

# SPARC M8 and SPARC M7 Servers Product Notes

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SPARC M8 and SPARC M7 Servers Product Notes

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## Using This Documentation

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- **Overview** – Provides late-breaking information about the SPARC M8 and SPARC M7 servers from Oracle
- **Audience** - Technicians, system administrators, authorized service providers, and trained hardware service personnel who have been instructed on the hazards within the equipment and are qualified to remove and replace hardware.
- **Required knowledge** – Advanced experience troubleshooting and replacing hardware

## Product Documentation Library

Documentation and resources for this product and related products are available at <http://www.oracle.com/goto/m8/docs> and <http://www.oracle.com/goto/m7/docs>.

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## Late-Breaking Information

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This document provides late-breaking information for the servers.

- [“SPARC M8 Server Late-Breaking Information” on page 11](#)
- [“SPARC M7 Server Late-Breaking Information” on page 15](#)
- [“Common Late-Breaking Information” on page 23](#)

### Related Information

- [“Known Issues” on page 27](#)
- [“Glossary” on page 57](#)

## SPARC M8 Server Late-Breaking Information

These topics provide the late-breaking information for the SPARC M8-8 server.

- [“Minimum Supported Versions of the Firmware, OS, and Software \(SPARC M8\)” on page 12](#)
- [“Mandatory Oracle Solaris 11 OS Package Updates \(SPARC M8\)” on page 13](#)
- [“Mandatory Oracle Solaris 10 1/13 OS Patches and Packages \(SPARC M8\)” on page 14](#)
- [“Obtain Oracle Solaris 10 Patches \(SPARC M8\)” on page 14](#)

### Related Information

- [“Common Late-Breaking Information” on page 23](#)
- [“Known Issues” on page 27](#)

## Minimum Supported Versions of the Firmware, OS, and Software (SPARC M8)

You must install the latest available and supported versions of the system firmware, [OS](#), and patches for optimal performance, security, and stability.

Oracle Solaris 11 is the recommended OS for the SPARC M8-8 server. Oracle Solaris 11 provides simplified installation and maintenance, enhanced virtualization capabilities, and performance improvements. A more detailed list of Oracle Solaris 11 advantages is available at <http://www.oracle.com/technetwork/server-storage/solaris11/overview/solaris-matrix-1549264.html>.

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**Note** - If you configure the server with Oracle VM Server for SPARC, you can install various combinations of OS versions. For example, you must run Oracle Solaris 11.3 in the control domain, but you can run Oracle Solaris 11.3 or Oracle Solaris 10 1/13 in a guest domain.

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**Note** - By default, the Oracle Solaris OS [AI](#) server installer selects the first drive it finds as the boot disk and installs the OS on it. Since SPARC M8-8 servers do not include integrated drives, the installation might fail or the installer might install the OS on the first drive of an external storage device, even if that first drive is not appropriate for your environment. To ensure that the OS is installed on the correct drive, always specify the target drive in the AI manifest file. For instructions, refer to [Installing Oracle Solaris 11.3 Systems](#) in the Oracle Solaris documentation and the `ai_manifest(4)` man page.

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Software	Minimum Supported Versions
Oracle System Firmware	<p>9.8.0 includes Oracle ILOM 4.0.x support on M8-8 servers.</p> <p>9.10.3 includes 128 GB DIMM support and Oracle ILOM 5.0.2.2 support on M8-8 servers.</p>
Oracle Solaris 11	<p>Oracle Solaris 11.3 SRU 24.</p> <p>For the control domain, guest domains, and nonvirtualized configurations.</p> <p>Includes these software components:</p> <ul style="list-style-type: none"> <li>■ Oracle VM Server for SPARC</li> <li>■ <a href="#">Oracle VTS</a></li> </ul> <p>Also see “<a href="#">Mandatory Oracle Solaris 11 OS Package Updates (SPARC M8)</a>” on page 13.</p>
Oracle Solaris 10	Oracle Solaris 10 1/13 SPARC Bundle and patches.

Software	Minimum Supported Versions
Java Development Kit	<p data-bbox="808 369 1073 390">For virtual guest domains only.</p> <p data-bbox="808 415 1325 464">Also see “<a href="#">Mandatory Oracle Solaris 10 1/13 OS Patches and Packages (SPARC M8)</a>” on page 14.</p> <p data-bbox="808 499 1333 548">Java applications running on this product require one of these minimum JDK versions:</p> <ul data-bbox="808 569 1089 653" style="list-style-type: none"> <li>■ JDK 11 or higher</li> <li>■ JDK 1.8.0_131 b11 or higher</li> <li>■ JDK 1.7.0_85 b33 or higher</li> </ul> <p data-bbox="808 678 1386 804">For production use, Oracle recommends using the latest available JDK and JRE versions, and does not recommend using JDK versions that are no longer updated and are in sustaining support. For details, refer to <a href="https://www.oracle.com/technetwork/java/javase/overview/index.html">https://www.oracle.com/technetwork/java/javase/overview/index.html</a></p> <p data-bbox="808 829 1386 877">For information about running older versions of the JDK on SPARC servers, refer to Doc ID 2564392.1 on My Oracle Support.</p>
Oracle Database Enterprise Edition	<p data-bbox="808 894 878 915">12.2.0.1</p> <p data-bbox="808 940 1289 961">Required on Oracle Solaris 11.3 for in-memory features.</p>

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**Note** - Always update optional [PCIe](#) card firmware to the latest supported version. Some PCIe cards and devices have other minimum requirements. For details, including what is required for a device to be bootable, refer to the product notes and other documentation for that device.

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**Note** - Refer to [Hardware and Software Requirements for Oracle Solaris Kernel Zones](#) to confirm that your server firmware supports Oracle Solaris kernel zones.

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## Mandatory Oracle Solaris 11 OS Package Updates (SPARC M8)

At a minimum, you must update the Oracle Solaris 11.3 OS with SRU 24.

If you reinstall the OS, you might need to install certain package updates before you put the server and optional hardware or software components into production.

Install the most recent Oracle Solaris 11.3 [SRU](#). Taking this action ensures that your server has the latest software for the best performance, security, and stability.

Use the `pkg info entire` command to display which SRU is currently installed on your server. Use the `pkg` command or the package manager GUI to download any available SRU.

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**Note** - To access the Oracle Solaris 11 package update repository, you must have an Oracle support agreement that enables you to install a required [SSL](#) certificate and support key.

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## Mandatory Oracle Solaris 10 1/13 OS Patches and Packages (SPARC M8)

If you install the Oracle Solaris 10 OS in a guest domain, you must also install the latest recommended patch set for Oracle Solaris 10 SPARC, and in some cases, additional patches.

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**Note** - This version of the OS is supported only in guest domains.

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Installation Order	OS and Patches
1	Oracle Solaris 10 1/13.
2	<p>Install the mandatory patches found in the recommended patchset for Oracle Solaris 10 SPARC bundle as of June 2017, or newer, which includes <a href="#">KU150400-51</a>.</p> <p>To install Oracle Solaris 10 1/13, you must use an image with the <a href="#">miniroot</a> patched with <a href="#">KU150400-29</a>, or higher.</p> <p>A supported image is provided in MOS patch 26032848. This image contains the original Oracle Solaris 10 1/13 software, and a miniroot image which includes kernel patch 150400-48. Downloading and using this image enables you to install Oracle Solaris 10 1/13 on guest domains using the Oracle Solaris 10 JumpStart technology without manually patching the packed miniroot.</p> <p>(Optional) If you do not want to use the image provided in the MOS patch, use the prior method to patch the packed miniroot manually. You must also use this method to patch versions of Oracle Solaris older than Oracle Solaris 10 1/13. Refer to MOS article 1501320.1 for instructions on how to patch a packed miniroot at <a href="#">My Oracle Support (https://myoraclesupport.com)</a>.</p> <p>You can use the Oracle Solaris 10 JumpStart technology and finish scripts to patch the installed image.</p>

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### ▼ Obtain Oracle Solaris 10 Patches (SPARC M8)

1. Sign in to My Oracle Support:

<https://myoraclesupport.com>

**2. Click the Patches & Updates tab.**

**3. Search for a patch using the Patch Search panel.**

When searching for a patch using the Patch Name or Number field, you must specify the complete name or number of the patch. For example:

- Solaris 10 1/13 SPARC Bundle
- 26032848
- 147159-03

To search using a patch number without the revision number (last two digits), type % in place of the revision number. For example:

147159-%

**4. After you locate the patch, access the README and download the patch from the site.**

The patch README provides the patch installation instructions.

## SPARC M7 Server Late-Breaking Information

These topics provide the late-breaking information for the SPARC M7 servers.

- [“Minimum Supported Versions of the Firmware, OS, and Software \(SPARC M7\)” on page 16](#)
- [“Mandatory Oracle Solaris 11 OS Package Updates \(SPARC M7\)” on page 17](#)
- [“Mandatory Oracle Solaris 10 OS Patches and Packages \(SPARC M7\)” on page 18](#)
- [“Trusted Platform Module Availability \(SPARC M7\)” on page 21](#)
- [“Oracle ILOM Deprecation Notices and Important Operating Notes \(SPARC M7\)” on page 21](#)
- [“Required Firmware Updates for Optional Components \(SPARC M7\)” on page 23](#)

### Related Information

- [“Common Late-Breaking Information” on page 23](#)

## Minimum Supported Versions of the Firmware, OS, and Software (SPARC M7)

You must install the latest available and supported versions of the system firmware, OS, and patches for optimal performance, security, and stability.

Oracle Solaris 11 is the recommended OS for the SPARC M7 servers. Oracle Solaris 11 provides simplified installation and maintenance, enhanced virtualization capabilities, and performance improvements. A more detailed list of Oracle Solaris 11 advantages is available at <http://www.oracle.com/technetwork/server-storage/solaris11/overview/solaris-matrix-1549264.html>.

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**Note** - If you configure the server with Oracle VM Server for SPARC, you can install various combinations of OS versions. For example, you must run Oracle Solaris 11.3 in the control domain, but you can run Oracle Solaris 11.3, Oracle Solaris 10 1/13, Oracle Solaris 10 8/11, or Oracle Solaris 10 9/10 in a guest domain.

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**Note** - By default, the Oracle Solaris OS AI server installer selects the first drive it finds as the boot disk and installs the OS on it. Since the SPARC M7 servers do not include integrated drives, the installation might fail or the installer might install the OS on the first drive of an external storage device, even if that first drive is not appropriate for your environment. To ensure that the OS is installed on the correct drive, always specify the target drive in the AI manifest file. For instructions, refer to [Installing Oracle Solaris 11.3 Systems](#) in the Oracle Solaris documentation and the ai\_manifest(4) man page.

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Software	Minimum Supported Versions
Sun System Firmware	9.5.2.g for the M7 servers, includes Oracle ILOM 3.2.5.8. <b>Note</b> - For the M7 servers, the latest firmware release is 9.8.0.c.
Oracle Solaris 11	Oracle Solaris 11.3 SRU2.  For the control domain, guest domains, and nonvirtualized configurations.  Includes these software components: <ul style="list-style-type: none"> <li>■ Oracle VM Server for SPARC.</li> <li>■ Oracle VTS.</li> </ul> Also see <a href="#">“Mandatory Oracle Solaris 11 OS Package Updates (SPARC M7)” on page 17</a> .
Oracle Solaris 10	Oracle Solaris 10 9/10 or Oracle Solaris 10 8/11 OS, plus Oracle Solaris 10 1/13 SPARC Bundle and patches.  For virtual guest domains only.



Software	Minimum Supported Versions
Java SE Development Kit	<p>Oracle Solaris 10 OS includes Oracle VTS 7 PS15.</p> <p>Also see “<a href="#">Mandatory Oracle Solaris 10 OS Patches and Packages (SPARC M7)</a>” on page 18.</p> <p>Java applications running on this product require one of these minimum JDK versions:</p> <ul style="list-style-type: none"> <li>■ JDK 11 or higher</li> <li>■ JDK 1.8.0_60 b27 or higher</li> <li>■ JDK 1.7.0_85 b33 or higher</li> </ul> <p>For production use, Oracle recommends using the latest available JDK and JRE versions, and does not recommend using JDK versions that are no longer updated and are in sustaining support. For details, refer to <a href="https://www.oracle.com/technetwork/java/javase/overview/index.html">https://www.oracle.com/technetwork/java/javase/overview/index.html</a></p> <p>For information about running older versions of the JDK on SPARC servers, refer to Doc ID 2564392.1 on My Oracle Support.</p>
Oracle Database Enterprise Edition	<p>12.1.0.2.13 (October 2015), plus required patch 21744410.</p> <p>Required on Oracle Solaris 11.3 for in-memory features.</p>

**Note** - Some [PCIe](#) cards and devices have other minimum requirements. For details, including what is required for a device to be bootable, refer to the product notes and other documentation for that device.

**Note** - Your server might require more recent firmware for using Oracle Solaris kernel zones. Refer to [Hardware and Software Requirements for Oracle Solaris Kernel Zones](#).

## Improved Hypervisor Failover

The latest Sun System firmware release (9.8.0.c) includes FPGA failover and SSI hardening improvements that enable the hypervisor to more gracefully handle failovers from one SP to another when they are triggered by a hardware fault. Previously, these situations caused the hypervisor abort, which impacted the end user.

## Mandatory Oracle Solaris 11 OS Package Updates (SPARC M7)

At a minimum, you must update the Oracle Solaris 11.3 OS with SRU2.

If you reinstall the OS, you might need to install certain package updates before you put the server and optional hardware or software components into production.

Install the most recent Oracle Solaris 11.3 [SRU](#). Taking this action ensures that your server has the latest software for the best performance, security, and stability.

Use the `pkg info entire` command to display which SRU is currently installed on your server. Use the `pkg` command or the package manager GUI to download any available SRU.

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**Note** - To access the Oracle Solaris 11 package update repository, you must have an Oracle support agreement that enables you to install a required [SSL](#) certificate and support key.

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## Mandatory Oracle Solaris 10 OS Patches and Packages (SPARC M7)

If you install the Oracle Solaris 10 OS in a guest domain, you must also install additional patches and in some cases, a patch bundle.

### Oracle Solaris 10 1/13 Mandatory Patches

This version of the OS is supported only in guest domains.

Installation Order	OS and Patches
1	Oracle Solaris 10 1/13.
2	These mandatory patches: <ul style="list-style-type: none"><li>■ All patches up to the most recently posted version.</li><li>■ <a href="#">KU150400-29</a>.</li></ul> <p>To install Oracle Solaris 10 1/13, you must use an image with the <a href="#">miniroot</a> patched with <a href="#">KU150400-29</a>, or higher.</p> <p>A supported image is provided in MOS patch 26032848. This image contains the original Oracle Solaris 10 1/13 software, and a miniroot image which includes kernel patch 150400-48. Downloading and using this image enables you to install Oracle Solaris 10 1/13 on guest domains using the Oracle Solaris 10 JumpStart technology without manually patching the packed miniroot.</p> <p>(Optional) If you do not want to use the image provided in the MOS patch, use the prior method to patch the packed miniroot manually. You must also use this method to patch versions of Oracle Solaris older than Oracle Solaris 10 1/13. Refer to MOS</p>

Installation Order	OS and Patches
	<p>article 1501320.1 for instructions on how to patch a packed miniroot at <a href="https://myoraclesupport.com">My Oracle Support (https://myoraclesupport.com)</a>.</p> <p>You can use the Oracle Solaris 10 JumpStart technology and finish scripts to patch the installed image.</p>

## Oracle Solaris 10 8/11 Mandatory Patches

This version of the OS is supported only in guest domains.

Installation Order	OS and Patches
1	<p>Oracle Solaris 10 8/11.</p> <p><b>Note</b> - Until the Oracle Solaris 10 1/13 SPARC Bundle has been installed, Oracle Solaris 10 8/11 supports only 512 CPUs and 3840 Gbytes of memory. For servers exceeding those resources, reduce the resources until the Oracle Solaris 10 1/13 SPARC Bundle has been installed, or install a later version of Oracle Solaris.</p>
2	<p>Oracle Solaris 10 1/13 SPARC Bundle.</p> <p>This bundle causes the OS to operate as the Oracle Solaris 10 1/13 OS, but the version number in the <code>/etc/release</code> file remains as Oracle Solaris 10 8/11.</p>
3	<p>These mandatory patches:</p> <ul style="list-style-type: none"> <li>■ All patches up to the most recently posted version.</li> <li>■ KU150400-29.</li> </ul> <p>To install Oracle Solaris 10, you must patch the miniroot of the installation media with KU150400-29, at minimum. You can use the Oracle Solaris 10 JumpStart technology and finish scripts to patch the installed image. Refer to MOS article 1501320.1 for instructions on how to patch a packed miniroot at <a href="https://myoraclesupport.com">My Oracle Support (https://myoraclesupport.com)</a>.</p> <p>If you are unfamiliar with the Oracle Solaris 10 JumpStart technology, contact your support representative or Oracle Support for documentation that describes how to configure an Oracle Solaris 11 zone as an Oracle Solaris 10 1/13 JumpStart server.</p>

**Note** - Until the Oracle Solaris 10 1/13 SPARC Bundle is installed, you might encounter these bugs — 15712380, 15704520, 15665037. The first two bugs are resolved when the Oracle Solaris 10 1/13 SPARC Bundle is installed. These bugs do not impact the patch installations.

## Oracle Solaris 10 9/10 Mandatory Patches and Packages

This version of the OS is supported only in guest domains.

Installation Order	OS, Patches, and Packages
1	Oracle Solaris 10 9/10 <b>Note</b> - Until the Oracle Solaris 10 1/13 SPARC Bundle has been installed, Oracle Solaris 10 9/10 only supports 512 CPUs and 1023 Gbytes of memory. For servers exceeding those resources, reduce the resources until the Oracle Solaris 10 1/13 SPARC Bundle has been installed, or install a later version of Oracle Solaris.
2	Oracle Solaris 10 1/13 SPARC Bundle.  This bundle causes the OS to operate as the Oracle Solaris 10 1/13 OS, but the version number in the <code>/etc/release</code> file remains as Oracle Solaris 10 9/10.
3	These mandatory patches: <ul style="list-style-type: none"><li>■ All patches up to the most recently posted version.</li><li>■ KU150400-29.</li></ul> To install Oracle Solaris 10, you must patch the miniroot of the installation media with KU150400-29, at minimum. You can use the Oracle Solaris 10 JumpStart technology and finish scripts to patch the installed image. Refer to MOS article 1501320.1 for instructions on how to patch a packed miniroot at <a href="https://myoraclesupport.com">My Oracle Support (https://myoraclesupport.com)</a> .  If you are unfamiliar with the Oracle Solaris 10 JumpStart technology, contact your support representative or Oracle Support for documentation that describes how to configure an Oracle Solaris 11 zone as an Oracle Solaris 10 1/13 JumpStart server.
4	Use the <code>pkgadd</code> command to install the <code>SUNwust1</code> and <code>SUNwust2</code> packages.

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**Note** - Until the Oracle Solaris 10 1/13 SPARC Bundle is installed, you might encounter these bugs — 15712380, 15704520, 15665037. The first two bugs are resolved when the Oracle Solaris 10 1/13 SPARC Bundle is installed. These bugs do not impact the patch installations.

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## ▼ Obtain Oracle Solaris 10 Patches (SPARC M7)

### 1. Sign in to My Oracle Support:

<https://myoraclesupport.com>

### 2. Click the Patches & Updates tab.

### 3. Search for a patch using the Patch Search panel.

When searching for a patch using the Patch Name or Number field, you must specify the complete name or number of the patch. For example:

- Solaris 10 1/13 SPARC Bundle
- 26032848
- 147159-03

To search using a patch number without the revision number (last two digits), type % in place of the revision number. For example:

147159-%

4. **After you locate the patch, access the README and download the patch from the site.**

The patch README provides the patch installation instructions.

## Trusted Platform Module Availability (SPARC M7)

On SPARC M7-8 and SPARC M7-16 servers, the Trusted Platform Module (TPM) can encrypt an optional on-disk keystore. The TPM-secured keystore can be decrypted only with the unique keys for that TPM. If the TPM changes through platform migration or hardware replacement, the keystore cannot be decrypted or accessed. Use the Oracle Solaris `tpmadm(1M)` migrate subcommand to back up the TPM-secured keystore for possible restoration at a later time. Example applications that might use the TPM-secured keystore include the Apache web server and the [SSH](#) secure shell.

The TPM chips reside on the SPs. One SP acts as the [Active SP](#), and the other SP acts as the [Standby SP](#). If a failure occurs on the Active SP, the system fails over to the Standby SP. If this failover occurs, the TPM on the Standby SP cannot decrypt the TPM-secured keystore until you restore the keystore.

By default, the TPM is not used unless you specifically enable and configure it on SPARC M7-8 and SPARC M7-16 servers. In Oracle Solaris 11.3, after you boot the server for the first time, you must set the `tpmadm failover` command to specify that TPM data and keys are automatically backed up to the Standby SP. You can use the backed-up TPM data and keys for a system migration or hardware replacement. Do *not* use the TPM-secured keystore unless you back up the keystore. For more information, refer to *SPARC: How to Initialize TPM Using the Oracle ILOM Interface* in the Oracle ILOM documentation.

## Oracle ILOM Deprecation Notices and Important Operating Notes (SPARC M7)

- [“Deprecation Notice for IPMI 2.0 Management Service” on page 22](#)
- [“Deprecation Notice for Default Self-Signed Certificate” on page 22](#)

## Deprecation Notice for IPMI 2.0 Management Service

**Present Behavior:** IPMI 2.0 Management Sessions - Enabled (default). Support for IPMI 2.0 client interfaces.

**Future Behavior:** The following IPMI Management Service changes will occur in future Oracle ILOM firmware releases after firmware version 3.2.7.

- First feature change: Oracle ILOM will add a new client interface as an alternative to the IPMI 2.0 Client interface.
- Second feature change: The default configuration property for IPMI 2.0 Sessions will change from Enabled to Disabled in a future release. Clients relying on IPMI 2.0 will be unable to communicate with Oracle ILOM unless the configuration property for IPMI 2.0 Sessions is manually enabled.
- Third feature change: Removal of IPMI 2.0 client support. IPMI 2.0 clients will no longer be able to communicate with Oracle ILOM.

For future updates about IPMI Management Service support in Oracle ILOM, refer to the latest firmware release information in the *Oracle ILOM Feature Updates and Release Notes for Firmware 3.2.x* at <http://www.oracle.com/goto/ilom/docs>.

## Deprecation Notice for Default Self-Signed Certificate

**Present Behavior:** An earlier version of the default SSL self-signed certificate is provided by Oracle ILOM.

**Future Behavior:** A newer version of the default SSL self-signed certificate will be provided in a future Oracle ILOM firmware release.

### **Impact to Customer Configuration:**

After updating to a future firmware release, users connecting to Oracle ILOM through the web interface will need to accept a newer version of the default SSL self-signed certificate that is provided by Oracle ILOM. Customer provided SSL certificates will not be impacted by this change.

For future updates about the default SSL self-signed certificate that is provided by Oracle ILOM, refer to the latest firmware release information in the *Oracle ILOM Feature Updates and Release Notes for Firmware 3.2.x* at <http://www.oracle.com/goto/ilom/docs>.

## Required Firmware Updates for Optional Components (SPARC M7)

Always update optional PCIe card firmware to the latest supported version.

If you install the Oracle Flash Accelerator F160 PCIe Card as an optional component, you must update the firmware to RA13, or a subsequent release if available. Servers ordered with this option already have the updated firmware. For firmware upgrade instructions, refer to the NVMe card and SSD documentation at <http://www.oracle.com/goto/oracleflashf160/docs>.

If you install the Oracle Storage 12 Gb SAS PCIe HBA, external (8 port), as an optional component, you must update the firmware to version 9.0.0.0, or a subsequent release if available. For firmware upgrade instructions, refer to the HBA documentation at [http://docs.oracle.com/cd/E52365\\_01/](http://docs.oracle.com/cd/E52365_01/).

## Common Late-Breaking Information

These topics provide the common late-breaking information for the SPARC M8 and SPARC M7 servers.

- [“Oracle VM Server for SPARC Guidelines” on page 23](#)
- [“Disable Verified Boot on Oracle Solaris 10 Guest Domains” on page 24](#)
- [“Oracle Software in Silicon Features” on page 25](#)
- [“Platform User Guidelines” on page 25](#)

### Related Information

- [“Known Issues” on page 27](#)

## Oracle VM Server for SPARC Guidelines

If you plan to configure Oracle VM Server for SPARC on this server, follow these guidelines:

- Do not configure the Oracle Solaris 10 OS in the control domain, root domains, I/O domains, or service domains.

- You can configure Oracle Solaris 10 OS with the required patches and packages in guest domains.
- Always disable verified boot in each Oracle Solaris 10 guest domain (see [“Disable Verified Boot on Oracle Solaris 10 Guest Domains” on page 24](#)).
- Be aware that instances of Oracle Solaris 10 with required patches and packages in a single guest domain are limited to 1024 virtual CPUs and 4 Tbytes of memory.

The majority of a physical domain’s memory can be assigned to [logical domains](#). However, a small portion of the [PDomain](#)’s memory is preassigned to software components, the hypervisor, and certain I/O devices. To determine which portions of the memory are unavailable for logical domains, log in to the PDomain and type this command:

```
# ldm ls-devices -a mem
```

In the command output, look for the rows that include `_sys_` in the BOUND column. These portions of memory are not available for logical domains.

## ▼ Disable Verified Boot on Oracle Solaris 10 Guest Domains

Oracle Solaris verified boot is enabled by default in the Oracle VM Server for SPARC 3.5 software. However, Solaris 10 guest domains do not support verified boot. Always disable verified boot on Oracle Solaris 10 guest domains.

For more information about verified boot, refer to:

- [“Configuring SPARC Verified Boot Properties” in \*Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 4.0.x\*](#)
- [“Using Verified Boot” in \*Securing Systems and Attached Devices in Oracle Solaris 11.3\*](#)

### 1. Display the guest domain boot policy setting.

```
# ldm ls -l domain | grep boot-policy
boot-policy=warning
```

By default, the boot policy could be set to warning. It might have been set to enforce. For Oracle Solaris 10 guest domains, the boot policy must be set to none in order to disable verified boot.

### 2. Set the guest domain boot policy setting to none.

```
# ldm set-domain boot-policy=none domain
```



The domain must be rebooted to make the boot-policy change effective.

**3. Confirm the guest domain boot policy setting.**

```
# ldm ls -l domain | grep boot-policy
boot-policy=none
```

**4. Reboot the guest domain.**

## Oracle Software in Silicon Features

The microprocessors for the SPARC M8 and SPARC M7 servers offer new co-engineered hardware and software capabilities that enable applications to run with the highest levels of security, reliability, and speed. This functionality is called *Oracle Software in Silicon*.

Software in Silicon features include:

- **Silicon Secured Memory** – These [APIs](#) can be used, for example, to enable the detection of memory corruption issues, thereby enhancing applications data integrity (ADI) when an application uses its own custom memory allocator. (The ADI feature is not supported for use with Kernel Zones at this time.)

With this feature enabled, an error is likely to be raised if an application tries to access memory to which it should not have access.

For more information, refer to the `adi(3C)`, `adi(2)`, `memcntl(2)`, `mmap(2)`, and `siginfo(3HEAD)` man pages.

- **Data Analytics Accelerator (DAX)** – Coprocessors perform query-related operations directly through the hardware, which improves Oracle Database performance. You can use DAX hardware acceleration for Oracle Database 12c in-memory database operations. (The DAX feature is not supported for use with Kernel Zones at this time.)

For more details on ADI, refer to the Oracle Solaris 11.3 documentation.

To use DAX, you must configure the Oracle Database 12c in-memory feature. For instructions, refer to “Using the In-Memory Column Store” at:

<http://docs.oracle.com/database/121/ADMIN/memory.htm#ADMIN14257>

## Platform User Guidelines

During the operation of the server, you might encounter faults or errors if you perform certain tasks, especially before, during, or after an SP failover or a power cycle. The power cycling

issues might result in either the start `/Servers/PDomains/PDomain_x/HOST` or the stop `/Servers/PDomains/PDomain_x/HOST` operation failing to make progress.

- You must prepare the system for failover before you manually initiate an SP failover (refer to [Prepare to Remove an SP](#) in the *SPARC M8 and SPARC M7 Servers Service Manual*).
- Initiate an SP failover using the Oracle ILOM [CLI](#) only when the host is powered off. In addition, if you use the Oracle ILOM web interface to initiate the SP failover, be aware that the web interface method does not always work properly. In this case, use the Oracle ILOM [CLI](#).
- If the host is in a power cycle, wait until the power cycle is done before you initiate an SP failover.
- If you change the IP address on the SP interconnect from the default to another address, the connection between the host and SP might not be correct after an SP failover. Hosts must use the default IP address for the SP interconnect.
- Before you install a new [CMIOU](#), stop the host, and do not perform an SP failover.
- If a host hangs in the warm start state, the hang might be due to an automatic SP failover.
- You might encounter errors or faults if you try to start multiple hosts in parallel, particularly following an SP reset or SP failover.
- If the list of faulty components is not complete after an SP failover, reset the `ip-transport` connection to cause the list of faults to be replayed.
- If the host does not use the default IP addresses for the SP interconnect, the connection between the host and SP might not be correct after an SP failover. Hosts must use the default IP address for the SP interconnect.
- You can ignore or manually acquit certain faults, messages, and event list entries.
- Start hosts manually only after the system startup process completes.

## Known Issues

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These are the known issues for the SPARC M8-8 server.

- “CMIOU Ready to Remove LED Remains Lit Even When `prepare_to_remove_status = Not Ready (26409633)`” on page 28
- “FRUID Inaccessible Faults Occur After an SP Failover (26403735)” on page 29
- “Fault Diagnosis Daemon Detects Unexpected Telemetry Error in Virtual Sensor (26360527)” on page 35
- “`/SYS/SP0/SPM1 is not ready. Please wait. Message Displays During Host Start (26282992)`” on page 38
- “iSCSI Boot Panic `vfs_mountroot: cannot mount root Due to Slow iSCSI Target (26178433)`” on page 39
- “Shutting Down Root and I/O Domain On Servers With a Virtual Function and Certain PCIe Cards Can Panic I/O Domain (26138639)” on page 44
- “Oracle ILOM Java Remote Console Plus Storage Redirection Does Not Suspend Miniroot Redirection While Active (25911614)” on page 45
- “Hotplugged Intel PCIe Cards Not Seen By the `fwupdate` Command (25830688)” on page 46
- “Timeout waiting for Tx completion Message When Booting Over a Sun Dual 10GbE SFP+ PCIe Low Profile Adapter (25675633)” on page 46
- “Failing Processor Might Result in Panic Hang (24973531)” on page 47
- “`prtdiag -v` is Missing Environmental and FRU Status (23619958)” on page 48
- “Intermittently `ereport.io.device.inval_state` is seen after SP force failover (26778934)” on page 49
- “IO domain `ldgX` is locked against modification at host restart (26191129)” on page 50
- “DIMM present sensor is not updated correctly after hotplug (26541821)” on page 50
- “SP/config restore fails to restore some `/HOST0/SP/powermgmt/budget` properties (26573130)” on page 52
- “CMP devices become immediately disabled after their parent CMU is disabled (26586749)” on page 53
- “Get link information failure when pressing ATTN button, PCIE in UNK state later (26620735)” on page 53

- “Panic: WAIT\_MBOX\_DONE() timeout running CPU/memory stress tests in a kernel zone (26628809)” on page 54
- “3-node-ldom guest domain Cluster - Unable to acquire quorum device - Node panic (26732562)” on page 54
- “Failed to write to Admin Rx Queue Regs on versaboot IO domain reboot stress (26768250)” on page 55

### Related Information

- “Late-Breaking Information” on page 11
- [SPARC M8 and SPARC M7 Server Documentation](#)

## CMIOU Ready to Remove LED Remains Lit Even When prepare\_to\_remove\_status = Not Ready (26409633)

When an installed Standby SP is not responsive to the Active SP (for example, when the Standby SP Oracle ILOM property, prepare\_to\_remove, is Ready), setting the prepare\_to\_remove property to true for a CMIOU will fail. The CMIOU prepare\_to\_remove\_status will be Not Ready, but the CMIOU's blue Ready to Remove LED will remain lit.

In the following example, CMIOU0 cannot be prepared to be removed because the Standby SP is not responsive. Although the CMIOU0 prepare\_to\_remove\_status is Not Ready, the CMIOU0 Ready to Remove LED (OK2RM) will be on.

```
-> set /SYS/CMIOU0 prepare_to_remove_action=true
set: Internal error
```

```
-> show /SYS/CMIOU0 prepare_to_remove_status
/SYS/CMIOU0
  Properties:
    prepare_to_remove_status = Not Ready
```

```
-> show /SYS/CMIOU0/OK2RM value
/SYS/CMIOU0/OK2RM
  Properties:
    value = On
```

**Recovery:** If the Standby SP has been prepared to be removed using Oracle ILOM commands, but it is not yet physically removed, complete the SP replacement procedure before attempting

to replace a CMIOU. Alternatively, you can return the Standby SP to service before attempting to replace a CMIOU.

**Workaround:** When both a CMIOU and a SP must be serviced, remove and install the CMIOU before removing and installing the SP, or vice versa. Complete the replacement procedure for one component before starting to replace the second component.

## FRUID Inaccessible Faults Occur After an SP Failover (26403735)

After an SP failover, the server might produce multiple `fault.fruid.inaccessible` faults. Use the `show /SP/logs/event/list` Oracle ILOM command to list these FRUID inaccessible fault messages.

**Recovery:** Follow these steps to correct the issue at the Oracle ILOM prompt.

1. Confirm that an SP failover occurred.

Look at the `show /SP/logs/event/list` command output for `Failover completed` messages near the time of the faults. For example, see `Failover completed. Active SP is /SYS/SP1/SPM0.` in the following example output.

```
-> show /SP/logs/event/list
```

```
Event
ID   Date/Time           Class  Type    Severity
-----
5092 Tue Jul 18 16:30:00 2017 Fault Fault critical
Fault detected at time = Tue Jul 18 16:30:00 2017. The suspect component: /SYS/
ROPNL has fault.fruid.inaccessible with probability=100. Refer to http://
support.oracle.com/msg/ILOM-8000-D8 for
details.
5091 Tue Jul 18 16:29:12 2017 Fault Fault critical
Fault detected at time = Tue Jul 18 16:29:12 2017. The suspect component: /SYS/
PS1 has fault.fruid.inaccessible with probability=100. Refer to http://
support.oracle.com/msg/ILOM-8000-D8 for
details.
5090 Tue Jul 18 16:27:28 2017 Fault Fault critical
Fault detected at time = Tue Jul 18 16:27:28 2017. The suspect component: /SYS/
PS2 has fault.fruid.inaccessible with probability=100. Refer to http://
support.oracle.com/msg/ILOM-8000-D8 for
```

details.

```
5089 Tue Jul 18 16:26:19 2017 System Log minor
Host ID 0: Solaris running
5088 Tue Jul 18 16:26:16 2017 System Log minor
Host ID 1: Solaris running
5087 Tue Jul 18 16:24:36 2017 Reset Log minor
/Servers/PDomains/PDomain_0 is now managed by PDomain SPP /SYS/SP1/SPM0.
5086 Tue Jul 18 16:24:36 2017 Reset Log minor
/System/DCUs/DCU_0 is now managed by /SYS/SP1/SPM0.
5085 Tue Jul 18 16:24:29 2017 Reset Log minor
Failover completed. Active SP is /SYS/SP1/SPM0.
5084 Tue Jul 18 16:20:02 2017 Reset Log minor
Failover on /SYS/SP1/SPM0 initiated by user command.
5083 Tue Jul 18 15:55:33 2017 System Log minor
Host ID 0: Solaris running
5082 Tue Jul 18 15:55:31 2017 System Log minor
Host ID 1: Solaris running
```

2. Locate the resources associated with the `fault.fruid.inaccessible` messages and note the UUIDs.

Use one of these two methods to identify the resources.

- Use the `show /System/Open_Problems` command to list the open problems.

```
-> show /System/Open_Problems
```

```
Open Problems (10)
```

```
Date/Time          Subsystems          Component
```

```
-----
```

```
Tue Jul 18 16:27:28 2017 Power PS2 (Power Supply 2)
```

```
The persistent storage on a FRU cannot be accessed. (Probability:100, UUID:
da75f76a-8501-69c4-ccb8-eab003f3867b, Resource:/SYS/PS2, Part Number:7068817,
Serial Number:400000G+1348B20BTT,
```

```
Reference Document:http://support.oracle.com/msg/ILOM-8000-D8)
```

```
Tue Jul 18 16:29:12 2017 Power PS1 (Power Supply 1)
```

```
The persistent storage on a FRU cannot be accessed. (Probability:100, UUID:
af79b458-c58e-449d-ec12-aa09511b43a2, Resource:/SYS/PS1, Part Number:7068817,
Serial Number:400000G+1347B20BF9,
```

```
Reference Document:http://support.oracle.com/msg/ILOM-8000-D8)
```

```
Tue Jul 18 16:30:00 2017 System ROPNL (Indicator Module)
```

```
The persistent storage on a FRU cannot be accessed. (Probability:100, UUID:
2eab490b-bd40-e71c-f9e1-b579fa51f67e, Resource:/SYS/ROPNL, Part Number:7084768,
Serial Number:465769T+14037L0091,
```

```
Reference Document:http://support.oracle.com/msg/ILOM-8000-D8)
```

- Use the `fmdadm faulty` command at the fault management shell to list the open problems.

```
-> start /SP/faultmgmt/shell
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y

faultmgmtsp> fmdadm faulty
-----
Time UUID msgid Severity
-----
2017-07-18/16:30:00 2eab490b-bd40-e71c-f9e1-b579fa51f67e ILOM-8000-D8 Major

Problem Status : open
Diag Engine : fdd 1.0
System
Manufacturer : Oracle Corporation
Name : SPARC M8-8
Part_Number : 30000002+3+1
Serial_Number : AK00000000

System Component
Firmware_Manufacturer : Oracle Corporation
Firmware_Version : (ILOM)4.0.1.0,(POST)5.7.x-_37b078bcd3e8,(OBP)4.42.2-
_07.06.2017,(HV)1.19.x-
Firmware_Release : (ILOM)2017.07.14,(POST)2017.07.06,(OBP)2017.07.06,
(HV)2017.07.06

-----
Suspect 1 of 1
Problem class : fault.fruid.inaccessible
Certainty : 100%
Affects : /SYS/ROPNL
Status : faulted

FRU
Status : faulty
Location : /SYS/ROPNL
Manufacturer : Celestica Holdings PTE LTD
Name : MODLE,PWR,CMIOU
Part_Number : 7084768
Revision : 01
Serial_Number : 465769T+14037L0091
Chassis
```

Manufacturer : Oracle Corporation  
Name : SPARC M8-8  
Part\_Number : 30000002+3+1  
Serial\_Number : AK00000000

Description : The persistent storage on a FRU cannot be accessed.

Response : The system will continue running. If not yet running, the affected FRU may not be usable.

Impact : Possible loss of resources if platform is not yet started.

Action : Please refer to the associated reference document at <http://support.oracle.com/msg/ILOM-8000-D8> for the latest service procedures and policies regarding this diagnosis.

-----  
Time UUID msgid Severity  
-----

2017-07-18/16:29:12 af79b458-c58e-449d-ec12-aa09511b43a2 ILOM-8000-D8 Major

Problem Status : open  
Diag Engine : fdd 1.0  
System  
Manufacturer : Oracle Corporation  
Name : SPARC M8-8  
Part\_Number : 30000002+3+1  
Serial\_Number : AK00000000

System Component  
Firmware\_Manufacturer : Oracle Corporation  
Firmware\_Version : (ILOM)4.0.1.0,(POST)5.7.x-37b078bcd3e8,(OBP)4.42.2-  
\_07.06.2017,(HV)1.19.x-  
Firmware\_Release : (ILOM)2017.07.14,(POST)2017.07.06,(OBP)2017.07.06,  
(HV)2017.07.06

-----  
Suspect 1 of 1  
Problem class : fault.fruid.inaccessible  
Certainty : 100%  
Affects : /SYS/PS1  
Status : faulted



FRU  
Status : faulty  
Location : /SYS/PS1  
Manufacturer : Power-One, Inc.  
Name : A261\_POWER\_SUPPLY  
Part\_Number : 7068817  
Revision : 21  
Serial\_Number : 400000G+1347B20BF9  
Chassis  
Manufacturer : Oracle Corporation  
Name : SPARC M8-8  
Part\_Number : 30000002+3+1  
Serial\_Number : AK00000000

Description : The persistent storage on a FRU cannot be accessed.

Response : The system will continue running. If not yet running, the affected FRU may not be usable.

Impact : Possible loss of resources if platform is not yet started.

Action : Please refer to the associated reference document at <http://support.oracle.com/msg/ILOM-8000-D8> for the latest service procedures and policies regarding this diagnosis.

-----  
Time UUID msgid Severity  
-----

2017-07-18/16:27:28 da75f76a-8501-69c4-ccb8-eab003f3867b ILOM-8000-D8 Major

Problem Status : open  
Diag Engine : fdd 1.0  
System  
Manufacturer : Oracle Corporation  
Name : SPARC M8-8  
Part\_Number : 30000002+3+1  
Serial\_Number : AK00000000

System Component  
Firmware\_Manufacturer : Oracle Corporation  
Firmware\_Version : (ILOM)4.0.1.0, (POST)5.7.x-37b078bcd3e8, (OBP)4.42.2-  
\_07.06.2017, (HV)1.19.x

Firmware\_Release : (ILOM)2017.07.14,(POST)2017.07.06,(OBP)2017.07.06,  
(HV)2017.07.06

-----  
Suspect 1 of 1  
Problem class : fault.fruid.inaccessible  
Certainty : 100%  
Affects : /SYS/PS2  
Status : faulted

FRU  
Status : faulty  
Location : /SYS/PS2  
Manufacturer : Power-One, Inc.  
Name : A261\_POWER\_SUPPLY  
Part\_Number : 7068817  
Revision : 21  
Serial\_Number : 400000G+1348B20BTT  
Chassis  
Manufacturer : Oracle Corporation  
Name : SPARC M8-8  
Part\_Number : 30000002+3+1  
Serial\_Number : AK00000000

Description : The persistent storage on a FRU cannot be accessed.

Response : The system will continue running. If not yet running, the affected FRU may not be usable.

Impact : Possible loss of resources if platform is not yet started.

Action : Please refer to the associated reference document at <http://support.oracle.com/msg/ILOM-8000-D8> for the latest service procedures and policies regarding this diagnosis.

3. After noting the UUIDs of the faults, repair them using the `fmadm repair` command at the fault management prompt.

If you are not yet at the fault management shell, start the shell using the `start /SP/faultmgmt/shell` command.

```
-> start /SP/faultmgmt/shell
```

```
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y
```

Use the `fmadm repair` command to clear the faults.

```

faultmgmtsp> fmadm repair 2eab490b-bd40-e71c-f9e1-b579fa51f67e
faultmgmtsp> fmadm repair af79b458-c58e-449d-ec12-aa09511b43a2
faultmgmtsp> fmadm repair da75f76a-8501-69c4-ccb8-eab003f3867b
faultmgmtsp> exit
    
```

## Fault Diagnosis Daemon Detects Unexpected Telemetry Error in Virtual Sensor (26360527)

If the server detects unexpected telemetry with a virtual sensor, the virtual sensor and /SYS will become faulted.

Use the Oracle ILOM `show /System/Open_Problems` command to display these faults.

In the `show /System/Open_Problems` output, virtual resource names end with the `_VIRTUAL` string. In the following example, `/SYS/COOLINGZONE/DCU0/BOB/T_BOB_VIRTUAL` is a virtual resource.

-> `show /System/Open_Problems`

Open Problems (2)

Date/Time	Subsystems	Component
-----------	------------	-----------

-----

Tue Jul 18 15:00:29 2017	System	/System (Host System)
--------------------------	--------	-----------------------

The fault diagnosis daemon (fdd) has detected unexpected error telemetry and is unable to provide a diagnosis. (Probability:50, UUID:ae862aca-8758-e6aa-d5bf-8896695fb551,

Resource:/SYS/COOLINGZONE/DCU0/BOB/T\_BOB\_VIRTUAL, Part Number:34439640+1+3, Serial Number:AK00380584, Reference Document:<http://support.oracle.com/msg/ILOM-8000-56>)

Tue Jul 18 15:00:29 2017	System	/System (Host System)
--------------------------	--------	-----------------------

The fault diagnosis daemon (fdd) has detected unexpected error telemetry and is unable to provide a diagnosis. (Probability:50, UUID:ae862aca-8758-e6aa-d5bf-8896695fb551, Resource:/SYS, Part

Number:34439640+1+3, Serial Number:AK00380584, Reference

Document: <http://support.oracle.com/msg/ILOM-8000-56>

**Recovery:** Use the fault management shell to clear the faults.

1. Identify the **UUIDs** of the faulted virtual resources in the `show /System/Open_Problems` output.

Virtual resources end with the `_VIRTUAL` string. In the preceding example, `/SYS/COOLINGZONE/DCU0/BOB/T_BOB_VIRTUAL` is a virtual resource and its UUID is `ae862aca-8758-e6aa-d5bf-8896695fb551`.

2. Use the fault management shell to clear the faults.

- a. Start the fault management shell.

```
-> start /SP/faultmgmt/shell
Are you sure you want to start /SP/faultmgmt/shell (y/n)? y
```

- b. Use the `fmadm faulty` command to confirm the fault and UUID.

```
faultmgmtsp> fmadm faulty
```

```
-----
Time                UUID                msgid                Severity
-----
2017-07-18/15:00:29 ae862aca-8758-e6aa-d5bf-8896695fb551 ILOM-8000-56      Major
```

```
Problem Status      : open
Diag Engine         : fdd 1.0
System
  Manufacturer      : Oracle Corporation
  Name              : SPARC M8-8
  Part_Number       : 34439640+1+3
  Serial_Number     : AK00380584
```

```
System Component
  Firmware_Manufacturer : Oracle Corporation
  Firmware_Version      : (ILOM)4.0.2.0, (POST)5.7.x-ee36ad4ad18c,
(OBP)4.42.2_07.16.2017, (HV)1.19.x
  Firmware_Release     : (ILOM)2017.07.17, (POST)2017.07.16, (OBP)2017.07.16,
(HV)2017.07.16
```

```
-----
Suspect 1 of 2
  Problem class      : fault.ilom.fdd.unexpected_telemetry
  Certainty         : 50%
  Affects           : /SYS
```

Status : faulted

FRU

Status : faulty  
Location : /SYS  
Manufacturer : Oracle Corporation  
Name : SPARC M8-8  
Part\_Number : 34439640+1+3  
Serial\_Number : AK00380584  
Chassis  
Manufacturer : Oracle Corporation  
Name : SPARC M8-8  
Part\_Number : 34439640+1+3  
Serial\_Number : AK00380584

Resource

Location : /SYS/COOLINGZONE/DCU0/BOB/T\_BOB\_VIRTUAL

-----  
Suspect 2 of 2

Problem class : defect.ilom.fdd.unexpected\_telemetry  
Certainty : 50%  
Affects : /SYS  
Status : faulted

FRU

Status : faulty  
Location : /SYS  
Manufacturer : Oracle Corporation  
Name : SPARC M8-8  
Part\_Number : 34439640+1+3  
Serial\_Number : AK00380584  
Chassis  
Manufacturer : Oracle Corporation  
Name : SPARC M8-8  
Part\_Number : 34439640+1+3  
Serial\_Number : AK00380584

Description : The fault diagnosis daemon (fdd) has detected unexpected error telemetry and is unable to provide a diagnosis.

Response : Error reports describing the unexpected error telemetry have been logged.

- Impact : Automated diagnosis and response for these events will not occur.
- Action : Please refer to the associated reference document at <http://support.oracle.com/msg/ILOM-8000-56> for the latest service procedures and policies regarding this diagnosis.
- c. Use the virtual resource's UUID to repair the fault.
- In this example, the UUID is ae862aca-8758-e6aa-d5bf-8896695fb551.
- After repairing the fault, exit the fault management shell.

```
faultmgmtsp> fmadm repair ae862aca-8758-e6aa-d5bf-8896695fb551
faultmgmtsp> exit
```

- d. Confirm that you faults have been repaired.

```
-> show /System/Open_Problems
```

```
Open Problems (0)
```

```
Date/Time          Subsystems          Component
-----
```

## **/SYS/SP0/SPM1 is not ready. Please wait. Message Displays During Host Start (26282992)**

After starting a server host, the ERROR: /SYS/SP0/SPM1 is not ready. Please wait. message might display in the system console.

```
. . .
2017-06-15 03:05:28 SP> NOTICE: Host firmware check complete
2017-06-15 03:05:29 SP> NOTICE: Start Host in progress: Step 1 of 7
2017-06-15 03:06:15 SP> NOTICE: ERROR: /SYS/SP0/SPM1 is not ready. Please wait.
2017-06-15 03:06:52 SP> NOTICE: Start Host in progress: Step 2 of 7
2017-06-15 03:06:57 SP> NOTICE: Start Host in progress: Step 3 of 7
(#)Hostconfig 1.10.x 2017/06/14 18:53
2017-06-15 03:07:57 SP> NOTICE: Start Host in progress: Step 4 of 7
2017-06-15 03:08:05 4:00:0> NOTICE: Firmware timezone is PDT
. . .
```

**Recovery:** This message is harmless and can be ignored. The boot sequence is not affected and the host will continue to boot the operating system.

## iSCSI Boot Panic vfs\_mountroot: cannot mount root Due to Slow iSCSI Target (26178433)

The operating system might panic in function `vfs_mountroot` if the server is configured to boot from an iSCSI logical unit (LUN) over an Ethernet or InfiniBand network.

---

**Note** - SPARC M8-8 servers running Oracle Solaris 11.3 SRU 24, and SPARC M7 servers running Oracle Solaris 11.3 SRU19 through SRU 24, might experience this `vfs_mountroot` panic.

---

If the `vfs_mountroot` panic occurs, the system console will display output similar to the following:

```
{0} ok boot net
Boot device: /pci@300/pci@1/network@0 File and args:
1000 Mbps full duplex Link up
1000 Mbps full duplex Link up
1000 Mbps full duplex Link up
SunOS Release 5.11 Version 11.3 64-bit
Copyright (c) 1983, 2016, Oracle and/or its affiliates. All rights reserved.
NOTICE: Configuring iSCSI boot session...
NOTICE: iscsi connection(5) unable to connect to target
       iqn.1986-03.com.sun:02:118cb23b-920f-49ef-b7a1-b00767a60dfa, target address 192.168.1.1
NOTICE: iscsi connection(5) unable to connect to target
       iqn.1986-03.com.sun:02:118cb23b-920f-49ef-b7a1-b00767a60dfa, target address 192.168.1.1
WARNING: Failed to configure iSCSI boot session
WARNING: Failed to get iscsi boot path

panic[cpu0]/thread=20012000: vfs_mountroot: cannot mount root
```

This `vfs_mountroot` panic will most often be seen during the boot process. However, a similar issue might occur if the system has already booted from an iSCSI logical unit and the iSCSI logical unit becomes temporary unavailable. For example, the iSCSI logical unit could become unavailable as a result of a temporary network congestion or a network failover.

**Workarounds:** This `vfs_mountroot` panic issue is usually caused by a slow iSCSI target device or a slow network connection. However, Solaris 11.3 SRU 24 is more vulnerable to this

issue due to timing differences in its iSCSI initiator kernel module. If the iSCSI target device or the network is slow, attempt one of the following workarounds to boot the server.

Determine the correct workaround for your server configuration:

- If your server contains only one boot environment, go to [“Apply Workaround to an Installed Boot Environment” on page 40.](#)
- If you freshly installed the Solaris OS on the server, go to [“Apply Workaround to a Fresh Oracle Solaris OS Installation” on page 42.](#)
- If your SPARC M7 server contains boot environments for Solaris 11.3 prior to SRU 19.5, go to "Select a Boot Environment Earlier than Oracle Solaris 11.3 SRU19.5."

## Apply Workaround to an Installed Boot Environment

The minimum supported Oracle Solaris OS 11.3 supported on SPARC T8 and SPARC M8 servers is Oracle Solaris 11.3 SRU 24. These servers will not contain boot environments for previous versions of Oracle Solaris 11.3. Follow these steps to apply the workaround to the installed boot environment.

1. Boot an Oracle Solaris 11.3 installation DVD.

Use the `-s` option with the `boot` command. Otherwise you will need to exit the installation program.

```
{0} ok boot rcdrom -s
```

2. Once the server is booted, configure the network interfaces and verify that the server is able to access the iSCSI target IP address.

```
# ping 192.168.1.1
192.168.1.1 is alive
```

3. Configure the iSCSI SendTargets discovery method by providing the discovery address of the iSCSI Target which was used for the iSCSI boot.

```
# iscsiadm add discovery-address 192.168.1.1
# iscsiadm modify discovery -t enable
```

4. Verify that the iSCSI boot logical unit is visible in the `format` command output.

```
# format
1. c0t5000CCA02D104088d0 <HGST-H101812SFSUN1.2T-A770-1.09TB>
  /scsi_vhci/disk@q5000cca02d104088
  /dev/chassis/SYS/DBP/HDD0/disk
```





11. Reboot the system and boot from iSCSI boot device.

```
# shutdown -y -i0 -g0
{0} ok boot net
```

## Apply Workaround to a Fresh Oracle Solaris OS Installation

Follow these steps to apply the workaround to a freshly installed boot environment.

1. Repeat the installation, but exit the installation program shortly before the system reboots.

Installation Complete

The installation of Oracle Solaris has completed successfully.

Reboot to start the newly installed software or Quit if you wish to perform additional tasks before rebooting.

The installation log is available at /system/volatile/install\_log. After reboot it can be found at /var/log/install/install\_log.

Esc-4\_View Log Esc-7\_Halt Esc-8\_Reboot Esc-9\_Quit

2. Press the Esc-9 key sequence to exit the installation program and then press 3 to enter the shell.

Welcome to the Oracle Solaris installation menu

```
1 Install Oracle Solaris
2 Install Additional Drivers
3 Shell
4 Terminal type (currently xterm)
5 Reboot
```

Please enter a number [1]:3

3. Display the boot environments.

```
# beadm list
be_find_current_be: failed to find current BE name
be_find_current_be: failed to find current BE name
BE      Flags Mountpoint Space Policy Created
```

```

-----
solaris R      -          2.29G static 2027-07-04 14:46

```

4. Mount the newly installed boot environment.

```
# beadm mount solaris /a
```

5. Apply the workaround.

```
# echo "set iscsi:iscsi_conn_first_login_max=20" >> /a/etc/system
# echo "set iscsi:iscsi_conn_first_interval_max=10" >> /a/etc/system
```

6. Update boot archive in the mounted boot environment to activate the workaround during next reboot.

```
# bootadm update-archive -v -R /a
```

7. Apply the workaround.

```
# echo "set iscsi:iscsi_conn_first_login_max=20" >> /etc/system
# echo "set iscsi:iscsi_conn_first_interval_max=10" >> /etc/system
```

8. Unmount the boot environment and reboot the system.

```
# beadm umount solaris
# reboot
```

## Select a Boot Environment Earlier than Oracle Solaris 11.3 SRU 19.5

SPARC T8 and SPARC M8-8 servers will never contain boot environments for Oracle Solaris 11.3 versions earlier than SRU 24. If you have a SPARC M7 server that contains earlier boot environments, follow these steps to boot a boot environment earlier than Oracle Solaris 11.3 SRU 19.5 in order to apply the workaround to the Oracle Solaris OS boot environment affected by this `vfs_mountroot` panic issue.

1. Select boot environment older than S11.3 SRU 19.5.

```
{0} ok boot net -L
Boot device: /pci@300/pci@1/network@0 File and args: -L
1000 Mbps full duplex Link up
1000 Mbps full duplex Link up
1000 Mbps full duplex Link up
1 Oracle Solaris 11.3 SPARC
2 S11.3-SRU18.6
3 S11.3-SRU22.3
Select environment to boot: [ 1 - 3 ]: 2
```

```
To boot the selected entry, invoke:  
boot [<root-device>] -Z rpool/ROOT/S11.3-SRU18.6
```

```
Program terminated
```

2. Select and boot to a boot environment earlier than Oracle Solaris 11.3 SRU 19.5.

```
{0} ok boot net -Z rpool/ROOT/S11.3-SRU18.6
```

3. List the existing boot environments.

```
# beadm list  
BE          Flags Mountpoint Space  Policy Created  
--          -  
S11.3-SRU18.6 N    /          33.32M static 2027-07-03 15:57  
S11.3-SRU22.3 R    -          6.40G  static 2027-07-03 16:03  
solaris     -    -          99.75M static 2027-07-03 15:40
```

4. Mount the boot environment which exhibits the panic.

```
# beadm mount S11.3-SRU22.3 /mnt
```

5. Apply the workaround.

```
# echo "set iscsi:iscsi_conn_first_login_max=20" >> /mnt/etc/system  
# echo "set iscsi:iscsi_conn_first_interval_max=10" >> /mnt/etc/system
```

6. Update boot archive in the mounted boot environment to activate the workaround during next reboot.

```
# bootadm update-archive -v -R /mnt
```

7. Unmount the boot environment.

```
# beadm umount S11.3-SRU22.3
```

8. Reboot the server to the new boot environment.

## Shutting Down Root and I/O Domain On Servers With a Virtual Function and Certain PCIe Cards Can Panic I/O Domain (26138639)

After shutting down an Oracle VM server for SPARC root domain using the `-f` option (for example, `ldm stop -f root domain`), shutting down an I/O domain with the `ldm stop` command causes the I/O domain to panic.

This issue affects servers containing one of the following PCIe cards and a virtual function (VF) assigned to the root domain.

- Oracle Quad 10Gb or Dual 40Gb Ethernet Adapter
- Oracle Quad Port 10GBase-T Adapter

**Recovery:** Reboot the I/O domain.

**Workaround:** Avoid using the `-f` option with the `ldm` command on servers with a VF assigned to the root domain and one of the preceding PCIe cards installed.

## Oracle ILOM Java Remote Console Plus Storage Redirection Does Not Suspend Miniroot Redirection While Active (25911614)

When the Oracle Solaris miniroot is enabled, starting the Oracle ILOM Remote System Console Plus storage redirection will fail with the following console error message:

```
Command failed to complete...Device is gone.
```

After the storage redirection fails, the Oracle Solaris OS miniroot will eventually reconnect to the server.

**Recovery:** Disable the miniroot redirection prior to starting the Oracle ILOM Remote System Console Plus storage redirection. When remote storage redirection is no longer required and the remote storage redirection has been disconnected, reactivate the miniroot redirection.

1. Disable miniroot redirection.

For M-series servers:

```
-> set /HOSTX/SP/services/kvms/host_storage_device mode=disabled
```

For T-series servers:

```
-> set /SP/services/kvms/host_storage_device mode=disabled
```

2. Start the Oracle ILOM Remote System Console Plus storage redirection.

For instructions on starting the Oracle ILOM Remote System Console Plus storage redirection, refer to the [Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x](#).

3. Reactivate the miniroot redirection.

For M-series servers:

```
-> set /HOSTx/SP/services/kvms/host_storage_device mode=miniroot
```

For T-series servers:

```
-> set /SP/services/kvms/host_storage_device mode=miniroot
```

## Hotplugged Intel PCIe Cards Not Seen By the fwupdate Command (25830688)

After hotplugging an Intel-manufactured PCIe card into the server using the hotplug command, the fwupdate command cannot show detailed information about the card. After using the hotplug command, the fwupdate command can no longer access the PCI mappings on the device. An Intel-supplied utility fails to gather information about the hotplugged card, so it cannot pass this information to the fwupdate command.

The supported Intel-manufactured PCIe cards are as follows:

- Sun Quad Port GbE PCIe 2.0 Low Profile Adapter, UTP
- Oracle Quad Port 10GBase-T Adapter
- Oracle Quad 10Gb or Dual 40Gb Ethernet Adapter
- Oracle Flash Accelerator F640 PCIe Card: 6.4 TB, NVMe PCIe 3.0

**Recovery:** Reboot the server containing the Intel-manufactured PCIe card.

## Timeout waiting for Tx completion Message When Booting Over a Sun Dual 10GbE SFP+ PCIe Low Profile Adapter (25675633)

During some system reboots, the OS is loaded from the storage device to the host memory. If the device on which the OS image resides is remote and needs to be accessed through network connections using a Niantic NIC HBA, you might see the following error message:

```

Timeout waiting for Tx completion
10G full duplex link up.
Link down, restarting network initialization
10G full duplex link up.
Timeout waiting for Tx completion
10G full duplex link up

```

In this case, the OS will not be available.

**Recovery:** If you see the preceding messages, issue a "send break" as describe in ILOM documentation at: [Oracle ILOM User's Guide for System Monitoring and Diagnostics Firmware Release 3.2.x](#).

The host console should drop to the OBP prompt, and at the OBP prompt, you can issue the "reset-all" command.

**Workaround:** This issue occurs intermittently, and the root cause is still under investigation. If you encounter this it, contact your authorized Oracle Service provider to see if a fix is available.

## Failing Processor Might Result in Panic Hang (24973531)

A server containing a failing SPARC M8 processor might cause the server to hang and panic. If, after the panic, the `fmddump -e` command displays L2 and L3 cache ereport messages for the failing processor similar to the following example, perform the actions listed in Recovery below.

```

# fmddump -e
. . .
2017-07-10/00:44:16 ereport.cpu.generic-sparc.l3data-return@SYS/CMIOU7/CM/CMP/SCC6/
CORE1
2017-07-10/00:44:16 ereport.cpu.generic-sparc.l2linefill@SYS/CMIOU7/CM/CMP/SCC6/CORE1/
L2D
2017-07-10/00:44:16 ereport.cpu.generic-sparc.l3data@SYS/CMIOU7/CM/CMP/L3BANK7
2017-07-10/00:44:16 ereport.cpu.generic-sparc.l2linefill@SYS/CMIOU7/CM/CMP/SCC5/CORE3/
L2D
2017-07-10/00:44:16 ereport.cpu.generic-sparc.l3data-return@SYS/CMIOU7/CM/CMP/SCC6/
CORE1
2017-07-10/00:44:16 ereport.cpu.generic-sparc.l2linefill@SYS/CMIOU7/CM/CMP/SCC6/L2I
2017-07-10/00:44:16 ereport.cpu.generic-sparc.l3data-return@SYS/CMIOU7/CM/CMP/SCC6/
CORE1
2017-07-10/00:44:16 ereport.cpu.generic-sparc.l2linefill@SYS/CMIOU7/CM/CMP/SCC7/CORE2/
L2D

```

. . .

In this example, the L3 cache (l3data) and L2 cache (l2linefill) ereport messages were generated from the same processor found on an SPARC M8-8 server CMIOU installed in CMIOU slot 7.

**Recovery:** Replace the motherboard, processor module, or CMIOU containing the failing SPARC M8 processor.

**Workaround:** If you must use the SPARC T8 server or SPARC M8-8 PDomain containing the failing SPARC M8 processor, disable the SPARC M8 processor prior to powering the host back on. At the Oracle ILOM prompt, set the processor's requested\_config\_state property to disabled, and then power on the host.

- On a SPARC T8-1 server, replace the motherboard.
- On a SPARC T8-2 server, replace the processor module or disable it as follows:

```
-> set /SYS/MB/CMx/CMP requested_config_state=disabled
```

Where *x* is the number of the processor (0 or 1).

- On a SPARC T8-4 server, replace the processor module or disable it as follows:

```
-> set /SYS/PMx/CMy/CMP requested_config_state=disabled
```

Where *x* is the number of the processor module (0 or 1) and *y* is the number of the processor (0 or 1).

- On a SPARC M8-8 server, replace the CMIOU containing the failing processor or disable it as follows:

```
-> set /SYS/CMIOUx/CM/CMP requested_config_state=disabled
```

Where *x* is the number of the CMIOU containing the failing processor (0 to 7).

## prtdiag -v is Missing Environmental and FRU Status (23619958)

During a server boot, the picl service occasionally fails to establish communications with the Active SP and it does not recover automatically. In that case, the prtdiag -v command fails to show the status of the various current, voltage, and temperature environmental sensors. These sensors are still being monitored, and any failures are appropriately handled by the system firmware and reported by the Fault Management Architecture (FMA).



**Workaround:** Avoid using the `prtpicl` and `prtdiag` commands. Use the FMA `fmtopo` command or Oracle ILOM commands to obtain the sensor data. The following example shows the Oracle ILOM command to obtain the environmental sensor data from `/SYS/CMIOU0`.

```
-> show -t /SYS/CMIOU0 value
Target | Property | Value
-----+-----+-----
/SYS/CMIOU0/1V0_STBY_OBPS/V_OUT | value | 1.001 Volts
/SYS/CMIOU0/1V5_STBY_OBPS/V_OUT | value | 1.498 Volts
/SYS/CMIOU0/1V8_STBY_OBPS/V_OUT | value | 1.801 Volts
/SYS/CMIOU0/2V5_STBY_OBPS/V_OUT | value | 2.498 Volts
/SYS/CMIOU0/3V3_STBY_OBPS/V_OUT | value | 3.302 Volts
/SYS/CMIOU0/5V0_STBY_OBPS/V_OUT | value | 5.039 Volts
/SYS/CMIOU0/CM/CMP/BOB00/CH0/DIMM/ | value | 35.000 degree C
  T_AMB | |
/SYS/CMIOU0/CM/CMP/BOB00/T_B | value | 35.250 degree C
/SYS/CMIOU0/CM/CMP/BOB01/CH0/DIMM/ | value | 34.250 degree C
  T_AMB | |
...
```

**Recovery:** Restart the `picl` service.

```
svcadm restart picl
```

## Intermittently ereport.io.device.inval\_state is seen after SP force failover (26778934)

On SPARC M8 servers, the USB host controller that connects SPs to the system might hang on device disconnect (for example, during SP failover). During the recovery process, while the USB host controller is not operating correctly, an FMA ereport (device `inval_state`) might be generated.

```
# fmdump -e
TIME CLASS
Sep 08 18:17:08.7644 ereport.io.device.inval_state

# fmdump -eV
TIME CLASS
Sep 08 2017 18:17:08.764470128 ereport.io.device.inval_state
nvlist version: 0
  class = ereport.io.device.inval_state
  ena = 0x1bac0066167d2c01
  detector = (embedded nvlist)
  nvlist version: 0
    version = 0x0
```

```
scheme = dev
cna_dev = 0x59b33a8000000011
device-path = /pci@304/pci@1/usb@0
(end detector)

__ttl = 0x1
__tod = 0x59b34114 0x2d90e370
```

**Recovery:** You can safely ignore FMA ereports that are generated in this case.

**Workaround:** Issue the `fmadm` command to repair the faulted component.

## IO domain IdgX is locked against modification at host restart (26191129)

The `pci-probe-policy` variable should only be used on Oracle SuperCluster engineered systems to specify how probing for PCIe devices is conducted. For all non-SuperCluster systems, the value of this property should not be changed. If you've changed the value of this variable, you might witness unknown system behavior.

**Workaround:** No workaround is available for this error. Do not change the `pci-probe-policy` variable on non-SuperCluster systems.

## DIMM present sensor is not updated correctly after hotplug (26541821)

After a SP/SPP failover, it's possible that the DIMMs can be reported inconsistently if one or more CMIOUs were replaced with CMIOUs of different set of DIMMs prior to the SP/SPP failover. As shown in the following example for a SPARC M8-4 server, ereports for faulted DIMMs result following the fail over of DCU1.

```
-> set /SYS/DCU1 initiate_sp_failover=true
Are you sure you want to set initiate_sp_failover=true (y/n)? y
Set 'initiate_sp_failover' to 'true'
```

```
2017-07-27/11:48:36
ereport.fruid.inaccessible@/SYS/CMIOU4/CM/CMP/BOB11/CH1/DIMM
```

```
2017-07-27/11:49:18
ereport.fruid.inaccessible@/SYS/CMIOU4/CM/CMP/BOB21/CH1/DIMM
2017-07-27/11:49:39
ereport.fruid.inaccessible@/SYS/CMIOU4/CM/CMP/BOB00/CH1/DIMM
2017-07-27/11:50:07
...
```

**Recovery:** Only when the HOST for the replaced CMIOU is off, complete these steps to reboot the SPM that manages the CMIOU:

1. Run the show command on the host for the replaced CMIOU and check the output from the power\_state property to verify that it reports the host off.
  - For SPARC M8-8 servers, use the show /HOST0 command.
  - For SPARC M8-4 servers, use the show command for the correct host, where CMIOU [0-3] belong to /SYS/DCU0 on HOST0, and CMIOU[4-7] belong to /SYS/DCU1 on HOST1.

For example:

```
-> show /HOST1
...
power_state = Off
send_break_action = (Cannot show property)
sp_name = /SYS/SP0/SPM0
state_capture_mode = default
state_capture_on_error = enabled
state_capture_status = enabled
status = OpenBoot Running
...
->
```

2. If the host is off, proceed to Step 3. If the HOST reports that is on, power off the host and proceed to Step 3.
3. Now, identify the SPM that manages the CMIOU that reports DIMM issues. You can determine the SPM from the output for the sp\_name property as follows:

```
-> show -t -l 2 sp_name dcus_assigned
Target          | Property          | Value
-----+-----+-----
/HOST0          | dcus_assigned    | /SYS/DCU0
/HOST0          | sp_name          | /SYS/SP1/SPM0
/HOST1          | dcus_assigned    | /SYS/DCU1
/HOST1          | sp_name          | /SYS/SP1/SPM1
```

4. Reboot the SPMs identified in the previous step. For example:
  - For SPARC M8-8 servers, use the reset /SYS/SP0/SPM0 and reset /SYS/SP1/SPM0 commands.

- For SPARC M8-4 servers, if CMIOU 0-3 have issues, reset /SYS/SP0/SPM0 and reset /SYS/SP1/SPM0 commands, and if CMIOU 4-7 have issues, reset /SYS/SP0/SPM1 and reset /SYS/SP1/SPM1 commands.

## SP/config restore fails to restore some /HOST0/SP/powermgmt/budget properties (26573130)

When a configuration backup is subsequently restored, the properties for /HOST0/SP/powermgmt/budget are not correctly restored. They will retain their previous values, and not match the restored-backup.

**Recovery:** Update the /HOST0/SP/powermgmt/budget settings manually using either the CLI or the Web interface. For example, using the CLI, check and update the values for activation\_state, powerlimit, timelimit, and violation\_actions.

```
-> cd /HOST0/SP/powermgmt/budget
/HOST0/SP/powermgmt/budget

-> show
/HOST0/SP/powermgmt/budget
Targets:
Properties:
  activation_state = disabled
  status = ok
  powerlimit = 2224 (watts)
  timelimit = default (30 seconds)
  violation_actions = none
  min_powerlimit = 2224
  pendingpowerlimit = 2224 (watts)
  pendingtimelimit = default
  pendingviolation_actions = none
  commitpending = (Cannot show property)

Commands:
  cd
  set
  show

->
```

## CMP devices become immediately disabled after their parent CMU is disabled (26586749)

As shown in the following example, if you set the `requested_config_state` property to `disabled` for a powered on component (for example, a CMIOU), the `current_config_state` setting for that component's children (for example, a CMIOU's CMPs) will immediately appear to be disabled even though the parent and children are not effectively disabled until next host power cycle.

```
-> set /SYS/CMU5 requested_config_state=Disabled
show /SYS/CMU5
    requested_config_state = Disabled
    current_config_state = Enabled
show /SYS/CMU5/CMP0
    requested_config_state = Disabled
    current_config_state = Disabled
    disable_reason = Parent resource disabled
```

**Recovery:** This message is harmless and can be ignored.

## Get link information failure when pressing ATTN button, PCIE in UNK state later (26620735)

After inserting a NIC adapter and pressing the ATTN button to configure the adapter, if you press the ATTN button too soon after the LED stops blinking, you might see the following errors in system logs:

```
rcm_daemon[]: NET: usage (device-path) get link information failure.
```

In this case, the removal operation will fail, and the LED will remain on to indicate that the adapter is still powered and cannot be removed.

**Recovery:** Wait one minute, then press the ATTN button again to enable the adapter to be removed.

**Workaround:** If the PCIE cards gets into the UNK (unknown) state, you could do a reboot as a work around to get the system to recognize the cards.

## Panic: WAIT\_MBOX\_DONE() timeout running CPU/memory stress tests in a kernel zone (26628809)

In some configurations, for example, when creating a kernel zone with more than 128 dedicated vCPUs, memory-intensive operations inside the kernel zone might trigger a panic.

**Recovery:** When running CPU/memory intensive workloads, if you receive a kernel zone panic message with `WAIT_MBOX_DONE()` timeout in the panic string, reduce the number of dedicated vCPUs to less than 128. For example, run the following command to set the dedicated vCPU number in the zone configuration:

```
# zonecfg -z <your_zone> "select dedicated-cpu;set ncpus=<less_than_128>;end"
```

Alternatively, if you want to use a number of virtual CPUs greater than 128, you can use virtual CPUs instead of dedicated vCPUs by running the following commands:

```
# zonecfg -z <your_zone> "remove dedicated-cpu"
# zonecfg -z <your_zone> "add virtual-cpu; set ncpus=<alternate_value>;end"
```

## 3-node-Idom guest domain Cluster - Unable to acquire quorum device - Node panic (26732562)

In the following configurations, it is possible for a node in an Oracle Solaris Cluster to encounter a panic when a cluster member reboots.

- The cluster is comprised of three or more Oracle VM Server 3.5 guests.
- The cluster quorum device (as described in the *Oracle Solaris Cluster 4.3 Concepts Guide*, Chapter 2, "Key Concepts") is a virtual disk whose physical storage is provided by SAN Fiber-Channel storage devices.
- A restart of one member of the cluster triggers another node to panic with the following message:

```
panic[cpu28]/thread=c0400b4cb2640: CMM: Unable to acquire the quorum device.
2017-07-10/00:44:16 ereport.cpu.generic-sparc.l3data-return@SYS
```

**Workaround:** Adjust the "qd\_acquisition\_timer" to 90, as described in the *Oracle Solaris Cluster 4.3 Software Installation Guide*, Chapter 3, "How to Configure Quorum Devices". Refer to the subsection "Unreachable quorum device" for information about adjusting the "qd\_acquisition\_timer."

## Failed to write to Admin Rx Queue Regs on versaboot IO domain reboot stress (26768250)

If a guest domain on a SPARC M8 or T8 server stores its OS in a remote storage device, rebooting the guest domain loads the OS from the storage device to system's memory over network using FCode and iSCSI protocol. Subsequent and repeated reboots of the guest domain might produce the following error on the console, after which the reboot fails and the guest domain (I/O domain) hangs up:

```
Failed to write to Admin Rx Queue Regs
ERROR: Last Trap: Fast Data Access MMU Miss
ERROR: Last Trap: Fast Data Access MMU Miss
...
```

**Recovery:** Recover the hung guest domain by running the following sequence of LDOM commands from the primary (control) domain:

```
ldm stop -f IO domain
ldm unbind IO domain
ldm set-var pci-probe-policy=required IO domain
ldm rm-io
ldm bind IO domain
ldm start IO domain
```





# Glossary

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## A

- Active SP** An SP selected by Oracle ILOM to manage server resources. When an Active SP can no longer serve this role, the Standby SP assumes the Active role. See also [SP](#) and [Standby SP](#).
- ADI** Applications data integrity.
- AI** Automated installer. AI provides a customizable mechanism for installing the Oracle Solaris OS using an installation parameters file called an AI manifest.
- API** Application programming interface.

## C

- CAR** Label of the [PCIe hot-plug carrier](#).
- CLI** Command line interface.
- CMIOU** CPU, memory, and I/O unit. Each CMIOU contains 1 [CMP](#), 16 [DIMM](#) slots, and 1 [IOH](#) chip. Each CMIOU also hosts an [eUSB](#) device.
- CMP** Chip multiprocessor. Each [CMIOU](#) contains 1 CMP. SPARC M8-8 and SPARC M7-8 servers can contain a maximum of 8 CMPs. The SPARC M7-16 server can contain a maximum of 16 CMPs.
- CPU** Central processing unit.

## D

- DAX** Data analytics accelerator.

**DCU** Domain configurable unit. The smallest building block for PDomains. SPARC M8-8 and SPARC M7-8 servers with two PDomains has two DCUs, and SPARC M8-8 and SPARC M7-8 servers with one PDomain has one DCU. Those DCUs are static. Their assignment cannot be changed. The SPARC M7-16 server has four DCUs that you can assign to the host in any one of the four possible PDomains. See also [PDomain](#).

**DCU SPM** In a multidomain server, Oracle ILOM identifies one [SPM](#) from an SPM pair to manage DCU activity. See also [SPM](#), [SPP](#), and [DCU](#).

**DIMM** Dual in-line memory module.

## E

**eUSB** Embedded USB. A flash-based drive designed specifically to be used as a boot device.

## F

**FMA** Fault management architecture. Generates fault indictments from the [SP](#). FMA provides three system activities: error handling, fault diagnosis, and response.

**FRU** Field replaceable unit.

**FRU name** Names used to identify hardware components in certain Oracle ILOM and system commands and messages.

## H

**HBA** Host bus adapter. Provides I/O processing and physical connectivity between a server and a storage or network device.

## I

**ILOM** See [Oracle ILOM](#).

**InfiniBand** A networking communications standard that features very high throughput and very low latency.

---

<b>IOH</b>	I/O hub.
<b>IOR</b>	I/O resiliency.
<b>IPMP</b>	IP network multipathing. An Oracle Solaris feature providing multipathing and load-balancing capabilities for IP network interfaces.
<b>IPoIB</b>	Internet protocol over <a href="#">InfiniBand</a> .
<b>iSCSI</b>	Internet small computer system interface. An IP-based storage networking standard that enables a server to access storage across a network. In an iSCSI network, the remote storage is called the iSCSI target.
<b>iSCSI using IPoIB</b>	A boot process that enables a server to boot an <a href="#">iSCSI</a> target accessible using IP over an <a href="#">InfiniBand</a> network. See also <a href="#">IPoIB</a> .
<b>K</b>	
<b>KA</b>	Knowledge article. These documents are hosted on <a href="https://myoraclesupport.com">My Oracle Support (https://myoraclesupport.com)</a> .
<b>KU</b>	Kernel update.
<b>KVMS</b>	Keyboard video mouse storage.
<b>L</b>	
<b>LDoms</b>	Logical domains.
<b>LED</b>	Light-emitting diode.
<b>logical domain</b>	A virtual machine comprising a discrete logical grouping of resources that has its own operating system and identity within a single computer system.
<b>M</b>	
<b>miniroot</b>	A miniroot is a minimal root file system consisting of the Oracle Solaris software required to boot the OS to either install or upgrade the OS. You might need to patch the miniroot if you need to add driver and hardware support to the boot image.

**multipathing** Multipathing software enables you to define and control redundant physical paths to I/O devices such as storage devices and network interfaces.

## N

**NVMe** Non-Volatile Memory Express. A specification for accessing SSDs attached through the [PCIe](#) bus.

**NVRAM** Non-volatile random-access memory.

## O

**OpenBoot** Oracle firmware that enables a [PDomain](#) to boot the Oracle Solaris OS. Provides an interface for testing hardware and software interactively.

**Oracle ILOM** Oracle Integrated Lights Out Manager. The system management firmware that is preinstalled on the server [SPs](#).

**Oracle VTS** Oracle Validation Test Suite. An application that exercises the system, provides hardware validation, and identifies possible faulty components.

**OS** Operating system.

## P

**PCIe** Peripheral Component Interconnect Express.

**PCIe hot-plug carrier** An enclosure used to install and house [PCIe](#) cards in the server. See [CAR](#).

**PDECB** Power distribution electronic circuit breaker.

**PDomain** Physical domain. SPARC M8-8 and SPARC M7-8 servers are configured with either two PDomains or one PDomain. These PDomains are static and cannot be reconfigured. The SPARC M7-16 server can have one to four configured PDomains. These SPARC M7-16 PDomains are dynamic, so you can assign or unassign the DCUs in the PDomains as long as you stop and start the host.

See also [DCU](#) and [switch unit](#).

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<b>PDomain SPM</b>	The lead SPM of a PDomain. The PDomain SPM manages tasks and provides rKVMS service for that PDomain. In a SPARC M7-16 server, Oracle ILOM identifies one of the <a href="#">DCU SPMs</a> from the pool of DCU SPMs on the same PDomain as the PDomain SPM to manage activity on that host. See also <a href="#">PDomain</a> and <a href="#">SPM</a> .
<b>pool</b>	A logical group of devices describing the layout and physical characteristics of the available storage. Storage space for datasets is allocated from a pool. <a href="#">ZFS</a> uses a model where storage devices are aggregated into a storage pool.
<b>R</b>	
<b>RC</b>	Root complex. The first element in a <a href="#">PCIe</a> device path (for example, <code>/pci@300</code> ).
<b>rKVMS</b>	Remote keyboard video mouse and storage.
<b>S</b>	
<b>scalability</b>	The ability to increase (or <i>scale up</i> ) processing power in a server by combining the server's physical configurable hardware (see <a href="#">DCU</a> ) into one or more logical groups (see <a href="#">PDomain</a> ).
<b>SCSI</b>	Small computer system interface. See also <a href="#">iSCSI</a> .
<b>SLink</b>	Scalability link. See also <a href="#">scalability</a> .
<b>SP</b>	Service processor. For redundancy, the server contains two service processors, one active and one on standby.
<b>SPM</b>	Service processor module. A component of the <a href="#">SPs</a> and <a href="#">SPPs</a> . SPMs contain processors that enable the <a href="#">SPs</a> and <a href="#">SPPs</a> to manage the server resources. See also <a href="#">DCU SPM</a> and <a href="#">PDomain SPM</a> .
<b>SPP</b>	Service processor proxy. One <a href="#">SPP</a> is assigned to manage each PDomain. <a href="#">SPPs</a> monitor environmental sensors and manage the <a href="#">CMIOUs</a> , memory controllers, and <a href="#">DIMMs</a> within the DCU. See also <a href="#">DCU SPM</a> and <a href="#">PDomain SPM</a> .
<b>SRU</b>	Support repository update.
<b>SSD</b>	Solid-state drive.
<b>SSH</b>	Secure shell. A program for logging in and executing commands on a system or service processor.

<b>SSL</b>	Secure socket layer.
<b>Standby SP</b>	A redundant SP that will manage server resources if the Active SP fails. See also <a href="#">SP</a> and <a href="#">Active SP</a> .
<b>switch unit</b>	A device that enables the <a href="#">CMIOUs</a> to communicate with each other. The SPARC M7-16 server switch contains six switch units.
<b>SWU</b>	Switch unit.
<b>system</b>	In the SPARC M8 and SPARC M7 servers documentation, <i>system</i> refers to the /System level in the Oracle ILOM firmware.
<b>T</b>	
<b>TPM</b>	Trusted Platform Module.
<b>U</b>	
<b>USB</b>	Universal serial bus.
<b>UUID</b>	Universally unique identifier.
<b>V</b>	
<b>VTs</b>	See <a href="#">Oracle VTs</a> .
<b>Z</b>	
<b>ZFS</b>	Zettabyte file system. A file system that uses storage pools to manage physical storage.
<b>VNC</b>	Virtual network computing.