Netra™ T1
AC200 and DC200 Server
User's Guide

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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:

- Section 1.1, "Overview of the Netra T1 Server" on page 1-2
- Section 1.2, "Contents of the Ship Kit" on page 1-3
- Section 1.3, "Optional Hardware and Software" on page 1-5
- Section 1.4, "Front Panel" on page 1-6
- Section 1.5, "Back Panel" on page 1-7
- Section 1.6, "The Fans Inside the Netra T1 Server" on page 1-8
- Section 1.8, "Environmental Specifications" on page 1-9
- Section 1.9, "Choosing Between a Rack and a Cabinet" on page 1-10

1.1 Overview of the Netra T1 Server

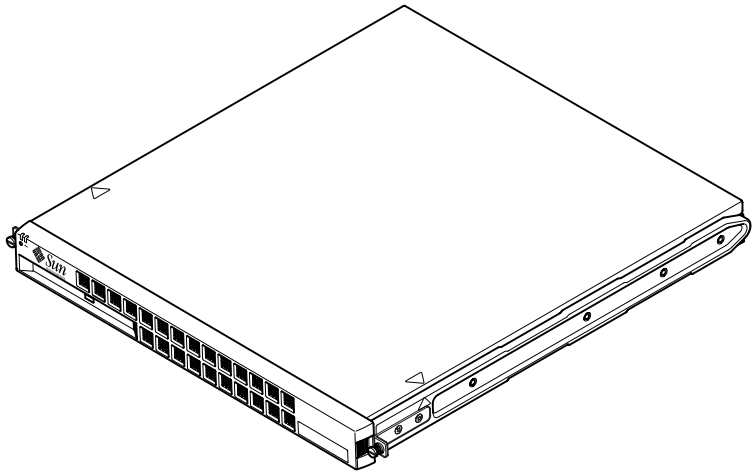

FIGURE 1-1 The Netra T1 Server

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 –48 VDC/–60 VDC 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

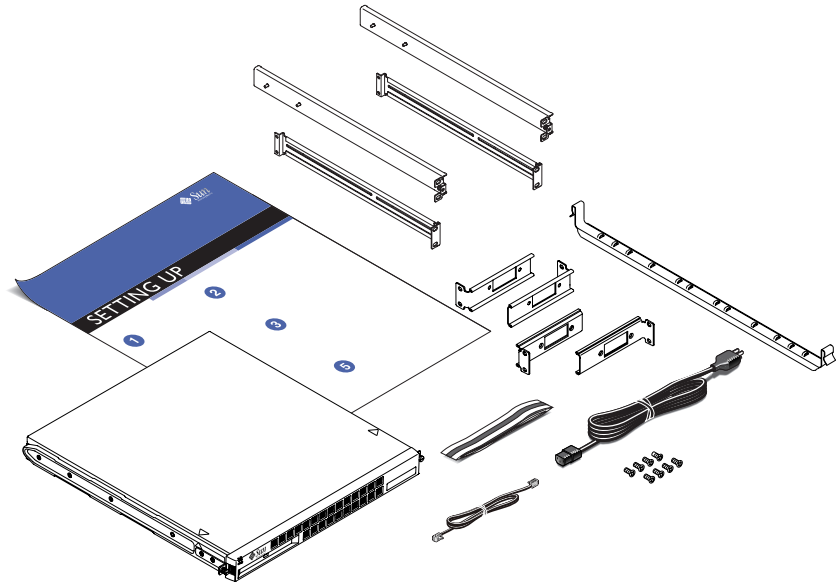

FIGURE 1-2 Contents of the Ship Kit

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

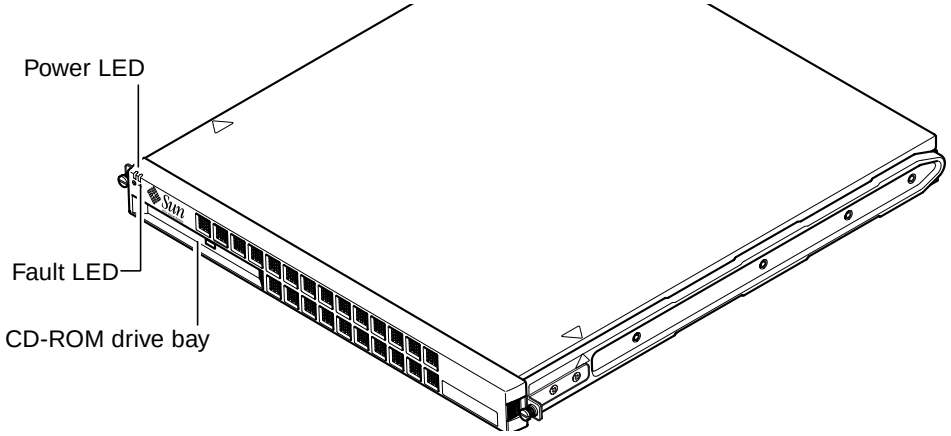

FIGURE 1-3 The Front Panel of the Netra T1 AC200 and DC200 Servers

1.5 Back Panel

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

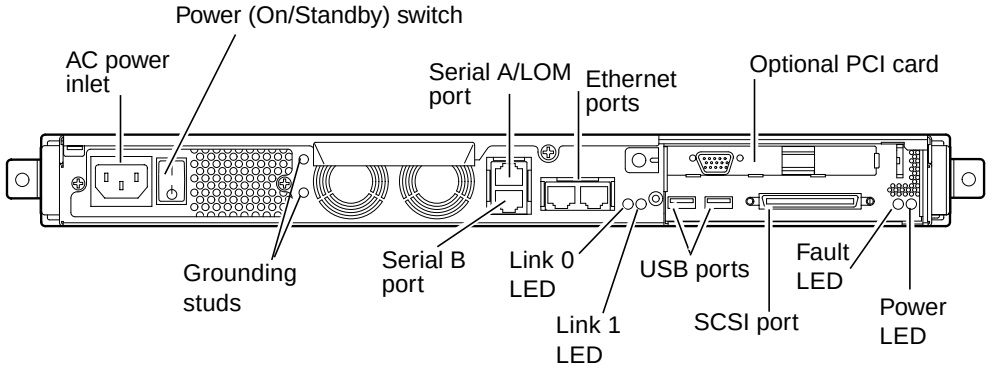

FIGURE 1-4 The Back Panel of the Netra T1 AC200 Server

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.

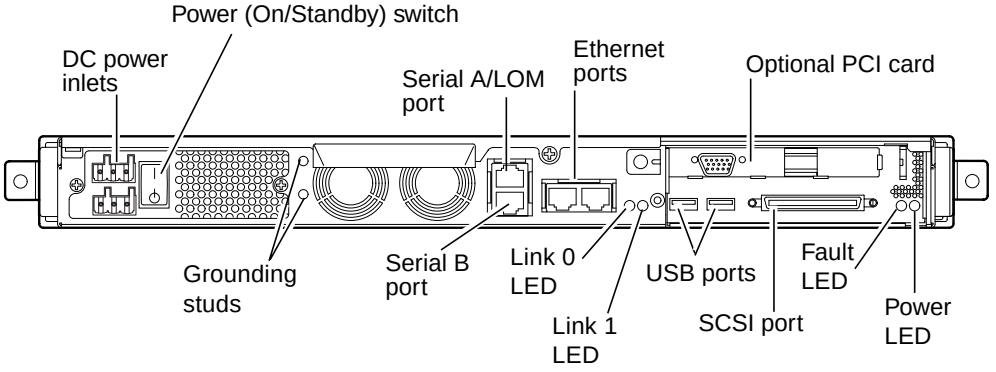

FIGURE 1-5 The Back Panel of the Netra T1 DC200 Server

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:

- Section 2.1, “Operating Power Limits and Ranges” on page 2-2
- Section 2.2, “Power Consumption” on page 2-3
- Section 2.3, “Estimating Heat Dissipation” on page 2-4

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.