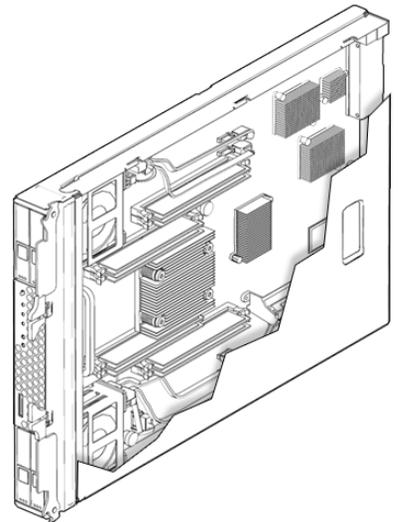


# Sun Blade™ T6300 Server Module Service Manual

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Sun Microsystems, Inc.  
[www.sun.com](http://www.sun.com)

Part No. 820-0276-10  
April 2007, Revision A

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# Preface

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The *Sun Blade™ Server Module Service Manual* provides information to aid in diagnosing hardware problems and describes how to replace components. This manual also describes how to add components such as hard drives and memory.

This manual is written for technicians, service personnel, and system administrators who service and repair computer systems. The person qualified to use this manual:

- Can open a system chassis, and can identify and replace internal components.
- Understands the Solaris™ Operating System and the command-line interface.
- Has superuser privileges for the system being serviced.
- Understands typical hardware troubleshooting tasks.

---

# How This Book Is Organized

This guide is organized into the following chapters:

[Chapter 1](#) describes the main features of the Sun Blade T6300 server module.

[Chapter 2](#) describes diagnostics procedures and related information.

[Chapter 3](#) explains how to remove and replace hot-pluggable hard drives.

[Chapter 4](#) describes how to remove and replace components that cannot be hot-swapped.

[Appendix A](#) provides specifications.

---

# Using UNIX Commands

This document might not contain information about basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris Operating System documentation, which is at:

<http://docs.sun.com>

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# Typographic Conventions

Typeface*	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
<b>AaBbCc123</b>	What you type, when contrasted with on-screen computer output	% <b>su</b> Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be superuser to do this. To delete a file, type <code>rm filename</code> .

\* The settings on your browser might differ from these settings.

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# Shell Prompts

Shell	Prompt
C shell	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

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Search on: St. Paul.

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<b>Document Title</b>	<b>Description</b>
<i>Sun Blade T6300 Server Module Product Notes, 820-0278</i>	Important late-breaking information about the server module and related software.
<i>Sun Blade T6300 Server Module Installation Guide, 820-0275</i>	Basic information about installing, powering on and installing software.
<i>Sun Blade T6300 Server Module Administration Guide, 820-0277</i>	Administrative tasks that are specific to the Sun Blade T6300 server module.
<i>Sun Blade T6300 Server Module Safety and Compliance Manual, 820-0279</i>	Important safety information for the Sun Blade T6300 server module.
<b>Sun Blade 6000 Chassis Documentation</b>	
<i>Sun Blade 6000 Modular System Service Manual, 820-0051</i>	Component removal and replacement procedures, diagnostics information and specifications.
<i>Sun Blade 6000 Modular System Product Notes, 820-0055</i>	Late-breaking information about the Sun Blade 6000 chassis and related software.
<b>Software Documentation</b>	
<i>Advanced Lights out Management (ALOM) CMT v1.3 Guide, 819-7981</i>	Advanced Lights Out Manager (ALOM) CMT software.
<i>Configuring Jumpstart Servers to Provision Sun x86-64 Systems, 819-1962-10</i>	Configuring JumpStart servers.
<i>Solaris 10 6/06 Installation Guide: Network-Based Installations</i>	Setting up network-based installations and JumpStart servers.
<i>Sun VTS 6.3 User's Guide, 820-0080</i>	Testing the server module, and creating custom hardware tests.
Solaris Operating System documentation	All information related to Solaris system administration commands and features.

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*Sun Blade T6300 Server Module Service Manual*, part number 820-0276.



# Sun Blade T6300 Server Module Product Description

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This chapter provides an overview of the features of the Sun Blade™ T6300 server module. (A server module is also known as a “blade.”)

The following topics are covered:

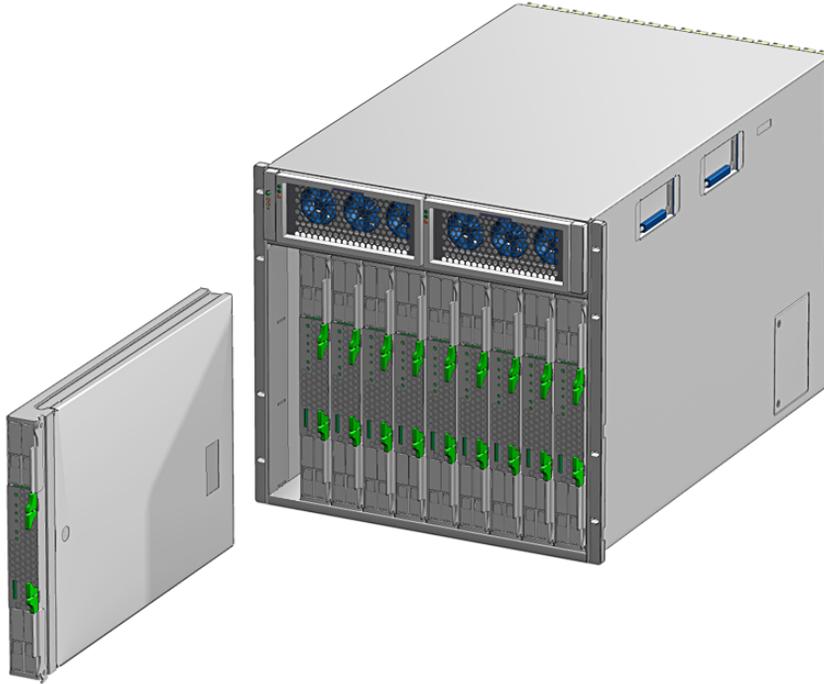
- Section 1.1, “Component Overview” on page 1-1
- Section 1.2, “Finding the Serial Number” on page 1-8
- Section 1.3, “Additional Service Related Information” on page 1-9

---

## 1.1 Component Overview

FIGURE 1-2 shows the main St. Paul components and some basic connections to the Sun Blade 6000 chassis. For information about connectivity to system fans, PCI ExpressModules, Ethernet modules, and other components, see the Sun Blade 6000 chassis documentation at:

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

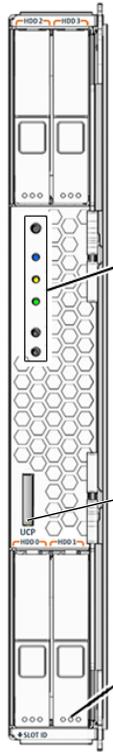


**FIGURE 1-1** Sun Blade T6300 Server Module With the Sun Blade 6000 Chassis

[FIGURE 1-5](#) shows the physical characteristics of the Sun Blade T6300 server module.

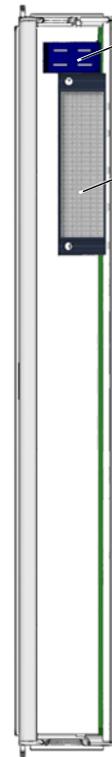
[TABLE 1-1](#) lists the Sun Blade T6300 server module features. [TABLE 1-2](#) lists some of Sun Blade 6000 chassis input-output features.

**Front View**



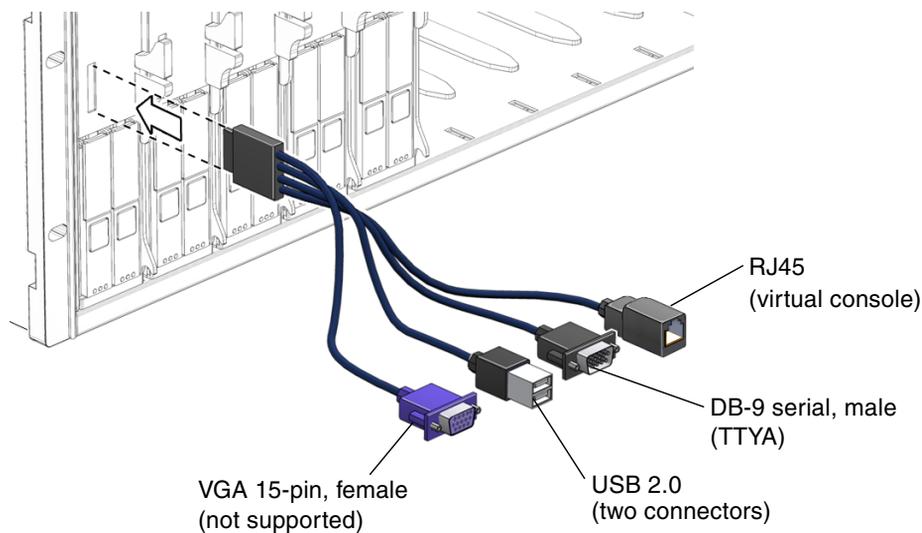
- White - Locator LED (press to reset the LED)
- Blue - Ready to Remove LED
- Amber - Service Action Required LED
- Green - OK LED
- Power button
- Not functional
- Universal connector port (UCP)
- Green - Drive OK LED
- Amber - Drive Service Action Required LED
- Blue - Drive Ready to Remove LED

**Rear View**



- Power connector
- Signal connector

**FIGURE 1-2** Front and Rear Panels and Optional Cable Dongle



**FIGURE 1-3** Optional Dongle Cable Connecting to the Universal Connector Port

**TABLE 1-1** Sun Blade T6300 Server Module Features

Feature	Description
Processor	One UltraSPARC® T1 multicore processor: <ul style="list-style-type: none"> <li>• 1.0 GHz, six core</li> <li>• 1.2 GHz, eight core</li> <li>• 1.4 GHz, eight core</li> </ul>
Memory	Eight DIMM slots for DDR-2 DIMMS: <ul style="list-style-type: none"> <li>• 1 Gbyte (8 Gbyte maximum)</li> <li>• 2 Gbyte (16 Gbyte maximum)</li> <li>• 4 Gbyte (32 Gbyte maximum)</li> </ul>

**TABLE 1-1** Sun Blade T6300 Server Module Features (Continued)

Feature	Description
Internal hard drives	Up to four hot-pluggable 2.5-inch hard drives with RAID 0 and RAID 1 support <ul style="list-style-type: none"> <li>• SFF SAS 73 Gbyte, 10k rpm</li> <li>• SFF SATA 80 Gbyte, 5.4k rpm</li> <li>• SFF SAS 146 Gbyte, 10k rpm</li> </ul> (Filler panels are inserted anywhere hard drives are not installed.)
Universal Connector Port	One universal connector port (UCB) in the front panel. A universal cable is included with the Sun Blade 6000 chassis. The cable is also available as an optional component and has the following connectors: <ul style="list-style-type: none"> <li>• Two USB 2.0*</li> <li>• VGA video, 15-pin female (not functional on this server module)</li> <li>• RJ45 (virtual console) (Three wire interface, no hardware handshaking)</li> <li>• DB-9, male (TTYA posix serial port)</li> </ul>
Architecture	SPARC <sup>®</sup> V9 architecture, ECC protected Platform group: sun4v Platform name: SUNW, Sun-Blade-T6300 Minimum system firmware 6.3.6 or subsequent compatible release

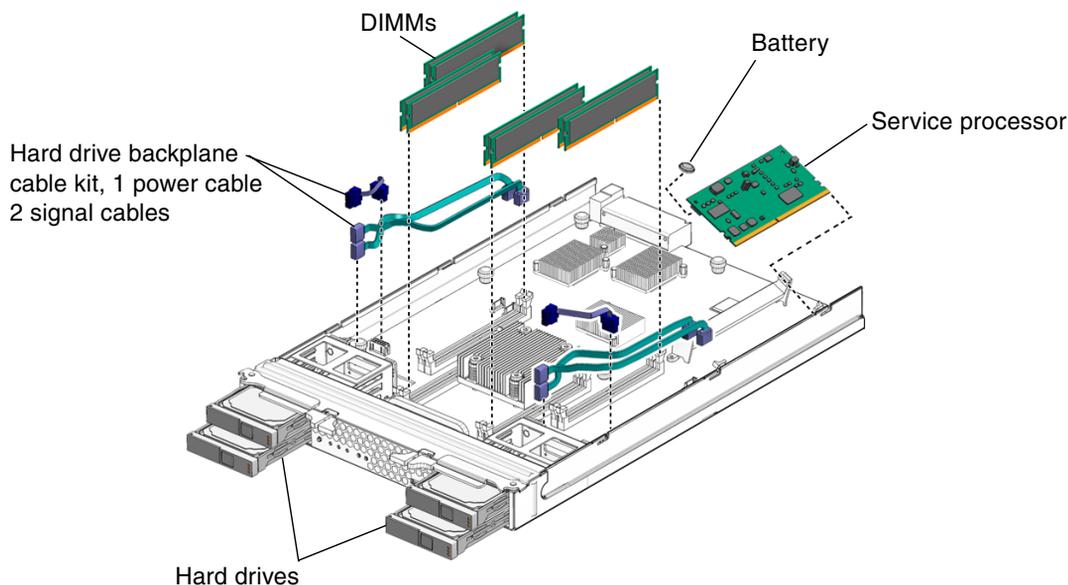
Some USB 2.0 connectors are thick and may distort or damage the connector when you try to connect two USB 2.0 cables. You can use a USB hub to avoid this problem.

Hardware handshaking signals are not transmitted through the RJ45 dongle connector, only transmit, receive, and ground signals are transmitted.

**TABLE 1-2** Interfaces With the Sun Blade 6000 Chassis

Feature	Description
Ethernet ports	Up to two Network Express Module (NEM) connections in the Sun Blade 6000 chassis: 10/100/1000 Mb autonegotiating (FIGURE 1-5)
PCI Express I/O	Two x8-lane ports connect to Sun Blade 6000 chassis midplane. Can support up to two PCI ExpressModules (PCI EM). (FIGURE 1-5)
Remote management	ALOM CMT management controller on the service processor. CLI maangement (telnet, ssh) and N1 system manager support
Power	Power is provided in the Sun Blade 6000 chassis
Cooling	Environmental controls are provided by the Sun Blade 6000 chassis

For more information about Sun Blade 6000 chassis features and controls, refer to the *Sun Blade 6000 Modular System Service Manual*, 820-0051.



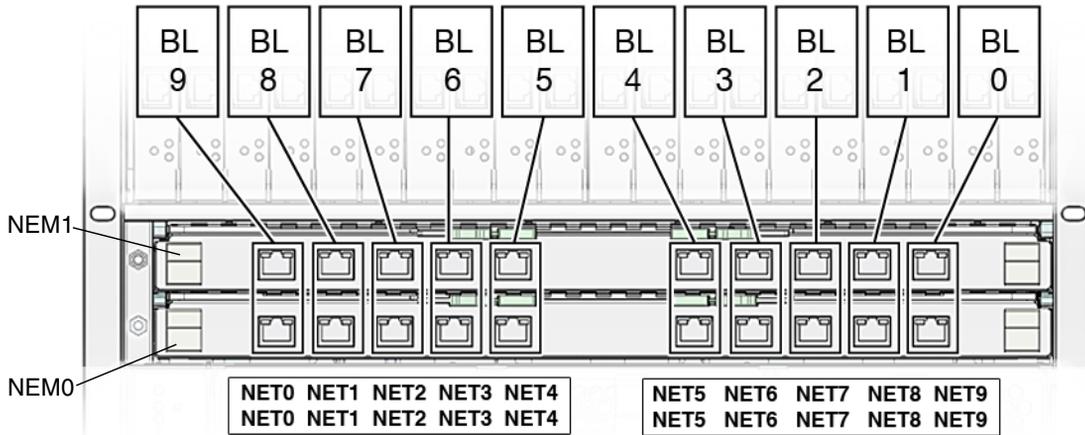
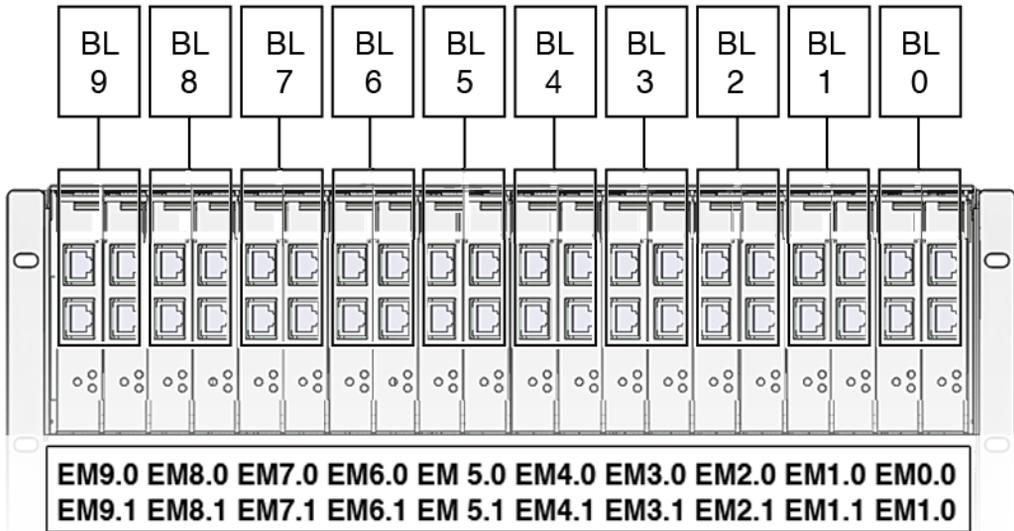
**FIGURE 1-4** Field-Replaceable Units

**TABLE 1-3** Sun Blade T6300 Server Module FRU List

FRU	Description	FRU Name*	Replacement Instructions
Service processor card	Controls the host power and monitors host system events (power and environmental). Socketed EEPROM stores system configuration, all Ethernet MAC addresses, and the host ID.	SC	<a href="#">Section 4.3.4, “Removing the Service Processor” on page 4-15</a>
Service processor battery	Lithium battery	SC/BAT	<a href="#">Section 4.5, “Removing the Battery on the Service Processor” on page 4-20</a>
DIMMs	1 Gbyte, 2 Gbyte, 4 Gbyte	MB/CMPx/ CHx/Rx/Dx	<a href="#">Section 4.3.2, “Removing the DIMMs” on page 4-9</a>
Cable kit	Two HDD signal cables and one HDD power cable	n/a	<a href="#">Section 4.4, “Removing the Disk Backplane Cables” on page 4-18</a>
Hard drive	SFF SAS, or SATA 2.5-inch hard drive in NEMO bracket	HDD0, 1, 2, 3	<a href="#">Section 3.2.2, “Removing a Hard Drive” on page 3-2</a>
Server Module	Chassis with CPU, hard disk backplane, and backplane cables	MB	New server module

\* The FRU name is used in system messages.

BL = blade (server module)



**FIGURE 1-5** PCI Express and Ethernet Connections Between Sun Blade 6000 Chassis and Sun Blade T6300 Server Module

## 1.1.1 Chip-Multithreaded (CMT) Multicore Processor and Memory Technology

The UltraSPARC® T1 multicore processor is the basis of the Sun Blade T6300 server module. The UltraSPARC® T1 multicore processor is based on chip-multithreading (CMT) technology that is optimized for highly threaded transactional processing. This processor improves throughput while using less power and dissipating less heat than conventional processor designs.

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, DDR-2 memory controllers, and a JBus I/O interface have been carefully tuned for optimal performance.

For more information about the UltraSPARC® T1 multicore processor, refer to the coolthreads white papers at:

<http://www.sun.com/servers/wp.jsp?tab=1>

## 1.1.2 Support for RAID Storage Configurations

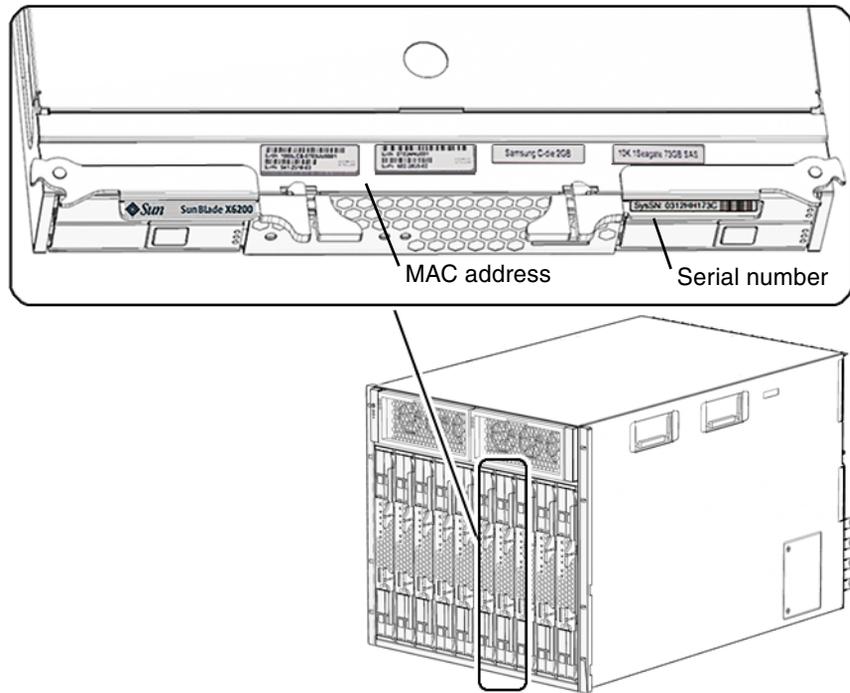
In addition to software RAID configurations, you can set up hardware RAID 1 (mirroring) and hardware RAID 0 (striping) configurations for any pair of internal hard drives using the on-board controller, providing a high-performance solution for hard drive mirroring.

By attaching one or more external storage devices to the Sun Blade T6300 server module, you can use a redundant array of independent drives (RAID) to configure system drive storage in a variety of different RAID levels.

---

## 1.2 Finding the Serial Number

To obtain support for your system, you need the serial number. The serial number is located on a sticker on the front of the server module (FIGURE 1-6).



**FIGURE 1-6** Serial Number and MAC Address Location

You can also run the ALOM CMT `showplatform` command to obtain the chassis serial number.

```
sc> showplatform
SUNW, Sun-Blade-T6300
Chassis Serial Number: YB0079
Slot number 2
Domain Status
-----
S0 OS Standby
sc>
```

## 1.3 Additional Service Related Information

Documentation for the Sun Blade T6300 server module, and related hardware and software is listed in [“Accessing Sun Documentation” on page xiii](#).

The following resources are also available.

- **SunSolve<sup>sm</sup> Online** – Provides a collection of support resources. Depending on the level of your service contract, you have access to Sun patches, the Sun System Handbook, the SunSolve knowledge base, the Sun Support Forum, and additional documents, bulletins, and related links. Access this site at:  
[http://www.sunsolve.sun.com/handbook\\_pub/](http://www.sunsolve.sun.com/handbook_pub/)
- **Predictive Self-Healing Knowledge Database** – You can access the knowledge article corresponding to a self-healing message by taking the Sun Message Identifier (SUNW-MSG-ID) and entering it into the field on this page:  
<http://www.sun.com/msg/>

# Sun Blade T6300 Server Module Diagnostics

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This chapter describes the diagnostics that are available for monitoring and troubleshooting the Sun Blade T6300 server module.

This chapter is intended for technicians, service personnel, and system administrators who service and repair computer systems.

The following topics are covered:

- [Section 2.1, “Sun Blade T6300 Server Module Diagnostics Overview” on page 2-1](#)
- [Section 2.2, “Interpreting System LEDs” on page 2-9](#)
- [Section 2.3, “Using ALOM CMT for Diagnosis and Repair Verification” on page 2-12](#)
- [Section 2.4, “Running POST” on page 2-22](#)
- [Section 2.5, “Using the Solaris Predictive Self-Healing Feature” on page 2-34](#)
- [Section 2.6, “Collecting Information From Solaris OS Files and Commands” on page 2-39](#)
- [Section 2.7, “Managing Components With Automatic System Recovery Commands” on page 2-40](#)
- [Section 2.8, “Exercising the System With SunVTS” on page 2-43](#)

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## 2.1 Sun Blade T6300 Server Module Diagnostics Overview

There are a variety of diagnostic tools, commands, and indicators you can use to monitor and troubleshoot a Sun Blade T6300 server module:

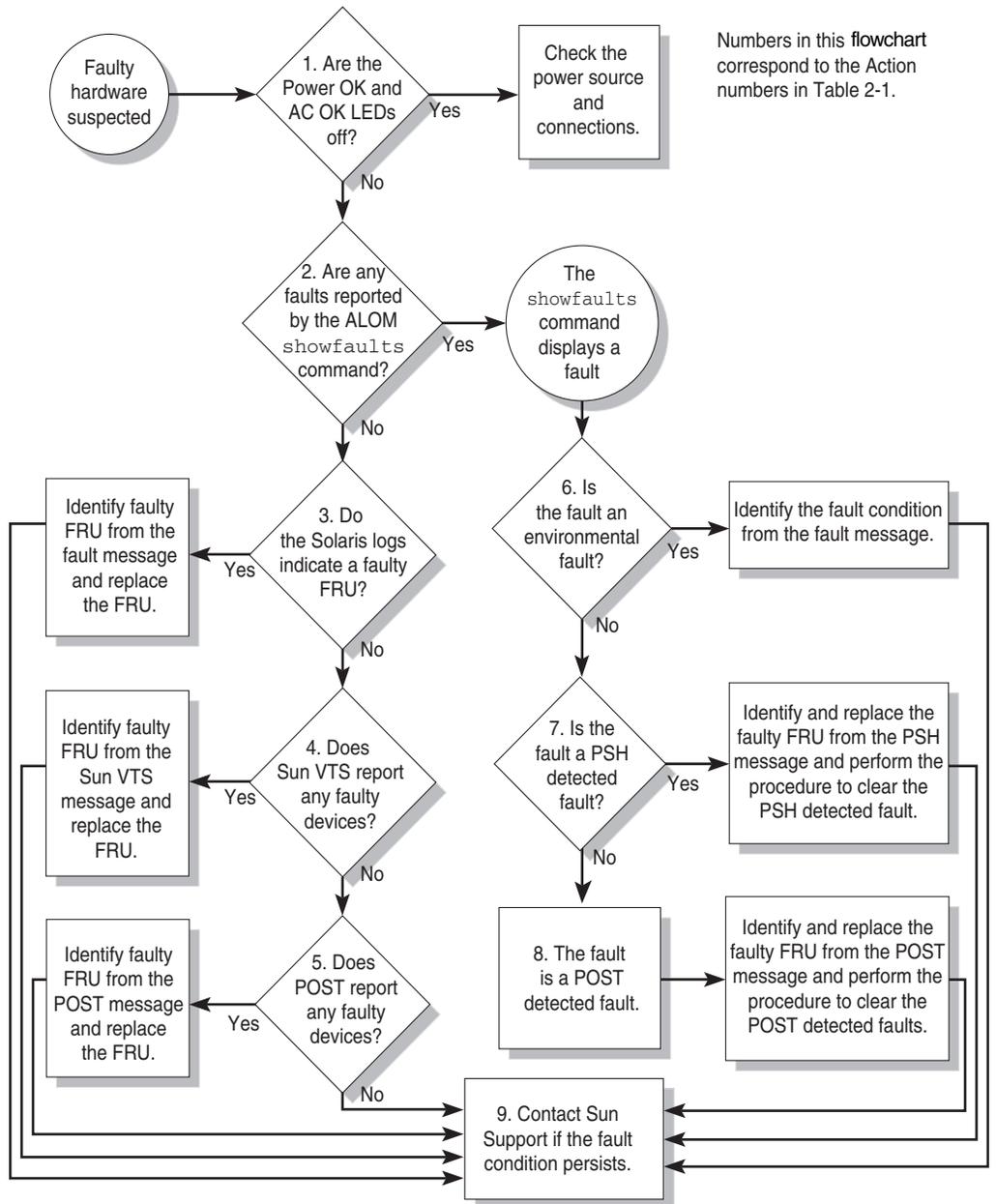
- **LEDs** – Provide a quick visual notification of the status of the server module and of some of the FRUs.

- **ALOM CMT firmware** – This system firmware runs on the service processor. In addition to providing the interface between the hardware and OS, ALOM CMT also tracks and reports the health of key server module components. ALOM CMT works closely with POST and Solaris Predictive Self-Healing technology to keep the system up and running even when there is a faulty component.
- **Power-on self-test (POST)** – POST performs diagnostics on system components upon system reset to ensure the integrity of those components. POST is configureable and works with ALOM CMT to take faulty components offline if needed.
- **Solaris OS Predictive Self-Healing (PSH)** – This technology continuously monitors the health of the CPU and memory, and works with ALOM CMT to take a faulty component offline if needed. The Predictive Self-Healing technology enables Sun systems to accurately predict component failures and mitigate many serious problems before they occur.
- **Log files and console messages** – Provide the standard Solaris OS log files and investigative commands that can be accessed and displayed on the device of your choice.
- **SunVTS™** – An application that exercises the system, provides hardware validation, and discloses possible faulty components with recommendations for repair.

The LEDs, ALOM, Solaris OS PSH, and many of the log files and console messages are integrated. For example, a fault detected by the Solaris software will display the fault, log it, pass information to ALOM CMT where it is logged, and depending on the fault, might illuminate one or more LEDs.

The diagnostic flowchart in [FIGURE 2-1](#) and [TABLE 2-1](#) describe an approach for using the server module diagnostics to identify a faulty field-replaceable unit (FRU). The diagnostics you use, and the order in which you use them, depend on the nature of the problem you are troubleshooting, so you might perform some actions and not others.

Use this flowchart to understand what diagnostics are available to troubleshoot faulty hardware, and use [TABLE 2-1](#) to find more information about each diagnostic in this chapter.



**FIGURE 2-1** Diagnostic Flowchart

**TABLE 2-1** Diagnostic Flowchart Actions

Action No.	Diagnostic Action	Resulting Action	For more information, see these sections
1.	Check the OK LED.	The OK LED is located on the front of the chassis. If the LED is not lit, check that the blade is properly plugged in and the chassis has power.	<a href="#">Section 2.2, “Interpreting System LEDs” on page 2-9</a>
2.	Run the ALOM CMT <code>showfaults</code> command to check for faults.	The <code>showfaults</code> command displays the following kinds of faults: <ul style="list-style-type: none"><li>• Environmental faults</li><li>• Solaris Predictive Self-Healing (PSH) detected faults</li><li>• POST detected faults</li></ul> Faulty FRUs are identified in fault messages using the FRU name. For a list of FRU names, see <a href="#">TABLE 1-3</a> .	<a href="#">Section 2.3.2, “Displaying System Faults” on page 2-17</a>
3.	Check the Solaris log files for fault information.	The Solaris message buffer and log files record system events and provide information about faults. <ul style="list-style-type: none"><li>• If system messages indicate a faulty device, replace the FRU.</li><li>• To obtain more diagnostic information, go to <a href="#">Action 4</a>.</li></ul>	<a href="#">Section 2.6, “Collecting Information From Solaris OS Files and Commands” on page 2-39</a>
4.	Run SunVTS software.	SunVTS can exercise and diagnose FRUs. To run SunVTS, the server module must be running the Solaris OS. <ul style="list-style-type: none"><li>• If SunVTS reports a faulty device replace the FRU.</li><li>• If SunVTS does not report a faulty device, go to <a href="#">Action 5</a>.</li></ul>	<a href="#">Section 2.8, “Exercising the System With SunVTS” on page 2-43</a>
5.	Run POST.	POST performs basic tests of the server module components and reports faulty FRUs. <ul style="list-style-type: none"><li>• If POST indicates a faulty FRU, replace the FRU.</li><li>• If POST does not indicate a faulty FRU, go to <a href="#">Action 9</a>.</li></ul>	<a href="#">Section 2.4, “Running POST” on page 2-22</a>
6.	Determine if the fault is an environmental fault.	If the fault listed by the <code>showfaults</code> command displays a temperature or voltage fault, then the fault is an environmental fault. Environmental faults can be caused by faulty FRUs (power supply, fan, or blower) or by environmental conditions such as high ambient temperature, or blocked airflow.	<a href="#">Section 2.3.2, “Displaying System Faults” on page 2-17</a> See the <i>Sun Blade 6000 Modular System Service Manual</i> , 820-0051.

**TABLE 2-1** Diagnostic Flowchart Actions (*Continued*)

Action No.	Diagnostic Action	Resulting Action	For more information, see these sections
7.	Determine if the fault was detected by PSH.	<p>If the fault message displays the following text, the fault was detected by the Solaris Predictive Self-Healing software:  Host detected fault</p> <p>If the fault is a PSH detected fault, identify the faulty FRU from the fault message and replace the faulty FRU.</p> <p>After the FRU is replaced, perform the procedure to clear PSH detected faults.</p>	<p><a href="#">Section 2.5, “Using the Solaris Predictive Self-Healing Feature” on page 2-34</a></p> <p><a href="#">Section 4.2, “Common Procedures for Parts Replacement” on page 4-3</a></p> <p><a href="#">Section 2.5.2, “Clearing PSH Detected Faults” on page 2-37</a></p> <p><a href="#">Section 2.5.3, “Clearing the PSH Fault From the ALOM CMT Logs” on page 2-38</a></p>
8.	Determine if the fault was detected by POST.	<p>POST performs basic tests of the server module components and reports faulty FRUs. When POST detects a faulty FRU, it logs the fault and if possible, takes the FRU offline. POST detected FRUs display the following text in the fault message:  <i>FRU-name</i> deemed faulty and disabled</p> <p>In this case, replace the FRU and run the procedure to clear POST detected faults.</p>	<p><a href="#">Section 2.4, “Running POST” on page 2-22</a></p> <p><a href="#">Section 4.2, “Common Procedures for Parts Replacement” on page 4-3</a></p> <p><a href="#">Section 2.4.5, “Clearing POST Detected Faults” on page 2-33</a></p>
9.	Contact Sun for support.	<p>The majority of hardware faults are detected by the server module diagnostics. In rare cases it is possible that a problem requires additional troubleshooting. If you are unable to determine the cause of the problem, contact Sun for support.</p>	<p>Sun Support information:  <a href="http://www.sun.com/support">http://www.sun.com/support</a></p> <p><a href="#">Section 1.2, “Finding the Serial Number” on page 1-8</a></p>

## 2.1.1 Memory Configuration and Fault Handling

This section describes how the memory is configured and how the server module deals with memory faults.

## 2.1.1.1 Memory Configuration

The Sun Blade T6300 server module has eight slots that hold DDR-2 memory DIMMs in the following DIMM sizes:

- 1 Gbyte (maximum of 8 Gbyte)
- 2 Gbyte (maximum of 16 Gbyte)
- 4 Gbyte (maximum of 32 Gbyte)

The Sun Blade T6300 server module performs best if all eight connectors are populated with eight DIMMs. This configuration also enables the system to continue operating even when a DIMM fails, or if an entire channel fails.

## 2.1.1.2 Capacity Restrictions

Due to interleaving rules for the CPU, the system will operate at the lowest capacity of all the DIMMs installed. *Therefore, it is ideal to install eight identical DIMMs* (not four DIMMs of one capacity and four DIMMs of another capacity).

## 2.1.1.3 DIMM Installation Rules



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**Caution** – The following DIMM rules must be followed. The server module might not operate correctly if the DIMM rules are not followed. Always use DIMMs that have been qualified by Sun.

---

DIMMs are installed in groups of four, with four DIMMs of the same capacity ([FIGURE 2-2](#)).

- All DIMMS must use DDR-2 four-data input output DRAMs
- Each set of four DIMMS must have the exact same DRAM devices on the DIMM, for example, four DIMMs must have 256 Mbyte DRAMs, or four DIMMS have 512 Mbyte DRAMs.
- All DIMMS must be 72-bit ECC.

If the DIMMs are not properly configured, the system issues a message and the system does not boot.

See [Section 5.2, “Installing DIMMS” on page 5-89](#) for DIMM installation instructions.

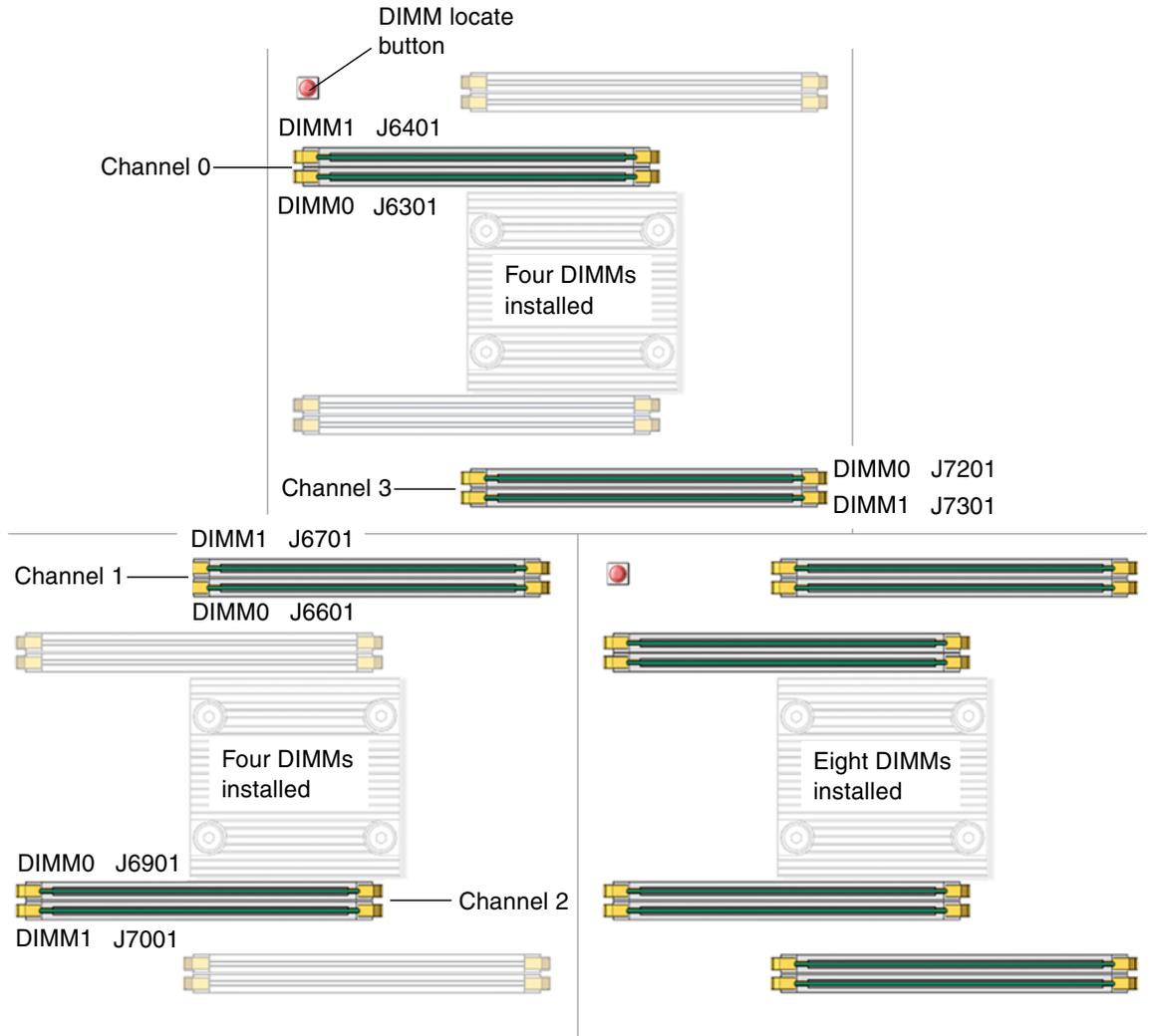


FIGURE 2-2 DIMM Installation Rules

### 2.1.1.4 Memory Fault Handling

The Sun Blade T6300 server module uses advanced ECC technology, also called *chipkill*, that 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.

The following server module features manage memory faults independently:

- **POST** – Runs when the server module is powered on (based on ALOM CMT configuration variables) and thoroughly tests the memory subsystem.

If a memory fault is detected, POST displays the fault with the FRU name of the faulty DIMMS, logs the fault, and disables the faulty DIMMs by placing them in the ASR blacklist. For a given memory fault, POST disables half of the physical memory in the system. When this occurs, you must replace the faulty DIMMs based on the fault message and enable the disabled DIMMs with the ALOM CMT `enablecomponent` command.

- **Solaris Predictive Self-healing (PSH) technology** – A feature of the Solaris OS, uses the fault manager daemon (`fmd`) to watch for various kinds of faults. When a fault occurs, the fault is assigned a unique fault ID (UUID), and logged. PSH reports the fault and provides a recommended proactive replacement for the DIMMs associated with the fault.

### 2.1.1.5 Troubleshooting Memory Faults

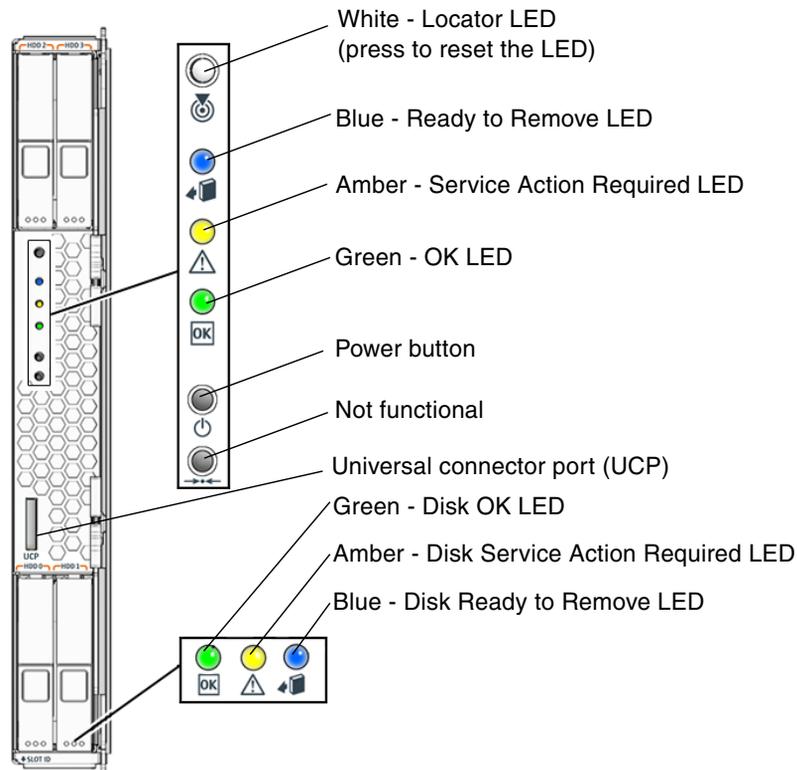
If you suspect that the server module has a memory problem, follow the flowchart (see [FIGURE 2-1](#)). Run the ALOM CMT `showfaults` command. The `showfaults` command lists memory faults and lists the specific DIMMS that are associated with the fault. Once you've identified which DIMMs to replace, see [Chapter 4](#) for DIMM removal and replacement instructions. You must perform the instructions in that chapter to clear the faults and enable the replaced DIMMs.

## 2.2 Interpreting System LEDs

The Sun Blade T6300 server module has LEDs on the front panel and the hard drives. The behavior of LEDs on your server module conform to the American National Standards Institute (ANSI) Status Indicator Standard (SIS). These standard LED behaviors are described in [TABLE 2-2](#)

### 2.2.1 Front Panel LEDs and Buttons

The front panel LEDs and buttons are located in the center of the server module ([FIGURE 2-3](#), [TABLE 2-2](#), and [TABLE 2-3](#), and [TABLE 2-4](#)).



**FIGURE 2-3** Front Panel and Hard Drive LEDs

**TABLE 2-2** LED Behavior and Meaning

LED Behavior	Meaning
Off	The condition represented by the color is not true.
Steady on	The condition represented by the color is true.
Standby blink	The system is functioning at a minimal level and ready to resume full function.
Slow blink	Transitory activity or new activity represented by the color is taking place.
Fast blink	Attention is required.
Feedback flash	Activity is taking place commensurate with the flash rate (such as disk drive activity).

The LEDs have assigned meanings, described in [TABLE 2-3](#).

**TABLE 2-3** LED Behaviors With Assigned Meanings

Color	Behavior	Definition	Description
White	Off	Steady state	
	Fast blink	4 Hz repeating sequence, equal intervals On and Off.	<p>This indicator helps you to locate a particular enclosure, board, or subsystem (for example, the Locator LED). The LED is activated using one of the following methods:</p> <ul style="list-style-type: none"> <li>• Issuing the <code>setlocator on</code> or <code>off</code> command.</li> <li>• Pressing the button to toggle the indicator on or off.</li> </ul> <p>This LED provides the following indications:</p> <ul style="list-style-type: none"> <li>• Off– Normal operating state.</li> </ul> <p>Fast blink – The server module received a signal as a result of one of the preceding methods and is indicating that the server module is active.</p>
Blue	Off	Steady state	Steady state - it is safe to remove the server module from the chassis.
	Steady on	Steady state	If blue is on, a service action can be performed on the applicable component with no adverse consequences (for example, the OK-to-Remove LED).
Yellow or Amber	Off	Steady state	

**TABLE 2-3** LED Behaviors With Assigned Meanings (*Continued*)

<b>Color</b>	<b>Behavior</b>	<b>Definition</b>	<b>Description</b>
Green	Steady on	Steady state	This indicator signals the existence of a fault condition. Service is required (for example, the Service Required LED). The ALOM CMT <code>showfaults</code> command provides details about any faults that cause this indicator to be lit.
	Off	Steady state	Off – The system is unavailable. Either it has no power or ALOM CMT is not running.
	Standby blink	Repeating sequence consisting of a brief (0.1 sec.) on flash followed by a long off period (2.9 sec.)	The system is running at a minimum level and is ready to be quickly revived to full function (for example, the System Activity LED).
	Steady on	Steady state	Status normal; system or component functioning with no service actions required.
	Slow blink		A transitory (temporary) event is taking place for which direct proportional feedback is not needed or not feasible.  ALOM is enabled but the server module is not fully powered on. Indicates that the service processor is running while the system is running at a minimum level in standby mode and ready to be returned to its normal operating state.

**TABLE 2-4** Front Panel Buttons

<b>LED</b>	<b>Color</b>	<b>Description</b>
Power button	gray	Turns the host system on and off. Use a paper clip or other small tipped object to completely press this button.
(reset)	gray	This button does not function on the Sun Blade T6300 server module.

## 2.2.2 Ethernet Port LEDs

For information about Ethernet LEDs see the *Sun Blade 6000 Modular System Service Manual*, 820-0051, at:

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

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## 2.3 Using ALOM CMT for Diagnosis and Repair Verification

The Sun Advanced Lights Out Manager (ALOM) CMT is a service processor in the Sun Blade T6300 server module that enables you to remotely manage and administer your server module.

ALOM CMT enables you to run remote diagnostics such as power-on self-test (POST), that would otherwise require physical proximity to the server module serial port. You can also configure ALOM CMT to send email alerts of hardware failures, hardware warnings, and other events related to the server module or to ALOM.

The ALOM CMT circuitry runs independently of the server module, using the server module standby power. Therefore, ALOM CMT firmware and software continue to function when the server module operating system goes offline or when the server module is powered off.

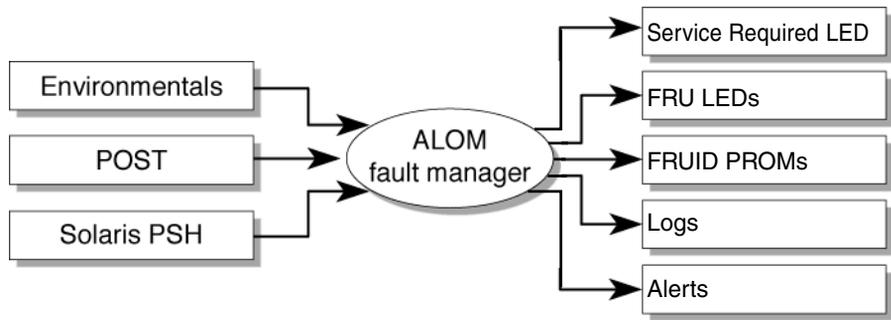
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**Note** – Refer to the *Advanced Lights out Management (ALOM) CMT v1.3 Guide*, 819-7981, for comprehensive ALOM CMT information.

---

Faults detected by ALOM CMT, POST, and the Solaris Predictive Self-healing (PSH) technology are forwarded to ALOM CMT for fault handling ([FIGURE 2-4](#)).

In the event of a system fault, ALOM CMT ensures that the Service Action Required LED is lit, FRU ID PROMs are updated, the fault is logged, and alerts are displayed (faulty FRUs are identified in fault messages using the FRU name. For a list of FRU names, see [Appendix A](#)).



**FIGURE 2-4** ALOM CMT Fault Management

ALOM CMT sends alerts to all ALOM CMT users that are logged in, sending the alert through email to a configured email address, and writing the event to the ALOM CMT event log.

ALOM CMT can detect when a fault is no longer present and clears the fault in several ways:

- **Fault recovery** – The system automatically detects that the fault condition is no longer present. ALOM CMT extinguishes the Service Action Required LED and updates the FRU PROM, indicating that the fault is no longer present.
- **Fault repair** – The fault has been repaired by human intervention. In most cases, ALOM CMT detects the repair and extinguishes the Service Required LED. In the event that ALOM CMT does not perform these actions, you must perform these tasks manually with `clearfault` or `enablecomponent` commands.

ALOM CMT can detect the removal of a FRU, in many cases even if the FRU is removed while ALOM CMT is powered off. This enables ALOM CMT to know that a fault, diagnosed to a specific FRU, has been repaired. The ALOM CMT `clearfault` command enables you to manually clear certain types of faults without a FRU replacement or if ALOM CMT was unable to automatically detect the FRU replacement.

ALOM CMT does not automatically detect hard drive replacement.

Many environmental faults can automatically recover. For example, a temperature that is exceeding a threshold might return to normal limits. An unplugged power supply can be plugged in. The recovery of environmental faults is automatically detected. Recovery events are reported using one of two forms:

- *fru at location is OK.*
- *sensor at location is within normal range.*

Environmental faults can be repaired through hot removal of the faulty FRU. FRU removal is automatically detected by the environmental monitoring and all faults associated with the removed FRU are cleared. The message for that case, and the alert sent for all FRU removals is:

*fru* at *location* has been removed.

There is no ALOM CMT command to manually repair an environmental fault.

ALOM CMT does not handle hard drive faults. Use the Solaris message files to view hard drive faults. See [Section 2.6, “Collecting Information From Solaris OS Files and Commands”](#) on page 2-39.

## 2.3.1 Running ALOM CMT Service-Related Commands

This section describes the ALOM CMT commands that are commonly used for service-related activities.

### 2.3.1.1 Connecting to ALOM

Before you can run ALOM CMT commands, you must connect to the ALOM. There are several ways to connect to the service processor:

- Connect an ASCII terminal directly to the serial management port.
- Use the `telnet` command to connect to ALOM CMT through an Ethernet connection on the network management port.

---

**Note** – Refer to the *Advanced Lights out Management (ALOM) CMT v1.3 Guide*, 819-7981, for instructions on configuring and connecting to ALOM.

---

### 2.3.1.2 Switching Between the System Console and ALOM

- To switch from the console output to the ALOM CMT `sc>` prompt, type: **#.** (Hash-Period).
- To switch from the `sc>` prompt to the console, type: **console**.

### 2.3.1.3 Service-Related ALOM CMT Commands

TABLE 2-5 describes the typical ALOM CMT commands for servicing a Sun Blade T6300 server module. For descriptions of all ALOM CMT commands, issue the `help` command or refer to the *Advanced Lights out Management (ALOM) CMT v1.3 Guide*, 819-7981.

TABLE 2-5 Service-Related ALOM CMT Commands

ALOM CMT Command	Description
<code>help [command]</code>	Displays a list of all ALOM CMT commands with syntax and descriptions. Specifying a command name as an option displays help for that command.
<code>break [-y][-c]</code>	Takes the host server from the OS to either <code>kmdb</code> or OpenBoot PROM (equivalent to a Stop-A command), depending on the Solaris mode that was booted. The <code>-y</code> option skips the confirmation question. The <code>-c</code> option executes a <code>console</code> command after completion of the <code>break</code> command.
<code>clearfault UUID</code>	Manually clears host-detected faults. The <code>UUID</code> is the unique fault ID of the fault to be cleared.
<code>console [-f]</code>	Connects you to the host system. The <code>-f</code> option forces the console to have read and write capabilities.
<code>consolehistory [-b lines -e lines -v] [-g lines] [boot run]</code>	Displays the contents of the system's console buffer. The following options enable you to specify how the output is displayed: <ul style="list-style-type: none"><li>• <code>-g lines</code> option specifies the number of lines to display before pausing.</li><li>• <code>-e lines</code> option displays <i>n</i> lines from the end of the buffer.</li><li>• <code>-b lines</code> option displays <i>n</i> lines from beginning of the buffer.</li><li>• <code>-v</code> option displays the entire buffer.</li><li>• <code>boot run</code> option specifies the log to display (<code>run</code> is the default log).</li></ul>
<code>bootmode [normal reset_nvram bootscript=string]</code>	Enables control of the firmware during system initialization with the following options: <ul style="list-style-type: none"><li>• <code>normal</code> is the default boot mode.</li><li>• <code>reset_nvram</code> resets OpenBoot PROM parameters to their default values.</li><li>• <code>bootscript=string</code> enables the passing of a string to the <code>boot</code> command.</li></ul>
<code>powercycle [-f]</code>	Performs a <code>poweroff</code> followed by <code>poweron</code> . The <code>-f</code> option forces an immediate <code>poweroff</code> , otherwise the command attempts a graceful shutdown.
<code>poweroff [-y] [-f]</code>	Powers off the host server. The <code>-y</code> option enables you to skip the confirmation question. The <code>-f</code> option forces an immediate shutdown.
<code>poweron [-c]</code>	Powers on the host server. Using the <code>-c</code> option executes a <code>console</code> command after completion of the <code>poweron</code> command.

**TABLE 2-5** Service-Related ALOM CMT Commands (*Continued*)

ALOM CMT Command	Description
<code>removefru PS0 PS1</code>	Indicates if it is OK to perform a hot-swap of a power supply. This command does not perform any action, but provides a warning if the power supply should not be removed because the other power supply is not enabled.
<code>removeblade</code>	Pauses the service processor tasks and illuminates the white locator LED indicating that it is safe to remove the blade.
<code>unremoveblade</code>	Turns off the locator LED and restores the service processor state.
<code>reset [-y] [-c]</code>	Generates a hardware reset on the host server. The <code>-y</code> option enables you to skip the confirmation question. The <code>-c</code> option executes a <code>console</code> command after completion of the <code>reset</code> command.
<code>resetsc [-y]</code>	Reboots the service processor. The <code>-y</code> option enables you to skip the confirmation question.
<code>setkeyswitch [-y] normal   stby   diag   locked</code>	Sets the virtual keyswitch. The <code>-y</code> option enables you to skip the confirmation question when setting the keyswitch to <code>stby</code> .
<code>setlocator [on   off]</code>	Turns the Locator LED on the server on or off.
<code>showenvironment</code>	Displays the environmental status of the host server. This information includes system temperatures, power supply, front panel LED, hard drive, fan, voltage, and current sensor status. See <a href="#">Section 2.3.3, “Displaying the Environmental Status” on page 2-18</a> .
<code>showfaults [-v]</code>	Displays current system faults. See <a href="#">Section 2.3.2, “Displaying System Faults” on page 2-17</a> .
<code>showfru [-g lines] [-s   -d] [FRU]</code>	Displays information about the FRUs in the server. <ul style="list-style-type: none"><li>• The <code>-g lines</code> option specifies the number of lines to display before pausing the output to the screen.</li><li>• The <code>-s</code> option displays static information about system FRUs (defaults to all FRUs, unless one is specified).</li><li>• The <code>-d</code> option displays dynamic information about system FRUs (defaults to all FRUs, unless one is specified). See <a href="#">Section 2.3.4, “Displaying FRU Information” on page 2-20</a>.</li></ul>
<code>showkeyswitch</code>	Displays the status of the virtual keyswitch.
<code>showlocator</code>	Displays the current state of the Locator LED as either on or off.
<code>showlogs [-b lines   -e lines   -v] [-g lines] [-p logtype[r p]]</code>	Displays the history of all events logged in the ALOM CMT event buffers (in RAM or the persistent buffers).
<code>showplatform [-v]</code>	Displays information about the host system’s hardware configuration, the system serial number, and whether the hardware is providing service.

---

**Note** – See [TABLE 2-8](#) for the ALOM CMT ASR commands.

---

## 2.3.2 Displaying System Faults

The ALOM CMT `showfaults` command displays the following kinds of faults:

- **Environmental faults** – Temperature or voltage problems that might be caused by faulty FRUs (power supplies, fans, or blower), or by room temperature or blocked air flow.
- **POST detected faults** – Faults on devices detected by the power-on self-test diagnostics.
- **PSH detected faults** – Faults detected by the Solaris Predictive Self-healing (PSH) technology

Use the `showfaults` command for the following reasons:

- To see if any faults have been passed to, or detected by ALOM CMT.
  - To obtain the fault message ID (SUNW-MSG-ID) for PSH detected faults.
  - To verify that the replacement of a FRU has cleared the fault and not generated any additional faults.
- **At the `sc>` prompt, type the `showfaults` command.**

The following `showfaults` command examples show the different kinds of output from the `showfaults` command:

- Example of the `showfaults` command when no faults are present:

```
sc> showfaults
Last POST run: THU MAR 09 16:52:44 2006
POST status: Passed all devices

No failures found in System
```

- Example of the `showfaults` command displaying an environmental fault:

```
sc> showfaults -v
Last POST run: TUE FEB 07 18:51:02 2006
POST status: Passed all devices
ID FRU          Fault
0 IOBD          VOLTAGE_SENSOR at IOBD/V_+1V has exceeded
low warning threshold.
```

- Example showing a fault that was detected by POST. These kinds of faults are identified by the message deemed faulty and disabled and by a FRU name:

```

sc> showfaults -v
      ID Time                FRU                Fault
      1 OCT 13 12:47:27    MB/CMP0/CH0/R0/D0 MB/CMP0/CH0/R0/D0 deemed
      faulty and disabled

```

- Example showing a fault that was detected by the PSH technology. These kinds of faults are identified by the text Host detected fault and by a Universal Unique Identifier (UUID):

```

sc> showfaults -v
      ID Time                FRU                Fault
      0 SEP 09 11:09:26    MB/CMP0/CH0/R0/D0 Host detected fault, MSGID:
      SUN4U-8000-2S  UUID: 7ee0e46b-ea64-6565-e684-e996963f7b86

```

### 2.3.3 Displaying the Environmental Status

The `showenvironment` command displays a snapshot of the server module environmental status. This command displays system temperatures, hard drive status, power supply and fan status, front panel LED status, voltage, and current sensors. The output uses a format similar to the Solaris OS command `prtdiag (1m)`.

- At the `sc>` prompt, type the `showenvironment` command.

The output differs according to your system's model and configuration.

Example:

```

sc> showenvironment
===== Environmental Status =====
-----
System Indicator Status:
SYS/LOCATE          SYS/SERVICE          SYS/ACT          SYS/OK_TO_RM
OFF                 ON                   ON              OFF
-----
System Disks:
-----
Disk  Status          Service  OKtoRem
-----
HDD0  OK                OFF     OFF
HDD1  OK                OFF     OFF
HDD2  OK                OFF     OFF
HDD3  OK                OFF     OFF

```

-----  
 System Temperatures (Temperatures in Celsius):  
 -----

Sensor HighHard	Status	Temp	LowHard	LowSoft	LowWarn	HighWarn	HighSoft
MB/T_AMB 50 55	OK	32	-10	-5	0	45	
MB/CMP0/T_TCORE 80 85	OK	45	-10	-5	0	80	
MB/CMP0/T_BCORE 80 85	OK	46	-10	-5	0	80	
MB/F0/T_CORE 100 105	OK	47	-10	-5	0	95	

-----  
 Fans Status (Speeds in Revolutions Per Minute) :  
 -----

Sensor	Status	Speed
MP/FM0/FIN	OK	3970
MP/FM0/FOUT	OK	3970
MP/FM1/FIN	OK	3970
MP/FM1/FOUT	OK	4017
MP/FM2/FIN	OK	4066
MP/FM2/FOUT	OK	4066
MP/FM3/FIN	OK	3970
MP/FM3/FOUT	OK	4017
MP/FM4/FIN	OK	4017
MP/FM4/FOUT	OK	4017
MP/FM5/FIN	OK	4017
MP/FM5/FOUT	OK	4017

-----  
 Voltage Sensors (in Volts):  
 -----

Sensor	Status	Voltage	LowSoft	LowWarn	HighWarn	HighSoft
MB/V_VCORE	OK	1.30	1.02	1.08	1.40	1.58
MB/V_VTTB	OK	0.87	0.76	0.81	0.99	1.03
MB/V_VTTT	OK	0.87	0.76	0.81	0.99	1.03
MB/V_VCCB	OK	1.78	1.53	1.62	1.98	2.07
MB/V_VCCT	OK	1.76	1.53	1.62	1.98	2.07
MB/V_+1V1	OK	1.10	0.85	0.90	1.15	1.18
MB/V_+1V2	OK	1.18	1.02	1.08	1.32	1.38
MB/V_+1V5	OK	1.46	1.28	1.35	1.65	1.72
MB/V_+1V8	OK	1.79	1.53	1.62	1.98	2.07
MB/V_+3V3	OK	3.33	2.80	3.00	3.63	3.80
MB/V_+3V3STBY	OK	3.34	2.80	2.97	3.63	3.80
MB/V_+5V	OK	4.91	4.25	4.50	5.50	5.75
MB/V_+12V	OK	12.18	10.20	10.80	13.20	13.80

```

SC/BAT/V_BAT   OK           3.03      --      2.25      --      --
MP/V_+12V     OK           12.40     10.20    10.80     13.20    13.80
-----
System Load (in amperes):
-----
Sensor          Status           Load        Warn        Shutdown
-----
MB/I_CORE      OK              10.760     80.000     88.000
MB/I_MEMB     OK              2.040      60.000     66.000
MB/I_MEMT     OK              1.740      60.000     66.000
MB/I_12V      OK              9.000      40.000     45.000
-----
Power Supply  Status
-----
Supply        Present         On
MP/PS0        PRESENT        FAULTED
MP/PS1        PRESENT        OK

SC>

```

---

**Note** – Some environmental information might not be available when the server module is in standby mode.

---

## 2.3.4 Displaying FRU Information

The `showfru` command displays information about the FRUs in the server module. Use this command to see information about an individual FRU, or for all the FRUs.

---

**Note** – By default, the output of the `showfru` command for all FRUs is very long.

---

- At the `sc>` prompt, enter the `showfru` command.

In the following example, the `showfru` command is used to get information about the motherboard (MB).

```
sc> showfru MB.SEEPROM
SEGMENT: SD
/ManR
/ManR/UNIX_Stamp32:      WED FEB 14 18:24:28 2007
/ManR/Description:      ASSY,Sun-Fire-T6300,CPU Board
/ManR/Manufacture Location:  Sriracha,Chonburi,Thailand
/ManR/Sun Part No:      5016843
/ManR/Sun Serial No:     NC000D
/ManR/Vendor:           Celestica
/ManR/Initial HW Dash Level: 06
/ManR/Initial HW Rev Level: 02
/ManR/Shortname:        T2000_MB
/SpecPartNo:            885-0483-04
SEGMENT: FL
/Configured_LevelR
/Configured_LevelR/UNIX_Stamp32:      WED FEB 14 18:24:28 2007
/Configured_LevelR/Sun_Part_No:        5410827
/Configured_LevelR/Configured_Serial_No: N4001A
/Configured_LevelR/HW_Dash_Level:      03
.
.
.
```

---

## 2.4 Running POST

Power-on self-test (POST) is a group of PROM-based tests that run when the server module is powered on or reset. POST checks the basic integrity of the critical hardware components in the server module (CPU, memory, and I/O buses).

If POST detects a faulty component, it is disabled automatically, preventing faulty hardware from potentially harming any software. If the system is capable of running without the disabled component, the system will boot when POST is complete. For example, if one of the processor cores is deemed faulty by POST, the core will be disabled, and the system will boot and run using the remaining cores.

---

**Note** – Devices can be manually enabled or disabled using ASR commands (see [Section 2.7, “Managing Components With Automatic System Recovery Commands” on page 2-40](#)).

---

### 2.4.1 Controlling How POST Runs

The server module can be configured for normal, extensive, or no POST execution. You can also control the level of tests that run, the amount of POST output that is displayed, and which reset events trigger POST by using ALOM CMT variables.

[TABLE 2-6](#) lists the ALOM CMT variables used to configure POST and [FIGURE 2-5](#) shows how the variables work together.

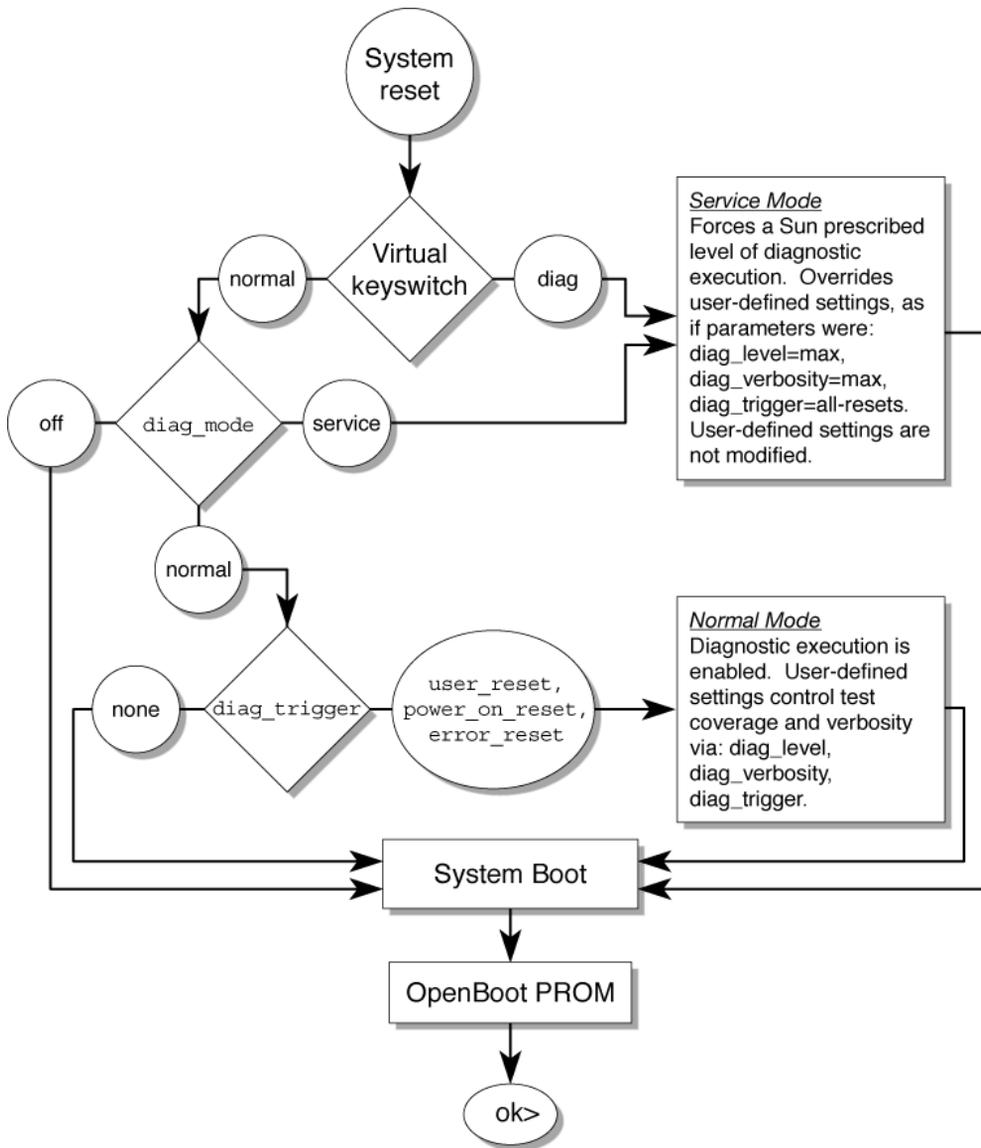
**TABLE 2-6** ALOM CMT Parameters Used For POST Configuration

Parameter	Values	Description
setkeyswitch*	normal	The system can power on and run POST (based on the other parameter settings). For details see <a href="#">FIGURE 2-5</a> . This parameter overrides all other commands.
	diag	The system runs POST based on predetermined settings.
	stby	The system cannot power on.
	locked	The system can power on and run POST, but no flash updates can be made.
diag_mode	off	POST does not run.
	normal	Runs POST according to <code>diag_level</code> value.

**TABLE 2-6** ALOM CMT Parameters Used For POST Configuration (*Continued*)

Parameter	Values	Description
	service	Runs POST with preset values for <code>diag_level</code> and <code>diag_verbosity</code> .
diag_level	min	If <code>diag_mode = normal</code> , runs minimum set of tests.
	max	If <code>diag_mode = normal</code> , runs all the minimum tests plus extensive CPU and memory tests.
diag_trigger	none	Does not run POST on reset.
	user_reset	Runs POST upon user initiated resets.
	power_on_reset	Only runs POST for the first poweron. This is the default.
	error_reset	Runs POST if fatal errors are detected.
	all_reset	Runs POST after any reset.
diag_verbosity	none	No POST output is displayed.
	min	POST output displays functional tests with a banner and pinwheel.
	normal	POST output displays all test and informational messages.
	max	POST displays all test, informational, and some debugging messages.

\* Set all of these parameters using the ALOM CMT `setsc` command, except for the `setkeyswitch` command.



**FIGURE 2-5** Flowchart of ALOM CMT Variables for POST Configuration

TABLE 2-7 shows typical combinations of ALOM CMT variables and associated POST modes.

TABLE 2-7 ALOM CMT Parameters and POST Modes

Parameter	Normal Diagnostic Mode (default settings)	No POST Execution	Diagnostic Service Mode	Keyswitch Diagnostic Preset Values
diag_mode	normal	off	service	normal
setkeyswitch*	normal	normal	normal	diag
diag_level	min	n/a	max	max
diag_trigger	power-on-reset error-reset	none	all-resets	all-resets
diag_verbosity	normal	n/a	max	max
<b>Description of POST execution</b>	This is the default POST configuration. This configuration tests the system thoroughly, and suppresses some of the detailed POST output.	POST does not run, resulting in quick system initialization, but this is not a suggested configuration.	POST runs the full spectrum of tests with the maximum output displayed.	POST runs the full spectrum of tests with the maximum output displayed.

\* The setkeyswitch parameter, when set to diag, overrides all the other ALOM CMT POST variables.

## 2.4.2 Changing POST Parameters

### 1. Access the ALOM CMT `sc>` prompt:

At the console, issue the `#.` key sequence:

```
#.
```

2. At the ALOM CMT `sc>` prompt, use the `setsc` command to set the POST parameter:

Example:

```
sc> setsc diag_mode service
```

The `setkeyswitch` parameter is a command that sets the virtual keyswitch, so it does not use the `setsc` command. Example:

```
sc> setkeyswitch diag
```

## 2.4.3 Reasons to Run POST

You can use POST to test and verify server module hardware.

### 2.4.3.1 Verifying Hardware Functionality

POST tests critical hardware components to verify functionality before the system boots and accesses software. If POST detects an error, the faulty component is disabled automatically, preventing faulty hardware from potentially harming software.

Under normal operating conditions, the server module is usually configured to run POST in maximum mode for all power-on or error-generated resets.

### 2.4.3.2 Diagnosing the System Hardware

You can use POST as an initial diagnostic tool for the system hardware. In this case, configure POST to run in diagnostic service mode for maximum test coverage and verbose output.

## 2.4.4 Running POST

This procedure describes how to run POST when you want maximum testing, as in the case when you are troubleshooting a system.

1. Switch from the system console prompt to the ALOM CMT `sc>` prompt by issuing the `#.` escape sequence.

```
ok #.  
sc>
```

2. Set the virtual keyswitch to `diag` so that POST will run in service mode.

```
sc> setkeyswitch diag
```

3. Reset the system so that POST runs.

There are several ways to initiate a reset. The following example uses the `powercycle` command. For other methods, refer to the *Sun Blade T6300 Server Module Administration Guide*, 820-0277.

```
sc> powercycle  
Are you sure you want to powercycle the system [y/n]? y  
Powering host off at MON JAN 10 02:52:02 2000  
  
Waiting for host to Power Off; hit any key to abort.  
  
SC Alert: SC Request to Power Off Host.  
  
SC Alert: Host system has shut down.  
Powering host on at MON JAN 10 02:52:13 2000  
  
SC Alert: SC Request to Power On Host.
```

4. Switch to the system console to view the post output:

```
sc> console
```

Example of POST output with some output omitted:

```
0:0>  
0:0>@(#)Sun Blade T6300 Server Module POST 4.25.0 2007/01/16 11:57  
0:0>Copyright © 2007 Sun Microsystems, Inc. All rights reserved  
SUN PROPRIETARY/CONFIDENTIAL. Use is subject to license terms.  
0:0>VBSC selecting POST MAX Testing.  
0:0>POST enabling threads: f00fffff  
0:0>VBSC setting verbosity level 3
```

```

0:0>Start Selftest.....
0:0>Begin: Init CPU
0:0>End   : Init CPU
0:0>Master CPU Tests Basic.....
0:0>CPU =: 0
0:0>Begin: DMMU Registers Access
0:0>End   : DMMU Registers Access
0:0>Begin: Common MMU regs
0:0>End   : Common MMU regs
0:0>Begin: Init mmu regs
0:0>End   : Init mmu regs
0:0>Begin: D-Cache RAM
0:0>End   : D-Cache RAM
0:0>Init MMU.....
0:0>Begin: DMMU TLB DATA RAM Access
0:0>End   : DMMU TLB DATA RAM Access
0:0>Begin: DMMU TLB TAGS Access
0:0>End   : DMMU TLB TAGS Access
0:0>Begin: DMMU CAM
0:0>End   : DMMU CAM
0:0>Begin: Setup DMMU Miss Handler
0:0>End   : Setup DMMU Miss Handler
0:0>   Niagara, Version 2.0
0:0>   Serial Number 00000098.00000820 = fffff238.2e4df502
0:0>Begin: Init JBUS Config Regs
0:0>End   : Init JBUS Config Regs
0:0>Begin: IO-Bridge unit 1 init test
0:0>End   : IO-Bridge unit 1 init test
0:0>sys 200 MHz, CPU 1000 MHz, mem 200 MHz.
0:0>Begin: Integrated POST Testing
0:0>End   : Integrated POST Testing
0:0>L2 Tests.....
0:0>Begin: Setup L2 Cache
0:0>L2 Cache Control = 00000000.00300000
0:0>End   : Setup L2 Cache
0:0>Begin: L2 Cache Tags Test
0:0>End   : L2 Cache Tags Test
0:0>Begin: Scrub and Setup L2 Cache
0:0>L2 Directory clear
0:0>L2 Scrub VD & UA
0:0>L2 Scrub Tags
0:0>End   : Scrub and Setup L2 Cache
0:0>Test Memory.....
0:0>Begin: Probe and Setup Memory
0:0>INFO: 4096MB at Memory Channel [1 2 ] Rank 0 Stack 0

```

```

0:0>INFO:No memory detected at Memory Channel [1 2 ] Rank 0 Stack 1
0:0>INFO:No memory detected at Memory Channel [1 2 ] Rank 1 Stack 0
0:0>INFO:No memory detected at Memory Channel [1 2 ] Rank 1 Stack 1
0:0>
0:0>End : Probe and Setup Memory
0:0>Begin: Data Bitwalk
0:0>L2 Scrub Data
0:0>L2 Enable
0:0> Testing Memory Channel 2 Rank 0 Stack 0
0:0> Testing Memory Channel 1 Rank 0 Stack 0
0:0>L2 Directory clear
0:0>L2 Scrub VD & UA
0:0>L2 Scrub Tags
0:0>L2 Disable
0:0>End : Data Bitwalk
0:0>Begin: Address Bitwalk
0:0> Testing Memory Channel 2 Rank 0 Stack 0
0:0> Testing Memory Channel 1 Rank 0 Stack 0
0:0>End : Address Bitwalk
0:0>Test Slave Threads Basic.....
0:0>Begin: Test Mailbox region
0:0>End : Test Mailbox region
0:0>Begin: Set Mailbox
0:0>End : Set Mailbox
0:0>Begin: Setup Final DMMU Entries
0:0>End : Setup Final DMMU Entries
0:0>Begin: Post Image Region Scrub
0:0>End : Post Image Region Scrub
0:0>Begin: Run POST from Memory
0:0>Verifying checksum on copied image.
0:0>The Memory's CHECKSUM value is f242.
0:0>The Memory's Content Size value is 84f42.
0:0>Success... Checksum on Memory Validated.
0:0>End : Run POST from Memory
0:0>Begin: L2 Cache Ram Test
0:0>End : L2 Cache Ram Test
0:0>Begin: Enable L2 Cache
0:0>L2 Scrub Data
0:0>L2 Enable
0:0>End : Enable L2 Cache
0:0>CPU =: 0 4 8 12 16 28
1:0>Begin: DMMU Registers Access
1:0>End : DMMU Registers Access
2:0>Begin: DMMU Registers Access
2:0>End : DMMU Registers Access

```

```

3:0>Begin: DMMU Registers Access
3:0>End   : DMMU Registers Access
4:0>Begin: DMMU Registers Access
7:0>Begin: DMMU Registers Access
4:0>End   : DMMU Registers Access
7:0>End   : DMMU Registers Access
0:0>CPU =: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 28 29
30 31
0:0>Test slave strand registers...
0:0>Extended CPU Tests.....
2:0>Begin: I-Cache RAM Test
2:0>End   : I-Cache RAM Test
3:0>Begin: I-Cache RAM Test
3:0>End   : I-Cache RAM Test
4:0>Begin: I-Cache RAM Test
4:0>End   : I-Cache RAM Test
7:0>Begin: I-Cache RAM Test
7:0>End   : I-Cache RAM Test
0:0>Begin: I-Cache RAM Test
0:0>End   : I-Cache RAM Test
0:0>Scrub Memory.....
0:0>Begin: Scrub Memory
0:0>Scrub 00000000.00600000->00000001.00000000 on Memory Channel
[ 1 2 ] Rank 0 Stack 0
0:0>End   : Scrub Memory
.
0:0>Extended Memory Tests.....
0:0>Begin: Print Mem Config
0:0>Caches : Icache is ON, Dcache is ON.
0:0>   Bank 0   4096MB : 00000000.00000000 -> 00000001.00000000.
0:0>End   : Print Mem Config
0:0>Begin: Block Mem Test
0:0>Test 4288675840 bytes at 00000000.00600000 Memory Channel
[ 1 2 ] Rank 0 Stack 0
0:0>.....
0:0>End   : Block Mem Test
0:0>IO-Bridge Tests.....
0:0>Begin: IO-Bridge Quick Read
0:0>
0:0>-----
0:0>----- IO-Bridge Quick Read Only of CSR and ID -----
0:0>-----
0:0>fire 1 JBUSID 00000080.0f000000 =
0:0>
fc000002.e03dda23
0:0>-----

```

```

0:0>fire 1 JBUSCSR 00000080.0f410000 =
0:0>
0:0>-----
0:0>End : IO-Bridge Quick Read
0:0>Begin: IO-Bridge unit 1 jbus perf test
0:0>End : IO-Bridge unit 1 jbus perf test
0:0>Begin: IO-Bridge unit 1 int init test
0:0>End : IO-Bridge unit 1 int init test
0:0>Begin: IO-Bridge unit 1 link train port A
0:0>End : IO-Bridge unit 1 link train port A
0:0>Begin: IO-Bridge unit 1 link train port B
0:0>End : IO-Bridge unit 1 link train port B
0:0>Begin: IO-Bridge unit 1 interrupt test
0:0>End : IO-Bridge unit 1 interrupt test
0:0>Begin: IO-Bridge unit 1 Config MB bridges
0:0>Config port A, bus 2 dev 0 func 0, tag MB/PCI-SWITCH0
0:0>Config port A, bus 3 dev 1 func 0, tag MB/PCI-SWITCH0
0:0>Config port B, bus 2 dev 0 func 0, tag MB/PCI-SWITCH1
0:0>Config port B, bus 3 dev 1 func 0, tag MB/PCI-SWITCH1
0:0>Config port B, bus 3 dev 2 func 0, tag MB/PCI-SWITCH1
0:0>Config port B, bus 4 dev 0 func 0, tag MB/PCIE-IO
0:0>End : IO-Bridge unit 1 Config MB bridges
0:0>Begin: IO-Bridge unit 1 PCI id test
0:0> INFO:100000 count read passed for MB/PCI-SWITCH0! Last read
VID:10b5|DID:8532 LinkWidth:8
0:0> INFO:100000 count read passed for MB/NET0! Last read
VID:8086|DID:105e LinkWidth:4
0:0> INFO:100000 count read passed for MB/PCI-SWITCH1! Last read
VID:10b5|DID:8532 LinkWidth:8
0:0>End : IO-Bridge unit 1 PCI id test
0:0>Begin: Quick JBI Loopback Block Mem Test
0:0>Quick jbus loopback Test 262144 bytes at 00000000.00600000
0:0>End : Quick JBI Loopback Block Mem Test
0:0>INFO:
0:0> POST Passed all devices.
0:0>POST: Return to VBSC.
0:0>Master set ACK for vbosc runpost command and spin...
SC Alert: Host System has Reset

```

## 5. Perform further investigation if needed.

When POST is finished running, and if no faults were detected, the system will boot.

If POST detects a faulty device, the fault is displayed and the fault information is passed to ALOM CMT for fault handling. Faulty FRUs are identified in fault messages using the FRU name. For a list of FRU names, see [Appendix A](#).

### a. Interpret the POST messages:

POST error messages use the following syntax:

```
c:s > ERROR: TEST = failing-test
c:s > H/W under test = FRU
c:s > Repair Instructions: Replace items in order listed by H/W
under test above
c:s > MSG = test-error-message
c:s > END_ERROR
```

In this syntax, *c* = the core number, *s* = the strand number.

Warning and informational messages use the following syntax:

```
INFO or WARNING: message
```

The following example shows a POST error message.

```
7:2>
7:2>ERROR: TEST = Data Bitwalk
7:2>H/W under test = MB/CMP0/CH2/R0/D0/S0 (MB/CMP0/CH2/R0/D0)
7:2>Repair Instructions: Replace items in order listed by 'H/W
under test' above.
7:2>MSG = Pin 149 failed on MB/CMP0/CH2/R0/D0/S0 (J6901)
7:2>END_ERROR

7:2>Decode of Dram Error Log Reg Channel 2 bits
60000000.0000108c
7:2> 1 MEC 62 R/W1C Multiple corrected
errors, one or more CE not logged
7:2> 1 DAC 61 R/W1C Set to 1 if the error
was a DRAM access CE
7:2> 108c SYND 15:0 RW ECC syndrome.
7:2>
7:2> Dram Error AFAR channel 2 = 00000000.00000000
7:2> L2 AFAR channel 2 = 00000000.00000000
```

In this example, POST is reporting a memory error at DIMM location MB/CMP0/CH2/R0/D0. This error was detected by POST running on core 7, strand 2.

**b. Run the `showfaults` command to obtain additional fault information.**

The fault is captured by ALOM, where the fault is logged, the Service Action Required LED is lit, and the faulty component is disabled.

Example:

```
ok .#
sc> showfaults -v
   ID   Time                FRU                Fault
   1 APR 24 12:47:27    MB/CMP0/CH2/R0/D0  MB/CMP0/CH2/R0/D0
deemed faulty and disabled
```

In this example, MB/CMP0/CH2/R0/D0 is disabled. The system can boot using memory that was not disabled until the faulty component is replaced.

---

**Note** – You can use ASR commands to display and control disabled components. See [Section 2.7, “Managing Components With Automatic System Recovery Commands”](#) on page 2-40.

---

## 2.4.5 Clearing POST Detected Faults

In most cases, when POST detects a faulty component, POST logs the fault and automatically takes the failed component out of operation by placing the component in the ASR blacklist (see [Section 2.7, “Managing Components With Automatic System Recovery Commands”](#) on page 2-40).

After the faulty FRU is replaced, you must clear the fault by removing the component from the ASR blacklist.

**1. At the ALOM CMT prompt, use the `showfaults` command to identify POST detected faults.**

POST detected faults are distinguished from other kinds of faults by the text: deemed faulty and disabled, and no UUID number is reported.

Example:

```
sc> showfaults -v
   ID   Time                FRU                Fault
   1 APR 24 12:47:27    MB/CMP0/CH2/R0/D0  MB/CMP0/CH2/R0/D0
deemed faulty and disabled
```

If no fault is reported, you do not need to do anything else. Do not perform the subsequent steps.

2. Use the `enablecomponent` command to clear the fault and remove the component from the ASR blacklist.

Use the FRU name that was reported in the fault in the previous step.

Example:

```
sc> enablecomponent MB/CMP0/CH0/R0/D0
```

The fault is cleared and should not show up when you run the `showfaults` command. Additionally, the Service Action Required LED is no longer on.

3. Reboot the server module.

You must reboot the server module for the `enablecomponent` command to take effect.

4. At the ALOM CMT prompt, use the `showfaults` command to verify that no faults are reported.

```
sc> showfaults
Last POST run: THU MAR 09 16:52:44 2006
POST status: Passed all devices

No failures found in System
```

---

## 2.5 Using the Solaris Predictive Self-Healing Feature

The Solaris Predictive Self-Healing (PSH) technology enables the Sun Blade T6300 server module to diagnose problems while the Solaris OS is running, and mitigate many problems before they negatively affect operations.

The Solaris OS uses the fault manager daemon, `fmd(1M)`, which starts at boot time and runs in the background to monitor the system. If a component generates an error, the daemon handles the error by correlating the error with data from previous errors and other related information to diagnose the problem. Once diagnosed, the fault manager daemon assigns the problem a Universal Unique Identifier (UUID) that distinguishes the problem across any set of systems. When possible, the fault manager daemon initiates steps to self-heal the failed component and take the component offline. The daemon also logs the fault to the `syslogd` daemon and

provides a fault notification with a message ID (MSGID). You can use message ID to get additional information about the problem from Sun's knowledge article database.

The Predictive Self-Healing technology covers the following Sun Blade T6300 server module components:

- UltraSPARC® T1 multicore processor (CPU)
- Memory
- I/O bus

The PSH console message provides the following information:

- Type
- Severity
- Description
- Automated response
- Impact
- Suggested action for system administrator

If the Solaris PSH facility has detected a faulty component, use the `fmddump` command to identify the fault. Faulty FRUs are identified in fault messages using the FRU name. For a list of FRU names, see [Appendix A](#).

---

**Note** – Additional Predictive Self-Healing information is available at: <http://www.sun.com/msg>

---

## 2.5.1 Identifying Faults With the `fmddump` Command

The `fmddump` command displays the list of faults detected by the Solaris PSH facility. Use this command for the following reasons:

- To see if any faults have been detected by the Solaris PSH facility.
- If you need to obtain the fault message ID (SUNW-MSG-ID) for detected faults.
- To verify that the replacement of a FRU has cleared the fault and not generated any additional faults.

If you already have a fault message ID, go to [Step 2](#) to obtain more information about the fault from the Sun Predictive Self-Healing Knowledge Article web site.

---

**Note** – Faults detected by the Solaris PSH facility are also reported through ALOM CMT alerts. In addition to the PSH `fmddump` command, the ALOM CMT `showfaults` command also provides information about faults and displays fault UUIDs. See [Section 2.3.2, “Displaying System Faults” on page 2-17](#).

---

**1. Check the event log using the `fmddump` command with `-v` for verbose output:**

```
# fmddump -v
TIME                UUID                SUNW-MSG-
ID
Apr 24 06:54:08.2005 1ce22523-1c80-6062-e61d-f3b39290ae2c SUN4V-
8000-6H
100% fault.cpu.ultraSPARCT112cachedata
      FRU:hc:///component=MB
      rsrc: cpu:///cpuid=0/serial=22D1D6604A
```

In this example, a fault is displayed, indicating the following details:

- Date and time of the fault (Apr 24 06:54:08.2005)
- Universal Unique Identifier (UUID) that is unique for every fault (1ce22523-1c80-6062-e61d-f3b39290ae2c)
- Sun message identifier (SUNW4V-8000-6H) that can be used to obtain additional fault information
- Faulted FRU (FRU:hc:///component=MB), that in this example is identified as *MB*, indicating that the motherboard requires replacement.

**2. Use the Sun message ID to obtain more information about this type of fault.**

- a. **In a browser, go to the Predictive Self-Healing Knowledge Article web site:**  
<http://www.sun.com/msg>

**b. Enter the message ID in the SUNW-MSG-ID field, and press Lookup.**

In this example, the message ID SUN4U-8000-6H returns the following information for corrective action:

```
CPU errors exceeded acceptable levels

Type
    Fault
Severity
    Major
Description
    The number of errors associated with this CPU has exceeded
    acceptable levels.
Automated Response
    The fault manager will attempt to remove the affected CPU from
    service.
Impact
    System performance may be affected.

Suggested Action for System Administrator
    Schedule a repair procedure to replace the affected CPU, the
    identity of which can be determined using fmddump -v -u <EVENT_ID>.

Details
    The Message ID:    SUN4U-8000-6H indicates diagnosis has
    determined that a CPU is faulty. The Solaris fault manager arranged
    an automated attempt to disable this CPU. The recommended action
    for the system administrator is to contact Sun support so a Sun
    service technician can replace the affected component.
```

**c. Follow the suggested actions to repair the fault.**

## 2.5.2 Clearing PSH Detected Faults

When the Solaris PSH facility detects faults, the faults are logged and displayed on the console. After the fault condition is corrected, for example by replacing a faulty FRU, you must clear the fault.

---

**Note** – If you are dealing with faulty DIMMs, do not follow this procedure. Instead, perform the procedure in [Section 4.3.3, “Replacing a DIMM” on page 4-13](#).

---

**1. After replacing a faulty FRU, boot the system.**

**2. At the ALOM CMT prompt, use the `showfaults` command to identify PSH detected faults.**

PSH detected faults are distinguished from other kinds of faults by the text: Host detected fault.

Example:

```
sc> showfaults -v
ID Time                FRU                Fault
0 SEP 09 11:09:26    MB/CMP0/CH0/R0/D0 Host detected fault, MSGID:
SUN4U-8000-2S    UUID: 7ee0e46b-ea64-6565-e684-e996963f7b86
```

If no fault is reported, you do not need to do anything else. Do not perform the subsequent step.

**3. Clear the fault from all persistent fault records.**

In some cases, even though the fault is cleared, some persistent fault information remains and results in erroneous fault messages at boot time. To ensure that these messages are not displayed, perform the following command:

```
fmadm repair UUID
```

Example:

```
sc> fmadm repair 7ee0e46b-ea64-6565-e684-e996963f7b86
```

## 2.5.3 Clearing the PSH Fault From the ALOM CMT Logs

When the Solaris PSH facility detects faults, the faults are also logged by the ALOM CMT service processor. After the fault condition is corrected, for example by replacing a faulty FRU, you must clear the fault from the ALOM CMT logs.

---

**Note** – If you are dealing with faulty DIMMs, do not follow this procedure. Instead, perform the procedure in [Section 4.3.3, “Replacing a DIMM” on page 4-13](#).

---

1. After replacing a faulty FRU, at the ALOM CMT prompt, use the `showfaults` command to identify PSH detected faults.

PSH detected faults are distinguished from other kinds of faults by the text:  
Host detected fault.

Example:

```
sc> showfaults
ID FRU                               Fault
0 MB                                 Host detected fault, MSGID: SUNW-TEST07
UUID: 7ee0e46b-ea64-6565-e684-e996963f7b86
```

If no fault is reported, you do not need to do anything else. Do not perform the subsequent steps.

2. Run the `clearfault` command with the UUID provided in the `showfaults` output:

```
sc> clearfault 7ee0e46b-ea64-6565-e684-e996963f7b86
Clearing fault from all indicted FRUs...
Fault cleared.
```

---

## 2.6 Collecting Information From Solaris OS Files and Commands

With the Solaris OS running on the Sun Blade T6300 server module, you have all the Solaris OS files and commands available for collecting information and for troubleshooting.

In the event that POST, ALOM, or the Solaris PSH features did not indicate the source of a fault, check the message buffer and log files for notifications for faults. Hard drive faults are usually captured by the Solaris message files.

Use the `dmesg` command to view the most recent system message. To view the system messages log file, view the contents of the `/var/adm/messages` file.

### 2.6.1 Checking the Message Buffer

1. Log in as superuser.

## 2. Issue the `dmesg` command:

```
# dmesg
```

The `dmesg` command displays the most recent messages generated by the system.

## 2.6.2 Viewing the System Message Log Files

The error logging daemon, `syslogd`, automatically records various system warnings, errors, and faults in message files. These messages can alert you to system problems such as a device that is about to fail.

The `/var/adm` directory contains several message files. The most recent messages are in the `/var/adm/messages` file. After a period of time (usually every ten days), a new `messages` file is automatically created. The original contents of the `messages` file are rotated to a file named `messages.1`. Over a period of time, the messages are further rotated to `messages.2` and `messages.3`, and then deleted.

1. Log in as superuser.
2. Issue the following command:

```
# more /var/adm/messages
```

3. If you want to view all logged messages, issue the following command:

```
# more /var/adm/messages*
```

---

## 2.7 Managing Components With Automatic System Recovery Commands

The Automatic System Recovery (ASR) feature enables the server module to automatically unconfigure failed components to remove them from operation until they can be replaced. In the Sun Blade T6300 server module, the following components are managed by the ASR feature:

- UltraSPARC T1 processor strands
- Memory DIMMS
- I/O bus

The database that contains the list of disabled components is called the ASR blacklist (`asr-db`).

In most cases, POST automatically disables a component when it is faulty. After the cause of the fault is repaired (FRU replacement, loose connector reseated, and so on), you must remove the component from the ASR blacklist.

The ASR commands (TABLE 2-8) enable you to view, and manually add or remove components from the ASR blacklist. These commands are run from the ALOM CMT `sc>` prompt.

**TABLE 2-8** ASR Commands

Command	Description
<code>showcomponent</code> *	Displays system components and their current state.
<code>enablecomponent</code> <i>asrkey</i>	Removes a component from the <code>asr-db</code> blacklist, where <i>asrkey</i> is the component to enable.
<code>disablecomponent</code> <i>asrkey</i>	Adds a component to the <code>asr-db</code> blacklist, where <i>asrkey</i> is the component to disable.
<code>clearasrdb</code>	Removes all entries from the <code>asr-db</code> blacklist.

\* The `showcomponent` command might not report all blacklisted DIMMS.

---

**Note** – The components (*asrkeys*) vary from system to system, depending on how many cores and memory are present. Use the `showcomponent` command to see the *asrkeys* on a given system.

---

---

**Note** – A `reset` or `powercycle` is required after disabling or enabling a component. If the status of a component is changed with power on there is no effect to the system until the next `reset` or `powercycle`.

---

## 2.7.1 Displaying System Components With the `showcomponent` Command

The `showcomponent` command displays the system components (*asrkeys*) and reports their status.

1. At the `sc>` prompt, enter the `showcomponent` command.

Example with no disabled components:

```
sc> showcomponent

Keys:

MB/CMP0/P0      MB/CMP0/P1      MB/CMP0/P2      MB/CMP0/P3      MB/CMP0/P4
MB/CMP0/P5      MB/CMP0/P6      MB/CMP0/P7      MB/CMP0/P8      MB/CMP0/P9
MB/CMP0/P10     MB/CMP0/P11     MB/CMP0/P12     MB/CMP0/P13     MB/CMP0/P14
MB/CMP0/P15     MB/CMP0/P16     MB/CMP0/P17     MB/CMP0/P18     MB/CMP0/P19
MB/CMP0/P20     MB/CMP0/P21     MB/CMP0/P22     MB/CMP0/P23     MB/CMP0/P24
MB/CMP0/P25     MB/CMP0/P26     MB/CMP0/P27     MB/CMP0/P28     MB/CMP0/P29
MB/CMP0/P30     MB/CMP0/P31     MB/CMP0/CH0/R0/D0      MB/CMP0/CH0/R0/D1
MB/CMP0/CH1/R0/D0      MB/CMP0/CH1/R0/D1      MB/CMP0/CH2/R0/D0
MB/CMP0/CH2/R0/D1      MB/CMP0/CH3/R0/D0      MB/CMP0/CH3/R0/D1
MB/PCIEa         MB/PCIEb         MB/EM0           MB/EM1
MB/NEM0          MB/NEM1          MB/PCI-BRIDGE   MB/USB           TTYA
MB/NET           MB/SAS-SATA-HBA

State: clean
```

Example showing a disabled component:

```
sc> showcomponent
.
.
.
ASR state: Disabled Devices
    MB/CMP0/CH3/R1/D1 : dimm15 deemed faulty
```

## 2.7.2 Disabling Components With the disablecomponent Command

The disablecomponent command disables a component by adding it to the ASR blacklist.

1. At the sc> prompt, enter the disablecomponent command.

```
sc> disablecomponent MB/CMP0/CH3/R1/D1

SC Alert:MB/CMP0/CH3/R1/D1 disabled
```

2. After receiving confirmation that the `disablecomponent` command is complete, reset the server module so that the ASR command takes effect.

```
sc> reset
```

## 2.7.3 Enabling a Disabled Component With the `enablecomponent` Command

The `enablecomponent` command enables a disabled component by removing it from the ASR blacklist.

1. At the `sc>` prompt, enter the `enablecomponent` command.

```
sc> enablecomponent MB/CMP0/CH3/R1/D1  
SC Alert:MB/CMP0/CH3/R1/D1 reenabled
```

2. After receiving confirmation that the `enablecomponent` command is complete, reset the server module for so that the ASR command takes effect.

```
sc> reset
```

---

## 2.8 Exercising the System With SunVTS

Sometimes a system exhibits a problem that cannot be isolated definitively to a particular hardware or software component. In such cases, it might be useful to run a diagnostic tool that stresses the system by continuously running a comprehensive battery of tests. Sun provides the SunVTS software for this purpose.

### 2.8.1 Checking SunVTS Software Installation

This procedure assumes that the Solaris OS is running on the Sun Blade T6300 server module, and that you have access to the Solaris command line.

## 1. Check for the presence of SunVTS packages using the `pkginfo` command.

```
% pkginfo -l SUNWvts SUNWvtsr SUNWvtsts SUNWvtsmn
```

- If SunVTS software is loaded, information about the packages is displayed.
- If SunVTS software is not loaded, you see an error message for each missing package.

```
ERROR: information for "SUNWvts" was not found
ERROR: information for "SUNWvtsr" was not found
...
```

TABLE 2-9 lists some SunVTS packages:

TABLE 2-9 Sample of installed SunVTS Packages

Package	Description
SUNWvts	SunVTS framework
SUNWvtsr	SunVTS Framework (root)
SUNWvtsts	SunVTS for tests
SUNWvtsmn	SunVTS man pages

If SunVTS is not installed, you can obtain the installation packages from the following resources:

- Solaris Operating System DVDs
- Sun Download Center: <http://www.sun.com/oem/products/vts>

The SunVTS 6.3 software, and future compatible versions, are supported on the Sun Blade T6300 server module.

SunVTS installation instructions are described in the *Sun VTS 6.3 User's Guide*, 820-0080.

## 2.8.2 Exercising the System Using SunVTS Software

Before you begin, the Solaris OS must be running. You must verify that SunVTS validation test software is installed on your system. See [Section 2.8.1, "Checking SunVTS Software Installation"](#) on page 2-43.

The SunVTS installation process requires that you specify one of two security schemes to use when running SunVTS. The security scheme you choose must be properly configured in the Solaris OS for you to run SunVTS.

SunVTS software features both character-based and graphics-based interfaces.

For more information about the character-based SunVTS TTY interface, and specifically for instructions on accessing it by TIP or `telnet` commands, refer to the *Sun VTS 6.3 User's Guide*.



# Replacing Hot-Swappable and Hot-Pluggable Components

---

This chapter describes how to remove and replace the hot-swappable and hot-pluggable field-replaceable units (FRUs) in the Sun Blade T6300 server module.

The following topics are covered:

- [Section 3.1, “Hot-Pluggable Hard Drives” on page 3-1](#)
- [Section 3.2, “Hot-Plugging a Hard Drive” on page 3-1](#)
- [Section 3.3, “Adding PCI ExpressModules” on page 3-5](#)

---

## 3.1 Hot-Pluggable Hard Drives

Hot-pluggable devices are those devices that can be removed and installed while the system is running, but you must perform administrative tasks first. The Sun Blade T6300 server module hard drives can be hot-swappable (depending on how they are configured).

For information about a hot-swappable or hot-pluggable PCI ExpressModule (PCI EM) or network express module (NEM), see the *Sun Blade 6000 Modular System Service Manual*, 820-0051.

---

## 3.2 Hot-Plugging a Hard Drive

The hard drives in the Sun Blade T6300 server module are hot-pluggable, but this capability depends on how the hard drives are configured.

## 3.2.1 Rules for Hot-Plugging

To safely remove a hard drive, you must:

- Prevent any applications from accessing the hard drive.
- Remove the logical software links.

Hard drives cannot be hot-plugged if:

- The hard drive provides the operating system, and the operating system is not mirrored on another drive.
- The hard drive cannot be logically isolated from the online operations of the server module.

If your drive falls into these conditions, you must shut the system down before you replace the hard drive. See [Section 4.2.2, “Shutting Down the System” on page 4-3](#).

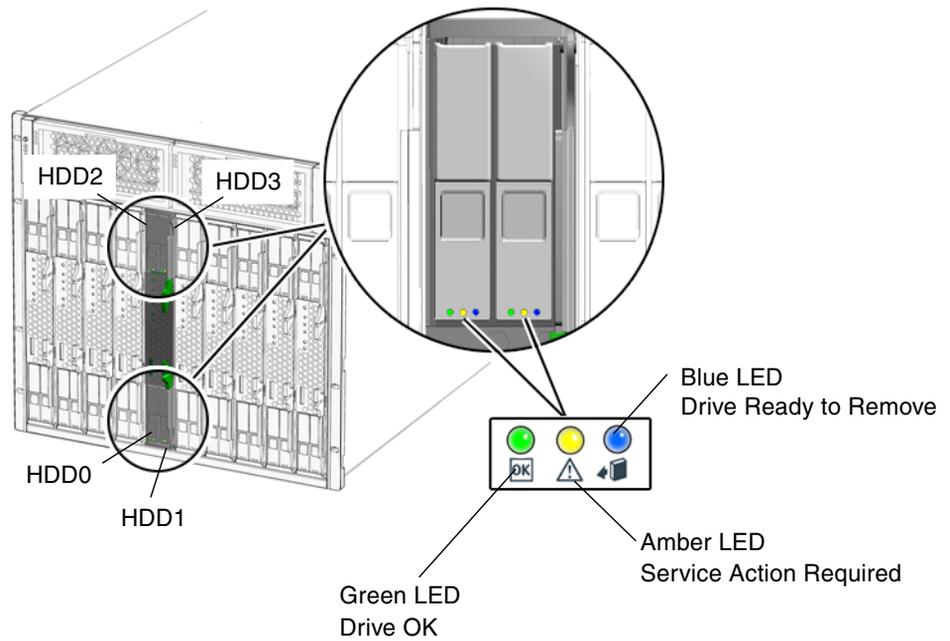
## 3.2.2 Removing a Hard Drive

For more information about the `cfgadm` and hard drive management commands see the Solaris man pages.

- 1. Identify the physical location of the hard drive that you want to replace** ([FIGURE 3-2](#)).
- 2. Issue the Solaris OS commands required to stop using the hard drive.**

Exact commands required depend on the configuration of your hard drives. You might need to unmount file systems or perform RAID commands.

One command that you may use to take the drive offline is `cfgadm`. For more information see the `cfgadm` man page.
- 3. Verify that the blue Drive Ready to Remove LED is illuminated on the front of the hard drive.**



**FIGURE 3-1** Hard Drive Locations and LEDs

4. Push the latch release button (FIGURE 3-2).



---

**Caution** – The latch is not an ejector. The latch can be damaged if you bend it too much.

---

5. Grasp the latch and pull the drive out of the drive slot.



**FIGURE 3-2** Hard Drive Locations, Release Button, and Latch

### 3.2.3 Replacing a Hard Drive or Installing a New Hard Drive

The hard drive is physically addressed to the slot in which it is installed.

---

**Note** – If you removed a hard drive, ensure that you install the replacement drive in the same slot.

---

1. If necessary, remove the hard drive filler panel.
2. Slide the drive into the bay until it is fully seated ([FIGURE 3-2](#)).
3. Close the latch to lock the drive in place.

#### 4. Perform administrative tasks to reconfigure the hard drive.

The procedures that you perform at this point depend on how your data is configured. You might need to partition the drive, create file systems, load data from backups, or have data updated from a RAID configuration.

- You can use the Solaris command `cfgadm -al` to list all disks in the device tree, including 'unconfigured' disks.
- If the disk is not in the list, such as with a newly installed disk, you can use `devfsadm` to configure it into the tree. See the `devfsadm` man page for details.

---

## 3.3 Adding PCI ExpressModules

The PCI ExpressModules (PCI EMs) plug into the Sun Blade 6000 chassis. To verify installation and to set up the PCI EMs see:

- *Sun Blade 6000 Modular System Service Manual*, 820-0051
- *Advanced Lights out Management (ALOM) CMT v1.3 Guide*, 819-7981
- *Sun Blade T6300 Server Module Administration Guide*, 820-0277 (See: Reconfiguring and Unconfiguring Devices)



# Replacing Cold-Swappable Components

---

This chapter describes how to remove and replace field-replaceable units (FRUs) that must be cold-swapped.

The following topics are covered:

- [Section 4.1, “Safety Information” on page 4-1](#)
- [Section 4.2, “Common Procedures for Parts Replacement” on page 4-3](#)
- [Section 4.3, “Removing and Replacing DIMMS” on page 4-8](#)
- [Section 4.4, “Removing the Disk Backplane Cables” on page 4-18](#)
- [Section 4.5, “Removing the Battery on the Service Processor” on page 4-20](#)
- [Section 4.6, “Finishing Component Replacement” on page 4-22](#)

---

## 4.1 Safety Information

This section describes important safety information you need to know prior to removing or installing parts in the Sun Blade T6300 server module.

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all Sun standard cautions, warnings, and instructions marked on the equipment and described in *Important Safety Information for Sun Hardware Systems*, 816-7190-10.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Follow the electrostatic discharge safety practices as described in this section.

## 4.1.1 Safety Symbols

The following symbols might appear in this manual, note their meanings:



---

**Caution** – There is a risk of personal injury and equipment damage. To avoid personal injury and equipment damage, follow the instructions.

---



---

**Caution** – Hot surface. Avoid contact. Surfaces are hot and might cause personal injury if touched.

---



---

**Caution** – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

---

## 4.1.2 Electrostatic Discharge Safety

Electrostatic discharge (ESD) sensitive devices, such as the motherboard, hard drives, and memory cards require special handling.



---

**Caution** – The boards and hard drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static electricity from clothing or the work environment can destroy components. Do not touch the components along their connector edges.

---

### 4.1.2.1 Using an Antistatic Wrist Strap

Wear an antistatic wrist strap and use an antistatic mat when handling components such as drive assemblies, boards, or cards. When servicing or removing server module components, attach an antistatic strap to your wrist and then to a metal area on the chassis. Do this after you disconnect the power cords from the server module. Following this practice equalizes the electrical potentials between you and the server module.

### 4.1.2.2 Using an Antistatic Mat

Place ESD-sensitive components such as the motherboard, memory, and other PCB cards on an antistatic mat.

---

## 4.2 Common Procedures for Parts Replacement

Before you can remove and replace internal components, you must perform the procedures in this section:

### 4.2.1 Required Tools

You can service the Sun Blade T6300 server module with the following tools:

- Antistatic wrist strap
- Antistatic mat

### 4.2.2 Shutting Down the System

Performing a graceful shutdown ensures that all of your data is saved and that the system is ready for restart.

**1. Log in as superuser or equivalent.**

Depending on the nature of the problem, you might want to view the system status, the log files, or run diagnostics before you shut down the system. For more information, refer to:

- *Sun Blade T6300 Server Module Administration Guide*, 820-0277
- *Advanced Lights out Management (ALOM) CMT v1.3 Guide*, 819-7981

**2. Notify affected users.**

Refer to your Solaris system administration documentation for additional information.

**3. Save any open files and quit all running programs.**

Refer to your application documentation for specific information on these processes.

**4. Shut down the Solaris OS.**

**5. Switch from the system console to the ALOM CMT `sc>` prompt by typing the `#.` (Hash-Period) key sequence.**

6. At the ALOM CMT `sc>` prompt, issue the `poweroff` command.

```
sc> poweroff -y  
SC Alert: SC Request to Power Off Host.
```

---

**Note** – You can also use the Power button on the front of the server module to initiate a graceful system shutdown. Use a paper clip to press this button.

---

```
# Feb 10 17:17:11 dt90-107 unix: WARNING: Power-off requested,  
system will now shutdown.  
Shutdown started.      Sat Feb 10 17:17:11 PST 2007  
Changing to init state 5 - please wait  
Broadcast Message from root (msglog) on dt90-107 Sat Feb 10  
17:17:12...  
THE SYSTEM dt90-107 IS BEING SHUT DOWN NOW ! ! !  
Log off now or risk your files being damaged  
  
svc.startd: The system is coming down.  Please wait.  
svc.startd: 87 system services are now being stopped.  
Feb 10 17:17:27 dt90-107 syslogd: going down on signal 15  
  
SC Alert: Host system has shut down.
```

Refer to the *Advanced Lights out Management (ALOM) CMT v1.3 Guide*, 819-7981, for more information about the ALOM CMT `poweroff` command.

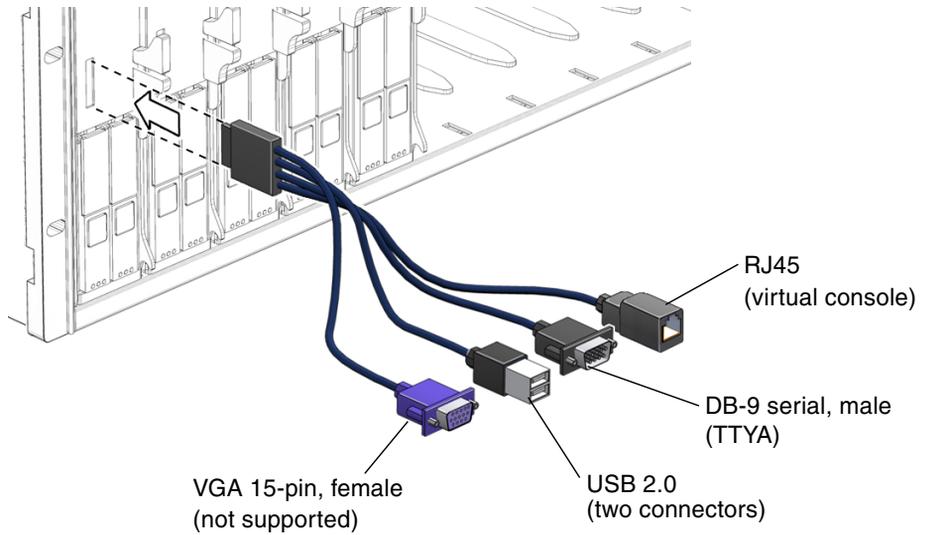
## 4.2.3 Removing the Sun Blade T6300 Server Module From the Sun Blade 6000 Chassis

1. To perform an orderly shutdown, run the `removeblade` command:

```
sc> removeblade
```

The top white LED is the Locator LED. Once you have located the server module, you can press the Locator LED to turn it off. Or you can use the `setlocator off` command to reset the LED.

2. If a cable is connected to the front of the server module, disconnect it.



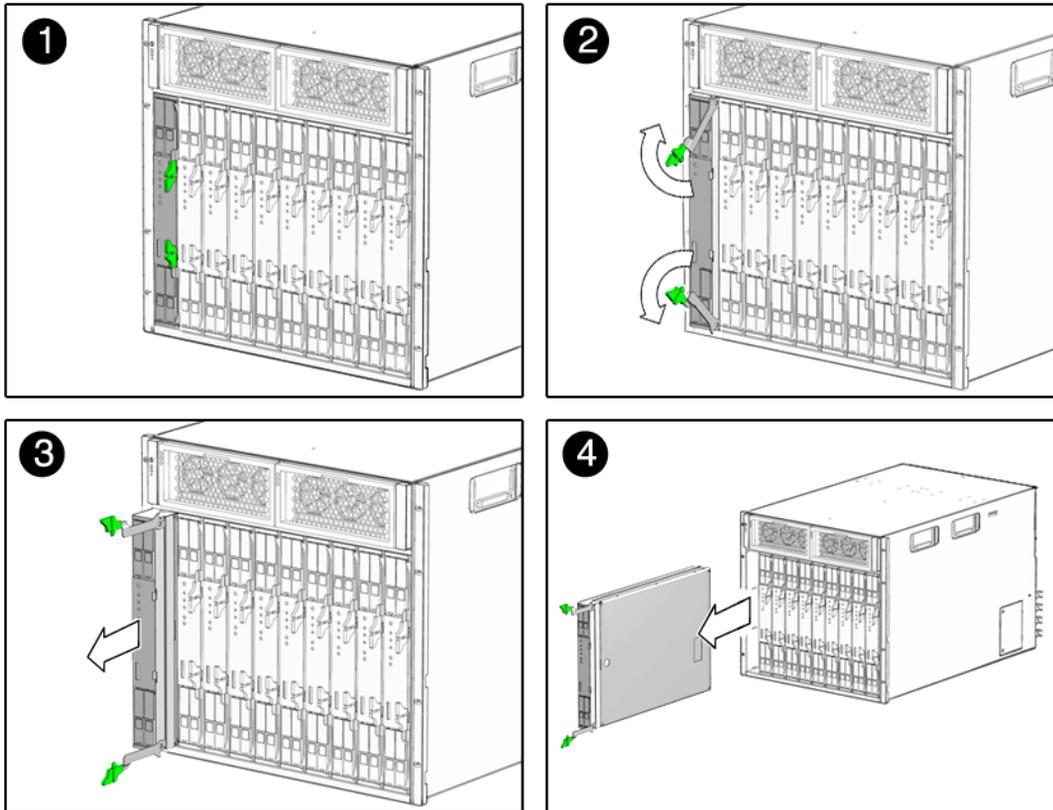
**FIGURE 4-1** Disconnecting the Cable Dangle

---

**Note** – The front panel of the server module is for temporary connections only. You should disconnect the cable dangle from the universal connector port after accessing or transferring data.

---

3. Open the ejector levers ([FIGURE 4-2](#)).



**FIGURE 4-2** Removing the Sun Blade T6300 Server Module From the Sun Blade 6000 Chassis

4. While pinching the release latches, slowly pull the server module forward until the slide rails latch.




---

**Caution** – Hold the server module firmly so that you do not drop it. The server module weighs approximately 14 to 17 pounds (6.4 - 8.0 kg).

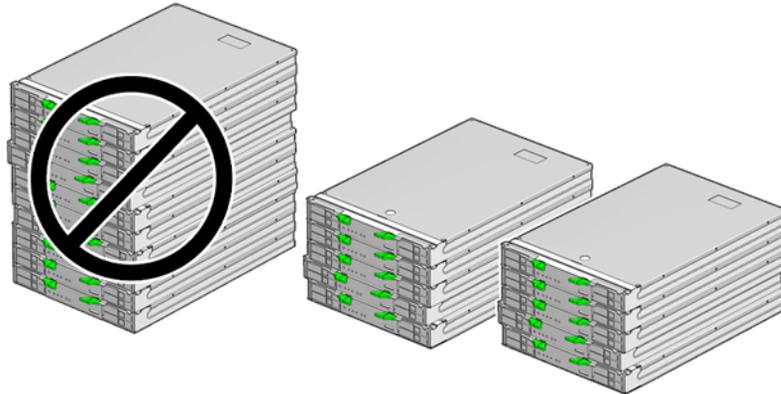
---




---

**Caution** – Do not stack server modules higher than five units tall. They might fall and cause damage or injury.

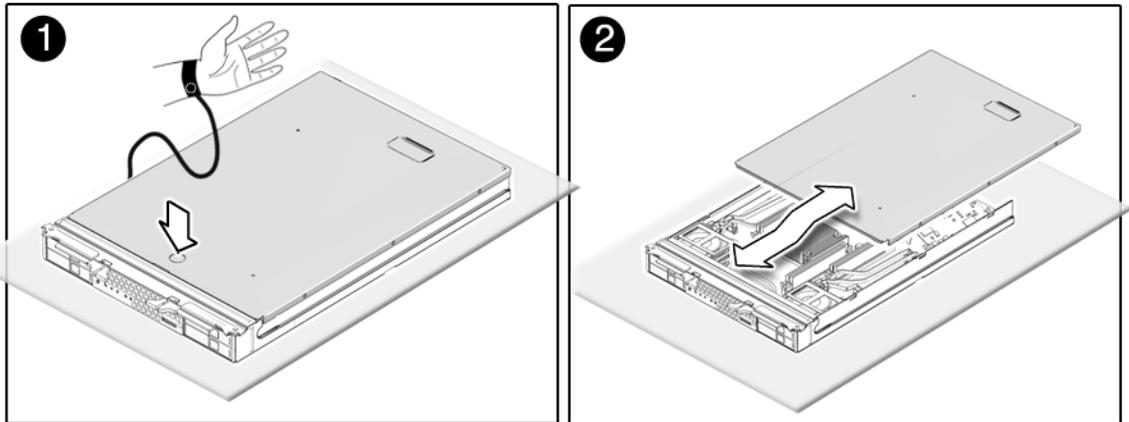
---



**FIGURE 4-3** Stack Five Server Modules or Fewer

5. Set the server module on an antistatic mat.
6. Attach an antistatic wrist strap.

When servicing or removing server module components, attach an antistatic strap to your wrist and then to a metal area on the chassis.



**FIGURE 4-4** Antistatic Mat and Wrist Strap

7. While pressing the top cover release button, slide the cover toward the rear of the server module about an inch (2.5 mm).
8. Lift the cover off the chassis.

---

## 4.3 Removing and Replacing DIMMS

### 4.3.1 Memory Configuration

The Sun Blade T6300 server module has eight slots that hold DDR-2 memory DIMMs in the following DIMM sizes:

- 1 Gbyte (maximum of 8 Gbyte)
- 2 Gbyte (maximum of 16 Gbyte)
- 4 Gbyte (maximum of 32 Gbyte)

The Sun Blade T6300 server module performs best if all eight connectors are populated with eight DIMMs. This configuration also enables the system to continue operating even when a DIMM fails, or if an entire channel fails.

#### 4.3.1.1 Capacity Restrictions

Due to interleaving rules for the CPU, the system will operate at the lowest capacity of all the DIMMs installed. *Therefore, it is ideal to install eight identical DIMMs (not four DIMMs of one capacity and four DIMMs of another capacity).*

#### 4.3.1.2 DIMM Installation Rules



---

**Caution** – The following DIMM rules must be followed. The server module might not operate correctly if the DIMM rules are not followed. Always use DIMMs that have been qualified by Sun.

---

DIMMs are installed in groups of four, with four DIMMs of the same capacity (FIGURE 4-6).

- All DIMMS must use DDR-2 four-data input output DRAMs
- Each set of four DIMMS must have the exact same DRAM devices on the DIMM, for example, four DIMMs must have 256 Mbyte DRAMs, or four DIMMS have 512 Mbyte DRAMs.
- All DIMMS must be 72-bit ECC.

If the DIMMs are not properly configured, the system issues a message and the system does not boot.

For more information about DIMMs see [Section 2.1.1.4, “Memory Fault Handling”](#) on page 2-7.

## 4.3.2 Removing the DIMMs

The DIMM ejectors have LEDs that indicate if a DIMM requires replacement.

- If the system is still powered on and installed in the chassis, see [Section 2.1.1, “Memory Configuration and Fault Handling”](#) on page 2-5 to determine if a DIMM requires replacement.
- If the server module is powered off, you can remove the server module from the chassis and test the DIMM LEDs on the motherboard to determine if the DIMMs require replacement.



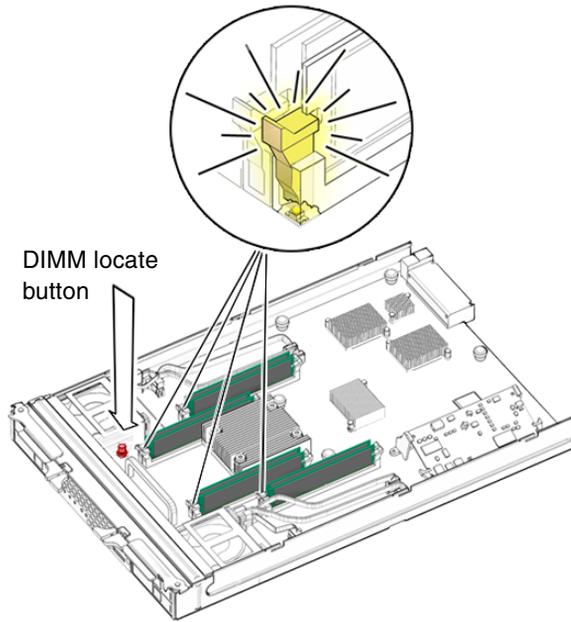
---

**Caution** – Ensure that you follow antistatic practices as described in [Section 4.1.2, “Electrostatic Discharge Safety”](#) on page 4-2.

---

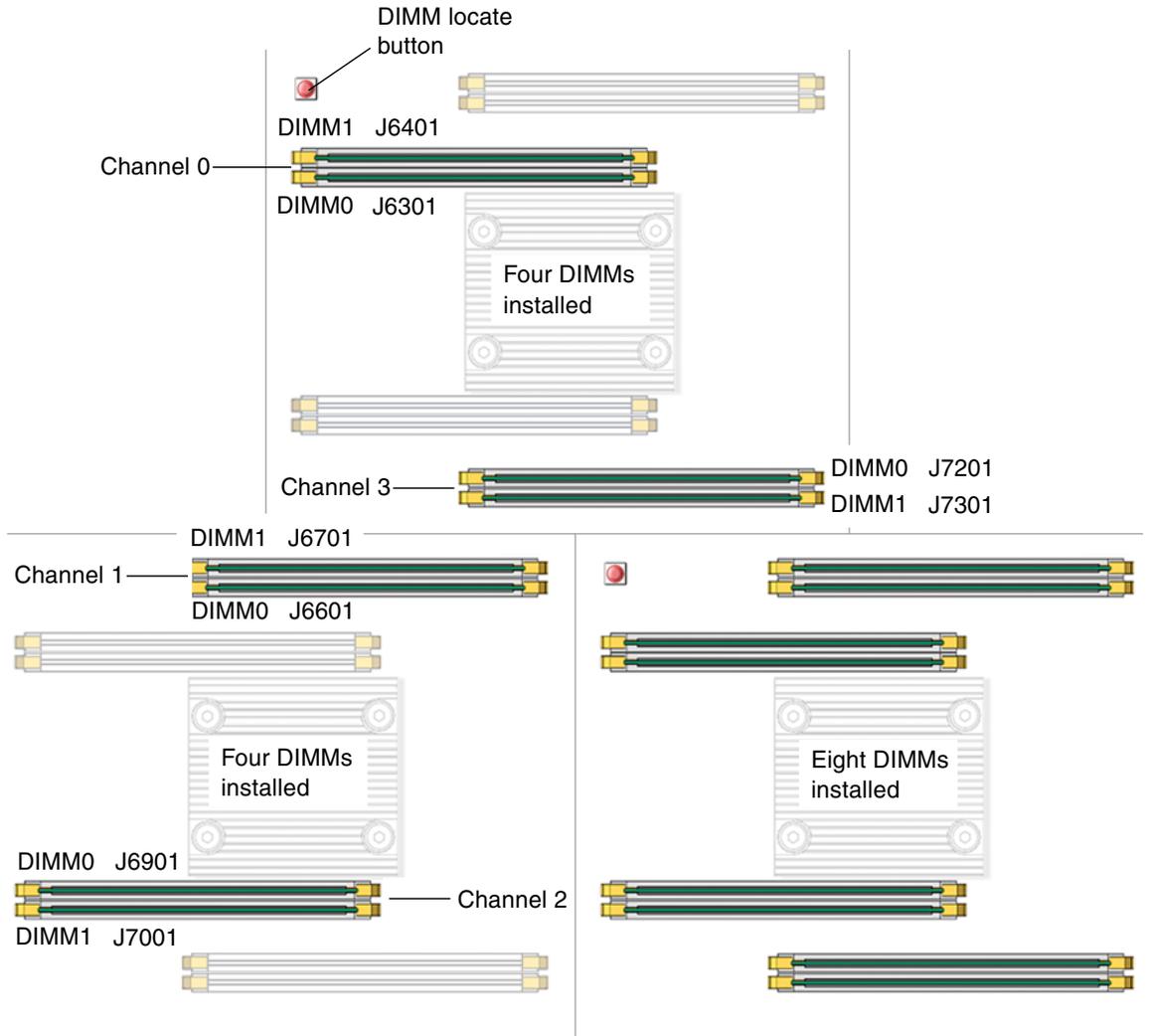
1. **Perform the procedures described in [Section 4.2, “Common Procedures for Parts Replacement”](#) on page 4-3.**
2. **Locate the DIMMs ([FIGURE 4-6](#)) that you want to replace.**

The server module has a DIMM test button on the motherboard. Press the DIMM Locate button to illuminate the ejectors of the bad DIMMs.



**FIGURE 4-5** DIMM Test Button and DIMM Ejector LEDs

You can also use [FIGURE 4-6](#) and [TABLE 4-1](#) to identify the DIMMs you want to remove.



**FIGURE 4-6** DIMM Installation Rules

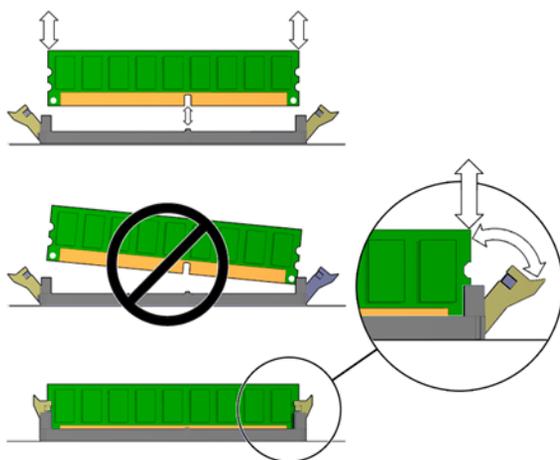
Use [FIGURE 4-6](#) and [TABLE 4-1](#) to map DIMM names that are displayed in messages to the socket numbers of the DIMMs.

**TABLE 4-1** DIMM Names and Socket Numbers

Channel Number	DIMM Name Used in Messages*	Socket No.
Channel 0	MB/CMP0/CH0/R0/D0	J6301
	MB/CMP0/CH0/R0/D1	J6401
Channel 1	MB/CMP0/CH1/R0/D1	J6601
	MB/CMP0/CH1/R0/D1	J6701
Channel 2	MB/CMP0/CH2/R0/D0	J6901
	MB/CMP0/CH2/R0/D1	J7001
Channel 3	MB/CMP0/CH3/R0/D0	J7201
	MB/CMP0/CH3/R0/D1	J7301

\* Numbering key: MB = motherboard, CMP = CPU, CH = channel, R = rank, D = DIMM

3. Note the DIMM locations so that you can install the replacement DIMMs in the same sockets.
4. Push down on the ejector levers on each side of the DIMM connector until the DIMM is released.



**FIGURE 4-7** Removing DIMMs

5. Grasp the top corners of the faulty DIMM and remove it from the system.
6. Place DIMMs on an antistatic mat.

## 4.3.3 Replacing a DIMM

1. Unpackage the replacement DIMMs and place them on an antistatic mat.
2. Ensure that the connector ejector tabs are in the open position.
3. Line up a replacement DIMM with the connector.  
Align the DIMM notch with the key in the connector.
  - a. Push each DIMM into a connector until the ejector tabs lock the DIMM in place.
  - a. Perform the procedures described in [Section 4.6, “Finishing Component Replacement”](#) on page 4-22.
4. Access the ALOM CMT `sc>` prompt.  
At the console, issue the `#.` key sequence:

```
#.
```

5. Run the `showfaults -v` command to determine how to clear the fault.

The method that you use to clear a fault depends on how the fault is identified by the `showfaults` command.

Examples:

- If the fault is a *host-detected fault* a message similar to the following is displayed.

```
sc> showfaults -v
ID Time           FRU           Fault
0 SEP 09 11:09:26 MB/CMP0/CH0/R0/D0 Host detected fault,
MSGID:
SUN4U-8000-2S  UUID: 7ee0e46b-ea64-6565-e684-e996963f7b86
```

Go to [Step 8](#).

- If the fault resulted in the FRU being disabled, a message similar to the following is displayed.

```
sc> showfaults -v
      ID Time           FRU           Fault
      1 OCT 13 12:47:27 MB/CMP0/CH0/R0/D0 MB/CMP0/CH0/R0/D0
      deemed faulty and disabled
```

Run the `enablecomponent` command to enable the FRU:

```
sc> enablecomponent MB/CMP0/CH0/R0/D0
```

## 6. Perform the following steps to verify that there are no faults:

- a. Set the virtual keyswitch to `diag` so that POST will run in service mode.

```
sc> setkeyswitch diag
```

- b. Issue the `poweron` command.

```
sc> poweron
```

- c. Switch to the system console to view POST output.

```
sc> console
```

Watch the POST output for possible fault messages. The following output is a sign that POST did not detect any faults:

```
.
.
2000-02-11 21:33:43.045 0:0> POST Passed all devices.
2000-02-11 21:33:43.272 0:0>POST: Return to VBSC.
2000-02-11 21:33:43.280 0:0>Master set ACK for vbosc runpost
command and spin.....
```

---

**Note** – Depending on the configuration of ALOM CMT POST variables and whether POST detected faults or not, the system might boot, or the system might remain at the `ok` prompt. If the system is at the `ok` prompt, type `boot`.

---

d. Issue the Solaris OS `fmadm faulty` command.

```
# fmadm faulty
```

No memory or DIMM faults should be displayed.

If faults are reported, refer to [FIGURE 2-1](#) to diagnose the fault.

7. Access the ALOM CMT `sc>` prompt.

8. Run the `showfaults` command.

- If the fault was detected by the host and the fault information persists, the output will be similar to the following example:

```
sc> showfaults -v  
ID Time                FRU                Fault  
0 SEP 09 11:09:26      MB/CMP0/CH0/R0/D0 Host detected fault, MSGID:  
SUN4U-8000-2S  UUID: 7ee0e46b-ea64-6565-e684-e996963f7b86
```

- If the `showfaults` command does not report a fault with a UUID, then you do not need to precede with the following steps because the fault is cleared.

9. Run the `clearfault` command.

```
sc> clearfault 7ee0e46b-ea64-6565-e684-e996963f7b86
```

10. Switch to the system console.

```
sc> console
```

11. Issue the `fmadm repair` command with the UUID.

Use the same UUID that you used with the `clearfault` command in [Step 9](#).

```
# fmadm repair 7ee0e46b-ea64-6565-e684-e996963f7b86
```

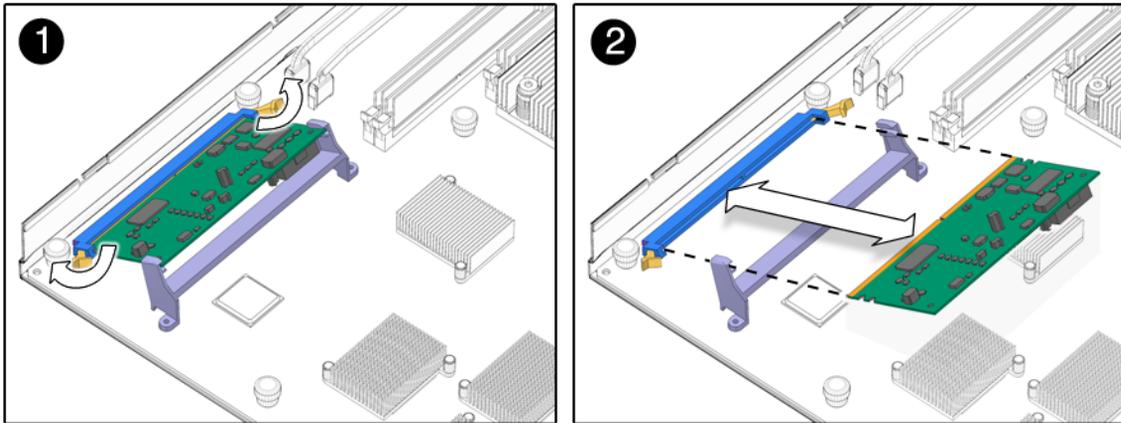
## 4.3.4 Removing the Service Processor

The service processor controls the host power and monitors host system events (power and environmental). The service processor holds a socketed EEPROM for storing the system configuration, all Ethernet MAC addresses, and the host ID.



**Caution** – The service processor card can be hot. To avoid injury, handle it carefully.

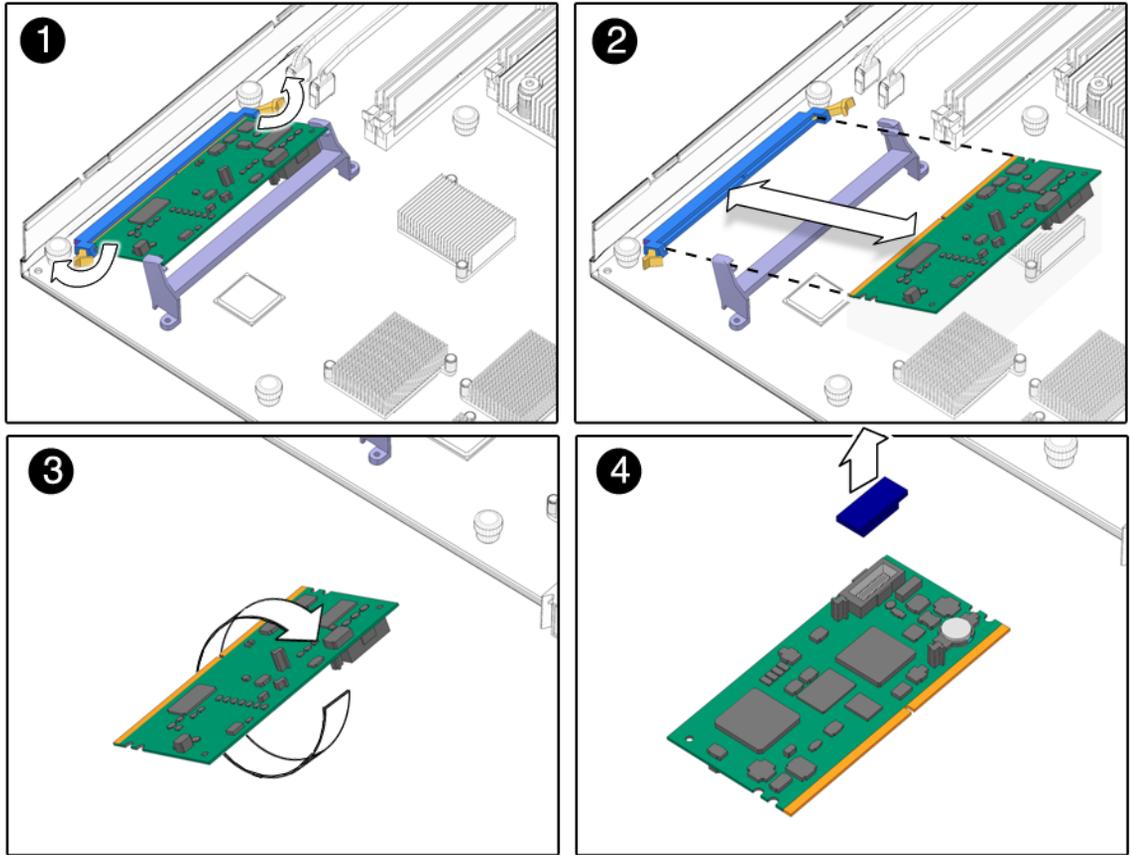
1. Perform the procedures described in [Section 4.2, “Common Procedures for Parts Replacement”](#) on page 4-3.
2. Locate the service processor card.
3. Push down on the ejector levers on each side of the service processor until the card is released from the socket.



**FIGURE 4-8** Ejecting and Removing the Service Processor

4. Grasp the top corners of the service processor and pull it out of the socket.
5. Place the service processor card on an antistatic mat.
6. Remove the system configuration PROM (NVRAM) ([FIGURE 4-9](#)) from the service processor card and place the PROM on an antistatic mat.

The service processor contains the persistent storage for the system host ID and Ethernet MAC addresses. The service processor also contains the ALOM CMT configuration including the IP addresses and ALOM CMT user accounts, if configured. This information will be lost unless the system configuration PROM (NVRAM) is removed and installed in the replacement service processor. The PROM does not hold the fault data, and the fault data will no longer be accessible when the service processor is replaced.



**FIGURE 4-9** Removing the System Configuration PROM (NVRAM)

### 4.3.5 Replacing the Service Processor

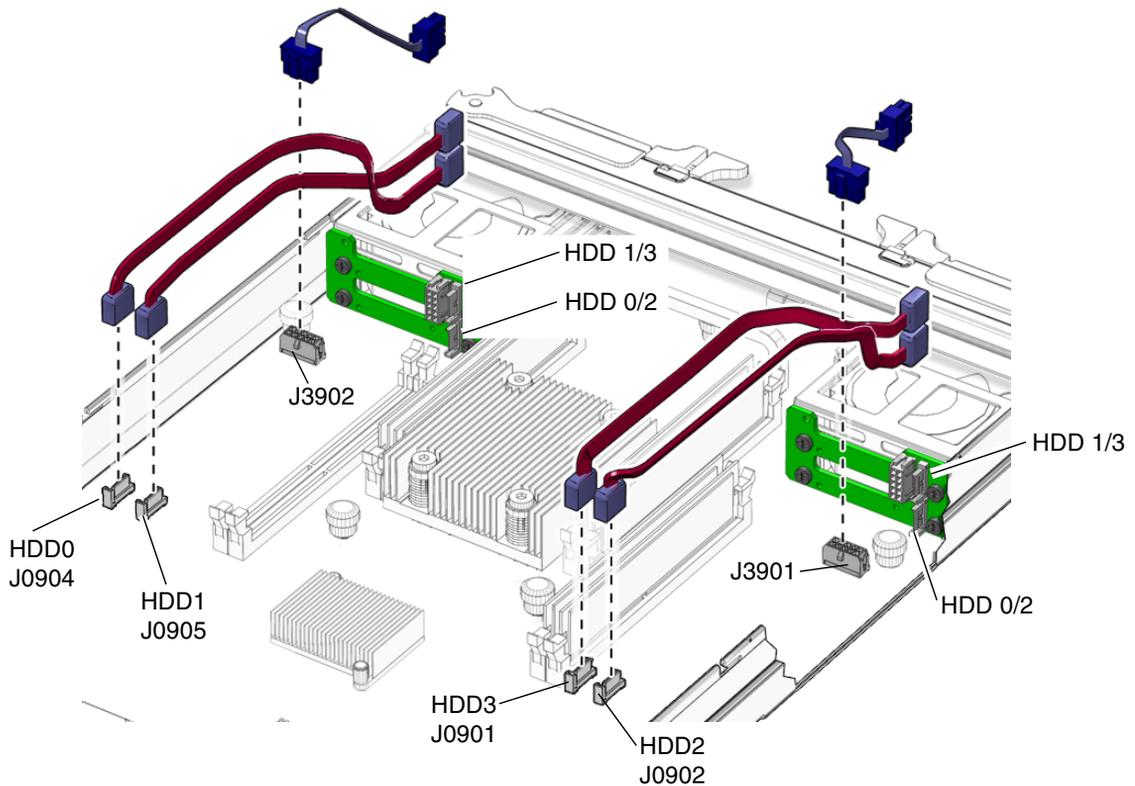
1. Remove the replacement service processor from the package and place it on an antistatic mat.
2. Install the system configuration PROM that you removed from the faulty service processor.  
The PROM is keyed to ensure proper orientation.
3. Locate the service processor slot on the motherboard assembly.
4. Ensure that the ejector levers are open.

5. **Holding the bottom edge of the service processor parallel to its socket, carefully align the service processor so that each of its contacts is centered on a socket pin.**  
Ensure that the service processor is correctly oriented. A notch along the bottom of the service processor corresponds to a tab on the socket.
6. **Push firmly and evenly on both ends of the service processor until it is firmly seated in the socket.**  
You hear a click when the ejector levers lock into place.
7. **Perform the procedures described in [Section 4.6, “Finishing Component Replacement”](#) on page 4-22.**

---

## 4.4 Removing the Disk Backplane Cables

1. **Perform the procedures described in [Section 4.2, “Common Procedures for Parts Replacement”](#) on page 4-3.**
2. **Disconnect the power cable from the power cable plug.**
3. **Note which data cable is plugged into each connector and disconnect the four data cables from the disk backplane.**
4. **Remove the five screws that secure the disk backplane to the chassis ([FIGURE 4-10](#)).**



**FIGURE 4-10** Removing the Disk Backplane Cables

## 4.4.1 Replacing the Disk Backplane Cables

Each cable FRU kit contains two hard drive signal cables and one power/signal cable.

1. Ensure that the system is on an antistatic mat and remove the cables from the package.
2. Connect the power cable to the controller and to the motherboard (FIGURE 4-10).




---

**Caution** – Ensure that the hard drive signal cables are connected to the appropriate connectors at each end.

---

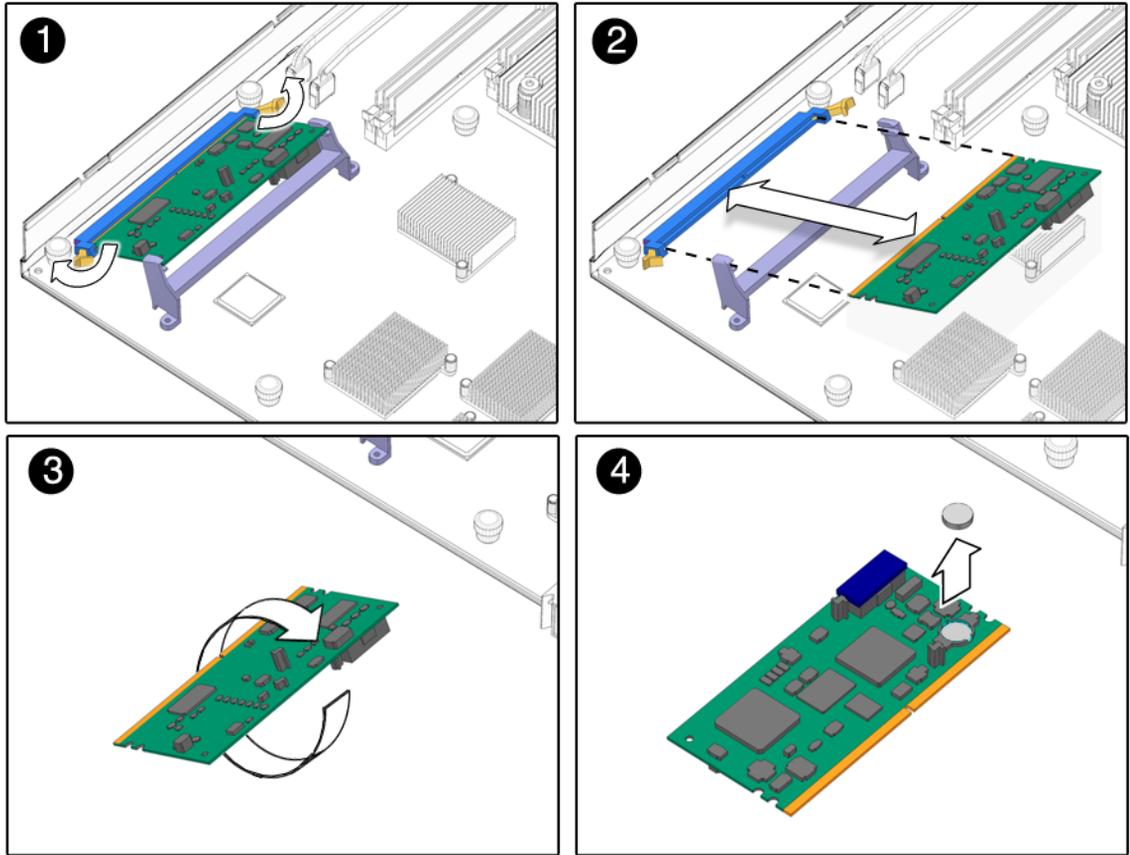
3. Connect the signal cable to the controller and to the motherboard (FIGURE 4-10).
4. Verify that the cables are tight.

5. Perform the procedures described in [Section 4.6, “Finishing Component Replacement”](#) on page 4-22

---

## 4.5 Removing the Battery on the Service Processor

1. Perform the procedures described in [Section 4.2, “Common Procedures for Parts Replacement”](#) on page 4-3.
2. Remove the service processor from the chassis ([Section 4.3.4, “Removing the Service Processor”](#) on page 4-15) and place it on an antistatic mat.
3. Carefully remove the battery ([FIGURE 4-11](#)) from the service processor.



**FIGURE 4-11** Removing the Battery From the Service Processor

## 4.5.1 Replacing the Battery on the Service Processor

1. Remove the replacement battery from the package.
2. Press the new battery into the service processor ([FIGURE 4-11](#)) with the positive side (+) facing upward (away from the card).
3. Replace the service processor.  
See [Section 4.3.5, “Replacing the Service Processor”](#) on page 4-17.
4. Perform the procedures described in [Section 4.6, “Finishing Component Replacement”](#) on page 4-22.

5. Use the **ALOM CMT** `setdate` command to set the day and time.

Use the `setdate` command before you power on the host system. For details about this command, refer to the *Advanced Lights out Management (ALOM) CMT v1.3 Guide*, 819-7981.

---

## 4.6 Finishing Component Replacement

### 4.6.1 Replacing the Cover

1. Place the cover on the chassis.

Set the cover down so that it hangs over the rear of the server module by about an inch (2.5 mm).

2. Slide the cover forward until it latches into place. (FIGURE 4-12).

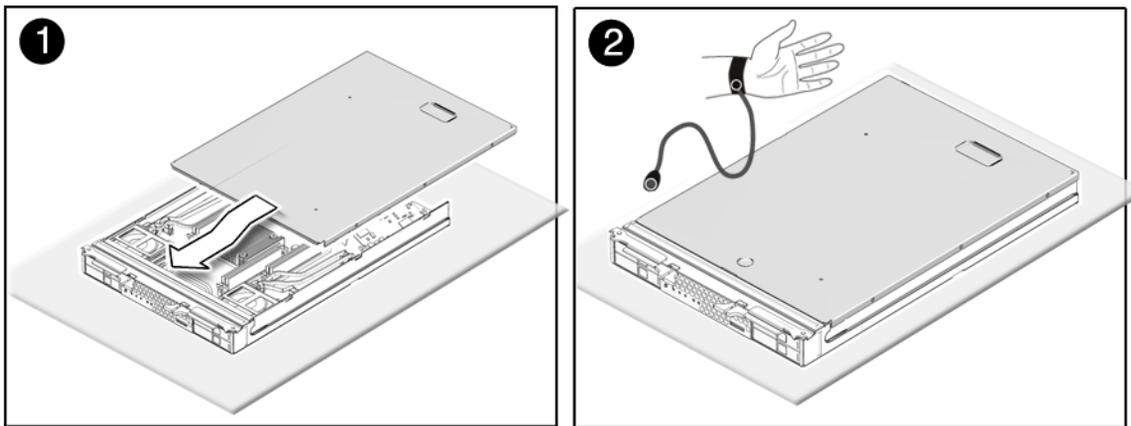


FIGURE 4-12 Replacing the Cover

### 4.6.2 Reinstalling the Server Module in the Chassis



---

**Caution** – Hold the server module firmly so that you do not drop it. The server module weighs approximately 14 to 17 pounds (6.4 - 8.0 kg).

---

1. Turn the server module over so that the ejector levers are on the right side (FIGURE 4-13).

2. Push the server module into the chassis.

3. Close the latches.

- The server module powers on with 3.3v standby power.
- The ALOM CMT software boots.

You can either press the Power button to fully power on the server module or use the ALOM `poweron` command. For more information, see the *Advanced Lights out Management (ALOM) CMT v1.3 Guide*, 819-7981.

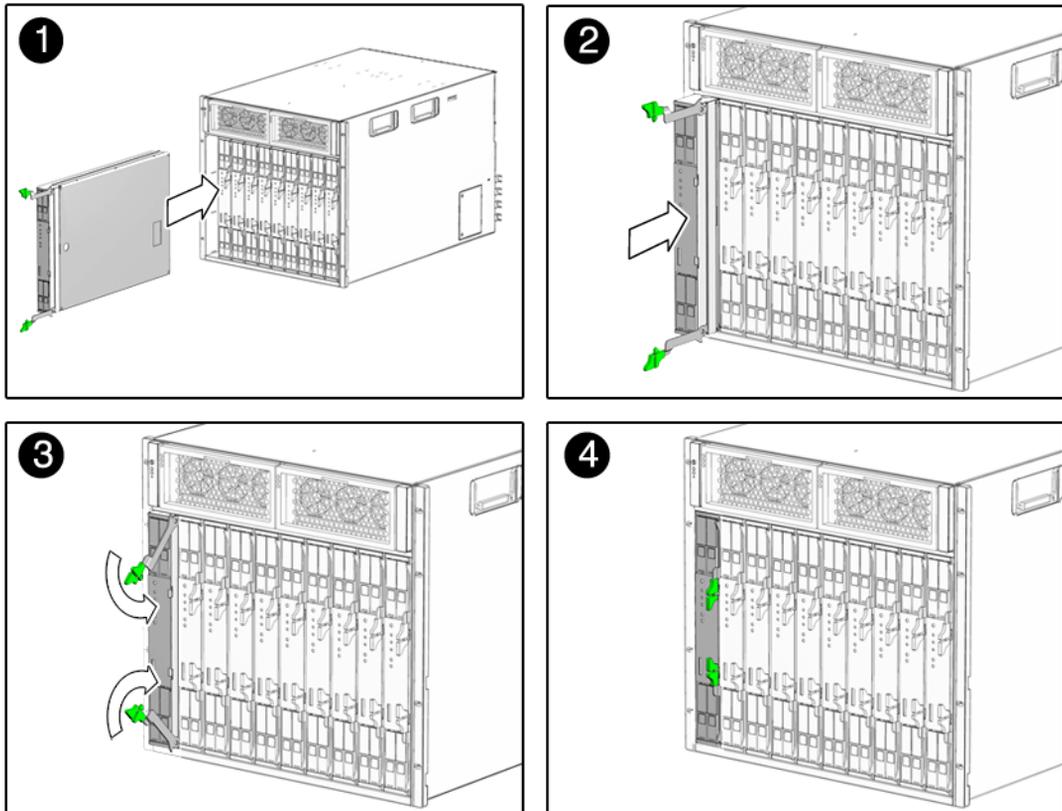


FIGURE 4-13 Inserting the Server Module in the Chassis



# Specifications

---

This appendix discusses the various specifications of the Sun Blade T6300 server module. Topics covered are:

- [Section A.1, “Physical Specifications” on page A-1](#)
- [Section A.2, “Motherboard Block Diagram” on page A-3](#)

If you need specifications for the Sun Blade 6000 chassis, see the *Sun Blade 6000 Modular System Site Planning Guide*, 820-0426.

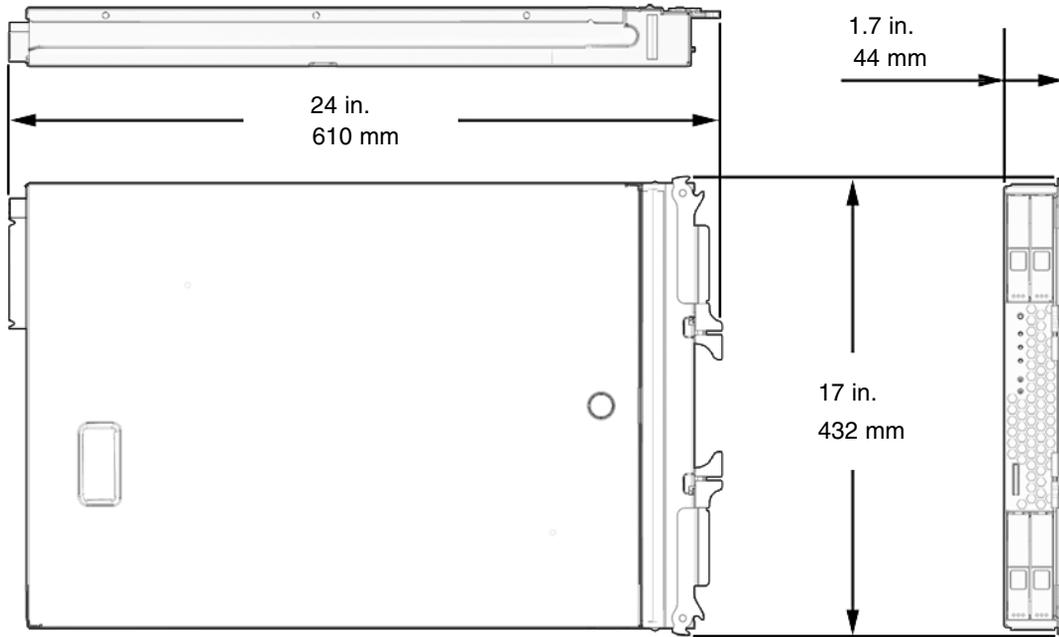
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## A.1 Physical Specifications

**TABLE A-1** Exterior Dimensions

Depth	Width	Height	Weight
20.15 in.	12.9 in.	1.7 in.	17 lbs
512 mm	327 mm	44 mm	8 kg

If the server module is placed in an enclosure, ensure that there is adequate airflow from front to rear.



**FIGURE A-1** Server Module Dimensions

## A.2 Motherboard Block Diagram

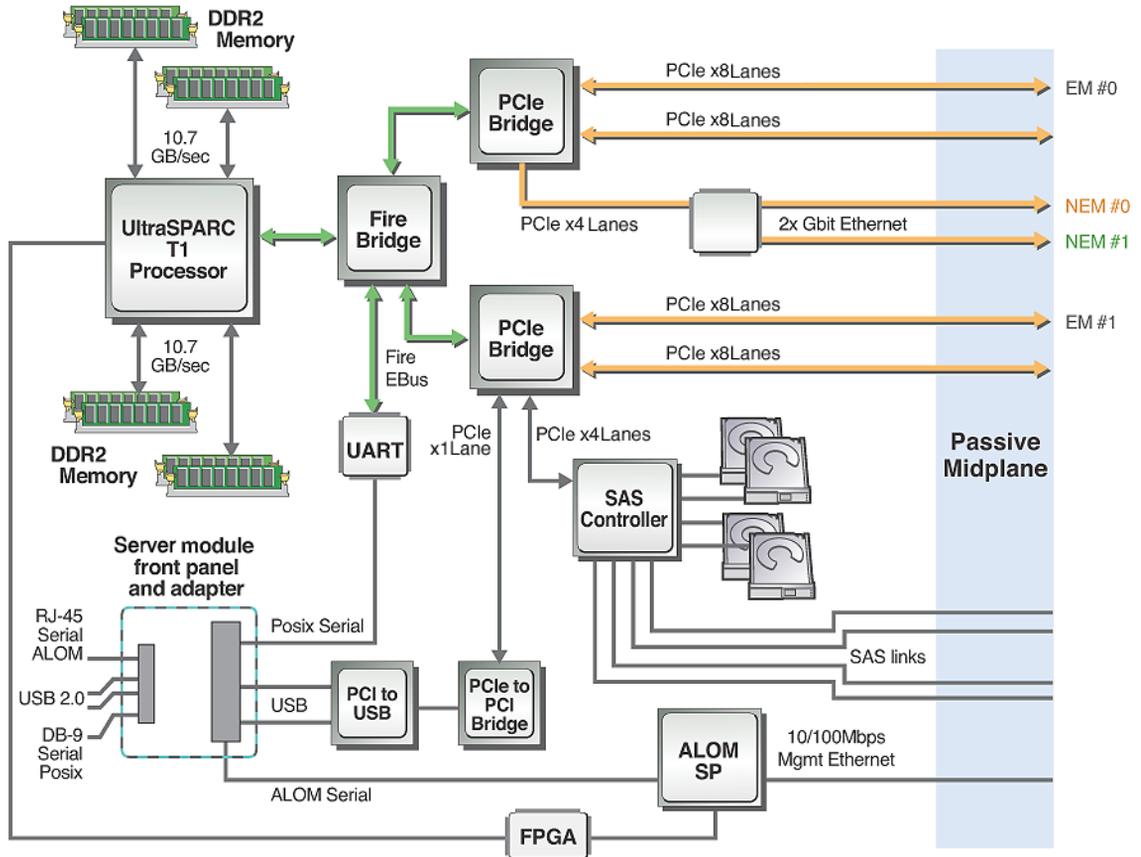


FIGURE A-2 Motherboard Block Diagram



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