

# SPARC T8 Series Servers Product Notes

**ORACLE**

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## Using This Documentation

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- **Overview** – Contains late-breaking information for the SPARC T8 Series servers
- **Audience** – Technicians, system administrators, and authorized service providers
- **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/t8/docs>.

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## Late-Breaking Information

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These topics provide important information and late-breaking news about the server:

- [“Preinstalled Software” on page 9](#)
- [“IMPORTANT - Install Latest OS Updates, Patches, and Firmware” on page 10](#)
- [“Minimum Supported Versions of the Firmware, OS, and Software” on page 11](#)
- [“Mandatory Oracle Solaris 11 OS Package Updates” on page 12](#)
- [“Mandatory Oracle Solaris 10 OS Patches” on page 13](#)
- [“Updating the System Firmware” on page 16](#)
- [“Required Firmware Updates for X-Options” on page 16](#)
- [“Installing and Booting Oracle Solaris 11 From Devices Connected to a USB Port” on page 17](#)
- [“Oracle VM Server for SPARC Guidelines” on page 17](#)
- [“Oracle Solaris Fallback Miniroot Image Must Be Installed on a New SPM” on page 18](#)
- [“Connecting a Terminal Device to the SER MGT Port” on page 19](#)
- [“When You Create Logical Domains, Some Memory Is Reserved By the Server” on page 19](#)
- [“Known Issues” on page 19](#)

## Preinstalled Software

Software	Location	Description
Oracle Solaris 11.3 SRU 18 OS	The OS is installed on drive 0, using a ZFS file system.	Host OS.
Oracle VM Server for SPARC <sup>†</sup>	/opt/SUNWldm	Manages logical domains.
Oracle VTS <sup>†</sup>	/usr/sunvts	Provides hardware validation tests.

<sup>†</sup>These software components are part of the Oracle Solaris 11 OS distribution.

The preinstalled OS is ready to be configured at the appropriate point when you first apply power to the server.

Mandatory package updates might not be preinstalled. Ensure that you obtain and install all mandatory updates before you put the server into production. See [“Mandatory Oracle Solaris 11 OS Package Updates” on page 12.](#)

Refer to the Oracle Solaris documentation for instructions on installing and configuring the Oracle Solaris OS.

You can reinstall the OS along with mandatory package updates or patches instead of using the preinstalled OS. See [“Minimum Supported Versions of the Firmware, OS, and Software” on page 11.](#)

## IMPORTANT - Install Latest OS Updates, Patches, and Firmware

Some product features are enabled only when the latest versions of patches or firmware are installed. In order to retain optimal performance, security, and stability, installing the latest available patches or firmware is required.

Verify that the SPARC T8 server firmware version is at a minimum 9.8 or higher.

1. Check the system firmware:

From the ILOM web interface, click System Information → Summary, then view the property value for the System Firmware Version in the General Information table.

From the command prompt, type:

```
-> show /HOST
```

2. Ensure the server firmware version is at the minimum required version, shown above, or a subsequent release, if available.

See a list of firmware versions here: [Firmware Downloads and Release History for Oracle Systems.](#)

3. If required, download the latest available software release version from My Oracle Support at:

<https://support.oracle.com>

4. If required, update the server firmware.

Refer to the information about performing firmware updates in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance*. Ensure that you perform the preparatory steps described in that document before updating the firmware.

## Minimum Supported Versions of the Firmware, OS, and Software

You are required to install the latest available and supported versions of the system firmware, OS, and patches, for optimal performance, security, and stability. See [“IMPORTANT - Install Latest OS Updates, Patches, and Firmware” on page 10.](#)

Oracle Solaris 11 is the recommended OS for the SPARC T8 series 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/index.html>.

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**Note** - If you configure the server with Oracle VM Server for SPARC, you can install various combinations of the minimum (or later) versions of the OS. For example, use Oracle Solaris 11.3 for the control domain, and Oracle Solaris 10 9/10 in a guest domain.

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Software	Minimum Supported Versions
Oracle System Firmware	9.8.1 or later.  9.10.3 or later is required for 128 GB DIMM support.
Oracle Solaris 11	Oracle Solaris 11.3 SRU 24 for the control domain and non-virtualized configurations.  Oracle Solaris 11.3 SRU 24 is the minimum supported version when using Oracle Solaris 11 in a guest domain.  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” on page 12.</a>
Oracle Solaris 10 OS (In Guest Domains Only)	Oracle Solaris 10U11, plus recommended patches  For virtual guest domains only  Includes Oracle VTS 7 PS15.  Also see <a href="#">“Mandatory Oracle Solaris 10 OS Patches” on page 13.</a>
Java Development Kit	Java applications running on this product require one of these minimum JDK versions: <ul 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>

Software	Minimum Supported Versions
	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>
	For information about running older versions of the JDK on SPARC servers, refer to Doc ID 2564392.1 on My Oracle Support.
Oracle Database Enterprise Edition	12.2 Required on Oracle Solaris 11.3 for in-memory features.

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**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.

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## Mandatory Oracle Solaris 11 OS Package Updates

No package update is required at this time to use the preinstalled Oracle Solaris 11.3 OS with this server.

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 Support Repository Update (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 SRUs from: <https://pkg.oracle.com/solaris/support>.

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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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See one of these topics, depending on your platform:

- [“Installing the OS” in SPARC T8-1 Server Installation Guide](#)
- [“Installing the OS” in SPARC T8-2 Server Installation Guide](#)
- [“Installing the OS” in SPARC T8-4 Server Installation Guide](#)

## Mandatory Oracle Solaris 10 OS Patches

If you choose to 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	<p>These mandatory patches:</p> <ul style="list-style-type: none"> <li>■ All patches up to October 2015.</li> <li>■ KU150400-29.</li> </ul> <p>To install Oracle Solaris 10, you must patch the miniroot of the installation media with KU150400-29, or higher. 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>

### 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	Oracle Solaris 10 1/13 SPARC Bundle.

Installation Order	OS and Patches
3	<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> <p>These mandatory patches:</p> <ul style="list-style-type: none"> <li>■ All patches up to October 2015.</li> <li>■ KU150400-29.</li> </ul> <p>To install Oracle Solaris 10, you must patch the miniroot of the installation media with KU150400-29, or higher. 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>

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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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## Oracle Solaris 10 9/10 Mandatory Patches

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

Installation Order	OS, Patches, and Packages
1	<p>Oracle Solaris 10 9/10</p> <p><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.</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 9/10.</p>
3	<p>These mandatory patches:</p> <ul style="list-style-type: none"> <li>■ All patches up to October 2015.</li> </ul>

Installation Order	OS, Patches, and Packages
4	<ul style="list-style-type: none"> <li>■ KU150400-29.</li> </ul> <p>To install Oracle Solaris 10, you must patch the miniroot of the installation media with KU150400-29, or higher. 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> <p>Use the pkgadd command to install the SUNWust1 and SUNWust2 packages.</p>

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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

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

<https://support.oracle.com>

### 2. Select 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
- 13058415
- 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.

## Updating the System Firmware

To update SP firmware from the HOST, Oracle is standardizing on the `fwupdate` utility. This utility is included in Oracle Solaris as part of the Oracle Hardware Management Pack (OHMP).

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**Note** - The `sysfwdownload` utility does not ship with SP firmware releases, and that utility is not supported on SPARC T8 servers.

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For more information on using the `fwupdate` utility that is included in Oracle Solaris 11.3, refer to *Using `fwupdate` to Update Firmware* ([http://docs.oracle.com/cd/E64576\\_01/html/E64582/gyuui.html#scrolltoc](http://docs.oracle.com/cd/E64576_01/html/E64582/gyuui.html#scrolltoc)) in the *Oracle Server CLI Tools for Oracle Solaris 11.3 User Guide*.

When you follow the steps in that procedure, and have obtained a desired firmware package, use this command to update the SP from the HOST:

```
fwupdate update all -x powercycle_metadata.xml
```

*firmware-package-file.pkg* is the path to the firmware package for your server's SP.

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**Note** - On SPARC T8 servers running Oracle Solaris 11.3 SRU 23 and SRU 24, the host cannot automatically power cycle as required by some firmware updates. This issue occurs even if there is a power cycle command in the firmware metadata file. If a power cycle is required for a firmware update, you must manually power cycle the host to complete the update. For more information, refer to 26613165 in "fwupdate Known Issues" in the Oracle Hardware Management Pack for Oracle Solaris 11.3 Release Notes at: [http://docs.oracle.com/cd/E64576\\_01/index.html](http://docs.oracle.com/cd/E64576_01/index.html)

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## Required Firmware Updates for X-Options

If you install the Oracle Flash Accelerator F160 PCIe Card or the Oracle 1.6TB NVMe SSD as an x-option, you must update the firmware to RA13, or a subsequent release if available. Servers ordered with this option installed 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>.



## Installing and Booting Oracle Solaris 11 From Devices Connected to a USB Port

To install Oracle Solaris without using an IPS AutoInstall server on the network, you can use Oracle Solaris media in a DVD drive. The DVD drive can be attached to a USB port. You also can boot from an ISO image copied to a DVD disk, hard drive, or SSD.

You can install Oracle Solaris 11.3 OS on this server from an image copied to a USB flash drive. That USB image is available for download at the same location as the ISO images <http://www.oracle.com/technetwork/server-storage/solaris11/downloads/index.html>.

You also can create a persistent device alias for a device connected to a USB port. The simpler alias name remains available for future installation or boot operations.

For more information about installing Oracle Solaris and creating persistent device aliases, refer to *Installing Oracle Solaris 11.3 Systems* at:

[http://docs.oracle.com/cd/E53394\\_01](http://docs.oracle.com/cd/E53394_01).

You can boot Oracle Solaris 11.3 from drives installed in the server (hard drive or SSD) or from devices connected to a USB port.

For the path to identify a USB port in a boot command, refer to the list of devices output by the `show-dev OpenBoot` command.

## 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.
- If you configure Oracle Solaris 10 OS in guest domains, you must disable Verified Boot for each Oracle Solaris 10 guest domain by running the following commands in the control domain, then reboot the guest domain:

```
# ldm ls -l <domain> | grep boot-policy
boot-policy=warning
# ldm set-domain boot-policy=none <domain>
The domain must be rebooted to make the boot-policy change effective.
```

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

- 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.

For more information about Oracle VM Server for SPARC, refer to the [Oracle VM Server for SPARC documentation](#).

## Oracle Solaris Fallback Miniroot Image Must Be Installed on a New SPM

When you replace the SPM in your server, you must install a fallback miniroot image that corresponds to the version of Oracle Solaris that you are using. The miniroot image is not part of the OS or firmware image that you install. Also, you must update the miniroot image when you install a new version of Oracle Solaris on the server, so the fallback image matches that version and SRU of Oracle Solaris.

You must download the fallback miniroot image for your hardware and your Oracle Solaris version from My Oracle Support at <https://support.oracle.com>. Then follow the procedure "Uploading a New Solaris Miniroot Package From SP to Host" in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance*.

You will see the `defect.ilom.fs.miniroot-missing` error if you fail to install a fallback miniroot image. For example:

```
-> show faulty
```

Target	Property	Value
/SP/faultmgmt/0	fru	/SYS
/SP/faultmgmt/0/faults/0	class	defect.ilom.fs.miniroot-missing

## Connecting a Terminal Device to the SER MGT Port

Crossover adapters are no longer provided in the shipping kit for this server. To connect the server's SER MGT port to a terminal device, use an RJ-45 cable that is set up for a null modem configuration, in which the transmit and receive signals cross over.

## When You Create Logical Domains, Some Memory Is Reserved By the Server

When you use Oracle VM Server for SPARC, you can assign most of the memory in a SPARC T8 server to logical domains. However, a small portion of the server's memory is preassigned to software components, the hypervisor, and certain I/O devices. Also, if DIMM sparing is active, a portion of memory is reserved to enable the server to operate normally after a DIMM has failed.

To determine which portions of memory are unavailable for logical domains, type:

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

In the output, look for rows that include `_sys_` in the Bound column. Each of those portions of memory is not available for logical domains.

## Known Issues

These issues are known to exist for the SPARC T8 servers:

- [“Supported DIMMs” on page 20](#)
- [“prtdiag -v is missing Environmental Status, FRU Status for some PDs \(23619958\)” on page 20](#)
- [“L3DAC Storm Simulating Broken Way Results in Panic Hang \(24973531\)” on page 21](#)
- [“Timeout waiting for Tx completion Message When Booting Over a Sun Dual 10GbE SFP+ PCIe Low Profile Adapter \(25675633\)” on page 21](#)
- [“ILOM reset to factory default after AC cycle \(25734596\)” on page 22](#)
- [“Hotplugged Intel PCIe Cards Not Seen By the fwupdate Command \(25830688\)” on page 23](#)
- [“Oracle ILOM Java Remote Console Plus Storage Redirection Does Not Suspend Miniroot Redirection While Active \(25911614\)” on page 24](#)

- [“Panic \[cpu9\]/thread=c040064486cc0: bad unexpected error from hypervisor call at T \(26138639\)” on page 24](#)
- [“iSCSI Boot Panic vfs\\_mountroot: cannot mount root Due to Slow iSCSI Target \(26178433\)” on page 25](#)
- [“XGBE not training at MAX advertised speed/width \(26526760\)” on page 30](#)
- [“SP/config restore fails to restore some /HOST0/SP/powermgmt/budget properties \(26573130\)” on page 32](#)
- [“Power cycle after fwupdate does not work on T8 \(26613165\)” on page 33](#)

## Supported DIMMs

The *SPARC T8 Series Server Service Manuals* provide incorrect references to the DIMMs supported for use in the T-8 series servers. At this time, T-8 series servers support only dual-rank 32 GB DIMMs.

## prtdiag -v is missing Environmental Status, FRU Status for some PDs (23619958)

On boot occasionally picl fails to establish communications with the SP and it does not recover automatically. In that case, prtdiag -v 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 prtpicl and prtdiag. Instead get sensor info from FMA fntopo or use smbios and Oracle ILOM commands to obtain sensor data. The following example shows the Oracle ILOM command to obtain the environmental sensor data from /SYS/MB:

```
-> show -t /SYS/MB value
Target          | Property | Value
-----+-----+-----
/SYS/MB/0V9_SAS0_OBPS/T_INT | value   | 30.781 degree C
/SYS/MB/0V9_SAS0_OBPS/V_OUT | value   | 0.977 Volts
/SYS/MB/0V9_SAS1_OBPS/T_INT | value   | 29.594 degree C
/SYS/MB/0V9_SAS1_OBPS/V_OUT | value   | 0.976 Volts
/SYS/MB/0V83_CV_OBPS/T_INT  | value   | 25.719 degree C
/SYS/MB/0V83_CV_OBPS/V_OUT  | value   | 0.832 Volts
/SYS/MB/0V85_FV_OBPS/T_INT  | value   | 25.594 degree C
/SYS/MB/0V85_FV_OBPS/V_OUT  | value   | 0.851 Volts
```

```

/SYS/MB/1V05_IOH0_OBPS/T_INT | value | 41.188 degree C
/SYS/MB/1V05_IOH0_OBPS/V_OUT | value | 1.050 Volts
/SYS/MB/1V05_IOH1_OBPS/T_INT | value | 36.750 degree C
/SYS/MB/1V05_IOH1_OBPS/V_OUT | value | 1.051 Volts
/SYS/MB/3V3_MAIN_OBPS/T_INT | value | 38.625 degree C
/SYS/MB/3V3_MAIN_OBPS/V_OUT | value | 3.417 Volts
/SYS/MB/3V3_PCIE_OBPS/T_INT | value | 43.750 degree C
/SYS/MB/3V3_PCIE_OBPS/V_OUT | value | 3.316 Volts
...

```

### Recovery

Restart the picl service. Type:

```
svcadm restart picl
```

## L3DAC Storm Simulating Broken Way Results in Panic Hang (24973531)

On very rare occasions a fault may develop within the cache within the processor, which may result in a system panic and a failure of the system to automatically recover.

If you see this problem, reset the system from the Oracle ILOM console.

```
→ reset /System
```

## 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.

# ILOM reset to factory default after AC cycle (25734596)

When AC cycling a SPARC T8 system, it is possible that the Service Processor configuration will be reset to factory defaults. If this occurs, the Service Processor date and time will be set to Jan 1 00:00:00 1970, and you will see the following output from the Service Processor serial port while the Service Processor is booting after the AC power cycle:

```
NAND ECC Stats   :
corrected      : 0^M
failed        : 0^M
badblocks     : 0^M
bbtblocks     : 0^M
/usr/local/bin/pre_conf_check: line 38: & 0x40: syntax error: operand expected (error
  token is "& 0x40")^M
/etc/init.d/ubifs: crw-r--r-- 10,  60 /var/ddev/ubi_ctrl           ^M
/etc/init.d/ubifs: crw-r--r-- 253,  0 /var/ddev/ubi0              ^M
  params:      (20.2 MB) exists mounted^M
  persist:    (106.3 MB) exists mounted^M
  coredump:   (70.4 MB) exists mounted^M
  large:      (64.5 MB) exists mounted^M
  extra:      (36.4 MB) exists mounted^M
  package:    (230.3 MB) exists mounted^M
  miniroot:   (468.1 MB) exists mounted^M
Available freespace: 0 MB^M
^M
Checking configuration files state ... ^M
/etc/rcS.d/S07z_S10restore_defaults: line 271:  803 Segmentation fault    /usr/local/
bin/passwd_check^M
***Sanity check of user configuration files has failed***^M
/etc/rcS.d/S07z_S10restore_defaults: line 275:  805 Segmentation fault    /usr/local/
bin/config_process cleanup^M
```

```

... not preserving config^M
...
Setting the system clock.^M
/etc/rcS.d/S08hwclock.sh: line 77: 964 Segmentation fault      /sbin/hwclock --rtc=/
dev/$HCTOSYS_DEVICE --hctosys $GMT $HWCLOCKPARS $BADYEAR $NOADJ^M
Unable to set System Clock to: Thu Jan 1 00:00:51 UTC 1970 ... (warning).^M
...

ORACLESP-<SP hostname> login:

```

### Workaround

There is no workaround for this issue. However, follow best practices and perform accurate backups of the Oracle ILOM configuration and your LDOMs configuration before AC power cycling the system. This will ease recovery if this situation occurs.

### Recovery

Restore the Oracle ILOM configuration and LDOMs configuration from backups. To restore your Oracle ILOM Configuration, see: [Backing Up, Restoring, or Resetting the Oracle ILOM Configuration](#). To restore your LDOMs configuration, see: [Restoring Domain Configurations](#).

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

After hotplugging an Intel-manufactured PCIe card into the server using the hotswap command, the fwupdate command cannot show detailed information about the card. After using the hotswap 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.

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

This issue affects all three servers.

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.

```
-> 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.

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

## Panic [cpu9]/thread=c040064486cc0: bad unexpected error from hypervisor call at T (26138639)

If you have an Oracle Quad 10Gb or Dual 40Gb Ethernet Adapter or an Oracle Quad Port 10GBase-T Adapter PCIe card installed in SPARC M8 or T8 system, with a VF assigned to the root domain, shutting down the root domain using the `-f` option, and then shutting down the IO domain with the `-f` option causes a panic of the IO domain.



**Workaround**

Avoid using the `-f` option with the `ldm stop` command in these circumstances.

**Recovery**

Reboot the IO domain.

## iSCSI Boot Panic `vfs_mountroot: cannot mount root` Due to Slow iSCSI Target (26178433)

This issue affects all three servers.

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_mount root` 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 26](#).
- If you freshly installed the Solaris OS on the server, go to [“Apply Workaround to a Fresh Oracle Solaris OS Installation” on page 28](#).
- 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>
```



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

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.

## XGBE not training at MAX advertised speed/width (26526760)

In rare circumstances, when power is first applied to the system the PCI-Express (PCIE) link leading to the onboard Ethernet device may train at less than its optimal speed. This will not result in any loss of connectivity or service, but may result in a loss of network bandwidth or throughput. This problem only occurs when AC power is applied to the chassis. If the links show the correct speed, they will remain at the correct speed as long as AC power is applied.

### Identifying the Error Condition

To troubleshoot this problem, you must determine whether your onboard network has trained to less than its full capability, and must then retrain any links that are trained to less than their full potential. Use either of the following methods to identify whether this error condition exists on your system; both methods can be run from within Solaris in the control domain.

#### Option 1: FMA Fault Log

If, and only if, you have run the Power On Self Test (POST) during boot, there will be faults registered in the FMA log for degraded links.

1. Display a list of diagnosed faults.

```
# fmadm faulty
-----
TIME          EVENT-ID          MSG-ID
SEVERITY
-----
Sep 14 06:21:49 33055e24-2f39-679e-9482-ec1c5f83b69b SPSUN4V-8001-0J Major Problem
  Status:open
  Diag Engine : fdd / 1.0
  System Manufacturer : Oracle Corporation
  Name : SPARC T8-1
  Part_Number : 32884356+1+1
  Serial_Number : AK00271486
  Host_ID : 86bbdd30
-----
Suspect 1 of 1 : Problem class : fault.io.pciex.bus-linkerr-deg
Certainty : 100%
Affects : location:///SYS/MB/NET2
Status : faulted but still in service
FRU Status : faulty
Location : "/SYS/MB"
...
Resource Location : "/SYS/MB/NET2"
```

2. Look for any faults with the "Problem class" set to "fault.io.pciex.bus-linkerr-deg" in any of these locations. The previous example shows this fault in /SYS/MB/NET2.

- /SYS/MB/NET0
- /SYS/MB/NET1
- /SYS/MB/NET2
- /SYS/MB/NET3
- /SYS/MB/IOH/IOS2/RP0/PCIE\_LINK

If you see fault.io.pciex.bus-linkerr-deg in any of these locations, the onboard network's PCI-E link did not train to its full potential.

3. Record the value listed under the EVENT-ID for each fault.io.pciex.bus-linkerr-deg fault. You will use these EVENT-IDs later to clear the faults.

In the previous example, this value is 33055e24-2f39-679e-9482-ec1c5f83b69b.

### Option 2: prtdiag(1M) command

You can use the `prtdiag(1M)` command from Solaris when logged into the primary domain whether or not POST had been enabled.

1. In the Solaris control domain, display the PCI-E width and speed for the onboard Ethernet device. In this case, the network ports for the onboard Ethernet device are named `/SYS/MB/XGBE`, `/SYS/MB/NET1`, `/SYS/MB/NET2`, and `/SYS/MB/NET3`.
2. 

```
# prtdiag
System Configuration: Oracle Corporation sun4v SPARC T8-1 Memory size: 243200 Slot
...
Cur Speed/Width...
/SYS/MB/XGBE PCIE network-pciex8086,1589 8.0GT/x8 8.0GT/x8 /pci@300/pci@1/network@0
/SYS/MB/NET1 PCIE network-pciex8086,1589 8.0GT/x8 8.0GT/x8 /pci@300/pci@1/network@0,1
/SYS/MB/NET2 PCIE network-pciex8086,1589 8.0GT/x8 8.0GT/x8 /pci@300/pci@1/network@0,2
/SYS/MB/NET3 PCIE network-pciex8086,1589 8.0GT/x8 8.0GT/x8
```

### Retrain Under-Optimized Links

If either of the previous methods indicate that the is trained to a less-than-optimal setting, retrain them as follows.

1. Halt all guests on the chassis.
2. Power off the host.
3. Remove the AC power from the chassis for a few seconds.
4. Repair the faults, using the `fmadm repair uuid-of-fault` command and the EVENT-ID you recorded for the uuid.

As shown in the previous example where the EVENT-ID for `/SYS/MB/NET2` was `33055e24-2f39-679e-9482-ec1c5f83b69b`. In this case, you would clear the fault as follows:

```
# fmadm repair 33055e24-2f39-679e-9482-ec1c5f83b69b
```

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

When a configuration backup is restored, the properties for `/HOST0/SP/powermgmt/budget` are not correctly restored, and instead, retain their previous values, which do not match the restored-backup.

### Recovery

Update the `/HOST0/SP/powermgmt/budget` settings manually using either the CLI or the web interface, as follows:

```
→ 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
  ...
```

Check and update the values for `activation_state`, `powerlimit`, `timelimit`, and `violation_actions`, then back up the configuration to save your changes.

## Power cycle after fwupdate does not work on T8 (26613165)

On systems running Oracle Solaris 11.3 SRU 23 and SRU 24, the host cannot automatically power cycle as required by some firmware updates.

### Workaround

If a power cycle is required for a firmware update, you must manually power cycle the host to complete the update. For more information, refer to 26613165 in "fwupdate Known Issues" in the Oracle Hardware Management Pack for Oracle Solaris 11.3 Release Notes at: [http://docs.oracle.com/cd/E64576\\_01/index.html](http://docs.oracle.com/cd/E64576_01/index.html).

## IO domain ldgX 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.

## 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
...
```

### Resolution

Update to System Firmware version 9.8 or later. See [“IMPORTANT - Install Latest OS Updates, Patches, and Firmware”](#) on page 10.