter	Serial Port on Workstation
RJ-45 on the distributed management card	RJ-45-to-DB-9 male	DB-9 female-to-DB-25 male null modem	Not needed	DB-25 female
DB-9 male on the rear transition card	Not needed	DB-9 female-to-DB-25 male null modem	Not needed	DB-25 female

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

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

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

3. Type `tip hardware` at the prompt.

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

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

B.3 Using a PC Laptop

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

Use the information in TABLE B-3 to make the necessary connections.

TABLE B-3 Connecting a PC Laptop

CONSOLE Port on Netra CT 820 Server Board	Adapter	Cable	Adapter	Serial Port on PC Laptop
RJ-45 on the distributed management card	RJ-45-to-DB-9 male	DB-9 female-to-DB-9 female null modem	Not needed	DB-9 male
DB-9 male on the rear transition card	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

System Specifications

This appendix gives the system specifications for the Netra CT 820 server:

- “Electrical Specifications” on page C-1
- “Environmental Specifications” on page C-2

C.1 Electrical Specifications

FIGURE C-1 DC Input Specifications

Parameter	Conditions/Description	MIN	NOM	MAX	Units
Input Voltage -DC	Continuous input range	36		75	VDC
Hold-up Time	From 48 VDC input	4			ms
Input Current	At full rated load; 36 VDC, 48VDC		7.6, 5.4		A
Input Protection	Non-user serviceable, internally-located input line fuse				
Inrush Surge Current	Internally limited by thermistor and electronic switch			12	A
Operating Frequency	Switching frequency of main output transformer	125		145	KHz
Input Transient Protection	Varistor				

C.2 Environmental Specifications

The Netra CT 820 server is designed for harsh environments. The chassis features sturdy steel and aluminum construction with a corrosion resistant finish.

Due to the modular construction of the system, components could be added that change the system's environmental constraints. Board-level components and power supply modules have their own operating temperature ratings. Refer to component-specific product manuals for operational details that may affect system performance.

Note – TABLE C-1 summarizes the environmental specifications for the Netra CT 820 server. The source of these specifications is NEBS GR-63-CORE. Systems were subjected to these environments and passed all testing.

TABLE C-1 Chassis Environmental Specifications

Parameter	Description
Temperature – Operating	-0° C to 40° C (32° F to 104° F)
Temperature – Operating, short-term (per NEBS GR-63-CORE)	-5° C to 55° C (23° F to 131° F)
Temperature – Non-Operating	-40° C to 70° C (-40° F to 158° F)
Humidity – Non-Operating	90% noncondensing relative humidity at @ 30° C
Shock – Unpackaged	Up to 110.2 lbs: 2 inch drop Over 110.2 lbs: 1 inch drop
Shock – Packaged	< 450 lbs: 11.8 inch drop (category B, palletized)
Vibration – Unpackaged	5 Hz to 100 Hz, at 0.1 g sine
Vibration – Packaged	5 to 100 Hz at 0.5 g sine and 100 to 500 Hz at 1.5 g sine

Glossary

Knowledge of the following terms and acronyms is useful in the administration of the Netra CT 820 server.

B

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

C

CompactPCI A standard for computer boards and buses. CompactPCI is adapted from the *Peripheral Component Interconnect (PCI) Specification* for industrial and/or embedded applications requiring a more robust mechanical form factor than desktop PCI. CompactPCI is supported by the PCI Industrial Computer Manufacturers Group (PICMG), a consortium that uses PCI for embedded applications.

F

**field replaceable unit
(FRU)**

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

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

See *hot swap*, *basic hot swap*

H

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

M

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

N

NEBS An acronym for Network Equipment/Building System. A set of requirements for equipment installed in telco offices. These requirements cover personnel safety, protection of property, and operational continuity. "NEBS testing" involves subjecting equipment to various vibration stresses, fire, and other environmental insults. There are three levels of NEBS compliance, each a

superset of the preceding. NEBS level 3, the highest level, certifies that a piece of equipment can be safely deployed in an “extreme environment.” A telco central office is considered an extreme environment.

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

P

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

See *CompactPCI*.

R

rear-access The model of the Netra CT 820 server that is configured so that all of the cables come out from the rear of the chassis.

rear transition card Used only on the rear access models of the Netra CT 820 server. The rear transition cards extend the connectors to the rear of the chassis.

**Reliability, Availability,
Serviceability (RAS)**

Refers to hardware and software features that implement or improve the reliability, availability and serviceability of a server.

U

U A unit of measure equal to 1.75 inches.

Index

A

air filter

- installing, 6-7
- part number, 8-1
- removing, 6-6

antistatic wrist strap, attaching, 1-2

D

distributed management cards

- installing, 5-5
- part number, 8-1
- ports, 5-4
 - console, A-3
 - location, A-2
- removing, 5-3
- rules and restrictions, 5-2

distributed management cards, rear transition card

- installing, 7-3
- part number, 8-3
- ports, 7-2
 - alarm 1A and 1B, A-6
 - console 1A and 1B, A-5
 - Ethernet 1A and 1B, A-7
 - location, A-4
- removing, 7-1

E

ESD ground jack

- location at front of chassis, 1-2
- location at rear of chassis, 1-3

F

fan trays

- installing, 6-5
- part number, 8-1
- removing, 6-4

H

hot-swap LED, locating

- on the distributed management card, 5-4
- on the node board, 5-13
- on the switching fabric board, 5-7

I

illustrated parts breakdown, 8-1

installing

- air filter, 6-7
- distributed management cards, 5-5
- distributed management cards, rear transition card, 7-3
- fan trays, 6-5
- midplane assembly, 7-6
- node boards, 5-16

- node boards, rear transition cards, 5–15
- power supplies, 6–3
- switching fabric boards, 5–10
- switching fabric boards, rear transition cards, 5–10

M

- midplane assembly
 - installing, 7–6
 - part number, 8–1
 - removing, 7–4

N

- Netra CP2300 boards
 - PMC connectors, A–17
- Netra CP2300 boards, rear transition cards
 - PIM connectors, A–25
 - ports
 - Ethernet, A–32
 - location, A–24
 - serial, A–31
 - USB, A–31
- node boards
 - installing, 5–16
 - part number, 8–1
 - removing, 5–12
- node boards, rear transition cards
 - installing, 5–15
 - part number, 8–3
 - ports, 5–14
 - removing, 5–14

P

- part numbers
 - air filters, 8–1
 - distributed management cards, 8–1
 - distributed management cards, rear transition card, 8–3
 - fan trays, 8–1
 - midplane assembly, 8–1
 - node boards, 8–1
 - node boards, rear transition cards, 8–3
 - PMC hard disk drive, 8–1

- power supplies, 8–1
- switching fabric board, cable for console port, 8–1
- switching fabric boards, 8–1
- switching fabric boards, rear transition cards, 8–3
 - cable for console port, 8–3

- PIM connectors, Netra CP2300 boards, rear transition cards, A–25

- PMC connectors, Netra CP2300 boards, A–17

ports

- distributed management cards, 5–4, A–2
 - console, A–3
- distributed management cards, rear transition card, 7–2, A–4
 - alarm 1A and 1B, A–6
 - console 1A and 1B, A–5
 - Ethernet 1A and 1B, A–7

- Netra CP2300 boards, rear transition cards

- Ethernet, A–32
- location, A–24
- serial, A–31
- USB, A–31

- node boards, rear transition cards, 5–14

- switching fabric boards, rear transition cards, 5–9
 - console, A–14
 - Ethernet, 10/100 Mbit/sec, A–12
 - Ethernet, 1000 Mbit/sec, A–13
 - location, A–11

power supplies

- installing, 6–3
- part number, 8–1
- removing, 6–2

- power switch, location at rear of chassis, 1–3

powering off the server

- hardware power-off, 2–4
- software power-off, 2–4

powering on the server

- hardware power-on, 2–2
- software power-on, 2–3

R

removing

- air filter, 6–6
- distributed management cards, 5–3

- distributed management cards, rear transition card, 7-1
- fan trays, 6-4
- midplane assembly, 7-4
- node boards, 5-12
- node boards, rear transition cards, 5-14
- power supplies, 6-2
- switching fabric boards, 5-7
- switching fabric boards, rear transition cards, 5-8

- running the DMC diagnostics test options, 4-7
- through SunVTS, 4-10
- through the DMC CLI, 4-6

S

- switching fabric boards
 - installing, 5-10
 - part number, 8-1
 - removing, 5-7
- switching fabric boards, rear transition cards
 - installing, 5-10
 - part number, 8-3
 - ports, 5-9
 - console, A-14
 - Ethernet, 10/100 Mbit/sec, A-12
 - Ethernet, 1000 Mbit/sec, A-13
 - location, A-11
 - removing, 5-8

T

- tools required, 1-1
- troubleshooting
 - Alarm Port test, 4-2
 - Ethernet test, 4-2
 - Fan Status test, 4-3
 - Fan Tachometer test, 4-3
 - Flash test, 4-2
 - FRU Presence test, 4-3
 - FRUID Checksum test, 4-4
 - Health test, 4-2
 - I2C Temperature test, 4-5
 - IPMI test, 4-3
 - Power Supply On/Off test, 4-5
 - Power Supply Status test, 4-5
 - Real Time Clock test, 4-3

