



Sun Fire™ T1000 Server Overview

Sun Microsystems, Inc.
www.sun.com

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Preface

The *Sun Fire T1000 Server Overview* describes the hardware and software features, options, and specifications for the Sun Fire™ T1000 server.

Sun Fire T1000 Server Documentation

You can view and print the following manuals from the Sun documentation web site at <http://www.sun.com/products-n-solutions/hardware/docs/Servers>

| Title | Description | Part Number |
|--|---|--------------------|
| <i>Sun Fire T1000 Server Site Planning Guide</i> | <i>Site planning information for the Sun Fire T1000 server</i> | 819-3749 |
| <i>Sun Fire T1000 Server Product Notes</i> | <i>Late-breaking information about the server. The latest notes are posted at:</i> http://www.sun.com/documentation | 819-3246 |
| <i>Sun Fire T1000 Server Getting Started Guide</i> | <i>High level instructions for getting your server installed and running quickly</i> | 819-3244 |
| <i>Sun Fire T1000 Server Installation Guide</i> | <i>Detailed rackmounting, cabling, power-on, and configuration information</i> | 819-3247 |
| <i>Sun Fire T1000 Server System Administration Guide</i> | <i>How to perform administrative tasks that are specific to the Sun Fire T1000 server</i> | 819-3249 |
| <i>Sun Fire T1000 Server Service Manual</i> | <i>How to remove and replace parts in the server</i> | 819-3248 |
| <i>Advanced Lights Out Manager (ALOM) CMT v1.1 Guide</i> | <i>How to use the Advanced Lights Out Manager (ALOM) CMT software on the Sun Fire T1000 server</i> | 819-3250 |

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Sun Fire T1000 Server Features

This chapter describes the features of the Sun Fire T1000 server. The following topics are covered:

- [“Features at a Glance” on page 2](#)
- [“Sun Fire T1000 Server Features” on page 3](#)
- [“Chassis Identification” on page 11](#)

Features at a Glance

TABLE 1 lists feature specifications for the Sun Fire T1000 server.

TABLE 1 Sun Fire T1000 System Features 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">• 512 MB (4 GB maximum)• 1 GB (8 GB maximum)• 2 GB (16 GB maximum) |
| Ethernet ports | 4 ports, 10/100/1000 Mb autonegotiating |
| Internal hard drive | 1 SFF SAS 80 GB 3.5-inch form factor hard drive (optional) |
| 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 | 1 300-watt power supply unit (PSU) |
| Remote management | ALOM system controller with a serial and 10/100 Mb Ethernet port |
| Firmware | OpenBoot PROM (OBP) establishing settings and for power-on self test (POST) support ALOMv4 for remote management administration |
| Cryptography | Hardware-assisted cyptographic acceleration |
| Operating system | Solaris 10 1/06 Operating System preinstalled on disk 0 (if the optional disk is purchased with the server) |
| Other software | Java Enterprise System with a 90-day trial licence |

System specifications are listed in the *Sun Fire T1000 Server Site Planning Guide*. Hardware configuration is described in the *Sun Fire T1000 Service Manual*. Software configuration that is specific to this server is described in the *Sun Fire T1000 Administration Guide*.

Sun Fire T1000 Server Features

The Sun Fire T1000 server is a high-performance entry-level server that is widely scalable and extremely reliable. The Sun Fire T1000 delivers a variety of options to meet specific business needs.

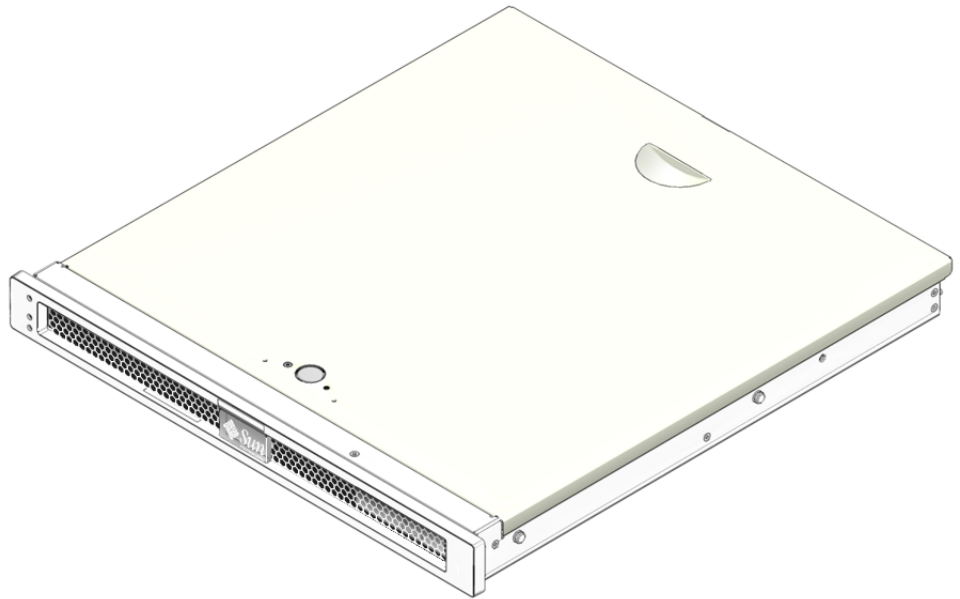


FIGURE 1 Sun Fire T1000 Server

Chip-Multithreaded Multicore Processor and Memory Technology

The UltraSPARC® T1 multicore processor is the basis of the Sun Fire T1000 server. The UltraSPARC T1 processor is based on chip multithreading (CMT) technology that is optimized for highly threaded transactional processing. The UltraSPARC T1 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, 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. See [FIGURE 2](#).

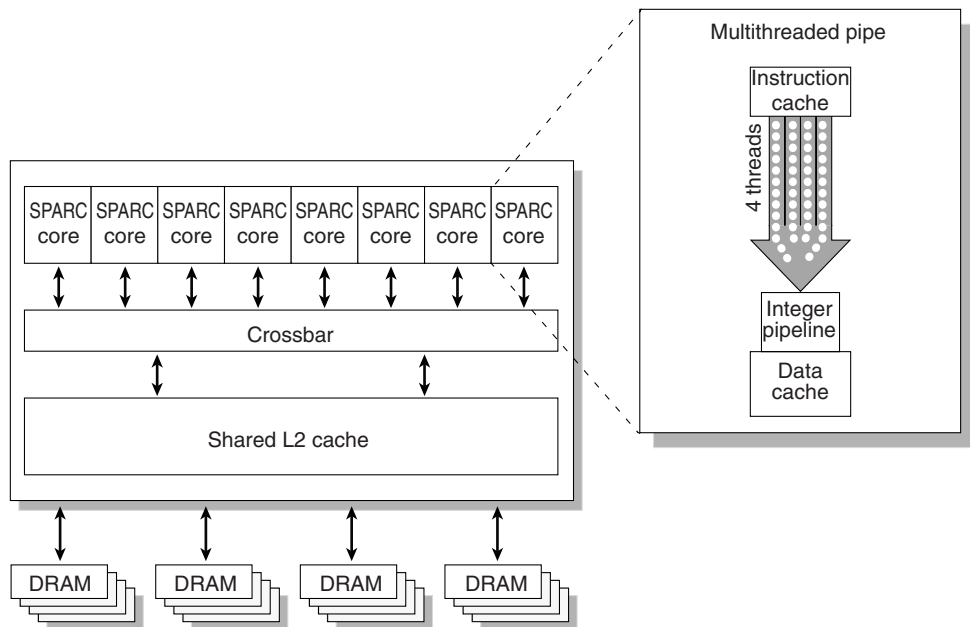


FIGURE 2 UltraSPARC T1 Multicore Processor Block Diagram

Performance Enhancements

The Sun Fire 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 Fire T1000 server is preinstalled with the Solaris™ 10 Operating System (Solaris 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 Fire T1000 server supports Solaris 10 OS. For specific supported Solaris releases, refer to the *Sun Fire T1000 Product Notes* posted at:

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

Preloaded Java Enterprise System Software

The Sun Fire T1000 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.

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

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

The ALOM 4v software is preinstalled as firmware, and therefore, ALOM initializes as soon as you apply power to the system. You can customize ALOM to work with your particular installation.

ALOM enables you to monitor and control your server over a network, or by using a dedicated serial port for connection to a terminal or terminal server. ALOM provides a command-line interface that you can use to remotely administer geographically distributed or physically inaccessible machines. In addition, ALOM 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 to send email alerts of hardware failures, hardware warnings, and other events related to the server or to ALOM. The ALOM circuitry runs independently of the server, using the server's standby power. Therefore, ALOM firmware and software continue to function when the server operating system goes offline or when the server is powered off. ALOM monitors the following Sun Fire T1000 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 *Sun Fire T1000 Server System Administration Guide* (819-3249).

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 Fire T1000 server offers the following features:

- Environmental monitoring
- Error detection and correction for improved data integrity
- Easy access for most component replacements

For more information about using RAS features, refer to the *Sun Fire T1000 Server Administration Guide* (819-3249).

Environmental Monitoring

The Sun Fire 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 back 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 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 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 Sun Fire T1000 server features the latest fault management technologies. With the Solaris 10 Operating System (OS), Sun is introducing a new architecture for building and deploying systems and services capable of *predictive self-healing*. Self-healing technology enables Sun 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 Sun Fire T1000 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 responds by logging 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 Sun Fire T1000 server uses a space-saving 1U-high rackmountable enclosure that can be installed into a variety of industry standard racks.

Documentation

The documentation that supports the Sun Fire T1000 server is comprised of three categories:

- Documentation that is specific to the Sun Fire T1000 server – This documentation provides hardware and software information about the Sun Fire T1000 server features, installation, configuration, usage, diagnostics, and parts replacement. For the list of titles see “[Sun Fire T1000 Server Documentation](#)” on page vi.
- Solaris Operating System documentation – Applies to other Sun SPARC-based systems as well as to Sun Fire T1000 server. This category includes Solaris Operating System installation, usage, reference, and release documents, as well as individual man page commands. Refer to the Solaris OS documentation site: <http://docs.sun.com/app/docs/prod/solaris>
- Documentation for additional Sun software products – These products are optionally installed and configured to run on the Sun Fire T1000 server. This category includes documentation about Java Enterprise System (JES) software products, Sun Management Center software, Sun Java Desktop System, and others. Refer to the general Sun documentation web site at: <http://www.sun.com/documentation>

Chassis Identification

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

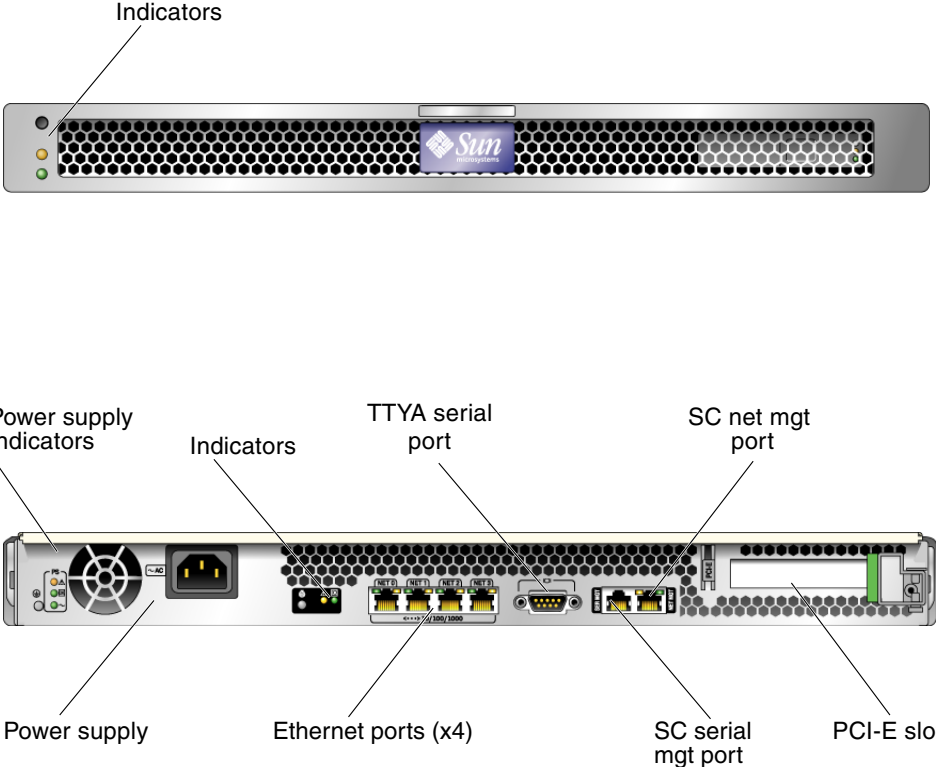


FIGURE 3 Sun Fire T1000 Server Front and Rear Panels

