



Netra™ CT 820 Server Installation Guide

Sun Microsystems, Inc.
www.sun.com

Part No. 817-2641-12
August 2004, Revision A

Submit comments about this document at: <http://www.sun.com/hwdocs/feedback>

Copyright 2004 Sun Microsystems, Inc., 4150 Network Circle, Santa Clara, California 95054, U.S.A. All rights reserved.

Sun Microsystems, Inc. has intellectual property rights relating to technology that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more of the U.S. patents listed at <http://www.sun.com/patents> and one or more additional patents or pending patent applications in the U.S. and in other countries.

This document and the product to which it pertains are distributed under licenses restricting their use, copying, distribution, and decompilation. No part of the product or of this document may be reproduced in any form by any means without prior written authorization of Sun and its licensors, if any.

Third-party software, including font technology, is copyrighted and licensed from Sun suppliers.

Parts of the product may be derived from Berkeley BSD systems, licensed from the University of California. UNIX is a registered trademark in the U.S. and in other countries, exclusively licensed through X/Open Company, Ltd.

Sun, Sun Microsystems, the Sun logo, AnswerBook2, docs.sun.com, VIS, Sun StorEdge, Solstice DiskSuite, Java, SunVTS, Netra, and Solaris are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. and in other countries.

All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the U.S. and in other countries. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc.

The OPEN LOOK and Sun™ Graphical User Interface was developed by Sun Microsystems, Inc. for its users and licensees. Sun acknowledges the pioneering efforts of Xerox in researching and developing the concept of visual or graphical user interfaces for the computer industry. Sun holds a non-exclusive license from Xerox to the Xerox Graphical User Interface, which license also covers Sun's licensees who implement OPEN LOOK GUIs and otherwise comply with Sun's written license agreements.

U.S. Government Rights—Commercial use. Government users are subject to the Sun Microsystems, Inc. standard license agreement and applicable provisions of the FAR and its supplements.

DOCUMENTATION IS PROVIDED "AS IS" AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.

Copyright 2004 Sun Microsystems, Inc., 4150 Network Circle, Santa Clara, Californie 95054, Etats-Unis. Tous droits réservés.

Sun Microsystems, Inc. a les droits de propriété intellectuels relatants à la technologie qui est décrit dans ce document. En particulier, et sans la limitation, ces droits de propriété intellectuels peuvent inclure un ou plus des brevets américains énumérés à <http://www.sun.com/patents> et un ou les brevets plus supplémentaires ou les applications de brevet en attente dans les Etats-Unis et dans les autres pays.

Ce produit ou document est protégé par un copyright et distribué avec des licences qui en restreignent l'utilisation, la copie, la distribution, et la décompilation. Aucune partie de ce produit ou document ne peut être reproduite sous aucune forme, par quelque moyen que ce soit, sans l'autorisation préalable et écrite de Sun et de ses bailleurs de licence, s'il y en a.

Le logiciel détenu par des tiers, et qui comprend la technologie relative aux polices de caractères, est protégé par un copyright et licencié par des fournisseurs de Sun.

Des parties de ce produit pourront être dérivées des systèmes Berkeley BSD licenciés par l'Université de Californie. UNIX est une marque déposée aux Etats-Unis et dans d'autres pays et licenciée exclusivement par X/Open Company, Ltd.

Sun, Sun Microsystems, le logo Sun, AnswerBook2, docs.sun.com, VIS, Sun StorEdge, Solstice DiskSuite, Java, SunVTS, Netra, et Solaris sont des marques de fabrique ou des marques déposées de Sun Microsystems, Inc. aux Etats-Unis et dans d'autres pays.

Toutes les marques SPARC sont utilisées sous licence et sont des marques de fabrique ou des marques déposées de SPARC International, Inc. aux Etats-Unis et dans d'autres pays. Les produits portant les marques SPARC sont basés sur une architecture développée par Sun Microsystems, Inc.

L'interface d'utilisation graphique OPEN LOOK et Sun™ a été développée par Sun Microsystems, Inc. pour ses utilisateurs et licenciés. Sun reconnaît les efforts de pionniers de Xerox pour la recherche et le développement du concept des interfaces d'utilisation visuelle ou graphique pour l'industrie de l'informatique. Sun détient une licence non exclusive de Xerox sur l'interface d'utilisation graphique Xerox, cette licence couvrant également les licenciées de Sun qui mettent en place l'interface d'utilisation graphique OPEN LOOK et qui en outre se conforment aux licences écrites de Sun.

LA DOCUMENTATION EST FOURNIE "EN L'ÉTAT" ET TOUTES AUTRES CONDITIONS, DECLARATIONS ET GARANTIES EXPRESSES OU TACITES SONT FORMELLEMENT EXCLUES, DANS LA MESURE AUTORISEE PAR LA LOI APPLICABLE, Y COMPRIS NOTAMMENT TOUTE GARANTIE IMPLICITE RELATIVE A LA QUALITE MARCHANDE, A L'APTITUDE A UNE UTILISATION PARTICULIERE OU A L'ABSENCE DE CONTREFAÇON.

Contents

Preface	xi
1. Installation Overview	1
2. Installing the Chassis	3
Tools Required	3
Unpacking the System	3
Shipping Contents	4
Basic Configuration	4
Installing the System	6
Rackmounting the System	8
Providing Power	9
Connecting DC Power	9
3. Installing Additional Cards Into the Netra CT 820 Server	11
Antistatic Precautions	11
Installing Additional Cards in the Netra CT 820 Server	12
Ethernet Networking on the Netra CP2300 Board	14
Installing Rear Transition Cards	15
Installing Node Cards	16

4. Cabling the System	17
Connecting Cables to the Distributed Management Cards	18
Ports on the Distributed Management Card	19
Console Port	20
Ports on the Rear Transition Card for the Distributed Management Card	21
Console Ports 1A and 1B	22
Alarm Ports 1A and 1B	23
Ethernet Ports 1A and 1B	23
Connecting Cables to the Switching Fabric Boards	24
10/100 Mbit/sec Ethernet Ports (20–23)	26
1000 Mbit/sec Ethernet Ports (25 and 26)	26
Console Port	27
Connecting the Cables to the Netra CP2300 Boards	28
PMCs on the Netra CP2300 Board	28
PMC Connectors	29
Ports on the Rear Transition Card for the Netra CP2300 Board	35
PIM Connectors	36
USB Port	42
Serial Ports	42
Fast Ethernet Connectors	43
5. Powering the Server On and Off	45
Connecting a Terminal Console to the Server	46
Using an ASCII Terminal	46
Using a Solaris Workstation	47
Using a PC Laptop	48
Powering On the Server or Boards	49
Performing a Hardware Power-On	49
Performing a Software Power-On	50

Powering Off the Server	51
Performing a Hardware Power-Off	52
Performing a Software Power-Off	52
A. System Specifications	53
Electrical Specifications	53
Environmental Specifications	54
Glossary	55
Index	59

Figures

FIGURE 2-1	Netra CT 820 Server (Front)	5
FIGURE 2-2	Netra CT 820 Server (Rear)	6
FIGURE 2-3	Airflow	8
FIGURE 2-4	DC Power Input Panel	10
FIGURE 3-1	Location of Node Slots	13
FIGURE 3-2	Location and Default Settings of the SW503 DIP Switch	14
FIGURE 3-3	Injector/Ejector Operation (Board-Level Components)	15
FIGURE 4-1	Location of the Console Port on the Distributed Management Card	19
FIGURE 4-2	RJ-45 Console Port Diagram	20
FIGURE 4-3	Distributed Management Card Rear Transition Module Ports	21
FIGURE 4-4	Console Port Connector Pins	22
FIGURE 4-5	Alarm Port	23
FIGURE 4-6	RJ-45 Ethernet Connector Diagram	24
FIGURE 4-7	Ports on the Rear Transition Card for the Switching Fabric Board	25
FIGURE 4-8	RJ-45 Ethernet Connector Diagram	26
FIGURE 4-9	RJ-45 Ethernet Connector Diagram	26
FIGURE 4-10	RJ-11 Console Connector Diagram	27
FIGURE 4-11	Netra CP2300 Board	28
FIGURE 4-12	Netra CP2300 Board PMC Port Connectors	29
FIGURE 4-13	Rear Transition Card for the Netra CP2300 Board	35

FIGURE 4-14	PIM Connector Pins	36
FIGURE 4-15	USB Connector Port A Pins	42
FIGURE 4-16	Serial Port Connector Pins	42
FIGURE 4-17	Fast Ethernet Connector Pins	43
FIGURE 5-1	Netra CT 820 Server (Rear)	50

Tables

TABLE 4-1	Console Port Pinouts	20
TABLE 4-2	Console Port 1A	22
TABLE 4-3	Console Port 1B	22
TABLE 4-4	Alarm Ports 1A and 1B Pinouts	23
TABLE 4-5	Ethernet Ports 1A and 1B Pinouts	24
TABLE 4-6	RJ11 Console Port Pinout	27
TABLE 4-7	PMC B J6 Connector Interface	30
TABLE 4-8	PMC B J12 Connector Interface	31
TABLE 4-9	PMC B J11 Connector Interface	32
TABLE 4-10	PMC A J5 Connector Interface	32
TABLE 4-11	PMC A J8 Connector Interface	33
TABLE 4-12	PMC A J7 Connector Interface	35
TABLE 4-13	PIM A Connector J4	36
TABLE 4-14	PIM A Connector J5	38
TABLE 4-15	PIM B Connector J6	39
TABLE 4-16	PIM B Connector J7	40
TABLE 4-17	USB Port A	42
TABLE 4-18	Serial Port A	43
TABLE 4-19	Serial Port B	43
TABLE 5-1	Connecting an ASCII Terminal	46

TABLE 5-2	Connecting a Solaris Workstation	47
TABLE 5-3	Connecting a PC Laptop	48
TABLE A-1	DC Input Specifications	53
TABLE A-2	Chassis Environmental Specifications	54

Preface

The *Netra CT 820 Server Installation Guide* describes how to perform the initial installation of the Netra™ CT 820 server. Upon completion of the procedures in this document, your server will be functional.

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

Before performing the procedures described in this book, you should review the information in the *Netra CT 820 Server Product Overview*.

Note – Refer to the *Netra CT 820 Server Release Notes* (817-2646-13, or future compatible revisions) for the Solaris Operating System installation instructions.

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. Review the information in the *Netra CT 820 Server Safety and Compliance Manual* before proceeding with the instructions in this document.

How This Book Is Organized

[Chapter 1](#) presents the documentation overview for this document.

[Chapter 2](#) describes how to mount the chassis into a rack and connect the DC power to the chassis.

[Chapter 3](#) describes how to install additional cards into the Netra CT 820 server.

[Chapter 4](#) describes how to connect the necessary cables to the Netra CT 820 server.

[Chapter 5](#) describes how to power the Netra CT 820 server on and off.

[Appendix A](#) provides the system specifications.

Using UNIX Commands

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

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

<http://docs.sun.com>

Shell Prompts

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

Typographic Conventions

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

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

Related Documentation

The 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

Refer to documentation on the following software for additional information: the Solaris Operating System (OS) and the Netra™ High Availability (HA) Suite Foundation Services software.

Accessing Sun Documentation

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

<http://www.sun.com/documentation>

Third-Party Web Sites

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

Contacting Sun Technical Support

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

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

Sun Welcomes Your Comments

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

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

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

Netra CT 820 Server Installation Guide, part number 817-2641-12

Installation Overview

This chapter provides an overview of the tasks to install the Netra CT 820 server. Detailed instructions for each task are provided on the pages specified.

Task	Detailed Instructions
Unpack your system.	Page 3
Mount the chassis in a rack.	Page 6
Make the DC power connections.	Page 9
Install additional cards.	Page 11
Connect the cables to the rear transition card for the distributed management cards.	Page 18
Connect the cables to the rear transition card for the switching fabric boards.	Page 24
Connect the cables to additional rear transition cards.	Page 28
Power on the server.	Page 49

Note – Refer to the *Netra CT 820 Server Release Notes* (817-2646-13, or future compatible revisions) for the Solaris Operating System installation instructions.

Installing the Chassis

This chapter describes the steps necessary to install and set up the Netra CT 820 server. It includes instructions on unpacking, rackmounting, and making power connections.

Tools Required

You will 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

Unpacking the System

Check the shipping carton for damage. If the shipping carton and contents are damaged, notify the carrier and Sun Microsystems for an insurance settlement. Retain the shipping carton and packing material for inspection by the carrier. Obtain authorization before returning any product to Sun Microsystems. Contact your local Sun Microsystems sales representative for more information.



Caution – Sun Microsystems has designed special packing material to protect the system during shipping. It is critical that the packing material be saved after unpacking the enclosure. Shipping the unit without the original packing material might void the warranty. Replacement packing material can be purchased from Sun Microsystems.



Caution – This system contains board-level components that must be protected from static discharge and physical shock. Wear a wrist strap grounded through one of the system's ESD ground jacks when handling system components.

Shipping Contents

The Netra CT 820 server is shipped fully assembled and tested. The baseline configuration and most common options are listed below. Your system might differ from the system described in this manual.

Basic Configuration

- High capacity 12U, 19-inch rackmount enclosure
 - 21-slot PICMG 2.16 R1.0 packet switching midplane, with slots for 18 node boards, 2 switching fabric boards, and 2 distributed management cards
 - DC power input panel
- Eight DC power supplies
- Two distributed management cards and a rear transition card
- Two switching fabric boards and rear transition cards
- One Netra CP2300 board (node board) and rear transition card
- Three fan trays with three blowers each
- Air intake grill with filter
- 19-inch rackmount kit
- Filler panels covering empty node board slots
- Safety and compliance literature

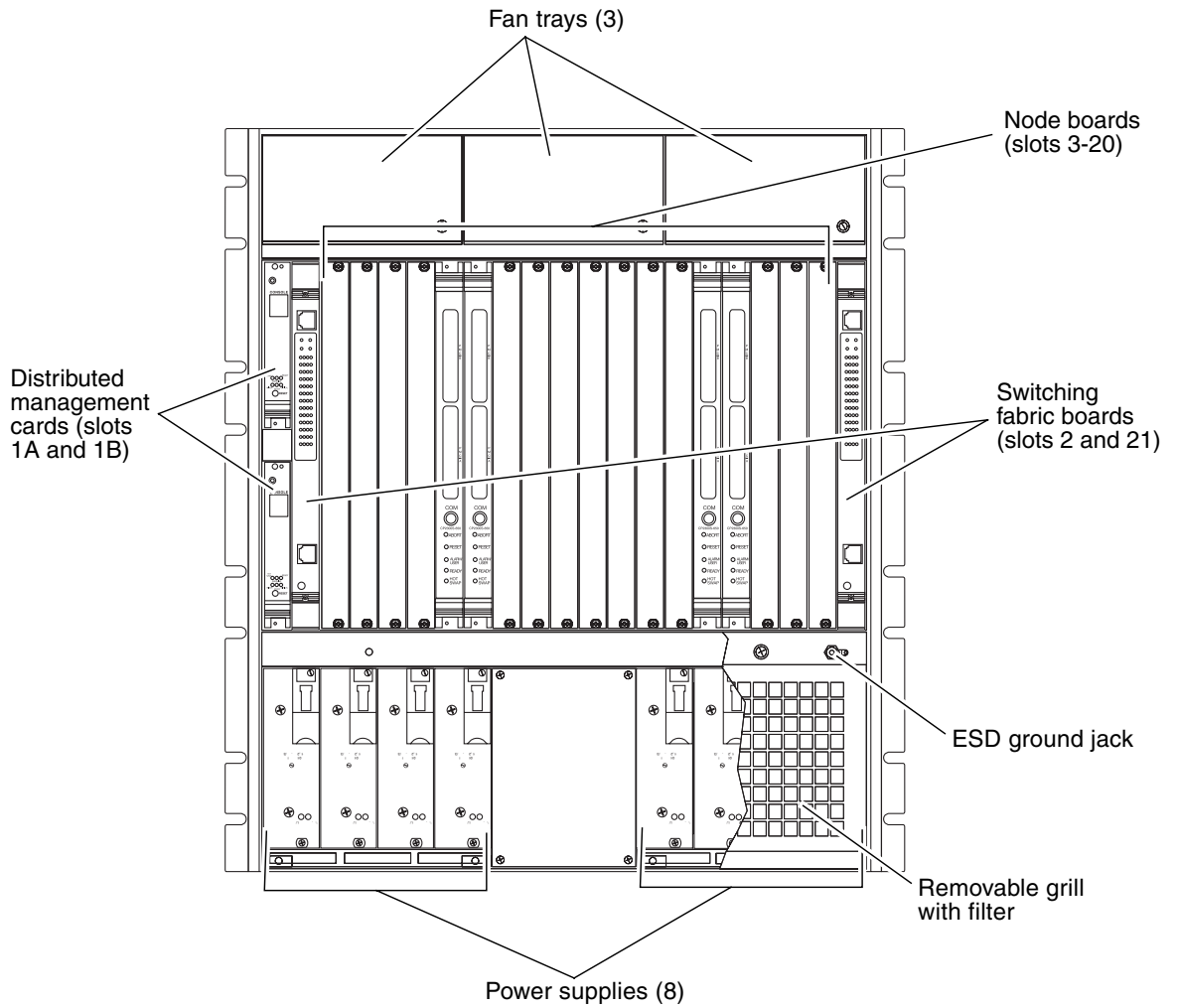


FIGURE 2-1 Netra CT 820 Server (Front)

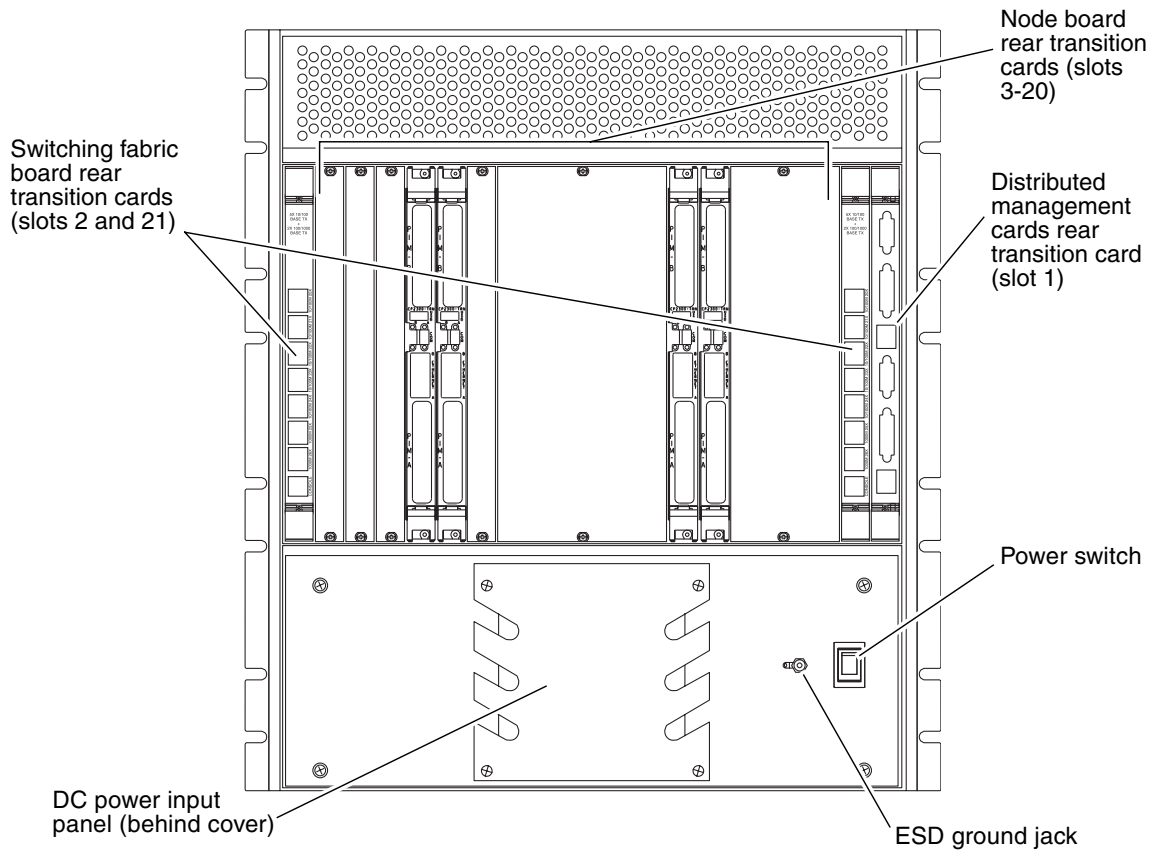


FIGURE 2-2 Netra CT 820 Server (Rear)

Installing the System

Note – 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 ground jack. See [FIGURE 2-1](#) and [FIGURE 2-2](#) for ESD ground jack locations.

Before installing and using the Netra CT 820 server, ensure that all cover panels are in place and that all component slots are populated with a component or covered with a blank filler panel.



Caution – Failure to cover open slots could cause overheating of power supplies, boards, or other components, and could damage the system.

The Netra CT 820 server fits standard 19-inch EIA racks. Mounting flanges are attached to the front of the enclosure to facilitate front mounting. The flanges can be repositioned for center-mounting the enclosure.



Caution – It takes more than one person to safely lift a Netra CT 820 server. Get assistance and use proper lifting techniques when moving the system. To prevent damage to the components, never use component handles or cables to lift or move the entire system.

This system is intended for stationary mounting in a rack designed to meet the physical strength requirements of NEBS GR-63-CORE and NEBS GR 487. Be sure to mount the system in a way that ensures even weight distribution in the rack. Uneven mechanical loading can result in a hazardous condition. Secure all mounting bolts when installing the enclosure to the frame or rack.

The maximum ambient temperature at which a factory-configured Netra CT 820 server should operate is 55°C (131°F) at 5% to 85% relative humidity (see [Appendix A](#) for details). The operating ambient temperature inside the enclosure might be greater than the room's ambient temperature if the system is installed with its ventilation intakes near another system's exhaust or in a closed or multiunit rack assembly. Install the system in an environment compatible with this recommended maximum ambient temperature. Due to the modular design of the system, components might be installed that alter the system's operating requirements. Please refer to product-specific documentation for the maximum recommended ambient temperature for individual components.

Safe operation of the Netra CT 820 server is dependent on the 250LFM/slot of forced-air cooling provided by the system's cooling fans. Be sure to install the system in an environment that does not compromise this recommended minimum airflow requirement.

Rackmounting the System

1. Disconnect all power sources and external connections and cables prior to installing or removing the system from a rack.
2. Select a position in the rack that does not interfere with other equipment and that provides safe weight distribution.
3. Ensure that the area around the Netra CT 820 server's intake and exhaust vents are clear of obstructions for efficient cooling.

The intake should be away from another system's exhaust. [FIGURE 2-3](#) shows the proper airflow for the Netra CT 820 server.

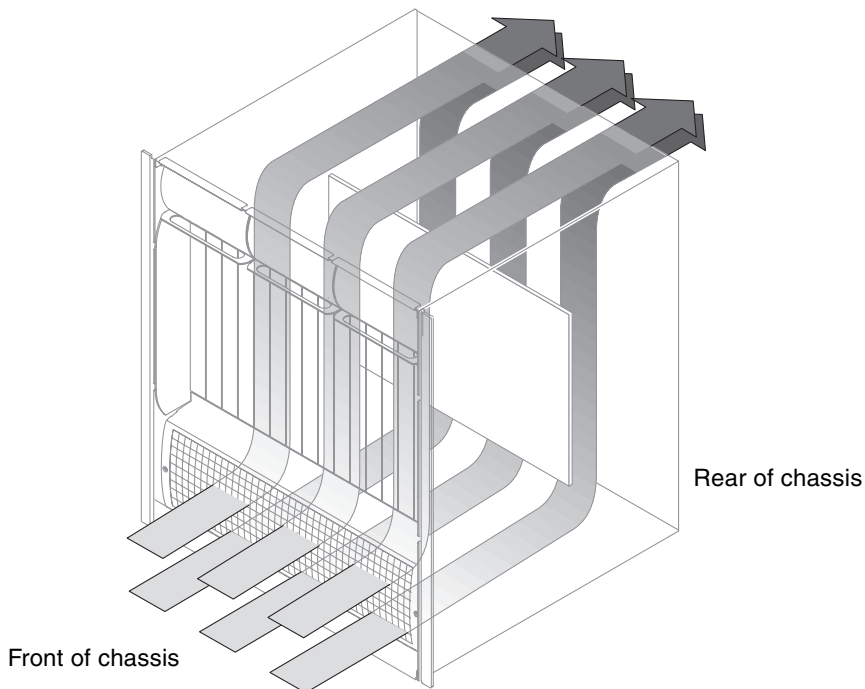


FIGURE 2-3 Airflow

4. Secure the mounting flanges to the front or middle of the enclosure.
5. Place the enclosure in its intended location and line up the mounting holes on the Netra CT 820 server's flanges with the rack's mounting holes.
6. Bolt the enclosure to the rack.
Rack hardware is not included.

Providing Power

The power input panel configuration must match the voltage input configuration of the power supplies intended for use with the system.

The Netra CT 820 server must be connected to properly rated supplies. For permanently connected equipment, a readily accessible disconnect device should be incorporated in the building wiring installation. Circuit breakers should be rated to handle the current indicated in the input specifications listed on the product identification label at the rear of the Netra CT 820 server.

Refer to the *Netra CT 820 Server Product Overview* for more information about providing power to the Netra CT 820 server.



Caution – Always ensure that the system is properly grounded before applying power. When the system is plugged in, energy hazards are present on the midplane. Do not reach into the enclosure.

Connecting DC Power

1. Verify that the power switch is in the Off (O) position.

See [FIGURE 2-2](#) for the power switch location.

2. Remove the service panel cover from the DC terminal block.

3. Attach the cables to the A and B terminal posts on the DC power input panel ([FIGURE 2-4](#)).

- Use No. 10 ring terminals (copper conductors only) for the -48V and Return terminal posts.
- Use 1/4-inch ring terminals for the chassis ground posts.

Conductors should be of adequate size to accommodate the maximum power output of the supplies (250W multiplied by the number of supplies powered from each feed), plus 20% for supply inefficiency. For each 2N configuration, each feed powers four power supplies, which equates to 1,000W per feed (plus 20% for supply inefficiency). To provide DC input power redundancy, connect both the A and B inputs to different redundant power sources. Refer to the *Netra CT 820 Server Product Overview* for more information about DC input power redundancy.

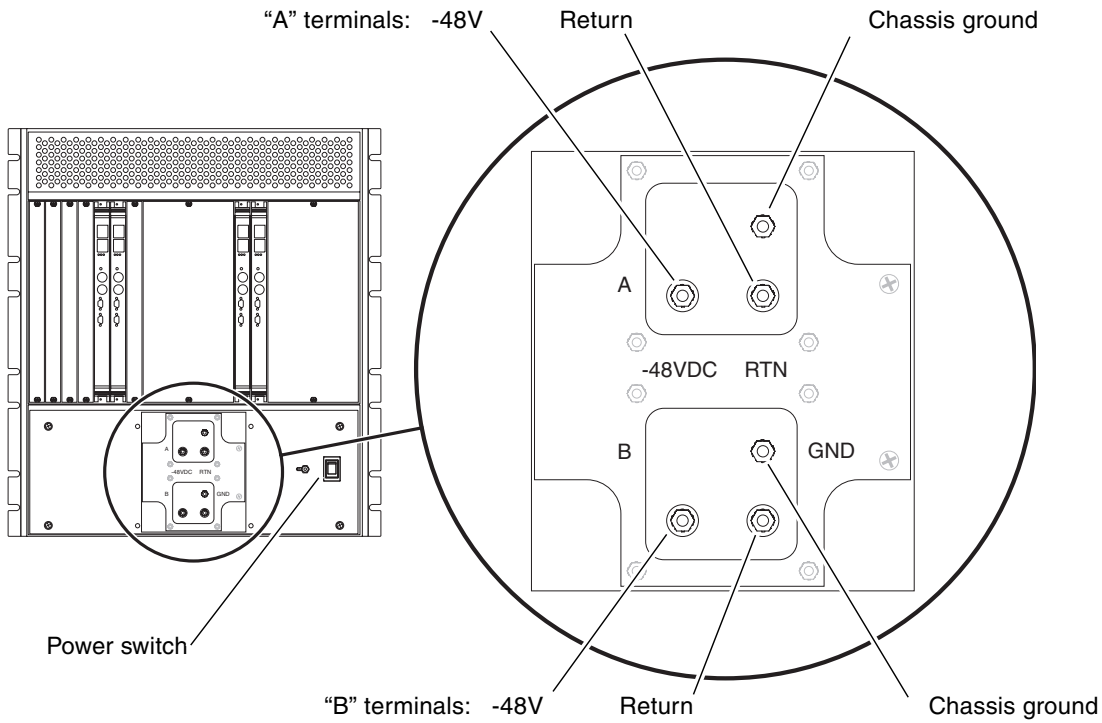


FIGURE 2-4 DC Power Input Panel

- 4. Replace the protective cover on the terminal block.**
- 5. Complete the connection to the DC power source.**

Installing Additional Cards Into the Netra CT 820 Server

Note – The instructions in this chapter are for installing additional cards into a server as part of the overall installation process where the server is powered *off*. If you are installing additional cards into a server that is powered *on*, follow the instructions in the *Netra CT 820 Server Service Manual*.

Every Netra CT 820 server comes with the following cards factory installed:

- Two distributed management cards and one rear transition card
- Two switching fabric boards and rear transition cards
- One Netra CP2300 board and rear transition card

If you have any additional boards to install in the server, such as the Netra CP2300 boards, follow the instructions in this chapter. If you do not have any additional boards to install, go to [Chapter 4](#).

Antistatic Precautions

Before you can install any additional cards into your system, you must first take the necessary 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. Refer to [FIGURE 2-1](#) and [FIGURE 2-2](#) for ESD ground jack locations.

Installing Additional Cards in the Netra CT 820 Server

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

When installing additional cards in a Netra CT 820 server, you should first install the rear transition card at the rear of the server, then install the front card in the front of the server. Even though you will be installing the rear transition card first, it might be useful to look at the front of the server and locate the slot number where you will be installing the cards, then go to the back of the server and install the rear transition card in that particular slot. [FIGURE 3-1](#) shows the location of the node slots from the front of the Netra CT 820 server.

When fully loading the system with either additional cards or filler panels, fill slot 11 first, then work outward, filling each odd-numbered slot, alternating from left-to-right (slot 11 first, 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 (slot 10 first, then slot 8, then slot 12, and so on).

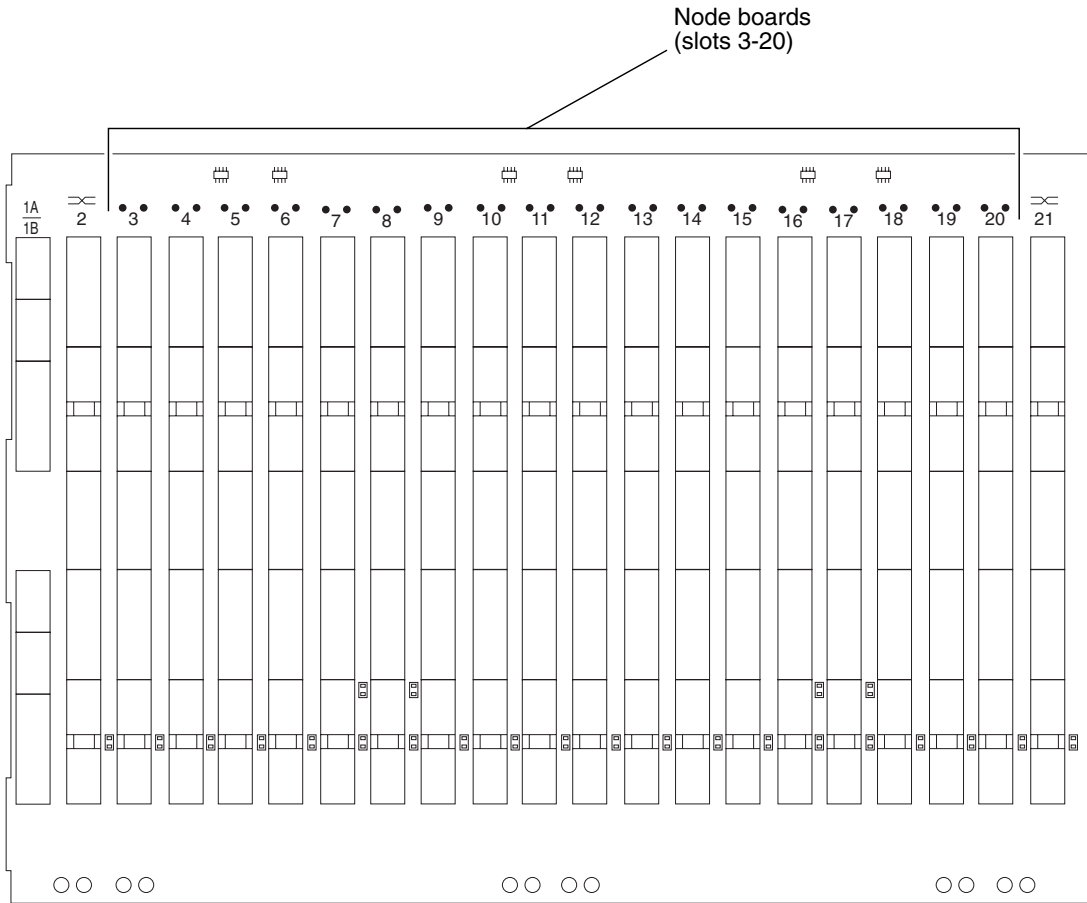


FIGURE 3-1 Location of Node Slots



Caution – An energy and cooling hazard is present if any slots are left uncovered. If you remove a card from a slot, you must either fill the slot with a replacement card or cover it with a filler panel.

Ethernet Networking on the Netra CP2300 Board

Before installing Netra CP2300 boards into the Netra CT 820 server, you must decide whether you want the Ethernet signals routed through the Netra CP2300 board rear transition cards or through the switching fabric board rear transition cards.

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 rear transition card.

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 3-2](#) for the location and settings of Position 0 on the SW503 DIP switch.

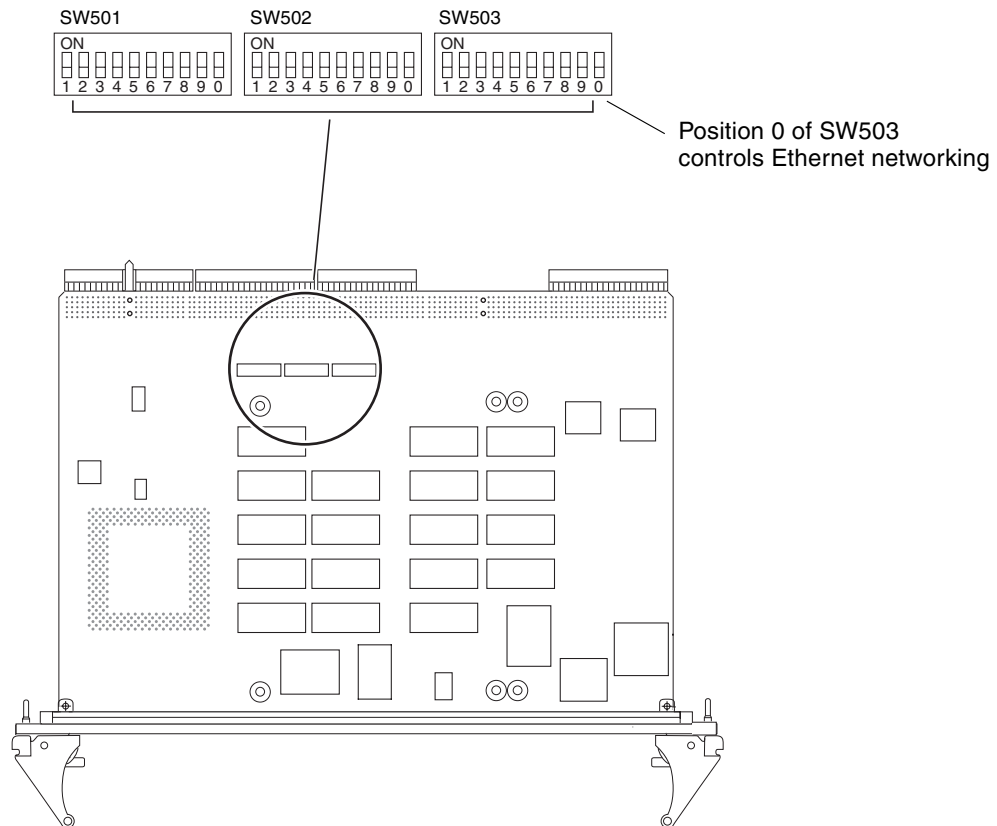


FIGURE 3-2 Location and Default Settings of the SW503 DIP Switch

Installing Rear Transition Cards

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

See [“Antistatic Precautions” on page 11](#) for those instructions.

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

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

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

Refer to the documentation that you received with the card for more information.

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

Rear transition cards must be installed inline behind the accompanying front board.

For example, if the accompanying front board is going to be installed in slot 3, its rear transition card must be installed at the back of the system in slot 3.

6. **Prepare the card by opening the injector/ejector mechanisms ([FIGURE 3-3](#)).**

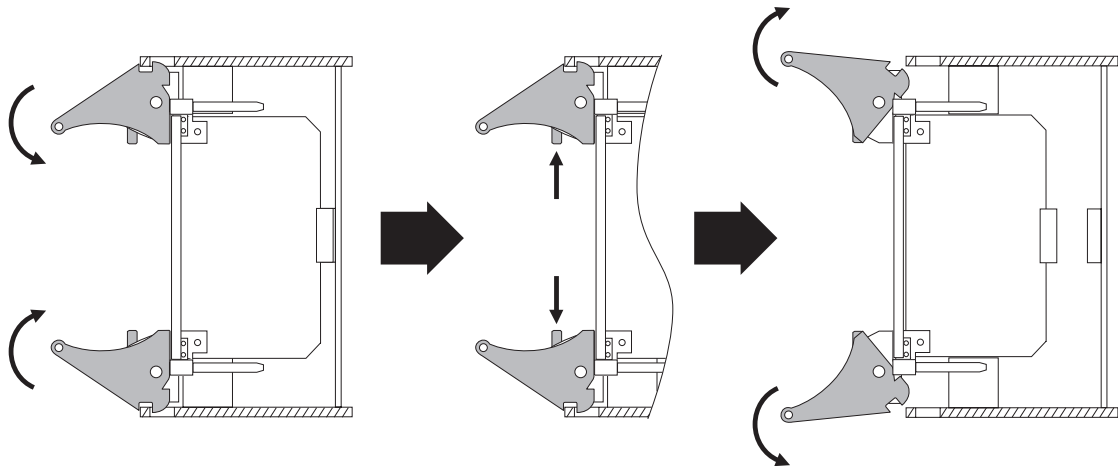


FIGURE 3-3 Injector/Ejector Operation (Board-Level Components)

7. **Connect any internal system cabling, such as cabling to an IDE device, to the appropriate headers on the rear transition card.**

Route the cabling so that it will not become snagged or kinked when the card is inserted.

8. **Carefully align the edges of the card with the card guides in the appropriate slot.**

It might be helpful to look into the enclosure to verify correct alignment of the rails in the guides.

9. Taking care to keep the board aligned in the guides, slide the card in until the injector/ejector mechanisms engage the retention bars.
10. Simultaneously push in the board and rotate the injector/ejector mechanisms inward to their closed positions to seat the midplane connectors.

Installing Node Cards

1. Go to the front of the system and locate the card slot where you installed the rear transition card at the rear of the system.
2. Remove the filler panel, if necessary.

The filler panel is secured to the card cage using two screws, one at the top of the filler panel, the other at the bottom. Store the filler panel in a safe place; you might need to use it again if you have to remove a card for an extended period of time.
3. Get the node card that you want to install in the Netra CT 820 server from the ship kit.
4. Perform any card-specific hardware procedures, if necessary.

Refer to the documentation that you received with the card for more information.
5. Prepare the board by opening the injector/ejector mechanisms ([FIGURE 3-3](#)).
6. Carefully align the edges of the board with the card guides in the appropriate slot.

It might be helpful to look into the enclosure to verify correct alignment of the rails in the guides.
7. Taking care to keep the board aligned in the guides, slide the board in until the injector/ejector mechanisms engage the retention bars.
8. Simultaneously push in the board and rotate the injector/ejector mechanisms inward to their closed positions to seat the midplane connectors.
9. Tighten the board retention screws to ensure the board is secured into the chassis.

Cabling the System

This chapter gives instructions for connecting cables to the cards. It is divided into the following sections:

- [“Connecting Cables to the Distributed Management Cards” on page 18](#)
- [“Connecting Cables to the Switching Fabric Boards” on page 24](#)
- [“Connecting the Cables to the Netra CP2300 Boards” on page 28](#)

Connecting Cables to the Distributed Management Cards

The Netra CT 820 server is available only as a rear-access server, so most of the cabling for the distributed management card will be to the rear transition card at the rear of the server. The only exception would be the console port on the distributed management card at the front of the server. You can administer the Netra CT 820 server either from the front of the server, through the console port on the distributed management card, or from the rear of the server, through one of the two console ports on the rear transition card.



Caution – Do *not* attempt to administer the Netra CT 820 server through the console ports on both the distributed management card and the rear transition card at the same time. 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 boards in an unknown state.

- If you are connecting a cable to the console port on the distributed management card at the front of the server, go to [“Ports on the Distributed Management Card” on page 19](#).
 - If you are connecting cables to the ports on the rear transition card at the rear of the server, go to [“Ports on the Rear Transition Card for the Distributed Management Card” on page 21](#).
-

Note – Make sure you connect the alarm ports for both distributed management cards to the central office alarming system. The alarm ports on the active and stand-by cards will not be active at the same time. During a distributed management card failover, the failed card will no longer connect to the alarming system, and the newly active card will provide the alarm connection. If a failover occurs, your application must also reload the alarm severity profile on the newly active distributed management card. Refer to the *Netra CT 820 Server Software Developer’s Guide* (817-2648) for more information.

Ports on the Distributed Management Card

FIGURE 4-1 shows the location of the console port on the distributed management card. The pinouts for the console port on the distributed management card are given in “Console Port” on page 20.

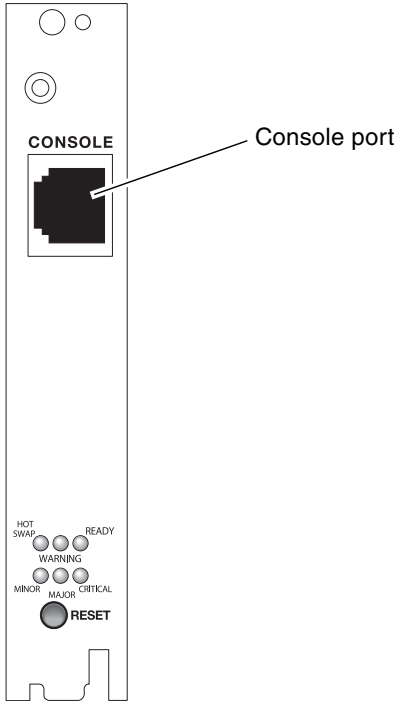


FIGURE 4-1 Location of the Console Port on the Distributed Management Card

Console Port

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

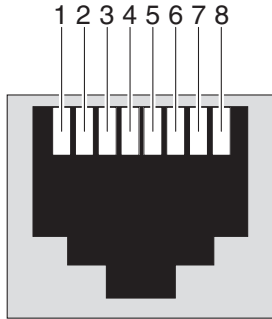


FIGURE 4-2 RJ-45 Console Port Diagram

TABLE 4-1 Console Port Pinouts

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

Ports on the Rear Transition Card for the Distributed Management Card

FIGURE 4-3 shows the ports on the rear transition card for the distributed management cards. Note that a single rear transition card gives ports for both of the distributed management cards installed in the front of the server (1A and 1B).

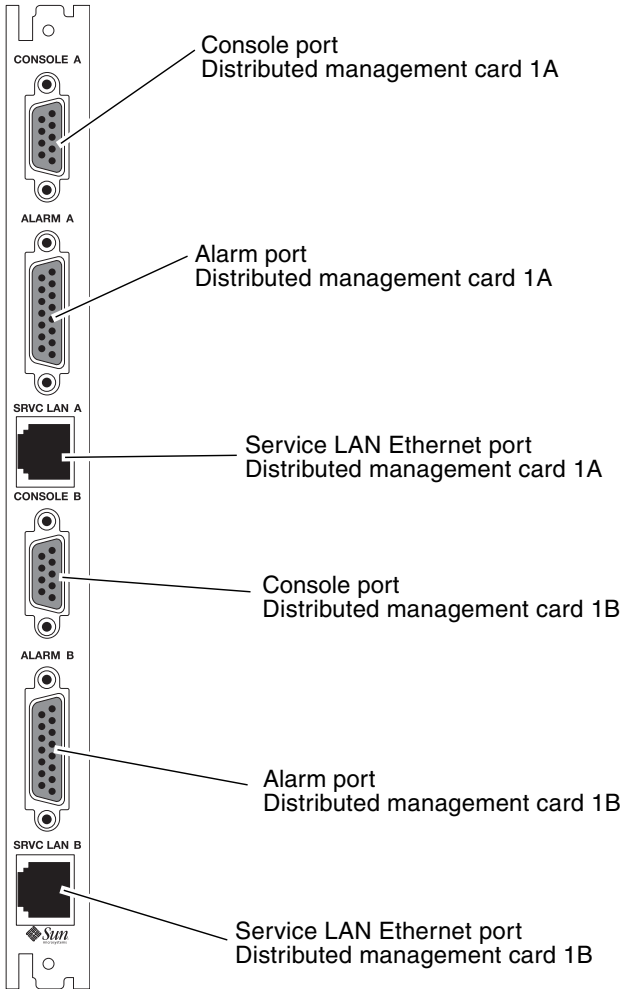


FIGURE 4-3 Distributed Management Card Rear Transition Module Ports

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

- [“Console Ports 1A and 1B” on page 22](#)
- [“Alarm Ports 1A and 1B” on page 23](#)
- [“Ethernet Ports 1A and 1B” on page 23](#)

Console Ports 1A and 1B

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

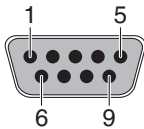


FIGURE 4-4 Console Port Connector Pins

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

TABLE 4-2 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 4-3 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
3	COM_B_TXD	8	COM_B_CTS
4	COM_B_DTR	9	COM_B_RI
5	GND_B		

Alarm Ports 1A and 1B

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

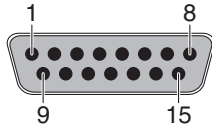


FIGURE 4-5 Alarm Port

TABLE 4-4 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

Ethernet Ports 1A and 1B

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.

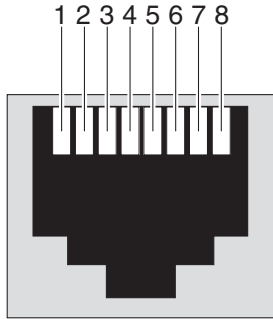


FIGURE 4-6 RJ-45 Ethernet Connector Diagram

TABLE 4-5 Ethernet Ports 1A and 1B Pinouts

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

Connecting Cables to the Switching Fabric Boards

Note – If you want the Ethernet signals to be routed to the rear transition card for the switching fabric board, verify that the SW503 DIP switch on the Netra CP2300 board is set correctly. See [“Ethernet Networking on the Netra CP2300 Board” on page 14](#) for more information before proceeding with these instructions.

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.

The Netra CT 820 server is available only as a rear-access server, so all of the cabling for the switching fabric board will be to the rear transition card at the rear of the server. There are no active components on the rear transition card, so you must have the accompanying switching fabric board installed in the same slot at the front of the server, even though no cables will be connected to that front card. The rear transition card is connected to the switching fabric board through the midplane through the RJ3 and RJ5 CompactPCI connectors. This card used to route Ethernet traffic through five 10/100-megabit switched Ethernet MDIX ports through shielded RJ-45 connectors (ports 20–23), two 1000-megabit Ethernet MDIX ports (ports 25–26), and an RJ-11 console port. FIGURE 4-7 shows 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.

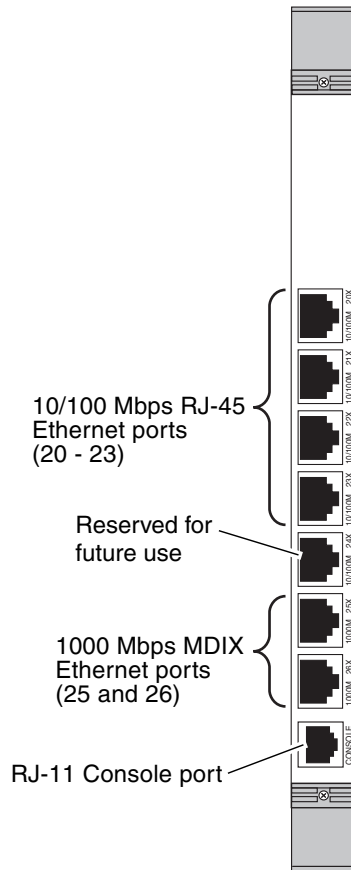


FIGURE 4-7 Ports on the Rear Transition Card for the Switching Fabric Board

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

- “10/100 Mbit/sec Ethernet Ports (20–23)” on page 26
- “1000 Mbit/sec Ethernet Ports (25 and 26)” on page 26
- “Console Port” on page 27

10/100 Mbit/sec Ethernet Ports (20–23)

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 Mbit/sec Ethernet ports.

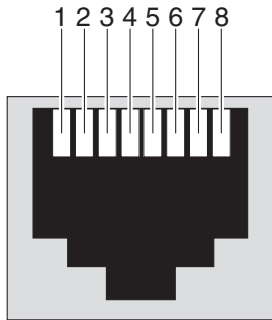


FIGURE 4-8 RJ-45 Ethernet Connector Diagram

1000 Mbit/sec 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 Mbit/sec Ethernet ports.

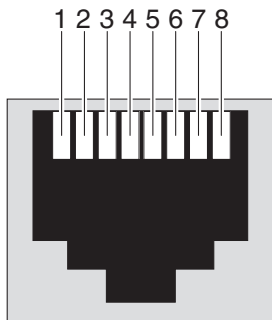


FIGURE 4-9 RJ-45 Ethernet Connector Diagram

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.

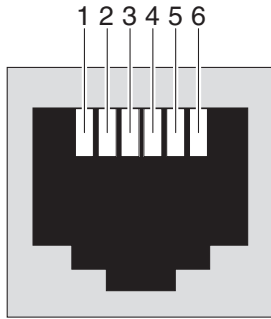


FIGURE 4-10 RJ-11 Console Connector Diagram

The only signals used are transmit, receive, and ground. The pinouts for this port is shown in [TABLE 4-6](#).

TABLE 4-6 RJ11 Console Port Pinout

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

* With use of null modem provided.

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

Connecting the Cables to the Netra CP2300 Boards

The Netra CT 820 server is available only as a rear-access server, so all of the cabling for the Netra CP2300 boards will be to the rear transition card at the rear of the server. However, in order to use the PCI Interface Modules (PIMs) on the rear transition card, you must also have the accompanying PCI mezzanine cards (PMCs) installed on the Netra CP2300 board.

PMCs on the Netra CP2300 Board

FIGURE 4-11 shows the location of the PMCs on the Netra CP2300 board, and “[PMC Connectors](#)” on page 29 gives connector interface information for the PMC slots.

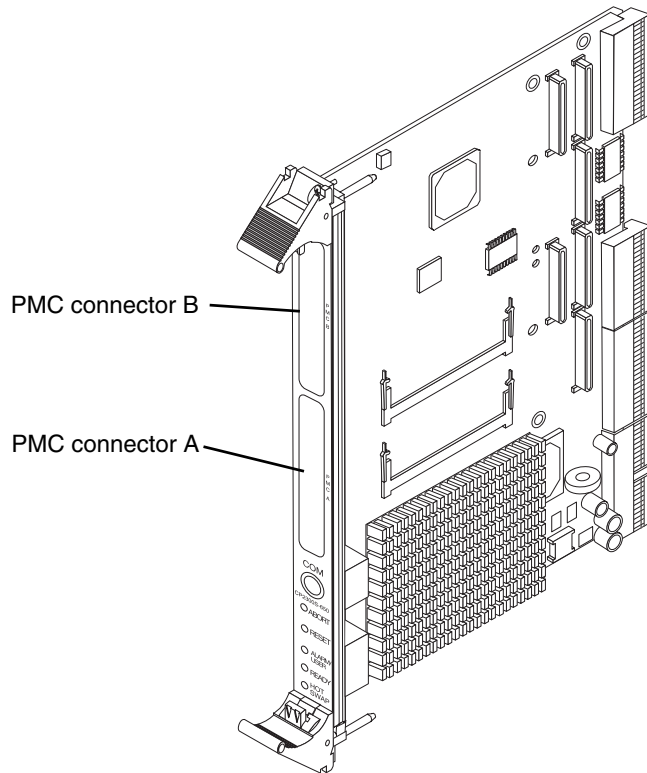


FIGURE 4-11 Netra CP2300 Board

PMC Connectors

FIGURE 4-12 shows the locations of PMC port connectors. The following tables show contact allocations.

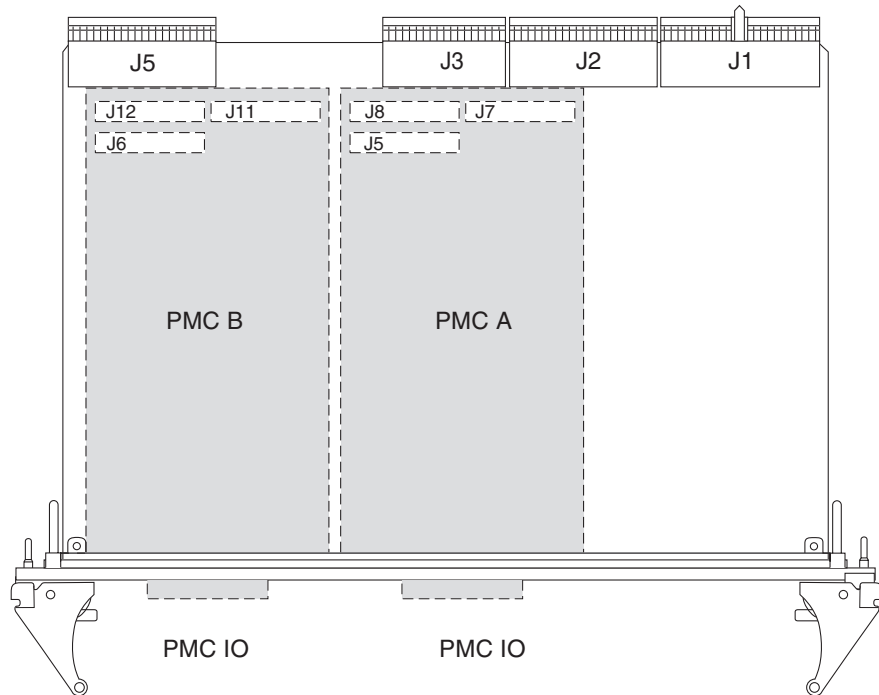


FIGURE 4-12 Netra CP2300 Board PMC Port Connectors

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.

PMC B Connector Interfaces

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

TABLE 4-7 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
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 4-7 PMC B J6 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

TABLE 4-8 PMC B J12 Connector Interface

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

TABLE 4-8 PMC B J12 Connector Interface (Continued)

Description	Pin	Pin	Description
GND	47	48	PCI_B_AD<10>
PCI_B_AD<8>	49	50	VDD
PCI_B_AD<7>	51	52	NC
VDD	53	54	NC
NC	55	56	GND
NC	57	58	NC
GND	59	60	NC
PCI_B_ACK64_L	61	62	VDD
GND	63	64	NC

TABLE 4-9 PMC B J11 Connector Interface

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

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 4-10 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*	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>

TABLE 4-10 PMC A J5 Connector Interface (Continued)

Pin	Description	Pin	Description
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

* BUSMODE signals require a pull-up

TABLE 4-11 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

TABLE 4-11 PMC A J8 Connector Interface (Continued)

Pin	Description	Pin	Description
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
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. This connector is not fitted on these boards.

TABLE 4-12 PMC A J7 Connector Interface

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

Ports on the Rear Transition Card for the Netra CP2300 Board

FIGURE 4-13 shows the ports on the rear transition card for the Netra CP2300 board.

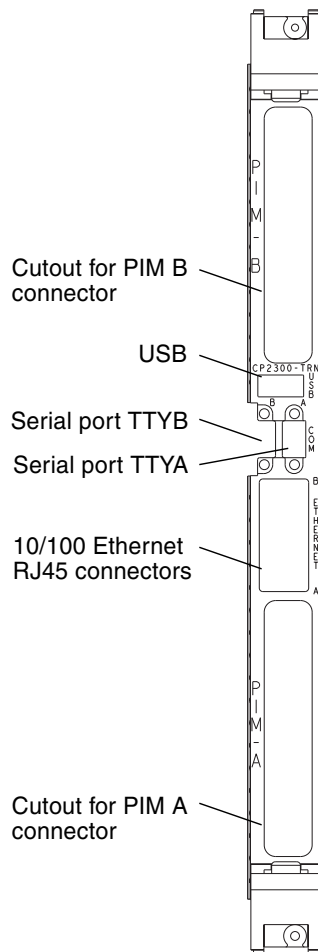


FIGURE 4-13 Rear Transition Card for the Netra CP2300 Board

Following are figures and tables showing the pinouts for each of the ports on the rear transition card for the Netra CP2300 board:

- “PIM Connectors” on page 36
- “USB Port” on page 42
- “Serial Ports” on page 42
- “Fast Ethernet Connectors” on page 43

PIM Connectors

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 4-14](#) for the connector pin numbering, and see [FIGURE 4-13](#) for the location of these connectors on the transition card.

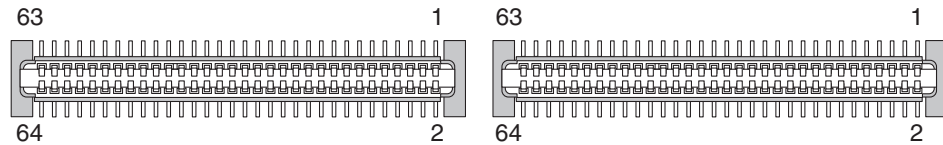


FIGURE 4-14 PIM Connector Pins

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) for more information about switch settings.

[TABLE 4-13](#) lists the pin assignments for the PIM A connector at J4, and [TABLE 4-14](#) lists the pin assignments for the PIM A connector at J5.

TABLE 4-13 PIM A Connector J4

Signal Name	Pin	Pin	Signal Name
SMC_TX	1	2	+12V
SMC_RX	3	4	
+5V	5	6	

TABLE 4-13 PIM A Connector J4 (Continued)

Signal Name	Pin	Pin	Signal Name
TXN_I2C_SDA	7	8	
TXN_I2C_SCL	9	10	+3.3V
I2C_PWR	11	12	
GND	13	14	
	15	16	
	17	18	GND
RSV(PCI_RST#)	19	20	
+5V	21	22	
RSV	23	24	
RSV	25	26	+3.3V
	27	28	
GND	29	30	
	31	32	
	33	34	GND
	35	36	
+5V	37	38	
	39	40	
	41	42	+3.3V
	43	44	
GND	45	46	
	47	48	
	49	50	GND
	51	52	
+5V	53	54	
	55	56	
	57	58	+3.3V
	59	60	
-12V	61	62	
	63	64	

TABLE 4-14 PIM A Connector J5

Signal Name	Pin	Pin	Signal Name
PMC_A_IO_1	1	2	PMC_A_IO_2
PMC_A_IO_3	3	4	PMC_A_IO_4
PMC_A_IO_5	5	6	PMC_A_IO_6
PMC_A_IO_7	7	8	PMC_A_IO_8
PMC_A_IO_9	9	10	PMC_A_IO_10
PMC_A_IO_11	11	12	PMC_A_IO_12
PMC_A_IO_13	13	14	PMC_A_IO_14
PMC_A_IO_15	15	16	PMC_A_IO_16
PMC_A_IO_17	17	18	PMC_A_IO_18
PMC_A_IO_19	19	20	PMC_A_IO_20
PMC_A_IO_21	21	22	PMC_A_IO_22
PMC_A_IO_23	23	24	PMC_A_IO_24
PMC_A_IO_25	25	26	PMC_A_IO_26
PMC_A_IO_27	27	28	PMC_A_IO_28
PMC_A_IO_29	29	30	PMC_A_IO_30
PMC_A_IO_31	31	32	PMC_A_IO_32
PMC_A_IO_33	33	34	PMC_A_IO_34
PMC_A_IO_35	35	36	PMC_A_IO_36
PMC_A_IO_37	37	38	PMC_A_IO_38
PMC_A_IO_39	39	40	PMC_A_IO_40
PMC_A_IO_41	41	42	PMC_A_IO_42
PMC_A_IO_43	43	44	PMC_A_IO_44
PMC_A_IO_45	45	46	PMC_A_IO_46
PMC_A_IO_47	47	48	PMC_A_IO_48
PMC_A_IO_49	49	50	PMC_A_IO_50
PMC_A_IO_51	51	52	PMC_A_IO_52
PMC_A_IO_53	53	54	PMC_A_IO_54
PMC_A_IO_55	55	56	PMC_A_IO_56
PMC_A_IO_57	57	58	PMC_A_IO_58

TABLE 4-14 PIM A Connector J5 (Continued)

Signal Name	Pin	Pin	Signal Name
PMC_A_IO_59	59	60	PMC_A_IO_60
PMC_A_IO_61	61	62	PMC_A_IO_62
PMC_A_IO_63	63	64	PMC_A_IO_64

PIM B Connector Pin Assignments

[TABLE 4-15](#) lists the pin assignments for the PIM B connector at J6, and [TABLE 4-16](#) lists the pin assignments for the PIM B connector at J7.

TABLE 4-15 PIM B Connector J6

Signal Name	Pin	Pin	Signal Name
SMC_TX	1	2	+12V
SMC_RX	3	4	
+5V	5	6	
TXN_I2C_SDA	7	8	
TXN_I2C_SCL	9	10	+3.3V
I2C_PWR	11	12	
GND	13	14	
	15	16	
	17	18	GND
RSV(PCI_RST#)	19	20	
+5V	21	22	
RSV	23	24	
RSV	25	26	+3.3V
	27	28	
GND	29	30	
	31	32	
	33	34	GND
	35	36	
+5V	37	38	
	39	40	

TABLE 4-15 PIM B Connector J6 (Continued)

Signal Name	Pin	Pin	Signal Name
	41	42	+3.3V
	43	44	
GND	45	46	
	47	48	
	49	50	GND
	51	52	
+5V	53	54	
	55	56	
	57	58	+3.3V
	59	60	
-12V	61	62	
	63	64	

TABLE 4-16 PIM B Connector J7

Signal Name	Pin	Pin	Signal Name
PMC_B_IO_1	1	2	PMC_B_IO_2
PMC_B_IO_3	3	4	PMC_B_IO_4
PMC_B_IO_5	5	6	PMC_B_IO_6
PMC_B_IO_7	7	8	PMC_B_IO_8
PMC_B_IO_9	9	10	PMC_B_IO_10
PMC_B_IO_11	11	12	PMC_B_IO_12
PMC_B_IO_13	13	14	PMC_B_IO_14
PMC_B_IO_15	15	16	PMC_B_IO_16
PMC_B_IO_17	17	18	PMC_B_IO_18
PMC_B_IO_19	19	20	PMC_B_IO_20
PMC_B_IO_21	21	22	PMC_B_IO_22
PMC_B_IO_23	23	24	PMC_B_IO_24
PMC_B_IO_25	25	26	PMC_B_IO_26
PMC_B_IO_27	27	28	PMC_B_IO_28
PMC_B_IO_29	29	30	PMC_B_IO_30

TABLE 4-16 PIM B Connector J7 (Continued)

Signal Name	Pin	Pin	Signal Name
PMC_B_IO_31	31	32	PMC_B_IO_32
PMC_B_IO_33	33	34	PMC_B_IO_34
PMC_B_IO_35	35	36	PMC_B_IO_36
PMC_B_IO_37	37	38	PMC_B_IO_38
PMC_B_IO_39	39	40	PMC_B_IO_40
PMC_B_IO_41	41	42	PMC_B_IO_42
PMC_B_IO_43	43	44	PMC_B_IO_44
PMC_B_IO_45	45	46	PMC_B_IO_46
PMC_B_IO_47	47	48	PMC_B_IO_48
PMC_B_IO_49	49	50	PMC_B_IO_50
PMC_B_IO_51	51	52	PMC_B_IO_52
PMC_B_IO_53	53	54	PMC_B_IO_54
PMC_B_IO_55	55	56	PMC_B_IO_56
PMC_B_IO_57	57	58	PMC_B_IO_58
PMC_B_IO_59	59	60	PMC_B_IO_60
PMC_B_IO_61	61	62	PMC_B_IO_62
PMC_B_IO_63	63	64	PMC_B_IO_64

USB Port

[FIGURE 4-15](#) shows the USB connector port A on the rear transition card for the Netra CP2300 board. [TABLE 4-17](#) lists the pin assignments for the USB port.

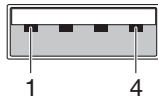


FIGURE 4-15 USB Connector Port A Pins

TABLE 4-17 USB Port A

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

Serial Ports

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 4-16](#)).

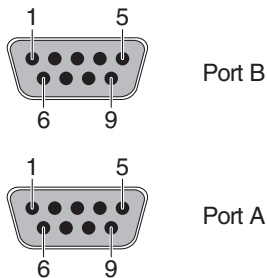


FIGURE 4-16 Serial Port Connector Pins

The signal interfaces of the connectors are described in [TABLE 4-18](#) and [TABLE 4-19](#).

TABLE 4-18 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 4-19 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		

Fast Ethernet Connectors

The dual-jack RJ-45 (J701) AMP1116353-8 Ethernet connectors, located on the transition card's back panel, provide two 10/100 Mbit/sec fast Ethernet ports.

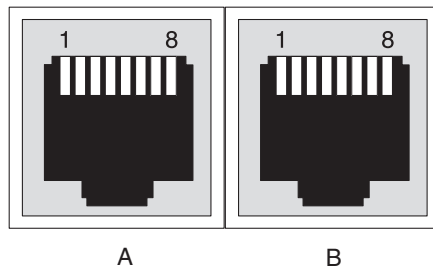


FIGURE 4-17 Fast Ethernet Connector Pins

By default, the Netra CP2300 board is set so that Ethernet traffic is routed to the switching fabric board rear transition card, and the fast Ethernet connectors on the Netra CP2300 rear transition card are disabled. You can use the fast Ethernet connectors on the Netra CP2300 rear transition card only if you changed the default settings on the Netra CP2300 board beforehand. Refer to [“Ethernet Networking on the Netra CP2300 Board”](#) on page 14 for more information before proceeding with these instructions.

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 or server, 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 *Netra CT 820 Server System Administration Guide* (817-2647), and 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.

- [“Connecting a Terminal Console to the Server” on page 46](#)
- [“Powering On the Server or Boards” on page 49](#)
- [“Powering Off the Server” on page 51](#)

Connecting a Terminal Console to the Server

You can access the Netra CT 820 server either remotely, where you would log in to the Netra CT 820 server as superuser through another server on the network, or directly, where you would connect 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 CONSOLE port on either the distributed management card or the rear transition card for the distributed management card. Refer to [“Connecting Cables to the Distributed Management Cards” on page 18](#) for more information.

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 46](#).
- If you are using a Solaris workstation to access the Netra CT 820 server, go to [“Using a Solaris Workstation” on page 47](#).
- If you are using a PC laptop to access the Netra CT 820 server, go to [“Using a PC Laptop” on page 48](#).

Using an ASCII Terminal

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

Use the information in [TABLE 5-1](#) to make the necessary connections.

TABLE 5-1 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.

Using a Solaris Workstation

1. Make sure that the Solaris workstation to which you are establishing the connection is powered on and active.

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

Use the information in [TABLE 5-2](#) to make the necessary connections.

TABLE 5-2 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

The command you use to make a serial connection depends on which serial port (TTY A or TTY B) on the workstation you connected to the distributed management card.

- To connect to the workstation serial port TTY A, type the following in a terminal window on the workstation:

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

- To connect to the workstation serial port TTY B, first ensure that the `/etc/remote` file on the Sun system contains an entry for `hardwire`.

Note – Most releases of the Solaris operating system software shipped since 1992 contain an `/etc/remote` file with the appropriate `hardware` entry. However, if the workstation is running an older version of the Solaris software, or if the `/etc/remote` file has been modified, you might need to edit it. Refer to the `remote(4)` man page for additional information.

Then, in a terminal window on the workstation, type:

```
# tip hardware
```

Alternatively, you can type the following to connect to the workstation serial port TTY B:

```
# tip -9600 /dev/ttyb
```

You should see the word `connected` as the response. For more information on using the `tip` command, refer to the `tip(1)` man page.

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

Using a PC Laptop

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

Use the information in [TABLE 5-3](#) to make the necessary connections.

TABLE 5-3 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

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 52](#)).
- **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 52](#)); you cannot go through a slot-by-slot software power-on if you powered off the entire system using the hardware power-off instructions.

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.**

See [“Providing Power” on page 9](#) for more information.

2. **Locate the power switch at the rear of the server and press it to the On (I) position (FIGURE 5-1).**

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

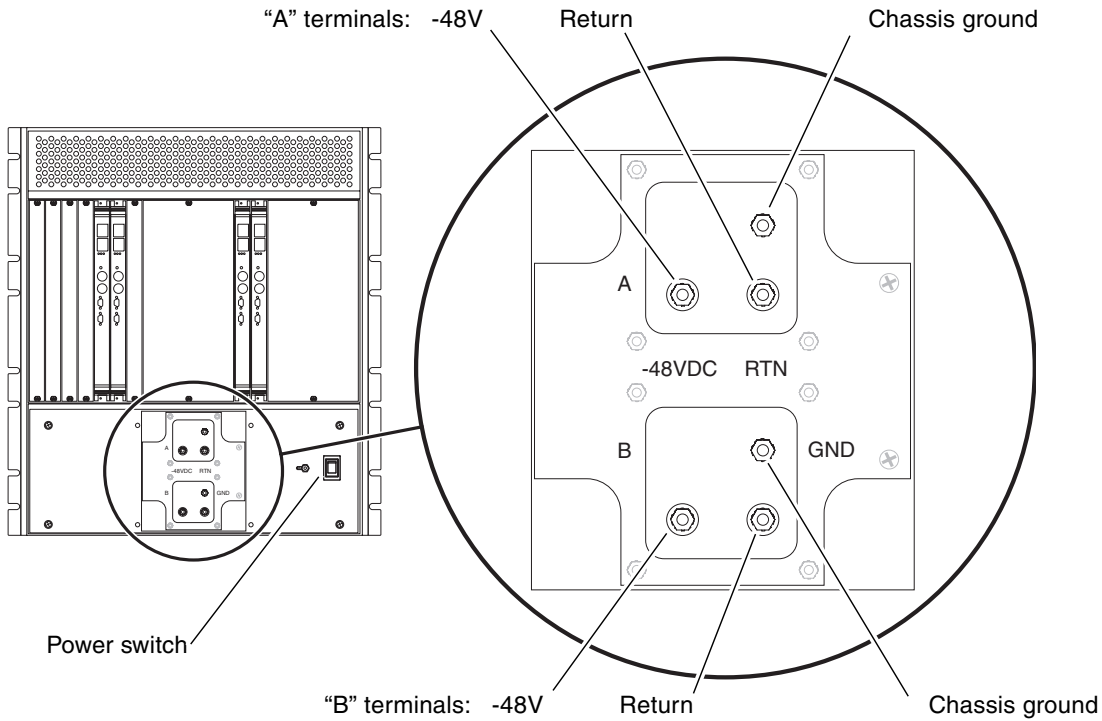


FIGURE 5-1 Netra CT 820 Server (Rear)

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 [“Connecting a Terminal Console to the Server”](#) on page 46 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 systems 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.

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've gone through 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 will allow you to power-on the node or switching fabric slots remotely through the distributed management cards using the software power-on instructions.

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 5-1).



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 5-1).

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.

Performing a Software Power-Off

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

See “[Connecting a Terminal Console to the Server](#)” on page 46 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.

System Specifications

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

Electrical Specifications

TABLE A-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				

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.

TABLE A-2 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 A-2 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

- airflow, 8
- antistatic precautions, 11

C

- cabling
 - distributed management cards, 18
 - Netra CP2300 boards, 28
 - switching fabric boards, 25
- chassis
 - front view, 5
 - rear view, 6

D

- distributed management cards
 - cabling, 18
 - ports
 - console, 20
 - location, 19
- distributed management cards, rear transition card
 - ports
 - alarm 1A and 1B, 23
 - console 1A and 1B, 22
 - Ethernet 1A and 1B, 23
 - location, 21

E

- electrical specifications, 53
- environmental specifications, 54
- ethernet networking, setting on Netra CP2300 boards, 14

I

- installation overview, 1
- installing
 - node cards, 16
 - rear transition cards, 15

N

- Netra CP2300 boards
 - cabling, 28
 - ethernet networking, setting, 14
 - PMC connectors, 29
- Netra CP2300 boards, rear transition cards
 - PIM connectors, 36
 - ports
 - Ethernet, 43
 - location, 35
 - serial, 42
 - USB, 42
- node boards
 - slot locations, 13

P

- PIM connectors, Netra CP2300 boards, rear transition cards, 36
- PMC connectors, Netra CP2300 boards, 29
- ports
 - distributed management cards, 19
 - console, 20
 - distributed management cards, rear transition card, 21
 - alarm 1A and 1B, 23
 - console 1A and 1B, 22

- Ethernet 1A and 1B, 23
- Netra CP2300 boards, rear transition cards
 - Ethernet, 43
 - location, 35
 - serial, 42
 - USB, 42
- switching fabric boards, rear transition cards
 - console, 27
 - Ethernet, 10/100 Mbit/sec, 26
 - Ethernet, 1000 Mbit/sec, 26
 - location, 25
- power, connecting, 9
- powering off the server
 - hardware power-off, 52
 - software power-off, 52
- powering on the server
 - hardware power-on, 49
 - software power-on, 50

S

- shipping contents, 4
- software, installing, 1
- specifications
 - electrical, 53
 - environmental, 54
- switching fabric boards
 - cabling, 25
- switching fabric boards, rear transition cards
 - ports
 - console, 27
 - Ethernet, 10/100 Mbit/sec, 26
 - Ethernet, 1000 Mbit/sec, 26
 - location, 25

T

- terminal console, connecting to the server, 46
- tools required, 3