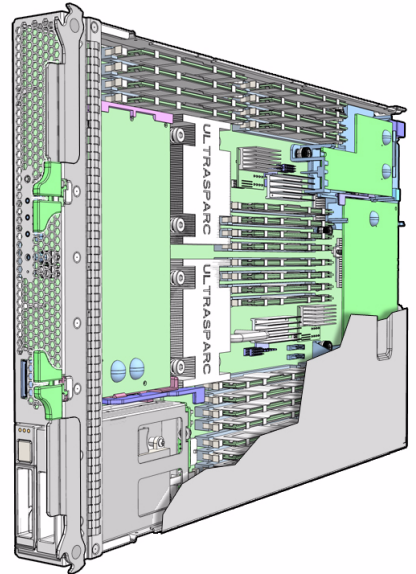


Sun Blade T6340 Server Module

Service Manual



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Using This Documentation

This manual provides information to about servicing the Sun Blade T6340 server module from Oracle. 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.

How This Book Is Organized

This manual is organized into the following chapters:

[Chapter 1](#) describes the main features of the Sun Blade T6340 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 server specifications.

[Appendix B](#) describes how to create a bootable RAID array

[Appendix C](#) describes how to install the Solaris OS on a bootable RAID array.

[Appendix D](#) provides information about the onboard XVR-50 graphics.

[Appendix E](#) provides pinout information for the dongle cable.

[Appendix F](#) provides reference information about the ALOM CMT Compatibility shell.

[Appendix G](#) provides additional information about ILOM and ALOM use.

Related Documentation

You can view, print, or purchase a broad selection of Sun documentation, including localized versions, at:

<http://docs.sun.com/app/docs/prod/blade.t6340>

To find other product documents, go to:

<http://docs.sun.com>

Document Title	Description
<i>Sun Blade T6340 Server Module Product Notes, 820-3901</i>	Important late-breaking information about the server module and related software.
<i>Sun Blade T6340 Server Module Installation and Administration Guide, 820-3900</i>	Basic information about installing, powering on, and installing software. If you purchased hard drives with preinstalled software you can also find information here: http://www.sun.com/software/preinstall
<i>Sun Integrated Lights Out Manager 2.0 Supplement for Sun Blade T6340 Server Modules, 820-3904</i>	ILOM information specific to the UltraSPARC and the Sun Blade T6340 server module. Provides command comparisons of the ALOM CMT and ILOM CLI command sets.
<i>Sun Blade T6340 Server Module Safety and Compliance Manual, 820-2387</i>	Important safety information for the Sun Blade T6340 server module.
Chassis Documentation (Refer to the documents for your specific modular system chassis.)	
<i>Integrated Lights Out Manager ILOM Administration Guide</i>	ILOM information specific to the modular system chassis.
Modular System Product Notes	Late-breaking information about the chassis and related software.
Modular System Service Manual	Component removal and replacement procedures, diagnostics information and specifications.
Software Documentation	
<i>Sun Integrated Lights out Manager 2.0 User's Guide, 820-1188</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 8/07 Installation Guide: Network-Based Installations</i>	Setting up network-based installations and JumpStart servers.

Document Title	Description
<i>Sun VTS 7.0 User's Guide</i> , 820-0012	Testing the server module, and creating custom hardware tests.
<i>Beginner's Guide to LDom: Understanding and Deploying Logical Domains</i> , 820-0832	Learning about LDom principles.
Solaris Operating System documentation	All information related to Solaris system administration commands and features. Go to http://www.docs.sun.com

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Sun Blade T6340 Server Module Service Manual, part number 820-3902-12.

Sun Blade T6340 Server Module Product Description

This chapter provides an overview of the features of the Sun Blade T6340 Server Module. (A server module is also known as a blade.)

The following topics are covered:

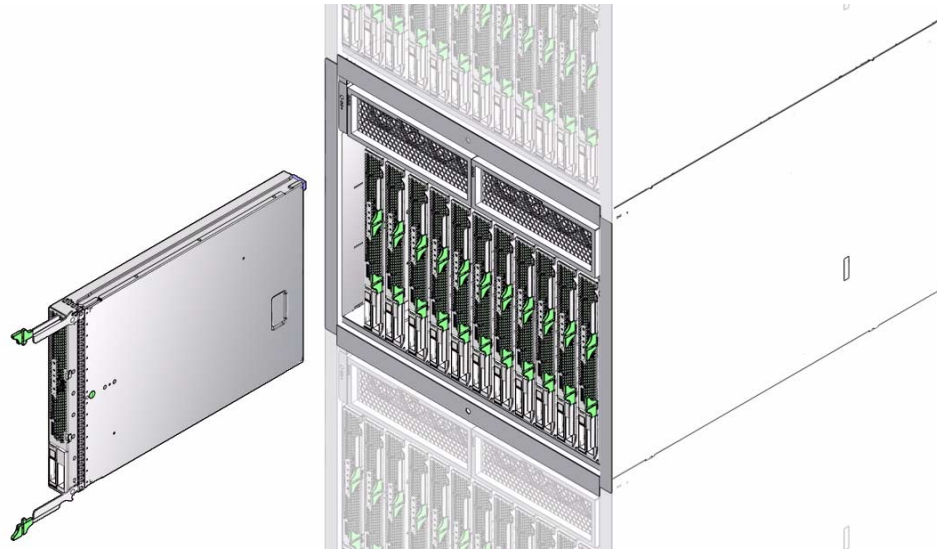
- Section 1.1, “Component Overview” on page 1-1
- Section 1.2, “Support for RAID Storage Configurations” on page 1-10
- Section 1.3, “Finding the Serial Number” on page 1-12
- Section 1.4, “Additional Service Related Information” on page 1-15

1.1 Component Overview

FIGURE 1-1, FIGURE 1-2, and FIGURE 1-3 show the main Sun Blade T6340 components and some basic connections to the chassis. For information about connectivity to system fans, PCI ExpressModules, Ethernet modules, and other components, see the chassis documentation at:

<http://docs.sun.com/app/docs/prod/blade.t6340>

FIGURE 1-1 Sun Blade T6340 Server Module With Chassis



[TABLE 1-1](#) lists the Sun Blade T6340 server module features. [TABLE 1-2](#) lists some of chassis input-output features.

FIGURE 1-2 Front and Rear Panels

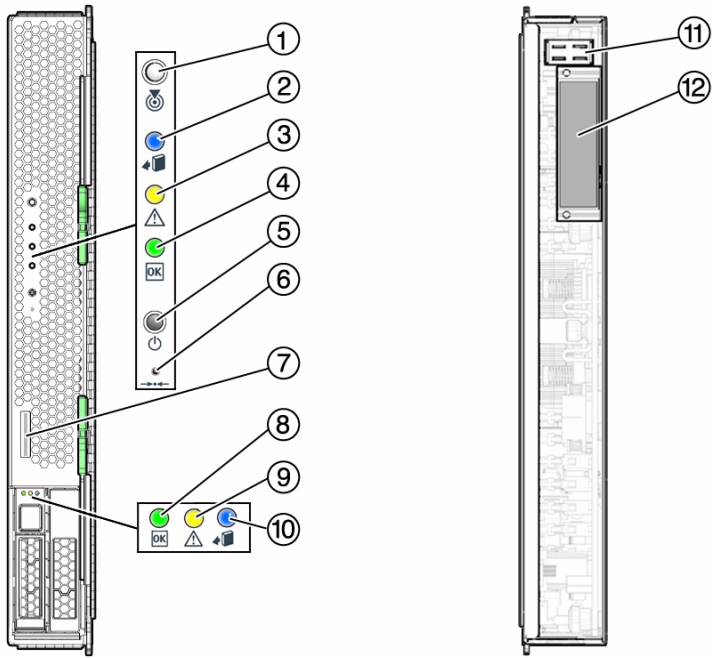


Figure Legend

1	White Locator LED	7	Universal Connector Port (UCP)
2	Blue Ready to Remove LED	8	Green Drive OK LED
3	Amber Service Action Required LED	9	Amber Drive Service Action Required LED
4	Green OK LED	10	Blue Drive Ready to Remove LED
5	Power Button	11	Chassis power connector
6	Reset Button (for service use only)	12	Chassis data connector

FIGURE 1-3 Cable Dongle Connectors

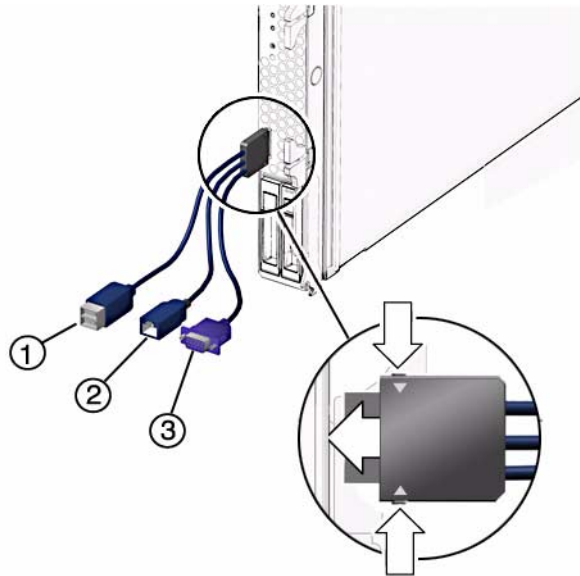


Figure Legend

-
- | | |
|---|---------------------------------|
| 1 | USB 2.0 (2) connectors |
| 2 | RJ-45 Virtual Console connector |
| 3 | 15-pin VGA Female connector |
-

Note – Insert the connector straight into the server module. The cable dongle is for temporary connections only. The cable dongle has not been evaluated for electromagnetic compatibility (EMC). The cable dongle or server module connectors could be damaged by closing rack doors or other impacts. Remove the cable dongle during normal system operation.



Caution – If you are using the older *4-cable dongle* (UCP-4), do *not* use the RJ-45 connector with the Sun Blade T6340 server module. Use the DB-9 connector for serial connections.

TABLE 1-1 Sun Blade T6340 Server Module Features

Feature	Description
Processor	Two UltraSPARC T2 Plus multicore processors with 4MB L2 cache. Can execute up to 128 threads.
Memory	32 slots for fully buffered DIMMs (FB-DIMM), 667 MHz: <ul style="list-style-type: none">• 1 Gbyte (32 Gbyte maximum)• 2 Gbyte (64 Gbyte maximum)• 4 Gbyte (128 Gbyte maximum)• 8 Gbyte (256 Gbyte maximum)
Internal hard drives	Up to two hot-pluggable 2.5-inch hard drives. <ul style="list-style-type: none">• SFF SAS 73 Gbyte, 15k rpm, and 10k rpm• SFF SAS 146 Gbyte, 10k rpm (Filler panels are inserted anywhere hard drives are not installed.)
RAID Express Module	RAID expansion module (hard drive management) with RAID 0, 1 controller. Eight links, x2 SAS (3 Gb/s) or SATA (1.5 Gb/s), supporting up to two internal hard drives and four x2 links to midplane.
Universal Connector Port ()	One universal connector port (UCP) in the front panel. A universal cable is included with the chassis and can be purchased separately. The following connections are supported: <ul style="list-style-type: none">• USB 2.0*• VGA video• Serial• Local keyboard, video, mouse, storage support (KVMS)
Architecture	SPARC V9 architecture, ECC protected Platform group: sun4v Platform name: SUNW, Sun Blade T6340 Server Module Minimum system firmware 7.1.6 or subsequent compatible release Solaris 10 8/07 OS with appropriate patches
XVR-50 on-board graphics accelerator	<ul style="list-style-type: none">• 2D 24-bit color graphics• Flexible 8- and 24-bit color application support• HD15 monitor connector for a wide range of Sun monitors• 3D support through Sun™ OpenGL for Solaris software

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

Note – For information about connecting to the server module refer to the *Sun Blade T6340 Server Module Installation and Administration Guide*, 820-3900.

TABLE 1-2 Interfaces With the chassis

Feature	Description
Ethernet ports	Two 1Gb Ethernet ports. Support for up to two 10Gb Ethernet ports through Fabric Expansion Modules (FEM) Consult the chassis documentation or Network Express Module (NEM) documentation for Ethernet pass-through specifications. (See FIGURE 1-5 and FIGURE A-2 .)
PCI Express I/O	Two 8-lane ports connect to chassis midplane. Can support up to two 8-lane PCI Express Modules (PCI EM). (FIGURE 1-5)
SAS/SATA	Four channels for remote storage connect from the RAID Express Module (REM) to the chassis midplane.
Remote management	ILOM management controller on the service processor. CLI management (<code>ssh</code> only) and N1 system manager support. DMTF CLI and ALOM-CMT compatible CLI available through <code>ssh</code> . Remote console (remote KVMS) is configurable through OpenBoot PROM and ILOM.
Power	Power is provided from the chassis
Cooling	Environmental controls are provided from the chassis.

For more information about chassis features and controls, refer to the service manual for your blade chassis at:

<http://docs.sun.com/app/docs/prod/blade.srvr>

Sun Blade T6340 Server Module Field-Replaceable Units (FRUs) are shown in [FIGURE 1-4](#).

FIGURE 1-4 Field-Replaceable Units

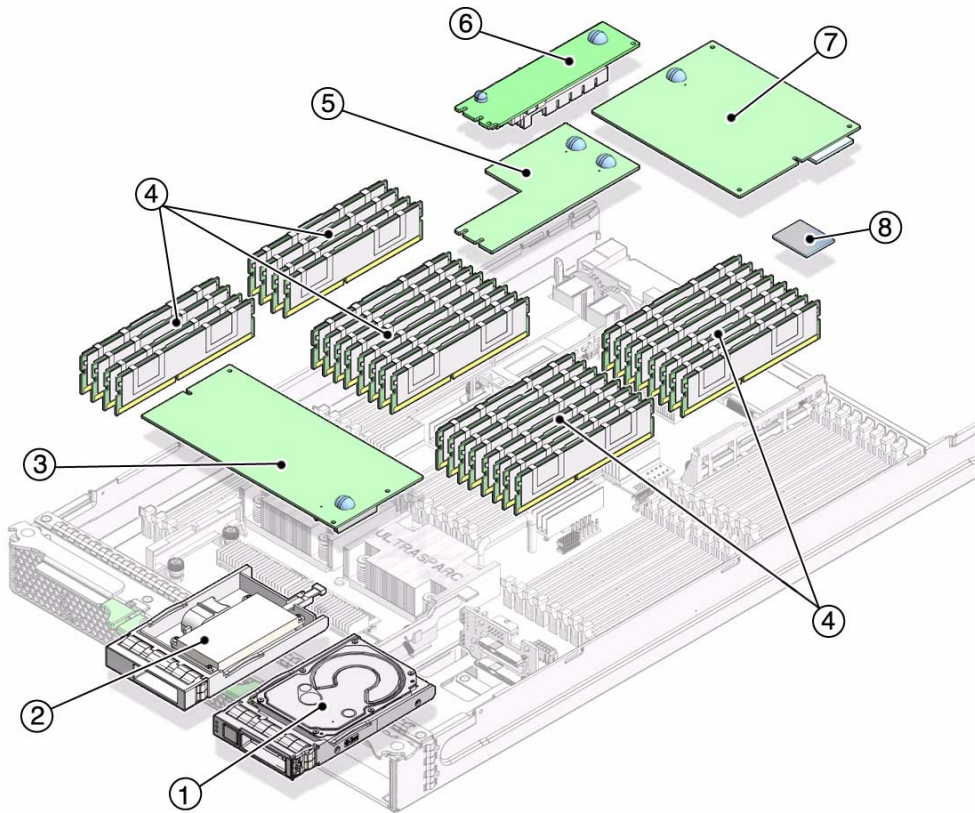


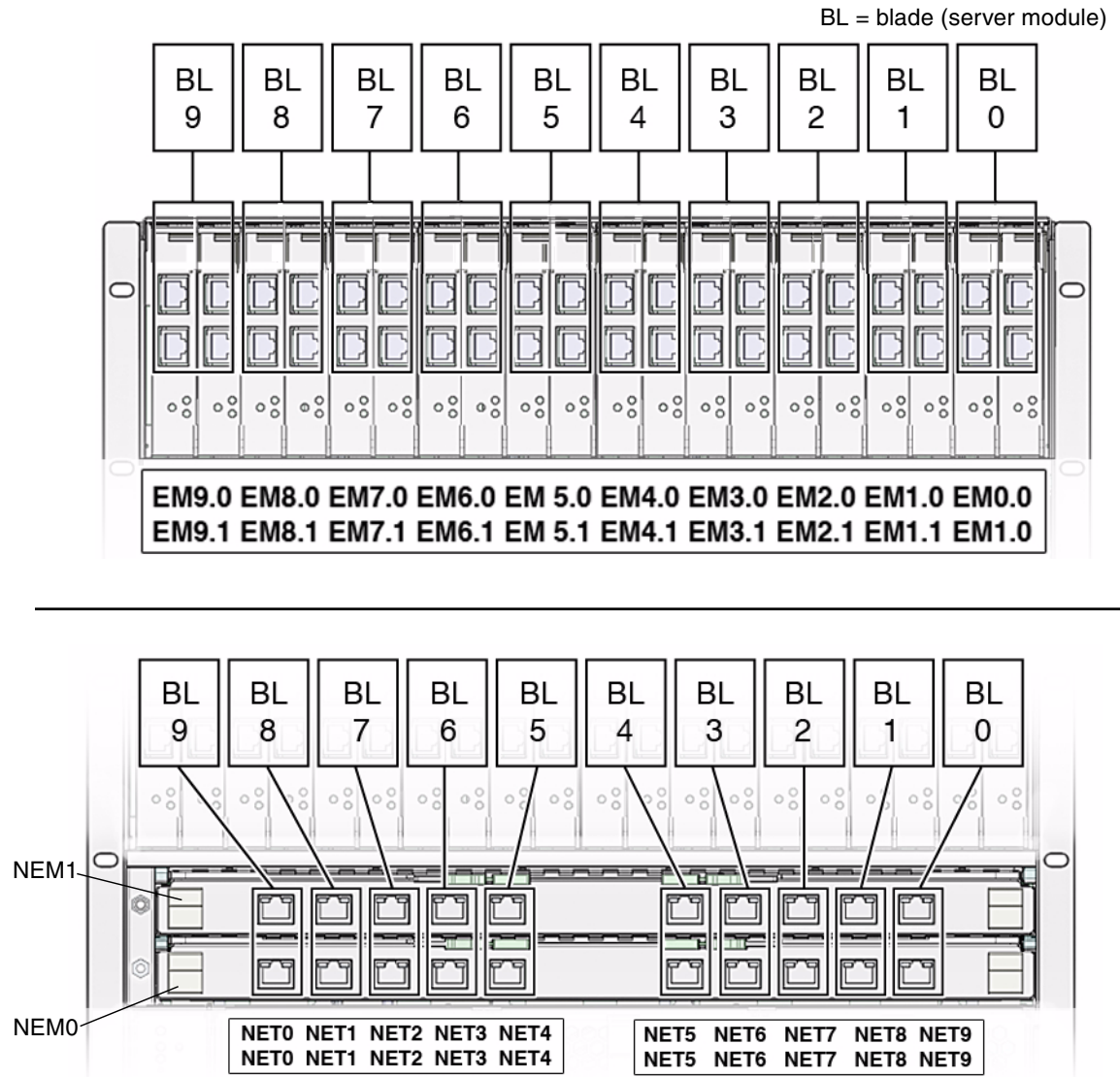
TABLE 1-3 Sun Blade T6340 Server Module FRU List

Callout #	Description	Replacement Instructions
1	Up to two SFF SAS or SATA 2.5-inch hard drives in mounting bracket; HDD0 and HDD1.	Section 3.1, “Hot-Plugging a Hard Drive” on page 3-2
2	REM Battery tray	Section 4.6.3, “Installing and Removing the Sun Blade RAID 5 Expansion Module Battery Tray” on page 4-23
3	Service processor. 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.	Section 4.4, “Removing and Replacing the Service Processor” on page 4-14

TABLE 1-3 Sun Blade T6340 Server Module FRU List *(Continued)*

Callout #	Description	Replacement Instructions
4	FB-DIMMs. 1 Gbyte, 2 Gbyte, 4 Gbyte, or 8Gbyte	Section 4.3, “Removing and Replacing DIMMs” on page 4-10
5	FEM (pass-through)	Section 4.8, “Removing and Replacing a Fabric ExpressModule (FEM)” on page 4-27
6	FEM (XAUI)	Section 4.8, “Removing and Replacing a Fabric ExpressModule (FEM)” on page 4-27
7	RAID expansion module (REM). Hard drive management for up to 8 hard drives	Section 4.6, “Replacing and Installing the Sun Blade RAID 5 Expansion Module” on page 4-18
8	Compact Flash memory module	Section 4.9, “Replacing the Compact Flash Module” on page 4-29
Server Module	Enclosure with CPU, motherboard	Replace with new server module

FIGURE 1-5 PCI Express and Ethernet Connections on a Sun Blade 6000 Modular System



1.1.1 Multicore Processor Information

The UltraSPARC® T2 Plus multicore processor is the basis of the Sun Blade T6340 server module. This server module supports two UltraSPARC T2 CPU modules.

Each processor has four, six, or eight UltraSPARC cores. Each core equates to a 64-bit execution pipeline capable of running eight threads. The result is that the 8-core processor handles up to 128 active threads concurrently. For more information about the UltraSPARC® T2 Plus multicore processors, go to:

<http://www.sun.com/processors/UltraSPARC-T2/features.xml>

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

1.2 Support for RAID Storage Configurations

By attaching one or more external storage devices to the Sun Blade T6340 server module, you can use a redundant array of independent drives (RAID) to configure system drive storage in a variety of different RAID levels.

As shipped, the Sun Blade T6320 Server hard drives are not configured for RAID. To make a disk part of a RAID array while preserving the data on the drive, add the drive to a mirrored RAID set (also known as hardware RAID Level 1).

Before configuring RAID, you must configure a RAID expansion module (REM). The Sun Blade T6340 Server Module supports two REMs, the Sun Blade RAID 5 and Sun Blade RAID 0/1 G2 Expansion Modules.

Refer to the following for RAID configuration instructions:

- *Uniform Command-Line Interface User's Guide*, 820-2145
- *Sun StorageTek RAID Manager Software User's Guide*, 820-1177
- *Sun Blade 6000 Disk Module Administration Guide*, 820-4922
<http://docs.sun.com/app/docs/prod/blade.6000disk-blade6000dskmod>

1.2.1 Sun Blade RAID 5 Expansion Module

The **Sun Blade RAID 5 Expansion Module** supports RAID levels 0, 1, 1E, 10, 5, or 6 with global or dedicated hot spares.

Note – When a Sun Blade RAID 5 Expansion Module is installed, one SAS drive must be installed in Hard Disk Drive (HDD) Slot HDD1. The Sun Blade RAID 5 Expansion Module external battery tray must be installed in Slot HDD0 (see [Section 4.6, “Replacing and Installing the Sun Blade RAID 5 Expansion Module” on page 4-18](#)). To enable RAID 0, 1, 5, or 10, you must also install a Sun Blade 6000 Disk Module, which supports up to eight SAS drives.

▼ To Create a Simple Volume Using Just One HDD

This task is for configurations that do not use the Sun Blade 6000 Disk Module

1. Enter the following command and options:

```
# ./arcconf CREATE 1 LOGICALDRIVE MAX VOLUME 0 0
Controllers found: 1
Do you want to add a logical device to the configuration?
Press y, then ENTER to continue or press ENTER to abort: y
Creating logical device: Device 0
devfsadm: mkdir failed for /dev 0x1ed: Read-only file system

Command completed successfully.
```

Note – You can safely ignore the `mkdir failed` message.

2. Perform the necessary tasks to configure the drive. Such tasks might include the following:

- Labeling the drive
- Partitioning the drive
- Preparing a file system
- Installing data from backups or recovering data from RAID capabilities
- Bringing the drive online

These tasks are covered in the Solaris OS administration documentation. For additional drive verification, use SunVTS. Refer to the SunVTS and Solaris documentation at <http://docs.sun.com> for details.

1.2.2 Sun Blade RAID 0/1 G2 Expansion Module

The **Sun Blade RAID 0/1 G2 Expansion Module** supports RAID 1 (two mirrored disks with an optional hot spare) or RAID 1E (three or more mirrored disks with one or two hot spares).

For more information, refer to the *Sun Blade G2 RAID 0/1 Expansion Module Installation Guide*, 820-5448 at:

<http://dlc.sun.com/pdf/820-5448-10/820-5448-10.pdf>

1.3 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 Locations

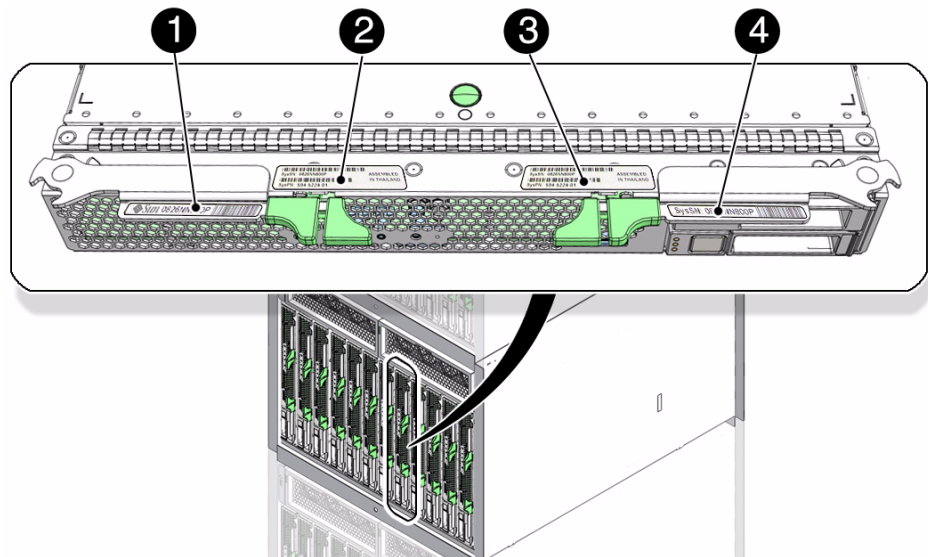


Figure Legend

-
- 1 Product Name: Sun Blade T6340 Server Module
 - 2 System MAC Number
 - 3 Chassis Serial Number and Sun Part Number
 - 4 System Serial Number
-

You can type the ILOM `show /SYS` command or the ALOM CMT `showplatform` command to obtain the chassis serial number. Both examples are shown below.

```
-> show /SYS

/SYS
  Targets:
    SERVICE
    LOCATE
    ACT
    OK2RM
    SP
    MB
    MIDPLANE
    HDD0
    HDD1
    NEM0
    NEM1
    FM0... ..
    PS0
    PS1
    CMM

  Properties:
    type = Host System
    keyswitch_state = Normal
    chassis_name = SUN BLADE 6000 MODULAR SYSTEM
    chassis_part_number = 541-1983-0
    chassis_serial_number = 1005LCB-0804YM04XE
    chassis_manufacturer = SUN MICROSYSTEMS
    product_name = Sun Blade T6340 Server Module
    product_part_number = 541-3299-02
    product_serial_number = 1005LCB-08268N0008
    product_manufacturer = SUN MICROSYSTEMS
    fault_state = OK
    prepare_to_remove_status = NotReady
    prepare_to_remove_action = (none)
    return_to_service_action = (none)
    power_state = On

  Commands:
    cd
    reset
    set
    show
    start
    stop
```

ALOM CMT example:

```
sc> showplatform
SUNW, Sun Blade T6340 Server Module
Blade Serial Number: 1005LCB-08268N0008
Chassis Serial Number: 1005LCB-0804YM04XE
  Slot Number: 5
Domain Status
-----
S0          Running
sc>
```

1.4 Additional Service Related Information

Documentation for the Sun Blade T6340 server module, and related hardware and software is listed in “[Related Documentation](#)” on page xiii.

The following resources are also available.

- **SunSolvesm 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/
- **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 typing it into the field on this page:
<http://www.sun.com/msg/>

Diagnostics

This chapter describes the diagnostics that are available for monitoring and troubleshooting the Sun Blade T6340 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 T6340 Server Module Diagnostics Overview” on page 2-1](#)
- [Section 2.2, “Memory Configuration and Fault Handling” on page 2-6](#)
- [Section 2.3, “Interpreting System LEDs” on page 2-11](#)
- [Section 2.4, “Using ILOM for Diagnosis and Repair Verification” on page 2-14](#)
- [Section 2.5, “Using the ILOM Web Interface For Diagnostics” on page 2-17](#)
- [Section 2.6, “Running POST” on page 2-27](#)
- [Section 2.7, “Using the Solaris Predictive Self-Healing Feature” on page 2-38](#)
- [Section 2.8, “Collecting Information From Solaris OS Files and Commands” on page 2-44](#)
- [Section 2.9, “Managing Components With Automatic System Recovery Commands” on page 2-45](#)
- [Section 2.10, “Exercising the System With SunVTS” on page 2-48](#)
- [Section 2.11, “Resetting the Password to the Factory Default” on page 2-52](#)

2.1 Sun Blade T6340 Server Module Diagnostics Overview

There are a variety of diagnostic tools, commands, and indicators you can use to monitor and troubleshoot a Sun Blade T6340 server module.

- **LEDs** – Provide a quick visual notification of the status of the server module and some of the FRUs.
- **ILOM firmware** – This system firmware runs on the service processor. In addition to providing the interface between the hardware and the Solaris OS, ILOM tracks and reports the health of key server module components. ILOM works closely with POST and Solaris Predictive Self-Healing technology to keep the system up and running even when there is a faulty component. For more information about ILOM, refer to the ILOM documentation collections.
- **Power-on self-test (POST)** – POST performs diagnostics on system components upon system reset to ensure the integrity of those components. POST is configurable and works with ILOM 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 other components. PSH works with ILOM 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, identifies possible faulty components, and provides recommendations for repair.

The LEDs, ILOM, Solaris OS PSH, and many of the log files and console messages are integrated. For example, when the Solaris software detects a fault, it will display the fault, log it, pass information to ILOM where the fault is logged, and depending on the fault, one or more LEDs might be illuminated.

The diagnostic flowchart in [FIGURE 2-1](#) and [TABLE 2-1](#) describes 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

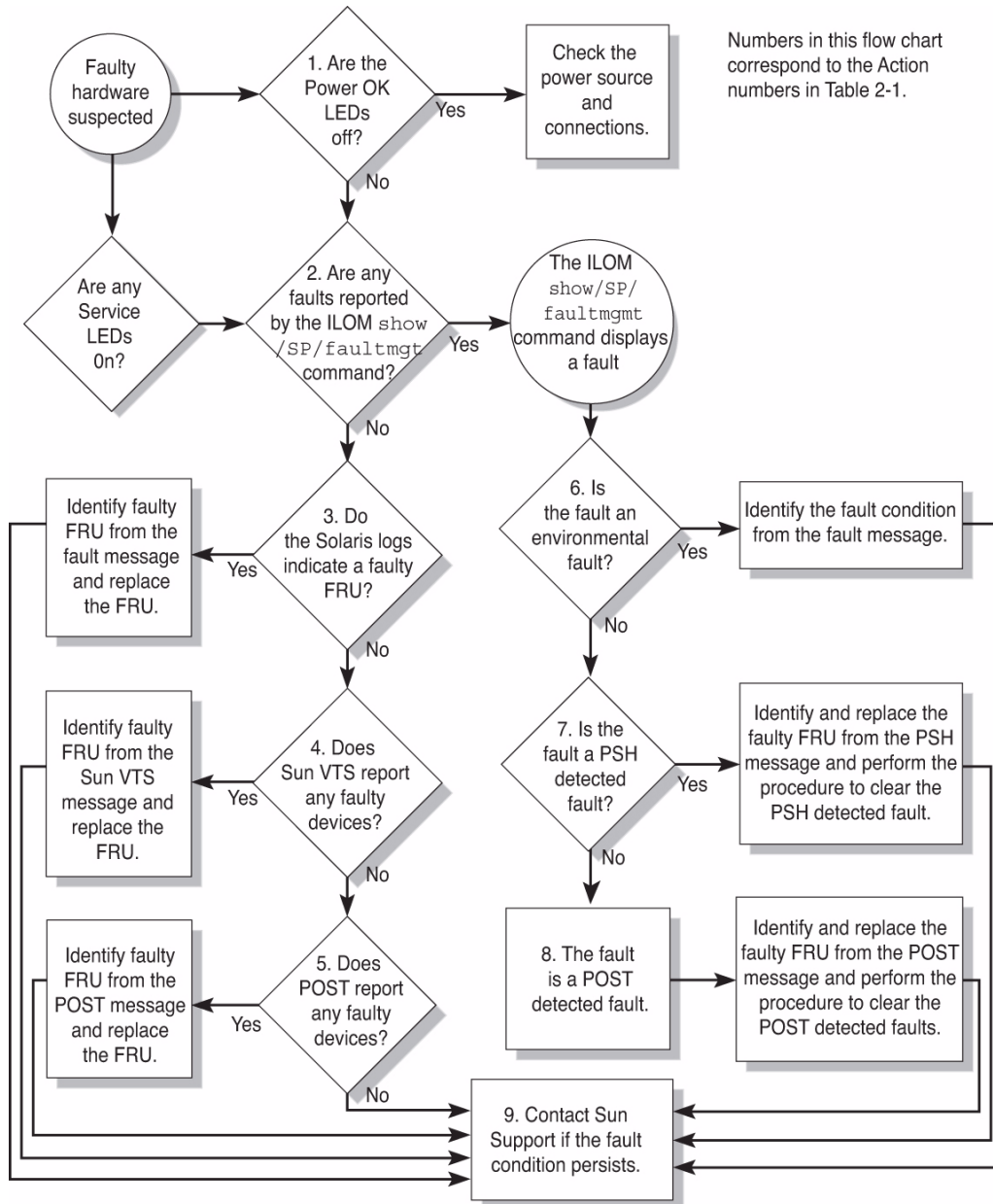


TABLE 2-1 Diagnostic Flowchart Actions

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 Sun Blade T6340 server module. If the LED is not lit, check that the blade is properly connected and the chassis has power.	Section 2.3, “Interpreting System LEDs” on page 2-11
2.	Type the ILOM <code>show faulty</code> command to check for faults.	The <code>faultmgmt</code> command displays the following types of faults: <ul style="list-style-type: none">• Environmental faults• Solaris Predictive Self-Healing (PSH) detected faults• POST detected faults Faulty FRUs are identified in fault messages using the FRU name. For a list of FRU names, see TABLE 1-3 .	Section 2.5.1, “Displaying System Faults” on page 2-18
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">• If system messages indicate a faulty device, replace the FRU.• To obtain more diagnostic information, go to Action 4.	Section 2.8, “Collecting Information From Solaris OS Files and Commands” on page 2-44
4.	Run the 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">• If SunVTS reports a faulty device replace the FRU.• If SunVTS does not report a faulty device, go to Action 5.	Section 2.10, “Exercising the System With SunVTS” on page 2-48
5.	Run POST.	POST performs basic tests of the server module components and reports faulty FRUs. <ul style="list-style-type: none">• If POST indicates a faulty FRU, replace the FRU.• If POST does not indicate a faulty FRU, go to Action 9.	Section 2.6, “Running POST” on page 2-27
6.	Determine if the fault is an environmental fault.	If the fault listed by the <code>show faulty</code> command displays a temperature or voltage fault, then the fault is an environmental fault. Environmental faults can be caused by faulty FRUs (chassis power supply, fan, or blower) or by environmental conditions such as high ambient temperature, or blocked airflow.	Section 2.5.1, “Displaying System Faults” on page 2-18

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>Section 2.7, "Using the Solaris Predictive Self-Healing Feature" on page 2-38</p> <p>Section 4.2, "Common Procedures for Parts Replacement" on page 4-3</p> <p>Section 2.7.2, "Clearing PSH Detected Faults" on page 2-42</p> <p>Section 2.7.3, "Clearing the PSH Fault From the ILOM Logs" on page 2-43</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>Section 2.6, "Running POST" on page 2-27</p> <p>Section 4.2, "Common Procedures for Parts Replacement" on page 4-3</p> <p>Section 2.6.4, "Clearing POST Detected Faults" on page 2-35</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: http://www.sun.com/support</p> <p>Section 1.3, "Finding the Serial Number" on page 1-12</p>

2.2 Memory Configuration and Fault Handling

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

2.2.1 Memory Configuration

The Sun Blade T6340 server module has 32 connectors (slots) that hold fully-buffered DIMMs (FB-DIMMs) in the following FB-DIMM capacities:

- 1 Gbyte (maximum of 32 Gbytes)
- 2 Gbyte (maximum of 64 Gbytes)
- 4 Gbyte (maximum of 128 Gbytes)
- 8 Gbyte (maximum of 256 Gbytes)

The Sun Blade T6340 server module performs best if all 32 connectors are populated with 32 identical DIMMs. This configuration also enables the system to continue operating even when a DIMM fails, or if an entire channel fails.

Note – All installed FB-DIMMs will be seen by the system as having the capacity of the smallest installed FB-DIMM.

For example, suppose that you have installed 32 8-Gbyte FB-DIMMs for a total of 256 Gbytes of memory. If you were to replace one of those 8-Gbyte FB-DIMMs with a functioning 1-Gbyte FB-DIMM, the system will now treat all installed FB-DIMMs as 1 Gbyte FB-DIMMs and thus see only 32 Gbytes of installed memory, .

2.2.1.1

FB-DIMM Installation Rules



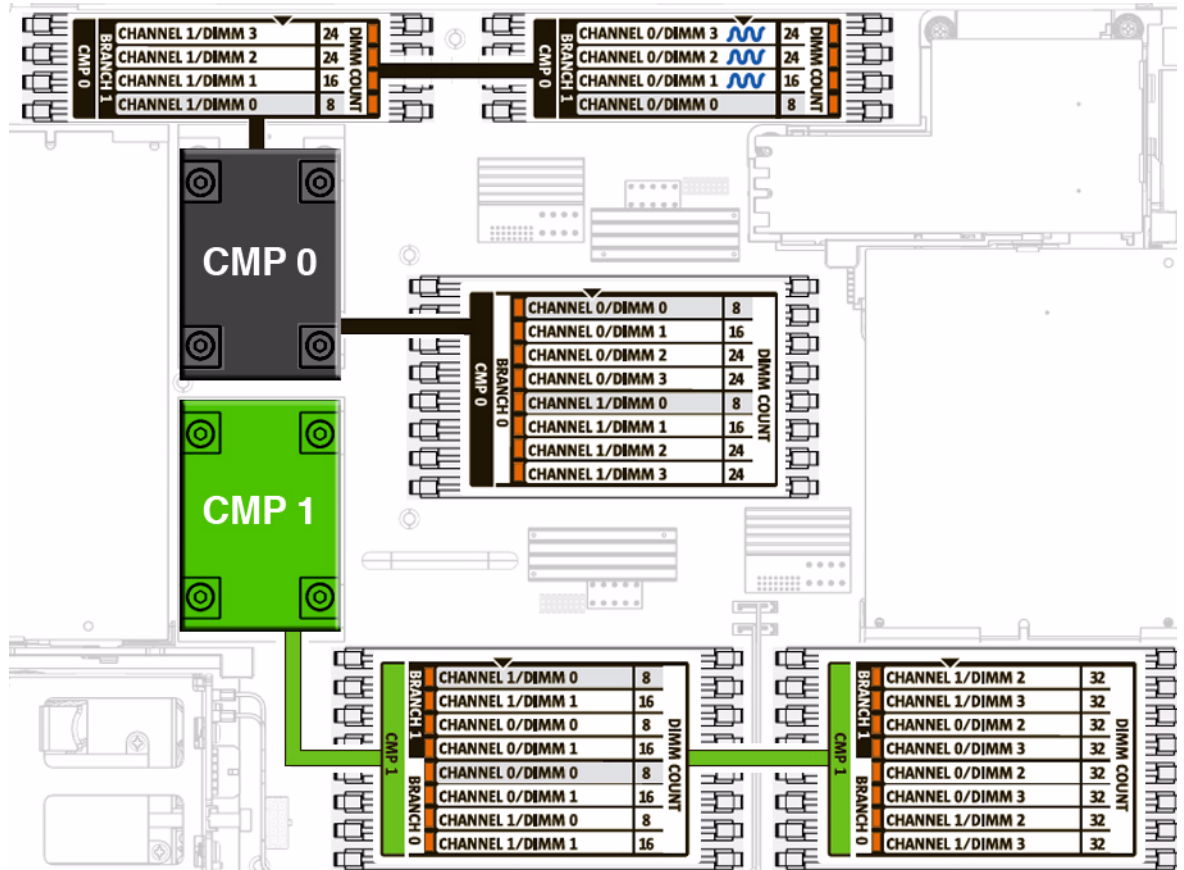
Caution – The following FB-DIMM rules must be followed. The server module might not operate correctly if the FB-DIMM rules are not followed. Always use FB-DIMMs that have been qualified by Sun.

Use these FB-DIMM configuration rules to help you plan the memory configuration of your server:

- 32 slots hold industry-standard FB-DIMM memory modules on the motherboard.
- All FB-DIMMs must have the same Sun part number. The system treats all installed FB-DIMMs as the lowest-capacity installed FB-DIMM.
- Install FB-DIMMs in this order, refer to [FIGURE 2-2](#):
 - Fill FB-DIMMs of group 8 first.
 - Fill FB-DIMMs of group 16 next.
 - Fill FB-DIMMs of group 24 next.
 - Fill FB-DIMMs of group 32 last.

See [Section 4.3.1, “Removing the DIMMs”](#) on page 4-10 for DIMM installation instructions.

FIGURE 2-2 DIMM Installation Rules



You can also use [TABLE 2-2](#) to identify the DIMMs you want to remove.

TABLE 2-2 FB-DIMM Configuration and Installation

CPU #	Branch Name	Channel Name	FRU Name in ILOM Messages	Motherboard FB-DIMM Connector	FB-DIMM Installation Order*
CMP 0	Branch 0	Channel 0	/SYS/MB/CMP0/BR0/CH0/D0	J0501	8
			/SYS/MB/CMP0/BR0/CH0/D1	J0601	16
			/SYS/MB/CMP0/BR0/CH0/D2	J0701	24
			/SYS/MB/CMP0/BR0/CH0/D3	J0801	24
		Channel 1	/SYS/MB/CMP0/BR0/CH1/D0	J0901	8
			/SYS/MB/CMP0/BR0/CH1/D1	J1001	16

TABLE 2-2 FB-DIMM Configuration and Installation (*Continued*)

CPU #	Branch Name	Channel Name	FRU Name in ILOM Messages	Motherboard FB-DIMM Connector	FB-DIMM Installation Order*
			/SYS/MB/CMP0/BR0/CH1/D2	J1101	24
			/SYS/MB/CMP0/BR0/CH1/D3	J1201	24
	Branch 1	Channel 0	/SYS/MB/CMP0/BR1/CH0/D0	J1301	8
			/SYS/MB/CMP0/BR1/CH0/D1	J1401	16
			/SYS/MB/CMP0/BR1/CH0/D2	J1501	24
			/SYS/MB/CMP0/BR1/CH0/D3	J1601	24
		Channel 1	/SYS/MB/CMP0/BR1/CH1/D0	J1701	8
			/SYS/MB/CMP0/BR1/CH1/D1	J1801	16
			/SYS/MB/CMP0/BR1/CH1/D2	J1901	24
			/SYS/MB/CMP0/BR1/CH1/D3	J2001	24
CMP 1	Branch 0	Channel 0	/SYS/MB/CMP1/BR0/CH0/D0	J2401	8
			/SYS/MB/CMP1/BR0/CH0/D1	J2501	16
			/SYS/MB/CMP1/BR0/CH0/D2	J2601	32
			/SYS/MB/CMP1/BR0/CH0/D3	J2701	32
		Channel 1	/SYS/MB/CMP1/BR0/CH1/D0	J2801	8
			/SYS/MB/CMP1/BR0/CH1/D1	J2901	16
			/SYS/MB/CMP1/BR0/CH1/D2	J2601	32
			/SYS/MB/CMP1/BR0/CH1/D3	J2701	32
	Branch 1	Channel 0	/SYS/MB/CMP1/BR1/CH0/D0	J3201	8
			/SYS/MB/CMP1/BR1/CH0/D1	J3301	16
			/SYS/MB/CMP1/BR1/CH0/D2	J3401	32
			/SYS/MB/CMP1/BR1/CH0/D3	J3501	32
		Channel 1	/SYS/MB/CMP1/BR1/CH1/D0	J3601	8
			/SYS/MB/CMP1/BR1/CH1/D1	J3701	16
			/SYS/MB/CMP1/BR1/CH1/D2	J3801	32
			/SYS/MB/CMP1/BR1/CH1/D3	J3901	32

* Upgrade path: DIMMs should be added with each group populated in the order shown.

2.2.1.2 Memory Fault Handling

The Sun Blade T6340 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.

Note – The chipkill function is only supported on DIMMs that use “x4” DRAMs.

The following server module features manage memory faults independently.

- **POST** – Runs when the server module is powered on (based on 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 Automatic System Recovery (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 ILOM command `set /SYS/component component_state=enabled`.

- **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.

2.2.1.3 Troubleshooting Memory Faults

If you suspect that the server module has a memory problem, follow the flowchart ([FIGURE 2-1](#)). Type the ILOM command: `show faulty`. The `faultmgmt` command lists memory faults and lists the specific DIMMs that are associated with the fault. Once you have 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.

2.3 Interpreting System LEDs

The Sun Blade T6340 server module has LEDs on the front panel and the hard drives. The behavior of LEDs on your server module conforms to the American National Standards Institute (ANSI) Status Indicator Standard (SIS). These standard LED behaviors are described in [TABLE 2-3](#).

2.3.1 Front Panel LEDs and Buttons

The front panel LEDs and buttons are located in the center of the server module ([TABLE 2-4](#), and [TABLE 2-5](#)). The functions of their respective devices are displayed as follows:

TABLE 2-3 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 that 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 front panel LEDs on the Sun Blade T6340 are shown in [FIGURE 2-3](#):

FIGURE 2-3 Front Panel and Hard Drive LEDs

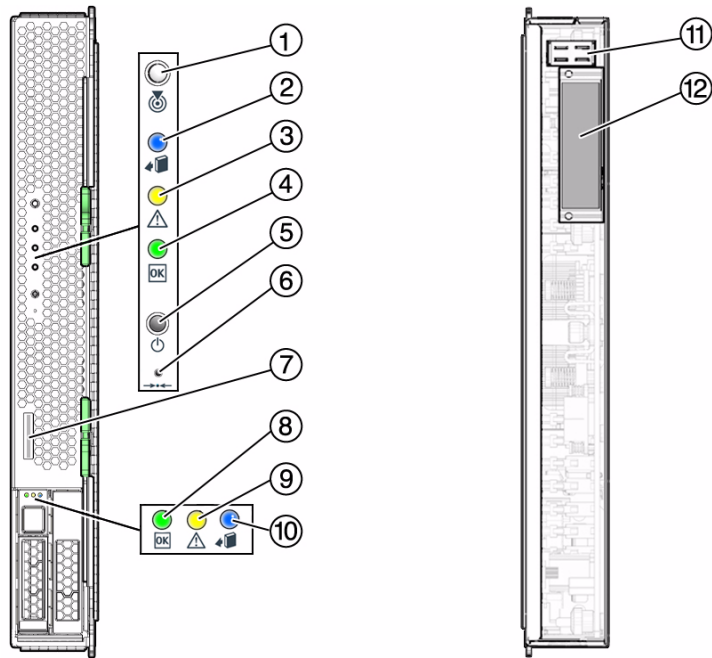


Figure Legend

1	White Locator LED	7	Universal Connector Port (UCP)
2	Blue Ready to Remove LED	8	Green Drive OK LED
3	Amber Service Action Required LED	9	Amber Drive Service Action Required LED
4	Green OK LED	10	Blue Drive Ready to Remove LED
5	Power Button	11	Chassis power connector
6	Reset Button (for service use only)	12	Chassis data connector

TABLE 2-4 LED Behaviors With Assigned Meanings

Color	Behavior	Definition	Description, Actions, and ILOM Commands
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"> Press the button to toggle the indicator on or off, or type the ILOM command: <pre>set /SYS/LOCATE value=Off</pre> <p>This LED provides the following indications:</p> <ul style="list-style-type: none"> Off- Normal operating state. <p>Fast blink – The server module received a signal as a result of one of the preceding methods and indicates that the server module is active.</p> <ul style="list-style-type: none"> Type the ILOM command: <pre>set /SYS/LOCATE value=Fast_Blink</pre>
Blue	Off	Steady state	<p>Steady state - If LED is off, it is not safe to remove the server module from the chassis. You must use software to take the component offline or shut down the server. To turn off the blue LED, type: <pre>set /SYS return_to_service_action=true</pre> </p>
	Steady on	Steady state	<p>If the blue LED is on, a service action can be safely performed on the component.</p> <p>To remove a server module (and illuminate the blue LED), type: <pre>set /SYS prepare_to_remove_action=true</pre> </p> <p>To remove a hard drive, use the Solaris <code>cfgadm</code> command</p>
Amber	Off	Steady state	
	Steady on	Steady state	<p>This indicator signals the existence of a fault condition. Service is required (for example, the Service Required LED). The ILOM <code>show faulty</code> command provides details about any faults that cause this indicator to be lit. To turn off an amber LED, either fix the fault condition or mark the fault condition fixed.</p>
Green	Off	Steady state	<p>Off – The system is unavailable. Either it has no power or ILOM is not running.</p>

TABLE 2-4 LED Behaviors With Assigned Meanings (*Continued*)

Color	Behavior	Definition	Description, Actions, and ILOM Commands
	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. ILOM 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.

2.3.2 Power and Reset Buttons

TABLE 2-5 Front Panel Buttons

Button	Color	Description
Power button	gray	Turns the host system on and off. Use a non-conductive stylus to completely press this button.
(reset)	gray	This button causes a reset of the Service Processor.

For information about Ethernet LEDs see the service manual for your modular system chassis or ethernet device at:

<http://docs.sun.com/app/docs/prod/blade.6000mod>

2.4 Using ILOM for Diagnosis and Repair Verification

The Oracle Integrated Lights Out Manager (ILOM) is contained on firmware on the service processor in the Sun Blade T6340 server module. ILOM enables you to remotely manage and administer your server module.

Note – ILOM also contains an ALOM-CMT compatibility shell. For more information about ALOM-CMT compatibility see the *Sun Integrated Lights Out Manager 2.0 Supplement for Sun Blade T6340 Server Modules*, 820-3904. [Appendix G](#) of this service manual also provides some information about the ALOM CMT CLI.

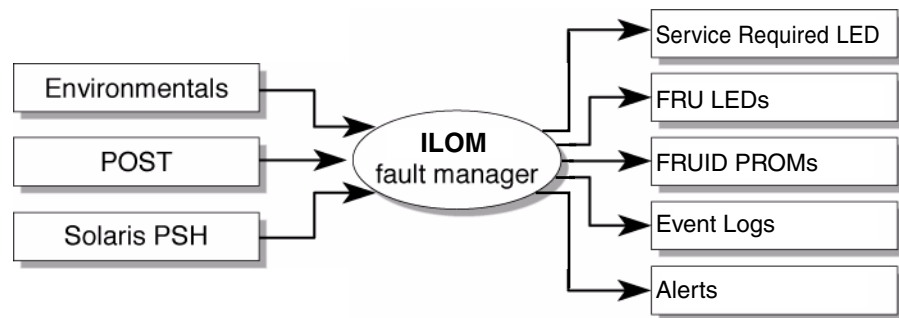
ILOM enables you to run remote diagnostics such as power-on self-test (POST), that would otherwise require physical proximity to the server module serial port. You can also configure ILOM to send email alerts of hardware failures, hardware warnings, and other events related to the server module or to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

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

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

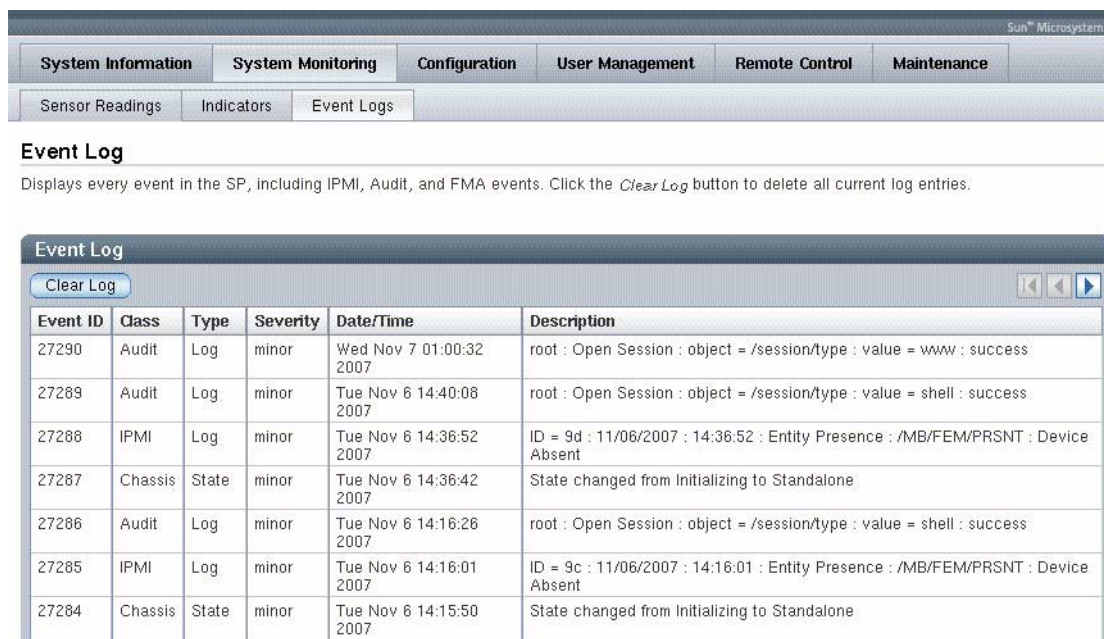
In the event of a system fault, ILOM ensures that the Service Action Required LED is lit, FRU ID PROMs are updated, the fault is logged, and alerts are displayed (faulty FRUs are identified in fault messages using the FRU name. For a list of FRU names, see [TABLE 1-3](#)).

FIGURE 2-4 ILOM Fault Management



In ILOM you can view the ILOM logs to see alerts. [FIGURE 2-5](#) is a sample of the ILOM web interface. Using the CLI you can type the `show /SP/logs/event/list/` command.

FIGURE 2-5 Sample Event Log in ILOM Web Interface



ILOM 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. ILOM extinguishes the Service Action Required LED and updates the FRU PROM.

Many environmental faults can automatically recover. For example, a temperature that is exceeding a threshold might return to normal limits when you connect a fan. 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.*

There are three thresholds for an environmental fault:

- **Warning:** ILOM issues a command to burst the fan speed.
- **Soft shutdown:** ILOM initiates a graceful shutdown.
- **Hard shutdown:** Immediate shutdown.

Environmental faults can be repaired through hot removal of the faulty FRU. The 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.

- **Fault repair** – The fault has been repaired by human intervention. In most cases, ILOM detects the repair and extinguishes the Service Required LED. In the event that ILOM does not perform these actions, you must perform these tasks manually with the following commands:
 - `set /SYS/FRU/clear_fault_action=true` (The ALOM-CMT equivalent is `clearfault`) clears the PSH fault logs but does not enable the component. See [Section 2.7.2, “Clearing PSH Detected Faults”](#) on page 2-42.
 - `set /SYS/component/component_state=enabled` (The ALOM-CMT equivalent is `enablecomponent`) clears POST generated faults and enables the component. See [Section 2.6.4, “Clearing POST Detected Faults”](#) on page 2-35.

2.5 Using the ILOM Web Interface For Diagnostics

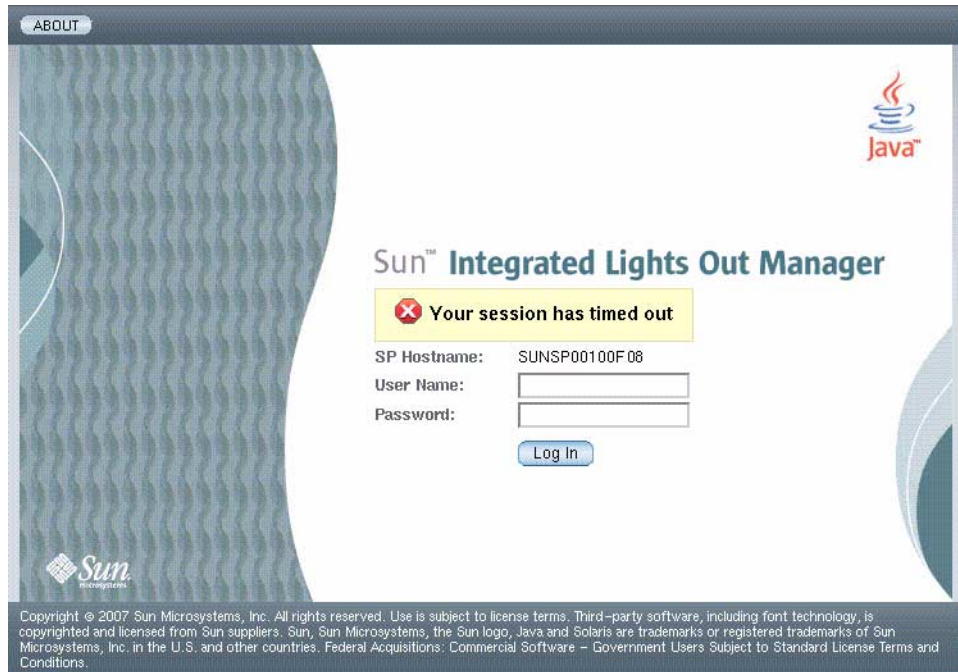
These instructions use the ILOM web interface. To use the command line interface (CLI), see [Appendix G](#) of this manual, the ILOM documentation collection.

1. **Connect to the ILOM web interface by typing the IP address for the Sun Blade T6340 server module service processor in a web browser.**

If you do not know the IP address for the server module, you can obtain the service processor IP address from the following:

- ILOM CLI: `->show /SP/network`
 - ALOM-CMT compatibility shell: `sc> shownetwork`
 - Chassis CMM ILOM: `->show /CH/BL<x>/SP/network` (Where `<x>` is the number of the blade server module in the chassis.)
2. Type the username and password to access the diagnostics menus in the ILOM web interface. The default user name is **root**, and the default password is **changeme**.

FIGURE 2-6 ILOM Login Screen



2.5.1 Displaying System Faults

ILOM displays the following faults with the web interface and CLI:

- **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** – Detected by the power-on self-test diagnostics
- **PSH detected faults** – Detected by the Solaris Predictive Self-healing (PSH) technology

Use the web interface or type the `show faulty` command for the following reasons:

- To see if any faults have been passed to, or detected by the ILOM firmware
- 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

2.5.1.1 Viewing Fault Status Using the ILOM Web Interface

In the ILOM web interface, you can view the system components currently in a fault state using the Fault Management page.

FIGURE 2-7 Fault Management Page Example



Screenshot of the ILOM web interface showing the Fault Management page. The page title is "Sun Microsystems, Inc." and the navigation menu includes "System Information", "System Monitoring", "Configuration", "User Management", "Remote Control", and "Maintenance". The "System Monitoring" menu is expanded, showing "Versions", "Session Time-Out", "Components", "Fault Management", and "Identification Information". The "Fault Management" page displays the following information:

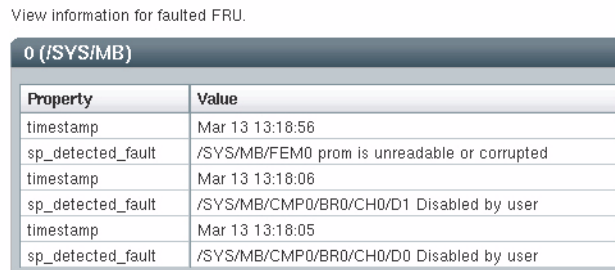
Fault Management
View the components that are currently in a faulted state.

Faulted Components

ID	FRU	Timestamp
0 (/SYS/MB)	/SYS/MB	Mar 13 13:18:05

The Fault Management page lists faulted components by ID, FRU, and TimeStamp. You can access additional information about the faulted component by clicking the faulted component ID. For example, if you clicked the faulted component ID, 0 *SYS/MB/*, a dialog window similar to the following one appears, displaying additional details about the faulted component.

FIGURE 2-8 Faulted Component ID Window



View information for faulted FRU.

0 (/SYS/MB)

Property	Value
timestamp	Mar 13 13:18:56
sp_detected_fault	/SYS/MB/FEM0 prom is unreadable or corrupted
timestamp	Mar 13 13:18:06
sp_detected_fault	/SYS/MB/CMP0/BR0/CH0/D1 Disabled by user
timestamp	Mar 13 13:18:05
sp_detected_fault	/SYS/MB/CMP0/BR0/CH0/D0 Disabled by user

Alternatively, in the ILOM web interface, you can identify the fault status of a component on the Component Management page.

FIGURE 2-9 Component Management Page - Fault Status

System Information		System Monitoring		Configuration		User Management		Remote Control		Maintenance	
Versions	Session Time-Out	Components	Fault Management	Identification Information							

Component Management

View component information, change component state, clear fault status, or prepare to install or remove a component from this page. To modify a component, select the radio button next to that component, then choose an option from the Action drop down list. Components without radio buttons cannot be modified. Choosing the *Prepare to Remove* action shuts down the selected component and lights its blue *Ready to Remove* LED. To view further details, click on a Component Name.

Component Management Status					
— Actions — ▾					
<input checked="" type="checkbox"/>	Component Name	Type	Component State	Fault Status	Ready to Remove Status
<input type="checkbox"/>	/SYS	Host System	-	OK	Not Ready
<input type="checkbox"/>	/SYS/SP	Service Processor	-	OK	-
<input type="checkbox"/>	/SYS/MB	Motherboard	-	OK	-
<input checked="" type="checkbox"/>	/SYS/MB/REM	RAID Expansion Module	Enabled	OK	-
<input type="checkbox"/>	/SYS/MB/NET	Network Module	Enabled	-	-
<input type="checkbox"/>	/SYS/MB/PCIE	Express Module	Unknown	-	-
<input type="checkbox"/>	/SYS/MB/PCI-SWITCH	Express Module	Enabled	-	-
<input type="checkbox"/>	/SYS/MB/PCI-EM0	Unknown	Enabled	-	-
<input type="checkbox"/>	/SYS/MB/PCI-EM1	Unknown	Enabled	-	-
<input type="checkbox"/>	/SYS/MB/PCI-BRIDGE	Express Module	Enabled	-	-
<input type="checkbox"/>	/SYS/MB/USB0	USB Port	Enabled	-	-
<input type="checkbox"/>	/SYS/MB/USB1	USB Port	Enabled	-	-
<input type="checkbox"/>	/SYS/MB/DISPLAY	Display	Enabled	-	-
<input type="checkbox"/>	/SYS/MB/CMP0	Host Processor	-	OK	-
<input type="checkbox"/>	/SYS/MB/CMP0/NIU0	Network Interface Port	Enabled	-	-
<input type="checkbox"/>	/SYS/MB/CMP0/NIU1	Network Interface Port	Enabled	-	-

2.5.1.2 Viewing Fault Status Using the ILOM CLI

In the ILOM CLI, you can view the fault status of component(s) by using the `show` command. For example:

```
->show faulty
```

2.5.2 Displaying the Environmental Status with the ILOM CLI

The ILOM `show` 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 `->` prompt, type the `show` command.

The output differs according to your system model and configuration.

```
-> show /SYS/MB/V_+12V

/SYS/MB/V_+12V
  Targets:

  Properties:
    type = Voltage
    class = Threshold Sensor
    value = 12.411 Volts
    upper_nonrecov_threshold = 13.23 Volts
    upper_critical_threshold = 13.10 Volts
    upper_noncritical_threshold = 12.85 Volts
    lower_noncritical_threshold = 11.15 Volts
    lower_critical_threshold = 10.90 Volts
    lower_nonrecov_threshold = 10.77 Volts

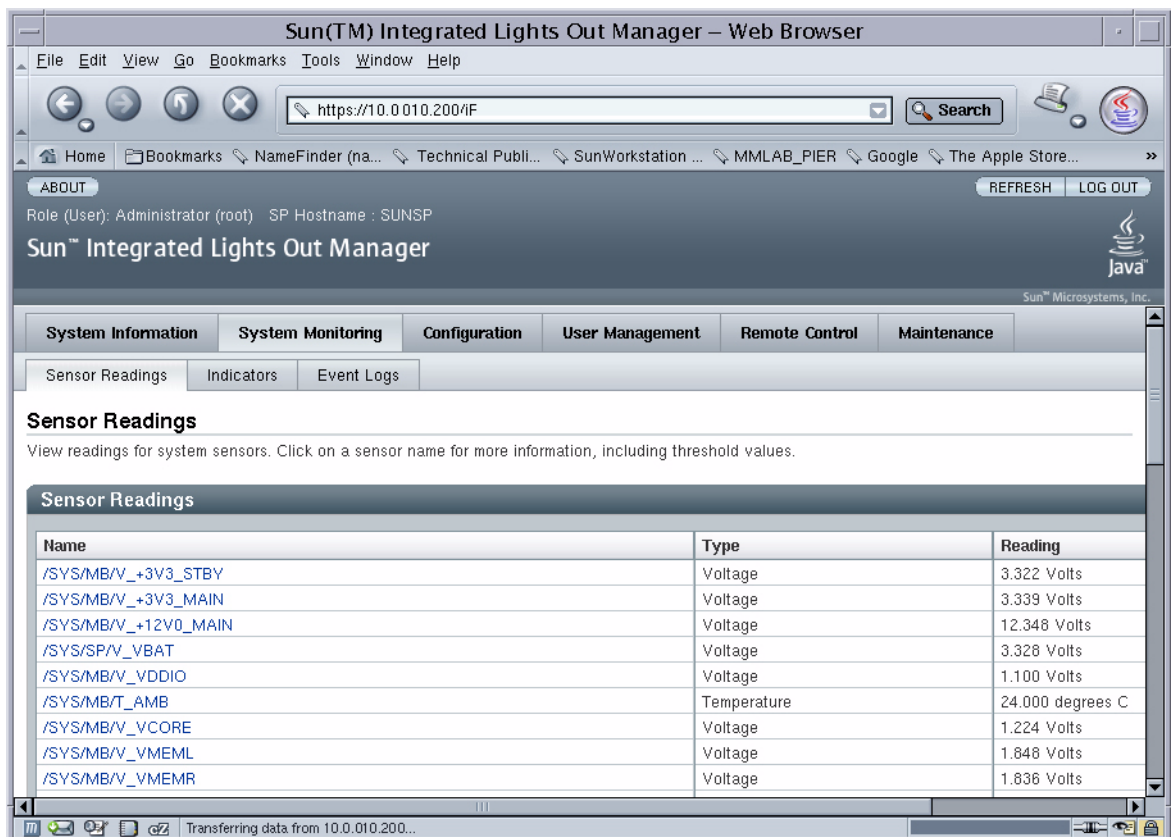
  Commands:
    cd
    show
```

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

2.5.3 Displaying the Environmental Status and Sensor Readings with the ILOM Web Interface

1. Open a web browser and type the IP address of the server module service processor in the browser.
2. Select the top System Monitoring tab and the lower Sensor Readings tab (FIGURE 2-10).
3. Click on the sensor reading that you want to check (FIGURE 2-10).

FIGURE 2-10 Obtaining Sensor Readings and Environmental Status With the ILOM Web Interface



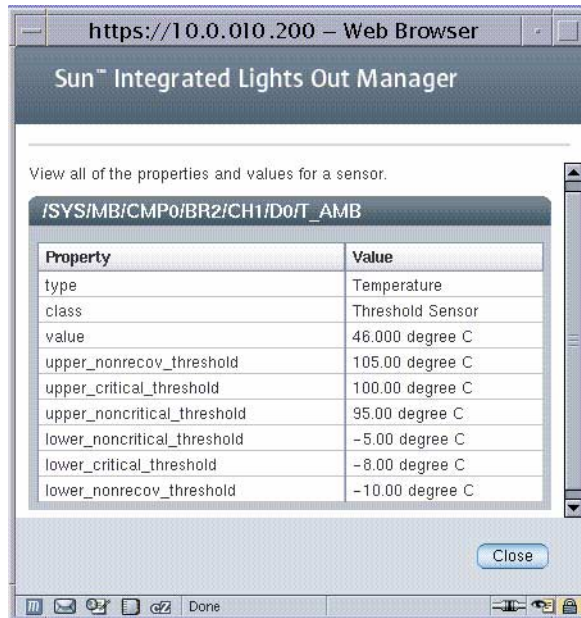
The screenshot displays the Sun(TM) Integrated Lights Out Manager (ILOM) Web Interface in a web browser. The browser's address bar shows the URL `https://10.0.010.200/IF`. The interface includes a navigation menu with tabs for System Information, System Monitoring, Configuration, User Management, Remote Control, and Maintenance. Under the System Monitoring tab, there are sub-tabs for Sensor Readings, Indicators, and Event Logs. The Sensor Readings section is active, showing a table of sensor data.

Sensor Readings

View readings for system sensors. Click on a sensor name for more information, including threshold values.

Name	Type	Reading
/SYS/MB/V_+3V3_STBY	Voltage	3.322 Volts
/SYS/MB/V_+3V3_MAIN	Voltage	3.339 Volts
/SYS/MB/V_+12V0_MAIN	Voltage	12.348 Volts
/SYS/SP/V_VBAT	Voltage	3.328 Volts
/SYS/MB/V_VDDIO	Voltage	1.100 Volts
/SYS/MB/T_AMB	Temperature	24.000 degrees C
/SYS/MB/V_VCORE	Voltage	1.224 Volts
/SYS/MB/V_VMEML	Voltage	1.848 Volts
/SYS/MB/V_VMEMR	Voltage	1.836 Volts

FIGURE 2-11 Sensor Reading Window for an FB-DIMM in Channel 1



2.5.4 Displaying FRU Information

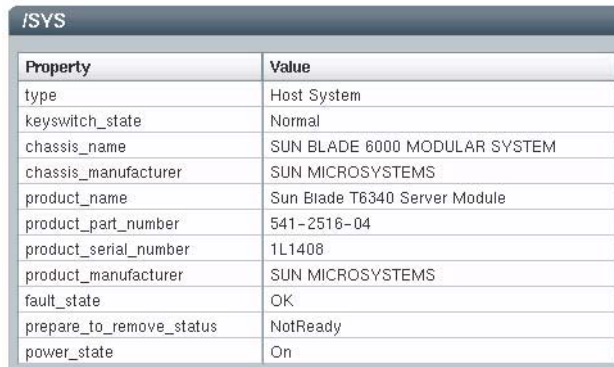
ILOM can display static FRU information such as the FRU manufacturer, serial number and some FRU status information (FIGURE 2-12).

Note – To view dynamic FRU information you must type the ALOM CMT `showfru` command. The dynamic FRU information provides more details about FRUs.

2.5.4.1 Using the ILOM Web Interface to Display FRU Information

1. Select the System Information and Components tabs.
2. Click on the component to view the FRU information (FIGURE 2-12).

FIGURE 2-12 Static FRU Information in the ILOM Web Interface



The screenshot shows a web interface window titled "/SYS" containing a table of static FRU information. The table has two columns: "Property" and "Value".

Property	Value
type	Host System
keyswitch_state	Normal
chassis_name	SUN BLADE 6000 MODULAR SYSTEM
chassis_manufacturer	SUN MICROSYSTEMS
product_name	Sun Blade T6340 Server Module
product_part_number	541-2516-04
product_serial_number	1L1408
product_manufacturer	SUN MICROSYSTEMS
fault_state	OK
prepare_to_remove_status	NotReady
power_state	On

2.5.4.2 Using the CLI to Display FRU Information

The `show /SYS/MB` command displays static information about the FRUs in the server module. Use this command to see information about an individual FRU.

- At the -> prompt, type the show command.

In the following example, the show command displays information about the motherboard (MB).

```
-> show /SYS/MB

/SYS/MB
  Targets:
    SEEPROM
    SCC_NVRAM
    PCIE0
    PCIE1
    PCI-SWITCH0
    PCI-SWITCH1
    REM
    NET0

  CMP0
    CMP1
    V_VDDIO
    V_+12V
    V_+3V3
    V_+3V3_STBY
    V_+5V

  Properties:
    type = Motherboard
    chassis_name = SUN BLADE 6000 MODULAR SYSTEM
    chassis_part_number = "541-1983-0
    chassis_serial_number = "1005LCB-0804YM04XE
    chassis_manufacturer = SUN MICROSYSTEMS
    product_name = Sun Blade T6340 Server Module
    product_part_number = 541-3299-02
    product_serial_number = 1005LCB-08268N0008
    product_manufacturer = SUN MICROSYSTEMS
    fru_name = T6340_MB
    fru_description = 8C,1.2GHZ VF,T6340,DIRECT-A
    fru_manufacturer = NO JEDEC CODE FOR THIS VENDOR
    fru_version = 02_01
    fru_part_number = 5407762
    fru_serial_number = 8J0010
    fault_state = OK
    clear_fault_action = (none)

  Commands:
    cd
    show

->
```

This example shows a portion of the more detailed dynamic FRU information provided by the ALOM CMT `showfru` command.

```
sc> showfru
/SYS/SP (container)
  SEGMENT: ST
    /Status_CurrentR
    /Status_CurrentR/UNIX_Timestamp32: Thu Feb 17 07:25:57 2000
    /Status_CurrentR/status:          0x00 (OK)
  SEGMENT: TH ...
... ..
  SEGMENT: FD
    /Customer_DataR
    /Customer_DataR/UNIX_Timestamp32: Wed Feb 16 08:41:44 GMT 2000
    /Customer_DataR/Cust_Data: QT
    /InstallationR (1 iterations)
    /InstallationR[0]
    /InstallationR[0]/UNIX_Timestamp32: Thu Feb 17 07:26:09 GMT 2000
    /InstallationR[0]/Fru_Path: /SYS/MB/REM
    /InstallationR[0]/Parent_Part_Number: 5017821
    /InstallationR[0]/Parent_Serial_Number: 5C00FV
    /InstallationR[0]/Parent_Dash_Level: 04
    /InstallationR[0]/System_Id: 1005LCB-0709YM00FV
    /InstallationR[0]/System_Tz: 0
    /InstallationR[0]/Geo_North: 0
    /InstallationR[0]/Geo_East: 0
    /InstallationR[0]/Geo_Alt: 0
    /InstallationR[0]/Geo_Location: GMT
... ..
/SYS/MB/CMP0/BR0/CH0/D0 (container)
  /SPD/TimeStamp: Mon Feb 12 12:00:00 2007
  /SPD/Description: DDR2 SDRAM FB-DIMM, 4 GByte
  /SPD/Manufacture Location: ff
  /SPD/AMB Vendor: IDT
  /SPD/Vendor: Micron Technology
  /SPD/Vendor Part No: 36HTF51272F667E1D4
  /SPD/Vendor Serial No: d2174043
  /SPD/Num_Banks: 8
  /SPD/Num_Ranks: 2
  /SPD/Num_Rows: 14
  /SPD/Num_Cols: 11
  /SPD/Sdram_Width: 4
  /SunSPD/Sun_Serial_Number: 002C010707D2174043
  /SunSPD/SPD_Format_Version: 20
  /SunSPD/Sun_Part_Dash_Rev: 000-0000-00 Rev 00
  /SunSPD/Certified_Platforms: 0x00000001 (OK)
  /SunSPD/Sun_Key_Code: 0x0000
  /SunSPD/Sun_Certification: NO
```



```
/SunSPD/timestamp: Thu Feb 17 07:26:20 2000
/SunSPD/MACADDR: 00:14:4F:98:84:7A
/SunSPD/status 0x00 (OK)
/SunSPD/Initiator N/A
/SunSPD/Message: No message
/SunSPD/powerupdate: Thu Feb 17 07:01:16 2000
/SunSPD/Poweron_minutes: 1487
/SYS/MB/CMP0/BR1/CH0/D0 (container)
... ..
sc>
```

2.6 Running POST

Use POST to test and verify server module hardware. 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, the component 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, that core will be disabled, and the system will boot and run using the remaining cores.

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.

Note – Devices can be manually enabled or disabled using ASR commands (see [Section 2.9, “Managing Components With Automatic System Recovery Commands”](#) on page 2-45).

2.6.1 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 diag variables.

TABLE 2-6 lists the DIAG variables used to configure POST and FIGURE 2-13 shows how the variables work together.

TABLE 2-6 Parameters Used For POST Configuration

Parameter	Values	Description
/SYS keyswitch_state	normal	The system can power on and run POST (based on the other parameter settings). For details see FIGURE 2-13. 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 diag_level value.
	service	Runs POST with preset values for diag_level and diag_verbosity.
diag_level	min	If diag_mode = normal, runs minimum set of tests.
	max	If diag_mode = normal, runs all the minimum tests plus extensive CPU and memory tests.
diag_trigger	none	Does not run POST on reset or poweron.
	user-reset	Runs POST upon user-initiated resets.
	power-on-reset	Only runs POST for the first power on. Default state is 'power-on-reset error-reset'
	error-reset	Runs POST if fatal errors are detected.
	all-resets	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.

FIGURE 2-13 Flowchart of ILOM Variables for POST Configuration

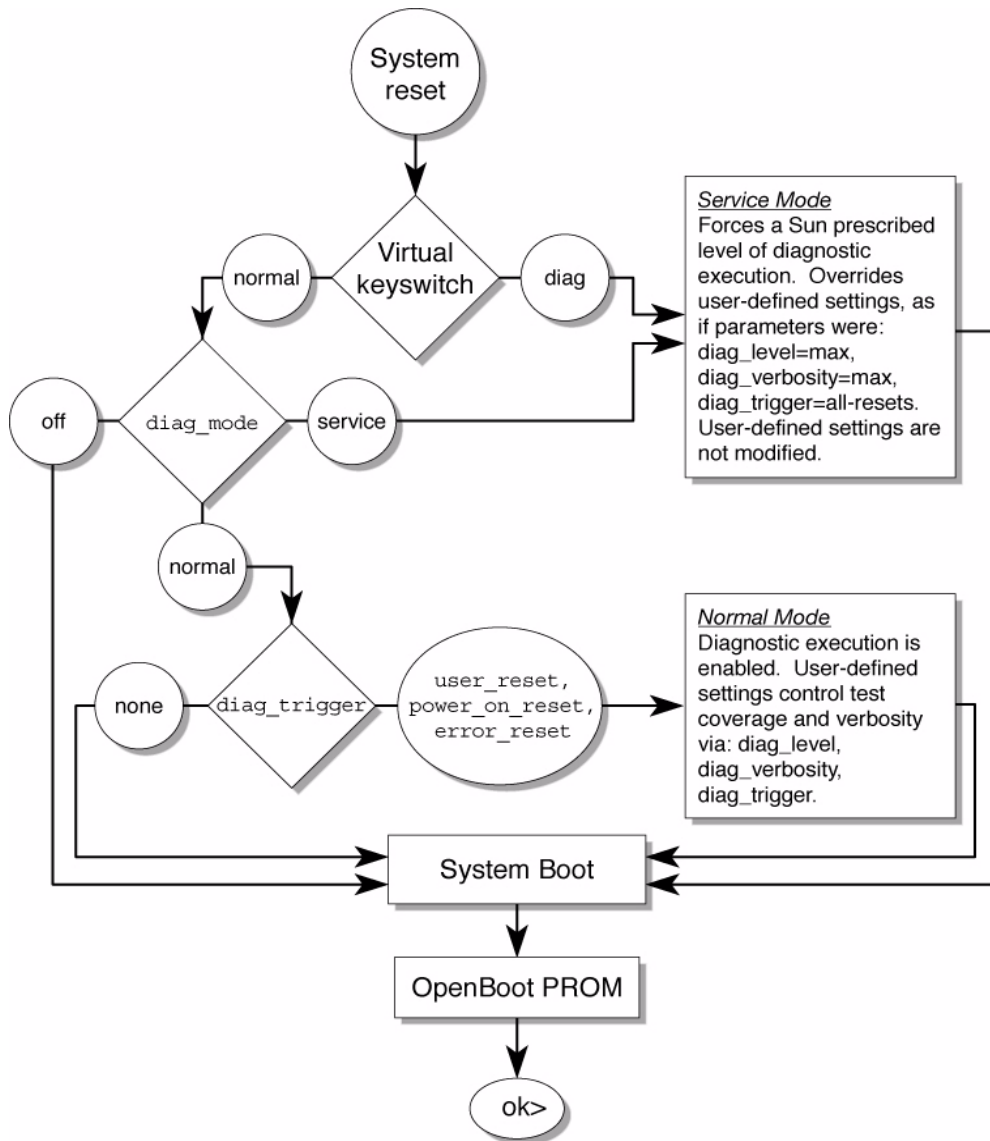


TABLE 2-7 shows typical combinations of ILOM variables and associated POST modes.

TABLE 2-7 POST Modes and Parameter Settings

Parameter	Normal Diagnostic Mode (default settings)	No POST Execution	Diagnostic Service Mode	Keyswitch Diagnostic Preset Values
diag_mode	normal	off	service	normal
keyswitch_state*	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
Description of POST execution	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 keyswitch_state parameter, when set to diag, overrides all the other POST variables.

2.6.2 Changing POST Parameters

You can use the web interface or the CLI to change the POST parameters.

2.6.2.1 Using the Web Interface to Change POST Parameters

1. From the ILOM web interface, select the Remote Console tab (FIGURE 2-14).
2. Select the Diagnostics Tab.
3. Select the POST settings that you require.
TABLE 2-7 describes how the POST settings will execute.
4. Click the Save button.

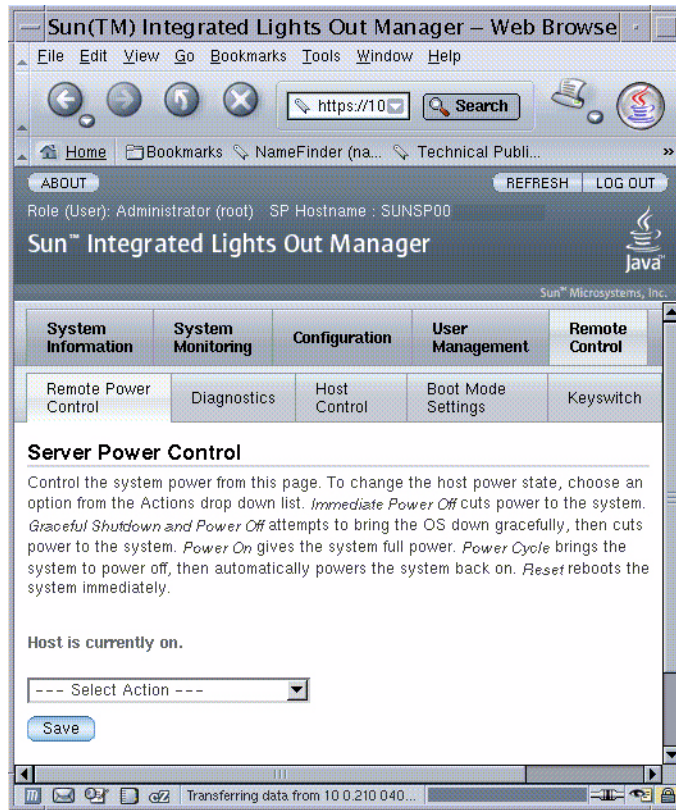
Note – If you do not have a console window open, you should open one. POST will only display output to a console window, not the web interface.

FIGURE 2-14 Setting POST Parameters With the ILOM Web Interface



5. Select the Remote Power Control Tab.
6. Select a power control setting and Select Save (FIGURE 2-15).

FIGURE 2-15 Changing Power Settings With the ILOM Web Interface



When you power cycle the server module, POST runs and displays output to the service processor console window:

```
{0} ok Chassis | critical: Host has been powered off
Chassis | major: Host has been powered on
2007-11-07 18:22:19.511 0:0:0>
2007-11-07 18:22:19.560 0:0:0>Sun Blade T6320 Server Module POST 4.27.4
2007/10/02 19:09

/export/delivery/delivery/4.27/4.27.4/post4.27.x/Niagara/glendale/integrated
(root)
2007-11-07 18:22:19.836 0:0:0>Copyright 2007 Sun Microsystems, Inc. All rights
reserved
2007-11-07 18:22:20.001 0:0:0>VBSC cmp 0 arg is: 00ffffff.ffff00ff
2007-11-07 18:22:20.108 0:0:0>POST enabling threads: 00ffffff.ffff00ff
2007-11-07 18:22:20.223 0:0:0>VBSC mode is: 00000000.00000001
2007-11-07 18:22:20.321 0:0:0>VBSC level is: 00000000.00000001
2007-11-07 18:22:20.421 0:0:0>VBSC selecting Normal mode, MAX Testing.
```

```
2007-11-07 18:22:20.533 0:0:0>VBSC setting verbosity level 3
2007-11-07 18:22:20.629 0:0:0> Niagara2, Version 2.1
2007-11-07 18:22:20.714 0:0:0> Serial Number: 0f880060.768660a8
2007-11-07 18:22:20.843 0:0:0>Basic Memory Tests.....
```

7. Read the POST output to determine if you need to perform service actions.

See [Section 2.6.3, “Interpreting POST Messages”](#) on page 2-34.

2.6.2.2 Using the CLI to Change POST Parameters

1. Verify the current post parameters with the `show` command. Type:

```
-> show /HOST/diag

/HOST/diag
  Targets:

  Properties:
    level = min
    mode = normal
    trigger = power-on-reset error-reset
    verbosity = normal

  Commands:
    cd
    set
    show

->
```

2. Type the `set` command to change the POST parameters.

[TABLE 2-7](#) describes how the POST settings will execute. This example shows how to set the verbosity to max.

```
-> set /HOST/diag verbosity=max
Set 'verbosity' to 'max'
->
```

3. Power cycle the server module to run POST.

There are several ways to initiate a reset. The following example uses the ILOM `reset` command.

```
-> reset /SYS
Are you sure you want to reset /SYS (y/n)? y
Performing hard reset on /SYS
->
```

4. Read the POST output to determine if you need to perform service actions. See [Section 2.6.3, “Interpreting POST Messages”](#) on page 2-34.

2.6.3 Interpreting POST Messages

When POST is finished running and 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 ILOM for fault handling. Faulty FRUs are identified in fault messages using the FRU name. For a list of FRU names, see [TABLE 1-3](#).

1. 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 report for a missing PCI device:

```
0:0:0>ERROR: TEST = PIU PCI id test
0:0:0>H/W under test = MB/PCI-SWITCH
0:0:0>Repair Instructions: Replace items in order listed by 'H/W under test'
above.
0:0:0>MSG = PCI ID test device missing Cont.
          DEVICE NAME: MB/PCI-SWITCH
0:0:0>END_ERROR
```


2. Type the `show faulty` command to obtain additional fault information.

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

For example:

```
ok #.  
->  
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS/MB/CMP0/BR0/CH0/D0
/SP/faultmgmt/0	timestamp	Sep 12 05:02:52
/SP/faultmgmt/0/ faults/0	timestamp	Sep 12 05:02:52
/SP/faultmgmt/0/ faults/0	sp_detected_fault	/SYS/MB/CMP0/BR0/CH0/D0 Disabled by user

```
Commands:  
  cd  
  show
```

In this example, `/SYS/MB/CMP0/BR0/CH0/D0` is disabled by a user. 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 2.9, “Managing Components With Automatic System Recovery Commands”](#) on page 2-45.

2.6.4 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 2.9, “Managing Components With Automatic System Recovery Commands”](#) on page 2-45).

After the faulty FRU is replaced, the fault is normally automatically cleared. In some cases it might be necessary to manually clear the fault by removing the component from the ASR blacklist.

2.6.4.1 Clearing Faults With the Web Interface

This procedure describes how to enable components after a POST fault has been generated. The POST fault log is not actually cleared.

1. Select the tabs: System Information and Components tabs (FIGURE 2-16).
2. Select the radio button for the component that you must clear.
3. In the Actions menu, select: Enable Component.

FIGURE 2-16 Enabling Components With the ILOM Web Interface



Note – The Clear Faults command in the Action menu will only clear the PSH-generated faults, and will not enable a component.

2.6.4.2 Clearing Faults With the ILOM CLI

1. **At the ILOM prompt, type the `show faulty` command to identify POST detected faults.**

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

For example:

```
-> show faulty
```

- If no fault is reported, you do not need to do anything else. Do not perform the subsequent steps.
- If a fault is detected, continue with [Step 2](#).

2. **Type the `set component_state=enabled` command to clear the fault and remove the component from the ASR blacklist.**

Type the `cd` command with the FRU name that was reported in the fault in the previous step.

This example shows how to change directory to thread P32 on the CPU and enable it.

```
-> cd /SYS/MB/CMP0/P32
/SYS/MB/CMP0/P32

-> show

/SYS/MB/CMP0/P32
  Targets:

  Properties:
    type = CPU thread
    component_state = Disabled

  Commands:
    cd
    show

-> set component_state=enabled
Set 'component_state' to 'enabled'
```

The fault is cleared and should not show up when you type the `show faulty` command. Additionally, the Service Action Required LED is no longer illuminated.

3. **Reboot the server module.**

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

4. At the ILOM prompt, type the `show faulty` command to verify that no faults are reported.

```
-> show faulty
Last POST run: THU MAR 09 16:52:44 2006
POST status: Passed all devices

No failures found in System
```

2.6.4.3 Clearing Faults Manually with ILOM

The ILOM `set /SYS/clear_fault_action=enabled` command allows you to manually clear certain types of faults without replacing a FRU. It also allows you to clear a fault if ILOM was unable to automatically detect the FRU replacement.

2.6.4.4 Clearing Hard Drive Faults

ILOM can detect hard drive replacement. However, to configure and unconfigure a hard drive, you must type the Solaris `cfgadm` command. See [Section 3.1, “Hot-Plugging a Hard Drive”](#) on page 3-2. ILOM does not handle hard drive faults. Use the Solaris message files to view hard drive faults. See [Section 2.8, “Collecting Information From Solaris OS Files and Commands”](#) on page 2-44.

2.7 Using the Solaris Predictive Self-Healing Feature

The Solaris Predictive Self-Healing (PSH) technology enables the Sun Blade T6340 server module to diagnose problems while the Solaris OS is running. Many problems can be resolved 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 system 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 the 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 T6340 server module components:

- UltraSPARC® T2 Plus 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, type the `fmdump` command to identify the fault. Faulty FRUs are identified in fault messages using the FRU name. For a list of FRU names, see [TABLE 1-3](#).

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

2.7.1 Identifying Faults With the `fmadm faulty` and `fmdump` Commands

2.7.1.1 Using the `fmadm faulty` Command

1. Use the `fmadm faulty` command to identify a faulty component.

```
# fmadm faulty
STATE RESOURCE /UUID
faulted cpu:///cpuid=8/serial=FAC006AE4515C47
      8856153f-6f9b-47c6-909a-b05180f53c07
```

The output shows the UUID of the related fault and provides information for clearing the fault.

2. Use the output of this command to clear the fault as shown in [Section 2.7.2, “Clearing PSH Detected Faults”](#) on page 2-42.

If `fmadm faulty` does not identify a faulty component or if you need more detailed information, type the `fmdump` command.

2.7.1.2 Using the `fmdump` Command

The `fmdump` 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.
- To obtain the fault message ID (SUNW-MSG-ID) for detected faults.
- To verify that the replacement of a FRU has 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 ILOM alerts. In addition to the PSH `fmdump` command, the ILOM `show faulty` command also provides information about faults and displays fault UUIDs. See [Section 2.5.1, “Displaying System Faults”](#) on page 2-18.

1. Check the event log by typing the `fmdump` command with `-v` for verbose output.

For example:

```
# fmdump -v
TIME          UUID          SUNW-MSG-ID
Apr 24 06:54:08.2005 1ce22523-1c80-6062-e61d-f3b39290ae2c
SUN4V-8000-6H
100% fault.cpu.ultraSPARCT212cachedata
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 (SUN4V-8000-6H) that can be used to obtain additional fault information
- Faulted FRU (FRU:hc:///component=MB). In this example it 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. Type 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
    fmdump -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.

2.7.2 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 might have to clear the fault.

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

2. **Type** `fmadm faulty`:

```
# fmadm faulty
STATE RESOURCE /UUID
faulted cpu:///cpuid=8/serial=FAC006AE4515C47
      8856153f-6f9b-47c6-909a-b05180f53c07
```

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
```

For example:

```
# fmadm repair cpu:///cpuid=8/serial=FAC006AE4515C47
fmadm: recorded repair to cpu:///cpuid=8/serial=FAC006AE4515C47
# fmadm faulty
STATE RESOURCE/UUID
```

Note – You can also use the FRU fault UUID instead of the Fault Management Resource Identifier (FMRI).

Typing `fmadm faulty` after the repair command verifies that there are no more faults.

2.7.3 Clearing the PSH Fault From the ILOM Logs

When the Solaris PSH facility detects faults, the faults are also logged by the ILOM software.

Note – If you clear the faults using Solaris PSH, you do not have to clear the faults in ILOM. If you clear the faults in ILOM, you do not have to clear them with Solaris PSH.

Note – If you are diagnosing or replacing faulty DIMMs, do not follow this procedure. Instead, perform the procedure in [Section 4.3.2, “Replacing the DIMMs” on page 4-13](#).

1. **After replacing a faulty FRU, at the ILOM prompt, type the ILOM `-> show faulty` command to identify PSH detected faults.**

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

For example:

```
-> show faulty
```

- If no fault is reported, you do not need to do anything else.
- If the fault is still reported, continue with [Step 2](#).

2. **Use the ILOM `clear_fault` command to clear the fault on the component provided in the `show faulty` output:**

```
-> set /SYS/component clear_fault_action=true  
Clearing fault from component...  
Fault cleared.
```

2.8 Collecting Information From Solaris OS Files and Commands

With the Solaris OS running on the Sun Blade T6340 server module, you have all the Solaris OS files and commands available for collecting information and for troubleshooting.

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

Type the `dmesg` command to view the most recent system message.

Use the `/var/adm/messages` file to view the system messages log file.

2.8.1 Checking the Message Buffer

1. **Log in as superuser.**
2. **Type the `dmesg` command.**

```
# dmesg
```

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

2.8.2 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. **Type the following command.**

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

3. If you want to view all logged messages, type:

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

2.9 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 T6340 server module, the following components are managed by the ASR feature:

- UltraSPARC T2 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 ILOM -> prompt. For information about ALOM CMT commands, see the *Sun Integrated Lights Out Manager 2.0 Supplement for Sun Blade T6340 Server Modules*, 820-3904.

TABLE 2-8 ASR Commands

ILOM Web Interface	ILOM Command	ALOM Command	Description
Select the following tabs: System Information, Components, Actions, then select the action.	<code>show /SYS/component component_state</code>	<code>showcomponent*</code>	Displays system components and their current state.
	<code>set /SYS/component component_state=enabled</code>	<code>enablecomponent asrkey</code>	Removes a component from the <code>asr-db</code> blacklist, where <code>asrkey</code> is the component to enable.
	<code>set /SYS/component component_state=disabled</code>	<code>disablecomponent asrkey</code>	Adds a component to the <code>asr-db</code> blacklist, where <code>asrkey</code> is the component to disable.
No equivalent in ILOM		<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. Type 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`.

2.9.1 Displaying System Components With the show /SYS Command

To see examples of ILOM web interface and CLI commands that show component status, see [Section 2.5.2, “Displaying the Environmental Status with the ILOM CLI” on page 2-21](#).

The show command displays the system components (asrkeys) and reports their status.

1. At the `->` prompt, type the `show` command.

An example with no disabled components.

```
-> show -level all -o table component_state
```

Target	Property	Value
-		
/SYS/MB/PCIE0	component_state	Enabled
/SYS/MB/PCIE1	component_state	Enabled
/SYS/MB/PCI-SWITCH0	component_state	Enabled
/SYS/MB/PCI-SWITCH1	component_state	Enabled
/SYS/MB/REM	component_state	Enabled
/SYS/MB/NET0	component_state	(none)
/SYS/MB/NET1	component_state	(none)
/SYS/MB/PCIE-IO	component_state	Enabled
/SYS/MB/PCIE-IO/USB	component_state	Enabled
/SYS/MB/PCIE-IO/GRFX	component_state	Enabled
/SYS/MB/CMP0/MCU0	component_state	Enabled
/SYS/MB/CMP0/MCU1	component_state	Enabled

```
Commands:  
  cd  
  show  
->
```

2.10 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.

2.10.1 Checking SunVTS Software Installation

This procedure assumes that the Solaris OS is running on the Sun Blade T6340 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 | grep -i vts
system      SUNWvts      SunVTS Framework
system      SUNWvtsmn    SunVTS Man Pages
system      SUNWvtshr    SunVTS Framework (root)
system      SUNWvtss     SunVTS Server and BUI
system      SUNWvtsts    SunVTS Core Installation Tests
#
```

- If SunVTS software is loaded, information about the packages is displayed.
- If SunVTS software is not loaded, no information is displayed.

[TABLE 2-9](#) lists some SunVTS packages.

TABLE 2-9 Sample of installed SunVTS Packages

Package	Description
SUNWvts	SunVTS framework
SUNWvtshr	SunVTS Framework (root)
SUNWvtss	SunVTS middle server and BI components
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 7.0 software, and subsequent compatible versions, are supported on the Sun Blade T6340 server module.

SunVTS installation instructions are described in the *Sun VTS 7.0 User's Guide*, 820-0012.

2.10.2 Exercising the System Using SunVTS Software

Before you begin, the Solaris OS must be running. You should verify that SunVTS validation test software is installed on your system. See [Section 2.10.1, “Checking SunVTS Software Installation”](#) on page 2-48.

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 7.0 User's Guide*.

Finally, this procedure describes how to run SunVTS tests in general. Individual tests might presume the presence of specific hardware, or might require specific drivers, cables, or loopback connectors. For information about test options and prerequisites, refer to the following documentation:

- *SunVTS 7.0 Test Reference Manual for SPARC Platforms*
- *Sun VTS 7.0 User's Guide*

1. Log in as superuser to a system with a graphics display.

The display system should be one with a frame buffer and monitor capable of displaying bitmap graphics such as those produced by the SunVTS BI.

2. Enable the remote display.

On the display system, type:

```
# /usr/openwin/bin/xhost + test-system
```

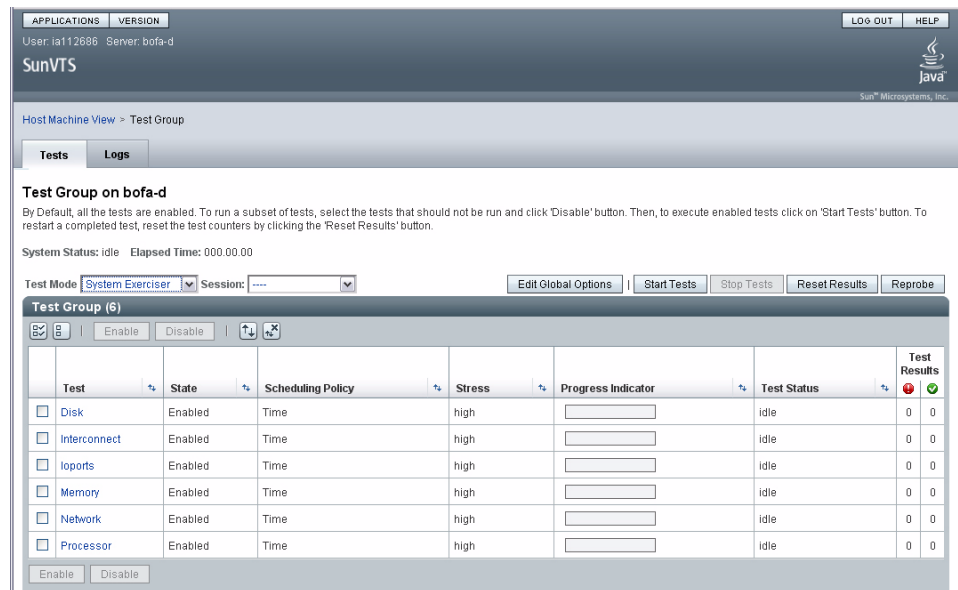
where *test-system* is the name of the server you plan to test.

3. Remotely log in to the server as superuser.
Type a command such as `rlogin` or `telnet`.
4. Start SunVTS software.

```
# /usr/sunvts/bin/startsunvts
```

As SunVTS starts, it prompts you to choose between using CLI, BI, or tty interfaces. A representative SunVTS BI is displayed below (FIGURE 2-17).

FIGURE 2-17 SunVTS BI



5. (Optional) Select the test category you want to run.

Certain tests are enabled by default, and you can choose to accept these.

Alternatively, you can enable or disable test categories by clicking the checkbox next to the test name or test category name. Tests are enabled when checked, and disabled when not checked.

TABLE 2-10 lists tests that are especially useful to run on this server.

TABLE 2-10 Useful SunVTS Tests to Run on This Server

Category	SunVTS Tests	FRUs Exercised by Tests
CPU	mptest	CPU and motherboard
Graphics	pfbtest, graphicstest— <i>indirectly</i> : systest	DIMMs, CPU motherboard
Processor	cmttest, cputest, fputest, iutest, l1dcachetest, dtlbtest, and l2sramtest— <i>indirectly</i> : mptest, and systest	DIMMs, CPU motherboard
Disk	disktest	Disks, cables, disk backplane
Environment	hsclbtest, cryptotest	Crypto engine (CPU), SP <-->, host communication channels (motherboard)
Network	nettest, netlbtest, xnetlbtest	Network interface, network cable, CPU motherboard
Memory	pmemtest, vmemtest, ramtest	DIMMs, motherboard
I/O ports	usbtest, iobustest	Motherboard, service processor (Host to service processor interface)

6. (Optional) Customize individual tests.

You can customize test categories by right-clicking on the name of the test.

7. Start testing.

Click the Start button that is located at the top left of the SunVTS window. Status and error messages appear in the test messages area located across the bottom of the window. You can stop testing at any time by clicking the Stop button.

During testing, SunVTS software logs all status and error messages. To view these messages, click the Log button or select Log Files from the Reports menu. This action opens a log window from which you can choose to view the following logs:

- **Information** – Detailed versions of all the status and error messages that appear in the test messages area.
- **Test Error** – Detailed error messages from individual tests.

- **VTS Kernel Error** – Error messages pertaining to SunVTS software itself. Look here if SunVTS software appears to be acting strangely, especially when it starts up.
- **Solaris OS Messages** (`/var/adm/messages`) – A file containing messages generated by the operating system and various applications.
- **Log Files** (`/var/sunvts/logs`) – A directory containing the log files.

2.11 Resetting the Password to the Factory Default

The procedure for resetting the ILOM root password to the factory default (`changeme`) requires installation of a jumper on the service processor. This procedure should be performed by a technician, a service professional, or a system administrator who services and repairs computer systems. This person should meet the criteria described in the preface of the *Sun Blade T6340 Server Module Service Manual*.

2.11.1 To Reset the Root Password to the Factory Default

1. Remove the server module from the modular system chassis.

Prepare for removal using ILOM or ALOM CMT commands and ensure that the blue OK to Remove LED is lit, indicating that it is safe to remove the blade.

2. Open the server module and install a standard jumper at location J0601, pins 11 and 12.

3. Close the server module, install it in the modular system chassis, and boot the server module.

Refer to the *Sun Blade T6340 Server Module Installation and Administration Guide* for instructions.

The ILOM root password is now reset to the factory default (`changeme`).

4. Change the root password.

Refer to the *Sun Blade T6340 Server Module Installation and Administration Guide* for instructions.

5. Remove the server module from the modular system chassis and remove the jumper.

As in [Step 1](#), prepare for removal using ILOM or ALOM CMT commands and ensure that the blue OK to Remove LED is lit, indicating that it is safe to remove the blade.

6. Close the server module, install it in the modular system chassis, and boot the server module.

Refer to the *Sun Blade T6340 Server Module Installation and Administration Guide* for instructions.

Replacing Hot-Swappable and Hot-Pluggable Components

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 T6340 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 service manual for your modular system chassis.

This chapter describes how to remove and replace the hot-swappable and hot-pluggable field-replaceable units (FRUs) in the Sun Blade T6340 server module.

The following topics are covered:

- [Section 3.1, “Hot-Plugging a Hard Drive” on page 3-2](#)
- [Section 3.2, “Adding PCI ExpressModules” on page 3-5](#)

3.1 Hot-Plugging a Hard Drive

The hard drives in the Sun Blade T6340 server module are hot-pluggable, but this may be affected by hard drive software configuration.

3.1.1 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.

3.1.2 Removing a Hard Drive

1. **Identify the physical location of the hard drive that you want to replace** ([FIGURE 3-1](#)).

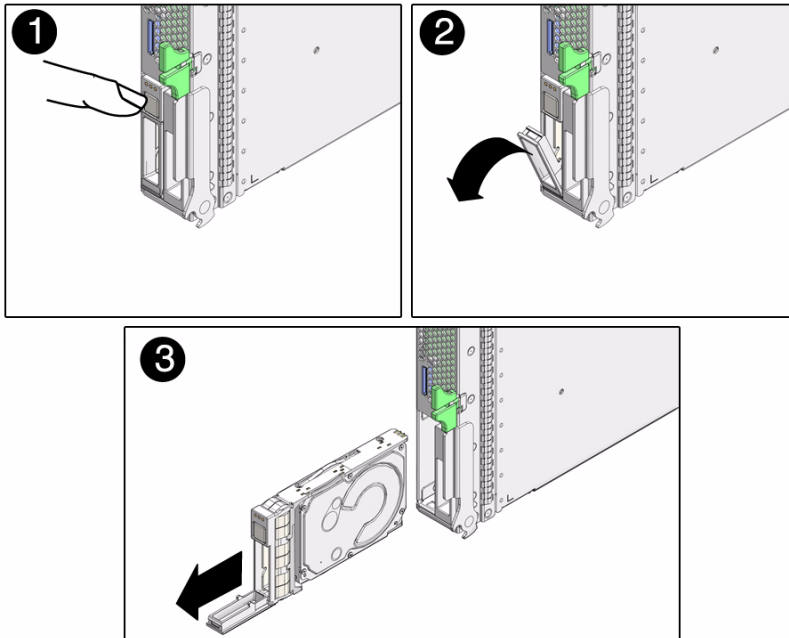
2. **Type the Solaris OS commands required to stop using the hard drive.**

The 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 might use to take the drive offline is `cfgadm`. For more information see the Solaris `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 Removing a Hard Drive



4. Push the latch release button (FIGURE 3-1).



Caution – The latch is not an ejector. The latch can be damaged if you bend it too much. Handle the hard drive carefully: the hard drive printed circuit board is not covered.

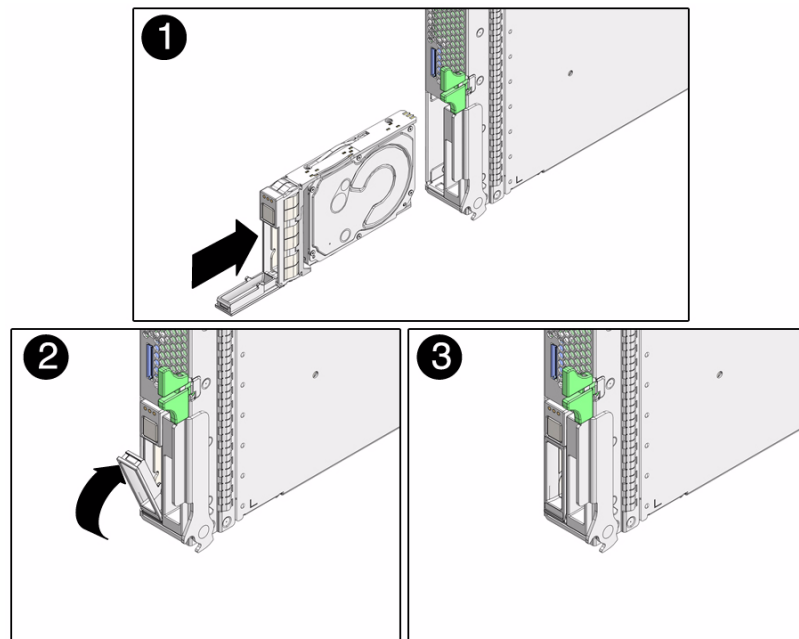
5. Grasp the latch and pull the drive out of the drive slot.

3.1.3 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.

FIGURE 3-2 Replacing a Hard Drive



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.

3.2 Adding PCI ExpressModules

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

- The service manual for your modular system chassis.
- *Sun Integrated Lights Out Manager 2.0 Supplement for Sun Blade T6340 Server Modules*, 820-3904

Replacing Cold-Swappable Components

This chapter describes how to remove and replace field-replaceable units (FRUs) that must be cold-swapped in the Sun Blade T6340 server module from Oracle.

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 4-10](#)
- [Section 4.4, “Removing and Replacing the Service Processor” on page 4-14](#)
- [Section 4.5, “Removing and Replacing the Service Processor Battery” on page 4-16](#)
- [Section 4.6, “Replacing and Installing the Sun Blade RAID 5 Expansion Module” on page 4-18](#)
- [Section 4.7, “Replacing the Sun Blade G2 RAID 0/1 Expansion Module” on page 4-25](#)
- [Section 4.8, “Removing and Replacing a Fabric ExpressModule \(FEM\)” on page 4-27](#)
- [Section 4.9, “Replacing the Compact Flash Module” on page 4-29](#)
- [Section 4.10, “Finishing Component Replacement” on page 4-30](#)

4.1 Safety Information

This section describes important safety information you need to know prior to removing or installing parts in the Sun Blade T6340 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.
- 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 the other end 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 T6340 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. This section describes procedures for using the ILOM CLI or the ILOM web interface to shut down the system.

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 Integrated Lights Out Manager 2.0 Supplement for Sun Blade T6340 Server Modules, 820-3904. This document describes ILOM information specific to the UltraSPARC and the Sun Blade T6340 server module. It also provides command comparisons of the ALOM CMT and ILOM CLI command sets.

- 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 using the `shutdown (1M)` command.**

- 5. Use either the ILOM web interface, or the ILOM CLI, to finish the shut down sequence as described in the following sections.**

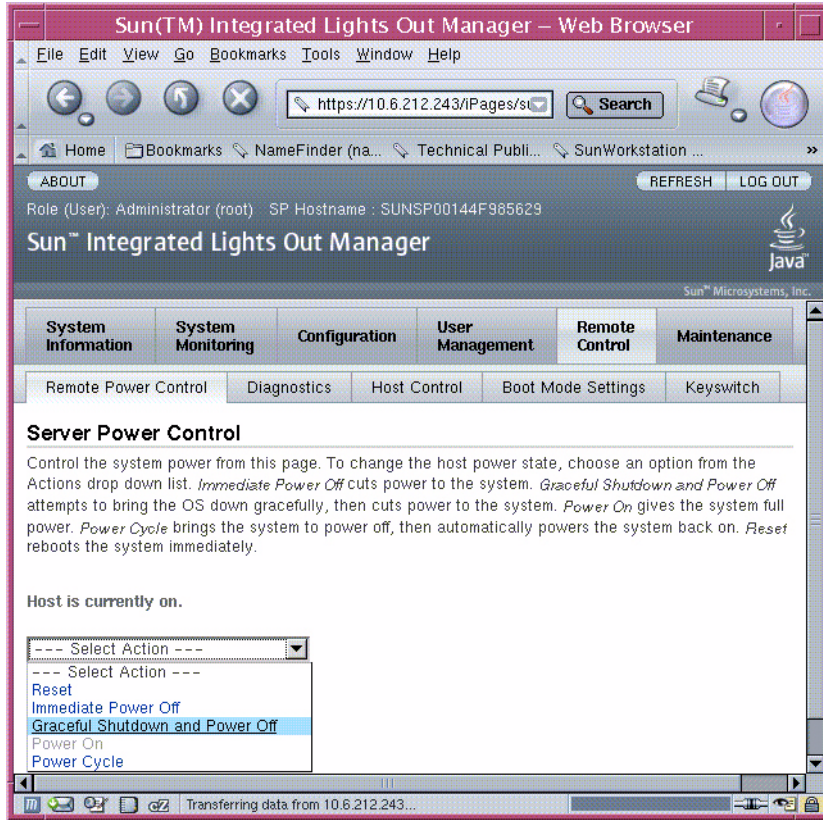
You can also press the power button on the front of the server module to initiate a graceful shutdown.

4.2.3 Shutting Down the Server Module Using the ILOM Web Interface

From the ILOM web interface ([FIGURE 4-1](#)).

- 1. Select the System Information tab.**
- 2. Select the Components tab.**
- 3. Select /SYS**
- 4. In the Actions menu, choose the “Prepare to Remove” option.**

FIGURE 4-1 Powering Off the Server Module With the ILOM Web Interface



4.2.4 Shutting Down the Server Module Using the ILOM CLI

1. Switch from the system (host) console to the ILOM -> prompt by typing the #. (Hash-Period) key sequence.

```
% #.  
->
```

2. At the ILOM -> prompt, type the server module power off command.

```
-> stop /SYS
```

If the server module fails to power off at this point, you might want to force the issue.

```
-> stop -force /SYS
```

4.2.5 Preparing to Remove the Server Module

1. At the ILOM -> prompt, type the `set /SYS/ prepare_to_remove_action=true` command and type `y` to confirm.

ILOM CLI, ILOM web interface, and ALOM-CMT command equivalents are described in [Appendix F](#) and [Appendix G](#).

```
-> set /SYS prepare_to_remove_action=true  
Are you sure you want to stop /SYS (y/n)? y  
Stopping /SYS
```

The blue blade ready to remove LED is illuminated.

The top white LED is the Locator LED. You can also set the white locator LED to blink:

```
-> set /SYS/LOCATE value=fast_blink
```

Once you have located the server module, you can press the Locator LED to turn it off.

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

FIGURE 4-2 Disconnecting the Cable Dongle

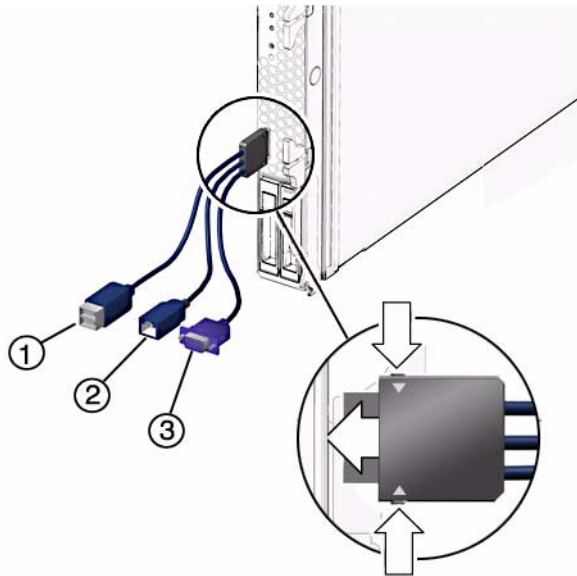


Figure Legend

-
- 1 USB 2.0 (2) connector
 - 2 RJ-45 Virtual Console connector
 - 3 15-pin VGA Female connector
-

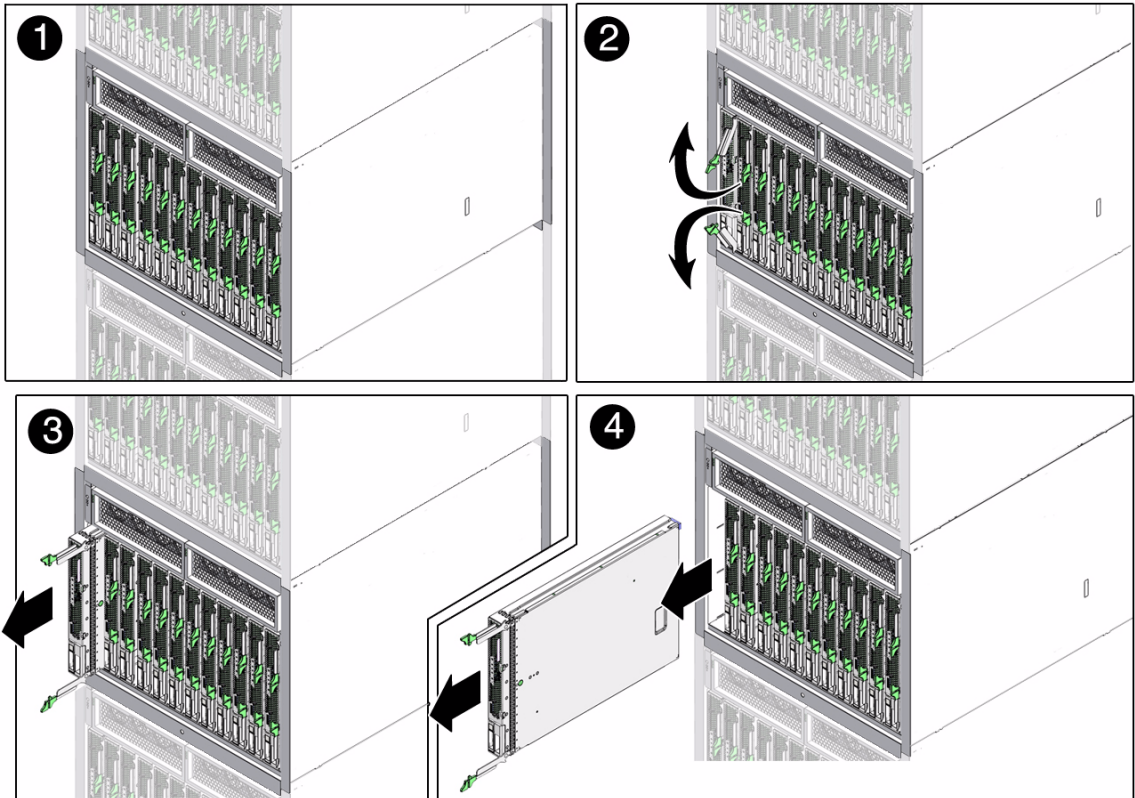


Caution – The cable dongle is for temporary connections only. The cable dongle has not been evaluated for electromagnetic compatibility (EMC). The cable dongle or server module connectors could be damaged by rack doors or other impacts. Remove the cable dongle during normal system operation.

Note – If you are using the older *4-cable dongle* (UCP-4), do not use the RJ-45 connector with the Sun Blade T6340 server module. Use the DB-9 connector for serial connections.

3. Open both ejector levers simultaneously (FIGURE 4-3).

FIGURE 4-3 Removing the Sun Blade T6340 Server Module From the Chassis



4. While pinching the release latches, slowly pull the server module forward and out of the chassis.

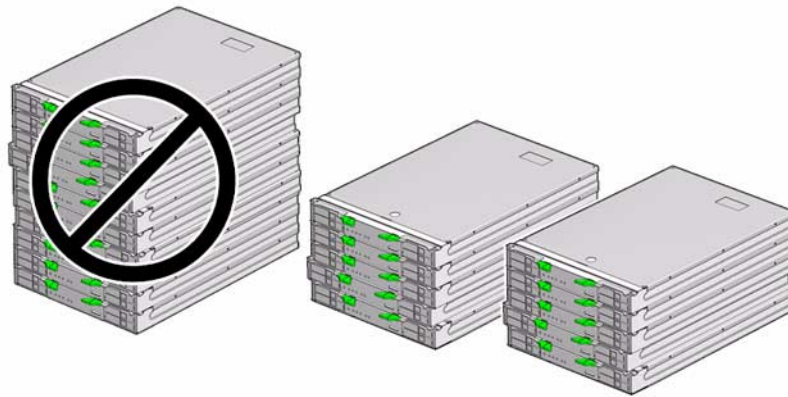


Caution – Hold the server module firmly with both hands so that you do not drop it. The server module weighs up to approximately 19.8 pounds (9 kg).



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

FIGURE 4-4 Stack Five Server Modules or Fewer

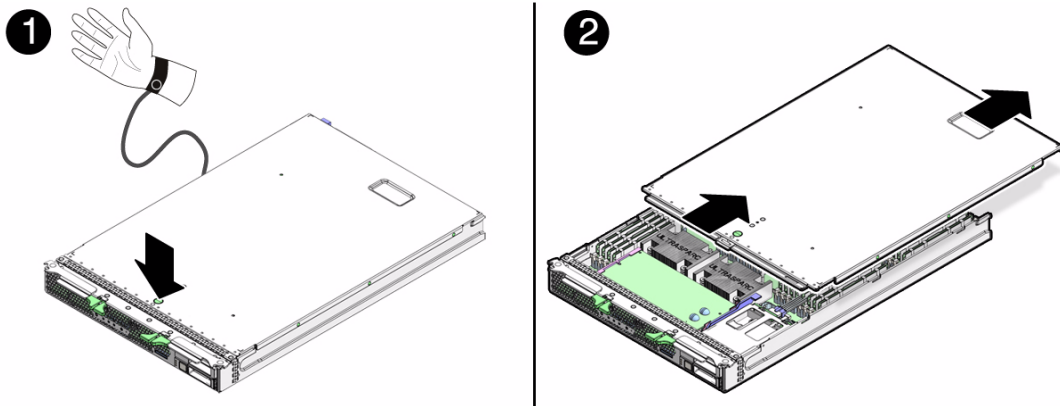


5. Set the server module on an antistatic mat.

6. Attach an antistatic wrist strap.

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

FIGURE 4-5 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

This section describes how to remove and replace DIMMs.

4.3.1 Removing the DIMMs

LEDs indicate if a DIMM requires replacement.

- If the system is still powered on and installed in the chassis, see [Section 2.2, “Memory Configuration and Fault Handling”](#) on page 2-6 to determine if a DIMM requires replacement.
- If the server module is powered off, you can remove the server module from the chassis. Pressing the DIMM Locate button illuminates an LED next to the faulty DIMMs ([FIGURE 4-6](#)).

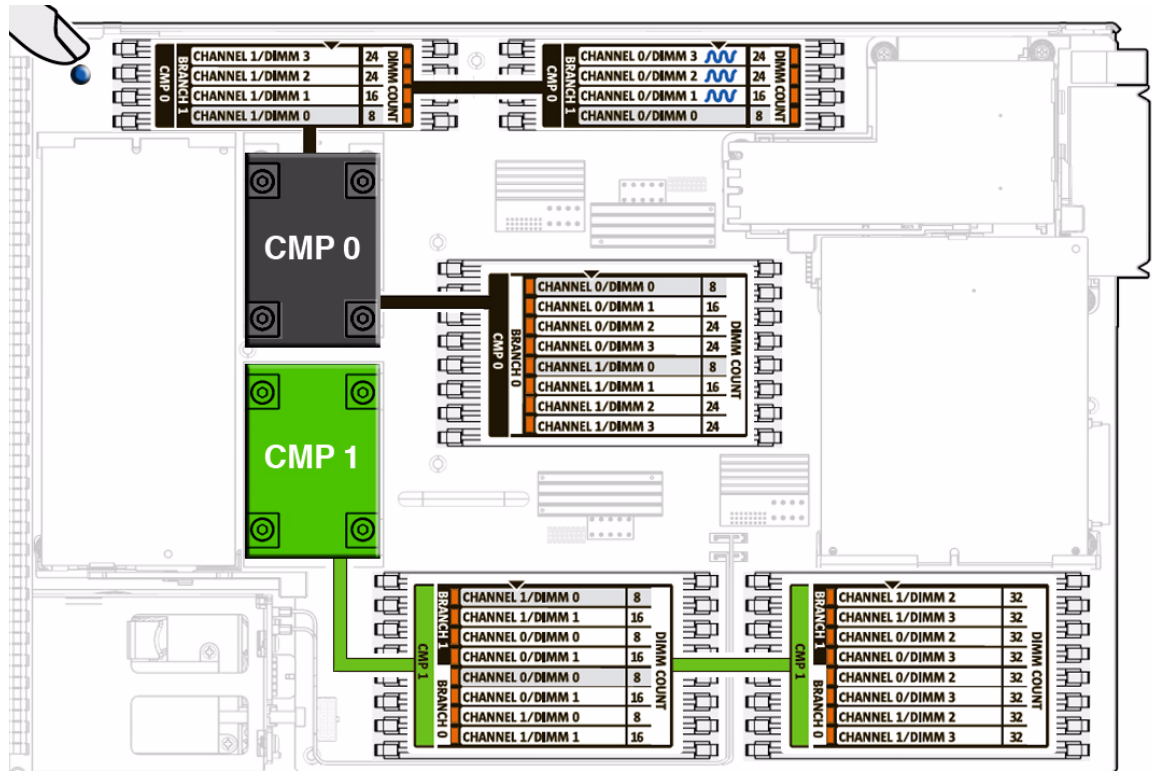


Caution – Ensure that you follow antistatic practices as described in [Section 4.1.2, “Electrostatic Discharge Safety”](#) on page 4-2.

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

The server module has a DIMM locate button on the motherboard. Press the DIMM locate button to illuminate the LEDs of the bad DIMMs.

FIGURE 4-6 DIMM Installation Rules



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

TABLE 4-1 FB-DIMM Configuration

CPU #	Branch Name	Channel Name	FRU Name in ILOM Messages	Motherboard FB-DIMM Connector	FB-DIMM Installation Order*
CMP 0	Branch 0	Channel 0	/SYS/MB/CMP0/BR0/CH0/D0	J0501	8
			/SYS/MB/CMP0/BR0/CH0/D1	J0601	16
			/SYS/MB/CMP0/BR0/CH0/D2	J0701	24
			/SYS/MB/CMP0/BR0/CH0/D3	J0801	24
	Branch 1	Channel 1	/SYS/MB/CMP0/BR0/CH1/D0	J0901	8
			/SYS/MB/CMP0/BR0/CH1/D1	J1001	16
			/SYS/MB/CMP0/BR0/CH1/D2	J1101	24
			/SYS/MB/CMP0/BR0/CH1/D3	J1201	24

TABLE 4-1 FB-DIMM Configuration (Continued)

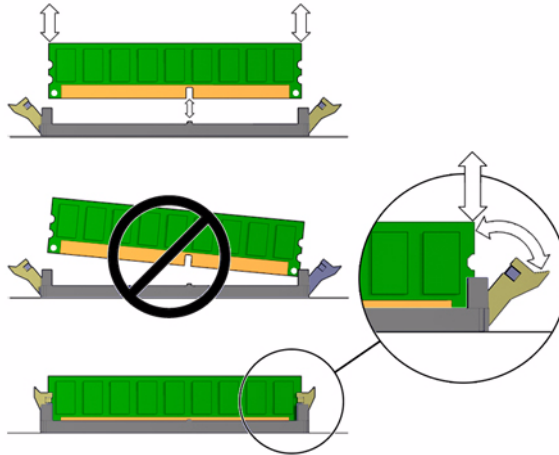
CPU #	Branch Name	Channel Name	FRU Name in ILOM Messages	Motherboard FB-DIMM Connector	FB-DIMM Installation Order*
	Branch 1	Channel 0	/SYS/MB/CMP0/BR1/CH0/D0	J1301	8
			/SYS/MB/CMP0/BR1/CH0/D1	J1401	16
			/SYS/MB/CMP0/BR1/CH0/D2	J1501	24
			/SYS/MB/CMP0/BR1/CH0/D3	J1601	24
		Channel 1	/SYS/MB/CMP0/BR1/CH1/D0	J1701	8
			/SYS/MB/CMP0/BR1/CH1/D1	J1801	16
			/SYS/MB/CMP0/BR1/CH1/D2	J1901	24
			/SYS/MB/CMP0/BR1/CH1/D3	J2001	24
CMP 1	Branch 0	Channel 0	/SYS/MB/CMP1/BR0/CH0/D0	J2401	8
			/SYS/MB/CMP1/BR0/CH0/D1	J2501	16
			/SYS/MB/CMP1/BR0/CH0/D2	J2601	32
			/SYS/MB/CMP1/BR0/CH0/D3	J2701	32
		Channel 1	/SYS/MB/CMP1/BR0/CH1/D0	J2801	8
			/SYS/MB/CMP1/BR0/CH1/D1	J2901	16
			/SYS/MB/CMP1/BR0/CH1/D2	J2601	32
			/SYS/MB/CMP1/BR0/CH1/D3	J2701	32
	Branch 1	Channel 0	/SYS/MB/CMP1/BR1/CH0/D0	J3201	8
			/SYS/MB/CMP1/BR1/CH0/D1	J3301	16
			/SYS/MB/CMP1/BR1/CH0/D2	J3401	32
			/SYS/MB/CMP1/BR1/CH0/D3	J3501	32
		Channel 1	/SYS/MB/CMP1/BR1/CH1/D0	J3601	8
			/SYS/MB/CMP1/BR1/CH1/D1	J3701	16
			/SYS/MB/CMP1/BR1/CH1/D2	J3801	32
			/SYS/MB/CMP1/BR1/CH1/D3	J3901	32

* Upgrade path: DIMMs should be added with each group populated in the order shown.

Note – FB-DIMM names in ILOM messages are displayed with the full name, such as /SYS/MB/CMP0/BR0/CH0/D0.

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.

4.3.2 Replacing the DIMMs

See [Section 2.2.1, “Memory Configuration”](#) on page 2-6 for complete memory configuration and installation rules.



Caution – The 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.

1. Place the replacement DIMMs on an antistatic mat.
2. Remove any DIMM filler cards installed in the DIMM connectors in which you plan to install the new DIMMs.
3. Ensure that the connector ejector tabs are in the open position.

4. 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.
 - b. Perform the procedures described in [Section 4.10, “Finishing Component Replacement”](#) on page 4-30.

4.4 Removing and Replacing the Service Processor

The service processor controls the host power and monitors host system events (power and environmental). The service processor holds a battery for maintaining the Real Time Clock (RTC), and a socketed EEPROM for storing the system MAC addresses (and therefore the host ID).

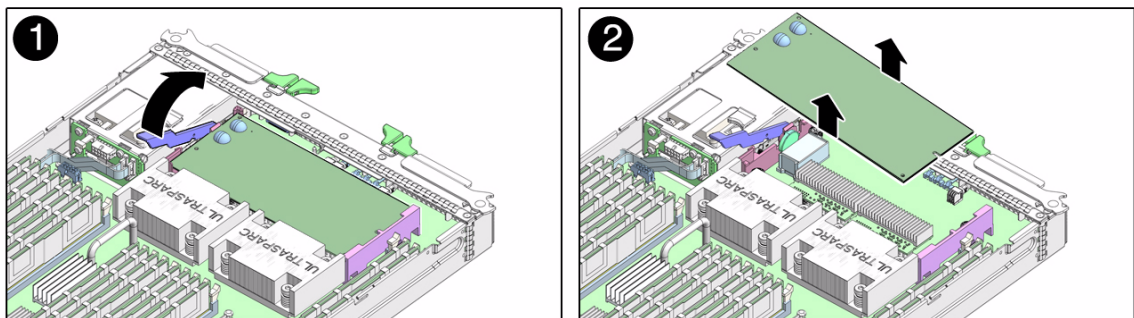


Caution – The service processor card can be hot. To avoid injury, handle it carefully.

4.4.1 Removing the Service Processor

1. Perform the procedures described in [Section 4.2, “Common Procedures for Parts Replacement”](#) on page 4-3.
2. Lift up on the card ejector lever ([FIGURE 4-8](#)).

FIGURE 4-8 Removing the Service Processor



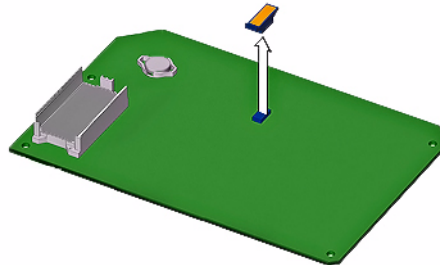
3. Slide the service processor out of the standoff bracket that holds the end of the service processor opposite the card connector.
4. Flip the service processor card over and place it on an antistatic mat.
5. Remove the system configuration PROM (NVRAM) (FIGURE 4-9) from the service processor card and place the PROM on an antistatic mat.

The socketed EEPROM attached to the Service Processor Card contains the system MAC addresses (and therefore the host ID).

The service processor also contains the ILOM configuration including the Service Processor IP addresses and ILOM user accounts, if configured. The MAC address (and host ID) will be lost unless the system configuration PROM (NVRAM) is removed from the old Service Processor card and installed in the replacement Service Processor Card. The ILOM configuration (IP address and user accounts) will be lost when the Service Processor Card is replaced.

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)



6. Retain the system configuration PROM to install it on the replacement service processor card.

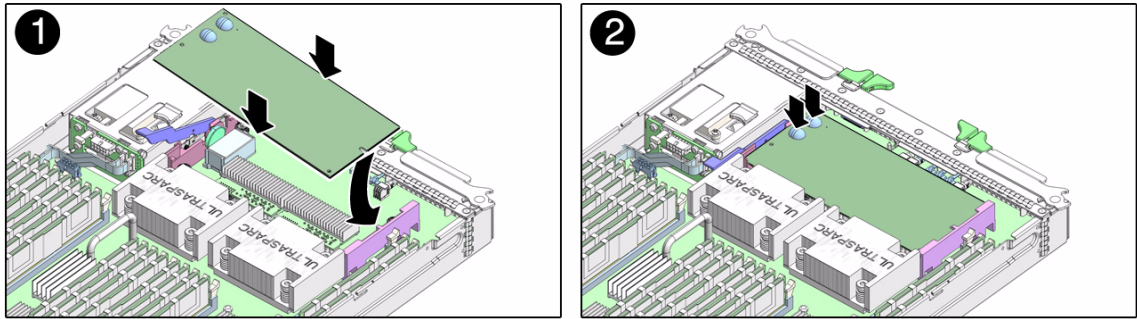
4.4.2 Replacing the Service Processor

1. Remove the replacement service processor from the package and place it on an antistatic mat.
2. Install the system configuration PROM (NVRAM) that you removed from the faulty service processor.

The PROM is keyed to ensure proper orientation.

3. Insert the service processor edge into the standoff bracket and carefully align the service processor so that each of its contacts is centered on a socket pin (FIGURE 4-10).

FIGURE 4-10 Replacing the Service Processor



4. Push both rubber buttons firmly and evenly until the service processor is firmly seated in the connector socket.
5. Perform the procedures described in [Section 4.10, “Finishing Component Replacement”](#) on page 4-30.

4.5 Removing and Replacing the Service Processor Battery



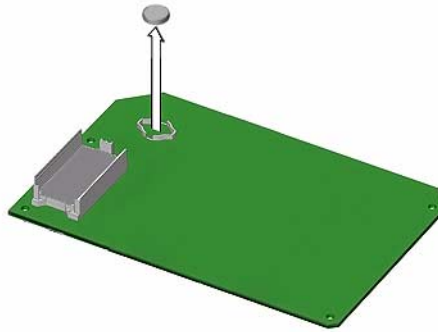
Caution – Handle the components carefully to avoid damage.

4.5.1 Removing the Service Processor Battery

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 as shown in [Section 4.4.1, “Removing the Service Processor”](#) on page 4-14.
3. Place the service processor upside down on an antistatic mat.

4. Carefully use your fingernail to remove the battery (FIGURE 4-11) from the service processor.

FIGURE 4-11 Removing the Battery From the Service Processor



4.5.2 Replacing the Service Processor Battery

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 in the server module as shown in [Section 4.4.2, “Replacing the Service Processor”](#) on page 4-15.
4. Perform the procedures described in [Section 4.10, “Finishing Component Replacement”](#) on page 4-30.

5. Before you power on the host system, type the ILOM `set /SP/clock datetime` command to set the day and time.

For details about this command, refer to the *Sun Integrated Lights out Manager 2.0 User's Guide*, 820-1188.

```
-> set /SP/clock datetime=10
Set 'datetime' to '102421532007.30'
-> show
/SP/clock
  Targets
  Properties:
    datetime = Wed Oct 24, 21:53:38 2007
    usentpserver = disabled
...
```

4.6 Replacing and Installing the Sun Blade RAID 5 Expansion Module

Note – Depending on how you ordered your server, the Sun Blade RAID 5 Expansion Module ships preinstalled in your server or as an option shipped separately. If your Sun Blade RAID 5 Expansion Module was shipped separately, see [Section 4.6.2, “Installing the Sun Blade RAID 5 Expansion Module” on page 4-21.](#)

Note – Avoid excess strain on the REM edges. Lift as close to the connector as possible.

4.6.1 Removing the Sun Blade RAID 5 Expansion Module

If you have a previously installed REM, save the configuration (save state) before removing it. Refer to the *Sun Blade 6000 Disk Module Service Manual*, 820-1703 and the *Sun Blade 6000 Disk Module Administration Guide* 820-4922

<http://docs.sun.com/app/docs/prod/blade.6000disk~blade6000dskmod>

Also refer to the *Sun Adaptec RAID User's Guide*, 820-4708 for instructions on using the Java GUI to save the configuration of the existing REM.

1. Perform the procedures described in [Section 4.2, "Common Procedures for Parts Replacement"](#) on page 4-3.

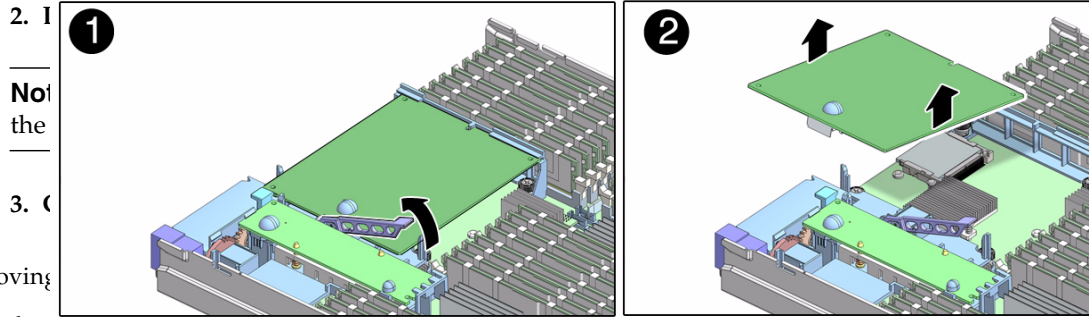
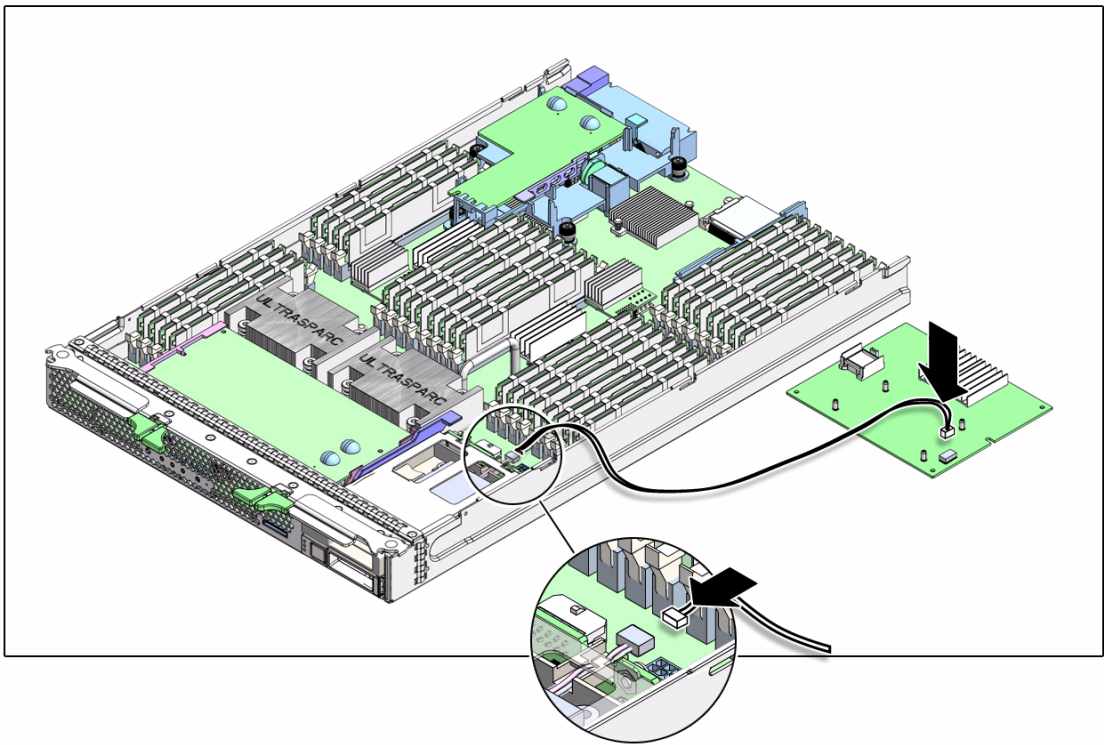


FIGURE 4-12 Removing

4. Disconnect the 520 mm external battery cable from the component (bottom) side of the REM at J3 and also from the external battery tray ([FIGURE 4-13](#)).

FIGURE 4-13 Disconnecting the External Battery Cable from the Sun Blade RAID 5 Expansion Module

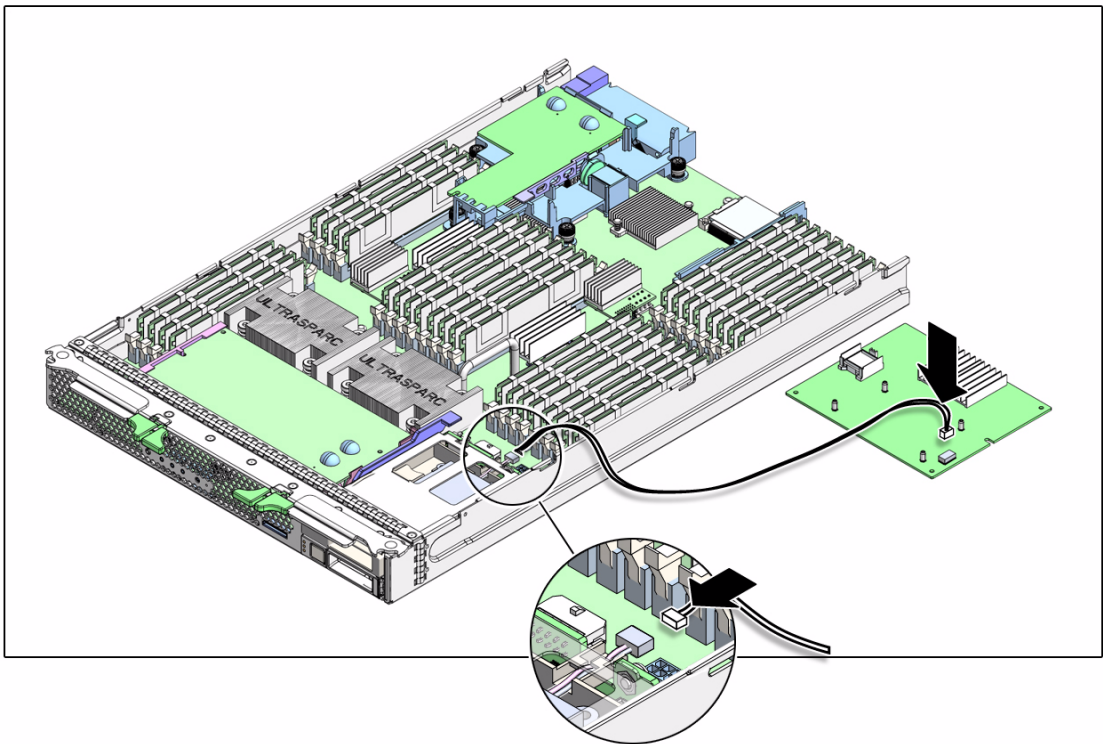


5. Set the REM aside on an antistatic surface.

4.6.2 Installing the Sun Blade RAID 5 Expansion Module

1. Install the Sun Blade RAID 5 Expansion Module battery tray in internal hard drive slot HDD1 (top HDD slot).
See Section 4.6.3, “Installing and Removing the Sun Blade RAID 5 Expansion Module Battery Tray” on page 4-23
2. Connect the 520 mm battery cable to the component side of the REM at J3 and to the external battery tray (FIGURE 4-14).

FIGURE 4-14 Connecting the Battery Cable to the Sun Blade RAID Expansion Module



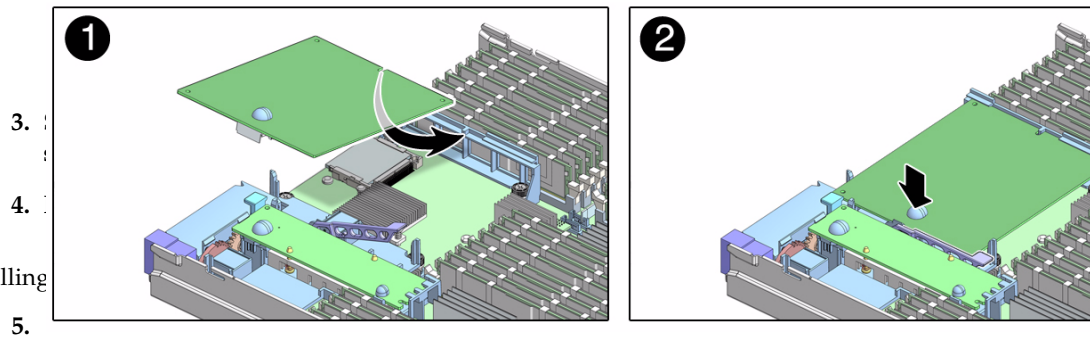
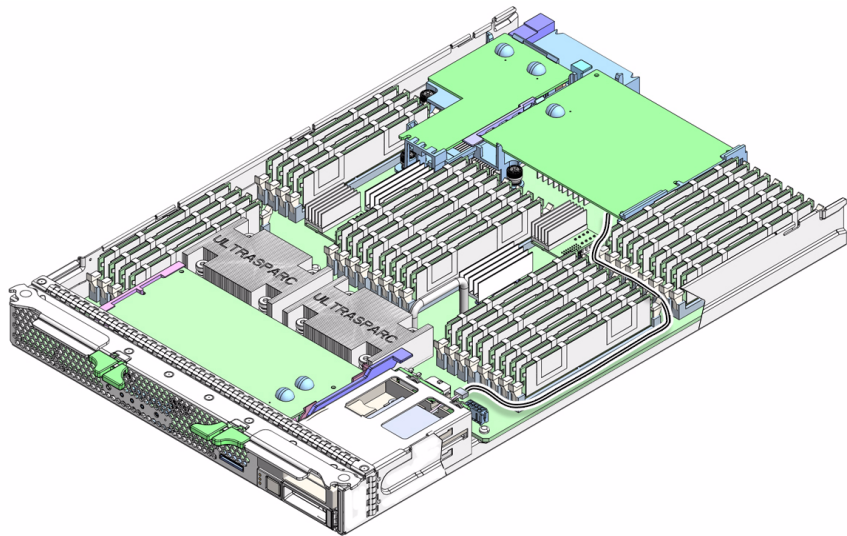


FIGURE 4-15 Installing

- 3.
- 4.
5. Route the Sun Blade RAID 5 Expansion Module 520 mm battery cable along the side of the memory, behind the SATA connectors at J9802 and J9803 (FIGURE 4-16).

FIGURE 4-16 Routing the External Battery Cable for a Sun Blade RAID 5 Expansion Module



6. Perform the procedures described in Section 4.10, “Finishing Component Replacement” on page 4-30.

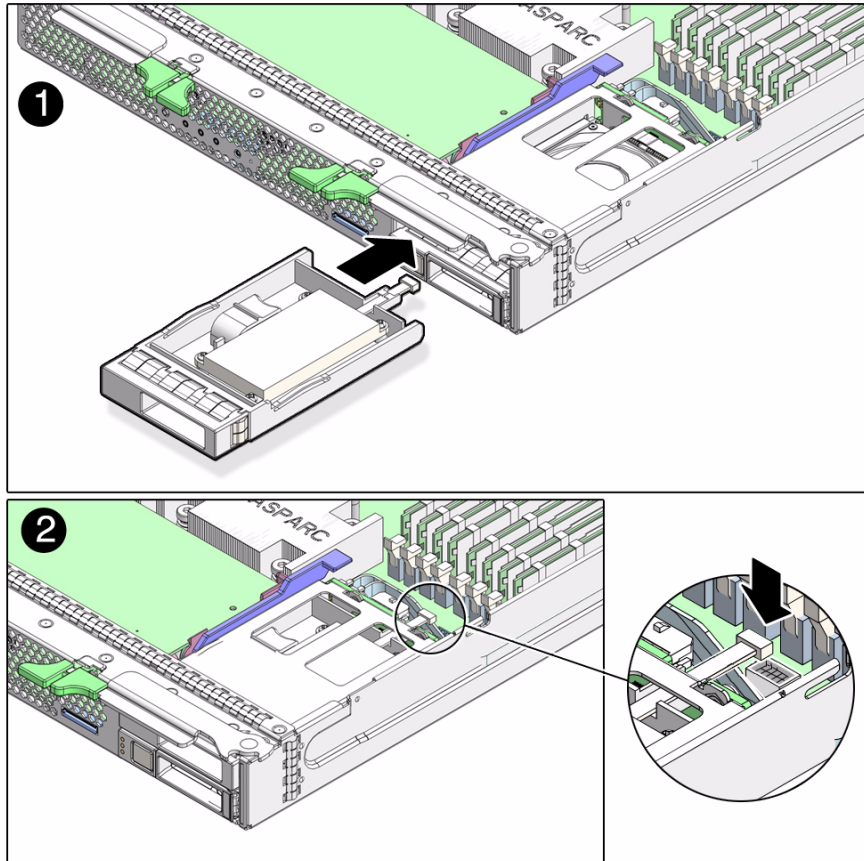
4.6.3 Installing and Removing the Sun Blade RAID 5 Expansion Module Battery Tray

Sun Blade RAID 5 Expansion Module receives battery support from a replaceable battery tray installed in place of the HDD1 internal hard drive.

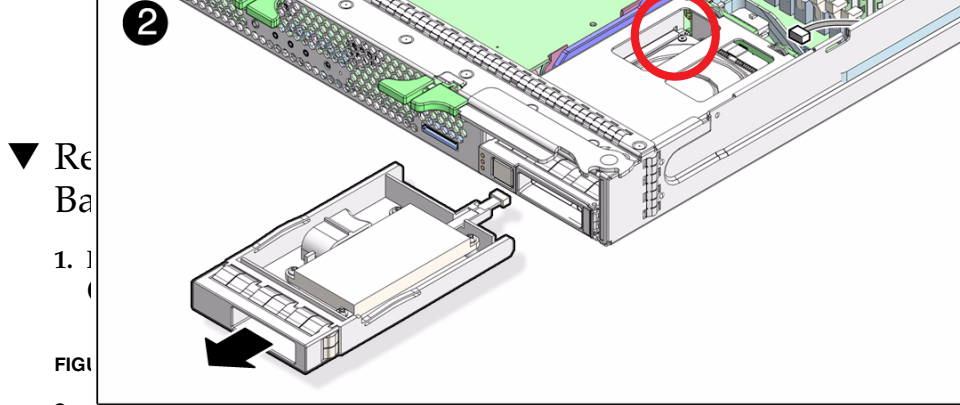
▼ Installing the Sun Blade RAID 5 Expansion Module Battery Tray

1. Slide the module into the bay until the latch clicks in place (FIGURE 4-17).

FIGURE 4-17 Installing the Sun Blade RAID 5 Battery Tray



2. Connect the 520 mm battery cable to the cable connector at the back of the Sun Blade RAID 5 Expansion Module battery tray (FIGURE 4-17).
3. Perform the procedures described in Section 4.10, “Finishing Component Replacement” on page 4-30.



2. Connect the 520 mm battery cable from the REM battery tray connector (FIGURE 4-18).

3. Press down on the the battery tray latch (circled in red) on the upper left side of the module case, and slide the module straight out of the drive slot (FIGURE 4-18).
4. Set the battery tray aside on an antistatic surface.

the Discor

4.6.4 Configuring the Sun Blade RAID 5 Expansion Module

See [Appendix B](#) for creating a bootable array. See [Appendix C](#) for nstalling the Solaris OS and the Sun Blade RAID 5 Expansion Module driver.

4.7 Replacing the Sun Blade G2 RAID 0/1 Expansion Module

Note – Avoid excess strain on the REM edges. Lift as close to the connector as possible.

4.7.1 Removing the Sun Blade G2 RAID 0/1 Expansion Module

If you have a previously installed REM, save the configuration with the LSI Utility (`lsiutil`) before removing it. Refer to the *Sun Blade 6000 Disk Module Service Manual*, 820-1703 and the *Sun Blade 6000 Disk Module Administration Guide* 820-4922 <http://docs.sun.com/app/docs/prod/blade.6000disk~blade6000dskmod>

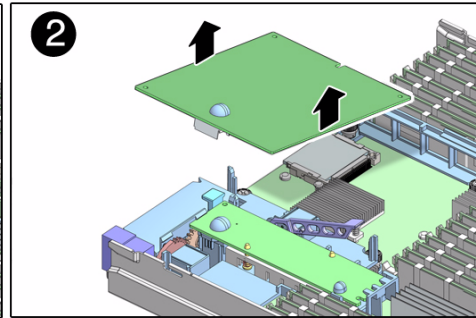
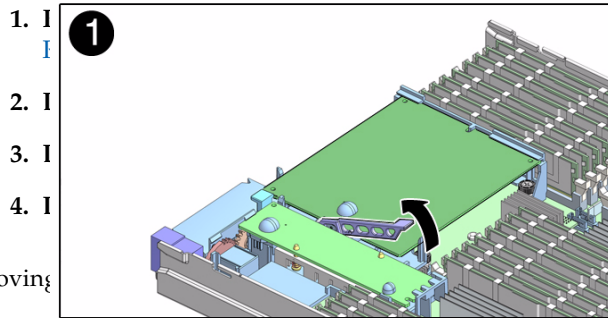


FIGURE 4-19 Removing

5. Set the REM aside on an antistatic surface.

4.7.2 Installing the Sun Blade G2 RAID 0/1 Expansion

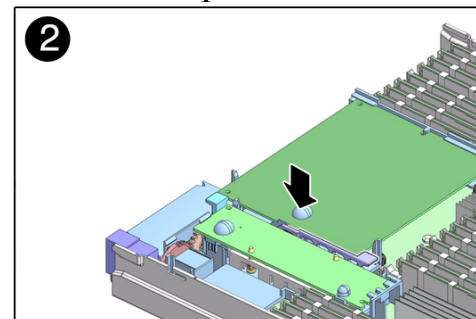
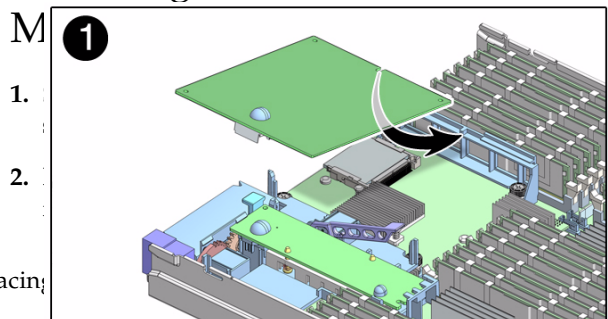


FIGURE 4-20 Replacing

3. Perform the procedures described in [Section 4.10, "Finishing Component Replacement"](#) on page 4-30.

4.8 Removing and Replacing a Fabric ExpressModule (FEM)



Caution – Handle the components carefully to avoid damage.

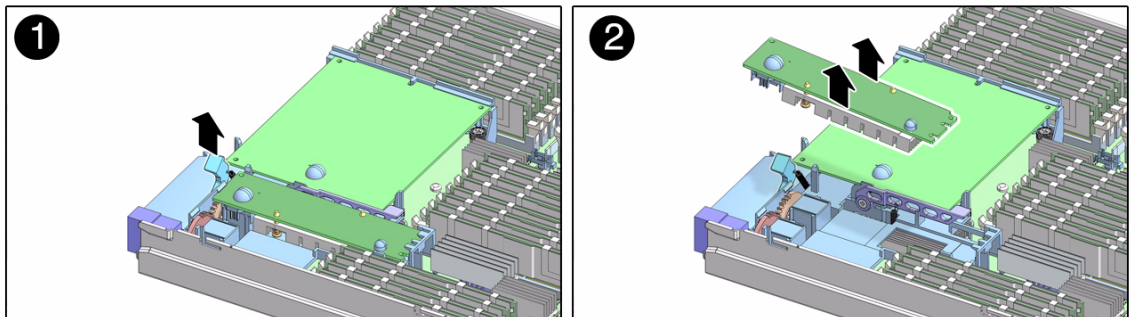
4.8.1 Removing the Fabric ExpressModule (FEM)



Caution – The FEM 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. Lift the handle of the FEM ejector to release the FEM from the motherboard connector ([FIGURE 4-21](#)).

FIGURE 4-21 Removing a Fabric ExpressModule (FEM)

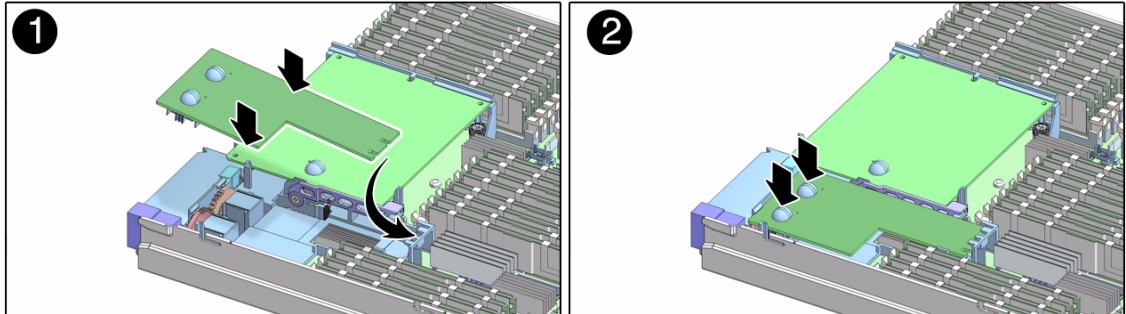


3. Lift the FEM free from the plastic standoff ([FIGURE 4-21](#)).
4. Place the FEM on an antistatic mat.

4.8.2 Replacing a Fabric ExpressModule (FEM)

1. Remove the replacement FEM from the package and place it on an antistatic mat.

FIGURE 4-22 Replacing the Fabric ExpressModule (FEM)



2. Insert the FEM edge into the bracket and carefully align the FEM so that its contacts are centered on motherboard connector (FIGURE 4-22).
3. Press firmly on the rubber buttons on the top of the FEM until its connectors fully engage the connectors on the motherboard..
4. Perform the procedures described in Section 4.10, “Finishing Component Replacement” on page 4-30.

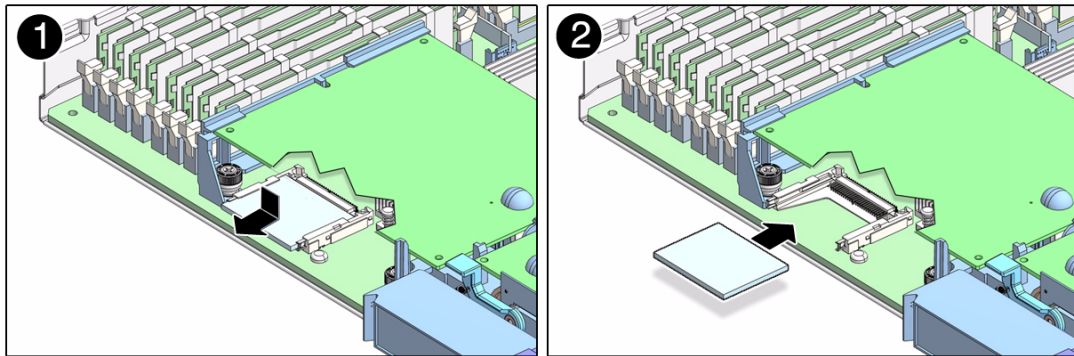
4.9 Replacing the Compact Flash Module



Caution – Handle the components carefully to avoid damage.

1. Perform the procedures described in [Section 4.2, “Common Procedures for Parts Replacement”](#) on page 4-3.
2. Remove an installed Compact Flash module by pressing it down and then pulling it straight out from its connector on the server module’s motherboard ([FIGURE 4-23](#)).

FIGURE 4-23 Replacing a Compact Flash Module



3. Place the Compact Flash module aside on an antistatic surface.
4. Insert the new replacement Compact Flash module straight into the connector on the server module’s motherboard ([FIGURE 4-23](#)).
The Compact Flash module connector is keyed; the Compact Flash module will only fit in the correct orientation.
5. Firmly push the Compact Flash module straight into the connector, until the module is securely seated in the connector.
6. Perform the procedures described in [Section 4.10, “Finishing Component Replacement”](#) on page 4-30.

4.10 Finishing Component Replacement

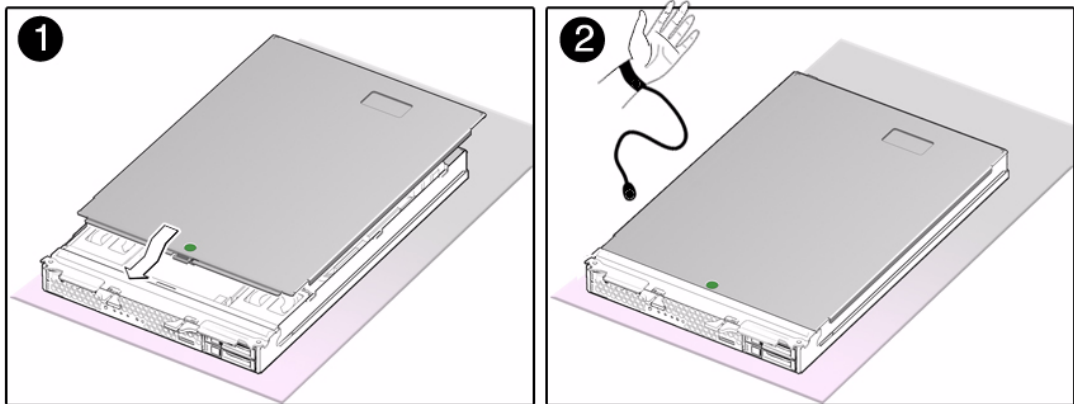
4.10.1 Replacing the Cover

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 4-24).

FIGURE 4-24 Replacing the Cover



4.10.2 Reinstalling the Server Module in the Chassis



Caution – Hold the server module firmly with both hands so that you do not drop it. The server module weighs approximately 19.8 pounds (9 kg).

- 1. Turn the server module over so that the ejector levers are on the right side.**
- 2. Slide the server module into the chassis.**
- 3. Close both latches simultaneously, locking the server module in the chassis.**
 - The server module powers on with 3.3V standby power.

- The ILOM software boots.

You can either press the Power button to fully power on the server module, type the ILOM command `start /SYS`, or use the ALOM-CMT `poweron` command.

FIGURE 4-25 Inserting the Server Module in the Chassis

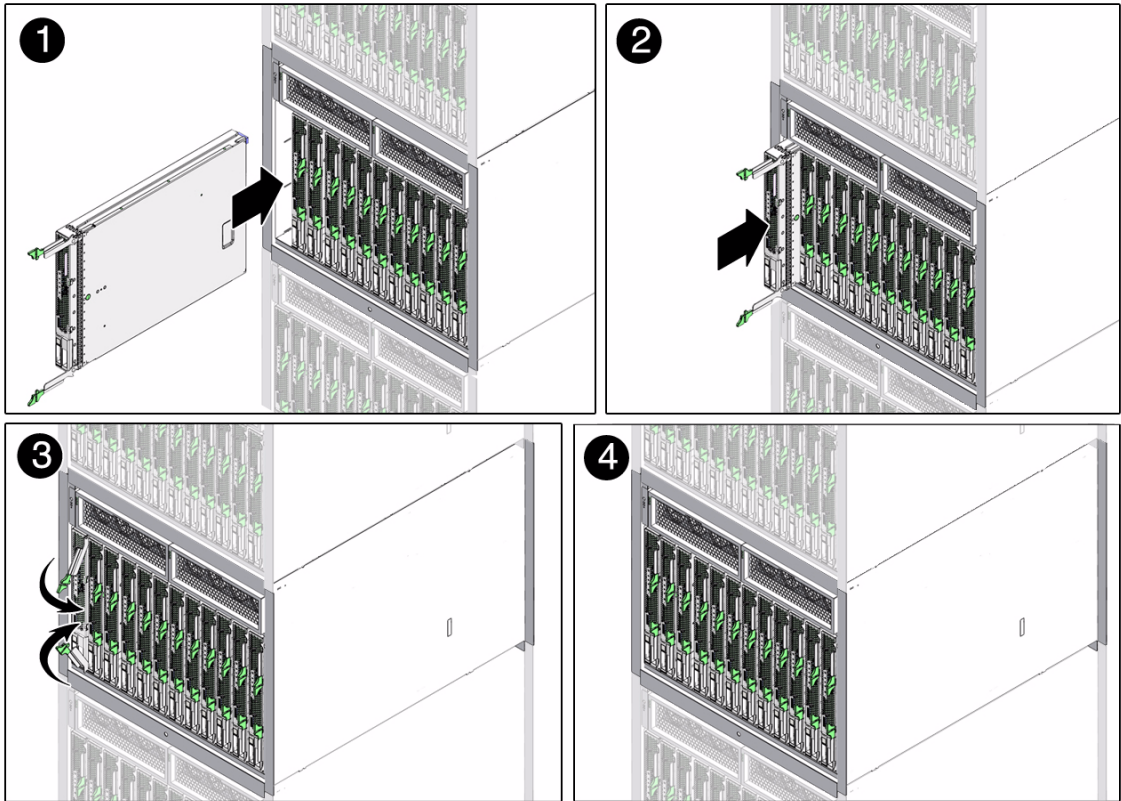


FIGURE 4-25 shows the server module being inserted into the chassis, and latches closing simultaneously.

Note – The sever module power on process can take five or more minutes to complete, depending on the amount of installed memory, diagnostic level set, and possibly other factors.

Specifications

This appendix discusses the various specifications of the Sun Blade T6340 server module. Topics covered are:

- [Section A.1, “Physical Specifications” on page A-2](#)
- [Section A.2, “System Environmental Specifications” on page A-3](#)
- [Section A.3, “Motherboard Block Diagram” on page A-4](#)

If you need specifications for the modular system chassis, see the chassis documentation.

A.1 Physical Specifications

FIGURE A-1 Server Module Dimensions

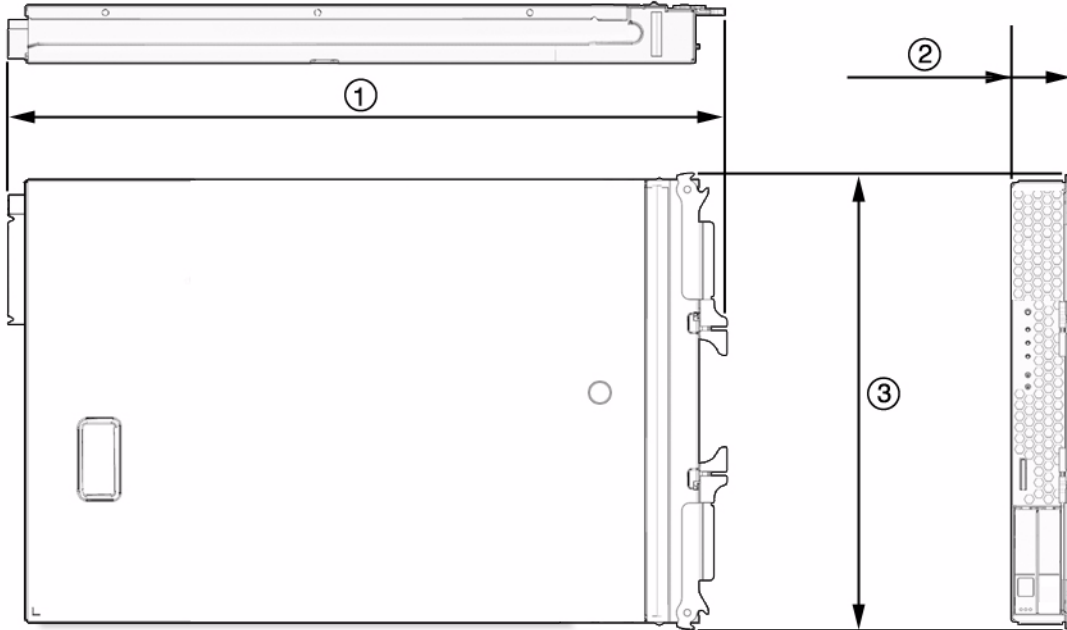


TABLE A-1 Server Module Dimensions

Callout	Measurement in Inches (Measurement in Millimeters)
1	19.56 in. (496.82 mm)
2	1.75 in. (44.6 mm)
3	12.88 in. (327.15 mm)

The Sun Blade T6340 server module may weigh up to 19.8 lbs (9 kg), depending on internal configuration.

A.2 System Environmental Specifications

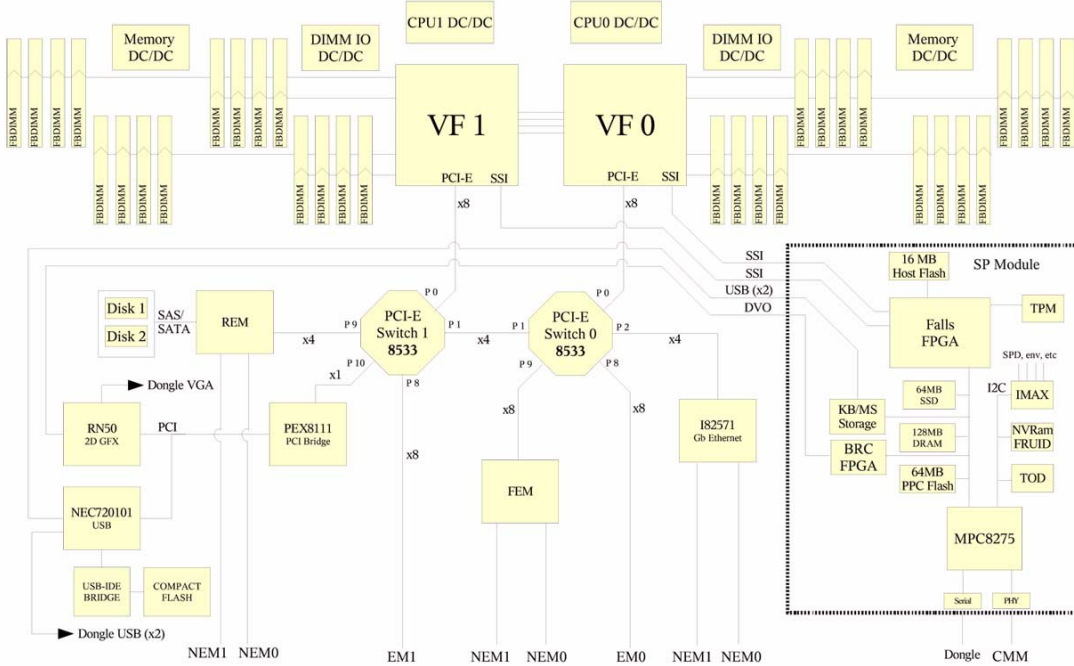
TABLE A-2 includes the environmental requirements that are specific to the Sun Blade T6340 server module.

TABLE A-2 Sun Blade T6340 Environmental Requirements

Condition	Requirement
Operating temperature	5°C (41°F) to 35°C (95°F) noncondensing
Nonoperating temperature	-40°C (-40° F) to 65°C (149° F)
Operating humidity	10% to 90% noncondensing (27°C (80° F) max. wet bulb)
Nonoperating humidity	93% noncondensing (38° C (100° F) max. wet bulb)
Operating altitude	3048 meters (10,000') at 35°C (95° F)
Nonoperating altitude	12,000 meters (40,000')

A.3 Motherboard Block Diagram

FIGURE A-2 Motherboard Block Diagram



Creating a Bootable Array With the Sun Blade RAID 5 Expansion Module

As an installation option, you can choose to create a bootable array (bootable logical drive) and then install the Solaris operating system and the HBA driver onto that array (logical drive). This chapter describes how to set the Sun Blade T6340 to be the boot controller, and how to create a bootable array on a SPARC system.

Note – This appendix assumes that you are experienced with Solaris network installs.

Topics include:

- [“About Creating a Bootable Array on a SPARC System” on page 2](#)
- [“Creating a Bootable Array Task Map” on page 2](#)
- [“Modifying the Miniroot Directory On the Install Server” on page 3](#)
- [“Modifying the Product Installation Directory on the Install Server” on page 5](#)
- [“Building a Logical Drive on Which to Install the Solaris OS” on page 6](#)

B.1 About Creating a Bootable Array on a SPARC System

These instructions describe how to use the Sun Blade RAID 5 Expansion Module to create boot disks for a SPARC system that will run the Solaris 10 OS with a network install server. Instructions for creating a bootable array with just the Live CD and no install server are also included. Creating a bootable array using an install server is suggested for larger sites.

The SUNwaac driver, which is required by Solaris to communicate with logical drives created on the Sun Blade RAID 5 Expansion Module, is not present on the install image. Because of this, you must manually add the driver. Manually adding the SUNwaac driver is necessary only if you want to boot directly off logical drives that are presented by the Sun Blade RAID 5 Expansion Module. Disks attached through a REM must be presented as logical volumes. They cannot be accessed directly.

B.2 Creating a Bootable Array Task Map

To create a bootable array for a SPARC system that will run the Solaris 10 OS, do the following:

1. Install and connect the HBA and disk drives.

See “Replacing and Installing the Sun Blade RAID 5 Expansion Module” on page 18.

2. Obtain the Live CD from the HBA ship kit or go to:

<http://support.intel.com/support/go/sunraid.htm>

3. To create a bootable array using just the REM and Live CD (no install server), go to “To Create a Logical Drive Without a Network Install Server” on page 8.

To create a bootable array using the REM, Live CD, and install server (suggested for larger sites), continue with [Step 4](#).

4. Install and configure a network install server, as described in *Solaris 10 Installation Guide: Network Based Installations*.

You can obtain this document by performing a search at:

<http://docs.sun.com>

5. Obtain the following packages from the Live CD or from <http://support.intel.com/support/go/sunraid.htm>, and copy them into a working directory on the install server:
 - **SUNWaac**
 - **StorMan**
 - **SUNWgccruntime**

Note – When you copy these packages to a working directory, ensure that you use the recursive copy command (`cp -r`). The packages are structured in a directory/file system format, so you need to copy the entire contents.

6. **Modify two locations on the network install server:**
 - **The *miniroot*** - The directory on the install server that is mounted as the `root` directory on client machines during the client machines' installation process. See “[Modifying the Miniroot Directory On the Install Server](#)” on page 3.
 - **The *product installation directory*** - The directory on the network install server in which all other Solaris products will be installed during the network install. See “[Modifying the Product Installation Directory on the Install Server](#)” on page 5.
7. **Build a logical drive on which to install the Solaris 10 5/08 OS.**

See “[Building a Logical Drive on Which to Install the Solaris OS](#)” on page 6.

B.3 Modifying the Miniroot Directory On the Install Server

The *miniroot* is the Solaris image mounted on `/` during a network installation, and is used to provide a Solaris environment to run installation programs within.

To enable configuration of logical drives on the Sun StorageTek SAS RAID Internal HBA card and to enable booting via the logical drives, you must add three packages to the *miniroot* directory:

- **SUNWaac** - The `SUNWaac` driver, which is required by the Solaris 10 5/08 OS to access logical drives.
- **SUNWgccruntime** - The `gcc` runtime libraries, which are required by the command-line interface and the Sun StorageTek RAID Manager graphical user interface (GUI).

- **StorMan** - The Sun StorageTek SAS RAID Internal HBA utilities package, which contains the command-line interface and Sun StorageTek RAID Manager GUI.

For information about obtaining these packages, see [“Creating a Bootable Array Task Map” on page 2](#).

▼ To Modify the Miniroot Directory

The examples in this procedure use *install_dir_path* to refer to the location where the network install image is located. This is the same directory path that you use with the `setup_install_server` command, as described in the *Solaris 10 Installation Guide: Network Based Installations*.

1. If the install server is running a version of the Solaris OS prior to Solaris 10 5/08, update the server with the appropriate Solaris patch:

- Solaris 10 - patch 137321 (SPARC) or 137322 (x64)
- Solaris 9 - patch 137477 (SPARC) or 137478 (x64)

You can download the patches from <http://www.sunsolve.com>. You must install the patch because the `SUNWgccruntime` package, which is one of the required packages on the miniroot directory, requires the presence of the `p7zip` compression program on the install server. This compression program is included in the Solaris 10 5/08 OS and in the patches described in this step.

2. Obtain the required packages, as described in [“Creating a Bootable Array Task Map” on page 2](#).
3. As a `root` user, log into a SPARC architecture host (install server) from which you can run the `pkgadd` commands.
4. If you are installing the packages directly from the Live CD from the HBA ship kit, mount the Live CD and use the `cd` command to change to the Live CD directory.

```
# cd /cdrom/raid_live/s0/Raid_card
```

5. Use the `pkgadd -R` command to install the `SUNWaac`, `SUNWgccruntime`, and `StorMan` packages in the *install_dir_path/Solaris_10/Tools/Boot* directory.

Note – In the following example, the `-R` flag is directing the `pkgadd` command to use an alternate `root` so that the packages will be installed correctly onto the miniroot image. When you substitute your own directory path for `install_dir_path`, be sure to begin with a `/` to provide an absolute path name. Also note that `-d.` (dash d dot) syntax before the package names.

```
# pkgadd -R install_dir_path/Solaris_10/Tools/Boot -d. SUNWaac
# pkgadd -R install_dir_path/Solaris_10/Tools/Boot -d. SUNWgccruntime
# pkgadd -R install_dir_path/Solaris_10/Tools/Boot -d. StorMan
```

B.4 Modifying the Product Installation Directory on the Install Server

The *product installation directory* is the directory into which all other Solaris products will be installed during the network install. On the network install server, the directory is `install_dir_path/Solaris_10/Product`.

You must place a copy of the `SUNWaac` package in this product installation directory. Doing so enables you to add the `SUNWaac` driver to the client machine after other Solaris packages have been installed. Without the `SUNWaac` driver, logical drives, including boot drives, will not be accessible to the operating system, and booting the newly installed machine will fail.

▼ To Modify the Product Installation Directory

1. Obtain the `SUNWaac` package, as described in “[Creating a Bootable Array Task Map](#)” on page 2.
2. Use the `cp -r` command to copy the `SUNWaac` package from the working directory to the `install_dir_path/Solaris_10/Product` directory on the install server.

```
# cp -r SUNWaac install_dir_path/Solaris_10/Product
```

The `cp` command places the package on a network-mounted directory that will be available to the install client. However, the command does not install the package. Installing the package is a manual step that you will perform after the installation of other Solaris software.

B.5 Building a Logical Drive on Which to Install the Solaris OS

Before you can install the Solaris OS, you need to build the logical drive (array) on which to install it. This section contains these topics:

- [“To Create a Logical Drive Using a Network Install Server” on page 6](#)
- [“To Create a Logical Drive Without a Network Install Server” on page 8](#)
- [“To Delete a Logical Drive on the REM” on page 11](#)
- [“To Label the Newly Created Logical Drive” on page 10](#)

Note – The following procedures provide basic examples of the command-line interface (CLI). For detailed information about using the CLI, see the *Uniform Command-Line Interface User’s Guide*, located at:

<http://docs.sun.com/app/docs/prod/stortek.raid.hba>

▼ To Create a Logical Drive Using a Network Install Server

Note – To create a logical drive using just the REM and Live CD, go to: [“To Create a Logical Drive Without a Network Install Server” on page 8](#).

Note – The following procedure requires having a Sun Blade 6000 Disk Module installed and configured for RAID. To create a simple volume on just one hard drive, see [“To Create a Simple Volume Using Just One HDD” on page 11](#).

1. **Create a bootable array task map**, see [“Creating a Bootable Array Task Map” on page 2](#).

2. From the system console, boot over the network into single user mode.

```
ok boot net -s
```

3. At the system prompt, access the command-line interface (CLI), and use the `./arccconf GETCONFIG` command to print a list of the complete configuration of card 1 on the system.

In the following example, note that the CLI is located in the `/opt/StorMan` directory, and the name of the CLI is `aarconf`. All commands must start with `./` unless you have altered the path to include `/opt/StorMan` in it.

```
# cd /opt/StorMan
# ./arccconf GETCONFIG 1
```

Note – Ignore any “failing to write to log files” messages that might be displayed after running the command. The command will run successfully and will provide a list of physical disks, card status, and logical disks. The list might be long if you have many physical disks.

4. Create a logical drive on the REM, using RAID 5 and all space on disks 0,2 0,3 and 0,4.

Run the `CREATE` command as shown in the following example.

```
# ./arccconf CREATE 1 LOGICALDRIVE MAX 5 0 2 0 3 0 4
```

Note – After using the `CREATE` command, you will see error messages like the one shown in the next example. This is because you are working on a read-only file system and certain links cannot be created. However, if the last message says “Command completed successfully”, the logical drive is created.

```
Creating logical device: Device 2
devfsadm: mkdir failed for /dev 0x1ed: Read-only file system
WARNING: /pci@7c0/pci@0/pci@8/scsi@0/sd@2,0 (sd2):
    Corrupt label; wrong magic number

devfsadm: inst_sync failed for /etc/path_to_inst.117: Read-only file system
devfsadm: WARNING: failed to update /etc/path_to_inst

Command completed successfully.
```

5. Perform the necessary tasks to configure the drive. Such tasks might include the following:

- Labeling the drive
- Partitioning the drive
- Preparing a file system
- Installing data from backups or recovering data from RAID capabilities
- Bringing the drive online

These tasks are covered in the Solaris OS administration documentation. For additional drive verification, use SunVTS. Refer to the SunVTS and Solaris documentation at <http://docs.sun.com> for details.

▼ To Create a Logical Drive Without a Network Install Server

Note – The following procedure requires having a Sun Blade 6000 Disk Module installed and configured for RAID. To create a simple volume on just one hard drive, see [“To Create a Simple Volume Using Just One HDD” on page 11.](#)

1. Using ILOM, obtain the IP address of the system console from the blade server:

```
sc> shownetwork
SC network configuration is:
IP Address: 10.6.214.63
Gateway address: 10.6.214.1
Netmask: 255.255.255.0
Ethernet Address: 00:14:4F:E5:AD:6B
```

2. Type the IP address in the browser interface and select the Remote Control tab and the Launch Redirection option.

3. Insert the Live CD in the blade server you are working on, then select Devices/CDROM.

4. Insert the path to your CDROM drive.

5. On the host system, type the following from the OpenBoot PROM prompt and follow the directions:

```
ok boot cdrom
```

6. At the system prompt, access the command-line interface (CLI), and use the `./arccconf GETCONFIG` command to print a list of the complete configuration of card 1 on the system.

In the following example, note that the CLI is located in the `/opt/StorMan` directory, and the name of the CLI is `aarconf`. All commands must start with `./` unless you have altered the path to include `/opt/StorMan` in it.

```
# cd /opt/StorMan
# ./arccconf GETCONFIG 1
```

Note – Ignore any “failing to write to log files” messages that might be displayed after running the command. The command will run successfully and will provide a list of physical disks, card status, and logical disks. The list might be long if you have many physical disks.

7. Create a logical drive on the REM, using RAID 5 and all space on disks 0,2 0,3 and 0,4.

Run the `CREATE` command as shown in the following example.

```
# ./arccconf CREATE 1 LOGICALDRIVE MAX 5 0 2 0 3 0 4
```

Note – After using the `CREATE` command, you will see error messages like the one shown in the next example. This is because you are working on a read-only file system and certain links cannot be created. However, if the last message says “Command completed successfully”, the logical drive is created.

```
Creating logical device: Device 2
devfsadm: mkdir failed for /dev 0x1ed: Read-only file system
WARNING: /pci@7c0/pci@0/pci@8/scsi@0/sd@2,0 (sd2):
    Corrupt label; wrong magic number

devfsadm: inst_sync failed for /etc/path_to_inst.117: Read-only file system
devfsadm: WARNING: failed to update /etc/path_to_inst

Command completed successfully.
```

8. To label the logical drive, see [“To Label the Newly Created Logical Drive”](#) on page 10.

▼ To Label the Newly Created Logical Drive

Before the Solaris OS can install software onto the newly created logical drive, you must label the drive.

1. Use the `./arcconf GETCONFIG card-number LD` command to display the logical drives on the REM.

```
# ./arcconf GETCONFIG 1 LD
```

2. Use the `devfsadm` command to find the newly created drive and load its drivers.

```
# devfsadm
```

3. To label the newly created drive, use the `format` command and select the logical drive.

You can distinguish the logical REM drives in the output by looking at the vendor/product ID string. The Sun Blade RAID 5 Expansion Module is displayed as "Sun-STKRAID." The last part of the string will display "EXT" (for external) or "INT" (for internal), depending on the type of card you have.

```
# format
Searching for disks...done

AVAILABLE DISK SELECTIONS:
  0. c0t0d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424>
     /pci@780/pci@0/pci@9/scsi@0/sd@0,0
  1. c0t1d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424>
     /pci@780/pci@0/pci@9/scsi@0/sd@1,0
  2. c2t0d0 <Sun-STKRAIDINT-V1.0 cyl 17818 alt 2 hd 255 sec 63>
     /pci@7c0/pci@0/pci@8/scsi@0/sd@0,0
  3. c2t1d0 <Sun-STKRAIDINT-V1.0 cyl 8907 alt 2 hd 255 sec 63>
     /pci@7c0/pci@0/pci@8/scsi@0/sd@1,0
Specify disk (enter its number): 2
```

4. When the `format` process displays the Disk not labeled. Label it now? prompt, type `y` and press Enter.

5. Exit the `format` process by typing `quit` and pressing Enter.

You now have a labeled logical drive.

6. Use the `init 0` command, switch to the `ok` prompt, and use the `boot net` command to reboot the system for normal network-based installation.

```
# init 0
# syncing file systems... done
Program terminated
r) reboot, o)k prompt, h)alt?o
ok boot net
```

▼ To Delete a Logical Drive on the REM

You might need to free up some space in order to create the logical drive on which the Solaris OS will be installed. You can do so by deleting existing logical drives.



Caution – Using the command in this procedure will destroy all data on the specified logical drive. Be very careful when using this command to prevent unintentional data loss.

- **To delete a logical drive on REM, use the `DELETE card-number LOGICALDRIVE drive-number` command.**

In this example, *x* is the number of the logical drive that you want to delete.

```
# ./arcconf DELETE 1 LOGICALDRIVE x
```

B.6 Next Steps

Install the Solaris OS and the HBA driver onto the bootable array, as described in [Appendix C](#).

B.6.1 Additional Information

For more information, refer to the following documents at:
<http://docs.sun.com/app/docs/coll/dsk-cntrl>

- *Uniform Command-Line Interface User's Guide*, 820-2145
- *Sun StorageTek RAID Manager Software User's Guide*, 820-1177

- *Sun StorageTek RAID Manager Software Release Notes, 820-2755*
- *Sun StorageTek SAS RAID HBA Installation Guide Eight-Port, Internal HBA*
<http://docs.sun.com/app/docs/doc/820-1847-17>

For Sun RAID controller drivers, firmware, and utilities including Sun StorageTek RAID Manager for SPARC (8/4/2008) Version 5.50, go to:

<http://support.intel.com/support/motherboards/server/sunraid/>

Installing the Solaris OS and the Sun Blade RAID 5 Expansion Module Driver

If you chose to create a bootable array as part of your installation (see [Appendix B](#)), you can install the Solaris operating system (OS) and the REM driver on that bootable array.

This appendix explains how to install the Solaris OS onto a bootable array (logical drive) and then install the REM driver on the array (logical drive).

Note – This appendix assumes you are experienced with Solaris network installs.

Topics include:

- [“Preparing to Install the Solaris OS” on page 1](#)
- [“Installing the RAID 5 Expansion Module Driver With the Solaris OS” on page 2](#)
- [“Next Steps” on page 4](#)

C.1 Preparing to Install the Solaris OS

Before you begin, prepare to install the Solaris operating system.

▼ To Prepare to Install the Solaris OS

- Complete the procedures in [Appendix B](#).

Note – For up-to-date Sun StorageTek SAS RAID HBA support, go to <http://support.intel.com/support/go/sunraid.htm>.

C.2 Installing the RAID 5 Expansion Module Driver With the Solaris OS

This section contains the following subsection:

- [“To Install the RAID 5 Expansion Module Driver With the Solaris OS” on page 2](#)

▼ To Install the RAID 5 Expansion Module Driver With the Solaris OS

1. **Obtain the Solaris 10 5/08 OS and perform a normal network installation, as described in the *Solaris 10 Installation Guide: Network-Based Installations*, until you encounter the prompt, `Reboot After Installation?`.**

Note – Do NOT select `Auto Reboot` at this point in the network installation process.

2. **Specify that you want to perform a Manual Reboot.**

Specifying a manual reboot provides you with the opportunity to install the HBA driver after all other Solaris software is in place. Without this driver, subsequent reboots will fail.

Note – If you accidentally choose `Auto Reboot`, you can still install the HBA driver prior to reboot. From an `ok` prompt, you can use the `boot net -s` command to boot from the network into single-user mode and then install the driver.

3. **Use the `df` command to verify the following:**

- The product install directory is mounted on `/cdrom` from the network install server.

- The logical drive onto which you need to place the driver package is mounted on /a.

/a is the standard Solaris mount point for the disk on which the OS is being installed.

4. If the product install directory and the logical drive are not mounted, manually mount them.

Note – With this example, you must substitute the correct host names, directory paths, and device paths in your environment.

```
# mount /dev/dsk/c2t0d0s0 /a (for the logical drive)
# mount install_host:install_dir_path /cdrom (for the install server products)
```

5. Apply the HBA driver package, SUNWaac.

```
# cd /cdrom/Solaris_10/Product
# pkgadd -R /a -d. SUNWaac
```

6. Apply any patches that are specifically required for the system.

7. Reboot the system.

```
# reboot
```

The system will now be able to see, and boot from, the logical drive on which you installed the Solaris OS.

Note – You might want to keep the network install server intact for re-installing or for emergency recovery, because as of Solaris 10 5/08, the SUNWaac driver is not included on standard Solaris install media. Using the `boot net -s` command from the `ok` prompt enables you to perform maintenance on the system, while a Solaris CD will not let you do so. You might also want to install the `StorMan` package on a running system. This enables you to have access to the GUI and command-line interface for the Sun StorageTek SAS RAID Internal HBA card, to configure or monitor disks.

C.3 Next Steps

You can optionally install and use the Sun StorageTek RAID Manager GUI to create arrays on the disk enclosure. See the *Sun StorageTek RAID Manager User's Guide* at: <http://docs.sun.com/app/docs/prod/stortek.raid.hba>

C.3.1 Additional Information

For more information, refer to the following documents at:

<http://docs.sun.com/app/docs/coll/dsk-cntrl>

- *Uniform Command-Line Interface User's Guide*, 820-2145
- *Sun StorageTek RAID Manager Software User's Guide*, 820-1177
- *Sun StorageTek RAID Manager Software Release Notes*, 820-2755
- *Sun StorageTek SAS RAID HBA Installation Guide Eight-Port, Internal HBA*
<http://docs.sun.com/app/docs/doc/820-1847-17>

For Sun RAID controller drivers, firmware, and utilities including Sun StorageTek RAID Manager for SPARC (8/4/2008) Version 5.50, go to:

<http://support.intel.com/support/motherboards/server/sunraid/>

XVR-50 Graphics Accelerator

The XVR-50 graphics accelerator is a 24-bit onboard PCI-based graphics frame buffer.

- [Section D.1, “Features” on page D-1](#)
- [Section D.2, “Video Formats” on page D-2](#)
- [Section D.3, “Sun OpenGL for Solaris Software” on page D-3](#)
- [Section D.4, “Man Pages” on page D-3](#)
- [Section D.5, “Optional Video Output” on page D-5](#)
- [Section D.6, “Default Color Depth” on page D-5](#)
- [Section D.7, “Checking Device Configuration” on page D-6](#)
- [Section D.8, “HD15 Video Output Port” on page D-8](#)

D.1 Features

The XVR-50 graphics accelerator offers the following features:

- 2D 24-bit color graphics
- Flexible 8-bit and 24-bit color application support
- HD15 monitor connector for a wide range of Sun monitors
- 3D support through Sun OpenGL for Solaris™ software

D.2 Video Formats

The video formats available for you to use are the intersection of those supported by the XVR-50 graphics hardware with those supported by the display device connected to the Sun Blade T6340 server module.

D.2.1 Obtaining Available Screen Resolutions

To get a list of available screen resolutions for your display device, type:

```
host% fbconfig -res \?
```

D.2.2 Supported Video Formats

If you have selected a resolution where support for this resolution cannot be verified, fbconfig displays the following output:

```
SUNWpfb_config: Cannot verify that selected resolution is a supported video resolution for this monitor
```

[TABLE D-1](#) lists video formats supported by the HD15 port.

TABLE D-1 XVR-50 Graphics Accelerator HD15 Video Formats

Display Resolution	Vertical Refresh Rate	Sync Standard	Aspect Ratio Format
1600 x 1200	60 Hz	VESA	4:3
1600 x 1000	66, 76 Hz	Sun	16:10
1440 x 900	60 Hz	VESA	16:10
1440 x 900	76 Hz	Sun	16:10
1280 x 1024	60, 75, 85 Hz	VESA	5:4
1280 x 1024	67, 76 Hz	Sun	5:4
1280 x 800	76 Hz	Sun	16:10
1152 x 900	66, 76 Hz	Sun	5:4

TABLE D-1 XVR-50 Graphics Accelerator HD15 Video Formats (*Continued*)

Display Resolution	Vertical Refresh Rate	Sync Standard	Aspect Ratio Format
1152 x 864	75 Hz	VESA	4:3
1024 x 768	60, 70, 75, 85 Hz	VESA	4:3
800 x 600	56, 60, 72, 75 Hz	VESA	4:3
720 x 400	85 Hz	VESA	9:5
640 x 480	60, 72, 75 Hz	VESA	4:3

Note – The XVR-50 graphics accelerator video composite sync is an XOR composite sync.

Note – Not all resolutions are supported by all monitors. Using resolutions that are not supported by the monitor might damage the monitor. Refer to your monitor manuals for supported resolutions.

The default resolution is dictated either by EDID information from the connected monitor or by the console resolution that is set ([TABLE D-1](#)). When no monitor is connected to supply EDID information, the default resolution is 1024 x 768 @ 75 Hz.

D.3 Sun OpenGL for Solaris Software

The Sun OpenGL 1.5 for Solaris software supports the XVR-50 graphics accelerator through software implementation.

D.4 Man Pages

The XVR-50 graphics accelerator man pages describe how you can query and set frame buffer attributes such as screen resolutions and visual configurations.

Use the `fbconfig (1M)` man page for configuring all Sun graphics accelerators. `SUNWpfb_config (1M)` contains XVR-50 device-specific configuration information. To get a list of all graphics devices on your system, type:

```
host% fbconfig -list
```

This example shows a list of graphics devices displayed:

Device-Filename	Specific Config Program
/dev/fbs/pfb0	SUNWpfb_config

Use the `fbconfig -help` option to display the attributes and parameters information of the man page.

```
host% fbconfig -dev pfb0 -help
```

- To access the `fbconfig` man page, type:

```
host% man fbconfig
```

- To access the XVR-50 graphics accelerator man page, type:

```
host% man SUNWpfb_config
```

D.5 Optional Video Output

The default system uses a resolution suggested by the monitor as long as the monitor is connected to power and connected to the XVR-50 video port. This is the default the system uses if no `fbconfig` commands have been given, or after entering `fbconfig -dev pfb0 -defaults`.

To manually set up a video output resolution, do the following:

1. Set the desired screen resolution. For example, type:

```
host% fbconfig -dev pfb0 -res 1280x1024x60
```

2. Log out, then log in.
3. To find all possible XVR-50 graphics accelerator resolutions, type:

```
host% fbconfig -dev pfb0 -res \?
```

D.6 Default Color Depth

1. Set or reset the default color depth.

To set 8 or 24 as the default color depth, type `/usr/sbin/svccfg`.

```
/usr/sbin/svccfg -s x11-server setprop options/default_depth=8  
/usr/sbin/svccfg -s x11-server setprop options/default_depth=24
```

The default color depth is 24.

2. Log out and then log back in for the change to take effect.

D.7 Checking Device Configuration

Type `fbconfig` to check the X window system (`-propt`) and XVR-50 graphics accelerator (`-prconf`) device configuration values.

The `fbconfig -propt` option displays the values of all options (for the specified device) saved in the `OWconfig` file (see below for an example). These are the values the X window system will use the next time it starts on that device:

```
host% fbconfig -dev pfb0 -propt

-- Graphics Configuration for /dev/fbs/pfb0 ---

OWconfig: machine
Video Mode: not set

Screen Information:
    Fake8 Rendering: Disable
    Gamma Correction: Disable
```

The `fbconfig -prconf` option displays the current XVR-50 graphics accelerator device configuration (see below for an example). If certain values differ from those displayed in `-propt`, it is because those values have been configured since the X window system started.

The values displayed are those supported by the connected device.. The intersection of these display resolutions with those shown in [TABLE D-1](#) are the resolutions available for you to use.

```
host% fbconfig -dev pfb0 -prconf

--- Hardware Configuration for /dev/fb ---

Type: XVR-50
ASIC: version 0x515e                REV: version 0x3000002

Monitor/Resolution Information:
  Monitor Manufacturer: SUN
  Product code: 1431
  Serial #: 0
  Manufacture date: 2006, week 24
  Monitor dimensions: 34x27 cm
  Monitor preferred resolution: SUNW_STD_1280x1024x60
  Separate sync supported: yes
  Composite sync supported: yes
  Gamma: 2.20
  EDID: Version 1, Revision 3
  Supported resolutions: SUNW_STD_1280x1024x60,
    VESA_STD_1280x1024x60, VESA_STD_1280x1024x75,
    SUNW_STD_1152x900x66, VESA_STD_1024x768x75,
    VESA_STD_720x400x70, VESA_STD_640x480x60, VESA_STD_640x480x67,
    VESA_STD_640x480x72, VESA_STD_640x480x75, VESA_STD_800x600x56,
    VESA_STD_800x600x60, VESA_STD_800x600x72, VESA_STD_800x600x75,
    VESA_STD_832x624x75, VESA_STD_1024x768x70,
    VESA_STD_1024x768x75, VESA_STD_1280x1024x75, APPLE_1152x870x75,
    1152x870x75
  Current resolution setting: 1280x1024x60
  Current depth: 24

Depth Information:
  Possible depths: 8, 24
```

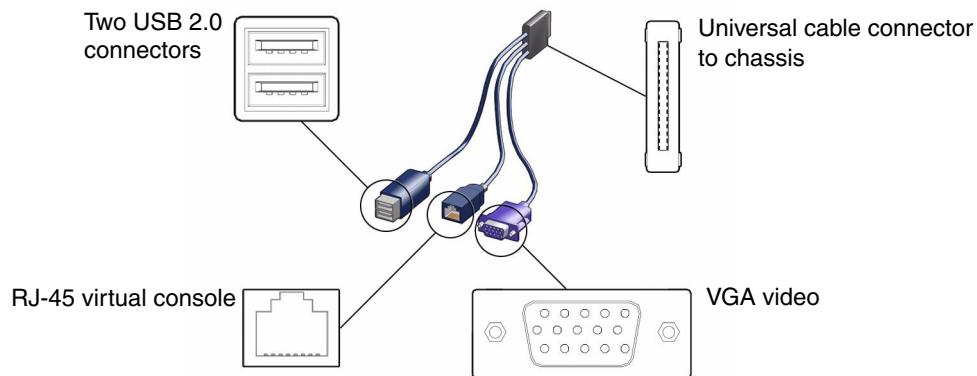
D.8 HD15 Video Output Port

The HD15 connector diagram and pinout signals are shown in [Section E.3, “HD15 Video Output Connector”](#) on page E-4.

Connector Pinouts

This chapter shows the pin signal assignments (pinouts) for the three-connector cable dongle (FIGURE E-1).

FIGURE E-1 Three-Connector Cable Dongle (UCP-3)



Note – The older four-connector cable dongle (UCP-4) can also be used on the Sun Blade T6340 server module, with some restrictions. The Sun Blade T6340 does *not* support use of the UCP-4 dongle’s RJ-45 connector.

E.1 RJ-45 Serial Connector

FIGURE E-2 RJ-45 Serial Connector on the Cable Dongle

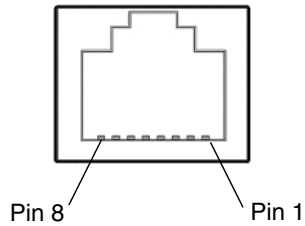


TABLE E-1 RJ-45 Connector Pin Assignments

Pin Number	Signal	Pin Number on Universal Connector
7	DSR	21
6	RxD	22
1	RTS	23
3	TxD	24
8	CTS	25
2	DTR	26
7	DCD	27
4, 5	GND	29

E.2 USB Connectors

FIGURE E-3 Dual USB 2.0 Connector Pin Assignments

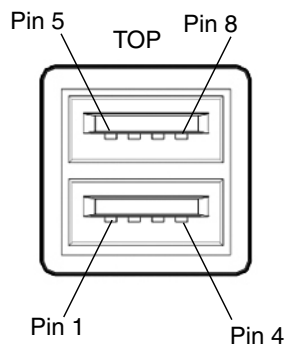


TABLE E-2 USB 2.0 Connector Pinout

Pin Number	Signal	Pin Number on Universal Connector
1	USB1 VCC Red	14, 15
2	USB1 DN white	12
3	USB1 DP Green	13
4	USB1 GND Black	11
5	USB2 VCC Orange	16, 17
6	USB2 DN Yellow	18
7	USB2 DP Blue	19
8	USB2 GND Brown	20

E.3 HD15 Video Output Connector

FIGURE E-4 and TABLE E-3 show the XVR-50 graphics accelerator HD15 connector and pinout signals.

The console video output port connects to the 15-pin connector on the cable dongle. The HD15 video connector supports DDC2 monitor support and Display Power Management Signaling (DPMS).

FIGURE E-4 XVR-50 Graphics Accelerator HD15 Connector Pin Assignments

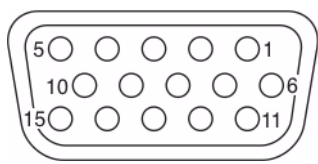


TABLE E-3 XVR-50 Graphics Accelerator HD15 Connector Pinout

Pin Number	Signal	Pin Number on Universal Connector
1	Red analog video	2
2	Green analog video	3
3	Blue analog video	4
4	No Connect	-
5	Ground	shell
6	Ground	
7	Ground	shell
8	Ground	
9	+5V Supply, black	1
10	Ground	
11	No Connect	shell
12	Monitor ID1 (DAT, white)	
13	Horizontal Sync, orange	
14	Vertical Sync, yellow	
15	Monitor ID2, red	11

E.4 Using the Cable Dongle



Caution – The cable dongle is for temporary connections only. The cable dongle has not been evaluated for electromagnetic compatibility (EMC). The cable dongle or server module connectors could be damaged by closing rack doors or other impacts. Remove the cable dongle during normal system operation.

ALOM CMT Reference Information

This appendix shows some ALOM CMT compatibility shell commands and related information.

Topics covered are:

- [Section F.1, “Switching Between the System Console and ALOM CMT and ILOM Shells” on page F-2](#)
- [Section F.2, “Service-Related ALOM CMT Commands” on page F-3](#)

If you require additional information, refer to the following documents:

- *Sun Integrated Lights Out Manager 2.0 Supplement for Sun Blade T6340 Server Modules, 820-3904*
- *Sun Integrated Lights out Manager 2.0 User’s Guide, 820-1188*
- *Integrated Lights Out Manager ILOM Administration Guide, 820-3904.*

F.1 Switching Between the System Console and ALOM CMT and ILOM Shells

- To switch from the console to the ALOM CMT shell, type hash-period:

```
host> #.  
SC>
```

- To switch from the ALOM CMT shell, to the host console, type:

```
SC> console  
host>
```

F.1.1 Switching From the ALOM CMT Shell to the ILOM Shell

1. Type the following commands from the ALOM CMT shell:

```
SC> userclimode root default  
SC> logout
```

2. Log in to the ILOM shell. The default user name is root and the default password is changeme.

```
SUNSP00144F985629 login: root  
password: changeme  
  
Waiting for daemons to initialize...  
Daemons ready  
Sun(TM) Integrated Lights Out Manager  
Version 2.0.4.0  
Copyright 2007 Sun Microsystems, Inc. All rights reserved.  
Use is subject to license terms.  
Warning: password is set to factory default.  
  
->
```

F.2 Service-Related ALOM CMT Commands

TABLE F-1 describes the typical ALOM CMT commands for servicing a Sun Blade T6340 server module. For descriptions of all ALOM CMT commands, type the `help` command or refer to the *Sun Integrated Lights out Manager 2.0 User's Guide*, 820-1188.

TABLE F-1 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>kndb</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">• <code>-g lines</code> option specifies the number of lines to display before pausing.• <code>-e lines</code> option displays <i>n</i> lines from the end of the buffer.• <code>-b lines</code> option displays <i>n</i> lines from beginning of the buffer.• <code>-v</code> option displays the entire buffer.• <code>boot run</code> option specifies the log to display (<code>run</code> is the default log).
<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">• <code>normal</code> is the default boot mode.• <code>reset_nvram</code> resets OpenBoot PROM parameters to their default values.• <code>bootscript=string</code> enables the passing of a string to the <code>boot</code> command.
<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 F-1 Service-Related ALOM CMT Commands (*Continued*)

ALOM CMT Command	Description
<code>removeblade [-y]</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 Section 2.5.2, "Displaying the Environmental Status with the ILOM CLI" on page 2-21.
<code>showfaults [-v]</code>	Displays current system faults..
<code>showfru [-g lines] [-s -d] [FRU]</code>	Displays information about the FRUs in the server. <ul style="list-style-type: none">• The <code>-g lines</code> option specifies the number of lines to display before pausing the output to the screen.• The <code>-s</code> option displays static information about system FRUs (defaults to all FRUs, unless one is specified).• The <code>-d</code> option displays dynamic information about system FRUs (defaults to all FRUs, unless one is specified)..
<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 slot location, hardware configuration, the system serial number, and whether the hardware is providing service.
<code>shownetwork [-v]</code>	Displays information about the local connected network.

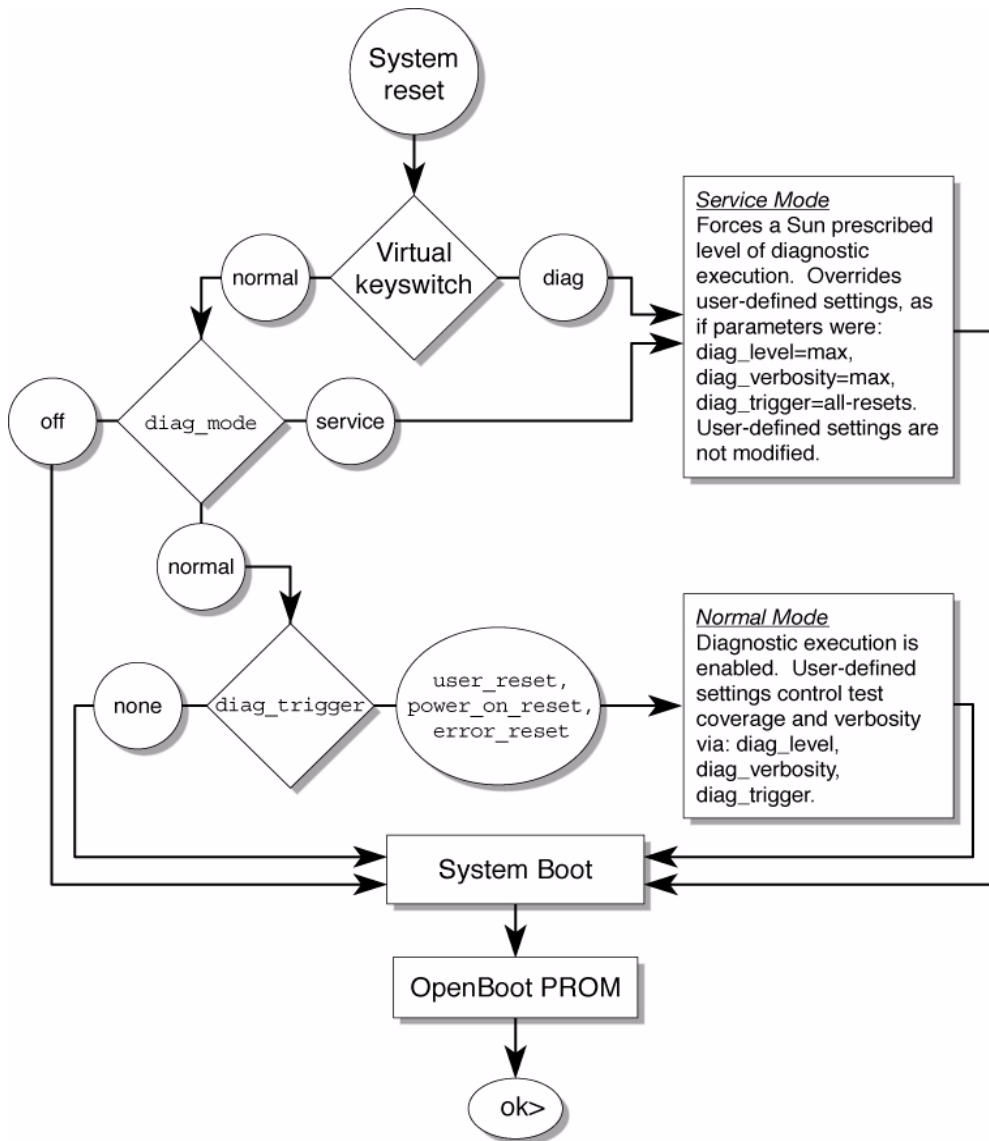
TABLE F-2 lists the ALOM CMT variables used to configure POST.

TABLE F-2 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). 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.
	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 F-1 Flowchart of ALOM CMT Variables for POST Configuration



ILOM Reference Information

This appendix shows some ILOM CLI commands and related information. Topics covered include:

- [Section G.1, “Creating an ALOM CMT Shell” on page G-1](#)
- [Section G.2, “Switching Between the ILOM CLI and ALOM CMT Compatibility Shell” on page G-5](#)
- [Section G.3, “Switching Between the System Console and ILOM” on page G-6](#)
- [Section G.4, “Connecting to the Server Module Service Processor From the Chassis CMM Service Processor” on page G-6](#)

If you require additional information, refer to the following documents:

- *Sun Integrated Lights Out Manager 2.0 Supplement for Sun Blade T6340 Server Modules, 820-3904*. This document describes ILOM information specific to the UltraSPARC and the Sun Blade T6340 server module. It also provides command comparisons of the ALOM CMT and ILOM CLI command sets.
- *Sun Integrated Lights out Manager 2.0 User’s Guide, 820-1188*
- *Integrated Lights Out Manager ILOM Administration Guide, 820-3904*.
- *Sun Blade T6340 Server Module Installation and Administration Guide, 820-3900*

G.1 Creating an ALOM CMT Shell

Your server is configured to operate under an ILOM shell, by default. You can create an ALOM compatibility shell if you prefer to use commands that resemble ALOM CMT commands to administer your server.

G.1.1 Creating an ALOM CMT Compatibility Shell

1. Log onto the service processor with the user name `root`.

When powered on, the SP boots to the ILOM login prompt. The factory default password is `changeme`.

```
SUNSPxxxxxxxx login: root
Password:
Waiting for daemons to initialize...
Daemons ready
Sun(TM) Integrated Lights Out Manager
Version 2.0.0.0
Copyright 2007 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
Warning: password is set to factory default.
```

2. Create a user named `admin`, then set the `admin` account role to `Administrator` and the CLI mode to `alom`.

```
-> create /SP/users/admin
Creating user...
Enter new password: *****
Enter new password again: *****
Created /SP/users/admin
-> set /SP/users/admin role=Administrator
Set 'role' to 'Administrator'
-> set /SP/users/admin cli_mode=alom
Set 'cli_mode' to 'alom'
```

Note – The asterisks in the example will not appear when you type (enter) your password.

You can combine the `create` and `set` commands on a single line:

```
-> create /SP/users/admin role=Administrator cli_mode=alom
Creating user...
Enter new password: *****
Enter new password again: *****
Created /SP/users/admin
```

3. Log out of the `root` account after you have finished creating the `admin` account:

```
-> exit
```

4. Log into the ALOM CLI shell (indicated by the `sc>` prompt) from the ILOM login prompt:

```
SUNSPxxxxxxxx login: admin
Password:
Waiting for daemons to initialize...
Daemons ready
Sun(TM) Integrated Lights Out Manager
Version 2.0.0.0
Copyright 2007 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
sc>
```

Using the ALOM CMT compatibility shell (with few exceptions) you can type commands that resemble the commands of ALOM CMT. It is useful to remember that the ALOM CMT compatibility shell is an ILOM interface. The comparisons between the ILOM CLI and The ALOM CMT compatibility CLI are described in the *Sun Integrated Lights Out Manager 2.0 Supplement for Sun Blade T6340 Server Modules*, 820-3904.

G.1.2 Connecting to the Host Console With SSH

1. Using SSH, type the IP address of the service processor for your server module.

```
$ ssh -l root 11.5.100.101
The authenticity of host '11.5.100.101' can't be established.
RSA key fingerprint is
32:77:0c:55:21:ce:90:c3:a1:b1:a9:9d:64:c5:7c:c1.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.6.214.130' (RSA) to the list of
known hosts.
Password:
Waiting for daemons to initialize...
Daemons ready
Sun(TM) Integrated Lights Out Manager
Version 2.0.4.6
Copyright 2007 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
Warning: password is set to factory default.
```

2. Start the host console.

```
-> start /SP/console
Are you sure you want to start /SP/console (y/n)? y
Serial console started. To stop, type #.
```

G.1.3 Switching Between the ALOM CMT Shell and the Host Console

- Switch from the ALOM CMT shell to the host console, type:

```
SC> console
host>
```

- To switch from the console to the ALOM CMT shell, type hash-period:

```
host> #.
SC>
```

G.1.4 Returning to the ILOM CLI

1. **Set the CLI mode for root to default, then log out of the ALOM CMT compatibility shell:**

```
sc> userclimode root default
sc> logout
```

The ILOM login prompt is displayed.

2. **Then, log in to the ILOM CLI as usual, using an account other than the admin account (such as root).**

The admin account cannot be used for the ILOM CLI as long as its CLI mode is set to the value `alom`.

Using the ALOM CMT compatibility shell (with few exceptions), you can use commands that resemble the commands of ALOM CMT. Remember that the ALOM CMT compatibility shell is an ILOM interface. The comparisons between the ILOM CLI and the ALOM CMT compatibility CLI are described in the *Sun Integrated Lights Out Manager 2.0 Supplement for Sun Blade T6340 Server Modules*, 820-3904.

G.2 Switching Between the ILOM CLI and ALOM CMT Compatibility Shell

1. To switch from the ILOM command line interface (CLI) to the ALOM-CMT compatibility shell, type:

```
->set /SP/users/root cli_mode=alom
Set 'cli_mode' to 'alom'

->exit
```

Note – A banner displays the ILOM version, however the `sc>` prompt, indicates that you are now using ALOM CMT.

2. To Switch from the ALOM-CMT compatibility shell to the default ILOM command line interface, type:

```
sc> userclimode root default
sc> logout
->
```

3. If you are using an ssh session, type `ssh` to login to the service processor.

```
ssh -l root 12.3.456.78
Password:
Waiting for daemons to initialize...
Daemons ready
Sun(TM) Integrated Lights Out Manager
Version 2.0.4.6
Copyright 2007 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
->
```

G.3 Switching Between the System Console and ILOM

1. Type the following commands from the host console:

```
user1% #.  
SUNSP00145:  
->
```

2. Login to the ILOM shell.

```
-> login  
username: root  
password: changeme
```

Note – If you want to use ssh session, you will have to type the ssh command.

G.4 Connecting to the Server Module Service Processor From the Chassis CMM Service Processor

You can connect to any server module service processor through the chassis CMM and the CMM ILOM firmware. The procedure is described in the *Sun Blade T6340 Server Module Installation and Administration Guide*, 820-3900.

You might also want to consult the ILOM administration or ILOM user's guide for the chassis CMM that your server module is installed in; for example, the *Integrated Lights Out Manager ILOM Administration Guide*, 820-3904.

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