

SPARC Enterprise

T5140 and T5240 Servers

Overview Guide



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SPARC Enterprise™ T5140 and T5240 Servers Overview Guide

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Preface

This manual provides an overview of the SPARC Enterprise™ T5140 and T5240 servers features.

For Safe Operation

This manual contains important information regarding the use and handling of this product. Read this manual thoroughly. Use the product according to the instructions and information available in this manual. Keep this manual handy for further reference.

Fujitsu makes every effort to prevent users and bystanders from being injured or from suffering damage to their property. Use the product according to this manual.

Related Documentation

The latest versions of all the SPARC Enterprise Series manuals are available at the following Web sites:

Global Site

(<http://www.fujitsu.com/sparcenterprise/manual/>)

Japanese Site

(<http://primeserver.fujitsu.com/sparcenterprise/manual/>)

Title	Description	Manual Code
<i>SPARC Enterprise T5140 Server Getting Started Guide</i>	Minimum steps to power on and boot the server for the first time	C120-E488
<i>SPARC Enterprise T5140 Server Getting Started Guide For Models That Run on DC Input Power</i>	Minimum steps to power on and boot the server that run on DC input power for the first time	C120-E554
<i>SPARC Enterprise T5240 Server Getting Started Guide</i>	Minimum steps to power on and boot the server for the first time	C120-E489
<i>SPARC Enterprise T5240 Server Getting Started Guide For Models That Run on DC Input Power</i>	Minimum steps to power on and boot the server that run on DC input power for the first time	C120-E555
<i>SPARC Enterprise T5140 and T5240 Servers Product Notes</i>	Information about the latest product updates and issues	C120-E493
<i>Important Safety Information for Hardware Systems</i>	Safety information that is common to all SPARC Enterprise series servers	C120-E391
<i>SPARC Enterprise T5140 and T5240 Servers Safety and Compliance Guide</i>	Safety and compliance information that is specific to the servers	C120-E495
<i>SPARC Enterprise/PRIMEQUEST Common Installation Planning Manual</i>	Requirements and concepts of installation and facility planning for the setup of SPARC Enterprise and PRIMEQUEST	C120-H007
<i>SPARC Enterprise T5140 and T5240 Servers Site Planning Guide</i>	Server specifications for site planning	C120-H028
<i>SPARC Enterprise T5140 and T5240 Servers Overview Guide</i>	Product features	C120-E494
<i>SPARC Enterprise T5140 and T5240 Servers Installation Guide</i>	Detailed rackmounting, cabling, power on, and configuring information	C120-E496

Title	Description	Manual Code
<i>SPARC Enterprise T5140 and T5240 Servers Service Manual</i>	How to run diagnostics to troubleshoot the server, and how to remove and replace parts in the server	C120-E497
<i>SPARC Enterprise T5140 and T5240 Servers Administration Guide</i>	How to perform administrative tasks that are specific to the servers	C120-E498
<i>Integrated Lights Out Manager 2.0 User's Guide</i>	Information that is common to all platforms managed by Integrated Lights Out Manager (ILOM) 2.0	C120-E474
<i>Integrated Lights Out Manager 2.0 Supplement for SPARC Enterprise T5140 and T5240 Servers</i>	How to use the ILOM 2.0 software on the servers	C120-E499
<i>Integrated Lights Out Manager (ILOM) 3.0 Concepts Guide</i>	Information that describes ILOM 3.0 features and functionality	C120-E573
<i>Integrated Lights Out Manager (ILOM) 3.0 Getting Started Guide</i>	Information and procedures for network connection, logging in to ILOM 3.0 for the first time, and configuring a user account or a directory service	C120-E576
<i>Integrated Lights Out Manager (ILOM) 3.0 Web Interface Procedures Guide</i>	Information and procedures for accessing ILOM 3.0 functions using the ILOM web interface	C120-E574
<i>Integrated Lights Out Manager (ILOM) 3.0 CLI Procedures Guide</i>	Information and procedures for accessing ILOM 3.0 functions using the ILOM CLI	C120-E575
<i>Integrated Lights Out Manager (ILOM) 3.0 SNMP and IPMI Procedures Guide</i>	Information and procedures for accessing ILOM 3.0 functions using SNMP or IPMI management hosts	C120-E579
<i>Integrated Lights Out Manager (ILOM) 3.x Feature Updates and Release Notes</i>	Enhancements that have been made to ILOM firmware since the ILOM 3.0 release	C120-E600
<i>Integrated Lights Out Manager (ILOM) 3.0 Supplement for SPARC Enterprise T5140 and T5240 Servers</i>	How to use the ILOM 3.0 software on the servers	C120-E578
<i>External I/O Expansion Unit Installation and Service Manual</i>	Procedures for installing the External I/O Expansion Unit on the SPARC Enterprise T5120/T5140/T5220/T5240/T5440 servers	C120-E543
<i>External I/O Expansion Unit Product Notes</i>	Important and late-breaking information about the External I/O Expansion Unit	C120-E544

Note – Product Notes are available on the website only. Please check for the recent update on your product.

Conventions for Alert Messages

This manual uses the following conventions to show alert messages, which are intended to prevent injury to the user or bystanders as well as property damage, and important messages that are useful to the user.



Warning – This indicates a hazardous situation that could result in death or serious personal injury (potential hazard) if the user does not perform the procedure correctly.



Caution – This indicates a hazardous situation that could result in minor or moderate personal injury if the user does not perform the procedure correctly. This signal also indicates that damage to the product or other property may occur if the user does not perform the procedure correctly.

Alert Messages in the Text

An alert message in the text consists of a signal indicating an alert level followed by an alert statement. A space of one line precedes and follows an alert statement.



Caution – The following tasks regarding this product and the optional products provided from Fujitsu should only be performed by a certified service engineer. Users must not perform these tasks. Incorrect operation of these tasks may cause malfunction.

Product Handling

Maintenance



Warning – Certain tasks in this manual should only be performed by a certified service engineer. User must not perform these tasks. Incorrect operation of these tasks may cause electric shock, injury, or fire.

- Installation and reinstallation of all components, and initial settings
 - Removal of front, rear, or side covers
 - Mounting/de-mounting of optional internal devices
 - Plugging or unplugging of external interface cards
 - Maintenance and inspections (repairing, and regular diagnosis and maintenance)
-



Caution – The following tasks regarding this product and the optional products provided from Fujitsu should only be performed by a certified service engineer. Users must not perform these tasks. Incorrect operation of these tasks may cause malfunction.

- Unpacking optional adapters and such packages delivered to the users
 - Plugging or unplugging of external interface cards
-

Remodeling/Rebuilding



Caution – Do not make mechanical or electrical modifications to the equipment. Using this product after modifying or reproducing by overhaul may cause unexpected injury or damage to the property of the user or bystanders.

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For Users in U.S.A., Canada, and Mexico:

(<https://download.computers.us.fujitsu.com/>)

For Users in Other Countries:

(http://www.fujitsu.com/global/contact/computing/sparce_index.html)

Understanding Server Features

These topics describe the features of the SPARC Enterprise T5140 and T5240 servers. The following topics are covered:

- [“Server Highlights” on page 2](#)
- [“Features at a Glance” on page 4](#)
- [“Additional Feature Information” on page 7](#)

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *SPARC Enterprise T5140 and T5240 Servers Getting Started Guide*
- *SPARC Enterprise T5140 and T5240 Servers Getting Started Guide (DC)*
- *SPARC Enterprise T5140 and T5240 Servers Site Planning Guide*
- *SPARC Enterprise T5140 and T5240 Servers Installation Guide*
- *SPARC Enterprise T5140 and T5240 Servers Administration Guide*
- Integrated Lights Out Manager (ILOM) software documentation
- *Integrated Lights Out Manager (ILOM) 3.0 Supplement for SPARC Enterprise T5140 and T5240 Servers*
- Logical Domains (LDDoms) software documentation (<http://docs.sun.com/app/docs/prod/ldoms>)
- *SPARC Enterprise T5140 and T5240 Servers Service Manual*
- Solaris OS documentation (<http://docs.sun.com/app/docs/prod/solaris>)

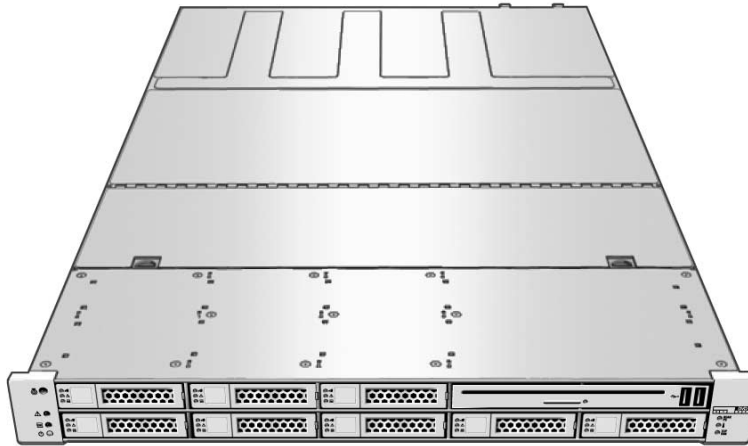
Server Highlights

The SPARC Enterprise T5140 (FIGURE: SPARC Enterprise T5140 Server on page 3) and T5240 (FIGURE: SPARC Enterprise T5240 Server on page 3) servers are scalable, reliable, high-performance, entry-level servers, optimized for enterprise data centers. These servers offer the following key features:

- Two UltraSPARC T2 Plus multicore, multithreaded, processors with CoolThreads technology for high throughput and energy savings.
- The latest QuadEthernet ASIC for high performance multithreaded networking.
- High levels of system uptime through the processor and memory reliability, availability, and serviceability (RAS) features. Redundancy of systems components, support for hardware RAID (0, 1), and the predictive self-healing features of the Solaris 10 Operating System (Solaris OS).
- Both servers come in a space efficient, rack-optimized form factor chassis – 1U for the SPARC Enterprise T5140 server, and 2U for the SPARC Enterprise T5240 server.
- Investment protection with SPARC V9 binary application compatibility and the Solaris 10 OS. The Solaris 10 OS also provides features such as Solaris Predictive Self-Healing, Solaris Dynamic Tracing, and support across UltraSPARC platforms.
- Unified server management through the use of the Integrated Lights Out Manager (ILOM) service processor interface. ILOM integrates and manages CoolThreads and x64 platforms with the same tool set, in heterogeneous environments, using industry standard element management tools and enterprise frameworks.

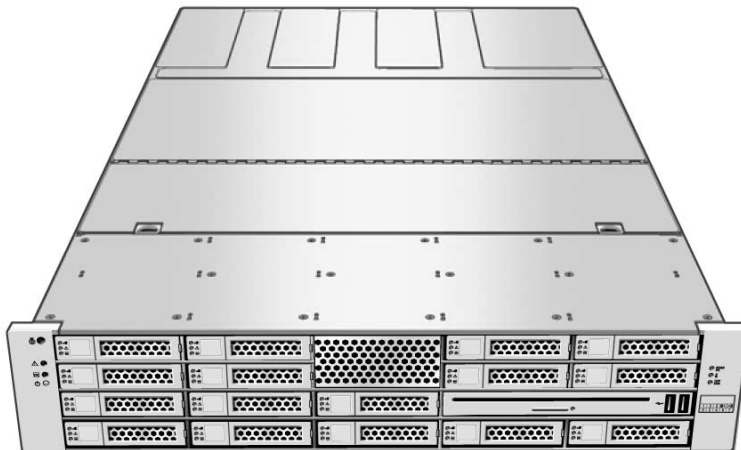
The following figure shows the SPARC Enterprise T5140 server chassis as viewed from the front and top.

FIGURE: SPARC Enterprise T5140 Server



The following figure shows the SPARC Enterprise T5240 server chassis as viewed from the front and top.

FIGURE: SPARC Enterprise T5240 Server



Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *SPARC Enterprise T5140 and T5240 Servers Administration Guide*
- *Integrated Lights Out Manager (ILOM) software documentation*

- *Integrated Lights Out Manager (ILOM) 3.0 Supplement for SPARC Enterprise T5140 and T5240 Servers*
- Solaris OS documentation (<http://docs.sun.com/app/docs/prod/solaris>)

Features at a Glance

The following table describes in summary form the main features of the SPARC Enterprise T5140 and T5240 servers.

TABLE: Summary of Features

Feature	Description
Chassis dimensions and rackmounting hardware	T5140 – 1 rack unit (1U): <ul style="list-style-type: none"> • Width: 425 mm (16.75 in.) • Height: 44 mm (1.75 in.) • Depth: 714 mm (28.13 in.) T5240 – 2 rack units (2U): <ul style="list-style-type: none"> • Width: 425 mm (16.75 in.) • Height: 88 mm (3.49 in.) • Depth: 714 mm (28.13 in.)
Processor	Two UltraSPARC T2 Plus multicore, multithreaded processors each with one of the following number of cores: <ul style="list-style-type: none"> • 4 cores (32 × 2, for a total of 64 concurrent threads); 1.2GHz • 6 cores (48 × 2, for a total of 96 concurrent threads); 1.2GHz • 8 cores (64 × 2, for a total of 128 concurrent threads); 1.2, 1.4, or 1.6GHz
Memory Slots/Capacity	T5140: Sixteen FB-DIMM slots supporting 2-, 4-, and 8-Gbyte modules (maximum capacity of 128 Gbytes of system memory). T5240: Sixteen or thirty-two FB-DIMM slots supporting 2-, 4-, and 8-Gbyte modules (maximum of 256 Gbytes of system memory).

TABLE: Summary of Features (*Continued*)

Feature	Description
Internal Hard Drives	<p>T5140</p> <p>Up to eight 73-Gbyte (15K rpm), 146-Gbyte, or 300-Gbyte, 2.5-inch disk-based SAS hard drives.</p> <p>Up to four solid-state drives can be used in conjunction with disk-based hard drives for a total of eight hard drive storage units.</p> <p>Integrated hard drive controller supports RAID 0 and RAID 1.</p> <p>T5240:</p> <p>Up to sixteen 73-Gbyte (15K rpm), 146-Gbyte, or 300-Gbyte, 2.5-inch disk-based SAS hard drives.</p> <p>Up to eight solid-state drives can be used in conjunction with disk-based hard drives for a total of sixteen hard drive storage units.</p> <p>Integrated hard drive controller supports RAID 0 and RAID 1.</p> <p>Note - Some configurations require an input voltage of 200 – 240 VAC. Refer to the <i>SPARC Enterprise T5140 and T5240 Servers Site Planning Guide</i> for details.</p>
Optical Media Device	<p>One slot-loading, slimline DVD drive, supporting CD-R/W, DVD-R/W, DVD+R/W</p>
Power Supplies	<p>Two hot-swappable power supply units providing N+1 redundancy</p>
Ethernet Ports	<p>Four 1-Gbit Ethernet, RJ-45-based, autonegotiating ports.</p> <p>Note - 10-Gbit Ethernet ports are available by adding XAUI cards to the I/O expansion slots. For each XAUI card added, one onboard 1-Gbit Ethernet port is disabled.</p>
I/O Expansion Slots	<p>T5140:</p> <p>Three I/O expansion slots with the following slot designated specifications:[*]</p> <ul style="list-style-type: none">• One slot – PCIe, 8-lane• Two slots – PCIe 8-lane (alternatively, these slots can be used for 10-Gbit Ethernet by adding XAUI cards)• Up to 10 additional PCIe slots are available using up to two External I/O Expansion Units <p>T5240:</p> <p>Six I/O expansion slots with the following slot designated specifications:</p> <ul style="list-style-type: none">• Four slots – PCIe, 8-lane• Two slots – PCIe 8-lane (alternatively, these slots can be used for 10-Gbit Ethernet by adding XAUI cards)• Up to 10 additional PCIe slots are available using up to two External I/O Expansion Units <p>Note - All of the PCIe slots support standard low-profile PCIe cards. All PCIe cards are installed using supplied riser boards.</p> <p>Note - Some PCIe configuration restrictions may apply based on system thermal requirements.</p>

TABLE: Summary of Features (*Continued*)

Feature	Description
USB Ports	Four USB 2.0 ports (2 forward, 2 rear facing).
Additional Ports	The following connectors are located on the rear of the server: <ul style="list-style-type: none">• One RJ-45 serial management port (SER MGT) – the default connection to the service processor• One 10/100 Mbps Ethernet network management port (NET MGT) – connection to the service processor• One DB-9 serial port – connection to the host
Remote Management	On-board service processor, running Integrated Lights Out Manager (ILOM) 3.0 with two command sets: <ul style="list-style-type: none">• ILOM• ALOM CMT compatibility shell (legacy command set) Both command sets are accessible through the RJ-45 serial and 10/100 Mbps Ethernet interfaces.
Cryptography	Processor integrated cryptographic acceleration that supports industry standard security ciphers
Operating System	Solaris 10 OS preinstalled on disk 0 Refer to the server product notes for information on the minimum version of supported OS and required patches.
Other Software	<ul style="list-style-type: none">• Java Enterprise System• Logical Domains Manager• Sun Studio Refer to the server product notes for details about specific versions of the preinstalled software.

* PCIe and PCI-X 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.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *SPARC Enterprise T5140 and T5240 Servers Site Planning Guide*
- *SPARC Enterprise T5140 and T5240 Servers Getting Started Guide*
- *SPARC Enterprise T5140 and T5240 Servers Getting Started Guide (DC)*
- *SPARC Enterprise T5140 and T5240 Servers Installation Guide*
- Integrated Lights Out Manager (ILOM) software documentation
- *Integrated Lights Out Manager (ILOM) 3.0 Supplement for SPARC Enterprise T5140 and T5240 Servers*

- Logical Domains (LDoms) software documentation (<http://docs.sun.com/app/docs/prod/ldoms>)
 - *SPARC Enterprise T5140 and T5240 Servers Service Manual*
 - Solaris OS documentation (<http://docs.sun.com/app/docs/prod/solaris>)
-

Additional Feature Information

- “Chip-Multithreaded Processor and Memory Technology” on page 7
- “Enhancements” on page 8
- “Preinstalled Solaris Operating System” on page 9
- “Hardware-Assisted Cryptography” on page 9
- “Support for Virtualization Through Logical Domains” on page 10
- “Remote Manageability With ILOM” on page 11
- “High Levels of System Reliability, Availability, and Serviceability” on page 12
- “Hot-Pluggable and Hot-Swappable Components” on page 12
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- “Environmental Monitoring” on page 13
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- “Error Correction and Parity Checking” on page 15
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Chip-Multithreaded Processor and Memory Technology

The UltraSPARC T2 Plus multicore, multithreaded, processor is the basis of the SPARC Enterprise T5140 and T5240 servers. There are two UltraSPARC T2 Plus processors in each server.

The UltraSPARC T2 Plus processor is based on chip-multithreading (CMT) technology that is optimized for highly threaded transactional processing. The UltraSPARC T2 Plus processor improves throughput while using less power and dissipating less heat than conventional processor designs.

Depending on the model purchased, each processor chip has four, six, or eight UltraSPARC cores. Each core has two integer pipelines, and each pipeline runs four threads, for a total of eight threads per core. Each core also has one floating point unit (FPU), for a total of up to eight FPUs per processor chip.

Additional processor components, such as L1 cache, L2 cache, memory access crossbar, memory controllers, and the I/O interface, have been carefully tuned for optimal performance.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *SPARC Enterprise T5140 and T5240 Servers Installation Guide*
- *SPARC Enterprise T5140 and T5240 Servers Administration Guide*
- *SPARC Enterprise T5140 and T5240 Servers Service Manual*

Enhancements

The SPARC Enterprise T5140 and T5240 servers expand the CoolThreads family to include dual socket systems. The servers deliver extremely high compute density with up to 128 threads in 1 and 2 rack units.

The SPARC Enterprise T5140 and T5240 servers provide advanced power management through the UltraSPARC T2 power management features that work at both the core and the memory levels of the processor, including the ability to reduce instruction issue rates, parking of idle threads and cores, and the ability to turn off clocks in both cores and memory to reduce power consumption.

In addition, these servers offer the following features:

- High memory density with up to 64 Gbytes in 1 rack unit, and up to 128 Gbytes in 2 rack units.
- High internal storage capacity with over 2 TBytes available in the SPARC Enterprise T5240 server.
- Robust I/O bandwidth with 8 lanes available in all of the PCIe slots.
- Eco-responsibility through the use of power supplies that are compliant with 80 Plus and Climate Savers computing initiatives.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *SPARC Enterprise T5140 and T5240 Servers Installation Guide*
- *SPARC Enterprise T5140 and T5240 Servers Administration Guide*

- *SPARC Enterprise T5140 and T5240 Servers Service Manual*

Preinstalled Solaris Operating System

The SPARC Enterprise T5140 and T5240 servers are preinstalled with the Solaris 10 OS and offer the following Solaris OS features:

- Stability, high performance, scalability, and precision of a mature 64-bit operating system.
- Support for over 5,000 leading technical and business applications, and thousands of Java based services.
- 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.

You can use the preinstalled Solaris 10 OS or reinstall a supported version of the Solaris 10 OS from your network, CD, or downloaded copy. In some cases, if you reinstall the Solaris OS, you must also install patches. Refer to the *SPARC Enterprise T5140 and T5240 Servers Product Notes* for information on the supported OS releases and mandatory patches for your server.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- Solaris OS documentation (<http://docs.sun.com/app/docs/prod/solaris>)

Hardware-Assisted Cryptography

The UltraSPARC T2 Plus multicore, multithreaded processors provide hardware-assisted acceleration of symmetric, asymmetric, hashing, and random number generation cryptographic operations as follows:

- Asymmetric algorithms – RSA, DSA, Diffie Hellman, and Elliptic Curve cryptography

- Symmetric algorithms – AES, 3DES, and RC\$
- Hashing algorithms – SHA1, SHA256, and MD5

The Solaris 10 OS provides the multithreaded device driver that supports the hardware-assisted cryptography.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- Solaris OS documentation (<http://docs.sun.com/app/docs/prod/solaris>)

Support for Virtualization Through Logical Domains

The SPARC Enterprise T5140 and T5240 servers support the use of Logical Domains (LDoms) technology. Through the use of the Solaris OS and the built-in server firmware, and by installing the Logical Domains Manager software, you can virtualize the compute services that run on your server. LDoms technology is open source technology and is included at no additional cost.

A *logical domain* is a discrete, logical grouping with its own operating system, resources, and identity within a single computer system. Each logical domain can be created, destroyed, reconfigured, and rebooted independently, without requiring a power cycle of the server.

You can run a variety of applications software in different logical domains and keep them independent for performance and security purposes.

Each logical domain can be managed as an entirely independent machine with its own resources, such as:

- Kernel, patches, and tuning parameters
- User accounts and administrators
- Network interfaces, MAC addresses, and IP addresses

Each logical domain can interact only with those server resources made available to it. The configuration is controlled using the Logical Domains Manager.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- Logical Domains (LDoms) software documentation (<http://docs.sun.com/app/docs/prod/ldoms>)

Remote Manageability With ILOM

The Integrated Lights Out Manager (ILOM) feature is a service processor, built into the server, that enables you to remotely manage and administer the server.

The ILOM software is preinstalled as firmware, and initializes as soon as you apply power to the system.

ILOM enables you to monitor and control your server over an Ethernet connection (supports SSH), or by using a dedicated serial port for connection to a terminal or terminal server. ILOM provides a command-line interface and a browser-based interface (BI) that you can use to remotely administer geographically distributed or physically inaccessible machines. In addition, ILOM enables you to run diagnostics (such as POST) remotely that would otherwise require physical proximity to the server's serial port.

You can configure ILOM to send email alerts of hardware failures and warnings, and other events related to the server. The ILOM circuitry runs independently of the server, using the server's standby power. Therefore, ILOM firmware and software continue to function when the server operating system goes offline or when the server is powered off. ILOM monitors the following SPARC Enterprise T5140 and T5240 server conditions:

- CPU temperature conditions
- Hard drive status
- Enclosure thermal conditions
- Fan speed and status
- Power supply status
- Voltage conditions
- Solaris watchdog, boot time-outs, and automatic server restart events

In addition to the ILOM CLI and BI, you can set up the server to use an ALOM CMT compatibility CLI. The ALOM CMT compatibility CLI provides commands that approximate the ALOM CMT UI that is a service processor interface provided on some previous servers.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *Integrated Lights Out Manager (ILOM) software documentation*
- *Integrated Lights Out Manager (ILOM) 3.0 Supplement for SPARC Enterprise T5140 and T5240 Servers*

High Levels of 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 SPARC Enterprise T5140 and T5240 servers offer the following features:

- Ability to disable individual threads and cores without rebooting
- Lower heat generation, reducing hardware failures
- Hot-pluggable hard drives
- Redundant, hot-swappable power supplies (two)
- Redundant N+1 hot-swappable fan modules
- Environmental monitoring
- Internal hardware drive mirroring (RAID 1)
- Error detection and correction for improved data integrity
- Easy access for most component replacements

Related Information

- [“Hot-Pluggable and Hot-Swappable Components” on page 12](#)
- [“Power Supply Redundancy” on page 13](#)
- [“Environmental Monitoring” on page 13](#)
- [“Support for RAID Storage Configurations” on page 14](#)
- [“Error Correction and Parity Checking” on page 15](#)

Hot-Pluggable and Hot-Swappable Components

SPARC Enterprise T5140 and T5240 server hardware is designed to support hot-plugging of the chassis-mounted hard drives, and hot-swapping of fan units, and power supplies. By using the proper software commands, you can install or remove these components while the system is running. Hot-swap and hot-plug technology

significantly increases the system's serviceability and availability by providing the ability to replace hard drives, fan units, and power supplies without service disruption.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *SPARC Enterprise T5140 and T5240 Servers Administration Guide*
- Integrated Lights Out Manager (ILOM) software documentation
- *Integrated Lights Out Manager (ILOM) 3.0 Supplement for SPARC Enterprise T5140 and T5240 Servers*
- *SPARC Enterprise T5140 and T5240 Servers Service Manual*
- *SPARC Enterprise T5140 and T5240 Servers Safety and Compliance Guide*

Power Supply Redundancy

The SPARC Enterprise T5140 and T5240 servers provide two hot-swappable power supplies, enabling the system to continue operating should one of the power supplies fail or if a power source fails.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *SPARC Enterprise T5140 and T5240 Servers Administration Guide*
- *SPARC Enterprise T5140 and T5240 Servers Service Manual*

Environmental Monitoring

The SPARC Enterprise T5140 and T5240 servers feature an environmental monitoring subsystem that protects 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 operating 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 panels. 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 service processor, backup sensors protect the system from serious damage, by initiating a forced hardware shutdown. 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.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *SPARC Enterprise T5140 and T5240 Servers Administration Guide*
- Integrated Lights Out Manager (ILOM) software documentation
- *Integrated Lights Out Manager (ILOM) 3.0 Supplement for SPARC Enterprise T5140 and T5240 Servers*
- *SPARC Enterprise T5140 and T5240 Servers Service Manual*

Support for RAID Storage Configurations

Using the on-board SAS controller, you can set up hardware RAID 1 (mirroring) and hardware RAID 0 (striping) configurations for any pair of internal hard drives, providing a high-performance solution for hard drive mirroring.

Additional RAID levels are supported by installing the StorageTek SAS HBA (internal PCIe card). This option requires a different set of internal cables.

By attaching one or more external storage devices to the SPARC Enterprise T5140 and T5240 servers, you can use a RAID software application such as Solstice DiskSuite or VERITAS Volume Manager¹ to configure system drive storage in a variety of different RAID levels.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *SPARC Enterprise T5140 and T5240 Servers Administration Guide*
- *SPARC Enterprise T5140 and T5240 Servers Service Manual*
- Solaris OS documentation (<http://docs.sun.com/app/docs/prod/solaris>)

1. Software RAID applications such as VERITAS Volume Manager are not included with this server. You must obtain and license them separately.

- Documentation for your hardware

Error Correction and Parity Checking

The UltraSPARC T2 Plus multicore, multithreaded processor provides parity protection on its internal cache memories, including tag parity and data parity on the D-cache and I-cache. The internal L2 cache has parity protection on the tags, and ECC protection on the data.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *SPARC Enterprise T5140 and T5240 Servers Administration Guide*
- *SPARC Enterprise T5140 and T5240 Servers Service Manual*

Fault Management and Predictive Self Healing

The SPARC Enterprise T5140 and T5240 servers provide the latest fault management technologies. The Solaris 10 OS architecture provides a means 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. This service also 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.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *SPARC Enterprise T5140 and T5240 Servers Administration Guide*
- *SPARC Enterprise T5140 and T5240 Servers Service Manual*
- Solaris OS documentation (<http://docs.sun.com/app/docs/prod/solaris>)

Rackmountable Enclosure

The SPARC Enterprise T5140 and T5240 servers use a space-saving 1U or 2U-high rackmountable enclosure that can be installed into a variety of industry standard racks.

Related Information

- *SPARC Enterprise T5140 and T5240 Servers Product Notes*
- *SPARC Enterprise T5140 and T5240 Servers Getting Started Guide*
- *SPARC Enterprise T5140 and T5240 Servers Getting Started Guide (DC)*
- *SPARC Enterprise T5140 and T5240 Servers Site Planning Guide*
- *SPARC Enterprise T5140 and T5240 Servers Installation Guide*
- *SPARC Enterprise T5140 and T5240 Servers Service Manual*
- *SPARC Enterprise T5140 and T5240 Servers Safety and Compliance Guide*

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