Netra™ t1 Server

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Positioning

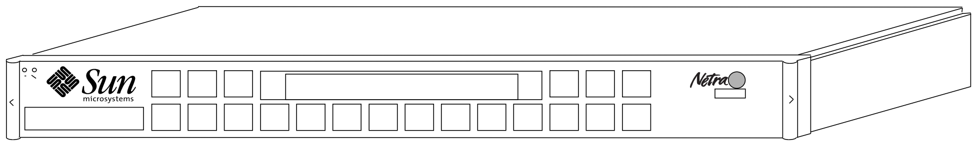

Figure 1. The Netra t1 server

Introduction

Sun is an established market leader in providing products for a wide range of network services to service providers (SPs). Sun's Netra™ server products are based on the robust, scalable SPARC™/Solaris™ Operating Environment, which provides customers with a single environment from development to service deployment on servers from 1- to 64-bit processors. Sun's open systems approach provides the stability, reliability, and outstanding price performance that SPs need.

ISP and Telco requirements are converging, creating an even larger market for carrier-grade products. The Netra t1 server (Flapjack) is Sun's entry-level server for the SP server market. The Netra t1 server represents the low end of Sun's carrier-grade Netra products.

The Netra product line offers a range of availability options. The very high availability level, in the form of fault-tolerance, is designed for business-critical applications where constant service availability is the highest priority. Where space is at a premium, customers can rackmount Netra carrier-grade systems to gain the highest performance density. With this broad range of carrier-grade products, SPs can focus their expertise on providing services to the end user.

Product Family Placement

The Netra t1 server completes the Netra t product line with a low-end, rackmounted server. The closest Sun product in this category is the Sun Enterprise Ultra™ 5S server, originally conceived as a desktop system. The Netra t1 server was conceived as a server and has the following distinguishing key features:

- Lights out management (LOM) provides optimum availability through remote management of power status.
- Front-accessible drives provide easy access for service and maintenance.
- With their 1U form factor, Netra t1 servers can be densely packed into existing racks, lowering operating costs.

Netra t1 Server and Sun Enterprise Ultra 5S Server Feature Comparison

Feature	Netra t1 Server	Sun Enterprise Ultra 5S Server
Packaging		
– Rackmounted	Yes	No
– Density/rack [1]	40	13 [2]
Disk		
– Subsystem	SCSI	IDE
– Accessibility	Front	Internal
– Hot-pluggable	Yes	No
– Number	2	2
Maximum memory	1 GB	512 MB
Base network connectivity	2 Ethernet 10/100BASE-T ports	1 Ethernet 10/100BASE-T port
Lights out management (LOM)	Yes	No
Expandability	1 PCI slot	3 PCI slots
Frame-buffer	No	Yes
Ports		
– Keyboard	No	Yes
– Mouse	No	Yes
– Parallel	No	Yes

[1] Number of systems per 72-inch rack.

[2] Assumes 3U for Sun Enterprise Ultra 5S server and tray.

Positioning

Key Messages

The Netra t1 server is a low-cost, full-functioned, single-processor server with a 1U form factor. The Netra t1 server was conceived, designed, and developed as a server in direct response to service provider needs and input. Key messages include the following:

- **Open systems architecture**

  Netra t1 servers incorporate industry standard, open systems architecture and were designed specifically for the service provider market.

- **SPARC/Solaris compatibility**

  The Solaris Operating Environment is a stable environment which is scalable and reliable and provides a single environment from development to service deployment on servers from 1- to 64-bit processors.

- **High availability features**

  Key features that help enable availability include hot-pluggable disks, lights out management (LOM)—a module that allows administrators to monitor fans, temperatures, and power supply and manage power status remotely—and automatic server restart (ASR).

- **Competitive price/performance**

  Standard components keep product cost low while the overall features reduce operating costs.

- **Hot-pluggable drives**

  Drives can be removed easily for repair or maintenance without system interruption.

Availability

The Netra t1 server will be available as a limited release in late July 1999. General availability is targeted for late August 1999.

Target Users

The Netra t1 server is designed for the SP who requires high density, availability, serviceability, and manageability in an affordable, complete product.

Target Markets

The Netra t1 server is being targeted at the service provider and Telco markets. Other potential target markets include industries requiring rackmounted, small computers and e-business administrators of large enterprises. Netra t1 servers can be used as MIS-supported local file servers deployed in network closets or racks.

Industry/Customer	Key Features to Highlight
Service provider (SP)	• High system count per rack • Dependable Sun hardware • Horizontal scalability: availability, flexibility • Manageability • Serviceability • True server functionality at a competitive price
Telco	• Compliant with Telcordia NEBS standards • Highly reliable and available • Robust SPARC/Solaris architecture

Selling Highlights

Market Value Proposition

Netra™ t1 servers provide the following features to the service provider (SP) market:

- **User-initiated product design**

  The Netra t1 server was conceived, designed, and developed specifically as a server in response to input from service providers.
- **High density**

  The Netra t1 server is a high density—1U form factor—performance rackmount server. High-density servers decrease operating costs by using existing data center space more efficiently.
- **Robust SPARC/Solaris architecture**

  With the Netra t1 server, service providers can expand their current service offerings to their clients with the robust SPARC™/Solaris™ platform architecture.
- **Availability**

  The Netra t1 server is built on the stable SPARC/Solaris platform and is designed with carrier-grade packaging for environments where service availability is critical.
- **Reliability**

  The Netra t1 server provides standard SPARC/Solaris platform reliability that is well established in the SP market.
- **Affordability**

  The Netra t1 server has been designed to use standard components in order to offer an affordable SPARC/Solaris server with carrier-grade features from Sun.

Applications

The Netra t1 server is designed to meet service providers' requirements for compact size, reliability, and manageability. The Netra t1 server can be deployed by SPs as a dedicated platform for both infrastructure (utility) and revenue services.

Infrastructure services are those services that service providers have to provide to run their businesses. Examples of infrastructure services include:

- Firewalls
- DNS (domain name system)
- Log processing
- Authentication
- Mail-relay
- Distributed SNMP (simple network management protocol)

Revenue services are those services for which service providers can collect payment from clients. Examples of revenue services include:

- Low-end web server
- Low-end hosting server
- Low-end application server

Also, the Netra t1 server's small size and low price make it an ideal platform for use in a redundant server array for these services.

Compatibility

The Netra t1 server comes preinstalled with a base version of the Solaris 7 Operating Environment (the Solaris 2.6 Operating Environment is available for an additional charge). The Netra t1 server is compatible with a wide range of SPARC/Solaris applications including those from

- Check Point Software Technologies, Ltd.
- Funk Software, Inc.
- Inktomi Corporation
- Netscape Communications Corporation
- Resonate, Inc.

For a complete list of Sun products or products from third-party vendors, refer to the following sites:

- Sun Reseller web site at `http://reseller.sun.com`
- Sun external web site at `http://www.sun.com/products-n-solutions`

Netra™ t1 Server Architecture

Netra™ t1 server components were designed to meet the reliability, availability, and serviceability needs required by service providers. The Netra t1 server has the following architectural features:

- Two built-in Ethernet 10/100BASE-T ports
- Two serial ports: TTY-A, referred to as the console port, and TTY-B
- Hot-pluggable, front-accessible SCSI disks

Form Factor

The Netra t1 server was specifically designed in response to service provider space constraints.

- Thin form factor—1U (1.75 inches)
- Package includes a rackmounting kit with rails. The racking system was designed specifically as part of the Netra t1 server and uses no vertical rack space.

Alarms and Warnings

The Netra t1 server has an extensive alarm and warning system allowing administrators to detect and respond to problems quickly onsite or remotely. The Netra t1 server's key distinguishing feature is its lights out management (LOM) module, derived from features found on the Sun Enterprise™ 250 server. These features include a command-line interface, API compatibility, and simplicity.

- **Lights out management (LOM)**

  With the LOM module, the Netra t1 server can be configured to allow administrators to monitor the system board, fan power/rpm, and temperature via a dedicated LOM serial port, combined console/LOM serial port, or alarm software that can be tied into SNMP. The LOM module also has a remote power on/off and power cycle.
- **Automatic server restart (ASR)**

  A feature of the LOM module, ASR reduces downtime by enabling administrators to configure the Netra t1 server to restart automatically in case of a software lock-up.

Convenient Utility Features

- The Netra t1 server chassis has indicator lights (power on and warning lights) located on the front and back.
- A fault indicator light stays on even when the power is off if there has been a fault (assuming the system is still plugged in).
- Built-in RJ-45 connectors for serial ports allow the Netra t1 server to be connected easily without adapters. A standard straight through Category 5 cable can be used (null modem cable no longer needed).

- The host-ID module is designed to be pulled out manually, making system replacement easy without affecting software that is host ID-bound.
- Cable hooks on the back of the chassis keep things organized and keeps cables away from the ventilation holes.
- Customer label area on the front panel provides an area for identifying the server name or function.

System Architecture

Overview

The Netra™ t1 server is a 19-inch, rackmounted, low-profile, competitively priced SPARC™/Solaris™ server with a 1U form factor.

Features	Benefits
• 1U rackmount design	• Small form factor enables multiple systems to be densely packed into existing racks, reducing operating costs • Small size allows redundant deployment, increasing overall service availability
• Up to 440-MHz processor with full 2-MB Ecache	• Sun performance—no penalty for small packaging
• Remote monitoring and manageability	• Detects and addresses problems faster with fewer resources, reducing downtime and maximizing availability
• Designed for serviceability	• Replaces a failed unit with another unit minimizing service downtime • Faults contained to a single system; replacing one complete system minimizes the potential of a fault propagating due to system or operator error and impacting other systems
• Up to 1-GB memory	• Large memory capacity allows large applications to be run in memory, increasing performance
• Support for up to 36-GB (2 x 18-GB), hot-pluggable, SCSI, low-profile disks	• Large drive provides higher availability for mirroring
• Optional 24X CD-ROM drive	• CD-ROM can be used to boot a custom Solaris CD image, providing a reliable, solid, fail-safe noncorruptible file system—can help remove downtime problems due to failed disk drives

Reliability, Availability, and Serviceability (RAS)

Reliability

The Netra t1 server is based on Sun's carrier-grade, SPARC/Solaris platform reliability that is well established in the service provider market.

Availability

- The Netra t1 server's low cost and small form factor allow redundant deployment in a compact space to increase overall service availability.
- Maximum availability is provided with features such as lights out management (LOM), automatic server restart (ASR), and hot-pluggable disks.
- Drives are front accessible for ease of service and maintenance. Hot-swap is supported if you are running a volume manager.
- Service providers can have a separate service per server and provide more services within the same footprint. This eliminates sharing servers and increases availability if the system goes down—only one server would be affected.

Serviceability

- The Netra t1 server was designed to be a field replaceable unit (FRU) that can be exchanged with another unit to minimize mean time to repair (MTTR).
- Drives are front accessible for ease of service and maintenance. Hot-swap is supported if you are running a volume manager.
- The host ID module can be swapped easily by pulling out the module and replacing it. No special tools are required.
- The LOM module allows administrators to monitor and manage power status at the sub-board level remotely. With the ASR feature, administrators can configure the Netra t1 server to restart automatically.
- Indicator lights on the front and back of the chassis allow problems to be detected and isolated easily.
- A fault indicator light stays on following a fault even if the system has been powered off.
- Rear power switch provides easy access.
- Rackmount slides are included for easy installation/removal of a unit.

Requirements and Configuration

System Requirements

The Netra t1 server comes configured with a minimum of 64 MB of memory. An ANSI console device is needed.

System Configuration

Up to 40 Netra t1 servers can be stacked in a standard 72-inch rack. A typical configuration is a stack of 30. Netra t1 servers are not assembled to order.

The Netra t1 server is available in a low-end and a high-end configuration. The components common to both models are as follows:

- 19-inch rackmount kit
- Console and serial port
- One U/W SCSI bus
- One PCI expansion slot—2/3 length
- AC power supply
- Solaris™ 7 Operating Environment is pre-installed, base version

The table below details the configuration specifications.

Feature	**Low-end Model**	**High-end Model**
Processor	360-MHz UltraSPARC™-IIi	440-MHz UltraSPARC-IIi
Ecache	1 MB	2 MB
Memory	64-MB memory	256-MB memory
Drives	9-GB, 7200-rpm SCSI drive	9-GB, 7200-rpm SCSI drive

The following components are options available to both models:

- Internal 24X CD-ROM drive
- Solaris 2.6 Operating Environment
- Second 9-GB, 7200-rpm or 10000-rpm or 18-GB, 10000-rpm low-profile drive
- Up to 1-GB memory

Licensing/Usage

The Netra t1 has a two-user server license.

Interconnect

The Netra t1 server is designed to be a server, therefore there is no parallel port, keyboard, or mouse. This server cannot be converted into a desktop machine.

The Netra t1 server comes standard with two Ethernet 10/100BASE-T ports without having to use the PCI expansion slot.

The following I/O cards will be available initially:

- Quad FastEthernet
- Gigabit Ethernet
- SunSwift™ FastEthernet U/W SCSI combo
- ATM 155
- FC-AL

Processor Options

Architecture	UltraSPARC IIi V9 superscalar processor: 64-bit single processor, 360/440 MHz
Cache	• 16-KB data and 16-KB instruction on chip • Secondary: 1 MB external with 360 MHz; 2 MB external with 440 MHz
Main Memory	• 2 Sun mezzanine memory cards supported • 1 GB memory max per system

Standard Interfaces

Network	Dual Ethernet/Fast Ethernet (10/100BASE-T)
I/O	40 MB/sec. UltraSCSI (SCSI-3) (synchronous)
Expansion Bus	Single 2/3 length PCI slot compliant with PCI specification version 2.1; slot operates at 33 MHz, 32 bits

Mass Storage and Media

Internal CD	Optional 644-MB slimline CD-ROM drive; 24X speed
Disk	Up to two 3.5 x 1-in. disks (9 GB or 18 GB); disk bays are front accessible and support hot-plug
External Storage	All UltraSCSI devices

Software

Operating Environment	Solaris 2.6 and Solaris 7
Programming Tools	4/97 Solaris NEO™ 2.0, OpenStep™ 1.0 software
Languages	C, C++, Pascal, FORTRAN, Java™, all standard Sun-supported languages
Networking	ONC™, NFS™, TCP/IP, SunLink™ OSI, MHS, IPX™/SPX, DCE, SS7, ATM, FDDI

Chassis Dimension and Weight

	U.S.	Metric
Height	1.73 in.	44.0 mm
Width (without mounting ears)	17.21 in.	437.2 mm
Depth (with front bezel)	19.19 in.	487.4 mm
Weight	20 lbs. (approx.)	9 kg (approx.)
Shipping Weight (product and packing)	25 lbs. (approx.)	11.5 kg (approx.)

Environment

The Netra t1 server is designed to meet the following requirements:

Power Requirements

	U.S.	International
Operating	100–240 VAC 47–63 Hz	*
Tolerance	*	*

* Information unavailable at time of publication

Temperature

	Fahrenheit	Celsius
Operating	41 to 104	5 to 40
Nonoperating	–40 to 158	–40 to 70

Humidity (Noncondensing)

Operating	20% to 80% relative humidity, noncondensing, subject to a maximum absolute humidity of 0.024 kg water/kg dry air
Nonoperating	10% to 95% relative humidity, noncondensing

Seismic

GR-63-CORE requirements for earthquake risk zone 4
ETSI ETS 300-19-2-3, A1 operating requirements

Noise (in accordance with ISO 9296)

Operating acoustic noise	Less than 60dBA (GR-63-CORE Test Method)
Idling acoustic noise	*

* Information unavailable at time of publication

Regulations

The Netra t1 server meets or exceeds the following requirements:

Safety	UL 1950/CSA C22.2 No. 950, EN 60950 (73/23/EEC), IEC 950
Emissions	CFR Title 47 FCC Part 15, EN 55022 (89/336/EEC)
Immunity	EN 50082-1 (89/336/EEC)
Telco environment	Telcordia: GR-63-CORE, FR-1089-CORE, TR-NWT-000295
Compliance • Telcordia • Safety • EMC	 • SR 3580 NEBS Level 3 • cULus Mark, TUV GS Mark, CE Mark • CD Mark (93/68/EEC), FCC authorized Class A

System Management

System Administration

The Netra™ t1 server's features were designed for ease of administration. Two Ethernet 10/100BASE-T ports come standard with Netra t1 servers. The lights out management feature with automatic server restart function allows system administrators to locate and resolve problems quickly, either onsite or remotely.

Standards/Conformance and Performance Statistics/Benchmarks

For standards/conformance information and for statistics on maximum availability (mean time between failures) and performance benchmarks such as SPECint95, SPECfp95, and SPECWeb96, refer to the following web sites:

- Sun Reseller Web site at `http://reseller.com`
- Sun external Web site at `http://www.sun.com/products-n-solutions/hw/networking/netrat/t1`

Operating Environment

The Netra t1 server comes with the Solaris™ 7 Operating Environment pre-installed. The Solaris 2.6 Operating Environment is available for an additional charge.

Ordering Information

Netra™ t1 servers are sold in packs of one or five units. Orders take three days to process, two days to deliver.

Order Number	Title and Description
N06-UGB1-9S064AH1	360-MHz processor, 1-MB Ecache, 64-MB RAM, 9-GB drive, AC power, 1 pack
N06-UGB1-9S064AH5	360-MHz processor, 1-MB Ecache, 64 -MB RAM, 9-GB drive, AC power, 5 pack
N06-UKC1-9S256AH1	440-MHz processor, 2-MB Ecache, 256-MB RAM, 9-GB drive, AC power, 1 pack
N06-UKC1-9S256AH5	440-MHz processor, 2-MB Ecache, 256-MB RAM, 9-GB drive, AC power, 5 pack

Optional Components

Order Number	Title and Description
X6966A	23-inch rackmount kit
X6967A	24-inch rackmount kit
X6968A	600-mm rackmount kit
X6971A	Netra t1 server internal CD-ROM kit
X6972A	Netra t1 server alarms software CD
X6973A	Netra t1 server serial port adapters (5 pack)
X6983A	64-MB mezzanine memory
X6985A	256-MB mezzanine memory
X6986A	512-MB mezzanine memory
SOLMS-070W999	Solaris™ 7 media kit
SOLD-E1-LF	Solaris 2.6 license kit
SOLMS-26EW999	Solaris 2.6 media kit
X5229A	9-GB, 7200-rpm drive
X5234A	9-GB, 10000-rpm drive
X5237A	18-GB, 10000-rpm drive

Order Number	Title and Description
X6157A	External SCSI CD ROM drive
X1141A	Sun Gigabit Ethernet
X1034A	Sun Quad FastEthernet™
X1157A	SunATM™ 155 UTP, PCI, 66-MHz EPCI
X1158A	SunATM 155 MMF, PCI, 66-MHz EPCI
X1032A	SunSwift™ combo
X6729A	PCI FC-100 FC-AL

Upgrade Paths

The following items can be upgraded:

- Service and support plan
- Memory and system upgrade programs are being developed and will follow General Availability

Service and Support

The SunSpectrum℠ program is an innovative and flexible service offering that allows customers to choose the level of service best suited to their needs, ranging from mission-critical support for maximum solution availability to backup assistance for self-support customers. The SunSpectrum program provides a simple pricing structure in which a single fee covers support for an entire system, including related hardware and peripherals, the Solaris™ Operating Environment software, and telephone support for Sun™ software packages. The majority of Sun's customers today take advantage of the SunSpectrum program, underscoring the value that it represents. Customers should check with their local Sun Enterprise™ Services representatives for program and feature availability in their areas.

FEATURE	SUNSPECTRUM PLATINUM℠ Mission-critical Support	SUNSPECTRUM GOLD℠ Business-critical Support	SUNSPECTRUM SILVER℠ Systems Support	SUNSPECTRUM BRONZE℠ Self Support
Systems Features				
Systems approach coverage	Yes	Yes	Yes	Yes
System availability guarantee	Customized	No	No	No
Account Support Features				
Service account management team	Yes	No	No	No
Personal technical account support	Yes	Yes	No	No
Account support plan	Yes	Yes	No	No
Software release planning	Yes	No	No	No
On-site account reviews	Monthly	Semiannual	No	No
Site activity log	Yes	Yes	No	No
Coverage / Response Time				
Standard telephone coverage hours	7 day/24 hour	7 day/24 hour	8 a.m.–8 p.m., Monday–Friday	8 a.m.–5 p.m., Monday–Friday
Standard on-site coverage hours	7 day/24 hour	8 a.m.–8 p.m., Monday–Friday	8 a.m.–5 p.m., Monday–Friday	N/A
7-day/24-hour telephone coverage	Yes	Yes	Option	No
7-day/24-hour on-site coverage	Yes	Option	Option	N/A
Customer-defined priority setting	Yes	Yes	Yes	No
• Urgent (phone/on-site)	Live transfer/ 2 hour	Live transfer/ 4 hour	Live transfer/ 4 hour	4 hour / N/A
• Serious (phone/on-site)	Live transfer/ 4 hour	2 hour/next day	2 hour/next day	4 hour / N/A
• Not critical (phone/on-site)	Live transfer/ customer convenience	4 hour/ customer convenience	4 hour/ customer convenience	4 hour / N/A
Additional contacts	Option	Option	Option	Option

FEATURE	SUNSPECTRUM PLATINUM℠ Mission-critical Support	SUNSPECTRUM GOLD℠ Business-critical Support	SUNSPECTRUM SILVER℠ Systems Support	SUNSPECTRUM BRONZE℠ Self Support
Enhanced Support Features				
Mission-critical support team	Yes	Yes	No	No
Sun Vendor Integration Program (SunVIP℠)	Yes	Yes	No	No
Software patch management assistance	Yes	No	No	No
Field change order (FCO) management assistance	Yes	No	No	No
Remote Systems Diagnostics				
Remote dial-in analysis	Yes	Yes	Yes	Yes
Remote systems monitoring	Yes	Yes	No	No
Remote predictive failure reporting	Yes	Yes	No	No
Software Enhancements and Maintenance Releases				
Solaris enhancement releases	Yes	Yes	Yes	Yes
Patches and maintenance releases	Yes	Yes	Yes	Yes
Sun unbundled software enhancements	Option	Option	Option	Option
Internet and CD-ROM Support Tools				
SunSolve™ license	Yes	Yes	Yes	Yes
SunSolve EarlyNotifier℠ Service	Yes	Yes	Yes	Yes

Warranty

Standard one-year return-to-depot (15-day turnaround).

Glossary

1U	One rack unit as defined by the Electronic Industries Alliances (EIA). A vertical measurement equal to 1.75 inches.
AC	Alternating current.
ASR	Automatic server restart. A feature of the LOM module that reduces downtime from system lock-up. ASR enables administrators to configure the Netra t1 server to restart automatically in case of a software lock-up.
ATM	Asynchronous transfer mode. ATM is a network technology that supports realtime voice, video, and data. ATM is used as a backbone technology by major enterprises and ISPs.
Carrier grade	Rackmountable systems with features including remote alarm capabilities, front-back cooling, front accessibility of media, rear cabling, and rugged NEBS-compliant packaging.
Commodity server	A server that is replaced when it fails, instead of being repaired.
Density	Number of units in a given amount of space.
Ecache	External cache. Memory cache external to the CPU chip, also referred to as L2 cache.
Ethernet 10/100BASE-T	The most widely used LAN access method defined by the IEEE 802.3 standard; uses standard RJ-45 connectors and telephone wire. 100BASE-T is also referred to as Fast Ethernet.
FC-AL	Fibre channel arbitrated loop. A topology for Fibre Channel in which all devices are linked together in a loop.
Gigabit Ethernet	An Ethernet technology with transmission speeds up to 1 Gbps.
Horizontal scalability	Increasing throughput by running the same service on several machines at the same time.
Host ID	The unique identifier assigned to the host computer.
Hot-pluggable	A feature that allows an administrator to remove a drive without affecting hardware system integrity.
Hot-swappable	A feature that allows an administrator to remove a drive without affecting software integrity.
Infrastructure services	Services that an SP runs to provide revenue services to clients. Examples include: firewalls, DNS, log processing, authentication, mail-relay, distributed SNMP, and low-end cache server.
I/O	Input/output. Transferring data between the CPU and any peripherals.

ISP	Internet service provider.
L2 cache	See Ecache.
LOM	Lights out management. A service and availability feature of the Netra t1 server to monitor the system board, fan power and rpm, and temperature via a dedicated LOM serial port, combined console/LOM serial port, or alarm software that can be tied into SNMP. The LOM module also has a remote power on/off and cycle.
MTBF	Mean time between failures. The average time a component works without failure.
MTTR	Mean time to repair. The average time it takes to repair a component.
NEBS	Network Equipment Building Standard. A stringent standard for durability, grounding cables, and hardware interfaces specified by Telcordia Technologies (formerly Bellcore) for equipment used in Telco central offices.
Sun Quad FastEthernet™	A Sun product that has four Fast Ethernet ports on the same I/O card.
RAM	Random access memory.
Revenue services	Services for which an SP can collect payment from clients. Examples include: low-end web server, low-end hosting server, and application server.
SCSI	Small computer systems interface. Pronounced “scuzzy.” A hardware interface that allows the connection of up to 15 peripheral devices to a single bus.
SPECint95	A benchmark for integer performance.
SPECfp95	A benchmark for floating point performance.
SPECWeb96	A benchmark for web performance.
SP	Service provider.
TTY A	A serial port. Referred to as the console port.
TTY B	A serial port.

Materials Abstract

All materials will be available on SunWIN except where noted otherwise.

Collateral	Description	Purpose	Distribution	Token # or COMAC Order #
Powerpack				
– *Netra t1 Server Just the Facts*	Reference Guide for the Netra t1 Server (this document)	Training Sales Tool	SunWIN, Reseller Web	107013
References				
– *Netra t Telecommunications Server Family*	Quick Reference Card	Sales Tool, Training	SunWIN	75091
– *Transition of Netra t, 6/30/98*	Sun Product Intro	Sales Tool, Training	SunWIN	88736
Product Literature				
– *Netra t1 Server Data Sheet*	Data Sheet	Sales Tool, Training	SunWIN	105428
External Web Site				
– *Netra t1 Server Web Site*	`http://www.sun.com/products-n-solutions/hw/networking/netrat/t1`			
Reseller Web Site				
– *Sun Reseller General Information*	`http://reseller.sun.com`			