

Sun Blade T6320 G2 and Sun Blade T6320 Server Modules

Product Notes



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Contents

1. Important Information 1

Identifying Your Server Module Generation 2

▼ To Identify the Generation of Your Server Module 2

Summary of New Features 3

New Support for SAS-2 Components 3

ILOM Remote Consoles (Remote KVMS) 4

Supported Versions of the Oracle Solaris OS, Firmware, and Patches 5

Required Oracle Solaris 10 OS Patches 6

▼ Access OS, Patch, and Firmware Updates 8

Supported Chassis 8

▼ Identify Your Chassis Midplane Version 9

Supported Modular Components 9

Online Documentation 13

Important Firmware Upgrade Required Prior to Mixing SAS-1 and SAS-2
Components 14

2. Late-Breaking Issues 15

Storms of Events Might Impact Logging of Telemetry Data (CR 6983799) 16

200-Gbyte SATA Hard Drive Vibration Sensitivity 16

Drive OK-to-Remove LED Might Not Work When Using the `cfgadm -c
unconfigure` Command (CR 6946124) 16

▼	Manually Locate a Drive	17
	cfgadm Does Not Unconfigure the Path When Multipathing Software Is Enabled (CR 6948701)	20
▼	Manually Unconfiguring Multipath-Enabled Drives	20
	Locate Button Is Inoperative (CR 6862442)	22
	Hot-Insertion of Blade Not Recognized by CMM – Intermittent (CR 6855886)	23
	Kernel Errors Reported (CR 6839498 and 6533591)	23
3.	Information Not Covered in the Online Documentation	25
	OS Installation from a USB DVD Drive	26
▼	To Install the OS From a USB DVD Drive	26
	OS Installation From a USB Flash Device	26
▼	To Install the OS to a USB Flash Device	26
	Remote Console (Remote KVMs)	29
	Local Graphics Monitor or Local KVMs Support	29
▼	To Access the System Console Through a Local Graphics Monitor	29
	Memory Capacity and FB-DIMM Configuration	30
	FB-DIMM Configuration Guidelines	31
	When Upgrading Memory	31
	When Replacing Faulty FB-DIMMs	31

Important Information

This document provides late-breaking information for the following Oracle server modules:

- Sun Blade T6320 server module – released in February 2008
- Sun Blade T6320 G2 server module – released in July 2009

Note – To determine the version of your Sun Blade T6320 server module, see [“To Identify the Generation of Your Server Module” on page 2](#).

This document is for technicians, system administrators, authorized service providers, and users who have advanced experience troubleshooting and replacing hardware.

This document changes with the latest updates. Always obtain the latest version at:

<http://www.oracle.com/pls/topic/lookup?ctx=E19745-01>

This chapter provides the following information:

- [“Identifying Your Server Module Generation” on page 2](#)
- [“Summary of New Features” on page 3](#)
- [“Supported Versions of the Oracle Solaris OS, Firmware, and Patches” on page 5](#)
- [“Required Oracle Solaris 10 OS Patches” on page 6](#)
- [“Access OS, Patch, and Firmware Updates” on page 8](#)
- [“Supported Chassis” on page 8](#)
- [“Supported Modular Components” on page 9](#)
- [“Online Documentation” on page 13](#)
- [“Important Firmware Upgrade Required Prior to Mixing SAS-1 and SAS-2 Components” on page 14](#)

Identifying Your Server Module Generation

In July 2009, a second generation of the Sun Blade T6320 server module was introduced, adding G2 to the product name. Today, the following server modules are available:

- Sun Blade T6320 server module
- Sun Blade T6320 G2 server module

Note – Labels on the Sun Blade T6320 G2 server module only display *Sun Blade T6320 server module*. The G2 is only displayed in the software banner and in output from some commands.

To properly install, configure, and manage your server module, and to understand the information in this document, you must know the generation of your Sun Blade T6320 server module. The following procedure explains how to make this distinction.

▼ To Identify the Generation of Your Server Module

1. From either the ILOM CLI or the ALOM CMT CLI, run one of the following commands:

- Use the ILOM show command:

```
-> show /SYS product_name

/SYS
Properties:
product_name = Sun Blade T6320 G2 Server Module    <===
```

- Use the ALOM CMT showplatform command:

```
SC> showplatform

Sun Blade T6320 G2 Server Module    <===
```

Blade Serial Number: 1005LCB-091853002N Chassis Serial Number: 0111APO-0741YT0214 Slot Number: 8 . . .
--

2. In the output, check the product name.

- Sun Blade T6320 Server Module – Indicates a first generation server module.
- Sun Blade T6320 G2 Server Module – The G2 indicates a second generation server module.

Summary of New Features

The following latest technologies are supported by the Sun Blade T6320 server module and the Sun Blade T6320 G2 server module:

- Oracle Solaris 10 9/10 OS
- Integrated Lights Out Manager (ILOM) 3.0 software
- Oracle VM Server for SPARC 2.0 software

New Support for SAS-2 Components

The following SAS-2 components are supported by Sun Blade T6320 server modules and Sun Blade T6320 G2 server modules that are installed in the Sun Blade 6000 modular system:

- Sun Blade 6000 Storage Module M2 – provides SAS-2 storage to server modules in the Sun Blade 6000 modular system and supports storage zoning with the Sun Blade Zone Manager.
- Sun Blade 6000 Virtualized Multi-Fabric 10GbE M2 Network Express Module – Provides two virtualized 10GbE shared uplinks, dedicated 10/100/1000 Mb/s Ethernet ports for each server module, and SAS-2 switching capabilities.
- Sun Blade 6000 Ethernet Switched NEM 24p 10GbE NEM – The Switched NEM supports connections to external devices through 10GbE SFP+ ports and QSFP ports.
- Sun Storage 6 Gb/s SAS REM HBA – Provides eight serial connections to SAS/SATA devices.

You must upgrade the firmware of your SAS-1 components (SAS-1 NEMs and disk modules) to a firmware version that supports SAS-1/SAS-2 coexistence. See [“Important Firmware Upgrade Required Prior to Mixing SAS-1 and SAS-2 Components”](#) on page 14.

Note – These SAS-2 components are not supported on server modules that are installed in the Sun Blade 6048 modular system.

ILOM Remote Consoles (Remote KVMS)

The Sun Blade T6320 G2 server module running ILOM 3.0 supports the use of ILOM remote consoles (remote KVMS) and supports serial console redirection.

ILOM Remote Console is a Java application that allows you to remotely redirect and control the following devices on the host server.

- Keyboard
- Video console display
- Mouse device
- Storage devices (USB)

Remote management of these devices is commonly abbreviated *rKVMS*.

For instructions on using these features, refer to the *Sun Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Blade T6340 Server Module*.

Note – The ILOM Remote Console feature is only supported on the Sun Blade T6320 G2 server module.

Supported Versions of the Oracle Solaris OS, Firmware, and Patches

Your server module is preinstalled with System Firmware on the service processor. Depending on how the server was purchased, your server module might be preinstalled with the Oracle Solaris OS and patches. You can install the same or another supported version.

The System Firmware controls various aspects of the host and the service processor. The System Firmware comprises the following individual firmware components:

- Integrated Lights Out Manager (ILOM) firmware
- OpenBoot firmware
- POST firmware
- Hypervisor firmware
- VBSC firmware

When you update the System Firmware, all of the individual firmware components are updated. You cannot update firmware components individually. See [“Access OS, Patch, and Firmware Updates” on page 8](#).

To determine the minimum supported versions of the OS, firmware, and software for your server module, identify the generation of your server module and use [TABLE 1](#). See [“To Identify the Generation of Your Server Module” on page 2](#).

TABLE 1 Minimum and Suggested Versions of the OS, Firmware, and Software

	Sun Blade T6320 Server Module		Sun Blade T6320 G2 Server Module	
	Suggested	Minimum	Suggested	Minimum
Oracle Solaris 10 OS release*	Solaris 10 9/10	Solaris 10 8/07 with required patches	Solaris 10 9/10	Solaris 10 8/07 with required patches
System Firmware version (Patch ID†)	7.3.0c (145674-02 or later)	7.1.7.h (136933-10 or later)	7.3.0c (145674-02 or later)	7.2.2.f (139440-03 or later)

TABLE 1 Minimum and Suggested Versions of the OS, Firmware, and Software

	Sun Blade T6320 Server Module		Sun Blade T6320 G2 Server Module	
	Suggested	Minimum	Suggested	Minimum
Integrated Lights Out Manager (ILOM) software [‡] version	ILOM 3.0.12.4.c	ILOM 2.0.4.27.g	ILOM 3.0.12.4.c	ILOM 3.0.3.20.f
Oracle VM Server for SPARC**	2.0	1.0.3	2.0	1.2
Chassis Management Module (CMM) ILOM firmware version	3.0.3.32	2.0.3.10	3.0.3.32	3.0.3.32

* Some releases of the Oracle Solaris 10 OS require the installation of patches. See [“Required Oracle Solaris 10 OS Patches” on page 6](#).

† The specified Patch ID provides you with the version of System Firmware listed with the Patch ID.

‡ ILOM is a component of the System Firmware. To upgrade your version of ILOM, you must upgrade your System Firmware.

** Oracle VM Server for SPARC was formerly called Logical Domains (LDoms) software.

Required Oracle Solaris 10 OS Patches

The following tables list suggested and required patches for the Oracle Solaris 10 OS.

TABLE 2 Oracle Solaris 10 5/09 OS Patches (Suggested)

Patch ID or Build	Description
141414-02 (or later)	SunOS 5.10: kernel patch for Oracle Solaris 10 05/09
139928-02 (or later)	SunOS 5.10: ehci, uhci, scsa2usb and hidparser patch
142259-03 (or later)	Required for the Sun Storage 6 Gb SAS REM HBA.
143523-04 (or later)	Required for the Sun Storage 6 Gb SAS REM HBA.
141870-03 (or later)	Required for the Sun Storage 6 Gb SAS REM HBA.

TABLE 3 Oracle Solaris 10 10/08 OS Patches (Suggested)

Patch ID	Description
119254-58 (or later)	SunOS 5.10: Install and patch utilities patch
138866-01 (or later)	SunOS 5.10: sharetab patch
137137-09 (or later)	SunOS 5.10: kernel patch

TABLE 3 Oracle Solaris 10 10/08 OS Patches (Suggested) (*Continued*)

Patch ID	Description
138075-02 (or later)	SunOS 5.10: mpt driver patch
138394-01 (or later)	SunOS 5.10: raidcfg patch
138128-01 (or later)	SunOS 5.10: ses patch
138312-01 (or later)	SunOS 5.10: usba and swapgeneric patch
138282-01 (or later)	SunOS 5.10: SunFire T2000 libprtdiag_psr patch
138048-03 (or later)	SunOS 5.10: nxge driver patch
138381-01 (or later)	SunOS 5.10: pcihp patch
138082-01 (or later)	SunOS 5.10: platform/sun4v/kernel/drv/sparcv9/ds_snmp patch
137121-03 (or later)	SunOS 5.10: e1000g driver patch

TABLE 4 Oracle Solaris 10 5/08 OS Patches (Required)

Patch ID or Build	Description
119254-51 (or later)	SunOS 5.10: install and patch utilities patch
125891-01 (or later)	SunOS 5.10: libc_psr_hwcapi.so.1 patch
127755-01 (or later)	SunOS 5.10: Fault Manager patch
127127-11 (or later)	SunOS 5.10: kernel patch
118712-21 (or later)	SunOS 5.10: Sun XVR-100 graphics accelerator patch
120812-24 (or later)	Sun OpenGL for Oracle Solaris: OpenGL 1.5 patch for Oracle Solaris
125416-06 (or later)	SunOS 5.10: UFS utilities patch
128304-03 (or later)	SunOS 5.10: ehci and scsa2usb patch
141909-17 (or later)	SunOS 5.10: kernel patch

Note – Sun Update Connection Manager is not currently supported.

▼ Access OS, Patch, and Firmware Updates

For the latest information about the OS, patches, and firmware updates perform the following steps.

1. log into My Oracle Support:

<https://support.oracle.com>

2. Select the Patches & Updates tab.

3. Enter the patch number in the search field.

4. Click Search.

5. In the search results, click on the patch name.

6. Use available links to view the `README` file and to download the patch.

Supported Chassis

The following table lists the supported modular system chassis for these server modules:

Modular System Chassis	Supported Features
Sun Blade 6000 modular system with PCIe 2.x midplane Part number: 511-1298-xx	The server module supports SAS-1 and SAS-2 modular components. Gen2-capable PCIe EMs and NEMs connected to the SPARC T3-1B server module run at Gen2 speeds. Gen1-capable devices run at Gen1 speeds. Note - See “Important Firmware Upgrade Required Prior to Mixing SAS-1 and SAS-2 Components” on page 14.
Sun Blade 6000 modular system with PCIe 1.x midplane Part number: 501-7376-xx	The server module functions with the following requirements and limitations: • PCIe EMs and NEMs connected to the SPARC T3-1B server module run at Gen1 speeds regardless of their Gen1 or Gen2 capabilities. • Any SAS-1 NEMs installed in the chassis require a firmware upgrade. See “Important Firmware Upgrade Required Prior to Mixing SAS-1 and SAS-2 Components” on page 14. • Storage devices on the server module that are connected to an on-board SAS-2 REM are supported and operate at SAS-2. • On-board SAS-2 REMs cannot be connected to SAS-1 disk or storage modules.
Sun Blade 6048 Modular System chassis	The server module supports SAS-1 modular components.

▼ Identify Your Chassis Midplane Version

This procedure identifies the version of the midplane in a Sun Blade 6000 modular system.

1. Log into CMM ILOM.

2. Type:

```
-> show /CH/MIDPLANE
```

3. View the `fru_part_number` field.

- 501-7376-xx identifies a PCIe 1.x type midplane.
- 511-1298-xx identifies a PCIe 2.x type midplane.
- 511-1487-xx identifies a PCIe 2.x type midplane that is installed in a next-generation Sun Blade 6000 modular system (*not supported*)

For further details, refer to the *Sun Blade 6000 Modular System Product Notes*.

Supported Modular Components

TABLE 5 describes hardware features and products that are supported by the Sun Blade T6320 server module.

TABLE 5 Supported Hardware Components

Hardware Components	Sun Blade T6320 Server Module	Sun Blade T6320 G2 Server Module
FB-DIMM support	• Single-ranked FB-DIMMs on modules with service processor v1 (Feb. 2008) • Dual-ranked FB-DIMMs on modules with service processor v2 (Oct. 2008)	Dual-ranked FB-DIMMs
Supported console connectivity	Local graphics console	Local or remote ILOM console (rKVMS)

TABLE 5 Supported Hardware Components (*Continued*)

Network Express Modules (NEMs)		
NEM X2073A-N – Sun Blade 6000 Ethernet Switched NEM 24p 10GbE	Requires: - For SAS-2 functionality, the server module and NEM X2073A-N must be installed in a chassis with a PCIe 2.x midplane. See “Supported Chassis” on page 8. - CMM Software Release 3.3 (CMM ILOM 3.0.12), or later - For 10GbE network connectivity – FEM 4871A-Z.or FEM X4822A - For storage connectivity – SG-SAS6-REM-Z. Note - For more details about requirements for this NEM, refer to the <i>Sun Blade 6000 Ethernet Switched NEM 24p 10Gb Product Notes</i> .	Requires: - For SAS-2 functionality, the server module and NEM X2073A-N must be installed in a chassis with a PCIe 2.x midplane. See “Supported Chassis” on page 8. - CMM Software Release 3.3 (CMM ILOM 3.0.12), or later - For 10GbE network connectivity – FEM 4871A-Z.or FEM X4822A - For storage connectivity – SG-SAS6-REM-Z. Note - For more details about requirements for this NEM, refer to the <i>Sun Blade 6000 Ethernet Switched NEM 24p 10Gb Product Notes</i> .
NEM X4338A – Sun Blade 6000 Virtualized Multi-Fabric 10GbE M2 Network Express Module	Requires: - CMM Software Release 3.2.1 (CMM ILOM 3.0.10.15a), or later (For SAS2 storage connectivity) REM SG- or SGX- SAS6-REM-Z (For network connectivity) FEM X4835A Note - For FEM X4835A requirements, see FEM X4835A – in the left column of this table.	Requires: - CMM Software Release 3.2.1 (CMM ILOM 3.0.10.15a), or later (For SAS2 storage connectivity) REM SG- or SGX- SAS6-REM-Z (For network connectivity) FEM X4835A Note - For FEM X4835A requirements, see FEM X4835A – in the left column of this table.
NEM X4238 – Sun Blade 6000 Virtualized NEM 10-port 1GbE, 4-port SAS, 2-port 10GbE	Requires: (For storage connectivity) REM X4601A or REM X4607A (For network connectivity) FEM X4835A Note - For FEM X4835A requirements, see FEM X4835A – in the left column of this table.	Requires: (For storage connectivity) REM X4607A (For network connectivity) FEM X4835A Note - For FEM X4835A requirements, see FEM X4835A – in the left column of this table.
NEM X4236A – Sun Blade 6000 Network Express Module (10x 1GbE pass-through ports, 4 miniSAS x4 ports, 10x 10GbE SFP+ ports)	Requires: (For storage connectivity) REM X4601A or REM X4607A (For network connectivity) FEM X4822A	Requires: (For storage connectivity) REM X4607A (For network connectivity) FEM X4822A

TABLE 5 Supported Hardware Components (*Continued*)

NEM X4212A – Sun Blade 6000 Multi-Fabric Network Express Module (10x 1GbE pass-through ports, 4 miniSAS x4 ports)	Requires: • Oracle Solaris 10 5/08 OS (minimum) • (For storage connectivity) REM X4601A or REM X4607A	Requires: • Oracle Solaris 10 5/08 OS (minimum) • (For storage connectivity) REM X4607A
NEM X4250A – Gigabit Ethernet (CU) 10-port Passthru Network Express Module	Supported	Supported
Storage Modules		
Sun Blade 6000 Storage Module M2	Requires: • REM SG- or SGX-SAS6-REM-Z • NEM X4338A • CMM Software Release 3.2.1 (CMM ILOM 3.0.10.15a), or later	Requires: • REM SG- or SGX-SAS6-REM-Z • NEM X4338A • CMM Software Release 3.2.1 (CMM ILOM 3.0.10.15a), or later
Sun Blade 6000 disk module	Requires one of the following REMs: • REM X4601A REM X4607A Also requires one of the following NEMs: • NEM X4238A • NEM X4236A • NEM X4212A	Requires: • REM X4607A Also requires one of the following NEMs: • NEM X4238A • NEM X4236A • NEM X4212A
RAID Expansion Modules (REMs)		
REM SGX-SAS6-REM-Z, REM SG-SAS6-REM-Z – Sun Storage 6 Gb SAS REM HBA	Requires: • Oracle Solaris 10 10/09 OS • Oracle Solaris 10 Patches; 142259-03 (or later), 143523-04 (or later), 141870-03 (or later) • Prior to installation, update firmware on SAS1 components. See “Important Firmware Upgrade Required Prior to Mixing SAS-1 and SAS-2 Components” on page 14	Requires: • Oracle Solaris 10 10/09 OS • Oracle Solaris 10 Patches; 142259-03 (or later), 143523-04 (or later), 141870-03 (or later) Prior to installation, update firmware on SAS1 components. See “Important Firmware Upgrade Required Prior to Mixing SAS-1 and SAS-2 Components” on page 14
REM X4607A – Sun Blade G2 RAID 0/1 Expansion Module	Requires: • LSI HBA FW 1.24.94* (Patch ID 139419-02 or later) • Patch ID 142259-03, or later	Requires: • LSI HBA FW 1.24.94* (Patch ID 139419-02 or later) • Patch ID 142259-03, or later

TABLE 5 Supported Hardware Components (*Continued*)

REM X4601A – T6320 RAID 0/1 Expansion Module	Requires: • LSI HBA FW 1.24.93[†] (patch 138445-03 or later)	Not supported
Fabric Expansion Modules (FEMs)		
FEM X4835A – PCIe Pass-through Fabric Expansion Module	Supported There are revision dependencies for the server module SP System Firmware, motherboard firmware, and OS. Refer to the <i>Sun Blade T63X0 PCIe Pass-Through Fabric Expansion Module User's Guide</i> .	Supported There are revision dependencies for the server module SP System Firmware, motherboard firmware, and OS. Refer to the <i>Sun Blade T63X0 PCIe Pass-Through Fabric Expansion Module User's Guide</i> .
FEM X4822A – 10 Gb Pass-through Fabric Expansion Module	Supported	Supported
X4871A-Z – Dual 10GbE PCIe 2.0 FEM	Supported	Supported

* REM X4607A requires a minimum LSI HBA firmware version of 1.24.94 to support SATA hard drives and for connectivity to the Sun Blade 6000 disk module.

† REM X4601A requires a minimum LSI HBA firmware version of 1.24.93 to support SATA hard drives and for connectivity to the Sun Blade 6000 disk module.

Note – For the latest information on hardware component requirements, refer to the product notes for your component.

Online Documentation

TABLE 6 Online Documentation for Modular Components

Documented Hardware Components	URL
Oracle Product Documentation	http://docs.oracle.com
Sun Blade T6320 and Sun Blade T6320 G2 Server Modules	http://www.oracle.com/pls/topic/lookup?ctx=E19745
Sun Blade 6000 Modular System chassis	http://www.oracle.com/pls/topic/lookup?ctx=E19938
Sun Blade 6048 Modular System chassis	http://www.oracle.com/pls/topic/lookup?ctx=E19926
Network Express Modules (NEMs)	http://www.oracle.com/technetwork/documentation/oracle-blade-sys-190001.html
Storage Modules	http://www.oracle.com/technetwork/documentation/oracle-blade-sys-190001.html
RAID Expansion Modules (REMs)	http://www.oracle.com/technetwork/documentation/oracle-storage-networking-190061.html
Fabric Expansion Modules (FEMs)	http://www.oracle.com/pls/topic/lookup?ctx=E19745 http://www.oracle.com/pls/topic/lookup?ctx=E19134
PCIe Express Modules (PEMs)	Ethernet: http://www.oracle.com/technetwork/documentation/oracle-net-sec-hw-190016.html HBAs: http://www.oracle.com/technetwork/documentation/oracle-storage-networking-190061.html
RAID Documentation	Refer to the <i>Sun SPARC Enterprise T5120 and T5220 Servers Administration Guide</i> at: http://www.oracle.com/pls/topic/lookup?ctx=E19839

Important Firmware Upgrade Required Prior to Mixing SAS-1 and SAS-2 Components

You must upgrade the firmware of your SAS-1 components (SAS-1 NEMs and disk modules) to a firmware version that supports SAS-1/SAS-2 coexistence.

This upgrade must be done before you insert a SAS-2 component into the chassis.

At a minimum, all SAS expanders for SAS-1 NEMs and Sun Blade 6000 Disk Modules must be upgraded to firmware revision 5.04.03 (or later). This firmware revision enables SAS-1/SAS-2 devices to coexist in the Sun Blade 6000 modular system chassis. Using older firmware revisions might result in SAS2 devices hanging.

Refer to the *SAS-1/SAS-2 Compatibility Upgrade Guide* for details on which devices require the upgrade, obtaining the firmware, and performing the upgrade. This guide is available at:

<http://www.oracle.com/pls/topic/lookup?ctx=E19745>

Late-Breaking Issues

This section provides the following information on known hardware issues for the Sun Blade T6320 server module:

- “Storms of Events Might Impact Logging of Telemetry Data (CR 6983799)” on page 16
- “200-Gbyte SATA Hard Drive Vibration Sensitivity” on page 16
- “Drive OK-to-Remove LED Might Not Work When Using the `cfgadm -c unconfigure` Command (CR 6946124)” on page 16
- “`cfgadm` Does Not Unconfigure the Path When Multipathing Software Is Enabled (CR 6948701)” on page 20
- “Locate Button Is Inoperative (CR 6862442)” on page 22
- “Hot-Insertion of Blade Not Recognized by CMM – Intermittent (CR 6855886)” on page 23
- “Kernel Errors Reported (CR 6839498 and 6533591)” on page 23

Storms of Events Might Impact Logging of Telemetry Data (CR 6983799)

Modular systems might experience issues when handling error events, where error telemetry might not be processed or logged by the service processor to the host upon processing a stream of error events. This problem can occur when the server module is running system firmware 7.2.10.a and earlier.

Workaround: Upgrade system firmware to 7.3.0 (or later). See [“Supported Versions of the Oracle Solaris OS, Firmware, and Patches” on page 5](#).

200-Gbyte SATA Hard Drive Vibration Sensitivity

The 200-Gbyte SATA hard drive (option model XRA-ST2CF-200G5K) could experience significant throughput degradation if external vibration is applied to the system chassis in the Z-axis (vertical axis) in the range of 100–400 Hz. The drive might exhibit slow response or possibly go offline with sustained forces up to or beyond 0.17 G (Sun test standard) in this vibration frequency range.

Workaround: If the chassis is in this environment and these symptoms are exhibited, performance can be improved by relocating the server to the slots toward the center of the chassis and placing the SATA drives in the lower two slots of the server.

Drive OK-to-Remove LED Might Not Work When Using the `cfgadm -c unconfigure` Command (CR 6946124)

When a SAS2 capable REM is installed in the server module, using the `cfgadm -c unconfigure` command fails to illuminate the drives OK-to-Remove LED making it difficult to identify which drive to remove.

Workaround: If you are still uncertain about the location of the drive, perform the following procedure.

▼ Manually Locate a Drive

1. Run `format` utility and select the device that you need to locate.

Example:

```
# format
Searching for disks...done
AVAILABLE DISK SELECTIONS:
    0. c0t5000C5000F8AD1FFd0 <SUN300G cyl 46873 alt 2 hd 20 sec
625>
        /scsi_vhci/disk@g5000c5000f8ad1ff
    1. c0t5000C5000F8BB997d0 <SUN300G cyl 46873 alt 2 hd 20 sec
625>
        /scsi_vhci/disk@g5000c5000f8bb997
    2. c0t5000C50003D3D85Bd0 <SUN72G cyl 14087 alt 2 hd 24 sec
424>
        /scsi_vhci/disk@g5000c50003d3d85b
    3. c0t5000C50012EEE447d0 <SUN146G cyl 14087 alt 2 hd 24 sec
848>
        /scsi_vhci/disk@g5000c50012eee447
    4. c0t5000C5000258C457d0 <SUN72G cyl 14087 alt 2 hd 24 sec
424>
        /scsi_vhci/disk@g5000c5000258c457
    5. c0t5000CCA00A4A924Cd0 <SUN300G cyl 46873 alt 2 hd 20 sec
625>
        /scsi_vhci/disk@g5000cca00a4a924c

Specify disk (enter its number): 4
selecting c0t5000C5000258C457d0      <<==
```

2. Make note of the `cntndn` number associated with the drive.

For example, in the previous output example, the string to note is `c0t5000C5000258C457d0`.

3. Type `q` to exit the `format` utility.

4. Find the serial number for the device:

a. Redirect the output of the `iostat` command to a file.

Example:

```
# iostat -En > iostat_output
```

b. In the file, search for the string you noted in Step 2.

You can use an editor and search for the string. In the following example, we are searching for c0t5000C5000258C457d0.

```
c0t5000C50003D3D85Bd0 Soft Errors: 0 Hard Errors: 0 Transport Errors: 0
Vendor: SEAGATE Product: ST973402SSUN72G Revision: 0603 Serial No: 0715215EVK
Size: 73.41GB <73407865856 bytes>
Media Error: 0 Device Not Ready: 0 No Device: 0 Recoverable: 0
Illegal Request: 0 Predictive Failure Analysis: 0
c0t5000C5000258C457d0 Soft Errors: 0 Hard Errors: 0 Transport Errors: 0
Vendor: SEAGATE Product:ST973451SSUN72G Revision: 0302 Serial No:0802V16VTE <<==
Size: 73.41GB <73407865856 bytes>
Media Error: 0 Device Not Ready: 0 No Device: 0 Recoverable: 0
Illegal Request: 0 Predictive Failure Analysis: 0
c1t0d0 Soft Errors: 4 Hard Errors: 2 Transport Errors: 0
Vendor: AMI Product: Virtual CDROM Revision: 1.00 Serial No:
Size: 0.00GB <0 bytes>
Media Error: 0 Device Not Ready: 0 No Device: 2 Recoverable: 0
Illegal Request: 4 Predictive Failure Analysis: 0
c0t5000CCA00A4A924Cd0 Soft Errors: 0 Hard Errors: 0 Transport Errors: 0
Vendor: HITACHI Product: H103030SCSUN300G Revision: A2A8 Serial No: 0950GA0B7E
Size: 300.00GB <300000000000 bytes>
Media Error: 0 Device Not Ready: 0 No Device: 0 Recoverable: 0
Illegal Request: 0 Predictive Failure Analysis: 0
c0t5000C50012EEE447d0 Soft Errors: 0 Hard Errors: 0 Transport Errors: 0
Vendor: SEAGATE Product: ST914603SSUN146G Revision: 0768 Serial No: 092180GMM6
Size: 146.81GB <146810536448 bytes>
/c0t5000C5000258C457d0
```

c. Identify the serial number associated with the string.

In the previous example, 0802V16VTE is the serial number.

5. Change to the directory where you installed the SAS2IRCU utility.

For information on downloading and installing the SAS2IRCU utility, refer to the *Sun Storage 6 Gb SAS REM HBA Installation Guide*.

6. Find the SAS2 controller number (shown under Index) using the sas2ircu LIST command.

Example:

```
# ./sas2ircu LIST
LSI Corporation SAS2 IR Configuration Utility.
Version 3.250.02.00 (2009.09.29)
Copyright (c) 2009 LSI Corporation. All rights reserved.
```

Adapter	Vendor	Device	SubSys	SubSys
---------	--------	--------	--------	--------

Index	Type	ID	ID	Pci Address	Ven ID	Dev ID
-----	-----	-----	-----	-----	-----	-----
0	SAS2008	1000h	72h	00h:700h:00h:00h	1000h	3180h

SAS2IRCU: Utility Completed Successfully.

7. Redirect the output of the `sas2ircu n display` command to a file, where *n* is the controller number from [Step 6](#).

Example:

```
# ./sas2ircu 0 display > sas2ircu_output
```

8. In the output file, search for the serial number obtained from [Step 4](#).

```
# cat sas2ircu_output

Device is a Hard disk
Enclosure #                : 1                <<==
Slot #                      : 1                <<==
State                      : Ready (RDY)
Size (in MB)/(in sectors)  : 70007/143374737
Manufacturer                : SEAGATE
Model Number                : ST973451SSUN72G
Firmware Revision           : 0302
Serial No                   : 0802V16VTE
Protocol                    : SAS
Drive Type                  : SAS_HDD
```

9. In the output, look for the enclosure # and slot # that correspond to this device.

- If the Enclosure # is 1:

The drive is in a server module. The Slot # refers to slot number on the server module. In the previous example, Slot # 1 corresponds to HDD1 on the front panel of the server module.

Locate the drive and do not complete the remaining steps in this procedure.

- If the Enclosure # is any number other than 1:

The drive is in a storage module. The Slot # refers to the slot number on the storage module.

Perform the remaining steps in this procedure.

10. To locate the drive in storage module, use the `sas2ircu LOCATE` command.

The locate ID on the drive will start blinking (amber).

Example specifying a drive in enclosure # 6, slot # 7:

```
# ./sas2ircu 0 LOCATE 6:7 ON
```

11. After replacing the drive, turn off the locate LED.

Example specifying a drive in enclosure # 6, slot # 7:

```
# ./sas2ircu 0 LOCATE 6:7 OFF
```

cfgadm Does Not Unconfigure the Path When Multipathing Software Is Enabled (CR 6948701)

The `cfgadm -c unconfigure` command fails if the path specified is an mpzio enabled device.

Workaround: This issue is fixed in the Oracle Solaris 9/10 OS and in kernel patch 14909-13 (or later). If you are unable to install Oracle Solaris 9/10 OS or patch 14909-13, perform the following procedure.

▼ Manually Unconfiguring Multipath-Enabled Drives

1. Start the `format` utility to see the drives and to obtain the drive numbers (such as `c0t5000C5000F0E5AFFd0`) for the drive you plan to unconfigure.

```
# format
Searching for disks...done
AVAILABLE DISK SELECTIONS:
0. c0t5000C5000F0E5AFFd0 <SUN72G cyl 14087 alt 2 hd 24 sec 424>
   /scsi_vhci/disk@g5000c5000f0e5aff
1. c0t5000C5000F0FE227d0 <SUN72G cyl 14087 alt 2 hd 24 sec 424>
   /scsi_vhci/disk@g5000c5000f0fe227
```

2. To exit the `format` utility, select one of the drives and type `q`.

```
Specify disk (enter its number): 1
selecting c0t5000C5000F0FE227d0
```

3. Use the `mount` command to identify whether the device is mounted or if it is a boot drive.

- The following example shows the output when the drive is mounted:

```
# mount | grep c0t5000C5000F0E5AFFd0
/mnt on /dev/dsk/c0t5000C5000F0E5AFFd0s6
read/write/setuid/devices/intr/largefiles/logging/xattr/onerror=
panic/dev=600016 on Fri Jun  4 10:37:08 2010
```

- The following example shows the output when the drive is a boot drive:

```
# mount | grep c0t5000C5000F0FE227d0
/ on /dev/dsk/c0t5000C5000F0FE227d0s0
read/write/setuid/devices/intr/largefiles/logging/xattr/onerror=
panic/dev=800010 on Wed Jun  9 09:58:24 2010
/export/home on /dev/dsk/c0t5000C5000F0FE227d0s7
read/write/setuid/devices/intr/largefiles/logging/xattr/onerror=
panic/dev=800017 on Wed Jun  9 09:59:13 2010
```

4. Based on your results, do one of the following:

- If the disk is a not boot drive, go to [Step 5](#).
- If the disk is a boot drive, go to [Step 6](#).

5. Identify the processes running on the drive:

a. Run the `fuser` command to identify the processes accessing the disk.

- The following example shows there are no processes using the disk:

```
# fuser -d /dev/dsk/c0t5000C5000F0E5AFFd0s2
/dev/dsk/c0t5000C5000F0FE227d0s2:
```

- The following example shows a process accessing the disk, followed by the process ID (PID):

```
# fuser -d /dev/dsk/c0t5000C5000F0FE227d0s2
/dev/dsk/c0t5000C5000F0FE227d0s2: 1036o
```

b. If you identify a process, use the `ps` command to further identify the process.

Example:

```
# ps -ef | grep 1036
root 1036 982 0 11:56:34 pts/2 0:02 dd if=/dev/dsk/c0t5000C5000F0E5AFFd0s2 of=
/dev/dsk/c0t5000C5000F0FE227d0s7
```

c. Kill processes identified in [Step b](#) using `kill -9 PID`.

- d. Use the `umount` command to unmount any mount points and then run `sync` command to synchronize the disk.

Example:

```
# umount /mnt  
  
# mount | grep c0t5000C5000F0E5AFFd0  
  
# sync
```

- e. Remove the disk, and do not continue with subsequent steps in this procedure.

6. If the drive is a boot drive, run the following commands to synchronize the drive and shutdown the system:

```
# sync  
  
# init 0
```

7. Remove the disk.

Locate Button Is Inoperative (CR 6862442)

Pressing the Locate button on the front panel does not toggle the Locator LED on or off. This problem is not present on server modules running System Firmware version 7.1.x.

Workaround: Control the Locator LED using the one of the following commands:

- From the ILOM CLI:

```
-> set /SYS/LOCATE value=on  
<or>  
-> set /SYS/LOCATE value=off
```

- From the ALOM CMT CLI:

```
sc> setlocator on  
<or>  
sc> setlocator off
```

Fix: Update the server module SP System Firmware to version 7.2.4.e or later.

Hot-Insertion of Blade Not Recognized by CMM – Intermittent (CR 6855886)

There is an intermittent problem with hot-insertions. This problem only applies to modular systems that are running CMM firmware 3.0.3.32.

When you perform a hot-insertion of the Sun Blade T6320 server module, sometimes the CMM does not detect the insertion. When you check for the presence of the blade using the CMM CLI or Web UI, no indication of the blade is displayed.

If this failure is not corrected, undetected blades might not receive adequate temperature management and might hit upper temperature limits.

Workaround: If you inserted a blade and it is not recognized, reset the CMM with the following command:

```
-> reset /CMM
```

Kernel Errors Reported (CR 6839498 and 6533591)

Some server modules with less than 64 G-bytes of memory might display kernel warning messages during high activity.

Examples:

```
panic . . . cannot satisfy mandatory allocation
```

```
. . . DL_BADADDR observed on nxge . . .
```

Workaround: This issue is fixed in the Oracle Solaris 9/10 OS and in kernel patch 142909-13 (or later). If you are unable to install this OS or patch, you might be able to improve this condition by increasing the memory on your server module.

Information Not Covered in the Online Documentation

This chapter provides the following information about Oracle server module documentation:

- [“OS Installation from a USB DVD Drive” on page 26](#)
- [“OS Installation From a USB Flash Device” on page 26](#)
- [“Remote Console \(Remote KVMs\)” on page 29](#)
- [“Local Graphics Monitor or Local KVMs Support” on page 29](#)
- [“Memory Capacity and FB-DIMM Configuration” on page 30](#)

OS Installation from a USB DVD Drive

The Oracle Solaris 10 5/08 OS is the minimum suggested OS for installing from a USB DVD drive. If the USB DVD drive is connected through a USB hub to the front dongle, the Oracle Solaris 10 10/08 OS is the minimum requirement.

▼ To Install the OS From a USB DVD Drive

1. Connect the USB DVD drive.
2. Identify the USB device path at the OpenBoot PROM level from output from the `show-disks` command:

```
{0} ok show-disks
a) /pci@0/pci@0/pci@2/LSILogic,sas@0/disk
b) /pci@0/pci@0/pci@1/pci@0/usb@1,2/storage@1/disk    <=====
q) NO SELECTION
Enter Selection, q to quit: q
{0} ok
```

3. At the `ok` prompt, boot from the DVD drive to proceed with the Oracle Solaris OS installation:

```
{0} ok boot /pci@0/pci@0/pci@1/pci@0/usb@1,2/storage@1/disk:f
```

OS Installation From a USB Flash Device

At a minimum, the Oracle Solaris 10 10/08 OS and an 8-Gbyte USB drive are required for installing the OS on USB Flash devices. For installing Core System Support only, you can use a 2-Gbyte USB drive.

▼ To Install the OS to a USB Flash Device

1. Label the USB drive.
 - a. Install the USB drive with a front dongle.

b. Boot from a netinstall image or a DVD drive in single user mode.

c. Format the drive:

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

AVAILABLE DISK SELECTIONS:
    0. c0t0d0 <drive type unknown>
        /pci@0/pci@0/pci@1/pci@0/usb@1,2/storage@1/disk@0,0
<=== USB drive
    1. c2t0d0 <SanDisk-uSSD5000-0.1 cyl 1957 alt 2 hd 128 sec 32>
        /pci@0/pci@0/pci@2/LSILogic,sas@0/sd@3,0
Specify disk (enter its number): 0

AVAILABLE DRIVE TYPES:
    0. Auto configure
    1. Quantum ProDrive 80S
    2. Quantum ProDrive 105S
    3. CDC Wren IV 94171-344
    4. SUN0104
    5. SUN0207
    6. SUN0327
    7. SUN0340
    8. SUN0424
    9. SUN0535
   10. SUN0669
   11. SUN1.0G
   12. SUN1.05
   13. SUN1.3G
   14. SUN2.1G
   15. SUN2.9G
   16. Zip 100
   17. Zip 250
   18. Peerless 10GB
   19. SanDisk-uSSD5000-0.1
   20. SUN72G
   21. ATA-FUJITSUMHV2080B-B02B
   22. other
Specify disk type (enter its number): 0
Auto configuration via format.dat[no]?
Auto configuration via generic SCSI-2[no]?

The device does not support mode page 3 or page 4,
or the reported geometry info is invalid.
WARNING: Disk geometry is based on capacity data.
```

```

The current rpm value 0 is invalid, adjusting it to 3600
c0t0d0: configured with capacity of 7.46GB
<LG-USBDrive-1100 cyl 3822 alt 2 hd 128 sec 32>
selecting c0t0d0
[disk formatted]

FORMAT MENU:
    disk      - select a disk
    type      - select (define) a disk type
    partition - select (define) a partition table
    current   - describe the current disk
    format    - format and analyze the disk
    repair    - repair a defective sector
    label     - write label to the disk
    analyze   - surface analysis
    defect    - defect list management
    backup    - search for backup labels
    verify    - read and display labels
    save      - save new disk/partition definitions
    inquiry   - show vendor, product and revision
    scsi      - independent SCSI mode selects
    cache     - enable, disable or query SCSI disk cache
    volname   - set 8-character volume name
    !<cmd>    - execute <cmd>, then return
    quit
format> label
[0] SMI Label
[1] EFI Label
Specify Label type[0]:
Ready to label disk, continue? y

```

2. After the USB drive is labeled, install the Oracle Solaris OS with a netinstall image or a USB DVD media.

Note – You might see a warning message similar to the following when the Oracle Solaris OS boots from the USB drive. You can ignore this message:

```

/usr/sbin/vold[592]: rmdisk: open of "/dev/rdisk/c0t0d0s0";
Device busy

```

Remote Console (Remote KVMs)

For instructions on using these features, refer to the *Sun Integrated Lights Out Manager (ILOM) 3.0 Supplement for the Sun Blade T6340 Server Module*.

Note – The ILOM Remote Console feature is only supported on the Sun Blade T6320 G2 server module.

Local Graphics Monitor or Local KVMs Support

After initial system installation, you can install a local graphics monitor and configure it to access the system console. You *cannot* use a local graphics monitor to perform initial system installation, nor can you use a local graphics monitor to view power-on self-test (POST) messages.

To install a local graphics monitor, you must have the following items:

- Monitor with appropriate resolution to support the frame buffer
- Supported USB keyboard
- Supported USB mouse

To view a list of supported screen resolutions type:

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

For more information about graphics support, refer to the *Sun Blade T6320 Server Module Service Manual*.

▼ To Access the System Console Through a Local Graphics Monitor

1. **Attach the monitor video cable to the HD-15 video connector on the cable dongle.**

Tighten the thumbscrews to secure the connection.

2. Connect the monitor power cord to an AC outlet.
3. Connect the USB keyboard cable to one USB connector on the cable dongle.
4. Connect the USB mouse cable to the other USB connector.
5. Access the `ok` prompt.

For more information, refer to the *Sun Blade T6320 Server Installation and Configuration Guide*.

6. Set the OpenBoot configuration variables.

From the existing system console, type:

```
ok setenv input-device keyboard
ok setenv output-device screen
```

7. To cause the changes to take effect, type:

```
ok reset-all
```

The system stores the parameter changes, and boots automatically when the OpenBoot configuration variable `auto-boot?` is set to `true` (the default value).

Note – To cause the parameter changes to take effect, you can also power cycle the system using the front panel Power button.

You can now issue system commands and view system messages using your local graphics monitor. Continue with your installation or diagnostic procedure, as needed. For more information about graphics configurations, refer to the *Sun Blade T6320 Server Module Service Manual*.

Memory Capacity and FB-DIMM Configuration

Oracle's Sun Blade T6320 server module has 16 connectors (slots) that hold Sun approved, industry standard FB-DIMMs in the following capacities:

- 1 Gbyte (maximum of 16 Gbytes)
- 2 Gbyte (maximum of 32 Gbytes)
- 4 Gbyte (maximum of 64 Gbytes)

- 8 Gbyte (maximum of 128 Gbytes)

The Sun Blade T6320 server module performs best if all 16 connectors are populated with 16 identical FB-DIMMs. This configuration also enables the system to continue operating even when a FB-DIMM fails, or if an entire channel fails.

FB-DIMM Configuration Guidelines

You must follow these guidelines when adding or replacing FB-DIMMs:

- Valid quantities of FB-DIMMs are 4, 8, or 16 (See [FIGURE 1](#)).
- All FB-DIMMs in the server *must* be the same capacity.
- All FB-DIMMs in a branch *must* have the same part number.

Note – FB-DIMMs that run on 1.5V are not supported in this server module. An FB-DIMM that runs on 1.5V is sometimes noted with an *LV* on the part number label. Do not install these FB-DIMMs in this server module.

When Upgrading Memory

When adding memory to the server, ensure that you follow all of the guidelines. You might need to move some of the original FB-DIMMs to ensure that all FB-DIMMs in a branch have the same part number.

When Replacing Faulty FB-DIMMs

Within each branch, ensure that the replacement FB-DIMM has the same part number as the FB-DIMM you are removing. If you are unable to obtain an FB-DIMM with the same part number, you might need to replace all FB-DIMMs in the branch to ensure that they all have the same part number.

FIGURE 1 DIMM Population Rules

