



# Sun SPARC® Enterprise T1000 Server Overview Guide

---

Sun Microsystems, Inc.  
www.sun.com

Part No. 820-0016-10  
April 2007, Revision A

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

Copyright 2007 Sun Microsystems, Inc., 4150 Network Circle, Santa Clara, California 95054, U.S.A. All rights reserved.

FUJITSU LIMITED provided technical input and review on portions of this material.

Sun Microsystems, Inc. and Fujitsu Limited each own or control intellectual property rights relating to products and technology described in this document, and such products, technology and this document are protected by copyright laws, patents and other intellectual property laws and international treaties. The intellectual property rights of Sun Microsystems, Inc. and Fujitsu Limited in such products, technology and this document include, without limitation, one or more of the United States patents listed at <http://www.sun.com/patents> and one or more additional patents or patent applications in the United States or other countries.

This document and the product and technology to which it pertains are distributed under licenses restricting their use, copying, distribution, and decompilation. No part of such product or technology, or of this document, may be reproduced in any form by any means without prior written authorization of Fujitsu Limited and Sun Microsystems, Inc., and their applicable licensors, if any. The furnishing of this document to you does not give you any rights or licenses, express or implied, with respect to the product or technology to which it pertains, and this document does not contain or represent any commitment of any kind on the part of Fujitsu Limited or Sun Microsystems, Inc., or any affiliate of either of them.

This document and the product and technology described in this document may incorporate third-party intellectual property copyrighted by and/or licensed from Fujitsu Limited and/or Sun Microsystems, Inc., including software and font technology.

Per the terms of the GPL or LGPL, a copy of the source code governed by the GPL or LGPL, as applicable, is available upon request by the End User. Please contact Fujitsu Limited or Sun Microsystems, Inc.

This distribution may include materials developed by third parties.

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

Sun, Sun Microsystems, the Sun logo, Java, Netra, Solaris, Sun StorEdge, docs.sun.com, OpenBoot, SunVTS, Sun Fire, SunSolve, CoolThreads, J2EE, and Sun are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. and other countries.

Fujitsu and the Fujitsu logo are registered trademarks of Fujitsu Limited.

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

SPARC64 is a trademark of SPARC International, Inc., used under license by Fujitsu Microelectronics, Inc. and Fujitsu Limited.

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

United States Government Rights - Commercial use. U.S. Government users are subject to the standard government user license agreements of Sun Microsystems, Inc. and Fujitsu Limited and the applicable provisions of the FAR and its supplements.

Disclaimer: The only warranties granted by Fujitsu Limited, Sun Microsystems, Inc. or any affiliate of either of them in connection with this document or any product or technology described herein are those expressly set forth in the license agreement pursuant to which the product or technology is provided. EXCEPT AS EXPRESSLY SET FORTH IN SUCH AGREEMENT, FUJITSU LIMITED, SUN MICROSYSTEMS, INC. AND THEIR AFFILIATES MAKE NO REPRESENTATIONS OR WARRANTIES OF ANY KIND (EXPRESS OR IMPLIED) REGARDING SUCH PRODUCT OR TECHNOLOGY OR THIS DOCUMENT, WHICH ARE ALL PROVIDED AS IS, AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID. Unless otherwise expressly set forth in such agreement, to the extent allowed by applicable law, in no event shall Fujitsu Limited, Sun Microsystems, Inc. or any of their affiliates have any liability to any third party under any legal theory for any loss of revenues or profits, loss of use or data, or business interruptions, or for any indirect, special, incidental or consequential damages, even if advised of the possibility of such damages.

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



Adobe PostScript

Copyright 2007 Sun Microsystems, Inc., 4150 Network Circle, Santa Clara, California 95054, Etats-Unis. Tous droits réservés.

Entrée et revue tecnica fournies par FUJITSU LIMITED sur des parties de ce matériel.

Sun Microsystems, Inc. et Fujitsu Limited détiennent et contrôlent toutes deux des droits de propriété intellectuelle relatifs aux produits et technologies décrits dans ce document. De même, ces produits, technologies et ce document sont protégés par des lois sur le copyright, des brevets, d'autres lois sur la propriété intellectuelle et des traités internationaux. Les droits de propriété intellectuelle de Sun Microsystems, Inc. et Fujitsu Limited concernant ces produits, ces technologies et ce document comprennent, sans que cette liste soit exhaustive, un ou plusieurs brevets déposés aux États-Unis et indiqués à l'adresse <http://www.sun.com/patents> de même qu'un ou plusieurs brevets ou applications brevetées supplémentaires aux États-Unis et dans d'autres pays.

Ce document, le produit et les technologies afférents sont exclusivement distribués avec des licences qui en restreignent l'utilisation, la copie, la distribution et la décompilation. Aucune partie de ce produit, de ces technologies ou de ce document ne peut être reproduite sous quelque forme que ce soit, par quelque moyen que ce soit, sans l'autorisation écrite préalable de Fujitsu Limited et de Sun Microsystems, Inc., et de leurs éventuels bailleurs de licence. Ce document, bien qu'il vous ait été fourni, ne vous confère aucun droit et aucune licence, expresses ou tacites, concernant le produit ou la technologie auxquels il se rapporte. Par ailleurs, il ne contient ni ne représente aucun engagement, de quelque type que ce soit, de la part de Fujitsu Limited ou de Sun Microsystems, Inc., ou des sociétés affiliées.

Ce document, et le produit et les technologies qu'il décrit, peuvent inclure des droits de propriété intellectuelle de parties tierces protégés par copyright et/ou cédés sous licence par des fournisseurs à Fujitsu Limited et/ou Sun Microsystems, Inc., y compris des logiciels et des technologies relatives aux polices de caractères.

Par limites du GPL ou du LGPL, une copie du code source régi par le GPL ou LGPL, comme applicable, est sur demande vers la fin utilisateur disponible; veuillez contacter Fujitsu Limited ou Sun Microsystems, Inc.

Cette distribution peut comprendre des composants développés par des tierces parties.

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

Sun, Sun Microsystems, le logo Sun, Java, Netra, Solaris, Sun StorEdge, docs.sun.com, OpenBoot, SunVTS, Sun Fire, SunSolve, CoolThreads, J2EE, et Sun sont des marques de fabrique ou des marques déposées de Sun Microsystems, Inc. aux États-Unis et dans d'autres pays.

Fujitsu et le logo Fujitsu sont des marques déposées de Fujitsu Limited.

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

SPARC64 est une marques déposée de SPARC International, Inc., utilisée sous le permis par Fujitsu Microelectronics, Inc. et Fujitsu Limited.

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

Droits du gouvernement américain - logiciel commercial. Les utilisateurs du gouvernement américain sont soumis aux contrats de licence standard de Sun Microsystems, Inc. et de Fujitsu Limited ainsi qu'aux clauses applicables stipulées dans le FAR et ses suppléments.

Avis de non-responsabilité: les seules garanties octroyées par Fujitsu Limited, Sun Microsystems, Inc. ou toute société affiliée de l'une ou l'autre entité en rapport avec ce document ou tout produit ou toute technologie décrit(e) dans les présentes correspondent aux garanties expressément stipulées dans le contrat de licence régissant le produit ou la technologie fourni(e). SAUF MENTION CONTRAIRE EXPRESSEMENT STIPULÉE DANS CE CONTRAT, FUJITSU LIMITED, SUN MICROSYSTEMS, INC. ET LES SOCIÉTÉS AFFILIÉES REJETTENT TOUTE REPRÉSENTATION OU TOUTE GARANTIE, QUELLE QU'EN SOIT LA NATURE (EXPRESSE OU IMPLICITE) CONCERNANT CE PRODUIT, CETTE TECHNOLOGIE OU CE DOCUMENT, LESQUELS SONT FOURNIS EN L'ÉTAT. EN OUTRE, TOUTES LES CONDITIONS, REPRÉSENTATIONS ET GARANTIES EXPRESSES OU TACITES, Y COMPRIS NOTAMMENT TOUTE GARANTIE IMPLICITE RELATIVE À LA QUALITÉ MARCHANDE, À L'APTITUDE À UNE UTILISATION PARTICULIÈRE OU À L'ABSENCE DE CONTREFAÇON, SONT EXCLUES, DANS LA MESURE AUTORISÉE PAR LA LOI APPLICABLE. Sauf mention contraire expressément stipulée dans ce contrat, dans la mesure autorisée par la loi applicable, en aucun cas Fujitsu Limited, Sun Microsystems, Inc. ou l'une de leurs filiales ne sauraient être tenues responsables envers une quelconque partie tierce, sous quelque théorie juridique que ce soit, de tout manque à gagner ou de perte de profit, de problèmes d'utilisation ou de perte de données, ou d'interruptions d'activités, ou de tout dommage indirect, spécial, secondaire ou consécutif, même si ces entités ont été préalablement informées d'une telle éventualité.

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



# Contents

---

**Preface** vii

Server Features 2

Feature Specifications at a Glance 3

Chip-Multithreaded Multicore Processor and Memory Technology 4

Performance Enhancements 5

Preinstalled Solaris Operating System 5

Preloaded Java Enterprise System Software 6

Hardware-Assisted Cryptography 7

Remote Manageability With ALOM CMT 7

System Reliability, Availability, and Serviceability 8

Environmental Monitoring 8

Error Correction and Parity Checking 9

Fault Management and Predictive Self Healing 9

Rackmountable Enclosure 9

Chassis Identification 10



# Preface

---

This document describes the hardware and software features, options, and specifications for the Sun SPARC Enterprise T1000 server.

---

# Server Documentation

You can view and print the following manuals from the Sun™ documentation web site at <http://www.sun.com/documentation>

<b>Title</b>	<b>Description</b>	<b>Part Number</b>
<i>Sun SPARC Enterprise T1000 Server Product Notes</i>	Information about the latest product updates and issues	820-0021
<i>Sun SPARC Enterprise T1000 Server Site Planning Guide</i>	Server specifications for site planning	820-0017
<i>Sun SPARC Enterprise T1000 Server Installation Guide</i>	Detailed rackmounting, cabling, power on, and configuring information	820-0018
<i>Sun SPARC Enterprise T1000 Server System Administration Guide</i>	How to perform administrative tasks that are specific to this server	820-0020
<i>Advanced Lights Out Manager (ALOM) CMT v1.x User's Guide</i>	How to use the Advanced Lights Out Manager (ALOM) software	varies based on version
<i>Sun SPARC Enterprise T1000 Server Service Manual</i>	How to run diagnostics to troubleshoot the server, and how to remove and replace parts in the server	820-0019
<i>Sun SPARC Enterprise T1000 Server Safety and Compliance manual</i>	Safety and compliance information about this server	820-0022



---

## Third-Party Web Sites

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

---

## Documentation, Support, and Training

Sun Function	URL
Documentation	<a href="http://www.sun.com/documentation/">http://www.sun.com/documentation/</a>
Support	<a href="http://www.sun.com/support/">http://www.sun.com/support/</a>
Training	<a href="http://www.sun.com/training/">http://www.sun.com/training/</a>

---

## Sun Welcomes Your Comments

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

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

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

*Sun SPARC Enterprise T1000 Server Overview Guide*, part number 820-0016-10



# Server Features

---

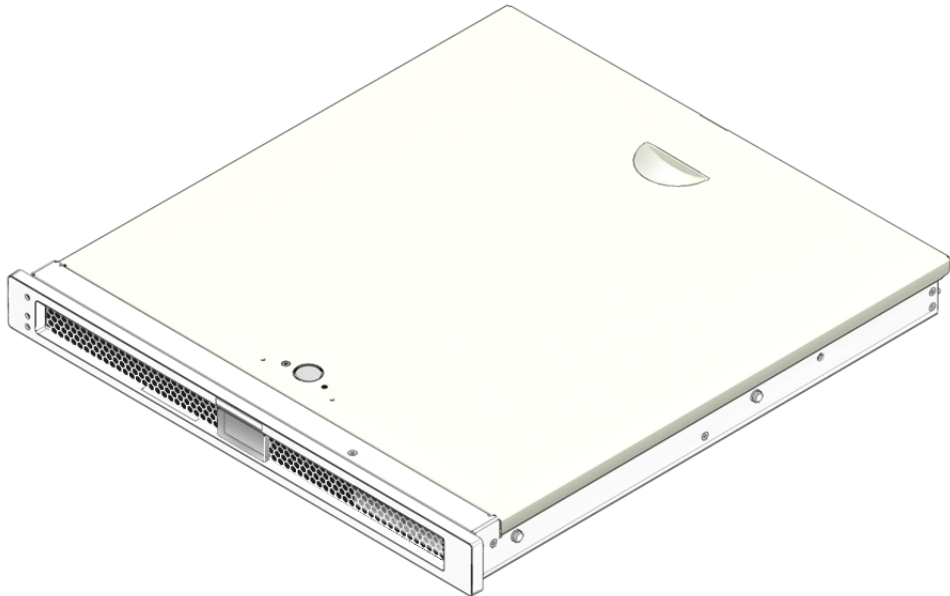
This chapter describes the features of the server.

---

# Server Features

The Sun SPARC Enterprise T1000 server is a scalable and reliable high-performance, entry-level server, offering the following characteristics:

- Space efficient, rack-optimized 1U form factor for horizontally scaled environments.
- Chip multithreading technology (CMT) in the UltraSPARC® T1 processor with CoolThreads™ technology offering six or eight cores, with four threads per core for improved throughput and reduced power consumption.
- Four on-board Ethernet ports providing efficient integration and connectivity.
- Investment protection with SPARC® V9 binary application compatibility and the Solaris™ 10 Operating System (Solaris OS). The Solaris 10 OS also provides features such as Solaris Predictive Self-Healing, Solaris Dynamic Tracing, and support across UltraSPARC platforms.



**FIGURE 1** Sun SPARC Enterprise T1000 Server

# Feature Specifications at a Glance

**TABLE 1** Feature Specifications at a Glance

Feature	Description
Processor	1 UltraSPARC T1 multicore processor (6 or 8 cores)
Memory	8 slots that can be populated with one of the following types of DDR-2, 400 MHz DIMMS with ECC: <ul style="list-style-type: none"><li>• 512 MB (4 GB maximum)</li><li>• 1 GB (8 GB maximum)</li><li>• 2 GB (16 GB maximum)</li><li>• 4 GB (32 GB maximum)</li></ul>
Ethernet ports	4 ports, 10/100/1000 Mb autonegotiating
Internal hard drives	2 SAS 73GB 2.5-inch form factor hard drives or 1 SATA 80 GB 3.5-inch form factor hard drive
Cooling	4 system fans and 1 fan in the power supply unit
PCI interface*	1 PCI Express (PCI-E) expansion slot for low-profile cards (supports x1, x4, and x8 width cards)
Power	Single 300-watt power supply unit (PSU)
Remote management	System controller with a serial and 10/100 Mb Ethernet port for access to the ALOM CMT remote management interface.
Firmware	OpenBoot™ PROM establishing settings and for power-on self-test (POST) support ALOM CMT for remote management administration
Cryptography	Hardware-assisted cryptographic acceleration
Operating system	Solaris 10 Operating System preinstalled on disk 0 (if a hard drive is purchased with the system). Refer to the <i>Sun SPARC Enterprise T1000 Server Product Notes</i> for information on the supported Solaris OS versions and required patches.
Other software	Java Enterprise System with a 90-day trial licence
Other	This server complies with the Restriction of Hazardous Substances (RoHS) directive 2002/95/EC.H.

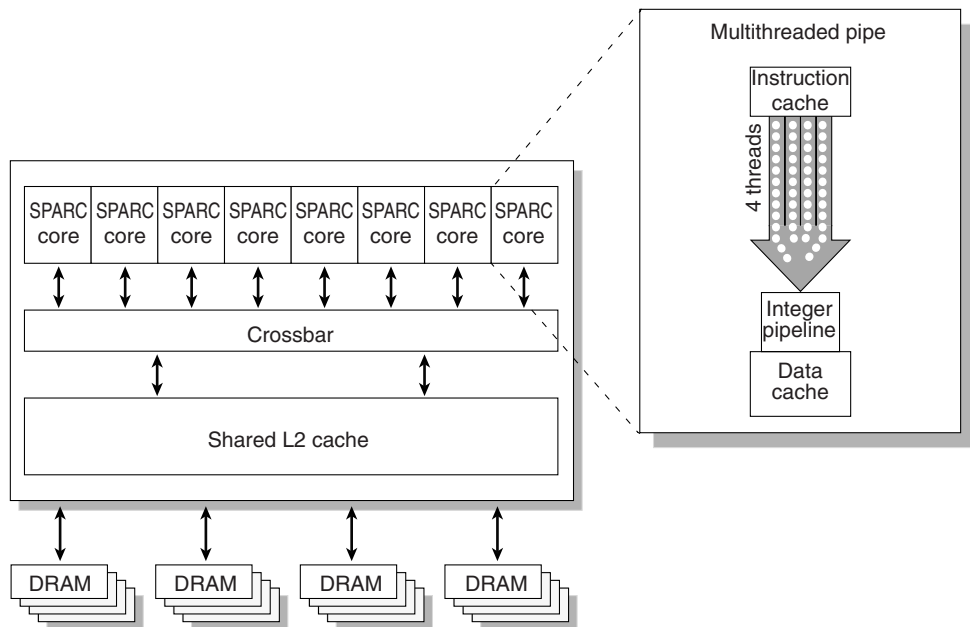
\* PCI Express specifications described in this table list the physical requirements for PCI cards. Additional support capabilities must also be provided (such as device drivers) for a PCI card to function in the server. Refer to the specifications and documentation for a given PCI card to determine if the required drivers are provided that enable the card to function in this server.

# Chip-Multithreaded Multicore Processor and Memory Technology

The UltraSPARC T1 multicore processor is the basis of the Sun SPARC Enterprise T1000 server. The UltraSPARC T1 processor is based on chip multithreading (CMT) technology that is optimized for highly threaded transactional processing. The processor improves throughput while using less power and dissipating less heat than conventional processor designs.

Depending on the model purchased, the processor has six or eight UltraSPARC cores. Each core equates to a 64-bit execution pipeline capable of running four threads. The result is that the 8-core processor handles up to 32 active threads concurrently.

Additional processor components (FIGURE 2), such as L1 cache, L2 cache, memory access crossbar, DDR2 memory controllers, and a JBus I/O interface have been carefully tuned for optimal performance.



**FIGURE 2** UltraSPARC T1 Multicore Processor Block Diagram

# Performance Enhancements

The Sun SPARC Enterprise T1000 server introduces several new technologies with its sun4v architecture and multicore multithreaded UltraSPARC T1 multicore processor.

Some of these enhancements are:

- Large page optimization
- Reduction on translation lookaside buffer (TLB) misses
- Optimized block copy

# Preinstalled Solaris Operating System

The Sun SPARC Enterprise T1000 server is preinstalled with the Solaris 10 OS, and offers the following Solaris OS features:

- Stability, high performance, scalability, and precision of a mature 64-bit operating system.
- Support for over 12,000 leading technical and business applications.
- Solaris Containers – Isolate software applications and services using flexible, software-defined boundaries.
- DTrace – A comprehensive dynamic tracing framework for tuning applications and troubleshooting systemic problems in real time.
- Predictive Self-Healing – Capability that automatically diagnoses, isolates, and recovers from many hardware and application faults.
- Security – Advanced security features designed to protect the enterprise at multiple levels.
- Network Performance – Completely rewritten TCP/IP stack dramatically improves the performance and scalability of your networked services.

If you prefer to install the Solaris OS rather than use the preinstalled Solaris OS, you can do so. The Sun SPARC Enterprise T1000 server uses the Solaris 10 OS. For specific supported Solaris releases, refer to the *Sun SPARC Enterprise T1000 Server Product Notes*.

# Preloaded Java Enterprise System Software

The server is preinstalled with Java Enterprise System software and includes a free 90-day evaluation license for the following Java Enterprise System software applications:

- Access Manager – A security foundation that helps manage secure access to an enterprises' Web applications by offering single sign-on (SSO) as well as enabling federation across trusted networks.
- Application Server – Provides a Java 2 Platform, Enterprise Edition (J2EE™ platform) 1.4 compatible platform for developing and delivering server-side Java applications and web services.
- Calendar Server – A web-based tool that facilitates team collaboration by enabling users to manage and coordinate appointments, events, tasks, and resources.
- Cluster software – Delivers high availability to enterprise system applications.
- Directory Server – User-management infrastructure for enterprises that manage high volumes of user information by providing a centralized repository for storing and managing user profiles and access privileges, as well as application and network resource information.
- Directory Proxy Server – Provides secure firewall-like services for the Directory Server.
- Instant Messaging – A standards-based, real-time communication and collaboration application.
- Message Queue – An enterprise-level message server using a standards-based (JMS) messaging solution.
- Messaging Server – A high-performance, highly secure messaging platform that provides security features that help ensure the integrity of communications.
- Portal Server – Provides portal services that identify users through centralized identity services using roles, and policies.
- Web Server – A secure, reliable, easy-to-use web server designed for medium and large business applications.

To gain the benefits of the Java Enterprise System, you can buy a subscription license for a Java Enterprise System Suite, or a combination of Java System Suites.

---

**Note** – The specific Java Enterprise System software applications vary depending on the version of Java Enterprise System software installed on the server.

---



# Hardware-Assisted Cryptography

The UltraSPARC T1 multicore processor provides hardware-assisted acceleration of RSA and DSA cryptographic operations. The Solaris 10 Operating System provides the multithreaded device driver (`ncp` device driver) that supports the hardware-assisted cryptography.

## Remote Manageability With ALOM CMT

The Advanced Lights Out Manager (ALOM CMT) feature is a system controller that enables you to remotely manage and administer the Sun SPARC Enterprise T1000 server.

The ALOM CMT software is preinstalled as firmware, and therefore, ALOM CMT initializes as soon as you apply power to the system. You can customize ALOM CMT to work with your particular installation.

ALOM CMT enables you to monitor and control your server over a network, or by using the dedicated serial port. ALOM CMT provides a command-line interface that you can use to remotely administer geographically distributed or physically inaccessible machines. In addition, ALOM CMT enables you to run diagnostics (such as POST) remotely that would otherwise require physical proximity to the server's serial port.

You can configure ALOM CMT to send email alerts of hardware failures, hardware warnings, and other events related to the server or to ALOM CMT. The ALOM CMT circuitry runs independently of the server, using the server's standby power. Therefore, ALOM CMT firmware and software continue to function when the server operating system goes offline or when the server is powered off. ALOM CMT monitors the following server components:

- CPU temperature conditions
- Enclosure thermal conditions
- Fan speed and status
- Power supply status
- Voltage conditions

For information about configuring and using the ALOM system controller, refer to the *Advanced Lights Out Management (ALOM) CMT guide*.

# System Reliability, Availability, and Serviceability

Reliability, availability, and serviceability (RAS) are aspects of a system's design that affect its ability to operate continuously and to minimize the time necessary to service the system. Reliability refers to a system's ability to operate continuously without failures and to maintain data integrity. System availability refers to the ability of a system to recover to an operational state after a failure, with minimal impact. Serviceability relates to the time it takes to restore a system to service following a system failure. Together, reliability, availability, and serviceability features provide for near continuous system operation.

To deliver high levels of reliability, availability, and serviceability, the Sun SPARC Enterprise T1000 server offers the following features:

- Environmental monitoring
- Error detection and correction for improved data integrity
- Easy access for most component replacements
- Support for hard drive mirroring (RAID 1) on redundant SAS hard drive configurations

For more information about using RAS features, refer to the *Sun SPARC Enterprise T1000 Server Administration Guide*.

## Environmental Monitoring

The Sun SPARC Enterprise T1000 server features an environmental monitoring subsystem designed to protect the server and its components against:

- Extreme temperatures
- Lack of adequate airflow through the system
- Power supply failures
- Hardware faults

Temperature sensors are located throughout the system to monitor the ambient temperature of the system and internal components. The software and hardware ensure that the temperatures within the enclosure do not exceed predetermined safe operation ranges. If the temperature observed by a sensor falls below a low-temperature threshold or rises above a high-temperature threshold, the monitoring subsystem software lights the amber Service Required LEDs on the front and rear panel. If the temperature condition persists and reaches a critical threshold, the system initiates a graceful system shutdown. In the event of a failure of the ALOM system controller, backup sensors are used to protect the system from serious damage, by initiating a forced hardware shutdown.

All error and warning messages are sent to the system controller (sc), system console, and logged in the ALOM CMT console log file. Service Required LEDs remain lit after an automatic system shutdown to aid in problem diagnosis.

The power subsystem is monitored in a similar fashion by monitoring power supplies and reporting any fault in the front and rear panel LEDs.

If a power supply problem is detected, an error message is sent to the SC system console and logged in the ALOM CMT console log file. Additionally, LEDs located on each power supply light to indicate failures. The system Service Required LED lights to indicate a system fault.

## Error Correction and Parity Checking

The UltraSPARC T1 multicore processor provides parity protection on its internal cache memories, including tag parity and data parity on the D-cache and I-cache. The internal 3MB L2 cache has parity protection on the tags, and ECC protection on the data.

Advanced ECC, also called *chipkill*, corrects up to 4-bits in error on nibble boundaries as long as they are all in the same DRAM. If a DRAM fails, the DIMM continues to function.

## Fault Management and Predictive Self Healing

The server features the latest fault management technologies based on a new architecture for building and deploying systems and services capable of *Predictive Self-Healing*. Self-healing technology enables systems to accurately predict component failures and mitigate many serious problems before they actually occur. This technology is incorporated into both the hardware and software of the server.

At the heart of the Predictive Self-Healing capabilities is the Solaris Fault Manager, a new service that receives data relating to hardware and software errors, and automatically and silently diagnoses the underlying problem. Once a problem is diagnosed, a set of agents automatically logs the event, and if necessary, takes the faulty component offline. By automatically diagnosing problems, business-critical applications and essential system services can continue uninterrupted in the event of software failures, or major hardware component failures.

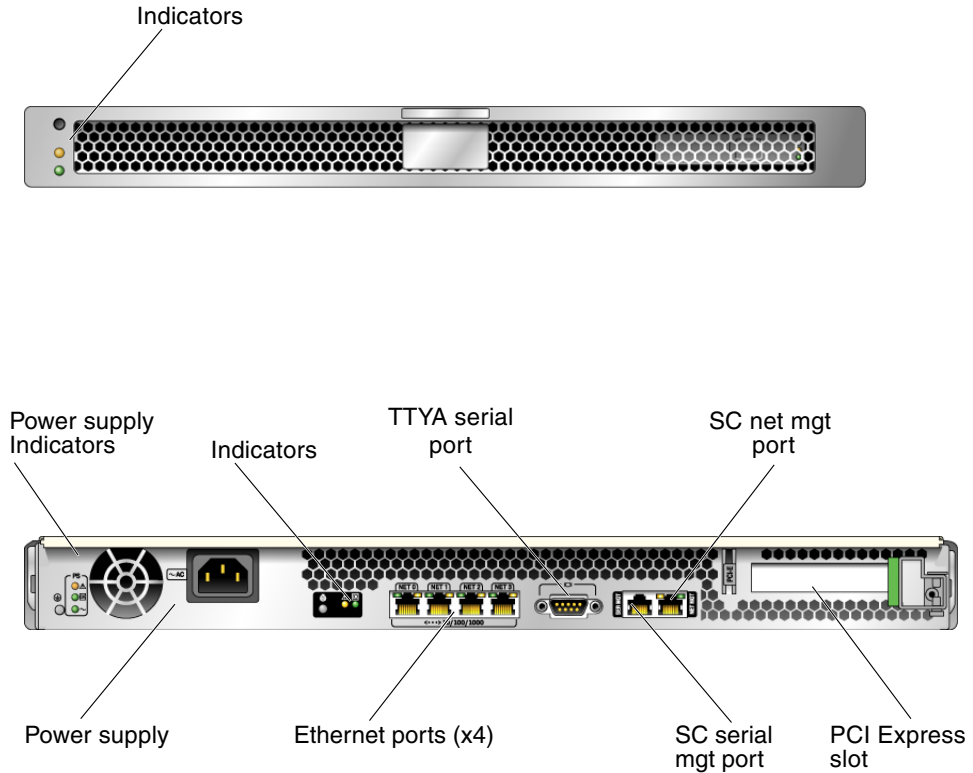
## Rackmountable Enclosure

The server uses a space-saving 1U-high rackmountable enclosure that can be installed into a variety of industry standard racks.

---

# Chassis Identification

The following figures show the physical characteristics of the Sun SPARC Enterprise T1000 server.



**FIGURE 3** Sun SPARC Enterprise T1000 Server Front and Rear Panels