SPARC T3-1 Server

Product Notes

Part No.: E20747-10
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Contents

Using This Documentation

This document contains late-breaking information and known issues for Oracle's SPARC T3-1 server.

Related Documentation

Documentation	Links
All Oracle products	http://www.oracle.com/documentation
SPARC T3-1 server	http://www.oracle.com/pls/topic/lookup?ctx=SPARCT3-1
Oracle Solaris OS and other systems software	http://www.oracle.com/technetwork/indexes/documentation/index.html#sys_sw
Oracle Integrated Lights Out Manager (ILOM) 3.0	http://www.oracle.com/pls/topic/lookup?ctx=ilom30
Oracle VTS 7.0	http://www.oracle.com/pls/topic/lookup?ctx=OracleVTS7.0

Note – See http://www.oracle.com/documentation for specific information about supported I/O cards and other peripherals.

Feedback

Provide feedback on this documentation at:

http://www.oracle.com/goto/docfeedback

Support and Accessibility

Description	Links
Access electronic support through My Oracle Support	http://support.oracle.com For hearing impaired: http://www.oracle.com/accessibility/support.html
Learn about Oracle's commitment to accessibility	http://www.oracle.com/us/corporate/accessibility/index.html

CHAPTER 1

Late-breaking Information

These product notes contain important and late-breaking information about Oracle's SPARC T3-1 server.

This information is organized into the following sections:

Preinstalled Software

The preinstalled Oracle Solaris OS is installed on a ZFS file system, as described in the following table.

TABLE 1-1 Preinstalled Software

Software	Location	Function
Oracle Solaris 11 OS or Oracle Solaris 10 9/10 OS	Root disk Slice 0	Operating system
Oracle VM Server for SPARC • 2.2 with Oracle Solaris 11 • 2.0 with Oracle Solaris 10	`/opt/SUNWldm`	Manages logical domains
Electronic Prognostics • 1.2 with Oracle Solaris 11 • 1.1 with Oracle Solaris 10	`/opt/ep`	Provides early warning of the potential for specific FRU faults
System firmware 8.2.0.a or later	Service processor Host processor	Oracle ILOM operations All other firmware operations

Note – Refer to the Customer Information Sheet shipped with your server to identify which version of Oracle Solaris OS is preinstalled.

Note – In addition to reading the product notes for your server, always review the latest version of the Oracle Solaris OS release notes when installing or using the server. The release notes provide important installation, runtime, and update information that you should consider when installing or running the Oracle Solaris OS. The release notes also list the known OS problems and provide workarounds when available.

Find the release notes for your version of the OS on the following web site:
`http://docs.oracle.com`

Supported Versions of Oracle Solaris OS, Firmware, and Software

TABLE 1-2 Supported Versions of the Oracle Solaris OS and Firmware

Software	Supported Versions
Operating System	• Oracle Solaris 11 • Oracle Solaris 10 8/11 OS • Oracle Solaris 10 9/10 OS with required patchsets • Oracle Solaris 10 10/09 OS with the Solaris 10 9/10 SPARC Bundle and required patchsets
Oracle VM Server for SPARC (LDoms)	• 2.1 or 2.2 with Oracle Solaris 11 • 2.0 with Oracle Solaris 10
Electronic Prognostics on the server host	• 1.2 with Oracle Solaris 11 • 1.1 with Oracle Solaris 10
System firmware	8.0.4.c or higher

OS Package and Patch Updates

Note – You should install the latest patches or package updates available for the version of the Oracle Solaris OS installed on your system.

Determining Oracle Solaris 11 OS Package Update Version

Updates to Oracle Solaris 11 are provisioned using package updates called Support Repository Updates (SRUs) instead of patches. SRUs are part of a new OS provisioning scheme called the Image Packaging System (IPS).

To determine the package version of the Oracle Solaris 11 OS installed on your system, run the `pkg info kernel` command and then interpret the FMRI value displayed in the output. This is an example:

```
# pkg info kernel
          Name: system/kernel
       Summary: Core Kernel
   Description: Core operating system kernel, device drivers and other modules.
      Category: System/Core
         State: Installed
     Publisher: solaris
       Version: 0.5.11
 Build Release: 5.11
        Branch: 0.175.0.2.0.2.1
Packaging Date: Wed Oct 19 07:57:11 2011
          Size: 17.99 MB
          FMRI: pkg://solaris/system/kernel@0.5.11,5.11-0.175.0.2.0.2.1:
                  20111128T20503
```

Then evaluate the following three fields in the FMRI value:

- 175 -- The value 175 indicates that the system has Oracle Solaris 11 OS installed. This value is a constant for Oracle Solaris 11.
- 0 -- The first field to the right of "175" indicates the update release. In this example, there have been no updates to the initial release.
- 2 -- The next field contains the SRU value. In this example, the second patch bundle (called SRU2) has been installed on Oracle Solaris 11, update 0.

You can ignore the other fields in the FMRI package description.

When you know which version of the OS is installed, you can access a list of all the packages contained in that release from the following web page:

http://pkg.oracle.com/solaris/release/en/index.shtml

To list the packages contained in a particular Oracle Solaris 11 release, select that release in the Release and Branch pull-down menu and press the Browse button. Or you can search for individual packages in the Search for: window.

Determining Oracle Solaris 10 Patch Revision

If your system is currently running Oracle Solaris 10, you can find its patch level with the commands `showrev`(1M) and `uname(1)`. This is shown in the following example:

```
# showrev
Hostname: *********
Host id: *********
Release: 5.10
Kernel architecture: sun4v
Application architecture: sparc
Hardware provider: Sun_Microsystems
Domain: Ecd.East.Sun.COM
Kernel version SunOS 5.10 Generic_142909-17
# uname -a
SunOS ********* Generic_142909-17 sun4v sparc sun4v
# showrev -p | tail -3
Patch: 143525-01 Obsoletes: Requires: 118833-36, 127127-11 Incompatibles:
    Packages:SUNWcsu
Patch: 143125-01 Obsoletes: 138079-01 138089-01 Requires: 120011-14
    Incompatibles: Packages: SUNWcsu
Patch: 121557-01 Obsoletes: Requires: Incompatibles: Packages: SUNWpiclu
#
```

Minimum Required Patchset for Oracle Solaris 10 08/11 OS

No additional patches are required before using the server with the Oracle Solaris 10 08/11 OS. However, you should download and install "Recommended OS Patchset Solaris 10 SPARC". This patchset contains Oracle Solaris 10 OS patches that address current Sun Alerts.

Note – The download of the Solaris 10 8/11 SPARC Bundle is identified by the number 14158708 at `http://support.oracle.com`.

Minimum Required Patchset for Oracle Solaris 10 09/10 OS

Install the patches listed in TABLE 1-3 before using the server with the Oracle Solaris 10 09/10 OS.

TABLE 1-3 Minimum Required Patchset for Oracle Solaris 10 09/10

143647-08
144567-01
145098-02
145868-01

In addition, you should download and install "Recommended OS Patchset Solaris 10 SPARC". This patchset contains Oracle Solaris 10 OS patches that address current Sun Alerts.

Note – The download of the Solaris 10 09/10 SPARC Bundle is identified by the number 13153809 at http://support.oracle.com.

Minimum Required Patchsets and SPARC Bundle for Oracle Solaris 10 10/09 OS

To use the server with the Oracle Solaris 10 10/09 OS, install the patches listed in TABLE 1-3, as well as the Oracle Solaris 10 09/10 SPARC Bundle. In addition, you should download and install "Recommended OS Patchset Solaris 10 SPARC". This patchset contains Oracle Solaris 10 OS patches that address current Sun Alerts.

Note – The download of the Solaris 10 8/11 SPARC Bundle is identified by the number 13153814 at http://support.oracle.com.

Rules for I/O Slot Use by Certain Cards

Some optional I/O cards are restricted to specific I/O slots to meet system cooling requirements. Other I/O cards provide better performance when installed in particular slots. TABLE 1-4 lists these slot requirements and recommendations.

Note – This table lists only I/O cards that have specific slot or quantity restrictions or other requirements. It does not list I/O cards that are supported by the SPARC T3-1 server but are not subject to slot or quantity restrictions.

TABLE 1-4 PCIe Slot Usage Rules for Certain I/O Cards

Description	X-option	ATO	Max	Restrictions
Network Interface Card				
Sun x8 PCI-E Quad Gigabit Ethernet UTP	X4447A-Z-N	4447A-Z-N	5	
Sun Dual 10GbE SFP+ PCIe 2.0 Low Profile adapter supporting pluggable SFP+ Transceivers	X1109A-Z	1109A-Z	4	
10 GbE XFP XAUI adapter card	SE3X7XA1Z	SE3Y7XA1Z	2	Slots 0 and 3 only
10 GbE short reach XFP transceiver	SE3X7XT1Z	SE3Y7XT1Z	2	
10 GbE long reach XFP transceiver	SE3X7XT2Z	SE3Y7XT2Z	2	
SAS Host Bus Adapter PCI-E				
Sun Storage 6 Gb SAS PCIe RAID HBA, Internal: 8 port and 512 MB memory*	SGX-SAS6-R-INT-Z	SG-SAS6-R-INT-Z	1	Slot 3
SAS cable kit for installation of internal RAID card	SE3X4A11Z	SE3Y4A11Z	1	
Sun Storage 6 Gb SAS PCIe HBA: 8 port Sun Storage 6 Gb SAS PCIe HBA: 8 port	SGX-SAS6-EXT-Z	SG-SAS6-EXT-Z	3	Slot 3, 4, 5
InfiniBand				
Sun InfiniBand QDR Host Channel Adapter PCIe	X4242A	4242A	2	
Miscellaneous				
Sun Crypto Accelerator 6000 PCIe Card	X6000A-N	6000A-N	2	Preferred slots 0, 2, 3 or 5
96 GB solid state Flash Accelerator PCIe Card	XTA-FAS-S3IE96GB-N	TA-FAS-S3IE96GB-N	4	Slots 0, 2, 3 and 5

* Requires SE3Y4A11Z cable kit.

Up to Eight SSDs Can Now Be Installed In Any SPARC T3-1 Server

Solid State Drives (SSDs) that have been qualified by Oracle can now be used in SPARC T3-1 servers configured with eight-disk capable backplanes. Qualified 32-GB SSDs can also be used in servers with sixteen-disk backplanes.

Note – *Only* SSDs with 32-GB capacity can be used in sixteen-disk backplanes.

To see the list of SSDs that have been qualified for use in SPARC T3-1 servers, go to the following page in the *Sun System Handbook*:

`https://support.oracle.com/handbook_private/Systems/SPARC_T3_1/components.html`

Note – The *Sun System Handbook* is on the Oracle support web site, so you will be asked to log in.

The following is a summary of the rules governing the deployment of SSDs in a SPARC T3-1 server:

- A maximum of eight SSDs can be installed in a server regardless of the type of backplane.
- SSDs and traditional disk-based hard drives can be installed in any numerical combination, so long as the number of SSDs does not exceed eight.
- SSDs and traditional disk-based hard drives can be distributed among the disk slots in any configuration.
- RAID volumes must not be configured with a mix of both SSDs and disk-based hard drives. Either storage technology can be used in a RAID array, but mixing them in a single volume places the integrity of the data at risk.
- In servers with sixteen-disk capable backplanes that use the onboard SAS-2 controllers, the backplane must be partitioned into two eight-disk zones. For disk zoning details, see "Disk Zoning Rules for Backplanes With Sixteen-Disk Capacity" on page 9 and "Disk Zone Management Using the zoningcli Command" on page 11.
- In servers with sixteen-disk capable backplanes that use an internal PCIe RAID HBA instead of the onboard SAS-2 controllers, disk zoning must be disabled. In this case, all disks in the backplane are seen by the HBA as a pool of storage devices. See "Disk Zone Management Using the zoningcli Command" on page 11.

Disk Zoning Rules for Backplanes With Sixteen-Disk Capacity

If your SPARC T3-1 server has a sixteen-disk capacity backplane and uses the onboard SAS-2 controllers to manage the disks, you must apply patch 147034-01 to the LSI firmware on the disk backplane.

Caution – Be certain to back up any data stored on the disks before you apply the patch. You can restore the files after the patch is applied.

Patch 147034-01 causes the backplane to be partitioned into two disk zones, which have the following characteristics:

- Zone A consists of backplane slots 0 through 7. Disks in zone A are managed exclusively by onboard SAS-2 controller 0. They are visible only to each other and to controller 0. Disks in zone A are not visible to any devices in zone B.
- Zone B consists of backplane slots 8 through 15. Disks in zone B are managed exclusively by onboard SAS-2 controller 1. They are visible only to each other and to controller 1. Disks in zone B not visible to any devices in zone A.

Note – When zoning is enabled, `devalias` for slots 8-15 will be incorrect unless the system firmware is updated to either 8.0.5.b (or a higher 8.0 level) or to 8.1.0 (or higher). See "Minimum System Firmware for Valid devalias in Upper Disk Locations" on page 10 for more information.

These disk zone definitions are persistent. Their configuration cannot be modified and they remain in effect across power cycles and reboot operations. They must be active whenever the SAS-2 onboard controllers are used to manage disks in a sixteen-disk capable backplane.

However, if you use an internal PCIe RAID HBA instead of the onboard SAS-2 controllers, you must disable disk zoning. You do this with the following command:

```
# zoningcli disable zoning
```

The `zoningcli` command is contained in versions 2.1.1 and 2.2 of the Oracle Hardware Management Pack. See "Oracle Hardware Management Pack 2.1.1 and 2.2 Support SPARC Platforms" on page 10 for more information.

The `zoningcli` command syntax also supports an `enable` subcommand, which you can use to re-enable disk zones A and B if they are ever disabled. For example, this step would be necessary if you remove an internal PCIe RAID HBA card and return control of the disks to the onboard SAS-2 controllers.

Because the zones are logically isolated from each other, RAID volumes created by controller 0 are restricted to disks in zone A. Likewise, RAID volumes created by controller 1 are restricted to disks in zone B.

Each onboard SAS-2 controller can create up to two hardware RAID volumes. That is, the maximum number of RAID volumes per disk zone is two.

Minimum System Firmware for Valid `devalias` in Upper Disk Locations

For `devalias` to be valid for disk slots 8-15, the system firmware level must be at 8.0.5.b (or a higher 8.0 level) or at 8.1.0.c (or higher). If your server's system firmware does not meet the minimum requirement, you must use the full disk path to identify individual disks in the range 8-15.

For example, if running with the minimum system firmware level and the correct `devalias`, you can use the following command line to boot from the disk in slot 12:

```
# boot disk12
```

If your disk slot is in the range 8-15 and the system firmware level does not meet the requirement described above, you will need to specify the full device path for the boot disk. This example shows the path for disk 12:

```
# boot /pci@400/pci@2/pci@0/pci@4/scsi@0/disk@p10c
```

Oracle Hardware Management Pack 2.1.1 and 2.2 Support SPARC Platforms

Versions 2.1.1 and 2.2 of the Oracle Hardware Management Pack provide Hardware Management Pack support to SPARC-based servers. Oracle Hardware Management Pack is a delivery mechanism for the Oracle Solaris native tools and agents used to configure and manage server hardware.

To use the Oracle Hardware Management commands, download and install the latest version of the Hardware Management Pack from My Oracle Support:

`http://support.oracle.com`

Click on the following link to access the Oracle Hardware Management Pack Installation Guide.

`http://www.oracle.com/pls/topic/lookup?ctx=ohmp`

Disk Zone Management Using the `zoningcli` Command

Versions 2.1.1 and 2.2 of the Oracle Hardware Management Pack include the ZoningCLI tool, which is needed for enabling disk zones in SPARC T3-1 servers that use the onboard SAS-2 controllers to manage disks in sixteen-disk capable backplanes. This tool is also used for disabling disk zones when an internal PCIe RAID HBA is used instead of the onboard SAS-2 controllers.

Note – See "Disk Zoning Rules for Backplanes With Sixteen-Disk Capacity" on page 9.

The ZoningCLI tool has the following syntax:

```
zoningcli subcommand options
```

The following subcommands are supported for `zoningcli`:

Command	Function
enable	Enables zoning
disable	Disables zoning
list	Shows zoning information

The following options can be used with `zoningcli`:

Short Option	Long Option	Description
-?	--help	Help--Displays help information
-V	--version	Version--Displays the tool version

ALOM CMT Compatibility Shell Not Supported

The SPARC T3-1 server does not support the Advanced Lights Out Manager (ALOM) CMT command-line compatibility shell (`cli_mode=alom`), which was available in previous platforms. For more information about the supported Oracle Integrated Lights Out Manager (ILOM) features, refer to the *SPARC T3 Series Servers Administration Guide*.

CHAPTER 2

Known Product Issues

This section describes issues that are known to affect Oracle's SPARC T3-1 servers at the time of this release. The issue descriptions are organized as follows:

Hardware Issues

This section describes issues related to SPARC T3-1 server components.

SAS Command Might Fail to Complete When Certain SAS Devices Are Put Under Heavy Load (CR 7088469)

When certain SAS devices are placed under heavy load, a SCSI Bus Reset might occur. The SCSI bus reset will result in one or more WARNING messages being written to the system log file, `/var/adm/messages`. The following is an example of the WARNING message you might see:

```
scsi: [ID 243001 kern.info] /pci@400/pci@2/pci@0/pci@4/scsi@0 (mpt_sas1):
mptsas_handle_event_sync: IOCLogInfo=0x31120303
scsi: [ID 243001 kern.info] /pci@400/pci@2/pci@0/pci@4/scsi@0 (mpt_sas1):
mptsas_handle_event: IOCLogInfo=0x31120303
scsi: [ID 243001 kern.info] /pci@400/pci@2/pci@0/pci@4/scsi@0 (mpt_sas1):
mptsas_check_scsi_io: IOCStatus=0x4b IOCLogInfo=0x31120303
scsi: [ID 243001 kern.info] /scsi_vhci (scsi_vhci0):
```

```
/scsi_vhci/disk@g5000c5003bee5ae3 (sd6):
Command failed to complete (4) on path mpt_sas3/disk@w5000c5003bee5ae1,0
scsi: [ID 107833 kern.warning] WARNING: /scsi_vhci/disk@g5000c5003bee5ae3 (sd6):
SCSI transport failed: reason 'reset': retrying command
```

Workaround: No workaround needed. The system will retry the failed command automatically.

Contact your authorized Oracle service provider if the following message is seen:

```
SCSI transport failed: reason 'reset': giving up
```

SPARC T3 and T4 Platforms Might See Dropped or Double Character Input From USB Keyboards (CR 7067025)

On Oracle's SPARC T3 and T4 servers, all USB ports/connectors available to users are connected to an internal USB 2.0 (ehci) controller through an onboard USB 2.0 hub.

When a full/low speed USB 1.0/1.1 keyboard and mouse are connected to a USB port through this USB 2.0 hub, keyboard input might drop characters or might display double characters.

Note – These errors occur when the ehci (USB 2.0) driver fails to detect keystrokes and mouse control input due to USB "Missed Micro-Frame" errors.

Workaround: Currently, a workaround has been implemented for this issue where an internal USB hub is manually bound to the ohci (USB 1.0/1.1) driver. This binding causes a variable named ehci_forced_port_to_companion to instruct the ehci (USB 2.0) driver to transfer ownership of a specific port on the USB controller to the ohci (1.0/1.1) driver. Once the ohci driver is bound to a particular port on the USB controller, the ohci driver will also be used by the internal USB hub connected to that port and all USB connectors on that hub.

This workaround is available in the following forms:

- Oracle Solaris 11 OS -- Oracle Solaris 11 Support Repository Update 3 (SRU3)
- Oracle Solaris 10 8/11 -- Patch 147004-03

For earlier supported versions of Oracle Solaris 10, apply the Solaris 10 8/11 SPARC Bundle, followed by patch 147004-03.

Note – As a general practice, you should download and install all the latest available patches (for Oracle Solaris 10 OS) or latest SRU package (for Oracle Solaris 11 OS). To download Oracle Solaris patches and/or SRU packages, go to `http://support.oracle.com`

Supplementary Notes for CR 7067025

On T3-1, T4-1, T3-2, and T4-2, the rear USB connectors as well as the virtual keyboard, virtual mouse, virtual CD-ROM, and virtual USB ethernet connection to the service processor (a.k.a RKVMS) are all beneath a hub connected to port 2 on the USB controller.

The front USB connectors are connected through a hub to port 4 of the USB controller.

Likewise, on the T3-4 and T4-4 platforms, the rear USB connector is beneath a hub that is connected to port 3 of the USB controller and the front USB connector and the virtual mouse, keyboard, CD-ROM and virtual USB ethernet connection to the service processor are beneath a hub that is connected to port 2 of the USB controller.

To use a physical keyboard and mouse with this workaround, apply the fix (either patch 147004-03 or SRU3) and then perform the following recommended steps:

- On SPARC T3-1, T4-1, T3-2, and T4-2 systems:
  1. Connect the input devices to a *front* USB connector.
  2. Add the following line to `/kernel/drv/ehci.conf`:

     ```
     ehci-port-forced-to-companion = 4
     ```

  3. Reboot.
- On SPARC T3-4 and T4-4 systems:
  1. Connect the input devices to a *rear* USB connector.
  2. Add the following line to `/kernel/drv/ehci.conf`:

     ```
     ehci-port-forced-to-companion = 3
     ```

  3. Reboot.

To use a physical keyboard and mouse with this workaround, first apply the fix (either patch 147004-03 for Oracle Solaris 10 or SRU3 for Oracle Solaris 11) and then add the following line to `/kernel/drv/ehci.conf` and reboot:

```
ehci-port-forced-to-companion = 2
```

All other devices connected to the hub that services the virtual keyboard and mouse will be forced to operate at the lower USB 1.0/1.1 speed. These include:

- The virtual USB ethernet connection to the service processor.
- The physical USB connectors:
  - Rear connectors on the T3-1, T4-1, T3-2, and T4-2 servers.
  - Front connectors on the T3-4 and T4-4 servers.

Note – If you use the virtual keyboard and mouse with this workaround, some devices connected to the hub, such as a Virtual CD-ROM and Ethernet over a USB connection to the service processor, may not come up properly following a reboot.

When these devices do not come up, messages similar to the following will be displayed on the console and written to system logs:

```
WARNING: /pci@400/pci@2/pci@0/pci@f/pci@0/usb@0,1/hub@1/hub@3 (hubd4):
Connecting device on port 2 failed
```

```
WARNING: /pci@400/pci@2/pci@0/pci@f/pci@0/usb@0,1/hub@1/hub@3 (hubd4):
Connecting device on port 3 failed
```

Caution – At this time, there is no fix or workaround for the failure of these devices to come up when the missing micro-frame workaround is configured to support a virtual keyboard and mouse.

For this reason, you should limit use of following USB ports when using virtual keyboard and mouse functionality:

- Rear USB connectors on the T3-1, T4-1, T3-2, and T4-2.
- Front USB connectors on the T3-4 and T4-4.

All other virtual devices (such as virtual keyboard and virtual mouse) will continue to function, but will be limited to operating at the lower speed.

When Running Older Versions of the Oracle Solaris OS With Multiple PCIe Cards of Certain Types Installed, Some PCIe Ports Might Not Come Up

When running either Oracle Solaris 10 9/10 or Oracle Solaris 10/09 with multiple PCIe cards of the following types installed, some ports on these cards might not come up:

- Sun Dual Port 10 GbE SFP+ PCIe 2.0 LP (with Intel 82599 10GbE controller, X1109A-Z)
- Sun Quad GbE x8 PCIe Low Profile Adapter (X4447A-z)
- Sun Storage 10GbE PCIe Converged Network Adapter (SG-XPCIEFCOE2-Q-TA/SG-XPCIECOE2-Q-SR)

Workaround: To enable all ports to come up properly in this situation, install the following patches (plus dependent patches):

- 147440-03 or later
- 145648-03 or later
- 147157-01 or later

Sun Type 6 Keyboards Are Not Supported By SPARC T3 Series Servers

Sun Type 6 keyboards cannot be used with SPARC T3 series servers.

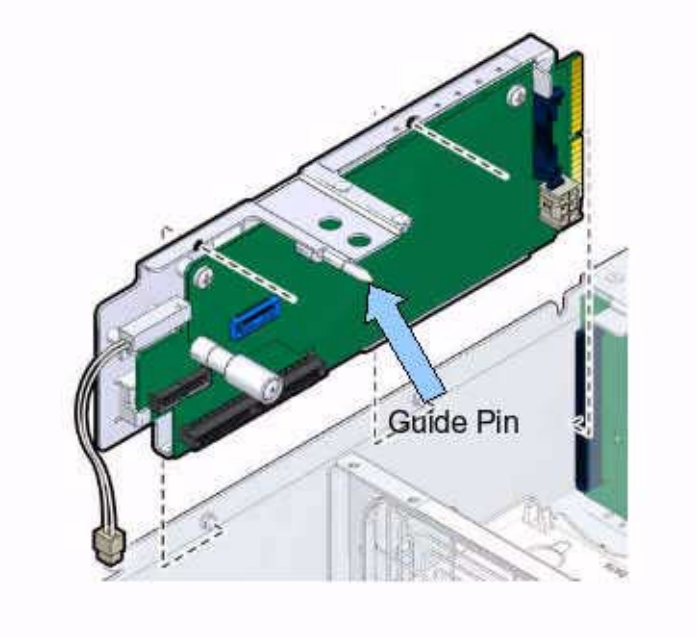
Caution Needed When Removing a SATA Data Cable From a Backplane Connector

When disconnecting the SATA data cable from the disk backplane, pull the cable straight back, in a perpendicular direction away from the backplane.

Caution – Do not rock or twist the cable in any other direction. Doing so could damage the integrity of the data cable connection.

Caution Needed When Handling the Connector Board

Use caution when handling the connector board to avoid pressing your hand against the pointed end of the guide pin that's located below the mounting bracket. The guide pin is indicated by an arrow in the following figure.



4 Ports Sun Dual 10 GbE SFP+ PCIe TCP RX Performance Lags PCI-E Quad Port GigE (copper) x8 Lane Card On SPARC T3-1 (CR 6943558)

Excessive packet loss may occur when three or more ports are used across multiple Sun Dual 10GbE SFP+ PCIe cards on a SPARC T3-1 server. This is likely to significantly degrade transmit and receive performance. When only two ports are used, packet loss is minimal and transmit/receive performance is as expected.

Workaround: Use one of the following procedures to enable flow control for the interfaces. This will greatly reduce packet loss and improve performance.

▼ Enable Flow Control (Include System Reboot)

1. **Add the following lines in /kernel/drv/ixgbe.conf**

```
fm_capable = 0;
flow_control = 3;
tx_queue_number = 2;
rx_queue_number = 6;
intr_throttling = 1000;
```

2. **Reboot the system to have these changes take effect.**

▼ Enable Flow Control (Without System Reboot)

1. **Add the following lines in /kernel/drv/ixgbe.conf**

```
fm_capable = 0;
flow_control = 3;
tx_queue_number = 2;
rx_queue_number = 6;
intr_throttling = 1000;
```

2. **Unplumb all the** `ixgbe` **interfaces.**
3. **Issue the** `update_drv ixgbe` **command.**
4. **Plumb all the** `ixgbe` **interfaces again.**

Server Panics When Booting From a USB Thumbdrive Attached to the Front USB Ports (CR 6983185)

When attempting to boot a USB thumbdrive inserted in either front USB port (USB2 or USB3), the server may panic.

Workaround: Use the server's rear USB ports (USB0 or USB1) whenever booting from an external USB device.

Oracle Solaris OS Issues

This section describes issues related to the Oracle Solaris OS in this release.

When a Start Address Is Not Aligned With the Largest Page Size, the OS Should Use the Next Available Page Size (CR 7048380)

Ideally, memory access start addresses should be aligned with the largest page size supported by the OS. For example, when the largest supported page size is 2 GB, memory accesses should start on 2-GB page boundaries.

When a start address aligns with a smaller page size, the OS should allocate pages based on the next available page size. For example, if an application specifies a start address on a 256 MB boundary, the OS should begin allocating 256 MB pages. Later, when the page allocations align with a 2 GB address, the OS should start allocating 2-GB pages.

Note – This issue was fixed in Oracle Database 11g Release 2, version 11.2.0.3.

Workaround: Update the package Oracle Database 11g Release 2 to patchset 11.2.0.3 or later.

Cannot Boot Oracle Solaris 10 10/09 OS (U8) From the Internal DVD

The internal DVD cannot be used to boot the Oracle Solaris U8 release.

Note – Later updates of Oracle Solaris 10 do not have this limitation.

Workaround: Remote cdrom/DVD (Storage part of rKVMS) can be used to boot the DVD media itself or the iso image. An external USB DVD drive can also be used to boot the media.

In a Zoned Sixteen-Disk Backplane, the Oracle Solaris `format` Utility Sees All Disks in the Controller 0 Zone (CR 7109778)

In a SPARC T3-1 server with a zoned sixteen-disk backplane, the Oracle Solaris `format` utility lists all disks attached to controllers 0 and 1 as attached to controller 0 only. The `format` output *should* list disks attached to controller 1 separately from those attached to controller 0.

Workaround: To see the correct listing of disks contained in a zoned sixteen-disk backplane configuration, use one of the other disk management commands, such as `show-children` (Fcode), `fwupdate list all` (HMP), or `probe-scsi-all` (OBP).

When Two Or More NIU Devices Are Plumbed, Memory DR Remove Operations May Hang (6983286)

This CR is fixed in Oracle Solaris 11.

Plumbing two or more NIU devices in a domain creates a condition in the Oracle Solaris kernel that can cause a DR operation to hang when memory is being removed from the domain.

Workaround: If memory DR remove operations are likely to be used, do not plumb more than one NIU device.

Recovery Method: If a DR operation hangs, reboot the domain to clear it.

`fault.memory.memlink-uc` Fault Did Not Cause Panic as Stated by System Message (6940599)

When a `fault.memory.memlink-uc` interconnect fault is detected, the system should shut down to protect memory integrity. On intermittent occasions, this fault has been reported during boot operations without the system shutting down.

Although it is possible that this irregular behavior indicates that the system was able to recover from the memory link error and restore a healthy boot-up state, the safest course is to perform a power-down/power-up sequence.

Recovery: AC power cycle the system.

Gigabit Ethernet (nxge) Driver Not Loading on Systems With Oracle Solaris 10 10/09 OS and Solaris 10 9/10 Patch Bundle (6995458)

A bug in the Oracle S10U8 package installation process prevents the nxge alias definition for SPARC T3 servers from being entered in /etc/driver_aliases. Without this alias being properly defined, the nxge cannot be attached.

Recovery Method: To correct this problem, perform the steps described below.

Note – You must be logged in as root to edit the driver_aliases file.

---

1. Add the following entry to /etc/driver_aliases:

```
nxge "SUNW,niusl-kt"
```

2. Reboot the system.

3. Configure the network interfaces.

Memory Allocation Issues With Emulex 8Gb HBAs In a Magma IO Expansion Box (6982072)

Memory allocation errors may occur when four or more 8Gb FC PCI-Express HBA, Emulex cards are used in a Magma IO expansion box connected to an Oracle SPARC T3 series server. The following is an example of the types of messages that may be logged in /var/adm/messages with this configuration:

```
date time hostname emlxs: [ID 349649 kern.info] [ 8.019A]emlxs22:  ERROR: 301: Memory
alloc failed. (BPL Pool buffer[1760]. size=1024)
date time hostname emlxs: [ID 349649 kern.info] [ 8.019A]emlxs20:  ERROR: 301: Memory
alloc failed. (BPL Pool buffer[2765]. size=1024)
date time hostname emlxs: [ID 349649 kern.info] [ 8.019A]emlxs24:  ERROR: 301: Memory
alloc failed. (BPL Pool buffer[3437]. size=1024)
date time hostname emlxs: [ID 349649 kern.info] [13.0363]emlxs22:  ERROR: 201:
Adapter initialization failed. (Unable to allocate memory buffers.)
date time hostname emlxs: [ID 349649 kern.info] [ 5.064D]emlxs22:  ERROR: 201:
Adapter initialization failed. (status=c)
date time hostname emlxs: [ID 349649 kern.info] [ B.1949]emlxs22:  ERROR: 101: Driver
```

```
attach failed. (Unable to initialize adapter.)
date time hostname emlxs: [ID 349649 kern.info] [13.0363]emlxs20:  ERROR: 201:
Adapter initialization failed. (Unable to allocate memory buffers.)
date time hostname emlxs: [ID 349649 kern.info] [ 5.064D]emlxs20:  ERROR: 201:
Adapter initialization failed. (status=c)
date time hostname emlxs: [ID 349649 kern.info] [ B.1949]emlxs24:  ERROR: 101: Driver
attach failed. (Unable to initialize adapter.)
date time hostname emlxs: [ID 349649 kern.info] [13.0363]emlxs24:  ERROR: 201:
Adapter initialization failed. (Unable to allocate memory buffers.)
date time hostname emlxs: [ID 349649 kern.info] [ 5.064D]emlxs24:  ERROR: 201:
Adapter initialization failed. (status=c)
date time hostname emlxs: [ID 349649 kern.info] [ B.1949]emlxs24:  ERROR: 101: Driver
attach failed. (Unable to initialize adapter.)
```

Workaround: Limit the number of 8Gb FC PCI-Express HBA, Emulex cards in a Magma IO expansion box to no more than three.

Spurious Error Message During Initial Oracle Solaris OS Installation (CR 6971896)

The miniroot is a bootable root file system that includes the minimum Oracle Solaris OS software required to boot the server and configure the OS. The miniroot runs only during the installation process.

When the server boots the miniroot for the initial configuration, you might see the following messages in the system console:

```
Fatal server error:
InitOutput: Error loading module for /dev/fb

giving up.
/usr/openwin/bin/xinit: Network is unreachable (errno 128):
unable to connect to X server
/usr/openwin/bin/xinit: No such process (errno 3): Server error.
```

The messages indicate the Xsun server in the Oracle Solaris OS miniroot cannot find a supported driver for the AST graphics device in the service processor. These messages are legitimate, as the miniroot contains only the Xsun environment, and the AST framebuffer (`astfb`) is supported only in the Xorg environment. The Xorg environment is included in the installed system, so the graphics device may be used when running the installed Oracle Solaris OS.

Workaround: You can safely ignore this message.

Spurious Interrupt Message in System Console (CR 6963563)

During the normal operation of the server, and when running the SunVTS system exerciser, you might see the following message in the system console:

```
date time hostname px: [ID 781074 kern.warning] WARNING: px0: spurious
interrupt from ino 0x4
date time hostname px: [ID 548919 kern.info] ehci-0#0
date time hostname px: [ID 100033 kern.info]
```

Workaround: You can safely ignore this message.

When `diag-switch?` is Set to `true`, Oracle Solaris OS Fails to Update EEPROM for Automatic Rebooting (CR 6982060)

When installing the Oracle Solaris OS to a device when the OBP `diag-switch?` parameter is set to `true`, the Oracle Solaris OS installer fails to update the `bootdevice` parameter with the new device path where the OS was installed. Therefore, this new device path will not be used during the subsequent automatic system reboots.

Under these conditions, the server will display the following error message and you will not be able to reboot from the device:

```
Installing boot information
       - Installing boot blocks (cxtxdxsx)
       - Installing boot blocks (/dev/rdsk/cxtxdxsx)
       - Updating system firmware for automatic rebooting
WARNING: Could not update system for automatic rebooting
```

On previous systems, the OBP `diag-device` parameter used to set the new device path to the boot device when the `diag-switch?` parameter was set to `true`. On SPARC T3 systems, the `diag-device` parameter is no longer supported and the Oracle Solaris OS installer warns that setting the OBP `boot-device` parameter is not possible.

Workaround: From the ILOM prompt, set the OBP diag-switch? parameter to `false`:

```
-> set /HOST/bootmode script="setenv diag-switch? false"
```

Alternatively, you can set this parameter at the OBP ok prompt:

```
ok setenv diag-switch? false
```

False nxge Warning Messages (CR 6938085)

This CR is fixed in Oracle Solaris 11.

During the normal operation of your server, you might see warning messages like the following in the system console:

```
date time hostname nxge: [ID 752849 kern.warning] WARNING: nxge0 : nxge_hio_init:
hypervisor services version 2.0
```

These messages are not true warning messages. These Gigabit Ethernet driver (nxge) messages display the version number of the hypervisor since the driver can operate on multiple hypervisor versions. These messages should be labeled as INFO or NOTICE messages instead of WARNING messages.

Workaround: You can safely ignore these messages.

Benign Error Message: mptsas request inquiry page 0x89 for SATA target :a failed (6986482)

This CR is fixed in Oracle Solaris 11.

You may see either or both of the following error messages in /var/adm/messages when the system is rebooted:

```
mptsas request inquiry page 0x89 for SATA target:a failed!
```

```
mptsas request inquiry page 0x83 for target:a, lun:0 failed!
```

Workaround: You can safely ignore these messages.

Firmware Issues

This section describes issues related to the system firmware.

Cold Reset Adds One Day to System Time (CR 7127740)

This issue is fixed in System Firmware version 8.1.4.e.

After a cold reset, the server might add one day to the Oracle Solaris OS date and time. This possible date change will only occur on the first cold reset after the first day of a leap year (for example. January 1, 2012). Once you set the correct date using the Oracle Solaris OS `date`(1) command, the corrected date and time will persist across future resets.

Note – This extra day error condition will return if the clock offset stored in the SP is cleared for any reason. For example, the clock offset will be lost if the battery is replaced, Oracle ILOM is reset, or the system firmware is flashed without first saving and then restoring the configuration.

A cold reset is when you halt the OS and restart the service processor (SP). For example, you can use one of the following Oracle Solaris OS commands to halt the OS:

```
# shutdown -g0 -i0 -y
# uadmin 1 6
# init 5
# poweroff
```

Then, at the Oracle ILOM prompt, use the following commands to reset the host:

```
# stop /SYS
# start /SYS
```

Refer to the service manual, the administration guide, and the Oracle Solaris OS documentation for more information.

Workaround: After the first cold reset of the system, verify that system date and time are correct. If the date has been impacted by this issue, use the Oracle Solaris OS date(1) command to set the correct date and time.

For example, to set the date and time to be February 26, 9:00am, 2012, type:

```
# date 022609002012
```

Refer to the `date` (1) man page and the Oracle Solaris OS documentation for more information.

In Servers With an Unzoned 16-Disk Backplanes, Setting a RAID Controller to Its Default State Deletes RAID Configurations From Both Controllers (6999411)

This CR is closed.

If you have a server with an unzoned-sixteen disk backplane and remove RAID configuration data from one onboard controller, all RAID configuration data will be removed from both controllers when the system is rebooted.

Note – This is valid behavior because backplanes with sixteen disk slots that use the two onboard SAS2 controllers must be partitioned into two logical zones. For this reason CR 6999411 has been closed. Refer to the Administration Guide for more information on disk zoning in servers with sixteen-disk slot backplanes.

`e1000g` Driver Generates Spurious `ereports` When Installing Oracle Solaris OS Over a Sun PCIe Dual Gigabit Ethernet Adapter (6958011)

When installing the Oracle Solaris OS on domains controlled through Sun PCIe Dual Gigabit Ethernet (UTP or MMF) adapters, the e1000g Gigabit Ethernet driver may generate false error reports on the static direct I/O (SDIO) and primary domains. The following is an example of these spurious reports:

```
date time ereport.io.pciex.tl.ca nvlist version: 0
          ena = 0x298a9f62243802
ena = 0x298a9f62243802
detector = (embedded nvlist)
nvlist version: 0
scheme = dev
device-path = /pci@400/pci@1
(end detector)
```

```
class = ereport.io.pciex.tl.ca
dev-status = 0x2
ue-status = 0x8000
ue-severity = 0x62030
adv-ctl = 0xf
source-id = 0x600
source-valid = 1
__ttl = 0x1
__tod = 0x4c058b2e 0x1e8813a0
```

Workaround: You can safely ignore these `ereports`.

`envtest` May Issue Invalid Temperature Reports For Some Components (6975427)

This CR is fixed in system firmware version 8.0.1 and higher.

When running the command `envtest -v` from the restricted shell the System Temperatures Status Check section will show the following sensors as having extremely low temperature readings:

```
/SYS/MB/DVRM_CMP0/TEMP_FAULT Status: OK Temp: 1 (Celsius)
/SYS/MB/DVRM_M0/TEMP_FAULT Status: OK Temp: 1 (Celsius)
/SYS/MB/DVRM_M1/TEMP_FAULT Status: OK Temp: 1 (Celsius)
```

The values being reported do not represent temperatures. They are discrete values being presented as temperatures.

Workaround: There is no workaround.

System is Powered Off When Running `reset /HOST/domain/control` With Active Guest Domains (6987371)

This CR is fixed in system firmware version 8.0.3 and higher.

If you use the following command to reset the component `/HOST/domain/control` *while there are active guest domains,* /SYS will power down ungracefully. This could leave the system in an adverse state.

```
-> reset /HOST/domain/control
```

Note – If there are no active logical domains, resetting `/HOST/domain/control` will reset the control domain in an orderly manner.

Workaround: To reset the control domain when there are active guest domains, reset it from the control domain itself. Do not use the service processor remote reset command `reset /HOST/domain/console`.

Incorrect Handling of Out-of-Order Ctrl TDs Can Result in Applications Hanging (CR 7024581)

This CR is fixed in Oracle Solaris 11.

If control requests that arrive in an out-of-order sequence are not handled properly, the Wait timer might be halted before it times out. This might cause the application to hang.

Workaround: Reboot the system. If the problem repeats, contact your authorized service provider.

Missing Interrupt Causes USB Hub Hotplug Thread to Hang, Resulting In Process Hangs (6968801)

This CR is closed as a duplicate of CR 7024581.

When running SunVTS on T3 series platforms, it is possible (although rare) for a SunVTS test to hang. If this happens, it may cause other processes and commands to hang, including `fmadm` and `prtconf`. The hung processes cannot be killed.

Workaround: Reboot the system. If the problem repeats, contact your authorized service provider. Avoid running SunVTS in production environments.

`spconfig` Names >36 Characters Give Communication eErrors for `ldm add/rm-config` Command (6987310)

This CR is fixed in system firmware version 8.0.2 and higher.

When saving OVM for SPARC servers (LDom) configurations on the service processor, if the name of a configuration exceeds 36 characters, the following error will be printed.

```
# ldm add-spconfig primary_8cpus_0mau_4G_vsw0_vsw4_vds0_
Error: Operation failed because of an error communicating with the
system controller
```

The service processor must be reset after this error.

Note – The space allocated by `ldm add-spconfig` for the configuration name is 32 characters in length. However, the error is not detected unless the name consists of 37 or more characters. If the configuration name is 33 to 36 characters long (inclusive), the name is quietly truncated.

Workaround: Limit configuration names to no more than 32 characters.

Service Processor Locks Up With No Access (6985738)

This CR is fixed in system firmware version 8.0.2 and higher.

Although highly unlikely, when the Oracle VM Server for SPARC successively adds and removes many configurations, the service processor may become unresponsive. In this state, it cannot be accessed until the system has been through an AC power cycle.

Recovery Method: AC power cycle the system.

Cannot Initiate Two Consecutive `probe-scsi-all` Commands in Systems With 8Gb FC PCI-Express, Emulex HBAs (6983959)

On systems containing any 8Gb FC PCI-Express, Emulex HBAs, the command `probe-scsi-all` cannot be run more than once without running an OBP reset between executions.

The first execution of `probe-scsi-all` will run successfully. If the command is issued again before running an OBE reset, the second session will fail, with an error message similar to the following example:

```
FCode Version 1.00.54, MPT Version 2.00, Firmware Version 5.00.17.00
Target 9
  Unit 0   Disk   HITACHI  H103030SCSUN300G A2A8    585937500 Blocks, 300 GB
  SASDeviceName 5000cca00ab4403c  SASAddress 5000cca00ab4403d  PhyNum 0
Target a
  Unit 0   Disk   HITACHI  H103030SCSUN300G A2A8    585937500 Blocks, 300 GB
  SASDeviceName 5000cca00ab2551c  SASAddress 5000cca00ab2551d  PhyNum 1
[...]
/pci@600/pci@2/pci@0/pci@5/pci@0/pci@3/SUNW,emlxs@0,1
Cannot Init Link.
/pci@600/pci@2/pci@0/pci@5/pci@0/pci@3/SUNW,emlxs@0
Cannot Init Link.
[...]
Cannot initialize port.
READ_LA Failed.
```

Workaround: Initiate an OBP reset between any two `probe-scsi-all` sessions.

SDIO: `ereports` Related to Sun Dual 10GbE SFP+ PCIe Cards On Reboots of the Primary Domain (6986960)

This CR is fixed in system firmware version 8.0.2 and higher.

When rebooting the primary domain in an SDIO configuration, a set of ereports may be logged for the Sun Dual 10GbE I2 SFP+ PCIe card(s) assigned to that domain. This behavior was seen for an SDIO configuration that was using the "stop" master/slave failure-policy on all SDIO domains.

Recovery Method: Use `fmadm` to clear the ereports and any associated faults.

`ereport.chassis.sp.unavailable` Not Generated For a Degraded Service Processor (CR 6978171)

This CR is fixed in Oracle Solaris 11.

When the service processor is operating in a degraded state, it generates the `ereport`:

```
ereport.fm.fmd.module
```

The following is an example of the detailed contents of this `ereport`:

```
# fmdump -eV
date time ereport.fm.fmd.module
nvlist version: 0
        version = 0x0
        class = ereport.fm.fmd.module
        detector = (embedded nvlist)
        nvlist version: 0
                version = 0x0
                scheme = fmd
                authority = (embedded nvlist)
                nvlist version: 0
                        version = 0x0
                        product-id = sun4v
                        server-id = hostname
                (end authority)

                mod-name = etm
                mod-version = 1.2
        (end detector)

        ena = 0x2653413e3403001
        msg = error: bad conn open during ver negot: errno 5
        __ttl = 0x1
        __tod = 0x4c6bd664 0x35f96563
```

A degraded service processor should *also* generate the following `ereport`, but is not currently doing so:

```
ereport.chassis.sp.unavailable
```

Part Number Provided to Oracle Solaris FMA Is Incorrect (6978447)

This CR is fixed in system firmware version 8.0.2 and higher.

The part number reported by the Oracle Solaris `fmadm faulty` command for a faulted FRU may be different from the part number reported by the Oracle ILOM `fmadm faulty` and `show faulty` commands for the same FRU.

Note – This discrepancy does not occur for DIMMs.

Workaround: When the Oracle Solaris `fmadm faulty` command reports a faulted FRU (other than a DIMM), run either `fmadm faulty` or `show faulty` from within Oracle ILOM to find the correct part number for that FRU.

OpenBoot Command `set-security-key` Produces the False Warning: `Unable to store security key` (6986849)

This CR is fixed in system firmware version 8.0.2 and higher.

OpenBoot reports a false warning that the command `set-security-key` does not save keys on the service processor. This is the false warning message:

```
WARNING: Unable to store security key. No space left, check SP and other logs
```

Workaround: The security keys are actually stored on the service processor, so you can ignore this message.

`sas2ircu` Message That RAID Volume Sizes Other Than "MAX" Are Not Supported Needs Clarification (6983210)

If you attempt to create a RAID volume smaller than"MAX", the following series of messages is returned:

```
You are about to create an IR volume.

WARNING: Proceeding with this operation may cause data loss or data
         corruption. Are you sure you want to proceed (YES/NO)? yes

WARNING: Volume created with size other than 'MAX' is not supported.
         Do you want to continue with volume creation (YES/NO)? n
SAS2IRCU: you must answer "YES" or "yes" to proceed; operation aborted!
SAS2IRCU: Error executing command CREATE.
```

It is true that RAID volumes smaller than "MAX" are not supported. However, if you want to create a volume below "MAX" size for non-production use, the software will allow you to do so. This is not clear from the message.

Workaround: Ignore the messages and answer **`yes`** for the question "`Do you want to continue with volume creation (YES/NO)?`".