

Sun Server X4-4 Product Notes

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Using This Documentation

- **Overview** – Provides late-breaking information, issue status, and product announcements for Oracle's Sun Server X4-4.
- **Audience** – System administrators, network administrators, and service technicians.
- **Required knowledge** – Advanced understanding of server systems.

Product Documentation Library

Documentation and resources for this product and related products are available at <https://www.oracle.com/goto/x4-4/docs>.

Feedback

Provide feedback about this documentation at <https://www.oracle.com/goto/docfeedback>.

Sun Server X4-4 Product Information

This section provides the following information about supported operating systems, firmware, and hardware configurations.

Review	Links
Supported firmware revisions	“Supported Firmware and Software” on page 11
Supported hardware	“Supported Hardware” on page 13
Supported Oracle server management tools	“Server Management Tools” on page 16
Getting Server Firmware and Software	“Getting Server Firmware and Software” on page 55

Note - This document contains information that was accurate for the server at the time of the document's publication.

Supported Firmware and Software

The following topics describe supported components for the Sun Server X4-4:

- [“Obtaining Information About Releases” on page 11](#)
- [“Supported Firmware” on page 12](#)
- [“Supported Operating Systems” on page 12](#)

Obtaining Information About Releases

When an update is released the changes are detailed in the ReadMe file for each updated software component, which is accessible at the following sources:

- In Oracle System Assistant by clicking the Help button on the System Information page.

- On My Oracle Support as the top-level ReadMe, and it is included in any server software package that you download from My Oracle Support. For download instructions, see [“Getting Server Firmware and Software” on page 55](#).
- With any server package download from My Oracle Support.

Supported Firmware

Some product features are enabled only when the latest versions of patches or firmware are installed. You are required to install the latest software version for optimal performance, security, and stability. For details, see [“IMPORTANT - Install Latest OS Updates, Patches, and Firmware” on page 18](#).

You can find detailed information about supported firmware releases here:

- [Latest Firmware Releases for Oracle X86 Servers](#)
- [Firmware Downloads and Release History for Oracle Systems](#)

Additional information about tools, drivers, component firmware versions, and bug fixes is available in the software release Readme file. For access to the Readme file, see [“Getting Server Firmware and Software” on page 55](#).

Note - During a system software release update of the server, all components for the release are installed at once (firmware, BIOS, FPGA). This process requires multiple automatic reboots of the system.

Supported Operating Systems

The following lists the minimum operating system and virtual machine software version support at the initial release of the Sun Server X4-4.

- Oracle Solaris 11.1 SRU12 (also available as a preinstalled system option)
- Oracle Linux 6.5 for x86 (64-bit). Oracle Unbreakable Enterprise Kernel (UEK3) for Linux and Red Hat compatible kernels (also available as a preinstalled system option)
- Oracle Linux 5.10 for x86 (64-bit). Oracle Unbreakable Enterprise Kernel (UEK2) for Linux and Red Hat compatible kernels
- Oracle VM Server 3.2.7 (also available as a preinstalled system option)
- SUSE Linux Enterprise Server (SLES) 11 SP3
- Red Hat Enterprise Linux (RHEL) 5.10, 6.5
- VMware ESXi 5.5 and 6.0

- Windows Server 2008 R2 SP1, Windows Server 2012, Windows Server 2012 R2

Operating system support for your system is updated frequently.

The Hardware Compatibility Lists (HCLs) identify the latest operating system versions supported on Oracle hardware. To find the latest operating system version supported for your system, go to the following sites and search using your server model number:

- Oracle Solaris: <https://www.oracle.com/webfolder/technetwork/hcl/index.html>
- Oracle Linux: <http://linux.oracle.com/pls/apex/f?p=117:1:3991604960223967>
- Oracle VM: <http://linux.oracle.com/pls/apex/f?p=117:1:3991604960223967>
- Microsoft Windows: <http://www.windowsservercatalog.com/>
- VMware ESXi: <http://www.vmware.com/resources/compatibility/search.php>
- Red Hat Enterprise Linux: <https://access.redhat.com/certifications>
- SUSE Linux Enterprise Server: <https://www.suse.com/yessearch/Search.jsp>

Note - Factory pre-installed versions of the latest supported Oracle Solaris, Oracle Linux and Oracle VM Server operating systems are made available as soon as possible after certification.

Note - The Oracle System Assistant assisted OS installation feature might not, from the factory, include support for the latest supported operating systems. To ensure you have the latest available Oracle System Assistant software, use the Oracle System Assistant Get Updates feature.

Supported Hardware

The following topics contain information about supported hardware for the server.

Supported Components	Link
Processors	“Supported CPUs” on page 14
Memory	“Supported Memory” on page 14
Storage drives	“Supported Storage Drives” on page 14
PCIe Cards	“Supported PCIe Cards” on page 14

For additional information about server hardware features, see [“Server Supported Components” in Sun Server X4-4 Installation Guide](#).

Supported CPUs

The server supports either two or four Intel Xeon E7-8895 V2 (15-core, 2.8 GHz, 155W) CPUs.

Supported Memory

Up to 96 slots (24 slots per CPU) are available in four CPU system for registered DDR3 DIMMs with ECC memory. DIMMs must be populated according to the rules described in the [Sun Server X4-4 Service Manual](#). Supported DIMMs are listed in the following table.

Supported Memory

- 8 GB DDR3 LV RDIMM (no longer orderable as of June 2014)
 - 16 GB DDR3 LV RDIMM
 - 32 GB DDR3 LV LRDIMM
-

Supported Storage Drives

The server has six SAS/SATA 2.5-inch disk bays supporting hard disk drives (HDDs) and solid-state drives (SSDs). The supported storage drives are listed in the following table.

Supported Storage Drives

- 600 GB 10000 rpm SAS-2 HDD
 - 1.2 TB 10000 rpm SAS-2 HDD
 - 400 GB SATA3 SSD
-

Supported PCIe Cards

The following PCI Express (PCIe) cards are supported for use with the Sun Server X4-4. Installation rules (card and slot) listed in the table below are recommendations based on factory tested configurations.

Note the following restrictions:

- No mixing of Emulex and Qlogic versions of the Sun Storage 16 Gb Fibre Channel PCIe Universal HBA in the system. Only one vendor's option card can be used per system.
- No mixing of FC SFP+ and FCoE SFP+ on the same Sun Storage 16Gb Fibre Channel Universal HBA.

- However, you can have a mix of a single vendor's Sun Storage 16Gb Fibre Channel Universal HBA in the system (either Qlogic or Emulex); one installed with FC SFP+ and one installed with FCoE SFP+.
 - For Qlogic adapters: 7101676, 7101680, 7101678 FCoE
 - or-
 - For Emulex adapters: 7101686, 7101688 FCoE
- No mixing of the Sun Storage 16 Gb Fibre Channel PCIe Universal HBA with the Sun StorageTek 8 Gb FC PCIe HBA in the system.
- No mixing of the Dual-Port 10 Gigabit-Ethernet PCIe 2.0 Copper/Fiber SFP+ Adapter with the Sun Dual Port 10GBase-T PCIe 2.0 Low Profile Adapter LP in the system.

PCIe Card Installation Order	PCIe Card	Maximum in 2-CPU System	Slot Installation Order	Maximum in 4-CPU System	Slot Installation Order
Factory Option	Sun Storage 6Gb SAS PCIe HBA, Internal (SG-SAS6-INT-Z)	1	Slot 2	1	Slot 2
Factory Option	Sun Storage 6Gb SAS PCIe RAID HBA, Internal (SG-SAS6-R-INT-Z)	1	Slot 2	1	Slot 2
1	Sun Flash Accelerator F80 PCIe Card (7107092)	4	Slots 6, 4, 5, 3	6	Slots 10, 7, 6, 3, 8, 5
2	Sun Storage 16 Gb Fibre Channel PCIe Universal HBA, Qlogic (order: 1st 7101676, 2nd 7101680, 3rd 7101678)	2	Slots 6, 4, 5, 3, 1	4	Slots 11, 8, 6, 4, 10, 7, 5, 3, 9, 1
3	Sun Storage 16 Gb Fibre Channel PCIe Universal HBA, Emulex (order: 1st 7101686, 2nd 7101688)	2	Slots 6, 4, 5, 3, 1	4	Slots 11, 8, 6, 4, 10, 7, 5, 3, 9, 1
4	Sun StorageTek 8 Gb FC PCIe HBA, Qlogic (SG-XPCIE2FC-QF8-N)	2	Slots 6, 4, 5, 3, 1	2	Slots 11, 8, 6, 4, 10, 7, 5, 3, 9, 1
5	Sun StorageTek 8 Gb FC PCIe HBA, Emulex (SG-XPCIE2FC-EM8-N)	2	Slots 6, 4, 5, 3, 1	2	Slots 11, 8, 6, 4, 10, 7, 5, 3, 9, 1
6	Sun Dual Port QDR InfiniBand Host Channel Adapter, InfiniBand CX3 (7104074)	2	Slots 6, 4, 5, 3, 1	2	Slots 11, 8, 6, 4, 10, 7, 5, 3, 9, 1
7	Dual-Port 10 Gigabit-Ethernet PCIe 2.0 Copper/Fiber SFP+ (1109A-Z)	2	Slots 6, 4, 5, 3, 1	4	Slots 11, 8, 6, 4, 10, 7, 5, 3, 9, 1

PCIe Card Installation Order	PCIe Card	Maximum in 2-CPU System	Slot Installation Order	Maximum in 4-CPU System	Slot Installation Order
8	Sun Dual Port 10GBase-T PCIe 2.0 Low Profile Adapter LP (7100488)	2	Slots 6, 4, 5, 3, 1	4	Slots 11, 8, 6, 4, 10, 7, 5, 3, 9, 1
9	Sun Storage 6Gb SAS PCIe HBA, External (SG-SAS6-EXT-Z)	2	Slots 6, 4, 5, 3, 1	2	Slots 11, 8, 6, 4, 10, 7, 5, 3, 9, 1
10	Sun Quad Port 10 GbE 2.0 Low Profile Adapter, UTP (7100477)	5	Slots 6, 4, 5, 3, 1	10	Slots 11, 8, 6, 4, 10, 7, 5, 3, 9, 1

Server Management Tools

There are three sets of single system management tools for your server:

- **Oracle Integrated Lights Out Manager (ILOM).** Single server monitoring and management using a service processor. Initial supported version is 3.2.2.10. Current supported version is 4.0.4.20. For information, refer to the Oracle Integrated Lights Out Manager (ILOM) Documentation Library at: <https://www.oracle.com/goto/i lom/docs>
- **Oracle System Assistant.** Single server provisioning using a bootable internal USB flash drive. Initial supported version is 1.2.1. For information, see instructions for setting up the server using Oracle System Assistant in the *Oracle X4 Series Servers Administration Guide* at: <https://www.oracle.com/goto/x86admindiag/docs>
- **Oracle Hardware Management Pack.** Single server management monitoring and command-line interface toolset. Initial supported version is 2.2.8. For information, refer to the Oracle Hardware Management Pack Documentation Library at: <https://www.oracle.com/goto/ohmp/docs>

In addition, the following software is available to manage multiple systems in a data center:

- **Oracle Enterprise Manager Ops Center.** Version 12c is supported at the initial Sun Server X4-4 release. For information, refer to the product information page at: <http://www.oracle.com/technetwork/oem/ops-center/index.html>

For an overview of available system management tools, see the information at: <https://www.oracle.com/goto/system-management>.

Important Operating Notes

This section provides information about critical issues that affect your server. These include:

Review	Links
Server Security, Software Releases, and Critical Patch Updates	“Server Security, Software Releases, and Critical Patch Updates” on page 18
Procedure to install the latest OS updates, patches, and firmware	“IMPORTANT - Install Latest OS Updates, Patches, and Firmware” on page 18
Changes to Oracle ILOM TLSv1.1 configuration property	“Changes to TLSv1.1 Configuration Property as of ILOM 4.0.4.x” on page 19
Diagnosing SAS Data Path Failures on Servers Using MegaRAID Disk Controllers	“Diagnosing SAS Data Path Failures on Servers Using MegaRAID Disk Controllers” on page 20
Oracle ILOM Deprecation Notice for IPMI 2.0 Management Service	“Deprecation Notice for Oracle ILOM IPMI 2.0 Management Service” on page 21
Information about self-signed SSL certificates	“Resolving Warning Messages for Custom CA and Self-Signed SSL Certificates ” on page 22
New Chassis View Feature Available in Oracle ILOM	“New Chassis View Feature Available in Oracle ILOM” on page 23
Oracle ILOM Enhancement Allows Enabling IPv4 only, IPv6 only, or Dual Stack	“Oracle ILOM Enhancement Allows Enabling IPv4 only, IPv6 only, or Dual Stack” on page 24
Reset Takes a Long Time and Causes the Server to Power Cycle Due to Delayed BIOS Update	“Reset Takes a Long Time and Causes the Server to Power Cycle Due to Delayed BIOS Update” on page 24
Antistatic Wrist Straps Are Not Included With All CRUs and FRUs	“Antistatic Wrist Straps Are Not Included With All CRUs and FRUs” on page 25

For known issues affecting system components, see:

- [“Hardware, Firmware and BIOS Issues” on page 31](#)
- [“Oracle System Assistant Issues” on page 35](#)
- [“Oracle Integrated Lights Out Manager \(ILOM\) Issues” on page 37](#)
- [“Oracle Solaris Issues” on page 41](#)
- [“Oracle VM Issues” on page 47](#)
- [“Linux Issues” on page 51](#)
- [“VMware ESXi Issues” on page 53](#)

Server Security, Software Releases, and Critical Patch Updates

To ensure continued security of your system, Oracle strongly recommends that you apply the latest Software Releases. Server Software Releases include Oracle ILOM, BIOS, and other firmware updates, often referred to as “patches.” Oracle publishes these patches regularly on the My Oracle Support site. Applying these patches helps ensure optimal system performance, security, and stability. You can identify the latest Software Release for your system at: <http://www.oracle.com/technetwork/systems/patches/firmware/release-history-jsp-138416.html>

To download a Software Release, go to My Oracle Support at: <https://support.oracle.com>

Oracle notifies customers about security vulnerability fixes for all its products four times a year through the Critical Patch Update (CPU) program. Customers should review the CPU advisories to ensure that the latest software release updates are applied to their Oracle products. Note that updates for Engineered Systems are specifically published for a specific Engineered Systems product (that is, you need not look at specific updates for individual software components included in your Engineered System). For more information about the Oracle CPU program, go to: <http://www.oracle.com/technetwork/topics/security/alerts-086861.html>

Oracle also recommends that you update to the latest operating system release when it becomes available. Although a minimum operating system release is supported, updating to the latest OS release ensures that you have the most up-to-date software and security patches. To confirm that you have the latest OS release, refer to the Oracle Hardware Compatibility Lists. See “Supported Operating Systems” on page 12.

For details about the current system software update, see: “[IMPORTANT - Install Latest OS Updates, Patches, and Firmware](#)” on page 18

▼ **IMPORTANT - Install Latest OS Updates, Patches, and Firmware**

Some product features are enabled only when the latest versions of operating systems, patches, and firmware are installed. To retain optimal performance, security, and stability, you must install the latest available operating systems, patches, and firmware.

To verify that the server firmware version is a minimum of 4.0.4.30 or higher:

1. **Use Oracle ILOM to check your system firmware version.**

- **From the web interface, click System Information > Summary, then view the System Firmware Version in the General Information table.**
 - **From the CLI, type: `show /System/Firmware OF version`.**

For more details, refer to information about viewing system information and inventory in your server administration guide, which is available at <https://www.oracle.com/goto/x86admindiag/docs>.
2. **Ensure that the server firmware version is at the minimum required version, shown above, or a subsequent release, if available.**
 3. **If the required firmware (or newer) is not installed:**
 - a. **Download the firmware from My Oracle Support at: <https://support.oracle.com>**

For more information, see: “Getting Server Firmware and Software” on page 55
 - b. **Install the downloaded firmware.**

Refer to the information about performing firmware updates in the *Oracle ILOM Administrators Guide for Configuration and Maintenance*, which is available at <https://www.oracle.com/goto/ilom/docs>. Ensure that you perform the preparatory steps described in that document before updating the firmware.

Note - Occasionally after installing the firmware, the Oracle ILOM web interface cannot display the power state correctly on the power control page. To correct this problem, clear your browser cache before logging in to the Oracle ILOM web interface.

Changes to TLSv1.1 Configuration Property as of ILOM 4.0.4.x

Present Behavior: The Oracle ILOM TLSv1.1 configuration property is Enabled by default.

Future Behavior: The following changes will occur to the TLSv1.1 configuration property sometime after the Oracle ILOM 4.0.4 firmware release:

- **First Change:** The TLSv1.1 configuration property will default to Disabled in the next minor release of Oracle ILOM.

- Second Change: The TLSv1.1 configuration property will no longer be supported and will be removed from all Oracle ILOM user interfaces in the next major release of Oracle ILOM.

For future updates regarding TLSv1.1 support in Oracle ILOM, refer to latest release information in the Oracle ILOM Feature Updates and Release Notes for Firmware 4.0.x at https://docs.oracle.com/cd/E81115_01/index.html.

Diagnosing SAS Data Path Failures on Servers Using MegaRAID Disk Controllers

Important Operating Note

On Oracle x86 servers using MegaRAID disk controllers, Serial Attached SCSI (SAS) data path errors can occur. To triage and isolate a data path problem on the SAS disk controller, disk backplane (DBP), SAS cable, SAS expander, or hard disk drive (HDD), gather and review the events in the disk controller event log. Classify and analyze all failure events reported by the disk controller based on the server SAS topology.

To classify a MegaRAID disk controller event:

- Gather and parse the MegaRAID disk controller event logs either by running the automated `sundiag` utility or manually using the `StorCLI` command.
 - For Oracle Exadata Database Machine database or storage cell servers, run the `sundiag` utility.
 - For Oracle Server X4-4, use the `StorCLI` command.

For example, manually gather and parse the controller event log by using the `StorCLI` command. At the root prompt, type:

```
root# ./storcli64/c0 show events file=event.log
Controller=0
Status=Success
```

Note - Use the existing name of the event log as the name for the disk controller event log. This produces a MegaRAID controller event log with the given file name `event.log`.

To show drive and slot errors separately, at the root prompt, type:

```
root# /opt/MegaRAID/storcli/storcli64 /c0 /eall /sall show errorcounters
Controller=0
Status=Success
Description=Show Drive/Cable Error Counters Succeeded.
```

Error Counters:

Drive	Error Counter for Drive Error	Error Counter for Slot
/c0/e8/s0	0	0
/c0/e8/s1	0	0
/c0/e8/s2	0	0
/c0/e8/s3	0	0
/c0/e8/s4	0	0
/c0/e8/s5	0	0
/c0/e8/s12	0	0
/c0/e8/s13	0	0

These error counters reflect drive or slot errors separately.

The following SCSI sense key errors found in the event log in SAS data path failures indicate a SAS data path fault:

```
B/4B/05 :SERIOUS: DATA OFFSET ERROR
B/4B/03 :SERIOUS: ACK/NAK TIMEOUT
B/47/01 :SERIOUS: DATA PHASE CRC ERROR DETECTED
B/4B/00 :SERIOUS: DATA PHASE ERROR
```

A communication fault between the disk and the host bus adapter causes these errors. The presence of these errors, even on a single disk, means there is a data path issue. The RAID controller, SAS cables, SAS expander, or disk backplane might be causing the interruption to the communication in the path between the RAID controller and the disks.

Oracle Service personnel can find more information about the diagnosis and triage of hard disk and SAS data path failures on x86 servers at the My Oracle Support web site: <https://support.oracle.com>. Refer to the Knowledge Article Doc ID 2161195.1. If there are multiple, simultaneous disk problems on an Exadata server, Oracle Service personnel can refer to Knowledge Article Doc ID 1370640.1.

Deprecation Notice for Oracle ILOM IPMI 2.0 Management Service

Present Behavior: IPMI 2.0 Management Sessions - Enabled (default setting).

Future Behavior: The following IPMI Management Service changes will occur in a future Oracle ILOM firmware release after firmware version 4.0.2.

First IPMI Service Support Change: The default configuration property for IPMI 2.0 Sessions will change from Enabled to Disabled. Clients relying on Oracle ILOM IPMI 2.0 session support by default will no longer be able to communicate with Oracle ILOM.

To enable IPMI communication with Oracle ILOM, perform one of the following:

- Use the Oracle IPMI TLS service and interface. For more information, refer to *IPMI TLS Service and Interface* in the *Oracle ILOM Protocol Management Reference SNMP and IPMI Firmware Release 4.0.x*.

- or -

- Manually enable the configuration property for IPMI 2.0 Session. For details, refer to *IPMI Service Configuration Properties* in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x*.

Second IPMI Service Support Change: Removal of IPMI 2.0 client support.

IPMI 2.0 clients *will no longer be able* to communicate with Oracle ILOM. Clients relying on IPMI communication will need to use the IPMI TLS service and interface. For more information, refer to *IPMI TLS Service and Interface* in the *Oracle ILOM Protocol Management Reference SNMP and IPMI Firmware Release 4.0.x*.

For future updates about IPMI Management Service support in Oracle ILOM, refer to the latest firmware release information published in the *Oracle ILOM Feature Updates and Release Notes Firmware Release 4.0.x*.

Resolving Warning Messages for Custom CA and Self-Signed SSL Certificates

The following information applies to the users of the Oracle ILOM Remote System Console and the Oracle ILOM Remote System Console Plus.

A warning message occurs when the Java client is not properly configured to validate the Secure Sockets Layer (SSL) certificate that is currently being used by Oracle ILOM. This validation behavior applies to Oracle ILOM firmware version 3.2.8 or later for systems using the default self-signed SSL certificate and to Oracle ILOM firmware version 3.2.10 and later for systems using a Custom Certification Authority (CA) SSL certificate.

To resolve the SSL warning message, refer to the applicable sections noted below in the Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x, which is available at: <https://www.oracle.com/goto/ilom/docs>

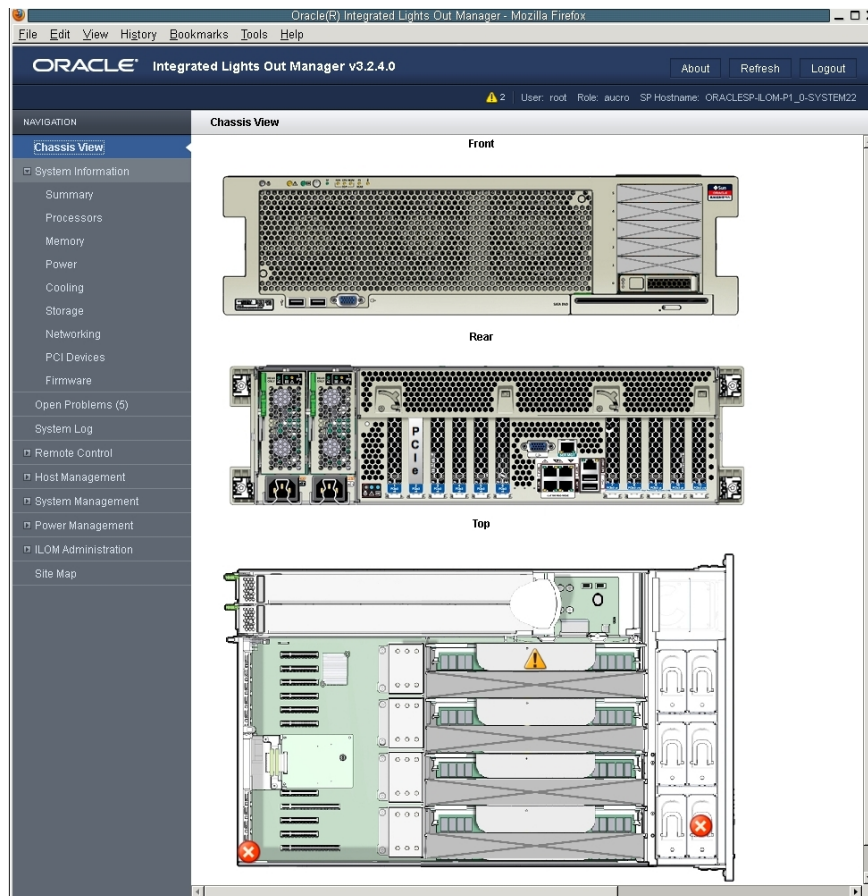
- *Warning Messages for Self-Signed SSL Certificate*

- *Resolving Warning Messages for Custom Certification Authority (CA) SSL Certificate*

New Chassis View Feature Available in Oracle ILOM

As of system software release 1.1.0, a new feature has been added that provides a graphical view of the server, its components and mouseover or clickable status. To access this new feature, select the Chassis View link from the left nav list after logging into Oracle ILOM for your server.

The following illustration is a sample of the chassis view.



Oracle ILOM Enhancement Allows Enabling IPv4 only, IPv6 only, or Dual Stack

Oracle ILOM's standard network connectivity features support the ability to configure an IPv4 network connection or a dual-stack (IPv4 and IPv6) network connection. Starting with software release (SW) 1.2, Oracle ILOM's enhanced network connectivity properties support the ability to configure a static IPv6 gateway address and any of the following type of network connections: IPv4 only, IPv6 only, or dual-stack (IPv4 and IPv6 enabled).

For more information, see the Oracle X4 Series Servers Administration Guide at <https://www.oracle.com/goto/x86admindiag/docs>.

Reset Takes a Long Time and Causes the Server to Power Cycle Due to Delayed BIOS Update

If you have a pending BIOS upgrade, a routine reset takes longer than expected and causes your server to power cycle and reboot several times. This is expected behavior, as it is necessary to power cycle the server to upgrade the BIOS firmware. If the upgrade includes an FPGA update, it can take as long as 26 minutes to complete.

A pending BIOS upgrade exists when both conditions are true:

- You update the BIOS and service processor firmware using Oracle ILOM.
- You select the option to Delay BIOS Upgrade.



Caution - Firmware corruption and server down time. If you reboot the server expecting a routine server reset and instead initiate a (delayed) BIOS upgrade, wait until the upgrade is finished. Do not interrupt the process, as this can result in corrupted firmware and server down time.

For details on the pending BIOS upgrade feature in Oracle ILOM, refer to <https://www.oracle.com/goto/ilom/docs>.

Antistatic Wrist Straps Are Not Included With All CRUs and FRUs

The service and installation documentation might state that antistatic wrist straps are included with Customer Replaceable Units (CRUs) and Field Replaceable Units (FRUs). This is not always true. Some CRUs and FRUs are shipped without antistatic wrist straps.

Oracle x86 Products Accessibility

This section describes the accessibility features that are part of Oracle x86 hardware, firmware, and related documentation.

Oracle strives to make its products, services, and supporting documentation usable and accessible to the disabled community. To that end, products, services, and documentation include features that make the product accessible to users of assistive technology.

For more information about Oracle's commitment to accessibility, go to:

- <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>

Hardware Accessibility

Oracle x86 hardware has color-coded labels, component touch points, and status indicators (LEDs) that provide information about the system. These labels, touch points, and indicators can be inaccessible features for sight-impaired users. The product HTML documentation provides context and descriptive text available to assistive technologies to aid in interpreting status and understanding the system. System-level descriptions and status indicator interpretation can be found in the product Service Manual. The documentation also provides diagrams and screenshots that do not rely on color. Within the diagrams, callouts indicate the referenced component information. The callout descriptions are mapped within a table. All images and tables in the documentation include descriptive alternative text.

Another method to obtain information about the system is to use the built-in Oracle Integrated Lights Out Manager (ILOM). Oracle ILOM provides a browser-based interface and a command-line interface that support assistive technologies for real-time viewing of system status, indicator interpretation, and system configuration. For details, see "Oracle ILOM Accessibility."

You can access the accessible HTML documentation for Oracle x86 hardware products at:

- <http://docs.oracle.com/en/servers/>

Oracle ILOM Accessibility

You can use the Oracle Integrated Lights Out Manager (ILOM) browser user interface (BUI) to monitor and manage the server hardware. The Oracle ILOM BUI does not require a special accessibility mode; rather, its accessibility features are always available. The BUI was developed using standard HTML and JavaScript and its features conform to accessibility guidelines.

To navigate a BUI page and select items or enter commands, you can use standard keyboard inputs, such as using the Tab key to go to a selection, or the up and down arrow keys to scroll through the page. You can also make menu selections by using standard keyboard combinations.

For example, using the Oracle ILOM Open Problems BUI page, you can identify faulted memory modules (DIMMs) or processors (CPUs) that would otherwise be identified by a lit LED indicator on the motherboard. Likewise, you can use the Oracle ILOM BUI to monitor the hardware power states that are also indicated by flashing LED indicators on the hardware.

The Oracle ILOM command-line interface (CLI) is an alternative and equivalent way to access the Oracle ILOM BUI features and functionality. Because the operating systems that run on the Oracle server hardware support assistive technologies to read the content of the screen, you can use the CLI as an equivalent means to access the color-based, mouse-based, and other visual-based utilities that are part of the BUI. For example, you can use a keyboard to enter CLI commands to identify faulted hardware components, check system status, and monitor system health.

You can use the Oracle ILOM Remote Console Plus to access both a text-based serial console and a graphics-based video console that enable you to remotely redirect host server system keyboard, video, mouse, and storage devices. Note, however, that the Oracle ILOM Java Remote Console does not support scaling of the video frame within the Java application. You need to use assistive technology to enlarge or reduce the content in the Java Remote Console Plus display.

As an alternative method to using the BIOS Setup Utility to configure BIOS settings, Oracle ILOM provides a set of configurable properties that can help you manage the BIOS configuration parameters on an Oracle x86 server. Using Oracle ILOM, you can:

- Back up a copy of the BIOS configuration parameters to an XML file using the Oracle ILOM BUI.
- Edit the XML file using a standard XML editor. The BIOS XML tags correlate directly to the BIOS screen labels.
- Restore the XML file of the backed up or edited configuration parameters to BIOS.

The BUI and CLI methods for using Oracle ILOM are described in the accessible HTML documentation for Oracle ILOM at:

- <https://www.oracle.com/goto/ilom/docs>

Oracle Hardware Management Pack Accessibility

Oracle Hardware Management Pack software is a set of command-line interface (CLI) tools. Oracle Hardware Management Pack software does not include product-specific accessibility features. Using a keyboard, you can run the CLI tools as text commands from the operating system of a supported Oracle server. All output is text-based.

Additionally, most Oracle Hardware Management Pack tools support command output to a text log file or XML file, which can be used for text-to-speech conversion. Accessible manual pages (man pages) are available that describe the Hardware Management Pack tools on the system on which those tools are installed.

Installation and uninstallation of Oracle Hardware Management Pack can be performed manually, using text commands entered from the CLI. Assistive technology products such as screen readers, digital speech synthesizers, or magnifiers can be used to read the content of the screen.

Refer to the assistive technology product documentation for information about operating system and command-line interface support.

The CLI tools for using the software are described in the accessible HTML documentation for Hardware Management Pack at:

- <https://www.oracle.com/goto/ohmp/docs>

BIOS Accessibility

When viewing BIOS output from a terminal using the serial console redirection feature, some terminals do not support function key input. However, BIOS supports the mapping of function keys to Control key sequences when serial redirection is enabled. Descriptions of the function key to Control key sequence mappings are provided in the product documentation, typically within the server Service Manual. You can navigate the BIOS Setup Utility by using either a mouse or keyboard commands.

As an alternative method of configuring BIOS settings using the BIOS Setup Utility screens, Oracle ILOM provides a set of configurable properties that can help you manage the BIOS configuration parameters on an Oracle x86 server. For more information, see "Oracle ILOM Accessibility."

BIOS information and its functions are typically documented in the product Service Manual or Installation Guide.

Documentation Accessibility

Documentation for Oracle hardware is provided in HTML and PDF formats. The HTML documents are accessible using standard operating system controls and assistive technology. PDF documents are also provided; however, PDF is not an accessible format. PDF documents are considered support documents because the PDF content is available in accessible HTML format.

Product documentation provides figures, other types of images, and screenshots that do not rely on color for interpretation. Within the figures, callouts indicate the referenced component information. The callouts are mapped within a table to provide text descriptions of the referenced parts of the figures. In addition, alternative text is provided for all tables and images that provides the context of the information and images.

Note that screen readers might not always correctly read the code examples in the documentation. The conventions for writing code require that closing braces should appear on an otherwise empty line. However, some screen readers might not always read a line of text that consists solely of a bracket or brace.

The documentation might contain links to web sites of other companies and organizations that Oracle does not own or control. Oracle neither evaluates nor makes any representations regarding the accessibility of these web sites.

You can access the accessible HTML documentation for Oracle x86 products at:

- <http://docs.oracle.com/en/servers/>

Hardware, Firmware and BIOS Issues

This section includes important information on hardware, firmware, and BIOS issues for the server.

Note - Issues listed in this document are unfixed issues that were known of at the time of release. The description for each issue might include a workaround and/or the release version that includes the fix.

Links to Issues	Workaround?	Fixed In
“Using Serial Console With GRUB Menu Causes The Server To Become Unresponsive (22878811)” on page 31	Yes	SW1.3.1
“New Policy Allows You to Prevent System from Disabling DIMMs with Correctable Errors (22708327)” on page 32	N/A	N/A
“Power/OK LED Does Not Transition From Blinking to Solid-on After Boot (17854057)” on page 32	No	SW1.1.0
“Bootable USB Device Plugged In After Starting the System Might Not Be Recognized as a Boot Device (17961398)” on page 33	Yes	SW1.1.0
“Downgrade to Older Version of System Software Requires Additional AC Power Cycle (20275809)” on page 33	Yes	N/A
“Fan Errors During System Diagnostic Tests or High Stress Conditions (20256677)” on page 33	No	SW1.1.1
“PCI Reporting Incorrect on ZS4-4 with SW 1.2 (21698145)” on page 34	No	SW1.2.1

Using Serial Console With GRUB Menu Causes The Server To Become Unresponsive (22878811)

If you are using a serial console to access the GRUB menu, pressing "e" might cause Oracle ILOM to reboot multiple times, making the system unresponsive.

If your system becomes unresponsive for this reason, power it off and perform one of the actions in the workaround before accessing the GRUB menu again.

Workaround

To prevent this from happening, perform one of the following actions:

- Use video console redirection to access the GRUB menu.
- Update your server to system software release 1.3.1 or newer.

New Policy Allows You to Prevent System from Disabling DIMMs with Correctable Errors (22708327)

Normally when a DIMM exceeds the threshold of correctable errors (CEs), the system maps it out, which disables it until it can be replaced.

Setting the DIMM CE Map Out policy allows you to prevent the system from mapping out DIMMs that exceed the CE threshold. This feature is available with Oracle ILOM 3.2.6 or later.

- When DIMM CE Mapout is enabled, DIMMs that exceed the CE threshold are mapped out (disabled). This is the default.
- When DIMM CE Mapout is disabled, DIMMs that exceed the CE threshold are not mapped out.

To enable or disable the DIMM CE Mapout policy:

- From the Oracle ILOM web interface, navigate to System Management > Policy and use the drop-down list to enable or disable DIMM CE fault DIMM map out.
- From the Oracle ILOM command-line interface (CLI), enter:

```
set /SP/policy DIMM_CE_MAP_OUT=[enabled/disabled]
```

Power/OK LED Does Not Transition From Blinking to Solid-on After Boot (17854057)

This issue is fixed in System Software 1.1.0.

During system boot, the main Power/OK LED transitions from a steady blink to solid once it has started booting an operating system. When the system is configured for UEFI Boot Mode and begins booting to an operating system that supports UEFI Boot Mode, the Power/OK LED remains in steady blink mode and does not transition to solid.

There is no workaround. The system functions normally and the blinking state of the Power/OK LED can be ignored.

Bootable USB Device Plugged In After Starting the System Might Not Be Recognized as a Boot Device (17961398)

This issue is fixed in System Software 1.1.0.

If you attempt to boot from a bootable USB device but do not have it plugged into the server before starting system, the system might not recognize the device as a boot device.

Workaround

1. Plug in the USB bootable device.
2. Power on, or power cycle, the system.
3. Press F8 when prompted to display the boot menu.
4. Select the USB boot device.

Downgrade to Older Version of System Software Requires Additional AC Power Cycle (20275809)

If after upgrading your server to the latest system software version (such as version 1.1.1) you need to go back to an older version (such as version 1.0.1 or 1.0) you must perform an additional AC power cycle of the server after the downgrade has completed to ensure proper system operation.

An AC power cycle can be performed by shutting down the system and removing the AC power cords from the power supplies. Then, plug the AC power cords back into the power supplies and restart the system.

Fan Errors During System Diagnostic Tests or High Stress Conditions (20256677)

This issue is fixed in System Software 1.1.1.

During high system stress, or during hardware diagnostic tests, low fan speed errors or fan faults might appear in the event log. These errors or faults might occur due to an incorrect setting of the fan rotation threshold in firmware. In rare cases this can shut down the system to prevent a perceived over-temperature condition.

If you encounter fan errors/faults, upgrade to the latest system software. If fan errors/faults continue after upgrading, contact Oracle Service.

PCI Reporting Incorrect on ZS4-4 with SW 1.2 (21698145)

This issue is fixed in System Software 1.2.1.

An issue in the way the system BIOS identifies PCIe slots in Sun Server X4-4 System Software 1.2, might cause other applications (such as the Oracle ZFS Storage Appliance browser or CLI interface for the ZS4-4) to list PCIe slot information incorrectly.

If you have installed Sun Server X4-4 System Software 1.2 and encounter this issue, upgrade to a later release. You can use Oracle ILOM to view information about installed firmware and BIOS versions.

Oracle System Assistant Issues

This section contains topics that describe Oracle System Assistant issues for the Sun Server X4-4. The following table lists the issues that are covered in this section.

Note - Issues listed in this document are unfixed issues that were known of at the time of release. The description for each issue might include a workaround and/or the release version that includes the fix.

Links to Issues	Workaround?
“Linux Operating Systems Might Not Install When Using Oracle System Assistant (19232280)” on page 35	Yes

Linux Operating Systems Might Not Install When Using Oracle System Assistant (19232280)

If you have BIOS set to UEFI Boot mode and want to install a Linux OS (including Oracle Linux, SUSE Linux Enterprise Server, and Red Hat Enterprise) using Oracle System Assistant, an error might be displayed while the user-selected disk is being prepared for OS installation and the boot order is being updated in NVRAM. This error is due to a limitation with Linux Unbreakable Enterprise Kernel 3 3.1.8.3 in that it can only address up to half of the system NVRAM space. This error will cause the OS installation to fail.

To mitigate this problem, you need to flush NVRAM. Resetting the BIOS to factory defaults flushes NVRAM. Note that when you reset BIOS to the factory defaults, the system is set to Legacy BIOS Boot Mode (the factory default). In order to utilize UEFI Boot Mode for your Linux OS installation, you need to reset the boot mode in BIOS to UEFI.

Workaround

Reset the system BIOS to the factory defaults and re-enable UEFI Boot Mode (if desired) before attempting to install Linux using Oracle System Assistant.

Before you begin, you need access to an Oracle ILOM user account on the system with Reset and Host Control (r), Console (c), and Admin (a) role privileges.

1. Log into Oracle ILOM for the system.
2. Navigate to System Management > BIOS.
3. Go to the Settings section on the System Management > BIOS page and choose "factory" in the Reset to Defaults option.
4. Click Save.

The BIOS will be set to factory defaults on the next boot.

5. If you want to set the BIOS to UEFI Boot Mode (instead of using the factory default Legacy BIOS Boot Mode), initiate a remote console session (otherwise, skip to step 6).
 - a. Navigate to the Remote Control > Redirection page.
 - b. Select the Use video redirection option.
 - c. Click Launch Remote Console.

The remote console session window should open.

6. Navigate to Host Management > Power Control and reset (or power on) the system.
This resets the system and loads the BIOS factory defaults.
7. If you started a remote console session to reset the BIOS to UEFI Boot Mode, enter the BIOS Setup Utility (otherwise, skip to step 8).
 - a. Watch the boot process from the remote console window and press F2 when prompted to enter the BIOS Setup Utility.
 - b. Once in the BIOS Setup Utility, select the Boot menu.
 - c. Highlight the UEFI/BIOS Boot Mode option and press Enter.
 - d. Use the arrow keys to select "UEFI" and press Enter.
 - e. Save the configuration and exit the BIOS Setup Utility by pressing the F10 key.
 - f. Close your remote console session.
8. Once your system reboots, you can launch Oracle System Assistant to use the assisted OS installation feature for your Linux OS.
 - a. Navigate to the System Information > Summary page.
 - b. Click the Launch button for Oracle System Assistant.

Oracle Integrated Lights Out Manager (ILOM) Issues

This section contains topics that describe Oracle ILOM issues for the Sun Server X4-4. The following table lists the issues that are covered in this section.

Note - Issues listed in this document are unfixed issues that were known of at the time of release. The description for each issue might include a workaround and/or the release version that includes the fix.

Links to Issues	Workaround?	Fixed In
“Use Oracle ILOM 4.0 Documentation After Updating to Firmware Version 2.0.0 or Newer” on page 38	N/A	N/A
“File Transfer Using URI Fails if Target Password Contains Certain Special Characters (25917655)” on page 38	Yes	Fixed in SW1.7.0
“Oracle ILOM SNMP v3 Traps Are Not Delivered After SNMP Engine ID Change (23634048)” on page 38	Yes	N/A
“Third-Party Web Scan and Test Tools Cause Sluggish Oracle ILOM Performance (23564626)” on page 39	Yes	SW1.3.1
“Do Not Perform Other Server-Related Actions While Running Diagnostics (17563508)” on page 40	N/A	SW1.1.0
“Out-Of-Memory Condition Message Following System AC Power Cycle or SP Reset (17622795)” on page 40	N/A	SW1.1.0

Note - Additional information about Oracle ILOM appears in [“Important Operating Notes” on page 17](#).

Use Oracle ILOM 4.0 Documentation After Updating to Firmware Version 2.0.0 or Newer

When you update firmware, it updates Oracle ILOM as well, and earlier documentation collections no longer apply.

- When you update to SW 2.0.0 or newer, refer to the Oracle ILOM 4.0 documentation collection.
- Refer to the Oracle ILOM 3.2 documentation collection for older SW versions.

The Oracle ILOM documentation collections are posted at <https://www.oracle.com/goto/ilom/docs>.

File Transfer Using URI Fails if Target Password Contains Certain Special Characters (25917655)

This issue is fixed in SW1.7.0.

When using Oracle ILOM to transfer files using a Uniform Resource Identifier (URI), the transfer fails if the target host's password contains any of the following special characters:

; ?

Examples of these transfers include using host storage redirection, and backing up and restoring BIOS and SP configurations.

Workaround

Use a target host password that does not include any of the indicated special characters.

Oracle ILOM SNMP v3 Traps Are Not Delivered After SNMP Engine ID Change (23634048)

If you change the engine ID, create an SNMP v3 user, and configure an alert using that user without waiting approximately 10 seconds between each action, the internal user configuration might be incorrect and traps are missed.

Workaround

Do not create multiple configuration changes without verifying the effect of each configuration change. To prevent misconfigured users and missed traps, insert sleep statements in the script. For example:

```
# change engineID
set /SP/services/snmp engineid=NEWENGINEID
# sleep 10 seconds to give snmp enough time to make the change
sleep 10
# verify engineID
show /SP/services/snmp engineid
# verify SNMPv3 users have been deleted
show /SP/services/snmp/users

# create snmpv3 user
create /SP/services/snmp/users newuser authenticationpassword=...
# sleep 10 seconds to give snmp enough time to make the change
sleep 10
# verify user
show /SP/services/snmp/users newuser
# do a snmpget with that user to verify it

# configure alert
set /SP/alertmgmt/rules/1 type=snmptrap ...
# sleep 10 seconds to give snmp enough time to make the change
sleep 10
# verify alert
show /SP/alertmgmt/rules/1
set /SP/alertmgmt/rules/1 testrule=true
```

Third-Party Web Scan and Test Tools Cause Sluggish Oracle ILOM Performance (23564626)

This issue is fixed in System Software 1.3.1.

Under certain conditions, third-party web scanning and test tools can cause Oracle ILOM to run extremely slowly.

Workaround

Install system software release 1.3.1 or newer.

Do Not Perform Other Server-Related Actions While Running Diagnostics (17563508)

This issue is fixed in System Software 1.1.0.

When running UEFI diagnostics on the server from Oracle ILOM (under Host Management > Diagnostics from the web browser user interface), do not attempt other server-related actions, such as firmware update or a user-initiated server power off, until diagnostics have completed and you reset the diagnostics mode back to disabled in Oracle ILOM under Host Management > Diagnostics. Doing so can cause firmware corruption during the diagnostics tests.

Out-Of-Memory Condition Message Following System AC Power Cycle or SP Reset (17622795)

This issue is fixed in System Software 1.1.0.

During a system AC power cycle or intentional reset of the service processor (SP) (for example, during a firmware update the server might power cycle or reset automatically as part of the update process), there is a rare chance that the SP might display a "System restarted due to Out-Of-Memory condition" error message.

For example, you would see the following output from the serial console:

```
Running BIOS version check...
Stop updating /conf/progparts.version
Running Platform Diagnostics: platform_diags.sh.

*****
System restarted due to Out-Of-Memory condition.
*****
```

ORACLESP-HW-X4-4_20645 login:

If the system was intentionally power cycled, or its SP intentionally reset, the "Out-of-Memory condition" message can be ignored.

Oracle Solaris Issues

This section describes issues with the supported Oracle Solaris operating system for the Sun Server X4-4. The following table lists the issues that are covered in this section.

Note - Issues listed in this document are unfixed issues that were known of at the time of release. The description for each issue might include a workaround and/or the release version that includes the fix.

Links to Issues	Workaround	Fixed In
“Pxebooting the Miniroot is Extremely Slow in UEFI Boot Mode (17458093)” on page 41	No	Oracle Solaris 11.2
“Solaris 11.1 With Desktop Package Cannot Be Powered Off Using Certain Options in Oracle ILOM (16816951)” on page 42	Yes	
“Oracle Solaris 11.1 Cannot Be Installed on a Linux iSCSI Target (16274469)” on page 43	No	Oracle Solaris 11.2
“Sun StorageTek 8 Gb FC PCIe HBA (Emulex) Port Goes Offline (17331148)” on page 43	Yes	Oracle Solaris 11.1 SRU16 and 11.2
“Using Oracle ILOM Remote Console Plus on a Solaris Client to Redirect an ISO Image Fails to Mount the Image (18285100)” on page 44	Yes	SW1.1.0
“SAN Boot Using Jumpstart Fails on a Server with a Sun StorageTek 8 Gb FC PCIe HBA (Qlogic) Installed (18237680)” on page 45	Yes	
“Oracle Solaris Generates fault.io.usb.not_acc When USB 1.0/1.1 Device is Connected (17785011)” on page 45	No	
“Performance Degradation Can Occur With Some High Bandwidth I/O Cards (19526300)” on page 46	Yes	

Pxebooting the Miniroot is Extremely Slow in UEFI Boot Mode (17458093)

This issue is fixed in Oracle Solaris 11.2.

When performing a network install of Oracle Solaris on a server configured in the BIOS for UEFI Boot Mode, the boot archive takes a long time to load (approximately 40-50 minutes) before the installation starts.

For example, the process shown below could take 40-45 minutes until you see the second "done" displayed:

```
Welcome to GRUB!
5  4  3  2  1  0      Booting 'Oracle Solaris 11.1.11.3.0'
Loading cd0/platform/i86pc/kernel/amd64/unix: 0%...66%...done.
Loading cd0/platform/i86pc/amd64/boot_archive: 0%...1%...3%...5%...7%...9%...
11%...12%...14%...16%...18%...20%...22%...24%...25%...27%...29%...30%...32%...
34%...36%...38%...40%...42%...43%...45%...47%...49%...51%...53%...54%...56%...
58%...60%...62%...64%...66%...67%...69%...71%...73%...75%...77%...79%...80%...
82%...84%...85%...87%...89%...91%...93%...95%...97%...99%...done.
```

This slowness is limited to network installs in UEFI Boot Mode. In general, no workaround is needed and the process will eventually complete. However, if you need to improve the operating system installation time, use an alternate method to install the operating system, such as using an ISO image, USB image, or CD-ROM/DVD.

Solaris 11.1 With Desktop Package Cannot Be Powered Off Using Certain Options in Oracle ILOM (16816951)

For a server running Oracle Solaris 11.1 with the desktop package, the following Oracle ILOM power off options do not power off the server:

- When performing a graceful shutdown of the server from the Oracle ILOM web interface.
- When performing a forced shutdown of the server using the `stop -f /SYS` command from the Oracle ILOM command-line interface (CLI).

Other power off options work normally.

Workaround

Perform one of the following workarounds on the server running Oracle Solaris depending on whether you plan on using the Oracle ILOM web interface or CLI to power-off the server.

In order to use the Oracle ILOM CLI for power-off, first do the following at the server running Oracle Solaris:

1. In `/usr/share/dbus-1/services/gnome-power-manager.service`, add `--verbose` to the following line: `Exec=/usr/bin/gnome-power-manager`

The edited line should read:

```
Exec=/usr/bin/gnome-power-manager --verbose
```

In order to use the Oracle ILOM web interface for power-off, first do the following at the server running Oracle Solaris:

1. Select System > Preferences > Startup Applications from gnome-panel's menu list.
2. Select Power Manager > Edit.
3. Add **--verbose** to the following line: `gnome-power-manager`

The edited line should read:

```
gnome-power-manager --verbose
```

Note - If `gnome-power-manager` demon is currently running, enter `kill gnome-power-manager` from the command line to stop it.

Oracle Solaris 11.1 Cannot Be Installed on a Linux iSCSI Target (16274469)

This issue is fixed in Oracle Solaris 11.2.

When installing the Oracle Solaris 11.1 OS on a Sun Server X4-4 in legacy iSCSI mode, do not install the OS to a Linux iSCSI target. Instead, use a Solaris or Windows iSCSI target for the installation.

Sun StorageTek 8 Gb FC PCIe HBA (Emulex) Port Goes Offline (17331148)

This issue is fixed in Oracle Solaris 11.1 SRU16 and 11.2.

In rare instances, a Sun Server X4-4 with the Sun StorageTek 8 Gb FC PCIe HBA (Emulex) installed might have an HBA port go offline during boot. When the Oracle Solaris Fault Management log is checked (using the `fmadm faulty` command), you see an error similar to:

```
# fmadm faulty
```

```
-----  
TIME                EVENT-ID                MSG-ID                SEVERITY
```

```
-----  
Oct 12 23:42:57 1786b6a2-57d7-cf84-ae3b-fc08de6effd8 PCIEX-8000-0A Critical  
  
Host      : testserver16  
Platform  : sun4v-platform   Chassis_id  :  
Product_sn :  
  
Fault class : fault.io.pciex.device-interr  
Affects     : dev:///pci@340/pci@1/pci@0/pci@2/SUNW,emlxs@0,1  
             faulted and taken out of service  
FRU        : "IOU0-PCIE2"  
(hc://:product-id=sun4v-platform:server-id=scxx043cto:chassis-id=AK00120548/ch  
assis=0/cpuboard=0/hostbridge=1/pciexrc=1/pciexbus=1/pciexdev=0/pciexfn=0/pcie  
xbus=2/pciexdev=2/pciexfn=0/pciexbus=115/pciexdev=0)  
             not present  
  
Description : A problem was detected for a PCIEX device.  
  
Response    : One or more device instances may be disabled  
  
Impact      : Loss of services provided by the device instances associated  
             with this fault  
  
Action      : Use 'fmadm faulty' to provide a more detailed view of this  
             event. Please refer to the associated reference document at  
             http://sun.com/msg/PCIEX-8000-0A for the latest service  
             procedures and policies regarding this diagnosis.
```

The reference link for "PCIEX-8000-0/A" confirms that the problem is with the PCIe device.

Workaround

Install Oracle Solaris 11.1 SRU16.5 to obtain the updated driver for the Sun StorageTek 8 Gb FC PCIe HBA (Emulex).

Using Oracle ILOM Remote Console Plus on a Solaris Client to Redirect an ISO Image Fails to Mount the Image (18285100)

This issue is fixed in System Software 1.1.0.

When using Oracle ILOM Remote Console Plus from a Solaris client to redirect an ISO image to a remote server, the redirected image does not mount on the server. This prevents the server from being able to access the ISO image.

Workaround

Use a Linux client or a Windows 7 client to run Oracle ILOM Remote Console Plus to redirect the ISO image.

SAN Boot Using Jumpstart Fails on a Server with a Sun StorageTek 8 Gb FC PCIe HBA (Qlogic) Installed (18237680)

When attempting a UEFI SAN boot using Jumpstart on a server with Oracle Solaris 11.1 OS and a Sun StorageTek 8 Gb FC PCIe HBA (Qlogic), the following error might appear:

```
>>Checking Media Presence.....
>>Media Present.....
Downloading NBP File...

Succeed to download NBP file...
Welcome to GRUB!

Oracle Solaris Network Boot
Please wait while the network boot configuration file is located...
No GRUB2 network configuration file could be located on the TFTP server!

Press 'r'<Enter> to reboot or <Enter> to enter GRUB
.....
```

Workaround

Disable the option ROM of the Sun StorageTek 8 Gb FC PCIe HBA (Qlogic).

Oracle Solaris Generates `fault.io.usb.not_acc` When USB 1.0/1.1 Device is Connected (17785011)

In rare cases, when a USB 1.0/1.1 device is connected to the system (such as a keyboard, mouse or KVM), Oracle Solaris generates a `fault.io.usb.not_acc` error. In addition, the system service required fault indicator might light.

There is no known functional impact as a result of this issue and the fault can be ignored.

Performance Degradation Can Occur With Some High Bandwidth I/O Cards (19526300)

Systems with some types of high performance I/O option cards, such as dual port InfiniBand cards, might experience constrained I/O performance in some types of high stress workloads. The symptom will show as lower than expected bandwidth through the external ports of the I/O option cards.

Workaround

If lower than expected performance is seen on the external ports of high bandwidth I/O cards and it is not attributable to an external cause, such as fabric issues, the following procedure might increase I/O performance.

1. Start or reboot the server.
2. During the initial boot process, press **F2** when prompted to enter the BIOS Setup Utility.
3. Use the right arrow key to navigate to the **Advanced** menu.
4. Cursor down to select **CPU Power Management Configuration** and press Enter.
5. Set the power management configurations as follows:

CPU PM Tuning:	Manual
EIST (GV3):	Disabled
Turbo Mode:	Disabled
CPU C3 report:	Disabled
CPU C6 report:	Disabled
Package C state Limit:	C0/C1
Uncore Frequency Scaling:	Disabled

6. Press the **F10** key to save your new settings and exit the BIOS Setup Utility.

For the latest updates on this issue, refer to bug 19526300 in My Oracle Support (<https://support.oracle.com>).

Oracle VM Issues

This section describes issues with the supported Oracle VM software for the Sun Server X4-4. The following table lists the issues that are covered in this section.

Note - Issues listed in this document are unfixed issues that were known of at the time of release. The description for each issue might include a workaround and/or the release version that includes the fix.

Link to Issue	Workaround
“Dhclient Command Causes System to Panic (16596993)” on page 47	Yes
“Ethtool Shows Unknown Speed and Duplex (16563881)” on page 48	Yes
“Error After Installing Oracle VM Server on a System With a Large Amount of Memory (16557272)” on page 48	Yes
“Multiple Corrected PCIe Error Messages (19583126)” on page 49	Yes

Dhclient Command Causes System to Panic (16596993)

Using dhclient in a system running Oracle VM with a large number of PCIe cards installed can cause a system panic. In some system configurations, Oracle VM might not allocate sufficient resources for all option cards. When this happens, an option card driver might attempt to load with insufficient resources resulting in a system panic.

Workaround

Edit the `grub.conf` file to add the following kernel boot parameters:

```
extra_guest_irqs=64,2048 nr_irqs=2048
```

Ethtool Shows Unknown Speed and Duplex (16563881)

When ethtool command is used on Oracle VM server, the status "Unknown!" is displayed for the Speed and Duplex settings. For example:

```
# ethtool eth0
Settings for eth0:
    Supported ports: [ TP ]
    Supported link modes:   10baseT/Half 10baseT/Full
                           100baseT/Half 100baseT/Full
                           1000baseT/Full
    Supports auto-negotiation: Yes
    Advertised link modes:  10baseT/Half 10baseT/Full
                           100baseT/Half 100baseT/Full
                           1000baseT/Full
    Advertised pause frame use: Symmetric
    Advertised auto-negotiation: Yes
    Speed: Unknown!
    Duplex: Unknown! (255)
    Port: Twisted Pair
    PHYAD: 1
    Transceiver: internal
    Auto-negotiation: on
    MDI-X: Unknown
    Supports Wake-on: pumbg
    Wake-on: d
    Current message level: 0x00000007 (7)
    Link detected: no
```

The problem is due to insufficient interrupt resources available to report the appropriate status.

Workaround

Edit the grub.conf file to add the following kernel boot parameters:

```
extra_guest_irqs=64,2048 nr_irqs=2048
```

Error After Installing Oracle VM Server on a System With a Large Amount of Memory (16557272)

In some instances, a system with a large amount of memory requires special configuration in order for Oracle VM to install and launch correctly. If not, you could receive the following error on launch after installation:


```
kernel panic -not syncing: Out of memory and no killable processes
```

If you install Oracle VM from an ISO image or by using Oracle System Assistant, the `dom0_mem` parameter should be set correctly. If you install the Oracle VM software from PXE boot or some other customized environment and you have a large-memory system, you might need to recalculate the `dom0_mem` setting.

Workaround

Recalculate the `dom0_mem` setting using this formula:

$$\text{dom0_mem} = 502 + \text{int}(\text{physical_mem} * 0.0205)$$

For example, if your system has 128 GB of memory, you need to increase `dom0_mem` to 3188 MB:

```
dom0_mem=3188M
```

You can update the `dom0_mem` setting in the `grub.conf` file, or during installation by interrupting the boot process at grub menu and editing it there.

For more information on the `dom0_mem` setting, refer to the Installing Oracle VM Server documentation:

http://docs.oracle.com/cd/E35328_01/E35330/html/vmiug-server-dom0-memory.html

Multiple Corrected PCIe Error Messages (19583126)

In rare instances, you might see self-corrected PCIe bus errors with Oracle VM 3.3.1 installed.

For example, when using `dmesg` to display kernel PCIe error messages, you might see:

```
root@ovmsserver331 ~]# dmesg |grep -i pci|grep -i error
pcieport 0000:00:02.0: AER: Multiple Corrected error received: id=0010
pcieport 0000:00:02.0: PCIe Bus Error: severity=Corrected, type=Physical
Layer, id=0010(Receiver ID)
pcieport 0000:00:02.0: device [8086:0e04] error
status/mask=00000001/00000000
pcieport 0000:00:02.0: [ 0] Receiver Error (First)
```

You can safely ignore these errors.

Linux Issues

This section describes issues with the supported Linux operating systems for the Sun Server X4-4. The following table lists the issues that are covered in this section.

Note - Issues listed in this document are unfixed issues that were known of at the time of release. The description for each issue might include a workaround and/or the release version that includes the fix.

Links to Issues	Workaround
“C-State Performance Issue with Intel_Idle Driver (16873953)” on page 51	Yes

C-State Performance Issue with Intel_Idle Driver (16873953)

On a system running Oracle Linux 6.5 (compatible version only) or Oracle Linux 5.10 (compatible version and UEK2), the system CPUs cannot get deeper than the C1 state when the system is idle (sleep state). This can manifest itself in C-state thread wakeup performance latencies.

Workaround

Edit the `/etc/grub.conf` file to add the following kernel parameter:

```
intel_idle.max_cstate=0
```

This disables the default `intel_idle` driver and forces the kernel to use `acpi_idle`.

This issue does not exist for Oracle Linux 6.5 UEK3.

VMware ESXi Issues

This section describes issues with the supported VMware ESXi software for the Sun Server X4-4. The following table lists the issues that are covered in this section.

Note - Issues listed in this document are unfixed issues that were known of at the time of release. The description for each issue might include a workaround and/or the release version that includes the fix.

Link to Issues	Workaround
“VMware ESXi 5.5 Does Not Support MMIO Regions Above 4GB (16480679)” on page 53	Yes
“VMware ESXi 5.5 Runs Out of Interrupts With PCIe Cards (16494653)” on page 54	No
“VMware ESXi 5.x Installation Fails on Systems With 1.2 TB Disks That Have Non-RAID Volumes (16373075)” on page 54	Yes

VMware ESXi 5.5 Does Not Support MMIO Regions Above 4GB (16480679)

The Sun Server X4-4 defaults in BIOS to 64-bit MMIO (Memory Mapped I/O). This allows additional PCIe memory address space to be mapped above the standard 32-bit 4GB of space for PCIe cards that include option ROMs. However, VMware ESXi is incompatible with MMIO space above the standard 4GB. This issue can cause some PCIe cards not to function properly with ESXi.

Workaround

As a possible workaround, disable 64-bit MMIO through the server's BIOS Setup Utility (under the IO > PCIe Subsystem Settings > PCI 64-bit Resources Allocation menu). This workaround has limitations. With some combinations of option cards, the system will require more MMIO space than what the system can allocate within 32 bits of address space. When that occurs, those option cards that could not be assigned MMIO address space (because there was not enough left) will be unavailable for use.

For more information, refer to VMware's Knowledge Base at:

<https://www.vmware.com/>

VMware ESXi 5.5 Runs Out of Interrupts With PCIe Cards (16494653)

In certain configurations VMware ESXi can run out of interrupts for devices (this can include storage and networking).

For more information, refer to VMware's *Configuration Maximums* document for ESXi 5.5, under host maximums:

<http://www.vmware.com/pdf/vsphere5/r55/vsphere-55-configuration-maximums.pdf>

VMware ESXi 5.x Installation Fails on Systems With 1.2 TB Disks That Have Non-RAID Volumes (16373075)

VMware ESXi 5.x installation will fail on systems with the internal Sun Storage 6 Gb SAS PCIe HBA connected to 1.2 TB drives that have non-RAID volumes.

Workaround

Use Oracle System Assistant (pressing F9 when prompted during system boot) or the HBA LSI Configuration Utility (pressing Ctrl+A when prompted during system boot) to create RAID volumes (either RAID 0, 1 or 10) on all drives.

Getting Server Firmware and Software

This section explains the options for accessing server firmware and software.

Description	Links
Learn about server firmware and software updates.	“Firmware and Software Updates” on page 55
Learn about the options for accessing firmware and software.	“Firmware and Software Access Options” on page 56
View the available firmware and software packages.	“Available Software Release Packages” on page 56
Access the firmware and software packages through Oracle System Assistant, or My Oracle Support.	“Accessing Firmware and Software” on page 57
Install firmware and software updates.	“Installing Updates” on page 58

Firmware and Software Updates

Firmware and software, such as hardware drivers and tools for the server, are updated periodically. These are made available as a software release. The software release is a set of downloads (patches) that includes all available firmware, hardware drivers, and utilities for the server. All these have been tested together. The ReadMe document that is included with the download explains what has changed and what has not changed from the prior software release.

You should update your server firmware and software as soon as possible after the software release becomes available. Software releases often include bug fixes, and updating ensures that your server software is compatible with the latest server firmware and other component firmware and software.

The ReadMe file in the download package contains information about the updated files in the download package, as well as bugs that are fixed with the current release. The product notes also provide information about which server software versions are supported.

Firmware and Software Access Options

Use one of the following options to obtain the latest set of firmware and software for your server:

- **Oracle System Assistant** – Oracle System Assistant is a new factory-installed option for Oracle servers that allows you to easily download and install server firmware and software.

For more information about using Oracle System Assistant, see the [Oracle X4 Series Servers Administration Guide \(https://www.oracle.com/goto/x86admindiag/docs\)](https://www.oracle.com/goto/x86admindiag/docs).

- **My Oracle Support** – All system firmware and software are available from the My Oracle Support web site.

For more information about what is available on the My Oracle Support web site, see <https://support.oracle.com>.

For instructions on how to download software releases from My Oracle Support, see “Download Firmware and Software Using My Oracle Support” on page 57.

Available Software Release Packages

Downloads on My Oracle Support are grouped by product family, then product, then version. The version contains one or more downloads (patches).

For servers and blades, the pattern is similar. The product is the server. Each server contains a set of releases. These releases are not true software product releases, but rather are releases of updates for the server. These updates are called software releases and comprise several downloads, all tested together. Each download contains firmware, drivers, or utilities.

My Oracle Support has the same set of download types for this server family as shown in the following table. The same firmware and software can also be downloaded using Oracle System Assistant.

Package Name	Description	When to Download This Package
Sun Server X4-4 SW <i>version</i> – Firmware Pack	All the system firmware, including Oracle ILOM, BIOS, and option card firmware.	You need the latest firmware.
Sun Server X4-4 SW <i>version</i> – OS Pack	An OS Pack is available for each supported operating system version. Each OS Pack includes a package of all tools, drivers, and utilities for that version of the OS.	You need to update OS-specific drivers, tools, or utilities.

Package Name	Description	When to Download This Package
	Software includes Oracle Hardware Management Pack and LSI MegaRAID software. For the Windows OS, this OS Pack also includes Intel Network Teaming and Install Pack.	
Sun Server X4-4 SW <i>version</i> – All Packs	Includes the Firmware Pack, all OS Packs, and all documents. This pack does not include Oracle VTS or the Oracle System Assistant image.	You need to update a combination of system firmware and OS-specific software.
Sun Server X4-4 SW <i>version</i> – Diagnostics	Oracle VTS diagnostics image.	You need the Oracle VTS diagnostics image.
Sun Server X4-4 SW <i>version</i> – Oracle System Assistant	Oracle System Assistant recovery and ISO update image.	You need to manually recover or update Oracle System Assistant.

Each of the downloads is a zip file that contains a ReadMe file and a set of subdirectories containing firmware or software files. The ReadMe file contains details on the components that have changed since the prior software release and the bugs that have been fixed.

Accessing Firmware and Software

This section covers instructions for downloading or requesting software release files.

You can use Oracle System Assistant to easily download and use the latest software release. For further information, see the [Oracle X4 Series Servers Administration Guide \(https://www.oracle.com/goto/x86admindiag/docs\)](https://www.oracle.com/goto/x86admindiag/docs).

You can use My Oracle Support. For further information, see “[Download Firmware and Software Using My Oracle Support](#)” on page 57.

▼ Download Firmware and Software Using My Oracle Support

1. Go to the following web site: <https://support.oracle.com>
2. Sign in to My Oracle Support.

- 3. At the top of the page, click the Patches and Updates tab.**
The Patches and Updates screen appears.
- 4. In the Search screen, click Product or Family (Advanced).**
The screen appears with search fields.
- 5. In the Product field, select the product from the drop-down list.**
Alternatively, type a full or partial product name (for example, Sun Server X4-4) until a match appears.
- 6. In the Release field, select a software release from the drop-down list.**
- 7. Click Search.**
The patches available for downloading are listed.
See [“Available Software Release Packages” on page 56](#) for a description of the available downloads.
- 8. To select a patch for downloading, click on it (you can use the shift key to select more than one patch).**
A pop-up action panel appears. The pop-up panel contains several action options, including the Add to Plan and Download options. For information about the Add to Plan option, click on the associated drop-down button and select “Why use a plan?”
- 9. To download the patch(es), click Download in the pop-up action panel.**
The File Download dialog box appears.
- 10. In the File Download dialog box, click on the patch zip file.**
The patch file downloads.

Installing Updates

The following sections provide information about installing firmware and software updates:

- [“Installing Firmware” on page 58](#)
- [“Installing Hardware Drivers and OS Tools” on page 59](#)

Installing Firmware

Updated firmware can be installed using one of the following:

- **Oracle Enterprise Manager Ops Center** – Ops Center Enterprise Controller can automatically download the latest firmware from Oracle, or firmware can be loaded manually into the Enterprise Controller. In either case, Ops Center can install the firmware onto one or more servers, blades, or blade chassis.

For more information, go to: <http://www.oracle.com/technetwork/oem/ops-center/index.html>.

- **Oracle System Assistant** – Oracle System Assistant can download and install the latest firmware from Oracle.

For more information, see the [Oracle X4 Series Servers Administration Guide \(https://www.oracle.com/goto/x86admindiag/docs\)](https://www.oracle.com/goto/x86admindiag/docs).

- **Oracle Hardware Management Pack** – The fwupdate CLI Tool within the Oracle Hardware Management Pack can be used to update firmware within the system.

For more information, refer to the Oracle Hardware Management Pack Documentation Library at: <https://www.oracle.com/goto/ohmp/docs>

- **Oracle ILOM** – Oracle ILOM and BIOS firmware are the only firmware that can be updated using either the Oracle ILOM web interface or the command-line interface.

For more information, refer to the documentation for your supported version of Oracle Lights Out Manager (ILOM) Documentation Library at: <https://www.oracle.com/goto/ilom/docs>

Installing Hardware Drivers and OS Tools

Updated hardware drivers and operating system (OS)-related tools, such as Oracle Hardware Management Pack, can be installed using one of the following:

- **Oracle Enterprise Manager Ops Center**

For more information, go to: <http://www.oracle.com/technetwork/oem/ops-center/index.html>

- **Oracle System Assistant**

For more information, see the [Oracle X4 Series Servers Administration Guide \(https://www.oracle.com/goto/x86admindiag/docs\)](https://www.oracle.com/goto/x86admindiag/docs).

- **Other deployment mechanisms**, such as JumpStart, KickStart, or third-party tools.

For more information, refer to your operating system documentation.

