Netra™ T1 AC200 and DC200 Server User's Guide

Sun Microsystems, Inc.
901 San Antonio Road
Palo Alto, CA 94303
U.S.A. 650-960-1300

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Preface

The *Netra T1 AC200 and DC200 Server User's Guide* describes how to install, manage, and maintain the Netra™ T1 AC200 and DC200 servers. The manual is intended for system administrators who have experience in setting up networked Solaris™ servers.

How This Book Is Organized

Part I Installation and Configuration

Chapter 1 introduces the Netra T1 AC200 and DC200 servers, lists the customer-installable hardware and software components available for them, and identifies the main features of the servers' front and back panels.

Chapter 2 provides information about the power and cooling requirements for the Netra T1 AC200 and DC200 servers.

Chapter 3 describes how to assemble the DC input power cable.

Chapter 4 describes how to install optional (hot-pluggable) hard disk drives and also how to open a Netra T1 server, identify its components, and install a CD-ROM drive, memory DIMMs, and a PCI expansion card.

Chapter 5 describes how to install a Netra T1 server into different types of racks.

Chapter 6 describes how to connect the cables and set up serial connections to a Netra T1 server.

Chapter 7 describes how to perform the initial power-on and configuration of a Netra T1 server.

Part II Remote and Local Management

Chapter 8 describes how to use the LOMlite2 shell to power the server on and off or reset it remotely. It also describes how to use this shell to view status information about the server's fans, power supply, supply rails, operating temperature, and internal circuit breakers.

Chapter 9 describes how to use the LOMlite2-specific Solaris commands to monitor and manage the system. This chapter also explains how to configure the LOMlite2 device to restart the Netra T1 server automatically after a system lockup.

Part III Troubleshooting and Maintenance

Chapter 10 lists some problems that you might encounter while setting up or using a Netra T1 server and tells you how to solve them. It also describes the server's LEDs.

Chapter 11 lists the field-replaceable units (FRUs) that you can order for Netra T1 AC200 and DC200 servers.

Part IV Appendixes

Appendix A describes the parameters you can configure in the LOMlite2 driver configuration file.

Appendix B provides the locations and the factory default settings of the jumpers on the system board.

Using Solaris Commands

This document does not contain information on basic Solaris 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:

- AnswerBook2™ online documentation for the Solaris software environment
- Other software documentation that you received with your system

Typographic Conventions

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

Shell Prompts

Shell	Prompt
C shell	*machine_name*%
C shell superuser	*machine_name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#
LOM shell	lom>

Related Documentation

Application	Title	Part Number
Installation	*Netra T1 AC200 and DC200 Server Product Notes*	806-6134-xx
Installation overview	*Netra T1 AC200 and DC200 Server Setup Poster*	806-5979-xx
Safety	*Netra T1 AC200 and DC200 Safety and Compliance Guide*	806-6135-xx

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Safety Precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions and instructions marked on the equipment.
- Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects can produce a short circuit that could cause fire, electric shock, or damage to your equipment.

Symbols

The following symbols may appear in this manual:

Caution – There is a risk of personal injury and equipment damage. Follow the instructions.

Caution – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

PART I Installation and Configuration

CHAPTER 1

Introduction

This chapter lists the features of the Netra T1 AC200 and DC200 servers, the contents of the ship kit, and the optional hardware and software that is available for them. It also describes the front and back panels, lists the tools you will need to use to install a server, and describes the servers' tolerance of, or suitability for, various environmental conditions. Finally, the chapter offers some guidance to help you decide whether to mount the system in a rack or a cabinet.

The chapter contains the following sections:

1.1 Overview of the Netra T1 Server

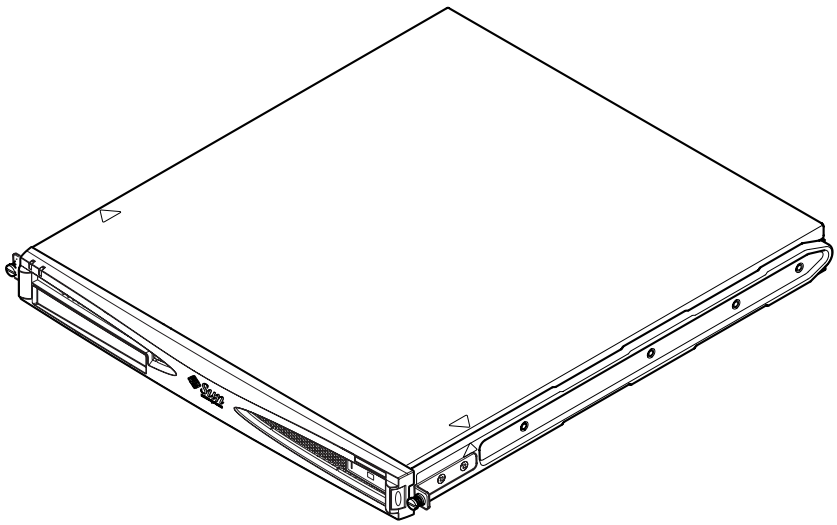


FIGURE 1-1 The Netra T1 Server

The Netra T1 AC200 and DC200 servers are single-processor, thin (1 U) servers designed primarily for use by telecommunications carriers and internet service providers. They are also suitable for use within corporate customer networks, wherever there is a need to maximize the density of high-performance Solaris servers.

The Netra T1 AC200 server is powered by an AC supply. The Netra T1 DC200 server is powered by –48VDC/–60VDC supplies. This is the only difference between the two models.

The Netra T1 server has the following features:

- Rackmounting enclosure with single power supply
- UltraSPARC™ IIe 500 MHz processor
- Four DIMM sockets accepting 256- or 512-Mbyte PC133 memory modules (giving a maximum of 2 Gbytes of memory)
- One 33-MHz, 32-bit, 5V PCI card slot
- Two 10/100 Mbps RJ-45 Ethernet ports
- Console/Lights Out Management (LOM) RJ-45 serial port
- Second RJ-45 serial port

- Support for up to two low-profile, 3.5-inch Fast-40 (Ultra2SCSI) disks
- Support for a low-profile ATAPI CD-ROM drive
- Support for up to two USB connections
- External Fast-40 (Ultra2SCSI) Multimode 68-pin port

The Netra T1 server is designed to be rackmounted. Its components are housed in a casing with the following dimensions:

- Height: 43.6 mm (1.72 inches)
- Width: 436.7 mm (17.2 inches)
- Depth: 478 mm (18.8 inches)
- Weight (when all option modules are installed): 10 kg (22 lb)

1.2 Contents of the Ship Kit

TABLE 1-1 Contents of the Ship Kit

Item	Quantity	Part Number
19-inch rackmounting brackets	4	340-5819-02
Cable management bracket	1	340-6151-01
Sun slide rail	2	540-4362-01
RJ-45 to RJ-45 patch cable for Ethernet or serial connection	2	530-2093-01
RJ-45 to DB-25 adapter	1	530-2889-02
DC connector kit (for Netra T1 DC200 systems only)	1	565-1644-01
10-32 UNF Sun rackmounting screw kit	1	565-1645-01
Side-mounting bracket screw kit	1	565-1654-01
Netra T1 AC200 and DC200 Server User's Guide	1	806-5978-10
Netra T1 AC200 and DC200 Server Safety and Compliance Guide	1	806-6135-10
Netra T1 AC200 and DC200 Server Product Notes	1	806-6134-1x

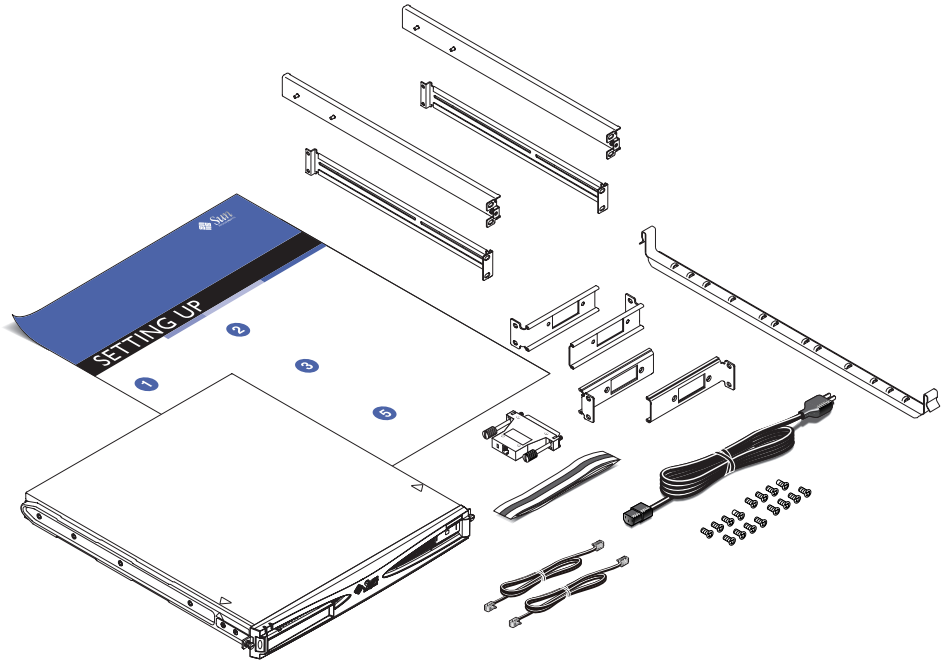


FIGURE 1-2 Contents of the Ship Kit

1.3 Optional Hardware and Software

TABLE 1-2 lists the customer-installable hardware components and software packages that are available for the Netra T1 server. To order them, contact your local Sun sales representative.

Note – The 256- and 512-Mbyte DIMMs available for use in the Netra T1 AC200 and DC200 servers cannot be used in Netra t1 Model 100 or 105 servers.

TABLE 1-2 Customer-Installable Hardware and Software Available for Netra T1 Servers

Optional Components	Part Number
19-inch rackmount kit	X7085A
23-inch rackmount kit	X6966A
24-inch rackmount kit	X6967A
600-mm rackmount kit	X6968A
Internal CD-ROM drive	X7088A
18-Gbyte hard disk	X5239A
36-Gbyte hard disk	X5244A
256-Mbyte DIMM	X7091A
512-Mbyte DIMM	X7092A
Power splitter cable	X7098A
5-pack serial port adapter	X6973A
Gigabit Ethernet PCI Adapter 2.0	X1141A
FastEthernet 10/100Base-T F/W UltraSCSI PCI Adapter 1.0	X1032A
FastEthernet 10/100Base-T PCI Adapter 2.0	X1033A
Quad FastEthernet PCI Adapter (QFE)	X1034A
High-Speed Serial Interface PCI Adapter 2.0	X1155A
ATM PCI Adapter 4.0 (155-Mbps Multi-Mode Fiber Interface)	X1157A
ATM PCI Adapter 4.0 (155-Mbps UTP Interface)	X1158A
Dual-Channel UltraSCSI Differential PCI Host Adapter	X6541A
Serial Asynchronous Interface PCI Adapter	X2156A

TABLE 1-2 Customer-Installable Hardware and Software Available for Netra T1 Servers

Optional Components	Part Number
Crypto Accelerator PCI Adapter	X1133A
Single-Loop FC-AL PCI Host Adapter	X6729A
Gigabit Ethernet and FC-AL PCI Adapter	X2069A

1.4 Front Panel

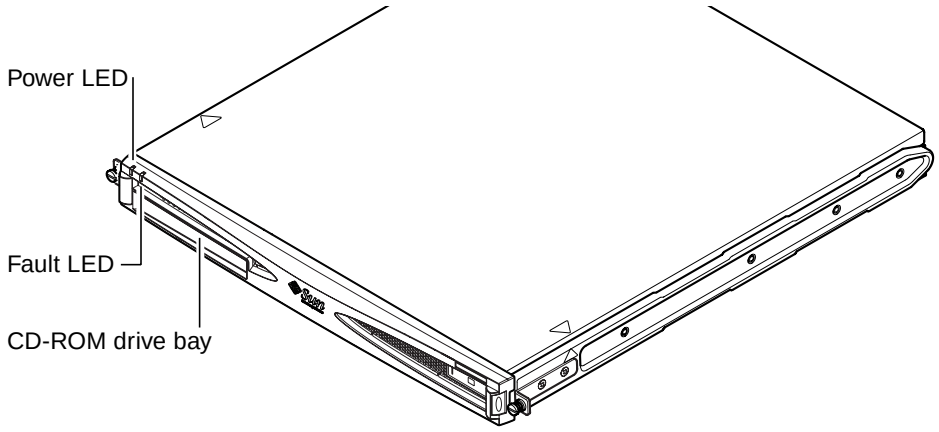


FIGURE 1-3 The Front Panel of the Netra T1 AC200 and DC200 Servers

1.5 Back Panel

FIGURE 1-4 shows the components on the Netra T1 AC200 server's back panel.

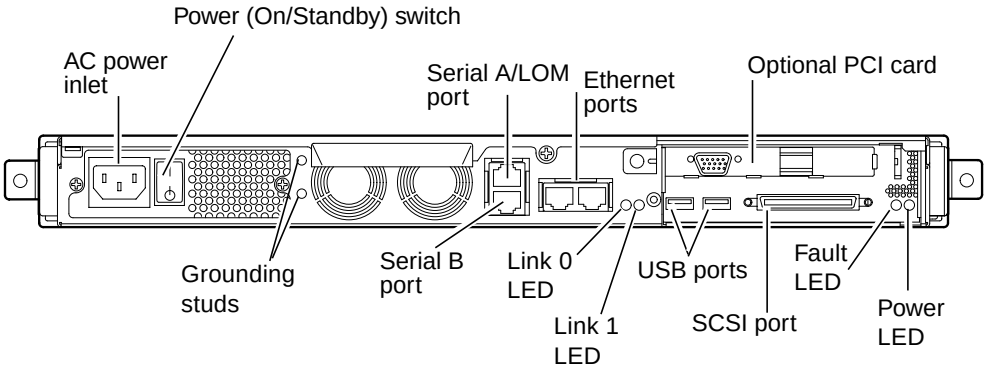


FIGURE 1-4 The Back Panel of the Netra T1 AC200 Server

FIGURE 1-5 shows the components on the Netra T1 DC200 server's back panel. Except for the power inlet, they are identical to those on the Netra T1 AC200.

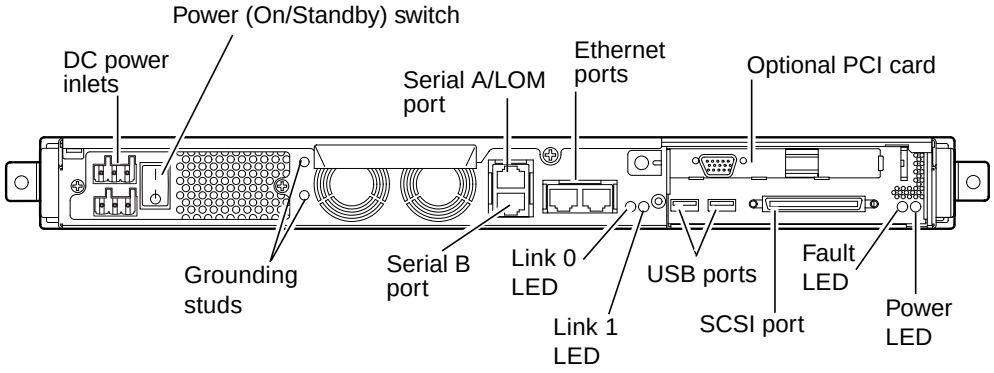


FIGURE 1-5 The Back Panel of the Netra T1 DC200 Server

1.6 The Fans Inside the Netra T1 Server

The Netra T1 contains four fans. These are monitored by the LOMlite2 device, so you can use the Lights-Out Management (LOM) commands to check their status.

Note – The arrangement of the components inside the Netra T1 AC200 and DC200 servers is not the same as it was inside the Netra t1 Model 100 and 105 servers. The fans are also numbered and positioned differently. For a diagram showing which fan is which inside a Netra T1 server, see “Identifying Server Components” on page 4-6.

1.7 Tools You Need for Installation

- An 8-mm wrench (for assembling the rackmounting).
- A small flat-head screwdriver (for levering the grilles when installing hard disks).
- An ESD pad and an antistatic wrist strap and earthing point (to protect the components of the system if you need to install any hardware options).
- A No. 2 Phillips screwdriver.
- For the Netra T1 DC200 server, a right-angled two-hole lug is supplied with the server. You will also need a crimping tool, such as the Thomas & Betts crimping tool (part number: TBM 5-S).

1.8 Environmental Specifications

1.8.1 Tolerance of Environmental Conditions

You can operate and store the system safely in the following conditions:

- Ambient temperature
  - Operating: 5˚C to 40˚C (temporary operation outside these limits is permitted for a maximum of 96 hours within the range –5˚C to 55˚C)
  - Storage: –40˚C to 70˚C
- Relative humidity
  - Operating: 5% to 85% (non-condensing)
  - Storage: 10% to 95% (non-condensing)
- Altitude
  - Operating: –300 m to +3000 m
  - Storage: –300 m to +12000 m
- Earthquake
  The system conforms to the NEBS requirements for earthquake zone 4

1.8.2 Acoustic Noise Generated by the Netra T1 Server

The server generates less than 60 dBA at a distance of 23.67 inches (600 mm) and a height of 59.17 inches (1500 mm) while operating in an ambient temperature of 25˚C.

1.8.3 Environmental Compliance Information

- NEBS environmental criteria
  The system conforms to GR-63-CORE issue 1, October 1995
- Electromagnetic compatibility
  - Immunity: The system conforms to GR-1089-CORE and EN50082-1
  - Emissions: The system conforms to GR-1089-CORE, EN55022 Class A and FCC Class A
- Safety
  The system conforms to UL 1950 (3rd edition), EN60950, GR-1089-CORE

1.9 Choosing Between a Rack and a Cabinet

You can install Netra T1 Servers in either racks or cabinets. Factors that might influence your decision include:

- **Security**
  If other people have access to the room in which your Netra systems are located, you can increase security by locking the systems in a cabinet.
- **Thermal issues**
  Cabinets often require additional fans, because the systems you install in them are generating heat in an enclosed space. Two-post racks, however, may require no special cooling systems.
- **Flooring**
  Two-post telco relay racks are designed so that cables can be run overhead. Cabinets often require cables to be run under the floor.

What's Next?

When you have read this chapter, go to Chapter 2 to find out how to estimate the power and cooling requirements for your server.

CHAPTER 2

Power and Cooling

This chapter contains information about the power consumption of the Netra T1 AC200 and DC200 servers. It also tells you how to estimate the amount of heat that your cooling system must dissipate.

The chapter contains the following sections:

Note – The power supply on the Netra T1 AC200 server continues to regulate all outputs for at least 20 milliseconds after AC power is removed. On the Netra T1 DC200 server, the power supply continues to regulate all outputs for at least 4.5 milliseconds after DC power is removed.

Note – Standby power is available whenever input power is connected.

2.1 Operating Power Limits and Ranges

TABLE 2-1 Operating Power Limits and Ranges for Netra T1 Servers

Description	Netra T1 DC200 Server (DC power)	Netra T1 Server (AC power)
Maximum operating current	4A @ –40 VDC	2A @ 90 VAC
Maximum in-rush current (cold start)	20A peak upon a restart performed 60 seconds or more after the removal of DC power.	20A peak upon a restart performed 60 seconds or more after the removal of AC power.
Maximum in-rush current (warm start)	40A peak upon a restart performed less than 60 seconds but more than 200 milliseconds after the removal of DC power.	40A peak upon a restart performed less than 60 seconds but more than 200 milliseconds after the removal of AC power.
Maximum in-rush current (hot start)	100A peak upon a restart performed less than 200 milliseconds after the removal of DC power.	100A peak upon a restart performed less than 200 milliseconds after the removal of AC power.
Operating input voltage range	–40 to –75 VDC	90-264 V_{rms}
Voltage frequency range	DC	47-63 Hz
Power factor	Not applicable	0.8 to 1.0
BTU rating	550 BTU	550 BTU

* For both models, the in-rush current decays to the normal operating current in less than 200 milliseconds. The in-rush decaying peaks last for less than 3 milliseconds in each half cycle.

Note – The figures for the maximum operating current are provided to help you specify the fusing and cabling you need to use to deliver power to your equipment. However, these figures represent “worst-case” scenarios. They are unlikely to be observed in a real installation.

2.2 Power Consumption

To estimate the total power consumption for several Netra T1 servers installed in a single rack or cabinet, add together the individual power requirement figures for each Netra T1 server you have installed (see TABLE 2-2**).**

TABLE 2-2 Power Consumption for the Available Configurations of the Netra T1 Server

Netra T1 Model	Hardware Options Installed	Power Consumption (Nominal)	Power Consumption (Maximum)
AC200	1x18 GB hard disk 1x256 MB DIMM	70W	95 VA
AC200	1x18 GB hard disk 2x256 MB DIMM	72W	100 VA
AC200	2x18 GB hard disk 2x512 MB DIMM	80W	110 VA
DC200	1x18 GB hard disk 1x256 MB DIMM	62W	80W

Note – Adding optional hardware components to your system will increase its power consumption. For a list of the optional hardware components available for these servers, see Section 1.3, “Optional Hardware and Software” on page 1-5.

2.3 Estimating Heat Dissipation

To estimate the heat generated by a Netra T1 server so that you can estimate the heat your cooling system must dissipate (see Section 2.2, “Power Consumption” on page 2-3) convert the figure for the server’s power consumption from watts to BTU / hr.

A general formula for doing this is to multiply the figure for the power consumption by 3.415. For example, the heat that must be dissipated for a Netra T1 AC200 server containing a single hard disk drive and a single 256-MB DIMM is:

70 W x 3.415 = 240 BTU / hr

You can install up to 32 Netra T1 servers into a Sun StorEdge 72-inch rack. To estimate the heat your cooling system must dissipate, add together the nominal power consumption for each server in the rack, then multiply the result by 3.415. For example, 30 Netra T1 AC200 systems containing a single hard disk and a single 256-MB DIMM will generate the following heat:

(30 x 70 W) x 3.415 = 7200 BTU / hr

What’s Next?

When you have used this chapter to estimate the power and cooling requirements for your Netra T1 server, go to Chapter 3 which tells you how to assemble the DC input power cables for the Netra T1 DC200 server; or, if you are installing a Netra T1 AC200 server, go straight to Chapter 4 to find out how to install the optional hardware components available for both servers.

CHAPTER 3

Using DC Power

This chapter applies only to the Netra T1 DC200 server. If you have purchased a Netra T1 AC200 server, skip this chapter and go to Chapter 4.

This chapter provides information on grounding a Netra T1 DC200 server and on assembling the DC power connectors.

It contains the following sections:

3.1 Grounding the Netra T1 DC200 Server

The two M5 grounding studs on the server's back panel are the recommended safety grounding point (see FIGURE 3-1). However, an alternative grounding point is provided by the middle pin of the WAGO connector.

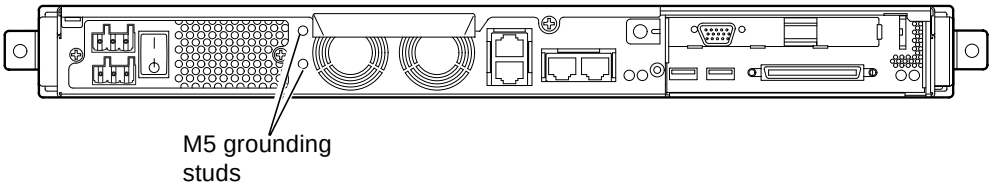


FIGURE 3-1 The Location of the Grounding Studs for Connecting the Two-Hole Lug

- **To ground the server, take a ground conductor and terminate it using a right-angled two-hole lug.**

  Make sure that it is UL/CSA-approved, that it is suitable for an 8 AWG ($6mm^2$) conductor, and that it is has a 5/8-inch pitch.

Note – For Netra T1 servers that are stacked on top of each other in a rack, you need to use a right-angled two-hole lug. Use a UL/CSA-approved component, such as the one supplied by Thomas & Betts (part number: 54204-UB).

- **To secure the lug onto the ground conductor cable, use a UL/CSA-approved crimping tool, such as the one supplied by Thomas & Betts (part number: TBM 5-S).**

  Do not use a torque value of more than 3.5 Nm maximum.

  Connect the free end of the ground conductor cable to an earthing bar located near to the equipment.

Caution – External filtering and/or surge suppression devices may be required on the power feeds where branch circuit electromagnetic characteristics are unknown.

Note – For more information about grounding the server, refer to the *Netra T1 AC200 and DC200 Safety and Compliance Guide*.

3.2 Assembling the DC Power Connectors

3.2.1 The Insulated Conductors You Need to Use

The insulated conductors you use must have the following characteristics:

- Material: tinned copper (multistranded)
- Size: 12 AWG (2.5 mm^2) (maximum)
- Rating:
  - 300 vrms (minimum)
  - 75^{O} C
  - Low-smoke fume (LSF)
- Fire resistance:
  - VW-1
  - GR63-CORE compliant

You need two supply conductors:

- One -48V (or -60V) DC supply conductor (return, RTN) grounded at source
- One DC supply conductor (- minus)

Finally, you need one power supply unit (PSU) ground conductor.

3.2.2 Assembling the DC Input Power Cable

1. **Determine how many DC input power cables you will need from each DC power source.**
2. **Turn off power to the DC power source through the circuit breakers.**

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

3. **Take a DC connector from the ship kit.**
4. **Locate the Supply and Return wires (and the PSU Ground, if you are using it) coming from the DC power source that you intend to use in the connection to your server:**
   - –48V Supply
   - PSU Ground
   - –48V Return

5. **Strip 8 mm (0.31 inches) of insulation from each of the wires coming from the DC power source (see** FIGURE 3-2**).**

   Do not strip more than 8 mm (0.31 inches) from each wire. Doing so will leave uninsulated wire exposed from the DC connector after the assembly is complete.

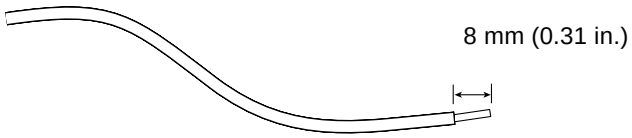


FIGURE 3-2 Stripping the Insulation From the Wire

6. **Insert the tip of the cage clamp operating lever into the rectangular hole directly above the hole in the DC connector where you want to insert the first wire.**

   Then press down on the cage clamp operating lever (see FIGURE 3-3). This opens the cage clamp for this section of the DC connector.

   You can also open the DC connector cage clamp by inserting a small slotted screwdriver into the rectangular hole directly above the hole in the DC connector where you want to insert the first wire, and pressing down on the screwdriver (see FIGURE 3-4).

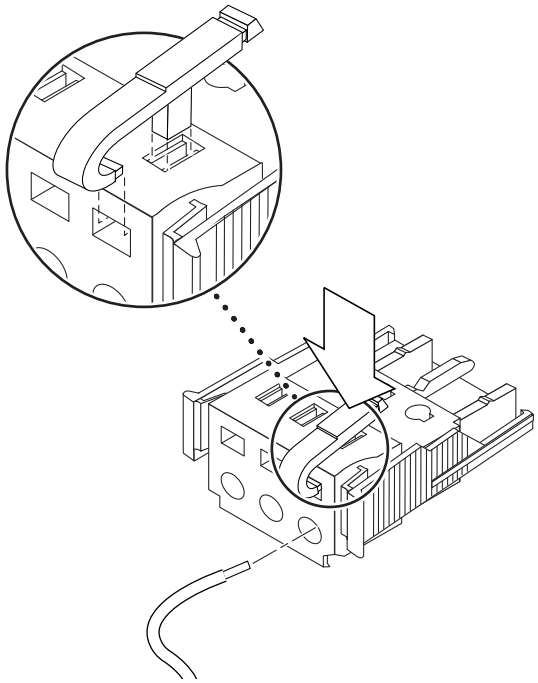


FIGURE 3-3 Opening the DC Connector Cage Clamp (Lever Method)

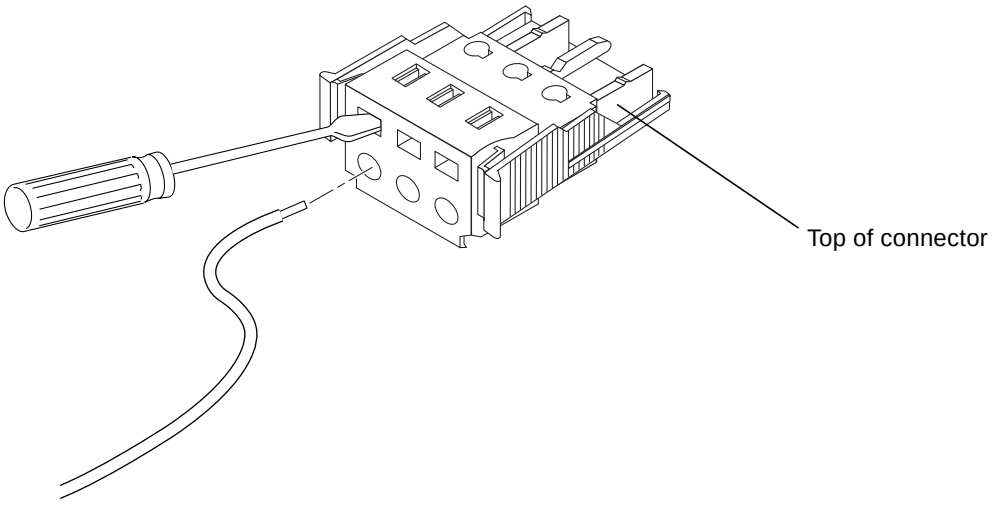


FIGURE 3-4 Opening the DC Connector Cage Clamp (Screwdriver Method)

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

   FIGURE 3-5 shows which wires should be inserted into each hole in the DC connector.

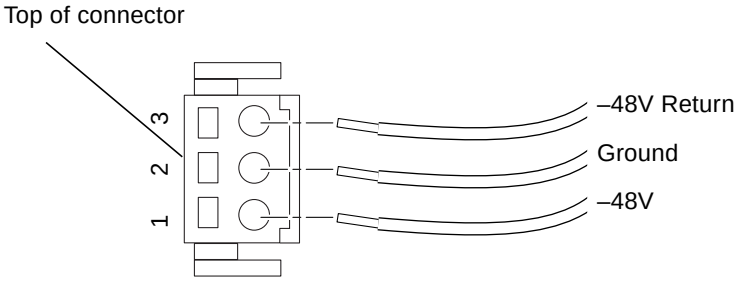


FIGURE 3-5 Assembling the DC Input Power Cable

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

9. **Repeat Step 4 through Step 8 to create a second DC input power cable.**

   If you need to remove a wire from the DC connector, insert the cage clamp operating lever or a small screwdriver into the slot directly above the wire and press down (FIGURE 3-3 and FIGURE 3-4).

3.2.3 Installing the Strain Relief Housings

1. **Insert the bottom portion of the strain relief housing into the notch on the DC connector until it snaps into place (see** FIGURE 3-6**).**

   Make sure that the strain relief housing snaps into place on the DC connector; otherwise you will not be able to complete the assembly correctly.

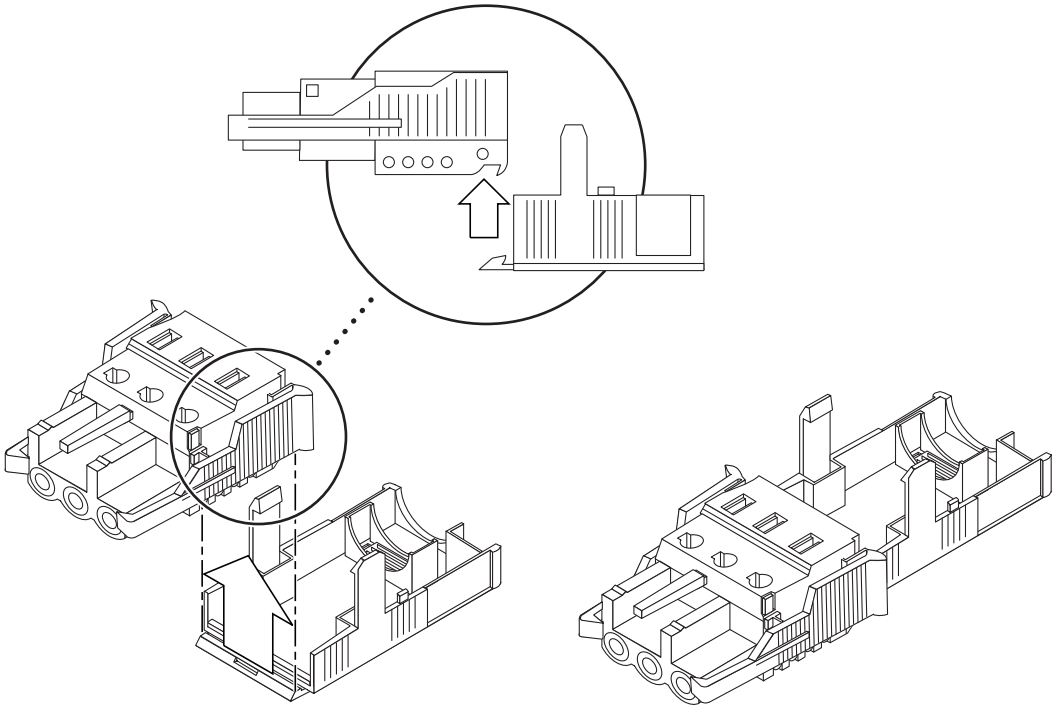


FIGURE 3-6 Inserting the Bottom Portion of the Strain Relief Housing

2. **Route the three wires coming from the DC power source through the opening at the end of the bottom portion of the strain relief housing (see** FIGURE 3-7**).**

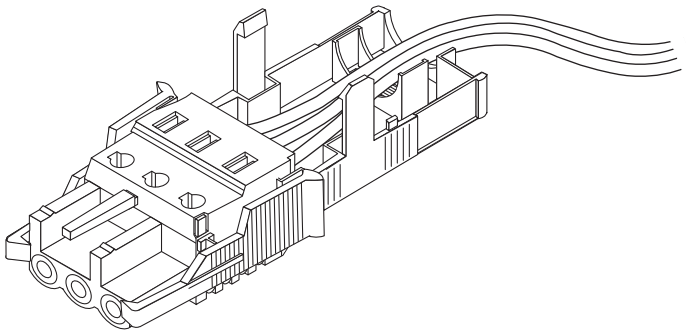


FIGURE 3-7 Routing the Wires Out of the Strain Relief Housing

3. **Insert the tie wrap into the bottom portion of the strain relief housing (see** FIGURE 3-8**).**

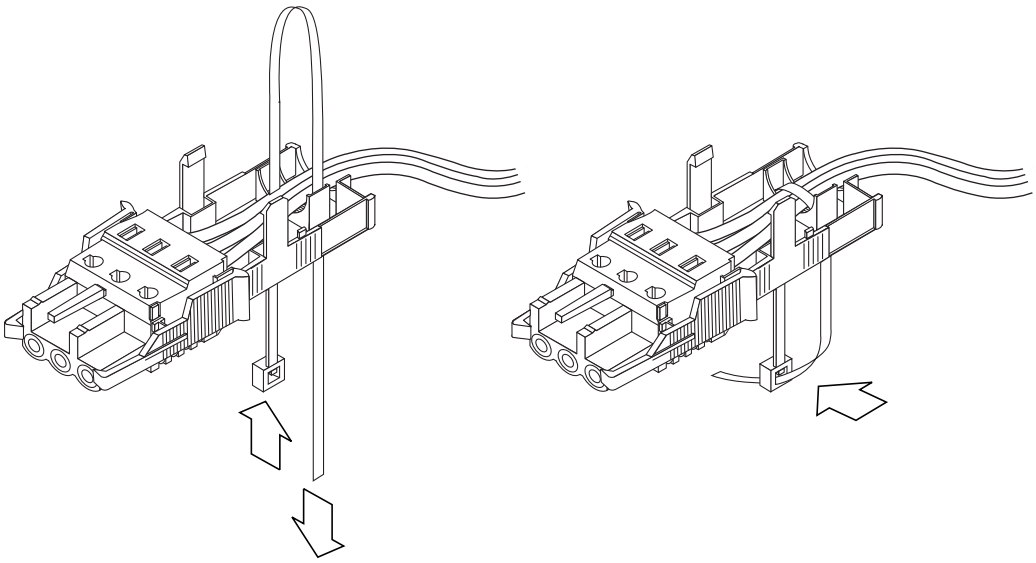


FIGURE 3-8 Securing the Wires to the Strain Relief Housing

4. **Loop the tie wrap over the wires and back out of the strain relief housing and tighten the tie wrap to secure the wires to the strain relief housing (see** FIGURE 3-8**).**

5. **Lower the top portion of the strain relief housing so that the three prongs on the top portion fit into the openings in the DC connector, and push the top and bottom portions of the strain relief housing together until they snap into place (see** FIGURE 3-9**).**

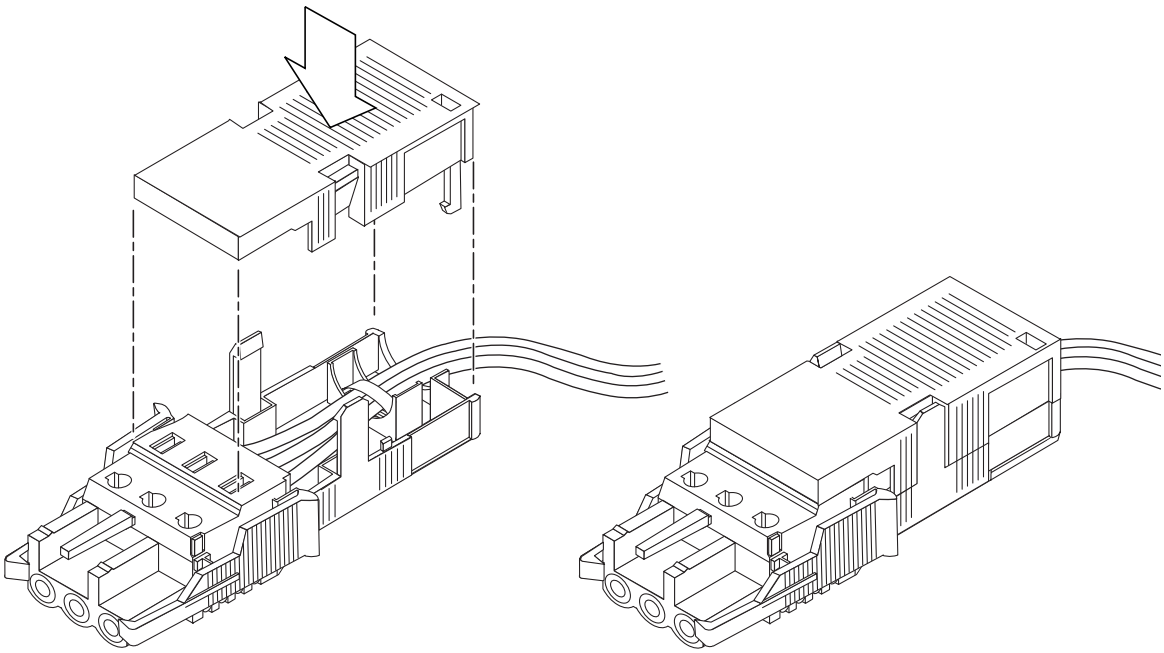


FIGURE 3-9 Assembling the Strain Relief Housing

What's Next?

The DC input power cables for your server are now completely assembled. For information about connecting the power cords and other cables, see Chapter 6. Do not power on the server (see Chapter 7) until you have installed any optional hardware components you need (see Chapter 4) and until you have installed the server securely into a rack or cabinet (see Chapter 5).

CHAPTER 4

Installing Optional Hardware Components

If you do not want to install any optional hardware components, skip this chapter and go straight to Chapter 5, which tells you how to install the Netra T1 server into a rack.

This chapter tells you how to install or remove the hot-pluggable hard disk drives available for the Netra T1 server. To do this, you do not need to power off the server or remove it from the rack. This chapter also tells you how to remove the cover of the Netra T1 server, how to identify the parts of the server, and how to install a CD-ROM drive, DIMM, and PCI card.

For the part numbers of the hardware components that are available from your local Sun sales representative, see Section 1.3, “Optional Hardware and Software” on page 1-5.

This chapter contains the following sections:

4.1 Installing and Removing Hot-Pluggable Hard Disk Drives

The hard disk drives are hot-pluggable modules. You do not need to power off the server or remove it from the rack to install or remove hard disk drives.

1. **Remove the front bezel.**

   Release the bezel from the server by pressing in on the tabs at either end of the bezel.

2. **Pull out the grilles.**

3. **Do one of the following:**

   - If you are *installing* a hard disk drive, slide it into its tray at the front of the server (see FIGURE 4-1). Push it in firmly until the metal lever starts to close: this indicates that it has engaged with the backplane connector. Then, push the metal lever until the disk drive clicks into place.

Note – When inserting a hard disk drive into its enclosure, make sure the top of the disk drive is touching the top of the enclosure. If you try to install it with the bottom of the disk drive touching the bottom of the enclosure, the drive will not align with the slide rails inside the enclosure, and you will not be able to insert the drive.

   - If you are *removing* a hard disk drive, locate the latch at the front of the disk drive and slide it to the right (see FIGURE 4-1). This causes the metal lever to open. Holding the latch, pull the disk drive out of its bay.

4. **Replace the grilles and front bezel.**

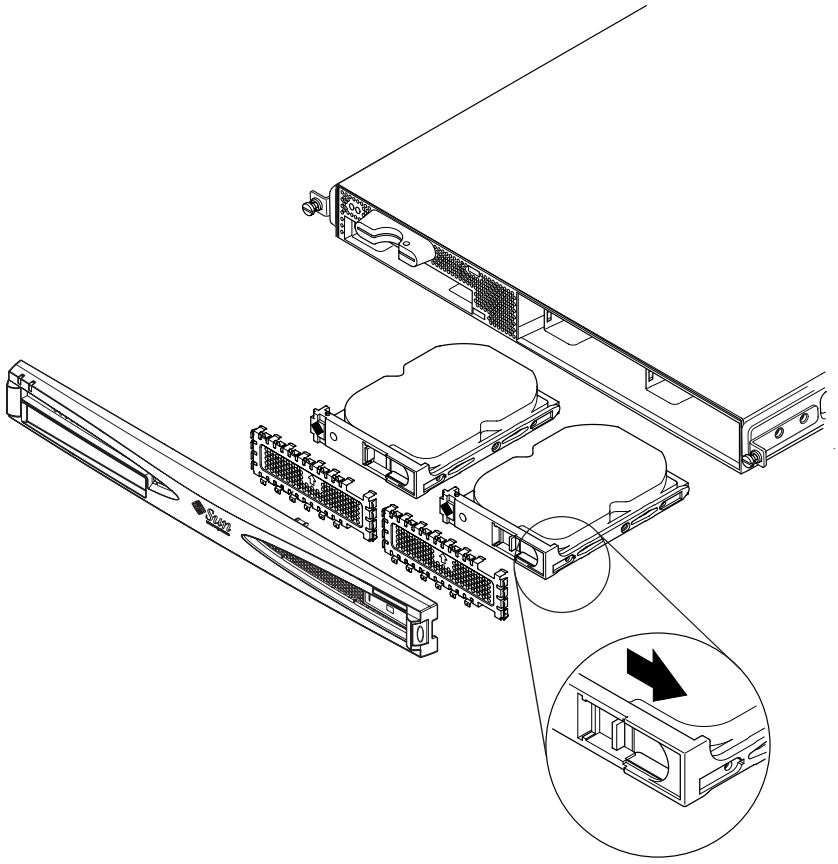


FIGURE 4-1 Inserting and Removing Hard Disks

4.2 Opening the Netra T1 Server

Caution – The server contains electronic parts that are extremely sensitive to static electricity. Do not touch any metal parts. Place the server on top of a grounded electrostatic discharge (ESD) pad. Attach the disposable antistatic wrist strap supplied with the server to its metal base before touching any of the internal components.

Caution – Before attempting to remove the cover, make sure that all power cords and all other cables have been disconnected from the server.

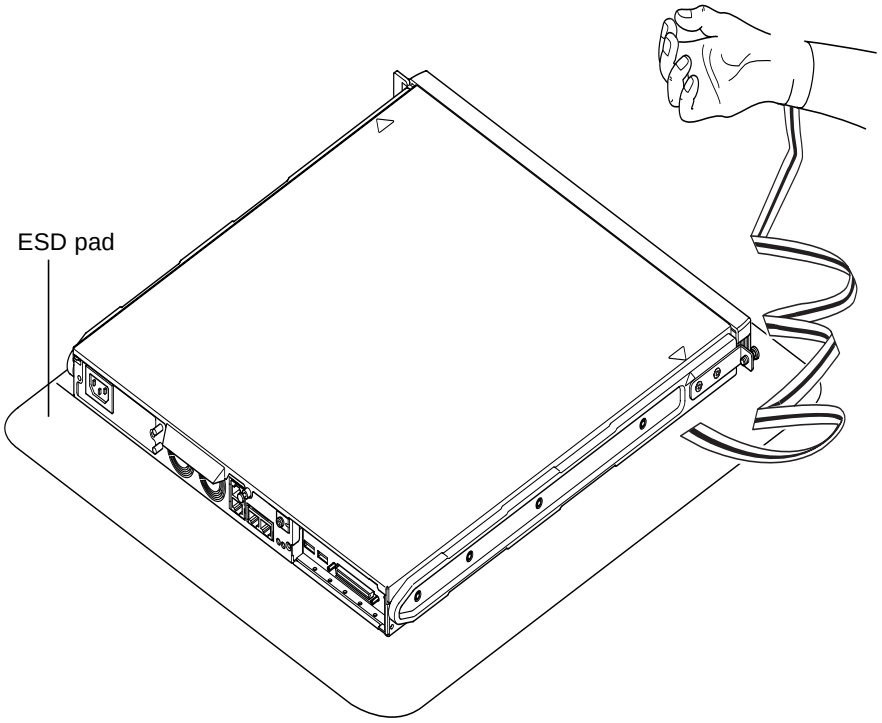


FIGURE 4-2 Using the Antistatic Wrist Strap Supplied With the Server

1. **Begin the procedure based on the status of your server:**

- If your server is new and you have just removed it from its packaging, go straight to Step 3.
- If your server is currently in use, but you need to open it to install or replace a hardware component, then:

a. Shut down and power off the server.

b. Disconnect the power cord(s).

c. Disconnect all other cables.

2. If you have installed the server into a rack or cabinet, remove it from the rack or cabinet.

3. Place the server on a grounded ESD surface and use an antistatic wrist strap.

4. Remove the server's top cover (see FIGURE 4-3**):**

a. Undo the captive screw at the rear center of the unit (see FIGURE 4-3**).**

b. Slide the top cover back and lift it off (see FIGURE 4-3**).**

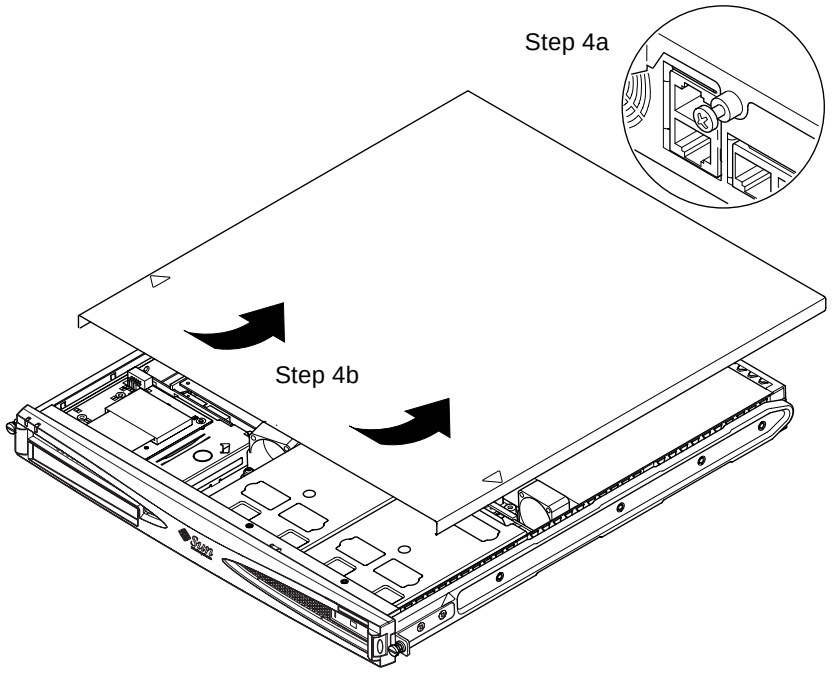


FIGURE 4-3 Removing the Top Cover

4.3 Identifying Server Components

Key to FIGURE 4-4:

1. **PCI card (optional)**
2. **System configuration card reader**
3. **Top cover**
4. **Hard disk drive**
5. **CD-ROM drive**
6. **Filler panel**
7. **Front bezel**
8. **Grilles**
9. **PCI card slide support rail**
10. **DIMM**
11. **Power Supply Unit**
12. **Fans 1 and 2**
13. **Fan 3 (CPU)**
14. **Fan 4**

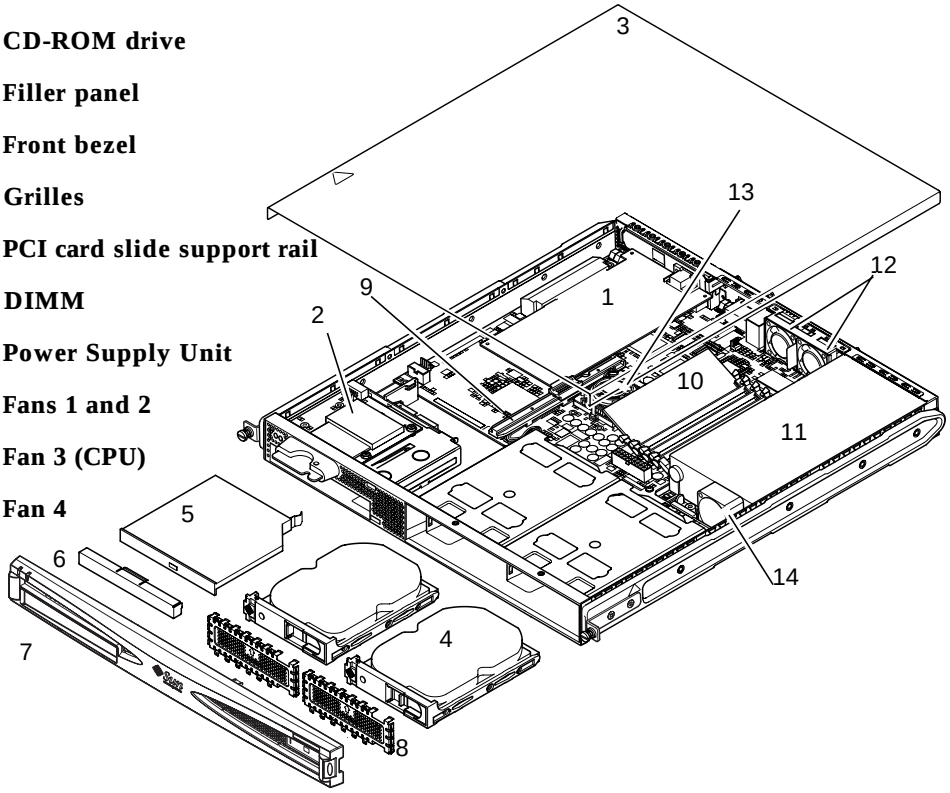
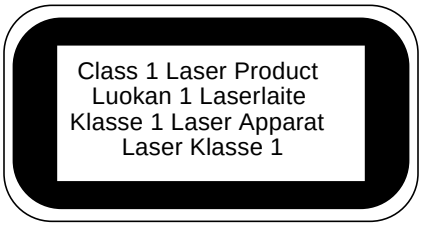


FIGURE 4-4 Components of the Netra T1 Server

4.4 Installing and Removing a CD-ROM Drive



Caution – Follow the instructions in this section carefully. The CD-ROM drive contains a laser device. Do not attempt to open the CD-ROM drive's enclosure and do not attempt to install or remove a CD-ROM drive using any procedures other than the ones contained in this section. If you do, you risk exposure to radiation.

4.4.1 Installing a CD-ROM Drive

Note – If you are going to install a full-length PCI card, install the CD-ROM drive first. If you have a full-length PCI card already installed, you will need to remove it before installing the CD-ROM drive.

1. **Remove the top cover by following the procedure described in Section 4.2, "Opening the Netra T1 Server" on page 4-4.**

   Make sure you disconnect all power cables and wear an antistatic wrist strap.

1. **Remove the front bezel.**

   Release it from the server by pressing in on the tabs at either end of the bezel.

2. **If you have a full-length PCI card installed, you must remove it before installing the CD-ROM drive (see Section 4.6.2, "Removing a PCI Card" on page 4-14).**

3. **Squeeze and pull out the filler panel at the front of the CD-ROM enclosure.**

4. **Carefully insert the CD-ROM drive into its enclosure (see** FIGURE 4-5**), making sure that the catch at the rear of the CD-ROM drive clicks onto the chassis.**

   Guide the CD-ROM drive in making sure that its connectors align with, and then engage with, the connectors on the CD-ROM paddleboard (see FIGURE 4-5) at the back of the CD-ROM enclosure. You may need to hold the paddleboard by the black IDE connector to guide the CD-ROM drive home.

5. **Re-install the full-length PCI card if you removed one (see Section 4.6, "Installing and Removing a PCI Card" on page 4-11).**

6. **Replace the server's cover and tighten the captive screw (see** FIGURE 4-9 **in Section 4.7, "Replacing the Server's Top Cover" on page 4-15).**

7. **Replace the front bezel.**

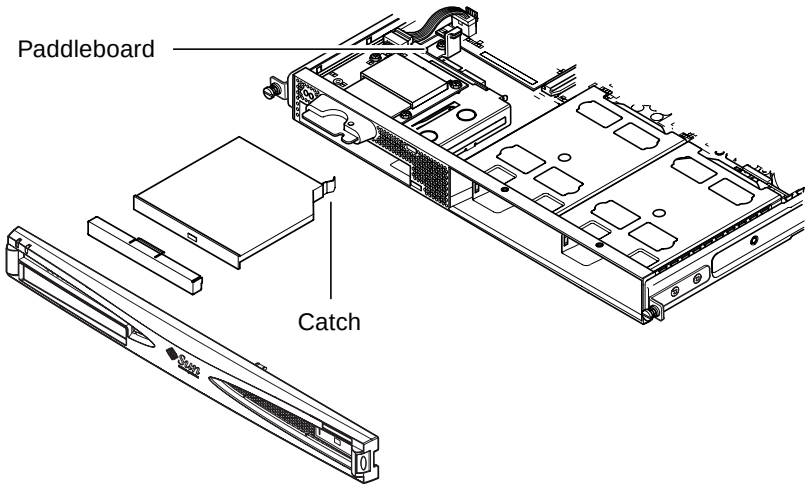


FIGURE 4-5 Installing an Internal CD-ROM Drive

4.4.2 Removing a CD-ROM Drive

1. **Remove the top cover by following the procedure described in Section 4.2, “Opening the Netra T1 Server” on page 4-4.**

   Make sure you disconnect all power cables and wear an antistatic wrist strap.

1. **Remove the front bezel.**

   Release it from the server by pressing in on the tabs at either end of the bezel.

2. **Unclip the catch which fastens the CD-ROM drive to the chassis. This catch is located at the back right-hand corner of the CD-ROM enclosure.**

3. **Carefully but firmly pull the CD-ROM drive out of its connector at the rear of the enclosure and pull the CD-ROM drive out.**

4. **Replace the server cover and tighten the captive screw (see** FIGURE 4-9 **in Section 4.7, “Replacing the Server’s Top Cover” on page 4-15).**

5. **Replace the front bezel.**

4.5 Installing and Removing Memory

There are four memory module sockets on the Netra T1 system board. You can install a 256- or 512-Mbyte DIMM into each socket. For the maximum 2 Gbytes of memory, install four 512-Mbyte DIMMs. For the sales part numbers of the DIMMs available from your local Sun sales representative, see Chapter 1.

1. **Remove the top cover by following the procedure described in Section 4.2, “Opening the Netra T1 Server” on page 4-4.**

   Make sure you wear an antistatic wrist strap and that you disconnect all power cables.

2. **Insert the memory module into a vacant DIMM socket, or, if you are removing memory, open the latches at the sides of the socket and remove the module.**

3. **Replace the server's cover and tighten the captive screw (see** FIGURE 4-9 **in Section 4.7, "Replacing the Server's Top Cover" on page 4-15).**

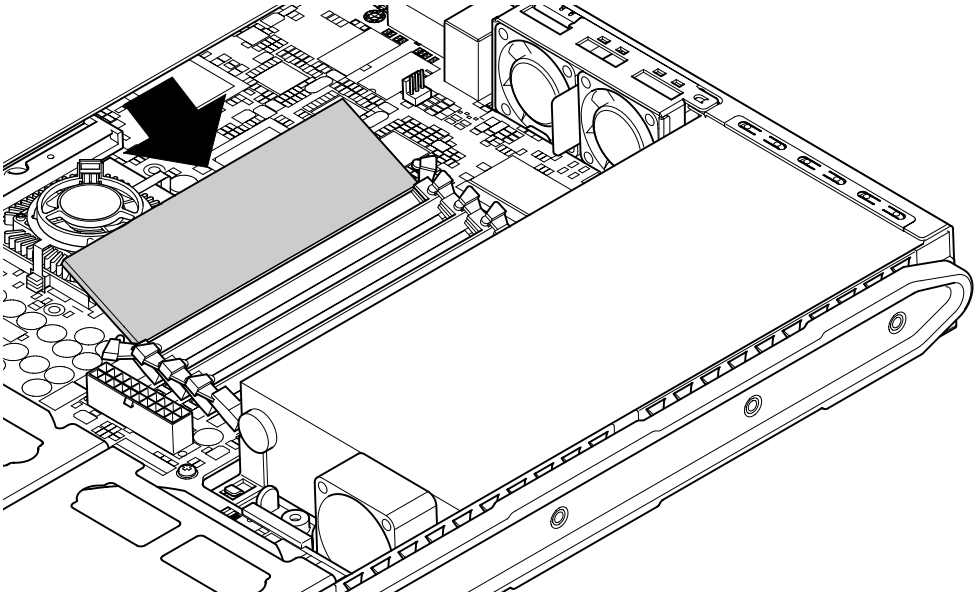


FIGURE 4-6 Installing Memory into a Socket on the System Board

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Note – There are four DIMM slots. The one nearest to the CPU fan is slot 0. The one nearest to the power supply unit is slot 3. Put the first DIMM in slot 0, and install subsequent DIMMs in contiguous slots.

4.6 Installing and Removing a PCI Card

4.6.1 Installing a PCI Card

For a list of the PCI cards available from your local Sun Sales representative, see Chapter 11.

Note – If you are installing a full-length PCI card and you also want to install a CD-ROM drive, install the CD-ROM drive first (see Section 4.4, “Installing and Removing a CD-ROM Drive” on page 4-7). Otherwise, when you install the CD-ROM drive, you will have to remove the PCI card that you have installed.

To install a PCI card into the Netra T1, do the following:

1. **Remove the top cover by following the procedure described in “Opening the Netra T1 Server” on page 4-4.**

   Make sure you wear an antistatic wrist strap and that you disconnect all power cables.

2. **Remove the filler panel protecting the PCI connector.**

3. **Loosen the captive screw holding the PCI slot’s retention bracket in place (see** FIGURE 4-7**).**

   Rotate the retention bracket through 90 degrees (see FIGURE 4-7). This releases the filler panel in the PCI slot enabling you to remove the filler panel. Remove it.

4. **If you are installing a full-length PCI card, slide the PCI card retainer (see** FIGURE 4-7**) off the PCI slide support rail on the system board.**

5. **Insert the PCI card firmly into the PCI connector (see** FIGURE 4-7**) making sure that the PCI card’s bracket is correctly positioned against the rear of the chassis.**

   The tapered end of the bracket must be inside the small metal tab designed for it on the chassis (see FIGURE 4-7).

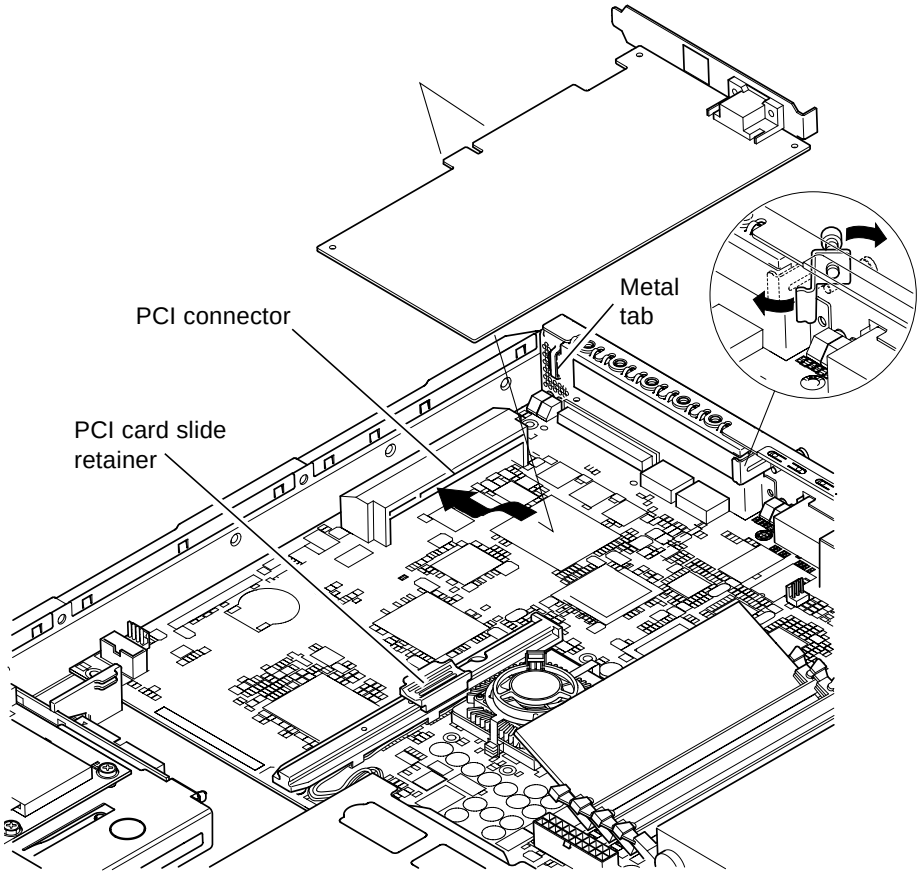


FIGURE 4-7 The Rotating Retention Bracket and the Position of a PCI Card

6. **Slide the PCI card retainer into a position at the back of the PCI card to prevent excessive flexing of the board (see** FIGURE 4-8**).**

   If you are installing a full-length PCI card, insert the end of the card into the groove in the plastic bracket shown in FIGURE 4-8; this provides extra support.

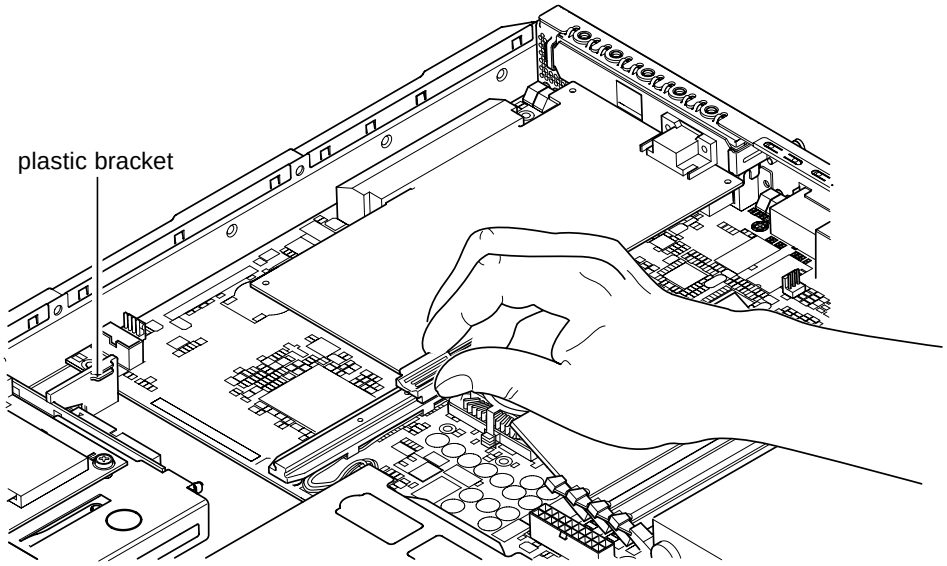


FIGURE 4-8 Using the PCI Card Retainer, Slide Support Rail, and Plastic Bracket

7. **Reposition and tighten the rotating retention bracket (see** FIGURE 4-7**) to secure the PCI card to the chassis.**

8. **Replace the server's cover and tighten the captive screw (see** FIGURE 4-9 **in Section 4.7, "Replacing the Server's Top Cover" on page 4-15).**

4.6.2 Removing a PCI Card

1. **Remove the top cover by following the procedure described in "Opening the Netra T1 Server" on page 4-4.**

   Make sure you wear an antistatic wrist strap and that you disconnect all power cables.

2. **Loosen the captive screw that secures the rotating retention bracket (the screw and bracket are illustrated in** FIGURE 4-7**).**

   Rotate the retention bracket through 90 degrees (see FIGURE 4-7).

3. **Move the PCI card retainer along the PCI slide support rail until it is no longer touching the PCI card (see** FIGURE 4-8**).**

4. **Remove the PCI card from the PCI connector.**

5. **Replace the filler panel that protects the pins in the PCI connector.**

6. **Replace the filler panel for the PCI slot (in the back panel of the chassis), and tighten the captive screw that secures the rotating retention bracket (see** FIGURE 4-7**).**

7. **Replace the server cover and tighten the captive screw (see** FIGURE 4-9 **in Section 4.7, "Replacing the Server's Top Cover" on page 4-15).**

4.7 Replacing the Server's Top Cover

- **When you have finished installing an option module, replace the top cover, making sure the alignment arrows on the lid and chassis line up.**

  Then tighten the captive retaining screw at the rear (see FIGURE 4-9).

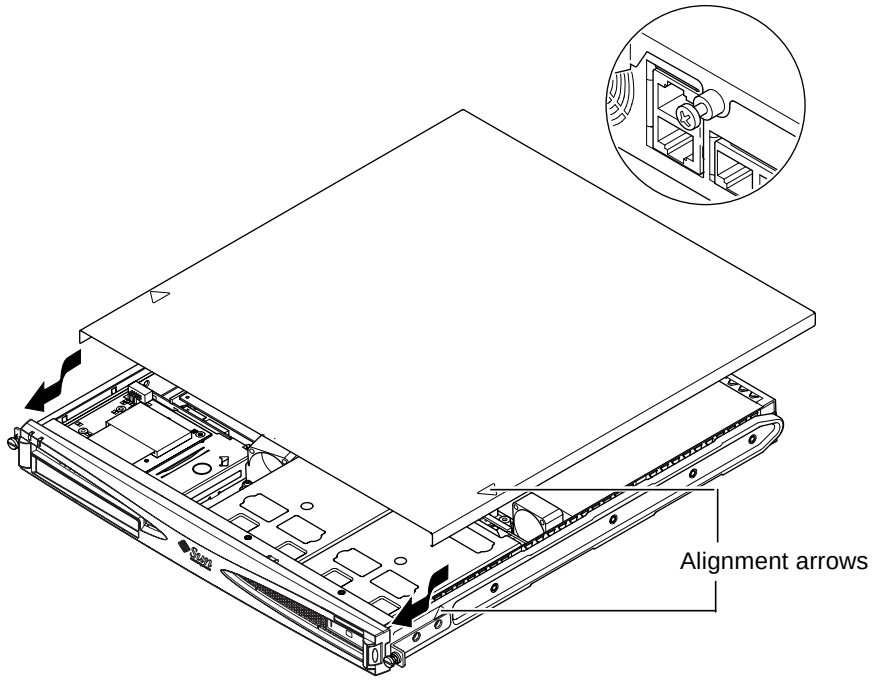


FIGURE 4-9 Replacing the Top Cover

What's Next?

When you have installed the optional hardware components you need, go to Chapter 5 for information about installing the Netra T1 server into a rack.

CHAPTER 5

Installing the Server Into a Rack

This chapter tells you how to install a Netra T1 server into a rack.

The chapter contains the following sections:

5.1 Installing Into a 19-Inch Four-Post Rack

5.1.1 The 19-Inch Rackmounting Kit

The mounting slides can each be used on either side of the rack. The parts required are listed in TABLE 5-1. The part number of the rackmounting kit is X6919A (see Section 1.3, “Optional Hardware and Software” on page 1-5).

TABLE 5-1 19-inch Rackmounting Kit

Item	Quantity	Part No.
Front slide	2	340-6125
Rear slide	2	340-6234
Cable management bracket	1	340-6151
M4 nuts	4	240-1373
Rack screw kit	1	565-1645

A bracket is provided to aid cable management at the back of the server (see FIGURE 5-1).

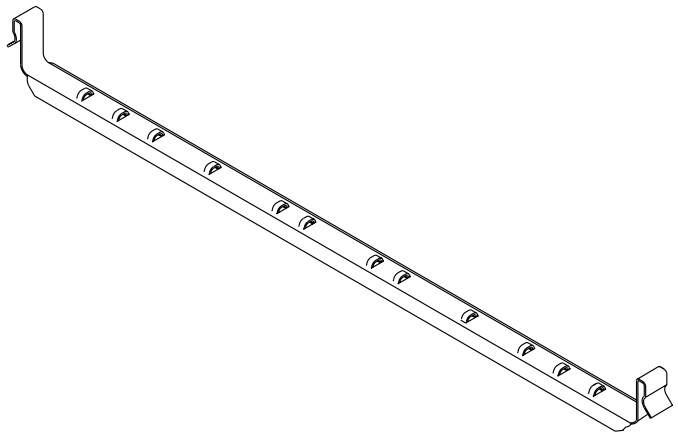


FIGURE 5-1 Cable Management Bracket

5.1.2 Assembling the Slides and Mounting the Server

1. **Position the two parts of the slide so that the double-angled ear (A) is in the correct position for the rack you are installing into.**
   - For the Sun StorEdge 72-inch tall (19-inch wide) rack, the double-angled ear (A) must be to the rear (see FIGURE 5-2).
   - For a standard 19-inch wide rack, the double-angled ear (A) must be to the front (see FIGURE 5-3).

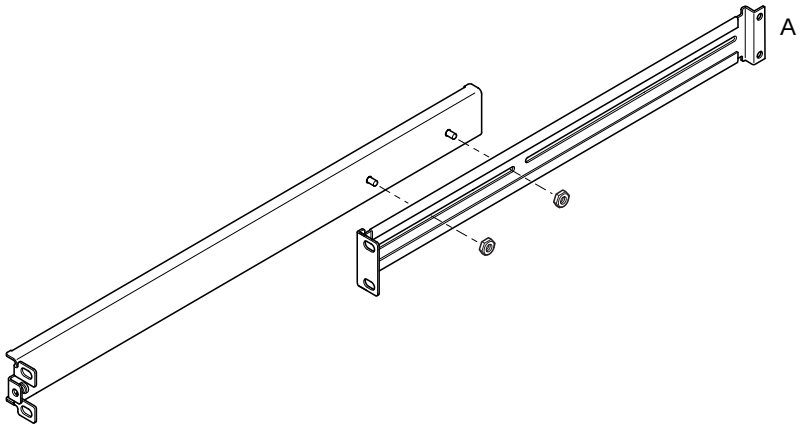


FIGURE 5-2 Positioning the Slide Mounts for a Sun StorEdge 72-Inch Tall Rack

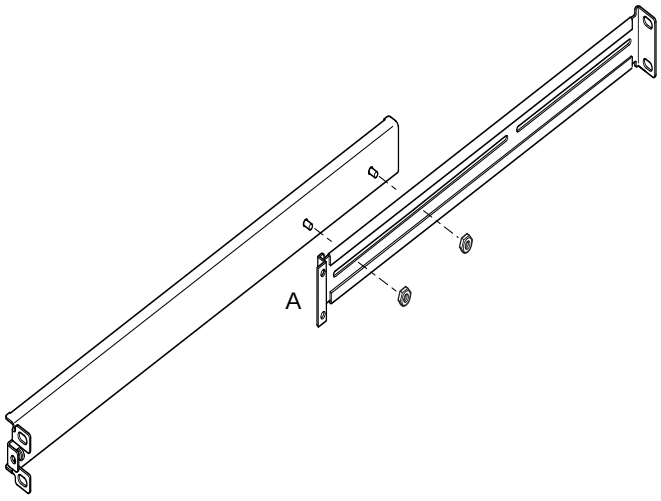


FIGURE 5-3 Positioning the Slide Mounts for a Standard 19-Inch Wide Rack

2. **Loosely screw the two parts of the slide mounts together using the M4 nuts supplied.**

3. **Measure the distance between the front and back posts of your rack.**

4. **Adjust the slide mounts so that the distance between the front and back mounting ears is approximately the distance between the front and back posts of the rack.**

5. **Move the brackets so that the studs are in suitable slots and tighten the nuts.**

6. **Fasten the mounting slides to the rack using the screws supplied.**

   For the Sun StorEdge 72-inch rack, refer to FIGURE 5-4 and FIGURE 5-5. Leave the screws slightly loose to allow adjustment when you slide the server into the rack.

   For a standard 19-inch rack, refer to FIGURE 5-6. Leave the screws slightly loose to allow adjustment when you slide the server into the rack.

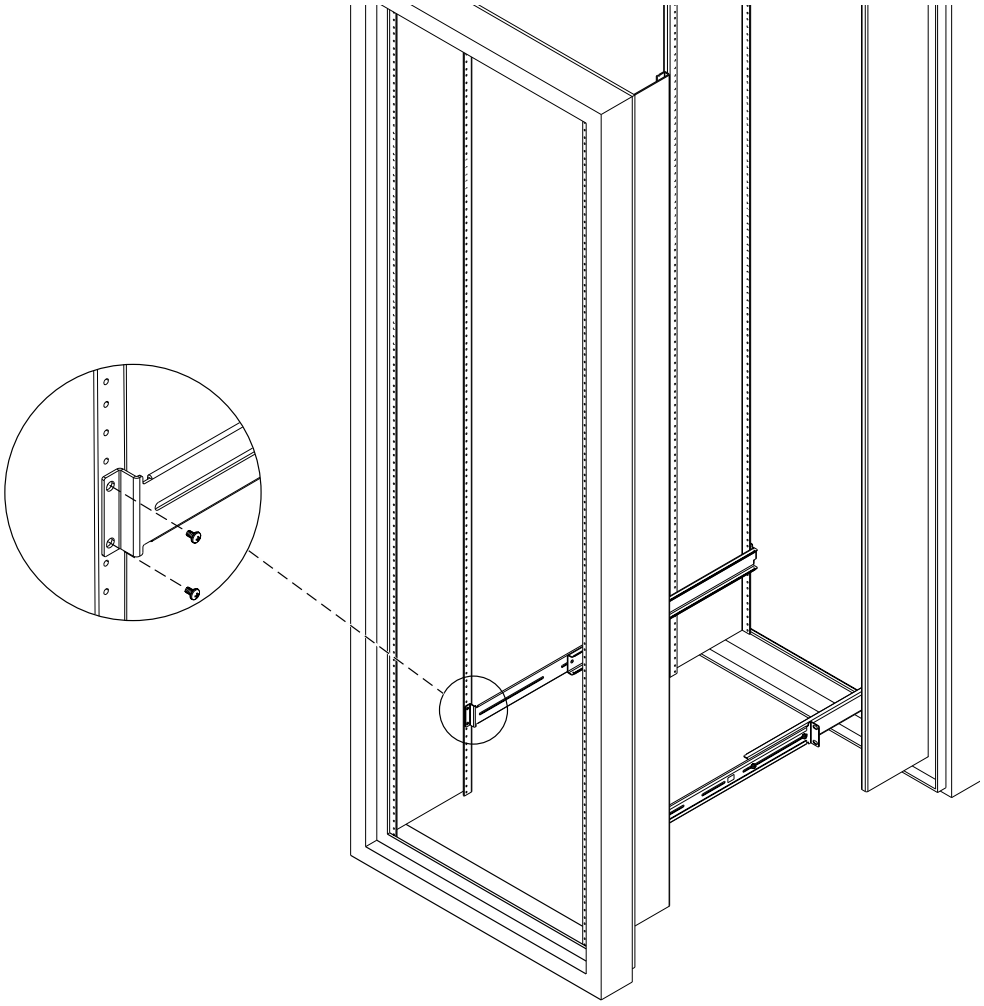


FIGURE 5-4 Fastening the Slide Mounts to a Sun StorEdge 72-inch Tall Rack – Rear View (Side Panels Removed for Clarity)

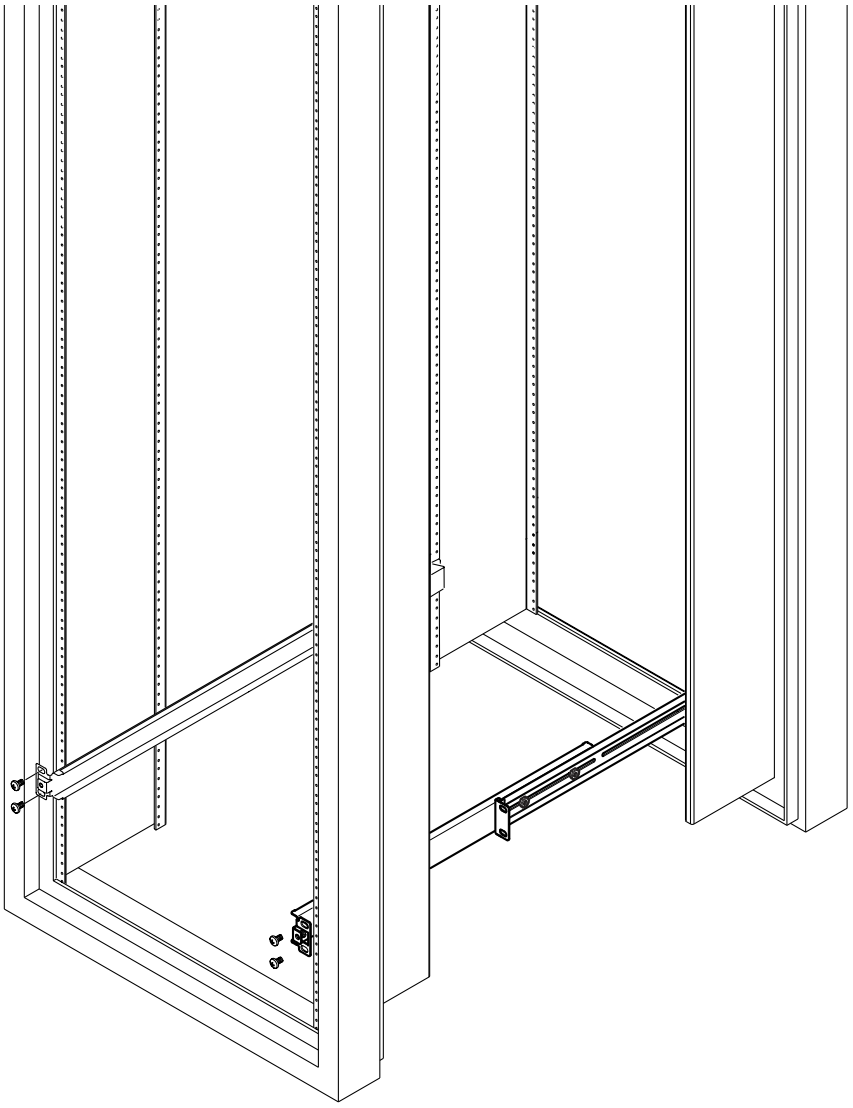


FIGURE 5-5 Fastening the Slide Mounts to a Sun StorEdge 72-inch Expansion Rack – Front View (Side Panels Removed for Clarity)

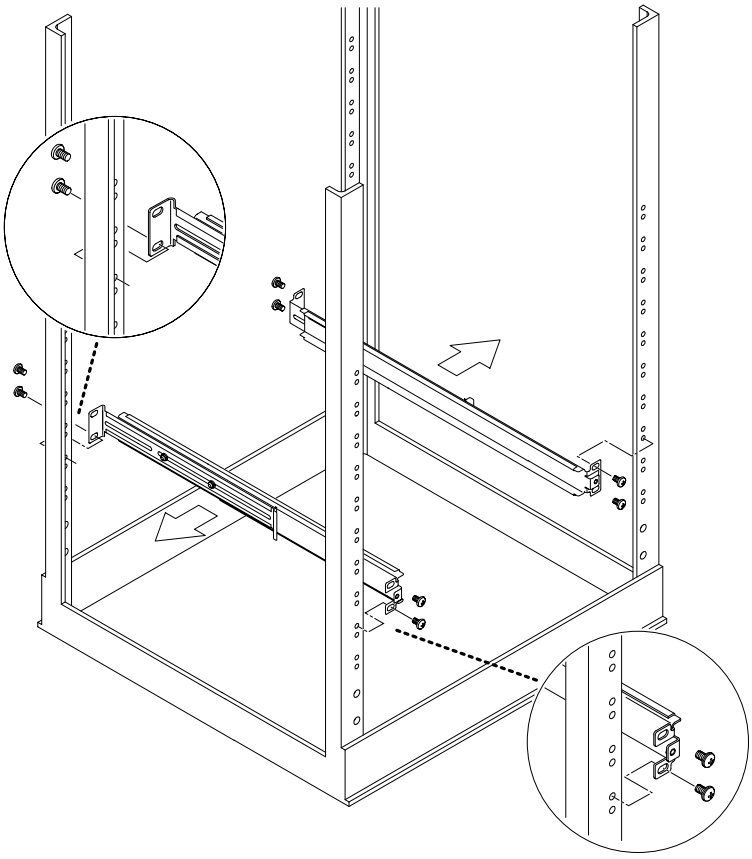


FIGURE 5-6 Fastening the Slide Mounts to a Standard 19-inch Rack

7. Slide the Netra T1 server into the rack (see FIGURE 5-7**).**

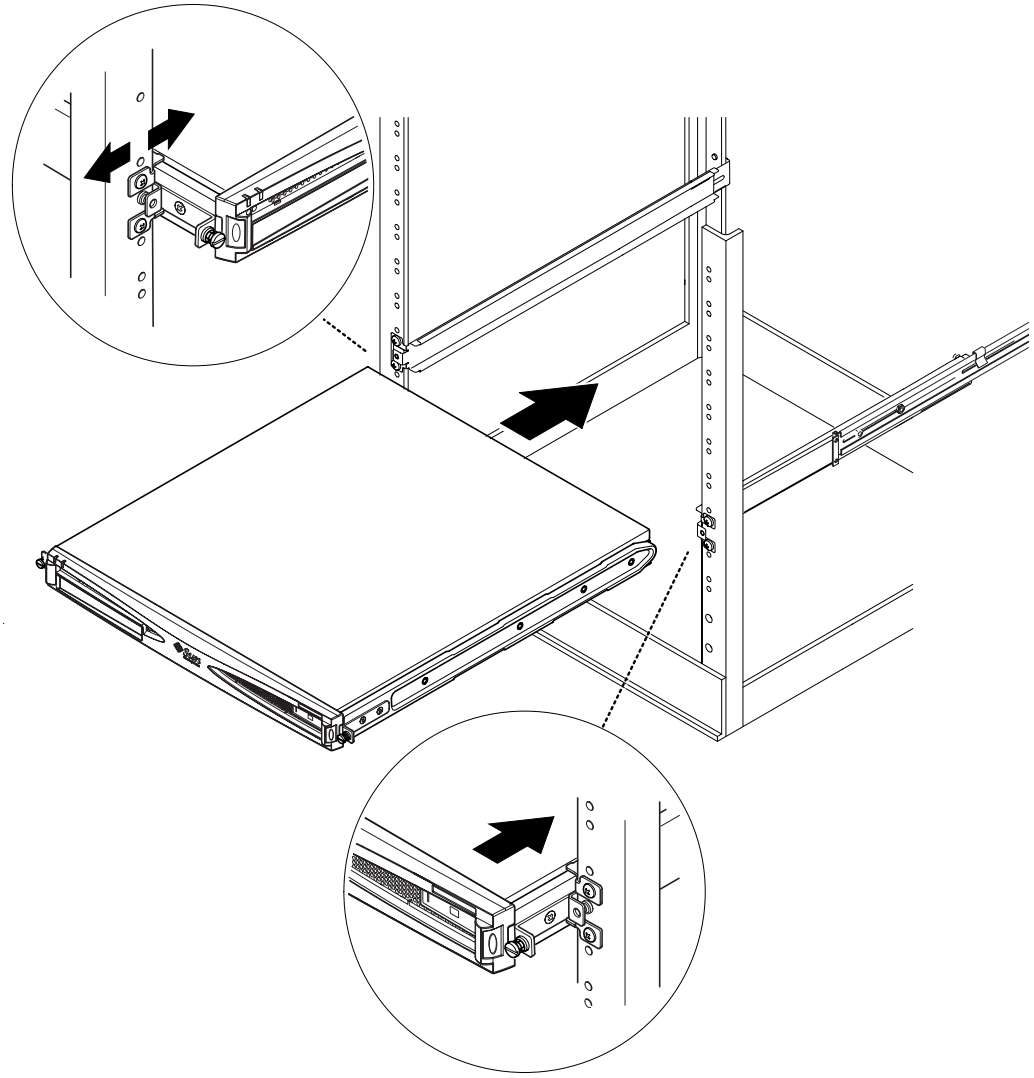


FIGURE 5-7 Sliding the Netra T1 Server Into a Standard 19-Inch Rack

8. **Align the thumbscrews on the sides of the server with the slide mounts in the rack (see** FIGURE 5-8**).**

   If necessary, readjust the slide mounts to align the server properly. The thumbscrews need to be finger-tight.

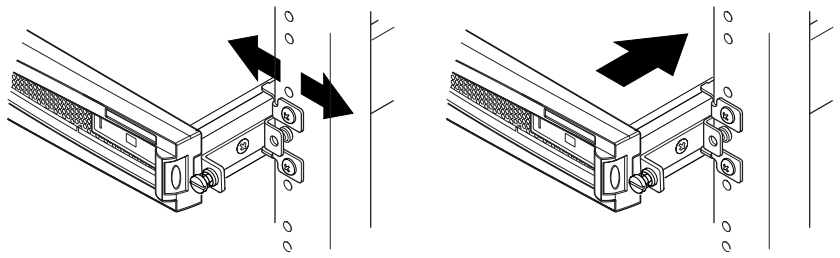


FIGURE 5-8 Adjusting the Slide Mounts and Screwing the Server Into the Rack

9. **Tighten the slide mounts in the rack if you have not fully secured them yet.**

10. **When the slide mounts are secure, use a screwdriver to tighten the thumbscrews on the side of the server.**

    The server is now securely installed in the rack.

5.1.3 Fitting the Cable Management Bracket

- **Hook the bracket over the slide mounts at the rear of the server (see** FIGURE 5-9**).**
  You can use the loops in the bracket to secure the cables with cable ties.

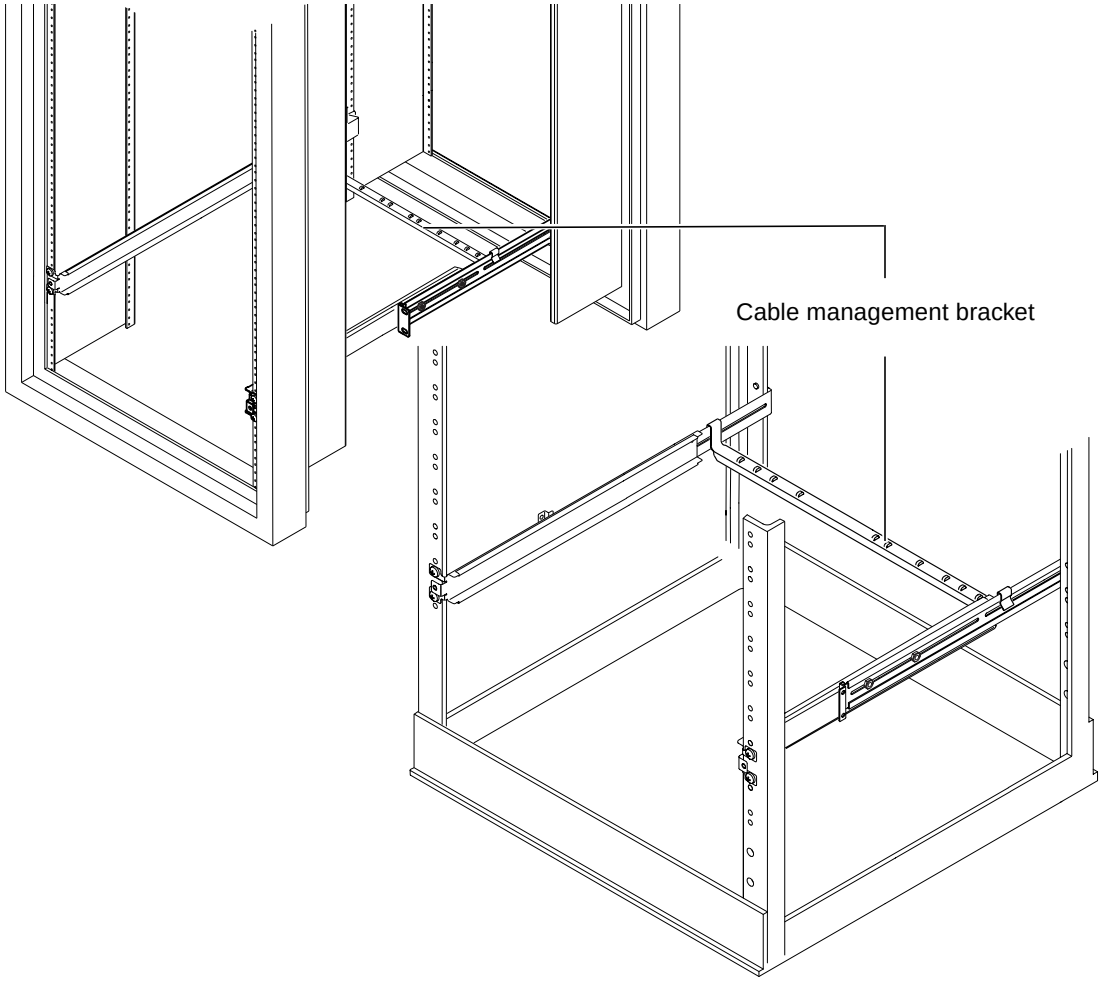


FIGURE 5-9 Fitting the Cable Management Bracket to a Sun StorEdge or a Standard 19-Inch Rack

5.1.4 Tips for Using a Sun StorEdge 72-inch Rack

- For maximum stability, fill the rack from the bottom up and leave at least 4U of space free at the top.
- To prevent warm air flowing to the front of the rack and being recirculated (which would reduce the efficiency of your cooling system and potentially cause overheating), close off the empty spaces at the top of the rack with filler panels. The following filler panels are available from your local Sun sales representative:
  - 1U (part number: 330-2610-01)
  - 2U (part number: 330-2611-01)
  - 3U (part number: 330-2613-01)
  - 4U (part number: 330-2614-01)
  - 5U (part number: 330-2615-01)
- Position your racks so that the warm air exhaust from one rack does not flow directly into the cool air intake area for another.
- If space is limited at the back of your Sun StorEdge 72-inch rack, install a redundant fan tray (part number: X9819A) into the top of the rack. This pulls air up through the top of the rack to prevent the build-up of heat behind it.

What's Next?

When you have installed your Netra T1 server into the rack, go to Chapter 6 for information about connecting the cables and setting up serial connections.

5.2 Installing Into a Two-Post Relay Rack

5.2.1 The Fixed Mounting Bracket Kit

The parts you require are listed in TABLE 5-2.

TABLE 5-2 Fixed Mounting Bracket Kit

Item	Quantity	Part No.
Brackets	4	340-5819
M4 x 8-mm countersunk Phillips screw kit	1	565-1654

5.2.2 Attaching the Fixed Mounting Brackets

1. **Remove the thumbscrew rack mounting brackets from either side of the server (see** FIGURE 5-10**).**

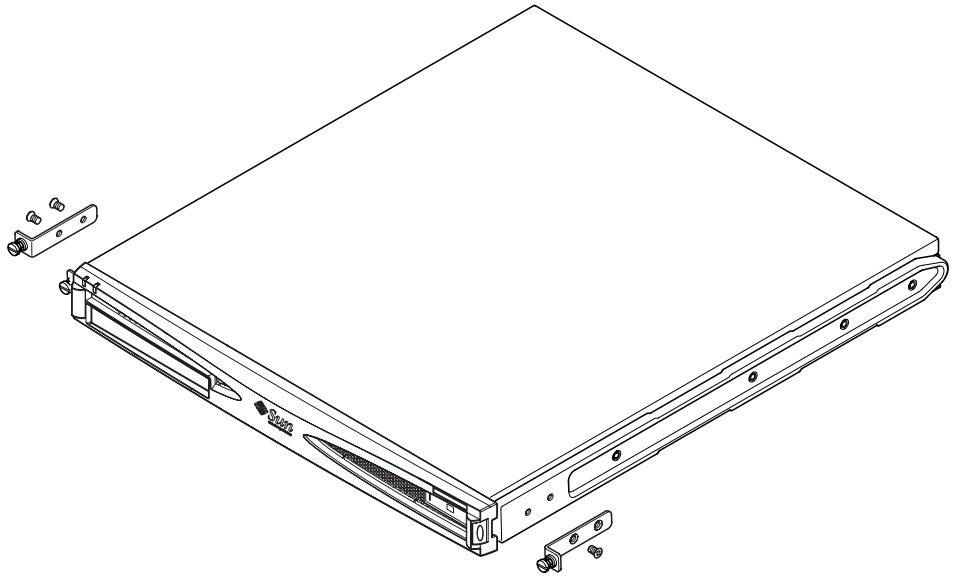


FIGURE 5-10 Removing the Thumbscrew Brackets

2. **Remove the first, third and fourth fixing screws from the plastic slide-mounts on the sides of the unit (see** FIGURE 5-11**).**

3. **Fit the two front fixed brackets to the rearmost two of the three tapped holes towards the front of the server.**

   Use the Phillips-head countersunk screws provided. See FIGURE 5-11, but do *not* fit the rear brackets yet.

Note – Do not fit the rear brackets until you have completed steps 1 through 4.

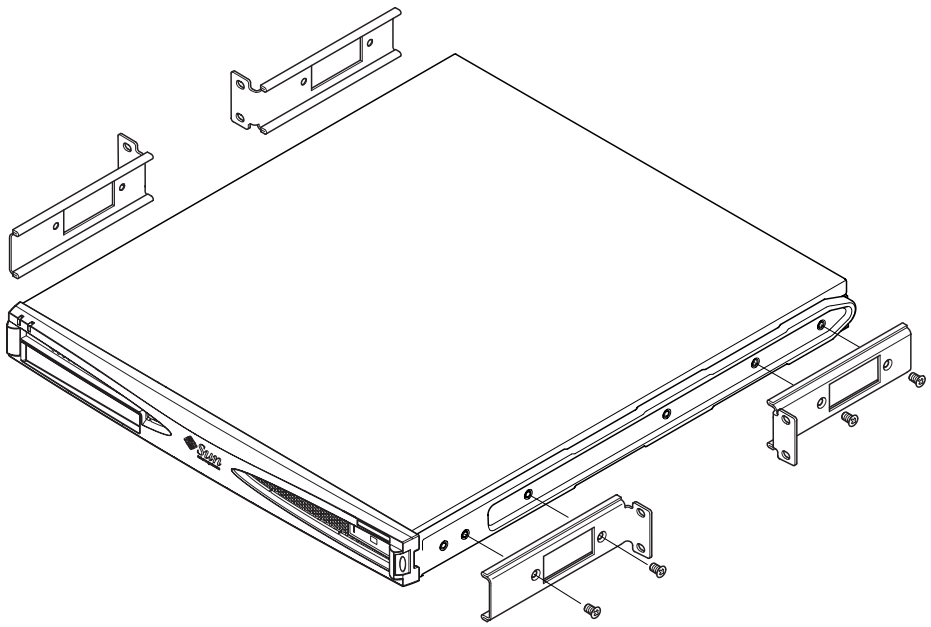


FIGURE 5-11 Fitting the Fixed Mounting Brackets

4. **Secure the server to the rack using the front brackets only, but do not fully tighten the screws yet.**

5. **Fit the two rear fixed brackets to the two tapped holes at the rear of the server on each side, using the Phillips-head countersunk screws provided (see** FIGURE 5-12**).**

6. **Align the screws and tighten them.**

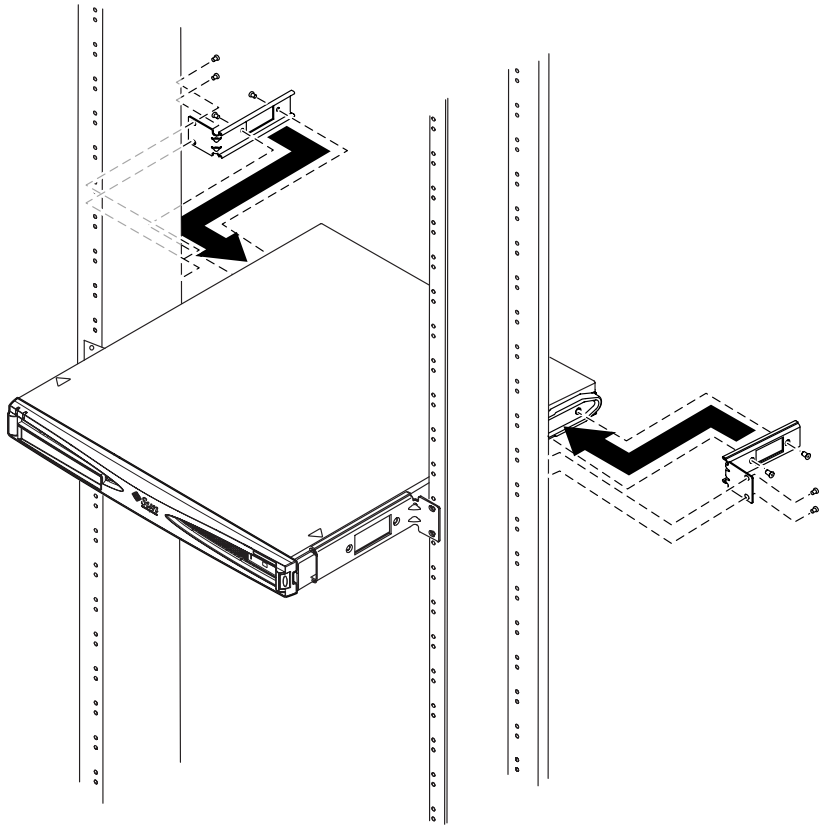


FIGURE 5-12 The Netra T1 Server Installed in a Two-Post Rack

What's Next?

When you have installed the Netra T1 server into the rack, go to Chapter 6 for information about connecting the cables and setting up serial connections.

CHAPTER 6

Connecting the Cables

This chapter describes how to connect the power cables and the Ethernet and serial cables to the Netra T1 server. It also tells you how to set up the serial connections you need.

Make sure you have installed the server into a rack or cabinet (see Chapter 5) before following the instructions in this chapter.

This chapter contains the following sections:

6.1 Connecting the Cables to the Server

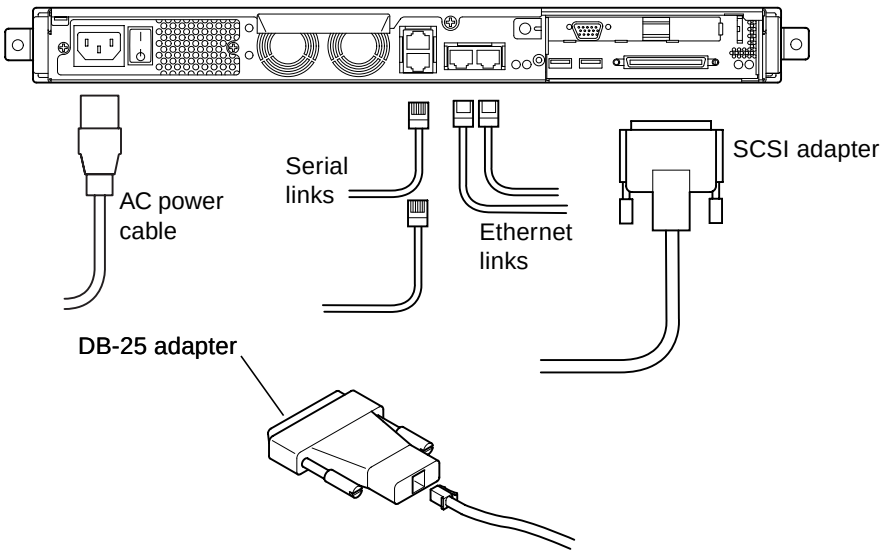


FIGURE 6-1 Connecting the Cables to the Netra T1 AC200 Server

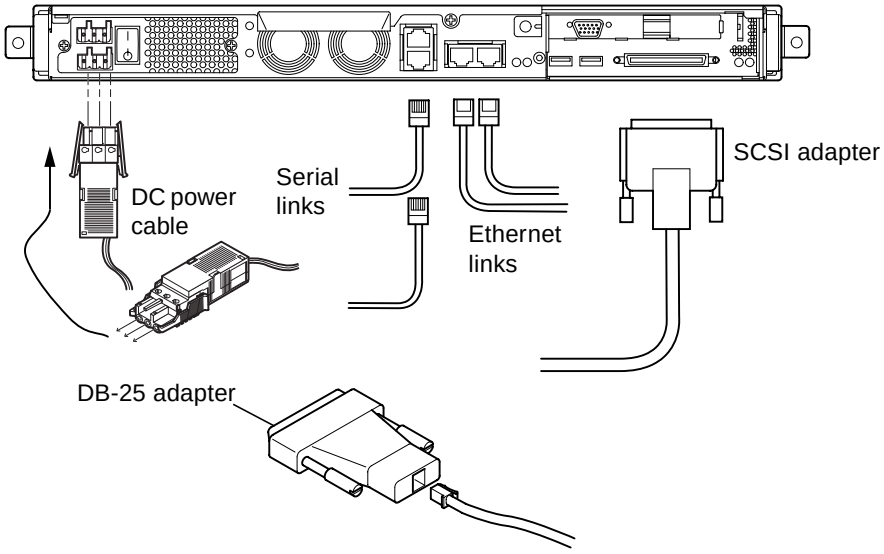


FIGURE 6-2 Connecting the Cables to the Netra T1 DC200 Server

Before following the instructions in this section, make sure you have installed the Netra T1 server into a rack or cabinet (see Chapter 5).

1. **Connect the power cord or cords.**

2. **Connect the server to at least one Ethernet hub.**

   You can connect to a maximum of two Ethernet hubs (unless you have a PCI adapter installed).

3. **Connect a serial device to the Serial A/LOM port.**

   To use the Netra T1 server's remote monitoring and management facilities, make sure you use the port labeled Serial A/LOM. For more information about remote monitoring and management, see Chapter 8 and Chapter 9.

   If you intend to configure the Netra T1 server directly from a dumb terminal or a Sun workstation, insert the loose end of the serial cable into the DB-25 adapter supplied (see FIGURE 6-2 and FIGURE 6-1). Then plug the adapter into the DB-25 serial connector on the terminal or Sun workstation you intend to use.

   For more information, see Section 6.2, "Using a Single DC Power Cord" on page 6-4.

4. **If you need to connect the Netra T1 server to an external SCSI device, you will need to use the SCSI cable supplied with that device.**

   The Netra T1 server's external SCSI bus is compatible with SCSI devices of the following types:

   - Single Ended (SE)
   - Low Voltage Differential (LVD)
   - Narrow (8-bit)
   - Wide (16-bit)

Caution – AC-powered Sun products are designed to work with single-phase power systems that have a grounded neutral conductor. To reduce the risk of electric shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

Caution – Your AC-powered Sun product is shipped with a grounding type (three-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded outlet.

6.2 Using a Single DC Power Cord

If you apply DC power to the Netra T1 server and you have only one DC power cord connected to the server, the LOMlite2 generates a poweron event, but it also generates an inlet failure event which causes the fault indicator light (not blinking).

Similarly, if you remove a single DC power cord from a Netra T1 server that is powered on, the LOMlite2 generates an inlet failure event and the fault indicator lights (not blinking).

If you intend to run the Netra T1 server using only one DC supply cord, then ignore these inlet failure events and turn off the fault indicator by typing:

```
lom> faultoff
```

6.3 Setting Up Serial Connections

To perform the initial configuration when you install the Netra T1 server, and also for ongoing monitoring and management of the server, you will need to use at least one of the serial ports on the server's rear panel. You can connect either or both serial ports to any of the following devices:

- **Dumb terminal**
  For this connection, you can use the standard RJ-45 patch cable supplied with the Netra T1 AC200 and DC200 servers, but you need to insert one end into the DB-25 adapter also supplied.
- **Sun workstation**
  For this connection, you can use the standard RJ-45 patch cable supplied with the Netra T1 server, but you need to insert one end into the DB-25 adapter also suppliedr.
- **Terminal server (or patch panel connected to a terminal server)**
  The pinouts for the Netra T1 server's serial ports correspond with the pinouts for the RJ45 ports on the Asynchronous Serial Interface Breakout Cable supplied by Cisco for use with the Cisco L2511 terminal server. For terminals from other manufacturers, you may need to make your own crossover cable (see Section 6.3.1, "Connecting to a Terminal Server" on page 6-6).

- **Modem**
  For this connection, you can use the standard RJ-45 patch cable supplied with the Netra T1 AC200 and DC200 servers, but you need to insert one end into the DB-25 adapter also supplied.

Note – Do not us the Serial A/LOM port for binary data transfers. To perform anything other than ASCII transfers, use the port labeled Serial B.

6.3.1 Connecting to a Terminal Server

The serial ports on the Netra T1 server are DTE ports. If you are connecting them to other DTE ports, then the cabling between the devices you are connecting needs to perform a crossover.

The pinouts for the Netra T1 server's serial ports correspond with the pinouts for the RJ-45 ports on Cisco terminal servers. This means, for example, that if you are using a Cisco L2511 Terminal Server (and you are connecting the Netra T1 server to it using the Cisco Asynchronous Serial Interface Breakout Cable), you can either:

- Connect the Breakout Cable directly to the Netra T1 server, or you can
- Connect the Breakout Cable to a patch panel and use the straight-through patch cable (supplied by Sun) to connect the patch panel to the Netra T1 server (see FIGURE 6-3).

Note – You do not have to use the Netra T1 server with a Cisco Terminal Server. For other terminal servers, check the manufacturer's documentation to see if the pinouts of the serial ports on the terminal server match the pinouts of the Netra T1 server's serial ports. If they do not, then write down which pins carry the signals listed in the second column in TABLE 6-1. Then make a crossover cable taking each of the Netra T1 server's pins to the correct pin on your terminal server's serial port.

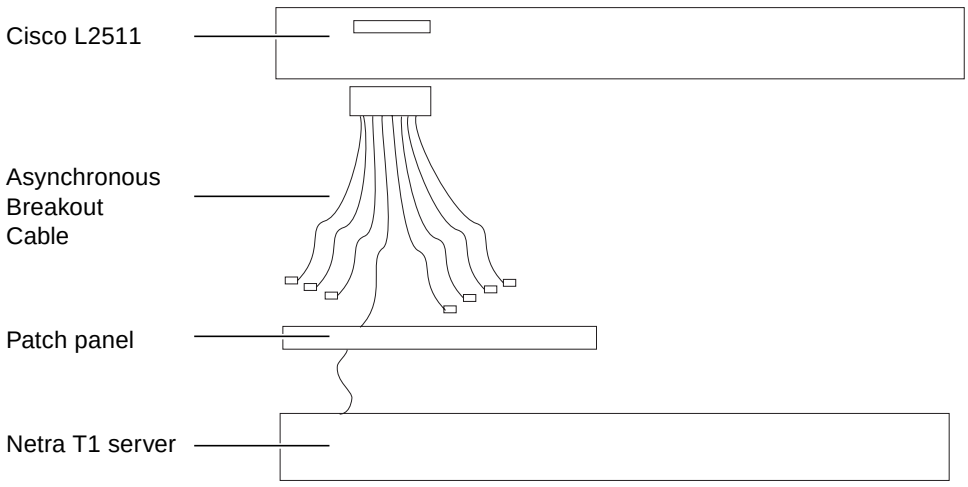


FIGURE 6-3 Patch Panel Connection Between a Cisco L2511 and a Netra T1 Server

Note – When viewed from the rear of the Netra T1 server, pin 1 of the RJ-45 serial port is on the left, pin 8 on the right.

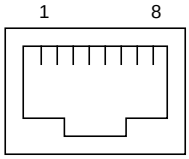


FIGURE 6-4 Serial Port Pins 1 to 8

TABLE 6-1 Serial Port Connection to a Terminal Server

Pinout on Netra T1 server	Signal to connect to on Terminal Server
Pin 1 (RTS)	CTS
Pin 2 (DTR)	DSR
Pin 3 (TXD)	RXD
Pin 4 (Signal Ground)	Signal Ground
Pin 5 (Signal Ground)	Signal Ground
Pin 6 (RXD)	TXD
Pin 7 (DSR)	DTR
Pin 8 (CTS)	RTS

6.3.2 Using a DB-25 Adapter for Your Serial Link

The pinouts are identical for both of the RJ-45 serial ports on the Netra T1 server. To connect from a vT100 terminal, you need to use either the DB-25 (25-Pin DSUB male to 8-POS RJ-45 female) adapter supplied by Sun (part number 530-2889) with your server or an alternative adapter that performs the same pin crossovers. The Sun-supplied DB-25 adapter enables you to connect to any Sun system. The crossovers it performs are listed in TABLE 6-2.

Note – When viewed from the rear of the Netra T1 server, pin 1 of the RJ-45 serial port is on the left, pin 8 on the right.

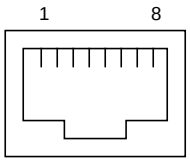


FIGURE 6-5 Pins 1 to 8 on the Serial Ports

TABLE 6-2 Pin Crossovers in the Sun DB-25 (25-pin) Adapter

Serial Port (RJ-45 Connector) Pin	25-pin Connecter
Pin 1 (RTS)	Pin 5 (CTS)
Pin 2 (DTR)	Pin 6 (DSR)
Pin 3 (TXD)	Pin 3 (RXD)
Pin 4 (Signal Ground)	Pin 7 (Signal Ground)
Pin 5 (Signal Ground)	Pin 7 (Signal Ground)
Pin 6 (RXD)	Pin 2 (TXD)
Pin 7 (DSR)	Pin 20 (DTR)
Pin 8 (CTS)	Pin 4 (RTS)

6.3.3 Using a DB-9 Adapter for Your Serial Link

To connect to a terminal that has a 9-pin serial connector, connect one of the Netra T1 server's serial ports to a DB-9 (9-pin) adapter that performs the pin crossovers listed in TABLE 6-3.

Note – When viewed from the rear of the Netra T1 server, pin 1 of the RJ-45 serial port is on the left, pin 8 on the right.

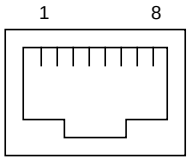


FIGURE 6-6 Pins 1 to 8 on the Serial Ports

TABLE 6-3 Pin Crossovers for a DB-9 (9-pin) Adapter

Serial Port (RJ-45 Connector) Pin	9-pin Connector
Pin 1 (RTS)	Pin 8 (CTS)
Pin 2 (DTR)	Pin 6 (DSR)
Pin 3 (TXD)	Pin 2 (RXD)
Pin 4 (Signal Ground)	Pin 5 (Signal Ground)
Pin 5 (Signal Ground)	Pin 5 (Signal Ground)
Pin 6 (RXD)	Pin 3 (TXD)
Pin 7 (DSR)	Pin 4 (DTR)
Pin 8 (CTS)	Pin 7 (RTS)

6.3.4 Settings for the Serial Connections

The settings you need to use for a serial connection are listed in TABLE 6-4. If you need to perform binary data transfers (that is, transfers of anything other than simple ASCII character streams), use the Serial B port. Communication on the Serial A/LOM port is subject to interruption by the LOMlite2 (Lights-Out Management) device (see Chapter 8).

TABLE 6-4 Default Settings for Connecting to the Serial A/LOM or Serial B Port

Parameter	Setting
Connector	Serial A/LOM or Serial B (use Serial B for binary data transfers)
Rate	9600 baud
Parity	No
Stop bits	1
Data bits	8

Note – If you ever change the OpenBoot PROM's serial configuration and then restart the server, the LOMlite2 device's serial configuration will reflect the new settings. By default, however, the OpenBoot PROM and LOMlite2 serial configuration is as described in TABLE 6-4.

6.4 Connecting to the Netra T1 Server From a Laptop Running Microsoft Windows

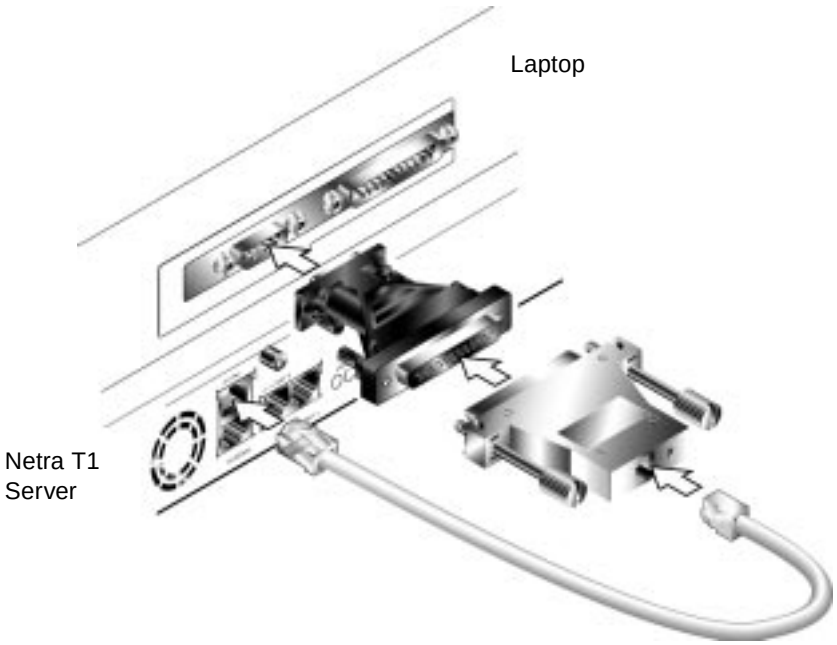
6.4.1 Connecting the Netra T1 Server to the Laptop

Note – Make sure you do not attempt to use the laptop's (25-pin) parallel port instead of its serial port. (The serial port is a male 9-pin D-type connector.)

1. **Connect the RJ-45 to RJ-45 patch cable (supplied with the server) to the Serial A/LOM port on the back panel of the Netra T1 server.**

2. **Connect the other end of the patch cable to the RJ-45 connector on the silver-colored DB25 (25-way DSUB male-to-female 8 POS RJ-45) adapter (part number 530-2889-0x) supplied with the Netra T1 server.**

FIGURE 1 Connecting the Netra T1 Server to the Serial Port on a Laptop



3. **Next connect the 25-way D-type male connector to an adapter that has one 25-way female connector and one 9-way D-type female connector.**

Sun does not supply a 25x9-way D-type female-to-female adapter. However, adapters of this description are available from home computer suppliers and electronics stores. The pin crossovers that the adapter must perform are listed in TABLE 6-3.

TABLE 6-5 Crossovers Inside the 25x9-way D-type Female-to-Female Adapter

9-way Female Connector	25-way Female Connector
Pin 1	Pin 8
Pin 2	Pin 3
Pin 3	Pin 2
Pin 4	Pin 20

TABLE 6-5 Crossovers Inside the 25x9-way D-type Female-to-Female Adapter

9-way Female Connector	25-way Female Connector
Pin 5	Pin 7
Pin 6	Pin 6
Pin 7	Pin 4
Pin 8	Pin 5
Pin 9	Pin 22

4. **Finally, connect the 9-way female connector to the serial port on the laptop.**

6.4.2 Using Microsoft Windows HyperTerminal

Note – If you normally connect the serial port on your laptop to a handheld device, you must close the Hot Sync Manager before following the instructions in this section. Otherwise you will not be able to use the serial port to communicate with the Netra T1 server.

The instructions in this section were verified on a laptop PC running Microsoft Windows 98 and with HyperTerminal Applet version 3.0.

1. **Run the Windows HyperTerminal utility.**
2. **In the HyperTerminal window, double-click the Hyperttrm.exe icon.**
3. **In the Connection Description window, specify a name for the HyperTerminal connection you are creating on the laptop.**

   Then select an icon for it and click OK.
4. **In the Connect to... window, click the arrow for the "Connect using" option and select the port you are using for your connection to the Netra T1 server.**

   Unless you have a particular reason for using a different port, select DIRECT TO COM1. Click OK.
5. **In the COM1 Properties Port Settings window, set the parameters as follows:**

   Bits per second: 9600
   Data bits: 8
   Parity: None
   Stop bits: 1
   Flow control: specify either "Xon/Xoff" or "None".

Note – Do not select “Hardware” for the Flow control option.

Click OK.

6. **Your HyperTerminal session is now active. From the File menu, select Properties.**

7. **In the Properties window, click the Settings tab.**

   On the Settings tab, click the arrow for the “Emulation” option and select VT100. For the “Telnet terminal” option, specify VT100. Click OK.

8. **If your Netra T1 server is not powered on, the `lom>` prompt will appear in the HyperTerminal window.**

   To power the server on, either use the rocker switch on the server’s back panel, or type:

```
lom> poweron
```

What’s Next?

When you have connected the cables and set up serial connections, you are ready to power on the server (see Chapter 7).

CHAPTER 7

Powering On the Netra T1 Server

This chapter tells you how to connect to and power on the Netra T1 server.

The chapter contains the following sections:

7.1 Preparing to Configure the Server

To perform the initial configuration of the Netra T1 server, set up a serial connection using the port labeled Serial A/LOM on the server's back panel (see Chapter 6). Make sure you have the server's power cord(s) connected (see Chapter 6).

7.1.1 Configuring Using a Terminal Server

- **To access the Netra T1 server from a Sun workstation through a terminal server, open a terminal session on the Sun workstation, and type:**

```
# telnet IP-address-of-terminal-server  port-number
```

For example, for a Netra T1 server connected to port 10000 on a terminal server whose IP address is 192.20.30.10, you would type:

```
# telnet 192.20.30.10 10000
```

7.1.2 Configuring From a Terminal or Workstation

- **To access the Netra T1 server from a dumb terminal, set up a connection between the terminal and the Netra T1 server.**
- **To access the Netra T1 server from a Sun workstation directly connected to the server, set up the connections between the devices, then open a terminal session and type:**

```
# tip /dev/term/a -9600
```

The `tip` command assumes that your console is using its ttya port. If you later configure your console to use its ttyb port, you will need to type the following to set up a `tip` session:

```
# tip /dev/term/b -9600
```

For information about dedicating the console to Serial B, see Section 8.6, “Separating the LOMlite2 From the Console on the Serial A/LOM Port” on page 8-19).

7.2 Powering On the Server

When the Netra T1 AC200 and DC200 servers are connected to mains electricity, they are always either fully powered or in standby power mode. To remove power from a server, you must disonnect its power cables. The methods referred to in this section and the next section for powering a server on and off by using `lom>` prompt commands or by using the rocker switch on the server’s back panel are methods either of powering the server on or returning it to standby power mode. They cannot be used to power the server off completely.

For more information, see Section 7.3, “Using the Power (On/Standby) Switch” on page 7-8.

7.2.1 Powering On for the First Time With the Server’s Details Registered at a Name Server

---

Note – Follow the instructions in this section only if you have have a Name Server installed on your network. If you need instructions on how to use a Name Server to automate the process of configuring the Solaris Operating Environment on multiple servers, refer to the *Solaris 8 Advanced Installation Guide* which accompanies the Solaris 8 CDs.

---

1. **Connect the server to the power supply but do not power it on.**
2. **Set up a serial connection to the Serial A/LOM port and also a connection to at least one Ethernet hub (as described in Chapter 6).**
3. **At the `lom>` prompt, type the following command to power on the server:**

```
lom> poweron
```

For more information about the `lom>` prompt and the commands that are available from it, see Chapter 8.

4. **During booting you will be prompted for certain information. The first question the system asks you is what language you want it to use when it prompts you for the information it needs. Specify a language.**
5. **Specify your locale.**
6. **Specify the type of terminal you are using to communicate with the Netra T1 server.**
7. **Specify whether you need IPv6 enabled, then follow the instructions on the screen.**
8. **Specify whether you want to to enable the Kerberos Security mechanism, then follow the instructions on the screen.**
9. **Confirm the information you have typed in and, when prompted, provide the time and date information the system needs.**
10. **When prompted, give a password (if any) for users logging in as root.**
11. **When asked if you want the server to perform Automatic Power Saving Shutdown, answer No.**

Note – If you answer Yes, the server will automatically put itself into Standby mode after a period of idleness.

When you have provided the information the system needs, it will boot.

7.2.2 Powering On the Server for the First Time Without Having Its Details Registered

Follow the instructions in this section if you do not have a Name Server configured on your network.

Before following the instructions in this section, read them to find out what information the system prompts you for when you start it for the first time.

1. **Connect the server to the power supply but do not power it on.**
2. **Set up a serial connection to the Serial A/LOM port and also a connection to at least one Ethernet hub (as described in Chapter 6).**

3. **At the `lom>` prompt, type the following command to power on the server:**

```
lom> poweron
```

   For more information about the `lom>` prompt and the commands that are available from it, see Chapter 8.

4. **During booting you will be prompted for certain information. The first question the system asks you is what language you want it to use when it prompts you for the information it needs. Specify a language.**
5. **Specify your locale.**
6. **Specify the type of terminal you are using to communicate with the Netra T1 server.**
7. **Specify whether the IP address is to be configured manually or by DHCP. If manually, specify an IP address when prompted.**
8. **Specify which of the Ethernet ports you intend to use as the primary Ethernet connection.**

   For the port labeled Net0, specify `eri0`. For the port labeled NeT1, specify `eri1`.

9. **Specify a Host Name for the server.**
10. **Specify whether you need IPv6 enabled, then follow the instructions on the screen.**
11. **Specify whether you want to to enable the Kerberos Security mechanism, then follow the instructions on the screen.**
12. **Specify the Name Service you want the server to use.**
13. **Specify the name of the Domain that the server will be a part of.**
14. **Specify whether you want the system to search the network for a Name Server or whether you want it to use a particular Name Server.**
15. **If you chose to use a particular Name Server, specify the Host Name and IP address of the Name Server.**
16. **Specify whether the Netra T1 server is to be part of a subnet.**
17. **Specify a Netmask for the server.**
18. **Confirm the information you have typed in and, when prompted, provide the time and date information the system needs.**
19. **When prompted, give a password (if any) for users logging in as root.**

20. **When asked if you want the server to perform Automatic Power Saving Shutdown, answer No.**

Note – If you answer Yes, the server will automatically put itself into Standby mode after a period of idleness.

When you have provided the information the system needs, it will boot.

7.2.3 Powering On a Standalone Server for the First Time

1. **Connect the server to the power supply but do not power it on.**
2. **Set up a serial connection using the Serial A/LOM port (as described in Chapter 6).**
3. **At the** `lom>` **prompt, type the following command to power on the server:**

```
lom> poweron
```

For more information about the `lom>` prompt and the commands that are available from it, see Chapter 8.

4. **During booting you will be prompted for certain information. The first question the system asks you is what language you want it to use when it prompts you for the information it needs. Specify a language.**
5. **Specify your locale.**
6. **Specify the type of terminal you are using to communicate with the Netra T1 server.**
7. **When prompted to indicate whether you want the server to be networked, specify No.**
8. **Specify a Host Name for the server.**
9. **Confirm the information you have given.**
10. **Specify the date and time information.**
11. **When prompted, give a password (if any) for users logging in as root.**
12. **When asked if you want the server to perform Automatic Power Saving Shutdown, answer No.**

Note – If you answer Yes, the server will automatically put itself into Standby mode after a period of idleness.

When you have provided the information the system needs, it will boot.

7.2.4 Clearing Your Configuration and Starting Again

If you need to clear the configuration of the Netra T1 server so that you can start the power on process again as if from a previously unused server, follow the instructions below:

1. **Boot the server into Solaris by typing:**

```
ok boot
```

2. **At the Solaris prompt, type:**

```
# sys-unconfig
```

3. **When prompted to confirm that you want to create a "blank" server, type y.**

4. **When the server has unconfigured itself, it displays the** ok **prompt.**

   To reconfigure it, return to the lom> prompt by typing the LOM escape sequence. By default, this is:

```
# .#
```

   When the lom> prompt appears, follow the instructions in either of the following sections:

   - Section 7.2.1, "Powering On for the First Time With the Server's Details Registered at a Name Server" on page 7-3 or
   - Section 7.2.2, "Powering On the Server for the First Time Without Having Its Details Registered" on page 7-4.

7.3 Using the Power (On/Standby) Switch

Caution – The power switch (on the rear panel of the Netra T1 server) is not an On/Off switch, it is an On/Standby switch. It does not isolate the equipment.

The power (On/Standby) switch of the Netra T1 server is a rocker, momentary switch. It controls only low voltage signals; no high-voltage circuits pass through it. This means that the main method of connecting or disconnecting power is by inserting or removing the power supply cord(s). The server contains no integral circuit breakers. To isolate it, you must break all connections to it. If you do not do this by removing the power supply cord(s), you must instead open all external circuit breakers.

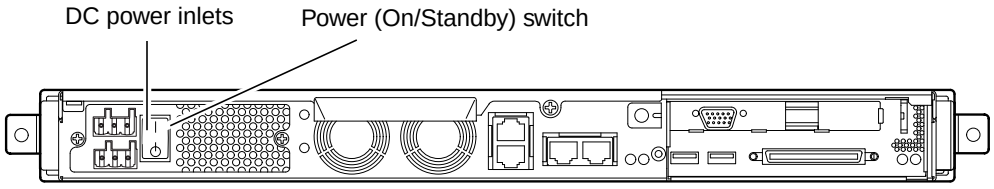


FIGURE 7-1 Netra T1 DC200 Server Power (On/Standby) Switch

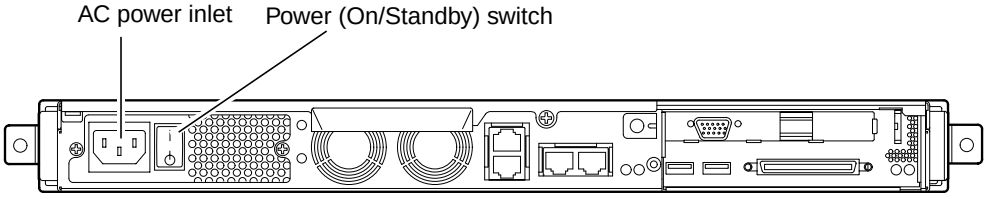


FIGURE 7-2 Netra T1 AC200 Server Power (On/Standby) Switch

The symbols on the switch are as follows:

On – Press this to apply power to the server.

Standby – Press this to put the server into standby mode.

What's Next?

When you have powered on the server and booted and logged in, your server is ready to use.

For information about managing the server, see Chapter 8 and Chapter 9.

PART II Remote and Local Management

CHAPTER 8

Managing the Netra T1 Server From the lom> Prompt

This chapter introduces the LOMlite2 Lights-Out Management facilities available for the Netra T1 server and tells you how to use the `/usr/sbin/lom` utility which provides a user interface to the device.

The chapter contains the following sections:

Note – For information about configuring the LOMlite2 device to restart the server automatically in the event of a lockup, see Chapter 9.

Note – For information about how to configure the LOMlite2 device-driver, see Appendix A.

8.1 Introduction to Lights-Out Management

The system board in the Netra T1 server contains a LOMlite2 device (see FIGURE 8-1). This device provides management facilities that enable you to detect and respond quickly to problems. The facilities are particularly useful for managing servers that are deployed in a “lights out” environment. However, you can also use them to perform quick onsite management tasks at a locally connected terminal.

You can use the LOM facilities remotely or from a local connection to:

- Power the server on or down to standby mode.
- Monitor the server’s temperature and the status of its power supply, fans, supply rails, fault LED and alarms, even when the server is in standby mode.
- Turn a Fault LED on.
- Configure the server to restart automatically after a lockup (see Chapter 9).

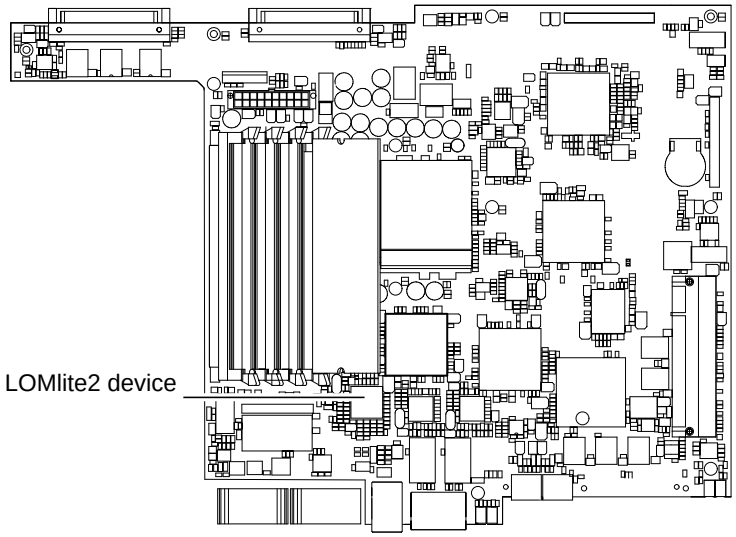


FIGURE 8-1 The Location of the Lights-Out Management Device on the System Board

Note – The Netra T1 server is supplied with the Solaris 8 operating environment installed and with the supplementary Lights-Out Management (LOM) software described in this chapter and Chapter 9 also installed. This software enables you to manage the Netra T1 server locally or remotely. If you ever need to re-install Solaris 8 and you want to use the Lights-Out Management facilities, you must also re-install the Netra Lights-Out Management software from the CD entitled *Software Supplement for the Solaris 8 Operating Environment*. This CD is included with the CDs supplied with the Solaris software. The LOM software is in the following directory: `/Netra_t_Lights_Out_Management_2.0`. The three packages you need are called: SUNWlomm, SUNWlomr, and SUNWlomu.

8.2 Powering On or Resetting the Server From the LOMlite2 Shell

To use the Lights-Out Management facilities either remotely or locally, you need a terminal connection to the Serial A/LOM port on the Netra T1 (see Chapter 6).

There are two ways of interrogating the LOMlite2 device or of sending it commands to perform. One is by executing LOMlite2 commands from the `lom>` shell prompt. This chapter tells you how to do this. The other is by executing LOMlite2-specific Solaris commands from the console prompt. For information about the LOMlite2 commands available with the Solarisoperatring environment, see Chapter 9.

When the Netra T1 AC200 and DC200 servers are connected to a power source, they are always either fully powered or in standby power mode. To remove power entirely from the server you must disonnect its power cables or open all external circuit breakers. The methods referred to in this chapter for powering the server on and off by using `lom>` prompt commands are methods either of powering the server on or of returning it to standby power mode. The `poweroff` command does not power the server off completely.

Note – All commands that involve powering on or off, resetting, or specifying the boot mode of the server require you or the named user to have `r`-level LOMlite2 user permission. If you have not set up any named users of the LOMlite2 device, then you have `r`-level permission by default. If you have set up one or more named users, then you must explicitly give them `r`-level permission to execute these commands. For more information about user privileges, see Section 8.4, “Setting Up LOMlite2 Privileges for Named Users” on page 8-13.

8.2.1 Powering the Server On or Down to Standby Mode

If the server you are connected to is not powered on but is connected to mains electricity, you will see the `lom>` prompt at your terminal. Remember that the LOMlite2 uses standby power and so remains active even when the Netra T1 server is not powered on.

- **To power on the server, type:**

```
lom> poweron
```

- **To power the server down to standby mode, type:**

```
lom> poweroff
```

8.2.2 Displaying the `lom>` Prompt

When you connect a terminal to the Serial A/LOM port, you will only see the `lom>` prompt if the server is powered off. If it is powered on and has not already been put into LOM mode, it will display the console prompt.

- **To display the `lom>` prompt, type the following LOMlite2 escape sequence:**

```
# #.
```

When you type the LOMlite2 escape sequence, the LOMlite2 device takes control of the Serial A/LOM port and the `lom>` prompt appears on your terminal screen. You can type the LOMlite2 escape sequence at any time.

Note – If you are at the console and you type the first character of the LOM escape sequence (by default this is #), there is a second's delay before the character appears on the screen. This is because the server waits to see if you type the dot (.) character next. If you do, the `lom>` prompt is displayed. If you do not, the # character appears on the screen.

For information about changing the first character of the LOMlite2 escape sequence, see Section 9.3.3, "Changing the First Character of the Sequence for Escaping to the `lom>` Prompt (`lom -X`)" on page 9-12.

8.2.3 Exiting From the lom> Prompt

- **To return to the Solaris console prompt from the** lom> **prompt, type:**

```
lom> console
```

Note – If you have the Serial A/LOM port dedicated to the LOMlite2 device (instead of shared between the LOMlite2 and the console), this command will have no effect. For information about dedicating the Serial A/LOM port to the LOMlite2 device, see Section 8.6, “Separating the LOMlite2 From the Console on the Serial A/LOM Port” on page 8-19.

Note – If you have set up named users of the LOMlite2 device, the users need c-level permission to execute the console command. Without it, the command will not work. For more information about setting up user permissions, see Section 8.4, “Setting Up LOMlite2 Privileges for Named Users” on page 8-13.

8.2.4 Resetting the Server

- **To reset the server, type:**

```
lom> reset
```

- **To perform a limited reset affecting the processor only, type:**

```
lom> reset -x
```

The -x option generates the equivalent of an externally initiated reset (XIR) of the server. You must have r-level permission to use this command (for information about user authorization levels, see Section 8.4, “Setting Up LOMlite2 Privileges for Named Users” on page 8-13). The -x option takes the server into OpenBoot PROM mode and causes it to display the ok prompt. It is useful for driver or kernel debugging, because most of the contents of the server’s memory and registers are preserved. The server does not automatically return to Solaris when you reset it using the -x option. Instead you must reboot it from the ok prompt.

8.2.5 Displaying the ok or kadb Prompt

To display the ok or kadb prompt, type the following at the lom> prompt:

```
lom> break
```

Note – If you have the Serial A/LOM port dedicated to the LOMlite2 device, this command will have no effect. For information about dedicating the Serial A/LOM port to the LOMlite2 device, see Section 8.6, “Separating the LOMlite2 From the Console on the Serial A/LOM Port” on page 8-19. To use the break command, you must have c-level LOMlite2 user privileges. For more information, see Section 8.4, “Setting Up LOMlite2 Privileges for Named Users” on page 8-13.

8.2.6 Controlling the Server’s Booting Behavior

The LOMlite2 shell includes a bootmode command:

```
bootmode [-u][normal|forth|reset_nvram|diag|skip_diag]
```

This command enables you to dictate the behavior of the server after a reset. Its functionality is identical to the functionality available on Sun keyboards via the L1 key combinations. (However, the bootmode command is provided because the L1 key combinations are not available for the Netra T1 server: you cannot use them from a keyboard that is connected to the server via a serial link.)

You must have r-level LOMlite2 permission to use the bootmode command. For information about user privileges, see Section 8.4, “Setting Up LOMlite2 Privileges for Named Users” on page 8-13.

8.2.6.1 Boot Modes Available

If you use the `bootmode` command without arguments, the LOMlite2 device reports just the current boot mode. The boot modes available are listed in TABLE 8-1.

TABLE 8-1 Boot Modes

Mode	Description
`-u`	This option does not represent a boot mode. However, if you have previously dedicated the Serial A/LOM port to the LOMlite2 device and now want to share the port between the console and the LOMlite2 device, you can use the `-u` option to achieve this. It is a quick alternative to the procedure described for sharing the Serial A/LOM port in the section called "Separating the LOMlite2 From the Console on the Serial A/LOM Port" on page 8-19.
`normal`	In this mode, the server boots using your OpenBoot™ PROM settings. To cause this parameter to take effect, you must reset the server after executing the `bootmode` command at the `lom>` prompt.
`forth`	In this mode, the server does not boot to Solaris but stops the boot cycle at the `ok` prompt. The command is equivalent to the L1-F key combination for Sun keyboards. To cause the parameter to take effect, you must execute the `bootmode forth` command at the `lom>` prompt and then reset the server. (It is only when the server resets that it reads the new `forth` parameter from the LOMlite2 device.)
`reset_nvram`	In this mode, the server returns all NVRAM data to its factory-default setting. The command is equivalent to the L1-N key combination for Sun keyboards. To cause the parameter to take effect, you must reset the server after executing the `bootmode` command at the `lom>` prompt.
`diag`	In this mode, the server performs full self-diagnostics as part of the boot process. The command is equivalent to the L1-D key combination for Sun keyboards. To cause the parameter to take effect, you must power off and then power on the server within 10 minutes after executing the `bootmode` command at the `lom>` prompt.
`skip_diag`	In this mode, the server skips the diagnostics part of the boot process. To cause the parameter to take effect, you must power off and then power on the server within 10 minutes after executing the `bootmode` command at the `lom>` prompt.

8.3 Monitoring the Server From the LOMlite2 Shell

This section describes the commands that enable you to check the status of the components monitored by the LOMlite2 device. It also describes how to view the events stored in the LOMlite2 device's event log.

8.3.1 Checking How Long the Server Has Been Running

To find out how much time has elapsed since the last boot, type:

```
lom> date
Time since last boot: +8d+20h48m2s
```

or:

```
lom> showdate
Time since last boot: +8d+12h23m6s
```

8.3.2 Checking the Current Status of All Components

To see the current status of all the components monitored by the LOMlite2 device, type:

```
lom> environment
```

FIGURE 8-2 shows some sample output from the `environment` command. In this example, all the components are running normally and none are faulty.

Note – For the locations of the different fans, see Section 8.9, "Checking the Status of the Server's Fans" on page 8-24.

Note – If the fans, PSU output, or supply rails fail on your Netra T1 server, you may need to replace components. For information about ordering and installing field-replaceable components, see Chapter 11.

```
lom>environment
Fault OFF
Alarm 1 OFF
Alarm 2 OFF
Alarm 3 OFF

Fans:
1 OK speed 99%
2 OK speed 95%
3 OK speed 100%
4 OK speed 100%

PSUs:
1 OK

Temperature sensors:
1 enclosure 28degC OK

Overheat sensors:
1 cpu OK

Circuit breakers:
1 SCSIA TERM OK
2 USB OK
3 SCC OK

Supply rails:
1 5V OK
2 3V3 OK
3 +12V OK
4 -12V OK
5 VDD OK
6 +3VSB OK
7 BATTERY OK

lom>
```

FIGURE 8-2 Sample Output From the `environment` Command

8.3.3 Viewing the LOMlite2 Device's Event Log

8.3.3.1 Viewing the Last 10 Events in the Event Log

Type the following:

```
lom> show eventlog
```

FIGURE 8-3 shows a sample event log display. The `eventlog` command reports the last 10 events. Note that the first event is the oldest and that each event has a time-stamp indicating the hours and minutes (and, if applicable, days) since:

- the LOMlite2 device was last powered off (that is, since all power to the server, including standby power, was last removed), or,
- if the server has been booted since all power was last removed, then the time-stamp indicates the number of days, hours, and minutes since the last reboot.

```
lom>show eventlog
Eventlog:
+0h0m0s host power on
+0h0m21s host reset
9/15/2000 17:35:28 LOM time reference
+0h3m20s Fault LED ON
+0h3m24s Fault LED OFF
+0h39m34s Alarm 1 ON
+0h39m40s Alarm 3 ON
+0h39m54s Alarm 3 OFF
+0h40m0s Alarm 1 OFF
+0h40m57s Fan 4 FATAL FAULT: failed
+0h40m58s Fault LED ON
```

FIGURE 8-3 Sample LOMlite2 Device Event Log (Oldest Event Reported First)

Note – If the fans, PSU output, or supply rails fail on your Netra T1 server, you may need to replace components. For information about ordering and installing field-replaceable components, see Chapter 11.

8.3.3.2 Viewing the Entire Event Log

- **Type:**

```
lom> loghistory [pause x] [level y]
```

where *x* is the number of lines you want the screen to pause after displaying, and *y* is the severity level of the events you want to see. By default, the `loghistory` command displays all the events in the log and does not pause the display.

If you specify a severity level, you will see reports for the level you specify and above. For example, if you specify level 2, you will see reports of level 2 and level 1 events. If you specify level 3, you will see reports of level 3, level 2, and level 1 events.

If you do not specify a level, you will see events for all levels.

For more information about severity levels, see Section 8.7, "Viewing the Event Reports That the LOMlite2 Sends to `syslogd`" on page 8-20.

Each entry in the log includes the time of the event, the server's host name, a unique identifier for the event and a user-friendly text message describing the event.

Note – The LOMlite2 device's Event Log is never cleared and can contain several hundred entries. Events are stored from the very first time the server boots. Eventually the buffer may become full, but when this happens the LOMlite2 device will start again at the beginning of the buffer, over-writing the earliest events.

8.3.3.3 Viewing All Events From the First to the *n*th Event Logged

- **Type:**

```
lom> loghistory index +n [pause x] [level y]
```

where *n* is the number of events you want to see that have been logged since the first event in the current log, *x* is the number of lines you want the screen to pause after displaying, and *y* is the severity level of the events you want to see. By default, the `loghistory` command does not pause the display.

8.3.3.4 Viewing All Events From the Last One Logged to *n*th Event Before It

- **Type**:

```
lom> loghistory index -n [pause x] [level y]
```

where *n* is the number of events you want to see listed that were logged before the last event in the current log, *x* is the number of lines you want the screen to pause after displaying, and *y* is the severity level of the events you want to see. By default, the `loghistory` command does not pause the display.

- **To see the last five events, type**:

```
lom> loghistory index -5
+0h39m34s Alarm 1 ON
+0h39m40s Alarm 3 ON
+0h39m54s Alarm 3 OFF
+0h40m0s Alarm 1 OFF
+0h40m58s Fault LED ON
```

8.3.4 Checking That a Component Has Been Fixed

If a monitored component has failed, the LOMlite2 device does not continue to report the failure.

- **To check the status of the component, for example, after attempting to fix it, type**:

```
lom> check
```

This causes the LOMlite2 device to update the status of all the components it monitors.

8.4 Setting Up LOMlite2 Privileges for Named Users

You can specify up to four named users of the LOMlite2 device on a Netra T1 AC200 or DC200 server. By default, no users are set up and therefore no user login prompt appears when you use the LOM escape sequence.

However, if you set up one or more users, every time you use the LOM escape sequence to display the `lom>` prompt you will be prompted for a user name and password. Therefore, one of the user accounts you set up, must be for yourself.

Four areas of authorization are available for named users. By default, all four are open to them. However, if you specify any (using the `lom> userperm` command), only the one or ones that you specify will be available.

8.4.1 Permissions Available for LOMlite2 Users

The four areas of authorization available by default are:

- **Console permission (`c`-level)**
  This enables the named user to exit from the `lom>` prompt to the Solaris prompt (if the Serial A/LOM port is shared between the LOMlite2 and the console).
- **User administration permission (`u`-level)**
  This enables the named user to add and delete users and alter their permissions.
- **Administration permission (`a`-level)**
  This enables the named user to change the LOMlite2 device's configuration variables (see Section 8.1, "Introduction to Lights-Out Management" on page 8-2).
- **Reset permission (`r`-level)**
  This enables the user you have named to reset the server and to power it on and off using the LOMlite2 device.

For information about how to specify one or more of these areas of authorization for a named user, see Section 8.4.7, "Specifying Permissions for a Named User" on page 8-16.

8.4.2 Creating a LOMlite2 User Account

- **Type**:

```
lom> useradd user name
```

where the *user name* is up to eight characters long, begins with an alphabetic character and contains at least one lower-case alphabetic character. You can use any of the following characters in the user name:

- Alphabetic
- Numeric
- Period (.)
- Underscore (_)
- Hyphen (-)

Note – You must have User Administration (a-level) authorization to add a user (see Section 8.4.1, "Permissions Available for LOMlite2 Users" on page 8-13). If you have not added any users, you have a-level and all other levels of authorization by default.

8.4.3 Specifying the Password for a LOMlite2 User Account

- **Type**:

```
lom> userpassword user name
```

where the *user name* is the name of a LOMlite2 user account that already exists.

Note – You must have User Administration (u-level) authorization to set a password for a user (see Section 8.4.1, "Permissions Available for LOMlite2 Users" on page 8-13).

8.4.4 Viewing Details of a LOMlite2 User Account

- **Type:**

```
lom> usershow user name
```

where the *user name* is the name of an existing LOMlite2 user account.

Note – You must have User Administration (u-level) authorization to view the details of a LOMlite2 user account (see Section 8.4.1, “Permissions Available for LOMlite2 Users” on page 8-13).

8.4.5 Changing Your Own User Password

1. **To change the password for the account you are currently logged into, type:**

```
lom> password
```

2. **When prompted, specify the current password.**
3. **When prompted, specify the new password you want to use.**
4. **Specify the new password again to confirm it.**

8.4.6 Deleting a LOMlite2 User Account

- **Type:**

```
lom> userdel user name
```

where the *user name* is the name of an existing LOMlite2 user account.

Note – You must have User Administration (a-level) authorization to delete a user account (see Section 8.4.1, “Permissions Available for LOMlite2 Users” on page 8-13).

If you delete all the users you have set up, you will no longer see the login prompt when you go to the `lom>` prompt.

8.4.7 Specifying Permissions for a Named User

By default, all four areas of authorization are available to each named user you set up.

- **To limit users to a particular area or areas of authorization, type:**

```
lom> userperm username [c][u][a][r]
```

You can specify:

- **No parameters**
  This makes all four areas available to the named user.
- **All four parameters** (for example, `userperm cuar`)
  This also makes all four areas available to the named user.
- **One, two or three parameters**
  This makes only the parameter or parameters you specify available.

The parameters are:

- **c**
  This stands for “console permission”. It enables the named user to exit from the `lom>` prompt to the Solaris prompt (as long as the Serial A/LOM port is shared between the LOMlite2 and the console).
- **u**
  This stands for “user administration permission”. It enables the named user to add and delete users and alter their areas of authorization by using the `userperm` command.
- **a**
  This stands for “administration permission”. It enables the named user to change the LOMlite2 device’s configuration variables (see Section 8.5, “Setting the LOMlite2 Device’s Configurable Variables” on page 8-17).
- **r**
  This stands for “reset permission”. It enables the user you have named to reset the server and to power it on and off using the LOMlite2 device.

8.4.8 Quitting a LOMlite2 Named User Session

- **Type:**

```
lom> logout
```

This returns you to the LOMlite2 login prompt.

8.5 Setting the LOMlite2 Device's Configurable Variables

There are some variables that you can use as arguments to the `set` command in the LOMlite2 shell. The `set` command duplicates the `faulton`, `faultoff`, `alarmon` and `alarmoff` commands by taking them as arguments. It also takes the argument `event_reporting`, which enables you to stop the LOMlite2 device from sending event reports to the Serial A/LOM port.

Note – To execute the commands described in this section, a named user must have a-level permission. For more information, see Section 8.4, "Setting Up LOMlite2 Privileges for Named Users" on page 8-13.

8.5.1 Turning the Fault LED on

- **To turn the Fault LED on by setting the `faulton` variable, type:**

```
lom> set faulton
```

8.5.2 Turning the Fault LED off

- **To turn the Fault LED off by setting the `faultoff` variable, type:**

```
lom> set faultoff
```

8.5.3 Setting the `alarmon` *n* Software Flag

- **Set the** `alarmon` *n* **variable by typing:**

```
lom> set alarmon n
```

where *n* is the number of the alarm you want to turn on: 1, 2, or 3.

8.5.4 Setting the `alarmoff` *n* Software Flag

- **To set the** `alarmoff` **configuration variable, type:**

```
lom> set alarmoff n
```

where *n* is the number of the alarm you want to turn off: 1, 2, or 3.

8.5.5 Stopping the LOMlite2 Sending Event Reports to the Serial A/LOM port

- **Set the** `event_reporting` **variable on by typing:**

```
lom> set eventreporting on
```

Note – This is the equivalent of using the `lom -E on` command from the Solaris shell (see Chapter 9).

- **Set the** `event_reporting` **variable off by typing:**

```
lom> set eventreporting off
```

Note – This is the equivalent of using the `lom -E off` command from the Solaris shell (see Chapter 9).

8.6 Separating the LOMlite2 From the Console on the Serial A/LOM Port

By default, the LOMlite2 device shares the Serial A/LOM port with the console, and when it has an event report to send it takes control of the Serial A/LOM port itself, interrupting any console activity you are performing. To prevent the LOMlite2 device from interrupting the console, either turn serial event reporting off (see Section 9.3.4, "Stopping the LOMlite2 from Sending Reports to the Serial A/LOM Port (`lom -E off`)" on page 9-12), or dedicate the Serial A/LOM port to the LOMlite2 device and use the Serial B port for console activity (see below).

The advantages of dedicating the Serial A/LOM port to the LOMlite2 device and using Serial B as your Console port include:

- Preserving the ability to power on or reset the server (from the `lom>` prompt on Serial A/LOM) even if for any reason you lose access to Solaris on your console port (Serial B).
- Capturing all LOMlite2 events passively on a terminal connected to the dedicated LOM port (Serial A/LOM). Note, however, that if you dedicate the Serial A/LOM port to the LOMlite2 device, you cannot use the `console` command to quit the LOMlite2 shell. Instead, for access to Solaris, you must connect to the Netra T1 server using the Serial B port.
- Preventing a user with console access from using the LOMlite2 escape sequence to exit Solaris and access the LOMlite2 shell. If you dedicate the Serial B port to the console, users cannot bring up the LOMlite2 shell and this means that they cannot interrogate or reconfigure the LOMlite2 device.
- Performing binary data transfers. To perform anything other than ASCII transfers, you need to use the Serial B port.

8.6.1 Dedicating Serial A/LOM to the LOMlite2

1. **Set up console connections to both the Serial A/LOM port and the Serial B port.**
2. **At the Solaris prompt, type:**

```
# eeprom input-device=ttyb
# eeprom output-device=ttyb
# reboot
```

The Serial B port (ttyb) is now your console port. The Serial A/LOM port remains in the control of the LOMlite2 device.

8.6.2 Sharing Serial A/LOM Between the LOMlite2 and the Console

By default, the Serial A/LOM port is shared by the LOMlite2 device and the console. Therefore, you only need to follow the instructions in this section if you have configured the Netra T1 server by using the instructions in the previous section (Section 8.6.1, "Dedicating Serial A/LOM to the LOMlite2" on page 8-19) and you now want to share the Serial A/LOM port between the LOMlite2 and the console.

To share the port between the LOMlite2 device and the console:

1. **Set up console connections to both the Serial A/LOM port and the Serial B port.**
2. **At the Solaris prompt, type:**

```
# eeprom input-device=ttya
# eeprom output-device=ttya
# reboot
```

The Serial A/LOM port (ttya) is now shared between the LOMlite2 device and the console.

8.7 Viewing the Event Reports That the LOMlite2 Sends to `syslogd`

The LOMlite2 device monitors the status of the fans, supply rails, temperature, and power supply even when the server is powered down (the LOMlite2 device operates on standby power). If it detects a fault, it turns on the Fault LED on the server's front and back panels and stores a report in an event log which resides in memory on the LOMlite2 device. When Solaris is running, the LOMlite2 device also sends event reports to `syslogd`. `syslogd` handles these in the way it has been configured to handle event reports. This means that by default it sends them to the console and stores them in the following file:

`/var/adm/messages`

In this file the reports are displayed with a label identifying them as `lom` reports and indicating their severity. The different levels of severity are, in descending order:

1. **Fatal**

   These events might concern, for example, exceeded temperature thresholds or supply rail failures. Fatal events may cause the server to shut itself down.

2. **Warning**

   These events might concern fans turning too slowly, the Fault LED having been turned on, or the System Configuration Card having been removed. They are not events that cause the server to shut down, but they do require immediate attention.

3. **Info**

   These events are most likely to inform you that some problem is now OK. For example, if you re-insert the System Configuration Card, the LOMlite2 device will generate an event to say that the System Configuration Card has been restored.

4. **User**

   User level events concern the activity of named users whom you have authorized to access the LOMlite2 device. For example, an event is generated when a user logs in or out.

8.8 The LOMlite2 Shell Command List

The commands you can execute from the `lom>` prompt are listed in TABLE 8-2.

TABLE 8-2 LOM Commands

Command	Effect
`alarmoff` *n*	Sets alarm *n* off. (Where n is 1, 2, or 3.) These three alarms are software flags. They are associated with no specific conditions but are available to be set by your own processes.
`alarmon` *n*	Sets alarm *n* on. See the description for the `alarmoff` command.
`break`	Takes the server down to the `ok` prompt.
`bootmode`	Determines the behavior of the server during the boot process.

TABLE 8-2 LOM Commands *(Continued)*

Command	Effect
`check`	Resets monitoring to report all failures. If a monitored component has failed, the LOMlite2 device will not continue to report the same failure. To check the status of the component, for example, after attempting to fix it, issue the `check` command. This updates the status of all monitored components.
`console`	This command takes you out of the LOMlite2 shell and back to the Solaris prompt. It returns control of the serial connection to the console.
`environment`	Displays the temperature of the server and the status of the fans, the power supply, the over-temperature monitors, the supply rails and circuit breakers, the alarms, and the fault LED.
`faulton`	Sets the Fault LED to On.
`faultoff`	Sets the Fault LED to Off.
`help`	Displays the list of LOM commands.
`loghistory`	Displays all the events in the LOMlite2 device's Event Log.
`logout`	This command is for use by named users you have set up with password access to the LOMlite2 device. It returns them to the LOM user login prompt.
`poweron`	Powers the server on.
`poweroff`	Powers the server down to standby power mode.
`reset`	Resets the Netra T1 server.
`show model`	Displays the server model.
`show hostname`	Displays the server name (this command is equivalent to the Solaris `uname -n command`).
`show eventlog`	Displays the LOMlite2 device's event log. The event log is the list of the last 10 events to have been stored in the LOMlite2 device. The most recent event is the one at the bottom of the list.
`show escape`	Displays the current LOMlite2 escape sequence.
`show`	Displays all the information available with the `show` command.
`useradd`	Adds a user to the LOMlite2 device's list of permitted users.
`userdel`	Deletes a user from the LOMlite2 device's list of permitted users.
`usershow`	Displays the details of a named user's LOMlite2 account.

TABLE 8-2 LOM Commands *(Continued)*

Command	Effect
`userpassword`	Sets or changes a user's password.
`userperm`	Sets the permission levels for a named user.
`version`	Displays the version number of the LOMlite2 device.

8.9 Checking the Status of the Server's Fans

Event reports about the fans inside the server include the number of the fan to which they relate. Fans 1 and 2 expel hot air from the server; Fan 3 cools the CPU. Fan 4 is the power supply fan; if this fan fails, you must replace the PSU.

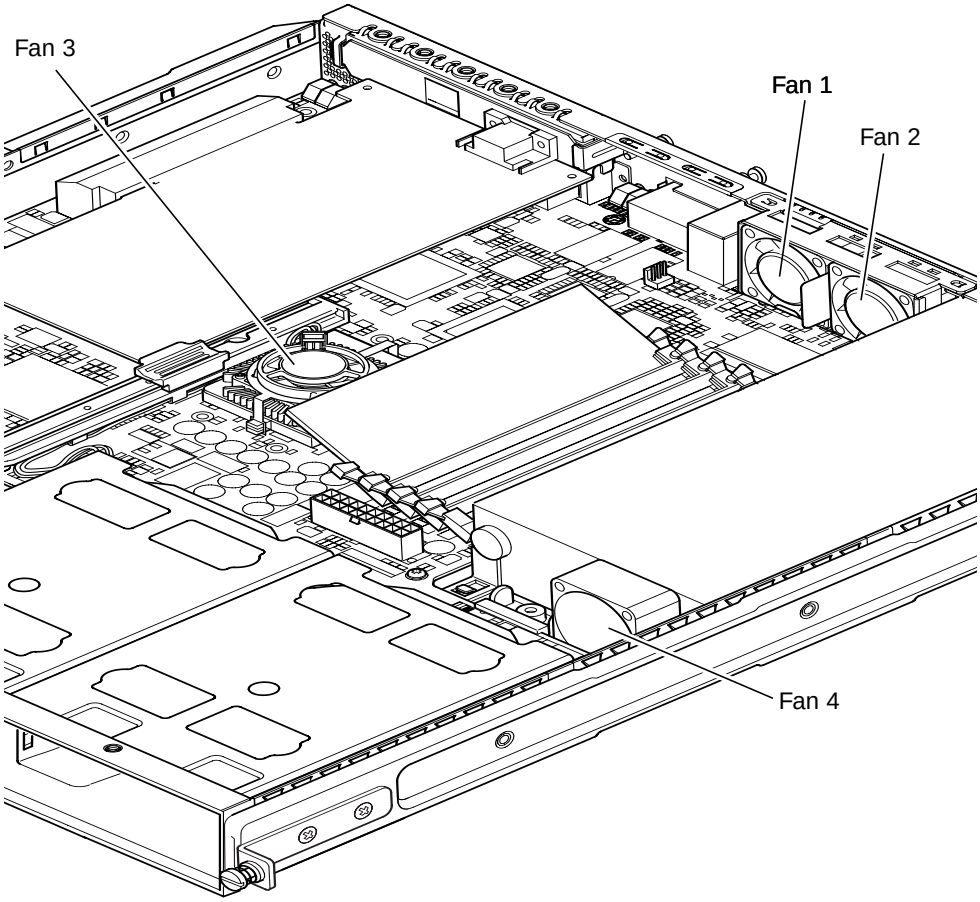


FIGURE 8-4 Locations of Fans 1, 2, 3, and 4

- **To check the status of the fans, type:**

```
lom> environment
```

CHAPTER 9

Managing the Netra T1 Server From the Solaris Prompt

This chapter tells you how to use the LOMlite2-specific commands available in the Solaris 8 operating environment for monitoring and managing a Netra T1 server.

For an introduction to the LOMlite2 device and a description of an alternative user interface to it, see Chapter 8.

The chapter contains the following sections:

Note – For information about how to configure the LOMlite2 device driver, see Appendix A.

Note – The Netra T1 server is supplied with the Solaris 8 operating environment installed and with the supplementary Lights-Out Management (LOM) software described in this chapter and Chapter 8 also installed. This software enables you to manage the Netra T1 server locally or remotely. If you ever need to re-install Solaris 8 and you want to use the Lights-Out Management facilities, you must also re-install the Netra Lights-Out Management software from the CD entitled *Software Supplement for the Solaris 8 Operating Environment*. This CD is included with the CDs supplied with the Solaris 8 software. The LOM software is in the following directory: `/Netra_t_Lights_Out_Management_2.0`. directory. The three packages you need are called: SUNWlomm, SUNWlomr, and SuNWlomu.

9.1 Monitoring the System From Solaris

To use the Lights-Out Management (LOM) facilities either remotely or locally, you need a terminal connection to the Serial A/LOM port on the Netra T1 server (see Chapter 6).

There are two ways of interrogating the LOMlite2 device or of sending it commands to perform.

- One is by executing LOMlite2 commands from the `lom>` shell prompt. For information about how to do this, see Chapter 8.
- The other is by executing LOMlite2-specific Solaris commands from the Solaris prompt. These commands are described in this chapter.

The Solaris commands described in this section are all available from the main Solaris # prompt. They run a utility called `/usr/sbin/lom`.

Where appropriate, the command lines given in this section are accompanied by typical output from the commands.

9.1.1 Viewing Online LOMlite2 Documentation

- **To view the manual pages for the LOMlite2 utility, type:**

```
# man lom
```

9.1.2 Checking the Power Supply Unit (`lom -p`)

- **To check that the input lines and the output line for the power supply unit are working normally, type:**

```
# lom -p
PSUs:
1 OK

#
```

Note – If there are any failures of the PSU that affect more than just the input or output lines, Solaris will not run. However, if standby power is present, you can still use the LOMlite2 shell commands described in Chapter 8.

9.1.3 Checking the Fans (`lom -f`)

- **To check the fans, type:**

```
# lom -f
Fans:
1 OK speed 99%
2 OK speed 95%
3 OK speed 100%
4 OK speed 100%

#
```

For the locations of each fan, see Section 8.9, “Checking the Status of the Server’s Fans” on page 8-24. If you need to replace a fan, contact your local Sun sales representative and quote the part number of the component you need. For information, see Section 11.2, “Field Replaceable Units” on page 11-4.

9.1.4 Checking the Supply Rail Voltages and Internal Circuit Breakers (`lom -v`)

The supply rails are the Netra T1 server’s internal power lines. If the status of any of these is `faulty`, contact your local Sun Sales representative. It means that you have either a faulty system board or a faulty PSU. For information about ordering and installing replacements of these components, see Chapter 11.

The `-v` option also displays the status of the Netra T1 server’s internal circuit breakers. For any that have been tripped, the status will read `faulty`. The system contains three circuit breakers: one for the SCSI connector, one for the USB ports, and one for the system configuration card reader. If there is a problem with the circuit breakers or the SCSI or USB port circuit breakers, remove the device connected to the relevant port. When you do this, the circuit breakers will automatically recover themselves. If there is a problem with the circuit breaker for the System Configuration Card, it means that you do not have a valid System Configuration Card inserted.

- **To check the status of the supply rails and internal circuit breakers, type:**

```
# lom -v
Supply voltages:
 1 5V status=ok
 2 3V3 status=ok
 3 +12V status=ok
 4 -12V status=ok
 5 VDD status=ok
 6 +3VSB status=ok
 7 BATTERY status=ok

System status flags (circuit breakers):
 1 SCSIA TERM status=ok
 2 USB status=ok
 3 SCC status=ok
```

9.1.5 Checking the Internal Temperature (`lom -t`)

- **To check the internal temperature of the sytem and also the system's warning and shutdown threshold temperatures, type:**

```
# lom -t
System Temperature Sensors:
1 enclosure 25 degC : warning 67 degC : shutdown 72 degC

System Over-temperature Sensors:
1 cpu status=ok
#
```

9.1.6 Checking the Status of the Fault LED and Alarms (`lom -l`)

- **To check whether the Fault LED and alarms are on or off, type:**

```
# lom -l
LOMlite alarm states:
Alarm1=off
Alarm2=off
Alarm3=off
Fault LED=on
#
```

Alarms 1, 2, and 3 are software flags. They are associated with no specific conditions but are available to be set by your own processes or from the command line (see Section 9.3.1, “Turning Alarms On and Off (`lom -A`)” on page 9-11).

9.1.7 Changing the LOMlite2 Automatic Server Restart Configuration (`lom -w`)

For full information about enabling and using the LOMlite2’s Automatic Server Restart (ASR), see Section 9.2, “Configuring Automatic Server Restart (ASR)” on page 9-8.

- **To find out how the LOMlite2’s watchdog is currently configured, type:**

```
# lom -w
LOMlite watchdog (ASR) settings:
Watchdog=on
Hardware reset=off
Timeout=40 s
#
```

The LOMlite2’s watchdog is enabled by default when Solaris boots. This means that, by default, if the watchdog does not receive a “pat” for 40,000 milliseconds, it will turn on the Fault LED on the front and back panels of the system, generate a LOM event report, and — if configured to do so — perform an automatic server restart. However, although the watchdog is enabled by default when Solaris boots, the `Hardware reset` option is not. This means that the LOMlite2 device does not, by default, automatically restart the server after a lockup.

- **To configure the LOMlite2 device to perform an automatic server restart (ASR) after a lockup, you must enable the** `Hardware reset` **option as well as the** `Watchdog` **option. For more information, see Section 9.2, "Configuring Automatic Server Restart (ASR)" on page 9-8.**

9.1.8 Viewing the Configuration of the LOMlite2 Device (`lom -c`)

- **To view the settings of all the configurable variables for the LOMlite2 device, type:**

```
# lom -c
LOMlite configuration settings:
serial escape character=#
serial event reporting=default
Event reporting level=fatal, warning & information
Serial security=enabled
Disable watchdog on break=disabled
Automatic return to console=disabled
alarm3 mode=watchdog
firmware version=3.0
firmware checksum=2983
product revision=0.0
product ID=Netra T1 200
#
```

9.1.9 Viewing All Component Status Data With the LOMlite2 Device's Configuration Data (`lom -a`)

- **To view all the status data stored by the LOMlite2 device plus the details of the device's own configuration, type:**

```
# lom -a
```

9.1.10 Viewing the Event Log (`lom -e`)

- **To see the event log, type:**

```
# lom -e n,[x]
```

where *n* is the number of reports (up to 128) that you want to see and *x* specifies the level of reports you are interested in. There are four levels of events:

1. Fatal events
2. Warning events
3. Information events
4. User events

If you specify a level, you will see reports for that level and above. For example, if you specify level 2, you will see reports of level 2 and level 1 events. If you specify level 3, you will see reports of level 3, level 2, and level 1 events.

If you do not specify a level, you will see reports of level 3, level 2, and level 1 events.

FIGURE 9-1 shows a sample event log display. Note that the first event is the oldest and that each event has a date-stamp indicating the days, hours and minutes since the system was last booted.

```
# lom -e 10
LOMlite Event Log:
+0h0m21s host reset
9/15/2000 17:35:28 GMT LOM time reference
+0h3m20s  fault led state - ON
+0h3m24s  fault led state - OFF
+0h39m34s Alarm 1 ON
+0h39m40s Alarm 3 ON
+0h39m54s Alarm 3 OFF
+0h40m0s Alarm 1 OFF
+0h48m52s fault led state - OFF
+0h49m39s Fan 1 FATAL FAULT: failed
+0h50m58s fault led state - ON

# lom -e 10
```

FIGURE 9-1 Sample LOMlite2 Device Event Log (Oldest Event Reported First)

9.2 Configuring Automatic Server Restart (ASR)

You can configure the LOMlite2 device to restart the server automatically after a lockup. The LOMlite2 device has a watchdog process that, by default, expects to be patted every 10,000 milliseconds. If it does not receive a pat after 40,000 milliseconds (default), the LOMlite2 device turns the front and back fault LEDs on and generates a LOM event report. However, it does not automatically restart the system unless you have configured it to do so.

9.2.1 Configuring the LOMlite2 Watchdog to Restart the System After a Lockup

- **Add the `-R` option to the `priocntl` command in the script file called `/etc/rc2.d/S25lom`.**

  This is the script that runs the LOMlite2 watchdog process:

```
# priocntl -e -c RT lom -W on,40000,10000 -R on
```

  When you have done this, the LOMlite2 device will restart the server whenever the watchdog times out.

  You can turn the option on and off from the Solaris command prompt. For more information, see Section 9.2.3, “Setting the `Hardware Reset` Option From a Script or Command (`lom -R on`)” on page 9-10.

  However, as long as you have the `-R on` option set in `/etc/rc2.d/S25lom`, the Hardware Reset option will always be enabled when you start the system.

9.2.2 Enabling the LOMlite2 Watchdog Process From Your Own Script or Command (`lom -W on`)

Note – You do not normally need to do this. If you want to configure the LOMlite2 device to perform an automatic server restart after a lockup, see Section 9.2.1, "Configuring the LOMlite2 Watchdog to Restart the System After a Lockup" on page 9-8. Only use the `lom -W on` option on the command line or in another script file if for some reason you have removed the `/etc/rc2.d/S25lom` script.

The LOMlite2 device's watchdog process is enabled by default and, if you type `lom -W on` while this watchdog process is already running, the command will have no effect. You can only run this command if you have removed the `/etc/rc2.d/S25lom` script file or you have turned the watchdog off manually by using the `lom -W off` command.

The default `priocntl` command is as follows:

```
priocntl -e -c RT lom -W on,40000,10000
```

The number 40,000 on this command line indicates the watchdog's timeout period in milliseconds; you can specify a different number. The number 10,000 indicates its pat interval in milliseconds; again, you can specify a different number.

Note – Do not specify a watchdog timeout period of less than 5,000 milliseconds. If you do, you might find that the watchdog times out frequently even though the server has not locked up. And this could cause your server to panic unnecessarily.

If the watchdog process times out (in other words, if it does not receive its expected pat), the LOMlite2 device will turn on the server's front and back Fault LEDs and generate a LOM event report. However, it will not automatically reset the system. To make it reset the system, you must use the `-R` option (see Section 9.2.3, "Setting the `Hardware Reset` Option From a Script or Command (`lom -R on`)" on page 9-10.)

- **If you have no LOMlite2 watchdog process running already and you want the process to run, type the following, or add it to another script file:**

```
# lom -W on,40000,10000
```

- **If you want the LOMlite2 device to perform an automatic server restart after a lockup, you must include the `-R on` option in the command, as follows:**

```
# lom -W on,40000,10000 -R on
```

Note – Unless you include the `lom -W on` and `-R on` options in a script file, you will need to execute the `lom` command every time you reboot the system. (That is, if you want to use the automatic server restart facility.) Otherwise the watchdog will not run, and the server will not reset after a lockup.

9.2.3 Setting the `Hardware Reset` Option From a Script or Command (`lom -R on`)

To make the LOMlite2 device's watchdog process trigger an automatic server restart (ASR) after a lockup, add the `-R on` option to the command in your `/etc/rc2.d/S25lom` script file. This is the script that runs the watchdog. For full instructions about how to do this, see Section 9.2.1, "Configuring the LOMlite2 Watchdog to Restart the System After a Lockup" on page 9-8.

- **However, if for any reason you are not using the script file provided with your system (`/etc/rc2.d/S25lom`) but have instead enabled the watchdog from the command line or from another script file, you can turn the `Hardware reset` option on by typing the following at the command line:**

```
# lom -R on
```

- **To turn the `Hardware reset` option off from the command line,type:**

```
# lom -R off
```

9.3 Other LOM Tasks You Can Perform From Solaris

This section tells you how to turn the alarms and Fault LEDs on and off by using the `lom` command. It also tells you how to change the first character of the lom escape sequence, how to stop the LOMlite2 device from sending reports to the Serial A/LOM port, how to remove driver protection from the device driver, how to make the LOMlite2 interface backward compatible, and how to upgrade the firmware on the LOMlite2 device.

9.3.1 Turning Alarms On and Off (`lom -A`)

There are three alarms associated with the LOMlite2 device. They are associated with no specific conditions but are software flags available to be set by your own processes or from the command line.

- **To turn an alarm on from the command line, type:**

```
# lom -A on,n
```

where *n* is the number of the alarm you want to set: 1, 2, or 3.

- **To turn the alarm off again, type:**

```
# lom -A off,n
```

where *n* is the number of the alarm you want to turn off: 1, 2, or 3.

9.3.2 Turning the Fault LED On and Off (`lom -F`)

- **To turn the Fault LED on, type:**

```
# lom -F on
```

- **To turn the Fault LED off again, type:**

```
# lom -F off
```

9.3.3 Changing the First Character of the Sequence for Escaping to the lom> Prompt (lom -X)

The character sequence #. (hash, dot) enables you to escape from Solaris to the lom> prompt.

- **To change the first character of this default lom escape sequence, type:**

```
# lom -X x
```

where *x* is the alpha-numeric character you want to use instead of #.

Note – If you are at the console and you type the first character of the LOM escape sequence (by default this is #), there is a second's delay before the character appears on the screen. This is because the system waits to see if you type the dot (.) character next. And, if you do, the lom> prompt appears. If you do not, the # character appears. If you want to change the LOM escape character, use a character that is not included in many console commands. Otherwise the delay between when you strike the key and when the character appears on the screen may affect your typing at the console.

9.3.4 Stopping the LOMlite2 from Sending Reports to the Serial A/LOM Port (lom -E off)

LOMlite2 event reports can interfere with information you are attempting to send or receive on the Serial A/LOM port.

- **To stop the LOMlite2 device from sending reports to the Serial A/LOM port, type:**

```
# lom -E off
```

By default, the Serial A/LOM port is shared by the console and the LOMlite2 device. The LOMlite2 interrupts the console whenever it needs to send an event report. To prevent the LOMlite2 from interrupting the console on Serial A/LOM, turn serial event reporting off.

- **To turn serial event reporting on again, type:**

```
# lom -E on
```

If you want to dedicate the Serial A/LOM port to the LOMlite2 device and to use the Serial B port as your console port, see Section 8.6, "Separating the LOMlite2 From the Console on the Serial A/LOM Port" on page 8-19 (Chapter 8).

9.3.5 Removing Driver Protection From the LOMlite2 Driver (`lom -U`)

By default, the LOMlite2 driver cannot be unloaded. This is because the driver is required by the watchdog process. If you unload the driver and you have configured the system to restart when the watchdog times out, the watchdog will time out causing a system reset. For information about configuring the system to restart automatically after a lock-up, see Section 9.2, "Configuring Automatic Server Restart (ASR)" on page 9-8).

To remove driver protection from the LOMlite2 driver so that you can unload the driver:

1. **Turn the watchdog process off by typing:**

```
# lom -W off
```

2. **Unload the driver by typing:**

```
# lom -U
```

9.3.6 Making the LOMlite2 Interface Backward Compatible (`lom -B`)

If you have scripts written to the LOMlite interface on the Netra t1 Model 100/105 server or the Netra t 1400/1405 server and you want to use these scripts on the Netra T1 AC200 or DC200 server, you can add file system links that make this possible. To do so, simply type:

```
# lom -B
```

When you have done this, you will be able to use the old scripts on the new system.

9.3.7 Upgrading the LOMlite2 Firmware (`lom -G` *filename*)

To upgrade the firmware on the LOMlite2 device, obtain the new firmware package from SunSolve[SM] or from your local Sun Sales representative, and type the following:

```
# lom -G filename
```

where *filename* is the name of the file containing the new firmware.

Note – LOMlite2 firmware upgrades will be released as patches and will include detailed installation instructions.

PART III Troubleshooting and Maintenance

CHAPTER 10

Troubleshooting

This chapter lists some problems that you might encounter when setting up or using the Netra T1 server and tells you how to solve them. It also explains how to interpret the LEDs on the server's front and back panels.

The chapter contains the following sections:

10.1 Solutions to Problems You Might Encounter

Problem: Cannot Set Up a Console Connection to the Server

The Netra t1 server's serial port pinouts are listed in Chapter 6. Check that they are correct for the device (that is, the terminal or terminal server) that you are connecting to the Netra t1.

Problem: Cannot Display the `lom>` *Prompt Using the "#." Escape Sequence*

Check whether the first character of the "#." escape sequence has been changed (this is a user-configurable value). To check the current value, type the following from the Solaris prompt:

```
# lom -c
```

The information that this command displays includes the "serial escape character". If this is not "#", then type the character that is currently specified and follow it immediately with a dot.

Problem: Cannot Turn Serial Event Reporting On and Off
Problem: Cannot Receive Clearly Formatted LOMlite2 Output
Problem: Cannot Reprogram the LOMlite2 Device

If you have reinstalled the Solaris 8 operating environment onto your server and have also reinstalled the LOMlite2 software from the support CD supplied with Solaris 8 (entitled *Software Supplement for the Solaris 8 Operating Environment*), you need to apply patch 110208-xx. This patch is available on SunSolve[SM].

Problem: Cannot Display the `lom>` *Prompt or the Solaris Prompt*
Problem: Receiving Corrupted Text at the Console on Serial A/LOM
Problem: Cannot Access the Server From the Console

First try resetting the LOMlite2 device. To do this, connect remotely (using the `rlogin` *host name* or `telnet` *host name* command), and type:

```
# lom -G resetlom
```

If resetting the LOMlite2 device does not fix the problem, reprogram the LOMlite2 device by using the firmware supplied in patch 110208-xx. Apply the patch first, then download the new firmware by typing:

```
# lom -G filename
```

where *filename* is the name of the file containing the new firmware.

Problem: OpenBoot PROM Initialization Aborts and the Server Will Not Boot

If the OpenBoot PROM initialization sequence aborts and the message 'NO IDPROM' is displayed when the operating system is attempting to read the serial number and MAC address, then you are attempting to boot without a valid System Configuration Card inserted. The System Configuration Card contains the serial number, MAC address, and NVRAM settings for the Netra T1 server.

Problem: Card Not Recognised During Installation or Bootup

The Netra T1 AC200 and DC200 servers are fitted with a System Configuration Card. If the card moves during transit then the server will not be able to read the card, and as a result will not boot.

If the System Configuration Card has moved during transit, follow the steps below to make sure it is seated in the server correctly.

Note – The presence of the tie-wrap does not necessarily mean that the card is correctly located in the reader.

---

1. **Remove the front bezel by pushing on the clips at both ends until they release.**

2. **Press the System Configuration Card in as far as it will go.**

3. **Replace the bezel and continue installation.**

   For more information about the System Configuration Card, see Section 11.1, “Replacing a Server” on page 11-2.

10.2 Interpreting the Front and Back Panel LEDs

The Netra T1 server contains two front panel LEDs:

- **A Power LED** (see FIGURE 10-1)
  This LED is lit when the server is powered on. It is unlit when the server is in standby mode.
- **A Fault LED** (see FIGURE 10-1)
  When the Fault LED is lit (but not flashing), this indicates a problem that is not fatal to the server but that you should attend to as soon as possible. Circumstances that cause the Fault LED to light up include the following:
  - The temperature inside the server’s enclosure is unusually high.
  - The voltage on one of the server’s output supply rails is unusually high.
  - One of the server’s internal circuit breakers has tripped, indicating a problem with a device connected to the SCSI or USB ports.
  - The System Configuration Card, containing the server’s serial number, MAC address and NVRAM settings, has been removed.
  - One of the DC power inlets has failed.
  - The LOMlite2 watchdog has timed out, indicating that the server has locked up. You can configure the server to restart automatically after a lockup (see Section 9.2, “Configuring Automatic Server Restart (ASR)” on page 9-8).

  When the Fault LED flashes on and off, a problem has occurred that is fatal to the server. Circumstances that cause the Fault LED to flash include the following:
  - The speed of one of the fans inside the server is too low.
  - The temperature inside the server’s enclosure is too high. (By default, this causes the server to shut down. For information about configuring the server not to shut down in this condition, see Appendix A.)
  - The voltage on one of the server’s output supply rails is too high. (By default, this causes the server to shut down. For information about configuring the server not to shut down in this condition, see Appendix A.)

- The temperature inside the CPU is too high. (This causes the server to shut down.)

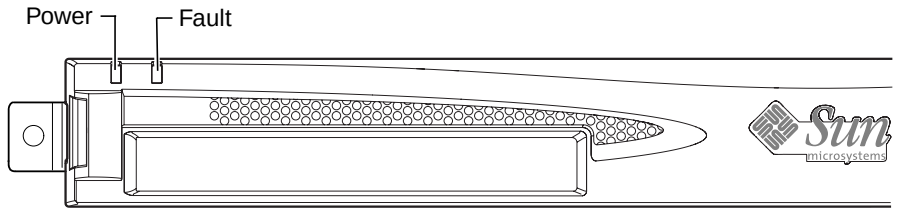


FIGURE 10-1 Front Panel Power and Fault LEDs

The Netra T1 contains four rear panel LEDs (see FIGURE 10-2):

- **A Power LED**
  This replicates the Power LED on the front panel.
- **A Fault LED**
  This replicates the Fault LED on the front panel.
- **A Link LED for each Ethernet port**
  The light comes on to indicate that a connection has been established to the hub.

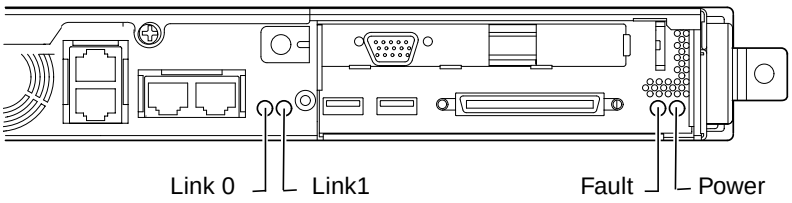


FIGURE 10-2 Back Panel Ethernet Link, Fault and Power LEDs

CHAPTER 11

Replacing a Server or Replacing Individual Components

If you ever need to replace an entire Netra T1 server, this chapter describes how to transfer the old server's configuration information (including its MAC address, serial number and NVRAM settings) to a new server by using the old server's configuration card.

The chapter also lists the field replaceable units (FRUs) that you might need to order for the Netra T1 server during its life-time.

Finally, this chapter describes how to install the main FRUs, for example, the system board, power supply, and fans.

The chapter contains the following sections:

11.1 Replacing a Server

The Netra T1 AC200 and DC200 servers contain a memory card (accessible by removing the unit's front bezel) called the System Configuration Card. This card contains the values for the system's IDPROM (Host ID, MAC address, date and Cyclic Redundancy Check value) and NVRAM variables. It is designed to be removable so that, if you ever need to replace an entire server, you can transfer the host ID and configuration data onto the new server. This makes the replacement of the server transparent to your network.

To transfer the configuration to a new server:

1. **Power down both the old and the new Netra T1 servers.**
2. **Remove the front bezel from both the old and the new servers.**
3. **Remove the system configuration card from the old server and insert it into the new one.**
4. **Replace the front bezel on the new server.**

   You can secure the new system configuration card by fixing a tie-wrap through the hole in the front mounting of the memory card reader (see FIGURE 11-1).

Note – If you swap the System Configuration Card into a new Netra T1 server, transfer the hard disk(s) from the old server into the corresponding bay(s) on the new server. Otherwise, when you boot the new server, the operating system will prompt you for some of the information that you first configured the old system with, including the language, locale, and root password.

Caution – Never remove the System Configuration Card when the server is booting or running the Solaris operating environment. Power the server off or down to standby mode before removing or inserting the System Configuration Card.

Caution – Do not handle the System Configuration Card unless you need to transfer it to another system. If you need to handle it for this reason, avoid contact with the gold terminals on the underside of the card.

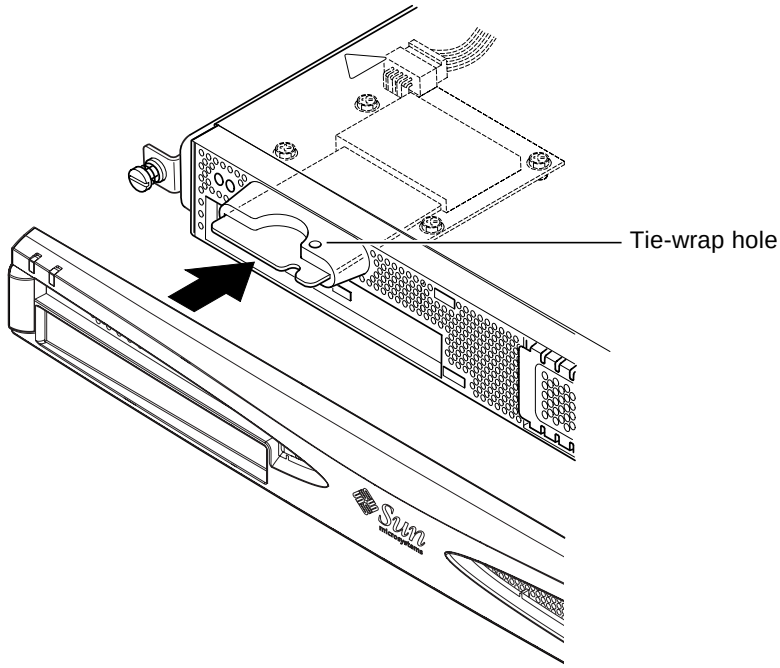


FIGURE 11-1 Replacing the System Configuration Card

11.2 Field Replaceable Units

Note – The procedures in this chapter for replacing faulty components are for the attention of qualified service engineers only. If you need to replace a component, contact your local Sun sales representative who will put you in touch with the Sun Enterprise Service branch for your area. You can then arrange to return the system to Sun for repair under the terms of your warranty. Or alternatively you can order the components and have them installed by your own qualified service engineers.

TABLE 11-1 lists the field replaceable units (FRUs) available for the Netra T1 server. FRUs are hardware components that are normally installed by Sun engineers and not by users.

TABLE 11-1 FRUs Available for the Netra T1 AC200 and DC200 Servers

Component	Part Number
Internal CD-ROM (including cabling and paddle board)	F370-4278
18 Gbyte hard disk drive	F540-4177
256 Mbyte DIMM	F370-4237
512 Mbyte DIMM	F370-4281
System board (including CPU and fan)	F375-0132
Memory card reader (for the system configuration card)	F370-4290
AC power supply	F300-1488
DC power supply	F300-1489
Rear fan subassembly (containing Fans 1 and 2)	F370-4284
System configuration card	F370-4285
Fan 3 (CPU fan)	F370-4352
NVRAM chip (including carrier)	F100-6889

Note – Except for the 18 Gbyte hard disk, you can only use the FRUs in this list in Netra T1 AC200 and DC200 servers. They are not for use in the earlier Netra t1 Model 100 or Model 105 servers.

For instructions about how to install DIMMs, see Chapter 4.

11.3 Replacing the Memory Card Reader for the System Configuration Card

Caution – The procedure below is for the attention of qualified service engineers only. Before touching or replacing any components inside the Netra T1 server, disconnect all cables and follow the instructions in Section 4.2, “Opening the Netra T1 Server” on page 4-4 which tell you how to open the system. Always place the server on a grounded ESD pad and wear a properly grounded antistatic wrist strap.

1. **Open the Netra T1 server by following the instructions in Chapter 4 (“Opening the Netra T1 Server” on page 4-4).**

   Make sure all external cables are disconnected and pay particular attention to the information about how to prevent electrostatic discharge from your body from damaging the components of the server.

2. **With the server open and seated on top of an ESD pad, and with a properly grounded antistatic wrist strap on your wrist, remove the power cable from the connector on the memory card reader board (see** FIGURE 11-2**).**

3. **Unscrew the screws fixing the memory card reader board into the top of the CD-ROM drive bay (see** FIGURE 11-2**).**

   Do not discard the screws.

4. **Remove the old system configuration card reader.**

5. **Position the new memory card reader board by lining up its fixing holes with the holes in the top of the CD-ROM drive enclosure.**

6. **Insert and tighten the fixing screws.**

7. **Attach the power cable to the memory card reader board.**

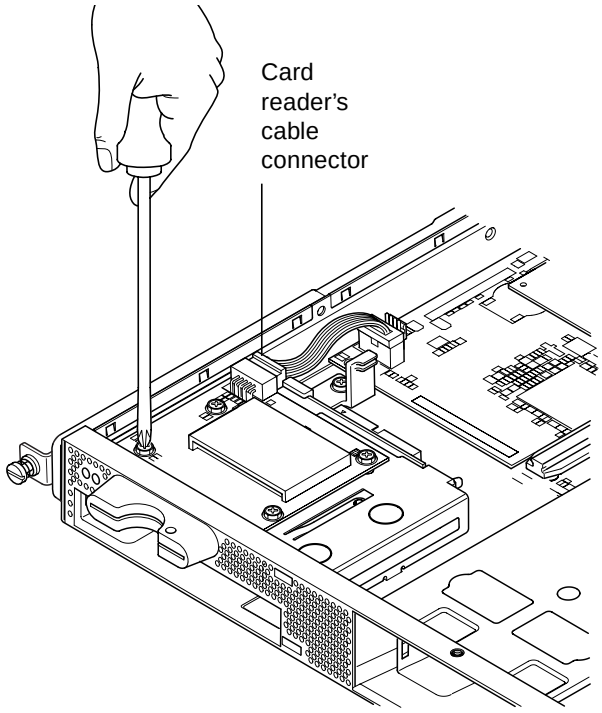


FIGURE 11-2 Removing the System Configuration Card Reader

11.4 Replacing the CD-ROM Drive, Cable, and Paddleboard

Caution – The procedure below is for the attention of qualified service engineers only. Before touching or replacing any components inside the Netra T1 server, disconnect all cables and follow the instructions in Section 4.2, "Opening the Netra T1 Server" on page 4-4 which tell you how to open the server. Always place the server on a grounded ESD pad and wear a properly grounded antistatic wrist strap.

1. **Open the Netra T1 server by following the instructions in Chapter 4 ("Opening the Netra T1 Server" on page 4-4).**

   Make sure all external cables are disconnected and pay particular attention to the information about how to prevent electro-static discharge from your body from damaging the components of the server.

2. **With the system open and seated on top of an ESD pad, and with a properly grounded antistatic wrist strap on your wrist, do the following:**

   a. **Remove the old CD-ROM drive from the CD-ROM enclosure (see Section 4.4.2, "Removing a CD-ROM Drive" on page 4-9).**

   b. **If you have a full-length PCI card installed, remove it (see Section 4.6.2, "Removing a PCI Card" on page 4-14).**

3. **Disconnect the memory card reader board's power cable from the system board (see** FIGURE 11-3**).**

4. **From the chassis base, unscrew the plastic bracket that secures the paddleboard (and that also provides support for a full-length PCI card).**

5. **Lift the paddleboard (with its ribbon cable) out of its guides at the back of the CD-ROM enclosure and discard it.**

6. **Connect the new IDE ribbon cable to the system board with the cable extending away from the system board and towards the CD-ROM drive (see** FIGURE 11-3**).**

7. **Now connect the ribbon cable to the connector on the paddleboard.**

8. **Insert the paddleboard into the guides at the back of the CD-ROM drive enclosure.**

   Do not replace the plastic bracket yet.

9. **Reconnect the memory card reader board's power cable to its connector on the system board.**

10. **Insert the new CD-ROM drive (see Section 4.4.1, “Installing a CD-ROM Drive” on page 4-7).**

11. **Now replace the plastic bracket that secures the paddleboard, and screw it into the chassis base (see** FIGURE 11-3**).**

12. **Replace the full-length PCI card if you removed it earlier (see Section 4.6.1, “Installing a PCI Card” on page 4-11).**

13. **Replace the system cover and tighten the captive screw (see** FIGURE 4-9 **in Section 4.7, “Replacing the Server’s Top Cover” on page 4-15).**

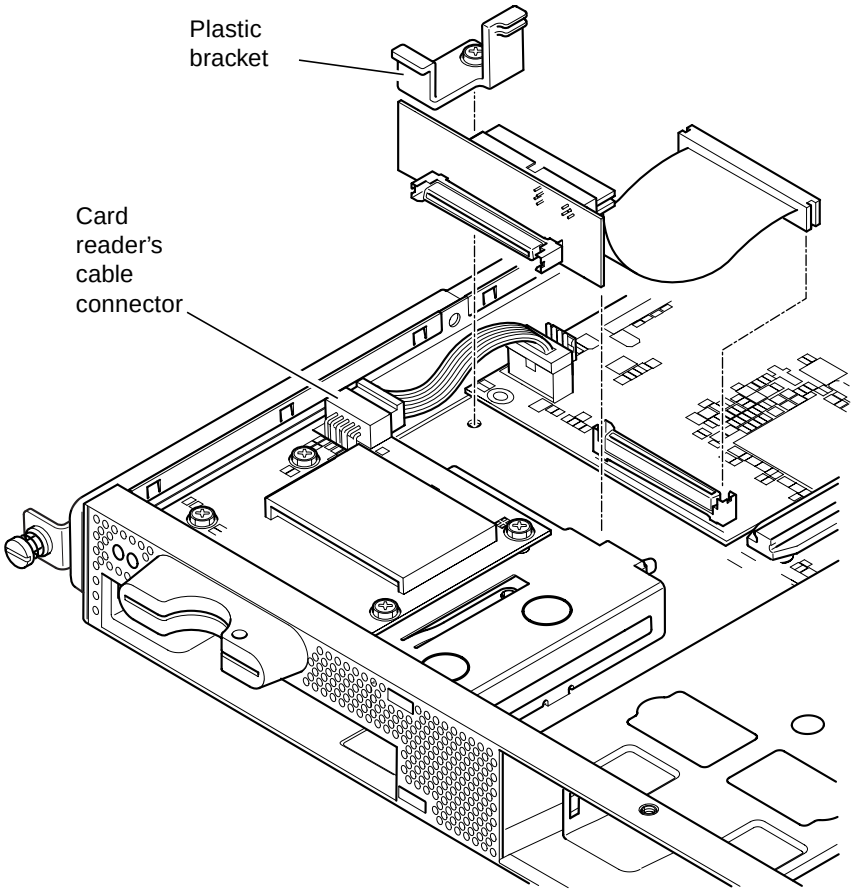


FIGURE 11-3 Replacing the CD-ROM Paddleboard

11.5 Replacing the NVRAM Chip

Caution – The procedure below is for the attention of qualified service engineers only. Before touching or replacing any components inside the Netra T1 server, disconnect all cables and follow the instructions in Section 4.2, “Opening the Netra T1 Server” on page 4-4 which tell you how to open the system. Always place the system on a grounded ESD pad and wear a properly grounded antistatic wrist strap.

The NVRAM chip on the Netra T1 server’s system board contains a lithium battery that in time may need replacing. If you see the following message on your console when you boot the server:

```
Warning -- Real-Time-Clock (and NVRAM) battery is low
```

order a new NVRAM chip (part number: F100-6889) from your local Sun sales representative. Take note of the caution below.

Caution – There is a danger of explosion if the NVRAM chip is incorrectly replaced. Replace it only with a component of the same type as the used one (part number F100-6889). To replace the chip, follow any instructions supplied with the new component. Dispose of the used component according to the manufacturer’s instructions.

The NVRAM chip is located in a carrier between the rear fan subassembly and the DIMM sockets on the system board (see FIGURE 11-4). To replace it:

1. **Make a note of the current settings of the environment parameters** `diag-switch?` **and** `diag-level`**. You will need these values to carry out Step 5.**

   To check the setting for `diag-switch?`, type:

   ```
   ok printenv diag-switch?
   ```

   To check the setting for `diag-level`, type:

   ```
   ok printenv diag-level
   ```

2. **Open the Netra T1 server by following the instructions in Section 4.2, “Opening the Netra T1 Server” on page 4-4).**

   Make sure all external cables are disconnected and pay particular attention to the information about how to prevent electrostatic discharge from your body from damaging the components of the server.

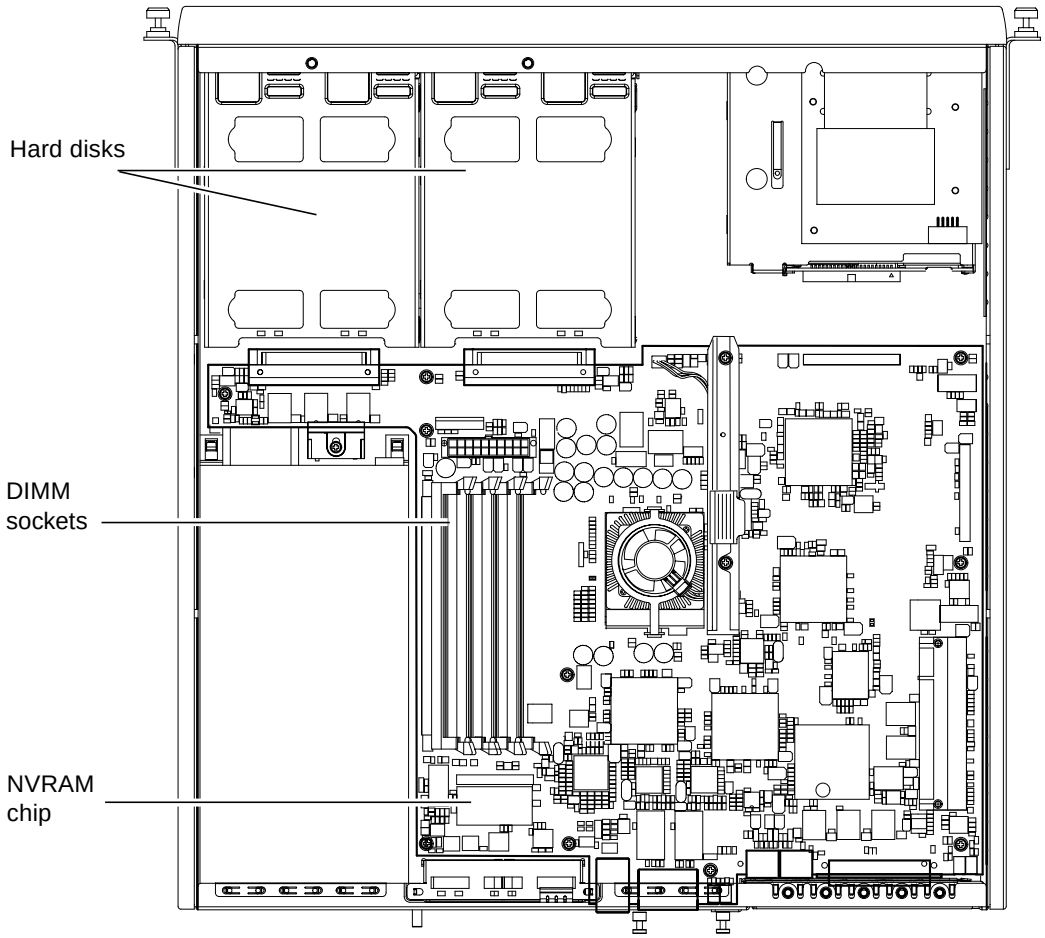


FIGURE 11-4 The Location of the NVRAM Chip

3. **Carefully take the NVRAM chip carrier lengthwise between your thumb and forefinger and pull it out of its socket (see** FIGURE 11-5**).**

4. **Holding the new NVRAM chip carrier in a similar fashion between your thumb and forefinger, position it over the socket and press firmly until the connectors engage.**

5. **When you have reconnected the cables and powered the server on, type the following at the** ok **prompt, using the values you noted in Step 1:**

```
ok reset-all
ok setenv diag-switch? noted_value
ok setenv diag-level noted_value
ok reset-all
```

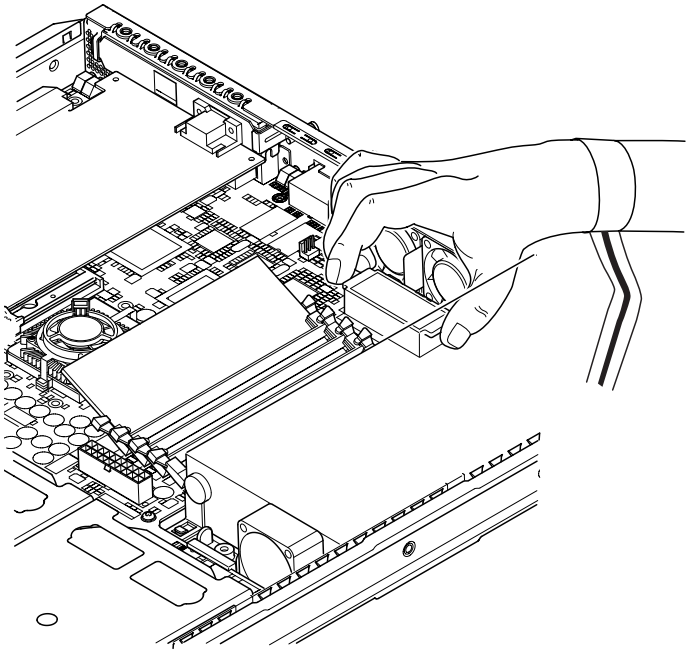


FIGURE 11-5 Replacing the NVRAM Chip

6. **Replace the system cover and tighten the captive screw (see** FIGURE 4-9 **in Section 4.7, “Replacing the Server’s Top Cover” on page 4-15).**

11.6 Replacing the System Board

Caution – The procedure below is for the attention of qualified service engineers only. Before touching or replacing any components inside the Netra T1 server, disconnect all cables and follow the instructions in Section 4.2, “Opening the Netra T1 Server” on page 4-4 which tell you how to open the server. Always place the server on a grounded ESD pad and wear a properly grounded antistatic wrist strap.

To perform the steps in this section, you need a 5mm nut-spinner to remove and replace the SCSI pillars on the rear of the chassis.

11.6.1 Removing the Old System Board

1. **Open the Netra T1 server by following the instructions in Section 4.2, “Opening the Netra T1 Server” on page 4-4.**

   Make sure all external cables are disconnected and pay particular attention to the information about how to prevent electro-static discharge from your body from damaging the components of the server.

2. **With the server open and seated on top of an ESD pad, and with a properly grounded antistatic wrist strap on your wrist, do the following:**

   a. **Disconnect all power supply cables from the system board.**

   b. **Disconnect the CD-ROM ribbon cable from the system board.**

   c. **Disconnect the memory card reader cable from the system board.**

3. **Remove the server’s front bezel.**

4. **Remove the hard disk drives in the server (see Section 4.1, “Installing and Removing Hot-Pluggable Hard Disk Drives” on page 4-2).**

5. **Remove the PCI card if you have one installed (see Section 4.6.2, “Removing a PCI Card” on page 4-14).**

6. **Remove the DIMMs from their slots (see Section 4.5, “Installing and Removing Memory” on page 4-9).**

7. **Remove the rear fan subassembly (see Section 11.8, “Replacing the Rear Fan Subassembly (Fans 1 and 2)” on page 11-17).**

8. **Unscrew the system board protection/support block (between the PSU and hard disk drive bay 1) and slide it back as far as the PSU (see** FIGURE 11-6**).**
9. **Unscrew and remove the PCI card slide retainer (see** FIGURE 11-6**).**
10. **Unscrew all system board fixing screws (see** FIGURE 11-6**).**
11. **Unscrew the SCSI pillars on the back panel (see** FIGURE 11-6**).**
12. **Slide the system board towards the front of the chassis so that the SCSI, Ethernet and Serial connectors come free from the chassis.**
13. **Carefully lift out the system board.**

11.6.2 Installing the New System Board

1. **Insert the new system board at an angle, and locate it so that the SCSI, Ethernet, and serial connectors are firmly positioned in their slots at the rear of the chassis.**
2. **Now position the system board on the alignment stand-off between the PSU fan and hard disk drive bay 1 (see** FIGURE 11-6**).**
3. **Insert the SCSI pillars (see** FIGURE 11-6**) and replace their screws loosely.**
4. **Insert all system board fixing screws loosely (see** FIGURE 11-6**). Do not put any screws in the holes for the PCI card slide retainer.**
5. **Tighten up the SCSI pillars, then tighten all the other screws.**
6. **Replace the PCI card slide retainer.**
7. **Replace the DIMMs that you removed from the old system board (see** Section 4.5, “Installing and Removing Memory” on page 4-9**).**
8. **Replace the rear fan assembly (see Section 11.8, “Replacing the Rear Fan Subassembly (Fans 1 and 2)” on page 11-17).**
9. **Replace the PCI card if you removed it (see** Section 4.6.1, “Installing a PCI Card” on page 4-11**).**
10. **Slide the system board protection/support block forward until it engages with the the system board (see** FIGURE 11-6**).**

    Tighten the screw to fix the block to the chassis.
11. **Reconnect all system board cables.**
12. **Replace the server’s cover and tighten the captive screw (see** FIGURE 4-9 **in Section 4.7, “Replacing the Server’s Top Cover” on page 4-15).**
13. **Replace the front bezel.**

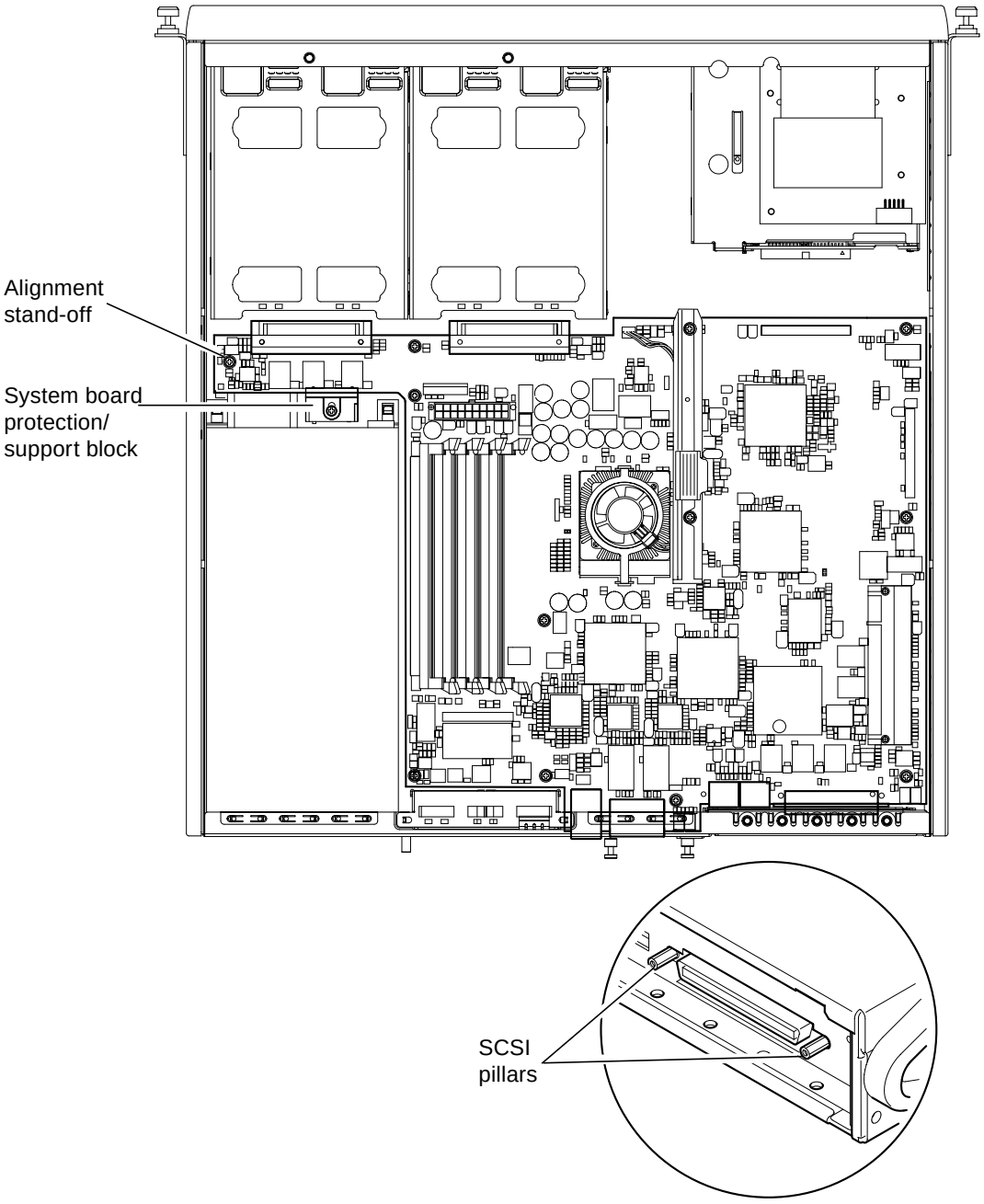


FIGURE 11-6 The System Board

11.7 Replacing the Power Supply Unit

Caution – The procedure below is for the attention of qualified service engineers only. Before touching or replacing any components inside the Netra T1 server, disconnect all cables and follow the instructions in Section 4.2, “Opening the Netra T1 Server” on page 4-4 which tell you how to open the server. Always place the server on a grounded ESD pad and wear a properly grounded antistatic wrist strap.

1. **Open the Netra T1 server by following the instructions in Section 4.2, “Opening the Netra T1 Server” on page 4-4.**

   Make sure all external cables are disconnected and pay particular attention to the information about how to prevent electrostatic discharge from your body from damaging the components of the server.

2. **With the server open and seated on top of a grounded ESD pad, and with a properly grounded antistatic wrist strap on your wrist, disconnect the power supply cables from the system board.**

3. **Undo the two rear fixing screws (see** FIGURE 11-7**).**

4. **Move the power supply unit (PSU) towards the front of the system to release it from the location tabs in the base.**

   Lift it away from the chassis.

5. **Lift the new PSU over the location tabs and slide it backwards into place (see** FIGURE 11-7**).**

6. **Secure the two rear fixing screws.**

7. **Connect the power supply cables to the connectors on the system board.**

8. **Replace the server’s cover and tighten the captive screw (see** FIGURE 4-9 **in Section 4.7, “Replacing the Server’s Top Cover” on page 4-15).**

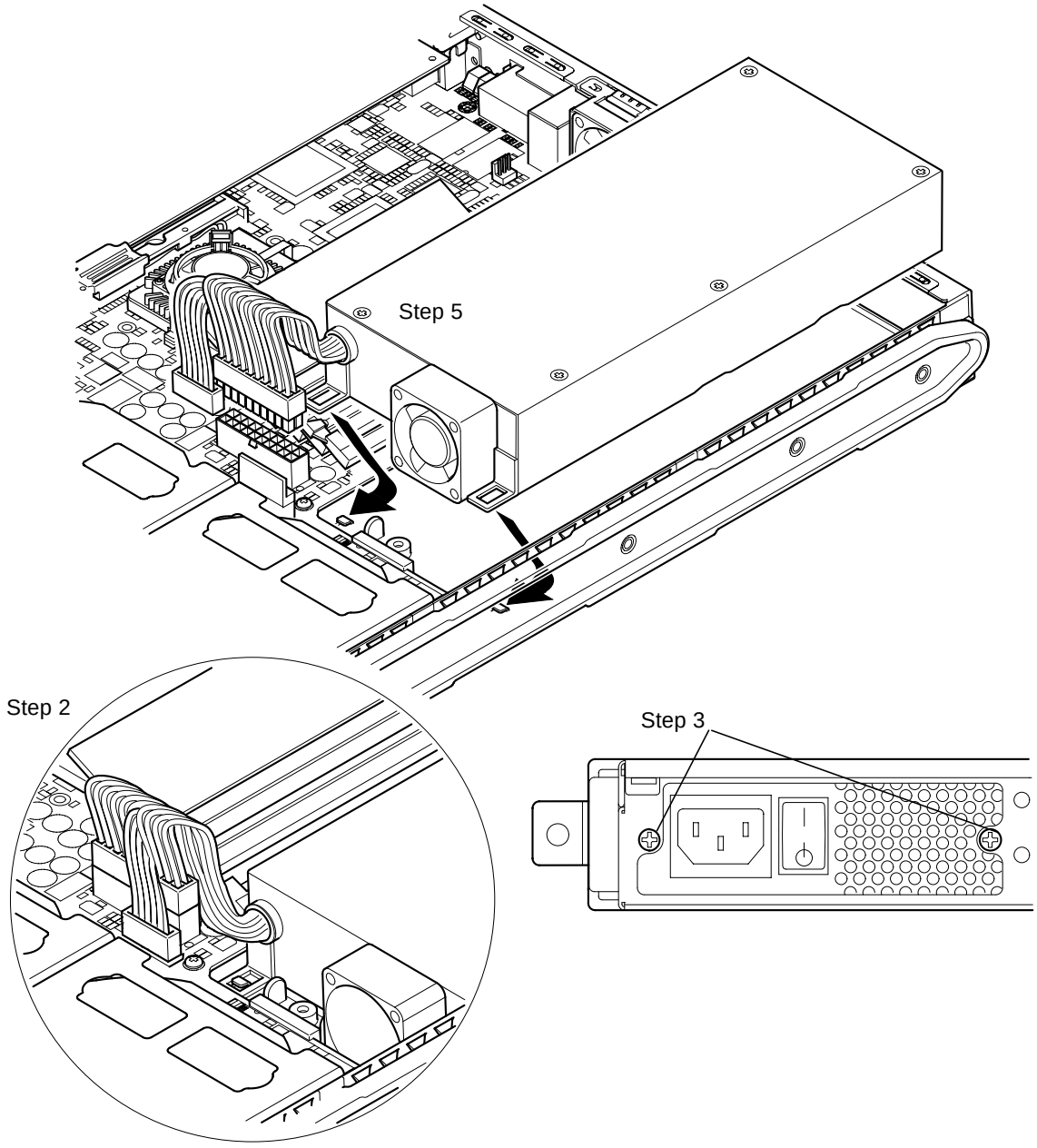


FIGURE 11-7 Replacing the Power Supply Unit

11.8 Replacing the Rear Fan Subassembly (Fans 1 and 2)

Caution – The procedure below is for the attention of qualified service engineers only. Before touching or replacing any components inside the Netra T1 server, disconnect all cables and follow the instructions in Section 4.2, “Opening the Netra T1 Server” on page 4-4 which tell you how to open the server. Always place the server on a grounded ESD pad and wear a properly grounded antistatic wrist strap.

1. **Open the Netra T1 server by following the instructions in Section 4.2, “Opening the Netra T1 Server” on page 4-4.**

   Make sure you disconnect all external cables and pay particular attention to the information about how to prevent electro-static discharge from your body from damaging the components of the server.

2. **With the server open and seated on top of an ESD pad, and with a properly grounded antistatic wrist strap on your wrist, disconnect the old subassembly’s power cables from the system board (see** FIGURE 11-8**).**

3. **Lift out the old subassembly and discard it.**

4. **Insert the new fan subassembly into its bay in the chassis.**

5. **Connect the fan cables to the system board (see** FIGURE 11-8**).**

6. **Replace the server’s cover and tighten the captive screw (see** FIGURE 4-9 **in Section 4.7, “Replacing the Server’s Top Cover” on page 4-15).**

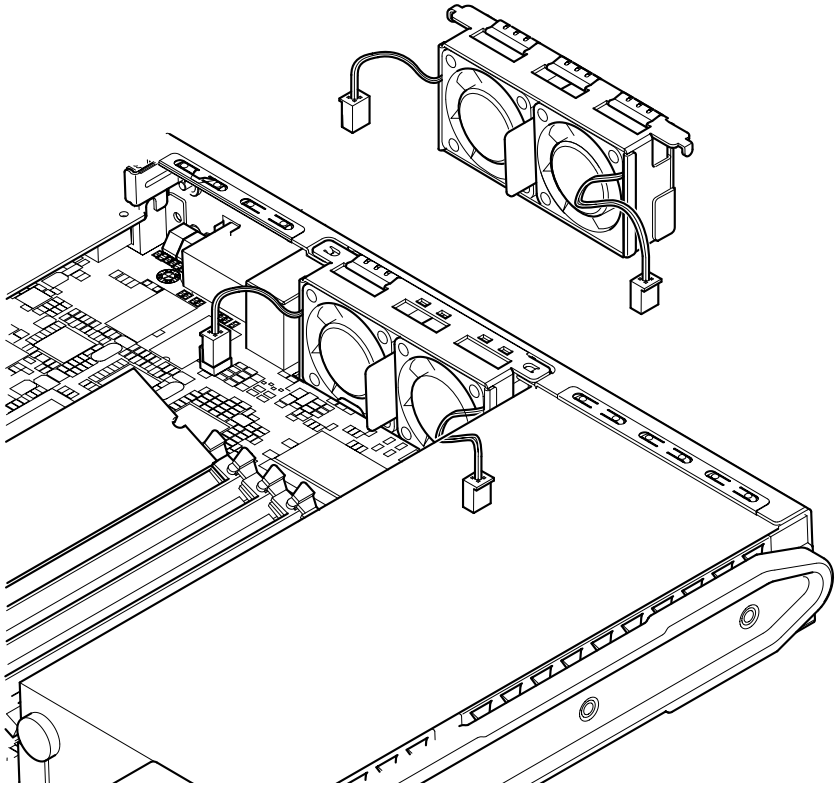


FIGURE 11-8 Replacing the Rear Fan Subassembly (Fans 1 and 2)

11.9 Replacing Fan 3 (CPU Fan)

Caution – The procedure below is for the attention of qualified service engineers only. Before touching or replacing any components inside the Netra T1 server, disconnect all cables and follow the instructions in Section 4.2, "Opening the Netra T1 Server" on page 4-4 which tell you how to open the server. Always place the server on a grounded ESD pad and wear a properly grounded antistatic wrist strap.

1. **Open the Netra T1 server by following the instructions in Section 4.2, "Opening the Netra T1 Server" on page 4-4.**

   Make sure you disconnect all external cables and pay particular attention to the information about how to prevent electro-static discharge from your body from damaging the components of the server.

2. **With the server open and seated on top of an ESD pad, and with a properly grounded anti-static wrist strap on your wrist, disconnect the power cable for Fan 3 from the system board.**

   Fan 3 is located in the center of the system board on top of the CPU mounting (see FIGURE 11-9).

3. **Press down on the long arm of the fan's metal fastening clip (see** FIGURE 11-9**) and then, with a finger of your other hand, unhook the clip from the CPU mounting.**

   The long arm is the one that extends towards the rear of the server.

4. **Lift the fan and clip about 60^{o} until it becomes possible to release the second clip which is at the front of the CPU mounting.**

5. **With the fan unclipped from the CPU mounting, lift it away and discard it.**

6. **Put the new fan onto the CPU mounting.**

7. **Push down on the short arm of the new fan's clip until the clip hooks over the plastic lip at the front of the CPU mounting.**

8. **Push down on the long arm of the clip until the clip hooks over the plastic lip at the back of the CPU mounting.**

9. **Connect the fan power cable to its connector on the system board.**

10. **Replace the system cover and tighten the captive screw (see** FIGURE 4-9 **in Section 4.7, "Replacing the Server's Top Cover" on page 4-15).**

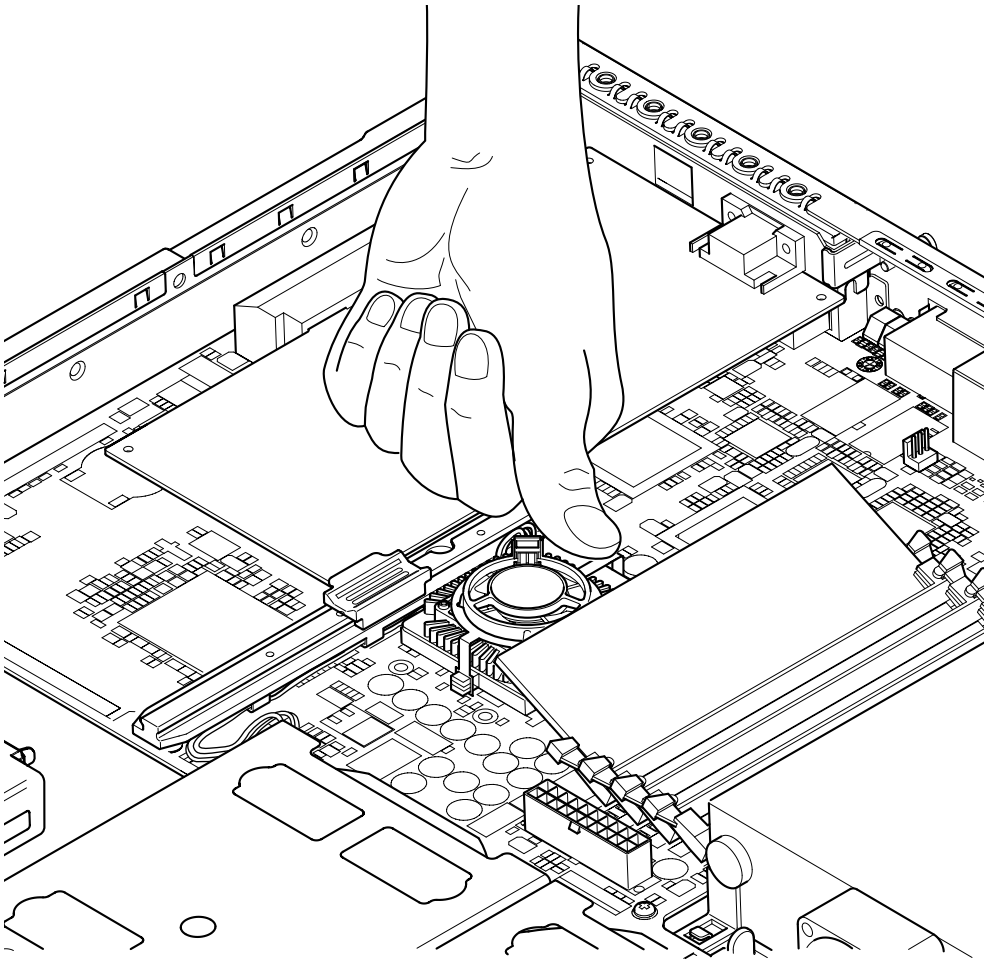


FIGURE 11-9 Pressing Down on the Long Arm of the Clip to Remove Fan 3

PART IV Appendixes

APPENDIX **A**

Configuring the LOMlite2 Device Driver

This appendix describes the driver parameters you can set in the `lom.conf` configuration file. Some of these parameters are also configurable by means of the LOMlite2-specific Solaris commands described in Chapter 9.

The appendix contains the following sections:

A.1 The LOMlite2 Device Driver

The LOMlite2 driver software included in Solaris 8 (10/00) is as follows:

- `/platform/sun4u/kernel/drv/lom` (the `lom` driver (32-bit))
- `/platform/sun4u/kernel/drv/sparcv9/lom` (the `lom` driver (64-bit))
- `/platform/sun4u/kernel/drv/lom.conf` (the `driver` configuration file)

A.2 Configuring the LOMlite2 Device Driver

The full list of parameters you can set in this file is given in TABLE A-1.

TABLE A-1 LOM Configuration File Parameters

Field	Format	Default	Effect
`wdog_reset=`	Boolean 0=FALSE 1=TRUE	0	Causes the LOMlite2 to reset the Netra T1 after a watchdog timeout. Setting this to 1 is equivalent to using the `lom -R on` command described in Chapter 9.
`wdog_alarm3=`	Boolean 0=FALSE 1=TRUE	0	Turns on software alarm 3 when the LOMlite2 watchdog times out.
`serial_events=`	0=OFF 1=ON 2=ON WHEN DRIVER NOT LOADED	2	Causes the LOMlite2 to report events over the serial connection. Setting this parameter to 0 means that no events will be reported over the serial connection. Setting it to 1 means that events will be reported over the serial connection as well as to `syslogd`; this is equivalent to `lom -E on`. If you have dedicated the Serial A/LOM port to the LOMlite2 device, you need to set this parameter to 1. It ensures that you receive all event reports at the terminal you have connected to Serial A/LOM. Finally, setting the parameter to 2 means that events will be reported over the serial connection, but only when the driver is not running (when it is running they will be reported to `syslogd`).
`disable_wdog_on_break=`	Boolean 0=FALSE 1=TRUE	1	Causes the LOMlite2 to disable its watchdog if it detects a break signal on the Serial A/LOM port.

TABLE A-1 LOM Configuration File Parameters *(Continued)*

Field	Format	Default	Effect
`disable_wdog_on_panic=`	Boolean 0=FALSE 1=TRUE	1	Causes the LOMlite2 to try to disable its watchdog after a system panic.
`faulty_voltage_shutdown=`	Boolean 0=FALSE 1=TRUE	1	Causes the LOMlite2 to attempt first to shut down the system and, if that fails, to power off the system in the event of a fatal problem with the supply rails.
`enclosure_warning_temp=`	^{o}C	67	Specifies the temperature at which the LOMlite2 generates a temperature warning.
`over_temperature_shutdown=`	Boolean 0=FALSE 1=TRUE	1	Causes the LOMlite2 to attempt to shut down the system, or to power it off, if the enclosure temperature exceeds the level specified for the `enclosure_shutdown_temp` parameter.
`enclosure_shutdown_temp=`	^{o}C	72	Specifies the enclosure temperature above which the LOMlite2 attempts to shut the system down, or, if this fails, to power the system off. (The LOMlite2 device will only attempt to do either of these if over_temperature_shutdown is set to 1.)
`serial_security=`	Boolean 0=FALSE 1=TRUE	1	Enables and disables the LOMlite2 user security facilities even if user security has been configured. You can use this parameter to set up users again if your users have forgotten their passwords.

TABLE A-1 LOM Configuration File Parameters *(Continued)*

Field	Format	Default	Effect
`serial_timeout=`	Multiples of 4 secs	0	Specifies the idle period after which the LOMlite2 device gives control of the Serial A/LOM port back to the console when it has finished sending a report. By default, there is no delay at all. If you enable the `serial_return=` option , the `serial_timeout=` option specifies the period that the LOMlite2 waits after each LOMlite command before giving control of the Serial A/LOM port back to the console. By default, there is no delay.
`serial_return=`	Boolean 0=FALSE 1=TRUE	0	Causes the LOMlite2 to return the user to the console from the `lom>` prompt after each LOMlite2 shell command. You can use this option in conjunction with the `serial_timeout=` option.
`reporting_level=`	Number between 0 and 4	3	The severity level down to which you want to see LOMlite2 event reports. 0 means no reports. 1 means Fatal event reports only. 2 means Fatal and Warning event reports. 3 means Fatal, Warning and Information event reports. 4 means Fatal, Warning, Information and User event reports. (User event reports concern the user security facility, you will not see any unless you have enabled the security facility and set up users.)

Each parameter must be on a separate line and must befollowed by an equals sign (=) and a value, without spaces. Where the format is Boolean, 1 means true and 0 means false.

APPENDIX **B**

System Board Jumper Settings

This appendix describes the functions and factory-default settings of the jumpers on the system board of the Netra T1 server.

The Netra T1 server's system board contains several jumpers.

We do not recommend you change the jumper settings. However, for reference, the factory-default settings are listed in TABLE B-1, and the locations of the jumpers are shown in FIGURE B-1 (which also illustrates the default settings).

TABLE B-1 Factory-Default Jumper Settings

Jumper	Default Setting	Description
JP7	1-2 (Fitted) 3-4 (Open) 5-6 (Fitted)	This jumper tells the system that its main processor is a 500 MHz CPU. Do not alter this setting. It is correct for the CPU on your system board.
JP9	1-2 (Fitted)	This jumper is for use by Sun engineers in the development of OBP software. Do not alter its setting.
JP13	1-2 (Open)	This is for use by Sun service engineers. It resets the LOMlite2 device. Do not alter this setting.
JP14	1-2 (Open)	This jumper is for use by Sun service engineers in the event that the LOMlite2 device on the system board is broken. The default setting is Open. If you alter this setting to Fitted, then, if the LOMlite2 is broken, you can use the On/Standby rocker switch to power the system on (or down to standby mode). Note that the power signals from the On/Standby switch pass through the LOMlite2 device, and that setting this jumper to Fitted causes the signals from the rocker switch to bypass the LOMlite2.
JP15	1-2 (Open)	This jumper is for use by Sun service engineers only. It enables and disables emergency recovery of the LOMlite2 firmware. In its default state (Open), recovery of the firmware is not possible. However, service engineers might need to follow a special procedure to recover the firmware for the LOMlite2, and this procedure involves temporarily changing the setting of JP15 to Fitted. Afterwards, it must always be returned to Open.
JP16	1-2 (Fitted)	This jumper write-enables the OBP software to allow you to update it. If you need to protect the OBP software from being over-written, change the jumper setting to Open.
JP17	1-2 (Open)	This jumper tells the CD-ROM drive (if one is installed) that it is a Master ATA device. For the CD-ROM drive currently available for the Netra T1 system, this jumper must be Open.

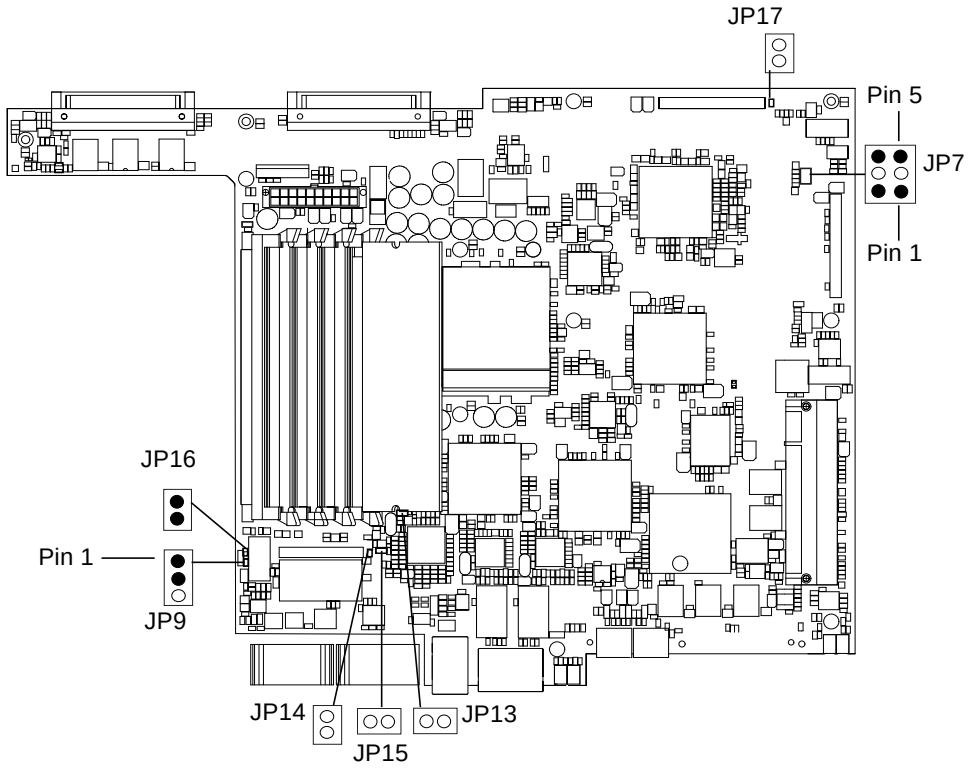


FIGURE B-1 System Board Jumper Locations and Default Settings

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