

# Oracle Integrated Lights Out Manager (ILOM) 3.1

Supplement for Sun Server X2-4



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# Using This Documentation

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This supplement contains information about Oracle Integrated Lights Out Manager (ILOM) 3.1 that is specific to Oracle's Sun Server X2-4.

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**Note** – The Sun Server X2-4 was formerly named the Sun Fire X4470 M2 server. This former name might still appear in the software. The new product name does not indicate any change in system features or functionality.

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This supplement also includes an overview of some of the server management options that are available for your server.

This document is intended for system administrators, network administrators, and service technicians who have an understanding of server systems.

- [“Getting the Latest Software and Firmware”](#) on page vii
- [“Related Documentation”](#) on page viii
- [“Support and Accessibility”](#) on page viii

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## Getting the Latest Software and Firmware

Firmware, drivers, and other hardware-related software for each Oracle x86 server, server module (blade), and blade chassis are updated periodically.

For information and download instructions, see [Chapter 5](#).

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## Related Documentation

Documentation	Link
All Oracle documentation	<a href="http://www.oracle.com/documentation">http://www.oracle.com/documentation</a>
Sun Server X2-4	<a href="http://www.oracle.com/pls/topic/lookup?ctx=SunServerX2-4">http://www.oracle.com/pls/topic/lookup?ctx=SunServerX2-4</a>
Oracle Integrated Lights Out Manager (ILOM) 3.0	<a href="http://www.oracle.com/pls/topic/lookup?ctx=ilom30">http://www.oracle.com/pls/topic/lookup?ctx=ilom30</a>
Oracle Integrated Lights Out Manager (ILOM) 3.1 (for Sun Server X2-4 Software Release 1.3 and above)	<a href="http://www.oracle.com/pls/topic/lookup?ctx=ilom31">http://www.oracle.com/pls/topic/lookup?ctx=ilom31</a>
Oracle Hardware Installation Assistant	<a href="http://www.oracle.com/pls/topic/lookup?ctx=hia">http://www.oracle.com/pls/topic/lookup?ctx=hia</a>

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## Support and Accessibility

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



# Determining Your Server Management Strategy

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With your Oracle x86 server, you have three single-server management tools available. They are:

- Oracle Integrated Lights Out Manager (ILOM)
- Oracle Hardware Management Pack
- Oracle Hardware Installation Assistant

Each server management tool has unique capabilities, but some of the functions of the tools overlap. Each server management tool is freely available. The tools also can be used together for comprehensive server management.

This chapter includes information to help you evaluate the single-server management solution that best fits your server environment. It also provides information on how to access the management software and related documentation.

This chapter includes the following topics:

- “Common System Management Tasks” on page 2
- “Server Management Software Benefits” on page 2
  - “Oracle Integrated Lights Out Manager” on page 3
  - “Oracle Hardware Management Pack” on page 4
  - “Oracle Hardware Installation Assistant” on page 5
- “Server Management Downloads and Documentation” on page 5

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**Note** – If you need to perform server management functions across several servers simultaneously, you might want to use Oracle Enterprise Manager Ops Center software, which you can order from Oracle. Refer to the Oracle Enterprise Manager Ops Center product information at:

<http://www.oracle.com/us/products/enterprise-manager/044497.html>

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# Common System Management Tasks

Each system management tool has unique capabilities, but some of the functions of the tools overlap. You can use each tool independently, or, depending on your platform, you can use the tools together for more comprehensive system management. Each system management tool is freely available.

The following table gives examples of common system management tasks that you can perform with the available system management tools.

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<b>Task</b>	<b>Oracle Hardware Installation Assistant</b>	<b>Oracle ILOM</b>	<b>Oracle Hardware Management Pack</b>
Update BIOS firmware.	Yes	Yes	Yes
Update Oracle ILOM firmware.	Yes	Yes	Yes
Configure Oracle ILOM.	Yes	Yes	Yes
Update HBA firmware.	Yes	No	Yes
Update expander firmware.	Yes	No	Yes
Install Windows operating system and drivers.	Yes	No	No
Install Linux operating system and drivers.	Yes	No	No
Install Oracle VM software and drivers.	Yes	No	No
Monitor hardware components.	No	Yes	Yes
Configure RAID.	Yes	No	Yes

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# Server Management Software Benefits

This section describes the benefits of the following server management software tools:

- [“Oracle Integrated Lights Out Manager” on page 3](#)
- [“Oracle Hardware Management Pack” on page 4](#)
- [“Oracle Hardware Installation Assistant” on page 5](#)

# Oracle Integrated Lights Out Manager

Oracle Integrated Lights Out Manager (Oracle ILOM) is system management firmware that is preinstalled on an embedded service processor on Oracle's x86-based servers and SPARC-based servers. Oracle ILOM enables you to actively manage and monitor components in your server. Using Oracle ILOM, you can remotely manage and monitor the server as if you were using a locally attached keyboard, monitor, and mouse, regardless of the state of the host system. The Oracle ILOM firmware automatically initializes when standby power is applied to the server.

Oracle ILOM firmware allows you to choose either a full-featured browser-based web interface or an equivalent command-line interface (CLI).

With Oracle ILOM, you can:

- View graphical and text-based consoles for the host.
- View Oracle ILOM using a web-based interface or a command-line interface.
- Monitor the current status of server sensors and indicators.
- Monitor server hardware errors and faults as they occur.
- Send events using SNMP traps or email alerts when faults occur.
- Remotely control the power state of the server.
- Configure the server hardware.

The service processor (SP) has a dedicated Ethernet port. The SP runs its own Oracle ILOM embedded operating system and provides out-of-band management capability. In addition, you can access Oracle ILOM from the server's host operating system (Oracle Solaris, Oracle Linux, other variants of Linux, or Windows).

You can also configure Oracle ILOM to integrate with other management tools in your data center. You can easily integrate the Oracle ILOM SNMP interface and IPMI management interfaces with other management tools and processes that you might have working already with your servers, such as Oracle Enterprise Manager Ops Center. For more information about Oracle Enterprise Manager Ops Center, go to:

<http://www.oracle.com/us/products/enterprise-manager/044497.html>

In addition, you can integrate Oracle ILOM with several enterprise management, third-party tools, such as CA Unicenter, HP OpenView Operations, BMC Patrol, and IBM Tivoli. For more information about which tools are supported, go to:

<http://www.oracle.com/technetwork/server-storage/servermgmt/tech/isv-hardware-connectors/index.html>

# Oracle Hardware Management Pack

Oracle Hardware Management Pack is available for your server, and for many other Oracle x86-based servers and some SPARC-based servers. Oracle Hardware Management Pack features two components: an SNMP monitoring agent and a family of cross-operating system command-line interface tools (CLI Tools) for managing your servers.

With the Hardware Management Agent SNMP Plugins, you can use SNMP to monitor Oracle servers and server modules in your data center with the advantage of not having to connect to two management points, the host and Oracle ILOM. This functionality enables you to use a single IP address (the host's IP) to monitor multiple servers and server modules.

Hardware Management Agent SNMP Plugins run on the host operating system of Oracle servers. The SNMP Plugins use the Oracle Hardware Storage Access Libraries to communicate with the service processor. Information about the current state of the server is fetched automatically by the Hardware Management Agent.

You can use the Oracle Server CLI Tools to configure Oracle servers. The CLI Tools work with Oracle Solaris, Oracle Linux, Oracle VM, other variants of Linux, and Windows operating systems. The following table describes the tasks that you can perform using the CLI Tools.

<b>System Management Task From Host OS</b>	<b>CLI Tool</b>
Configure BIOS settings, device boot order, and some SP settings.	<code>ubiosconfig</code>
Update Oracle ILOM and BIOS.	<code>fwupdate</code>
Query, update, and validate firmware versions on supported SAS storage devices, embedded SAS storage controllers, SAS storage expanders, and storage drives.	
Restore, set, and view Oracle ILOM configuration settings, as well as view and set Oracle ILOM properties that are associated with network management, clock configuration, and user management.	<code>ilomconfig</code>
View or create RAID volumes on storage drives that are attached to RAID controllers, including storage arrays.	<code>raidconfig</code>
Monitor the health of the system.	<code>hwmgmtcli</code>

# Oracle Hardware Installation Assistant

The Oracle Hardware Installation Assistant application is a provisioning tool for Oracle's x86 servers. The application guides you through server setup and maintenance by providing a single interface that facilitates server installation, configuration, maintenance, and recovery tasks.

The features and benefits of the Oracle Hardware Installation Assistant include:

- Supports multiple boot media options. Launch the Oracle Hardware Installation Assistant application from either a local drive attached to the server (CD/DVD or USB flash drive), a remote redirected network drive (virtual CD/DVD drive or ISO image), or an image available on your PXE network environment.
- Guides you through operating system installation and provides Oracle-certified, server-specific and configuration-specific device drivers for optional accessory cards and other system hardware.
- Guides you through RAID configuration for servers that contain an integrated LSI disk controller. Support is for RAID 0 and RAID 1 integrated mirror or integrated mirror enhanced (striping). Assisted RAID 1 configuration is also available (beginning with Oracle Hardware Installation Assistant 2.4) for LSI SAS-2 controllers (926x, 9280).
- Provides a specific set of service processor and Oracle ILOM configuration capabilities.
  - Enables management of Oracle ILOM user account settings and configuration of network settings, system clock, and system identification information.
  - Allows BIOS-level boot device priority configuration and next boot device selection.
- Contains firmware update capabilities for:
  - System BIOS and Oracle ILOM firmware
  - HBA firmware
  - Expander firmware

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## Server Management Downloads and Documentation

The following table describes how you can download and find documentation for the server management software options.

<b>Server Management Software</b>	<b>How to Access the Software</b>	<b>Documentation Library URL</b>
Oracle Integrated Lights Out Manager (ILOM) 3.1	No installation required. Embedded on system service processor.	<a href="http://www.oracle.com/pls/topic/lookup?ctx=ilom31">http://www.oracle.com/pls/topic/lookup?ctx=ilom31</a>
Oracle Hardware Management Pack	Download from: <a href="http://support.oracle.com">http://support.oracle.com</a>	<a href="http://www.oracle.com/pls/topic/lookup?ctx=ohmp">http://www.oracle.com/pls/topic/lookup?ctx=ohmp</a>
Oracle Hardware Installation Assistant	Standard option. If you opted not to use this software, you can download an .iso image from: <a href="http://support.oracle.com">http://support.oracle.com</a>	<a href="http://www.oracle.com/pls/topic/lookup?ctx=hia">http://www.oracle.com/pls/topic/lookup?ctx=hia</a>

## Oracle ILOM 3.1 Documentation

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Oracle ILOM 3.1 operates on Sun x86 servers and SPARC servers, supporting features that are common to all servers. This chapter provides a brief overview of the Oracle ILOM 3.1 Documentation Library, in which Oracle ILOM features that are common to all server platforms are described.

However, some Oracle ILOM 3.1 features are specific to certain platforms and not to all. For information about the Oracle ILOM features that are specific to the Sun Server X2-4, see [Chapter 3](#).

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## Oracle ILOM 3.1 Documentation Collection

For complete information about Oracle ILOM features, and for information about how to perform procedures using Oracle ILOM, refer to the Oracle ILOM 3.1 Documentation Library at <http://www.oracle.com/pls/topic/lookup?ctx=ilom31>.

The Oracle ILOM 3.1 Documentation Library includes the following documents:

- *Oracle ILOM 3.1 Quick Start Guide*
- *Oracle ILOM 3.1 Feature Updates and Release Notes*
- *Oracle ILOM 3.1 User's Guide*
- *Oracle ILOM 3.1 Configuration and Maintenance Guide*
- *Oracle ILOM 3.1 Protocol Management Reference Guide*
- *Oracle ILOM 3.1 Basic CLI Command Reference*





## Oracle ILOM Features for the Sun Server X2-4

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The Sun Server X2-4 supports all standard features in Oracle Integrated Lights Out Manager (ILOM) 3.1 firmware. In addition, Oracle ILOM 3.1 provides features that are designed specifically for Oracle x86 servers.

The following topics are discussed.

- [“Sun Server X2-4 Supported Firmware” on page 9](#)
  - [“Oracle ILOM 3.1 Features Supported on All Servers” on page 10](#)
  - [“Oracle ILOM 3.1 Features Supported on Oracle x86 Servers” on page 10](#)
  - [“Oracle ILOM 3.1 Features Not Supported on Sun Server X2-4” on page 18](#)
- 

### Sun Server X2-4 Supported Firmware

The following table identifies the supported Oracle ILOM and BIOS firmware versions supported on the Sun Server X2-4.

Software Release	Oracle ILOM SP Firmware	BIOS Firmware
1.3	3.1.2.24 r73820	16.04.01.02
1.2	3.0.6.12.a r70287	16.03.01.03
1.1	3.0.16.12 r65661	16.02.01.01
1.0	3.0.14.20 r63740	16.01.01.18

For information about how to update the firmware on your server, refer to the Oracle ILOM 3.1 Documentation Library at:

## Oracle ILOM 3.1 Features Supported on All Servers

Oracle ILOM offers a full set of features, functions, and protocols that you can use to monitor and manage Oracle x86-based servers and SPARC-based servers. Some of these features include:

- Browser-based web interface and SSH command-line interface
- Downloadable firmware updates
- Remote hardware monitoring
- Hardware field-replaceable unit inventory and presence detection
- Remote keyboard, video, mouse, and storage (KVMS) redirection
- System power control and monitoring
- Configuration and management of user accounts
- Error and fault management
- System alerts, including SNMP traps, IPMI PEs, remote syslog, and email alerts

For complete information about these features, and for information about how to perform procedures using Oracle ILOM, refer to the Oracle ILOM 3.1 Documentation Library at <http://www.oracle.com/pls/topic/lookup?ctx=ilom31>.

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## Oracle ILOM 3.1 Features Supported on Oracle x86 Servers

The following table identifies the Oracle ILOM 3.1 features and functions that are specific to, and supported on, Oracle x86 servers. Therefore, these Oracle ILOM 3.1 features are supported on the Sun Server X2-4. For complete information about these features and functions, refer to the documents in the Oracle ILOM 3.1 Documentation Library. The following table lists Oracle ILOM 3.1 features that are implemented on the Sun Server X2-4.

<b>Oracle ILOM 3.1 Feature</b>	<b>For Complete Information and Procedures, See:</b>
Sideband management	<ul style="list-style-type: none"> <li>• “Setting Up a Management Connection to Oracle ILOM” in <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i></li> </ul>
Power control policies	<ul style="list-style-type: none"> <li>• “System Management Policies Configurable From Server SP” in <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i></li> </ul>
Local host interconnect management connection	<ul style="list-style-type: none"> <li>• “Dedicated Interconnect SP Management Connection” in <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i></li> <li>• “Enabling the Local Interconnect Interface” in <i>Oracle Hardware Management Pack 2.2 User’s Guide</i></li> </ul>
Diagnostics using Pc-Check and non-maskable interrupt	<ul style="list-style-type: none"> <li>• “Troubleshooting Oracle ILOM Managed Devices” in <i>Oracle ILOM 3.1 User’s Guide</i></li> <li>• “Performing Pc-Check Diagnostics Tests in <i>Oracle x86 Servers Diagnostics, Applications, and Utilities Guide for Servers with Oracle ILOM 3.1</i></li> </ul>
Control next boot device	<ul style="list-style-type: none"> <li>• “Setting Next Boot Device on x86 Host Server” in <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i></li> </ul>
FRU top-level indicator auto-update	<ul style="list-style-type: none"> <li>• “FRU TLI Auto-Update” on page 15</li> </ul>
Switch serial port output to host management console	<ul style="list-style-type: none"> <li>• “Switch Serial Port Management Output to Host Serial Console in <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i></li> </ul>
Administer open problems and clear server faults	<ul style="list-style-type: none"> <li>• “Administering Open Problems” in <i>Oracle ILOM 3.1 User’s Guide</i></li> <li>• “Managing Sun Hardware Faults Through the Oracle ILOM Fault Management Shell” in <i>Oracle ILOM 3.1 User’s Guide</i></li> </ul>

For information about Oracle ILOM 3.1 features supported on the Sun Server X2-4, see these sections:

- “Sideband Management” on page 12
- “Power Control Policies” on page 12
- “Local Host Interconnect Management Connection” on page 14
- “Diagnostics Using Pc-Check and NMI” on page 14
- “Control Next Boot Device” on page 15
- “FRU TLI Auto-Update” on page 15
- “Switch Serial Port Output to Host Management Console” on page 16
- “Administer Open Problems and Clear Server Faults” on page 16

# Sideband Management

The sideband management feature is one of four ways you can establish a management connection to Oracle ILOM. By default, Oracle ILOM is set to transmit all traffic through the secure dedicated management port (NET MGT) on the Oracle x86 server chassis. However, if you prefer to support only one network connection to Oracle ILOM for both management and host traffic, you can configure a sideband management connection.

For more information about special considerations, requirements, and instructions for configuring a sideband management connection in Oracle ILOM, refer to “Setting Up a Management Connection to Oracle ILOM” in the *Oracle ILOM 3.1 Configuration and Maintenance Guide*.

# Power Control Policies

In Oracle ILOM 3.1, the following power features are enabled for Oracle x86 servers.

**TABLE 3-1** Power Control Policies for Oracle x86 Servers

Power Feature	Description
Remote Power Control	<p>Configure the power state for the server remotely from an Oracle ILOM interface. Available power states include:</p> <ul style="list-style-type: none"><li>• Removing power from the system</li><li>• Shutting down the system gracefully</li><li>• Powering on the system with full power</li></ul> <p>For instructions on performing these operations, see “System Management Policies Configurable From Server SP” in <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i>.</p>
Power-On Policies	<p>The service processor (SP) Power-On Policies determine the power state of the server when AC power is applied to the server (cold boot). Service processor Power-On Policies are mutually exclusive, so that if one policy is enabled, the other policy is disabled by default. If both policies are disabled, then the server SP will not apply main power to the server at boot time.</p> <p>The two power-on policies are:</p> <ul style="list-style-type: none"><li>• <b>Auto Power-On Host on Boot</b> – When this option is enabled, the SP automatically applies main power to the server. When disabled (default), main power is not applied to the server.</li><li>• <b>Set Host Power to Last Power State on Boot</b> – When this option is enabled, the SP automatically tracks the last power state and restores the server to this last power state following a power state change of at least 10 seconds. When disabled (default) the last power state is not applied to the server.</li></ul> <p>For instructions on how to set the Power-On Policies, refer to “System Management Policies Configurable From Server SP” in <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i>.</p>

## Host Power Throttling and Recovery

The Sun Server X2-4 supports a simple mechanism to automatically apply hardware throttles to the CPUs and memory controllers when power exceeds the rated capacity of the available power supplies. This can occur when a redundant power supply has failed or has been removed from the system.

When the server’s hardware (power CPLD) determines that power demand has exceeded the system’s available power, it automatically throttles the host processor to reduce its power consumption. The service processor (SP) removes this hardware throttle after it has been applied for 5 seconds. Host power throttling and recovery continues until such action is no longer needed.

## Low Line AC Override

The Low Line AC Override policy setting is provided to enable special test scenarios of a 4-CPU system using low-line (110 volt) power. Low-line voltage is normally supported only in 2-CPU system configurations. The capacity of each power supply unit (PSU) is roughly 1000 watts at low line. Since the power of a 4-CPU system can exceed 1000 watts by a large amount, enabling this setting results in a loss of PSU redundancy. This setting is disabled by default on the Sun Server X2-4.

## Local Host Interconnect Management Connection

The Local Host Interconnect property in Oracle ILOM enables you to optionally establish a dedicated and secure communication channel between the managed server host operating system and the Oracle ILOM service processor. It is recommended that you use the Oracle Hardware Management Pack, version 2.2 or later, to automatically configure this optional management connection for you.

For further information, refer to “Dedicated Interconnect SP Management Connection” in *Oracle ILOM 3.1 Configuration and Maintenance Guide*, and also refer to “Enabling the Local Interconnect Interface” in *Oracle Hardware Management Pack 2.2 User’s Guide*.

## Diagnostics Using Pc-Check and NMI

Pc-Check is a DOS-based diagnostic utility that is integrated into Oracle ILOM that enables you to detect and test all motherboard components, ports, and slots. Pc-Check has four operating modes that you can run from Oracle ILOM:

- **Enabled** – Run a predefined set of diagnostics when the server starts up.
- **Extended** – Run a comprehensive test suite of diagnostics when the server starts up.
- **Manual** – Run only the diagnostics that you specify when the server starts up.
- **Disabled** – Do not run Pc-Check diagnostics when the server starts up.

You can also send a non-maskable interrupt (NMI) to the host operating system using Oracle ILOM. Note that sending an NMI to the host operating system could cause the host to stop responding and wait for input from an external debugger. Therefore, you should use this feature only when instructed to do so by Oracle Services personnel.

For more information about Pc-Check diagnostics, refer to the *Oracle x86 Servers Diagnostics, Applications, and Utilities Guide for Servers with Oracle ILOM 3.1* at <http://www.oracle.com/pls/topic/lookup?ctx=x86diag>.

For instructions on how to run Pc-Check and how to generate an NMI from Oracle ILOM, refer to “Troubleshooting Oracle ILOM Managed Devices” in *Oracle ILOM 3.1 User’s Guide*.

## Control Next Boot Device

Using Oracle ILOM, you can remotely control what the next boot device will be at the next power-on. Available states for the Next Boot Device setting include the following. These settings take effect at the next host boot and will bypass the current BIOS boot order settings.

- **No Override (default)** – No override in the BIOS setting. Also clears any previously chosen selection.
- **PXE** – Host will boot from the network, following the PXE specification.
- **Disk** – Host will boot from the first disk as determined by BIOS.
- **Diagnostic** – Host will boot into the diagnostic partition, if configured.
- **CD-ROM** – Host will boot from the attached CD-ROM or DVD device.
- **BIOS** – Host will boot into the BIOS Setup screen.

For information on how to configure the Next Boot Device setting in Oracle ILOM, refer to “Setting Next Boot Device on x86 Host Server” in *Oracle ILOM 3.1 Configuration and Maintenance Guide*.

## FRU TLI Auto-Update

Oracle ILOM includes a top-level indicator (TLI) auto-update feature that ensures that the TLI stored in the server’s field-replaceable units (FRUs) is always correct. The TLI, which is unique to each server, is used to track the server’s service entitlement and warranty coverage. When a server requires service, the server’s TLI is used to verify that the server’s warranty has not expired.

The TLI is stored in the FRUID (field-replaceable unit identifiers) of these components: power distribution board (PDB), motherboard (MB), and disk backplane (DBP).

The TLI components stored in each component FRUID include:

- Product name
- PPN (product part number)
- PSN (product serial number)

When a server FRU that contains the TLI is removed and a replacement module installed, the TLI of the replacement module is programmed by Oracle ILOM to contain the same TLI as the other two modules.

## Switch Serial Port Output to Host Management Console

Oracle ILOM, by default, streams local management traffic through the serial management port (SER MGT). However, you can configure Oracle ILOM to stream the console output directly to the host console port (COM1). This feature is beneficial to Windows kernel debugging, as it enables you to view non-ASCII character traffic from the host console.



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**Caution** – You should set up the network on the SP before attempting to switch the serial port owner to the host server. If a network is not set up, and you switch the serial port owner to the host server, you will be unable to connect using the CLI or web interface to change the serial port owner back to the SP. To change the serial port owner back to the SP, you must use the Oracle ILOM Preboot Menu to restore access to the serial port over the network. For more information, see the Oracle ILOM Preboot Menu information in the *Sun Server X2-4 Service Manual*.

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For more information about prerequisites and instructions for switching the serial port output between the serial port and host console, refer to “Switch Serial Management Port Output to Host Console” in *Oracle ILOM 3.1 Configuration and Maintenance Guide*.

## Administer Open Problems and Clear Server Faults

Oracle ILOM automatically detects system hardware faults and environmental conditions on a managed system. If a problem occurs on a managed system, Oracle ILOM will automatically:

- Illuminate the Service Action indicator (LED) on the managed device.
- Identify the faulted condition in an easy-to-read Open Problems table.
- Record system information about the fault condition in the event log.

After the component is repaired or replaced, Oracle ILOM automatically clears the fault state from the Open Problems table.



For further information about administering hardware faults that are detected and reported in the Oracle ILOM interfaces, refer to “View Open Problems Detected on a Managed Device” and “Managing Sun Hardware Faults Through the Oracle ILOM Fault Management Shell” in *Oracle ILOM 3.1 User’s Guide*.

## Determining Faults

When a system fault occurs, you can view system indicators and use the Oracle ILOM CLI or web interface to determine the fault:

- **LEDs** – The Service Required LED will always be illuminated, and the component or subsystem-specific Service LED will be illuminated when applicable.
- **Oracle ILOM CLI** – Examine fault messages in the Oracle ILOM event log or see a fault summary.

For example:

- To view the Oracle ILOM event log, log in to the Oracle ILOM CLI and type:  
**show /SP/logs/event/list**
- To view a fault summary, log in to the Oracle ILOM CLI and type:  
**show /SP/faultmgmt**
- **Oracle ILOM web interface** – Examine fault messages in the Oracle ILOM event log or see a fault summary.

For example:

- To view the Oracle ILOM event log, log in to the Oracle ILOM web interface and select: System Monitoring --> Event Logs
- To view a fault summary, log in to the Oracle ILOM web interface and select: System Information --> Fault Management

## Clearing Faults

The procedure for clearing a fault differs depending on the type of component. Customer-replaceable units (CRUs) that are hot-swappable and are monitored by the SP will have their faults cleared automatically when the failed component is replaced and the updated status is reported as deasserted.

CRUs and field-replaceable units (FRUs) that have a FRUID container with identity information will have their faults cleared automatically when the failed component is replaced, as the SP is able to determine when a component is no longer present in the system.

You can use the Oracle ILOM web interface or the command-line interface (CLI) to manually clear faults. For information on how to use the Oracle ILOM web interface or the CLI to clear server faults, see the Oracle ILOM 3.1 Documentation Library at:

<http://www.oracle.com/pls/topic/lookup?ctx=ilom31>

The following types of faults are diagnosed by the Oracle ILOM SP:

- **Environmental events** – Fan modules, power supplies, ambient temperature, AC power loss, and chassis intrusion switch
- **Memory Reference Code (MRC) errors and warnings** – Memory initialization and population
- **I/O Hub (IOH) uncorrectable error events** – Motherboard
- **Memory ECC uncorrectable and correctable events** – Memory DIMMs
- **CPU uncorrectable error events** – Processor
- **Boot progress events** – Power-on, power-off, IPMI, MRC, QPI, BIOS, setup, and boot retries
- **Service Processor error events** – Oracle ILOM

For the Sun Server X2-4, the following types of faults must be cleared manually after the faulty component is replaced:

- PCIe faults (network ports and PCIe cards)
- Processor (CPU) faults

For instructions, refer to “Managing Sun Hardware Faults Through the Oracle ILOM Fault Management Shell” in the *Oracle ILOM 3.1 User’s Guide*.

In addition, the following fault does not require replacement of a faulty component; however, user action is required to clear the fault:

- `fault.security.integrity-compromised@/sys/sp`

This fault is generated when the server’s top cover is removed while the AC power cords are still connected to the power supply and standby power is still applied to the server service processor. To clear the `fault.security.integrity-compromised@/sys/sp` fault, replace the server’s top cover and then either reboot the Oracle ILOM SP, or remove the AC power cords and then reconnect the power cords.

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## Oracle ILOM 3.1 Features Not Supported on Sun Server X2-4

- Power Management Policy
- Backup and Restore BIOS Configuration
- Set PCIe Cooling Mode Policy

For information about these features, refer to the *Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Collection*.



## Sensors and Indicators Reference Information

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The server includes several sensors and indicators that report on hardware conditions. Many of the sensor readings are used to adjust the fan speeds and perform other actions, such as illuminating LEDs and powering off the server.

This section describes the sensors and indicators that Oracle ILOM monitors for the Sun Server X2-4.

The following types of sensors are described:

- “System Components” on page 21
- “System Indicators” on page 22
- “Temperature Sensors” on page 23
- “Power Supply Fault Sensors” on page 23
- “Fan Speed and Physical Security Sensors” on page 24
- “Power Supply Unit Current, Voltage, and Power Sensors” on page 25
- “Entity Presence Sensors” on page 25

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**Note** – For information about how to obtain sensor readings or to determine the state of system indicators in Oracle ILOM, see the *Oracle Integrated Lights Out Manager (ILOM) 3.1 SNMP, IPMI, CIM, WS-MAN Protocol Management Reference Guide*.

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## System Components

TABLE 4-1 describes the system components.

**TABLE 4-1** System Components

<b>Component Name</b>	<b>Description</b>
/SYS/DBP	Disk backplane
/SYS/DBP/HDD $n$	Hard disks $n$
/SYS/FB	Fan board
/SYS/FB/FAN $n$	Fan $n$
/SYS/MB	Motherboard
/SYS/MB/NET $n$	Host network interfaces $n$
/SYS/MB/P $n$	Processor $n$
/SYS/MB/P $n$ /MR $n$	Processor $n$ ; Memory riser $n$
/SYS/MB/P $n$ /MR $n$ /D $n$	Processor $n$ ; Memory riser $n$ ; DIMM $n$
/SYS/MB/PCIE[ $n$ , CC]	PCIe slot $n$ , or cluster card
/SYS/PS $n$	Power supply $n$
/SYS/SP	Service processor
/SYS/SP/NET $n$	SP network interface $n$

## System Indicators

TABLE 4-2 describes the system indicators.

**TABLE 4-2** System Indicators

<b>Indicator Name</b>	<b>Description</b>
/SYS/CPU_FAULT	System CPU Fault LED
/SYS/DBP/HDD $n$ /OK2RM	Hard disk $n$ OK-to-Remove LED
/SYS/DBP/HDD $n$ /SERVICE	Hard disk $n$ Service LED
/SYS/FAN_FAULT	System fan Fault LED
/SYS/FB/FAN $n$ /OK	Fan $n$ OK LED
/SYS/FB/FAN $n$ /SERVICE	Fan $n$ Service LED
/SYS/LOCATE	System Locate indicator LED
/SYS/MB/P $n$ /SERVICE	Processor $n$ Service LED

**TABLE 4-2** System Indicators (Continued)

Indicator Name	Description
/SYS/MB/Pn/MRn/SERVICE	Processor <i>n</i> ; Memory riser <i>n</i> Service LED
/SYS/MB/Pn/MRn/Dn/SERVICE	Processor <i>n</i> ; Memory riser <i>n</i> ; DIMM <i>n</i> ; Service indicator
/SYS/MEMORY_FAULT	System memory Fault LED
/SYS/OK	System OK LED
/SYS/PS_FAULT	System power supply Fault LED
/SYS/SERVICE	System Service LED
/SYS/SP/OK	SP OK LED
/SYS/SP/SERVICE	SP Service LED
/SYS/TEMP_FAULT	System temperature Fault LED

## Temperature Sensors

TABLE 4-3 describes the environmental sensors.

**TABLE 4-3** Temperature Sensors

Sensor Name	Sensor Type	Description
/SYS/DBP/T_AMB	Temperature	Disk back plane ambient temperature sensor
/SYS/MB/T_OUT <i>n</i>	Temperature	Motherboard exhaust temperature <i>n</i> sensor <b>Note</b> - These sensors are located in the rear of the chassis.
/SYS/T_AMB	Temperature	System ambient temperature sensor <b>Note</b> - This sensor is located on the underside of the fan board.
/SYS/PS <i>n</i> /T_OUT	Temperature	Power supply <i>n</i> exhaust temperature sensors

## Power Supply Fault Sensors

TABLE 4-4 describes the power supply fault sensors. In the table, *n* designates the numbers 0-1.

**TABLE 4-4** Power Supply Sensors

Sensor Name	Sensor Type	Description
/SYS/PS <i>n</i> /V_OUT_OK	Fault	Power supply <i>n</i> output voltage OK
/SYS/PS <i>n</i> /V_IN_ERR	Fault	Power supply <i>n</i> input voltage error
/SYS/PS <i>n</i> /V_IN_WARN	Fault	Power supply <i>n</i> input voltage warning
/SYS/PS <i>n</i> /V_OUT_ERR	Fault	Power supply <i>n</i> output voltage error
/SYS/PS <i>n</i> /I_OUT_ERR	Fault	Power supply <i>n</i> output current error
/SYS/PS <i>n</i> /I_OUT_WARN	Fault	Power supply <i>n</i> output current warning
/SYS/PS <i>n</i> /T_ERR	Fault	Power supply <i>n</i> temperature error
/SYS/PS <i>n</i> /T_WARN	Fault	Power supply <i>n</i> temperature warning
/SYS/PS <i>n</i> /FAN_ERR	Fault	Power supply <i>n</i> fan error
/SYS/PS <i>n</i> /FAN_WARN	Fault	Power supply <i>n</i> fan warning
/SYS/PS <i>n</i> /ERR	Fault	Power supply <i>n</i> error

## Fan Speed and Physical Security Sensors

[TABLE 4-5](#) describes the fan and security sensors. In the table, *n* designates numbers 0, 1, 2, etc.

**TABLE 4-5** Fan and Physical Security Sensors

Sensor Name	Sensor Type	Description
/SYS/FB/FAN <i>n</i> /TACH	Fan speed	Fan board; Fan <i>n</i> tachometer
/SYS/INTSW	Physical security	This sensor tracks the state of the chassis intrusion switch. If the server's top cover is opened while the AC power cords are still connected so that power is being applied to the server, this sensor asserts. If the top cover is subsequently replaced, this sensor is de-asserted.



# Power Supply Unit Current, Voltage, and Power Sensors

TABLE 4-6 describes the power supply unit current, voltage, and power sensors. In the table, *n* designates numbers 0-1.

**TABLE 4-6** Power Supply Unit Current, Voltage, and Power Sensors

Sensor Name	Sensor Type	Description
/SYS/PS <i>n</i> /V_IN	Voltage	Power supply <i>n</i> AC input voltage sensor
/SYS/PS <i>n</i> /V_12V	Voltage	Power supply <i>n</i> 12 volt output sensor
/SYS/PS <i>n</i> /V_3V3	Voltage	Power supply <i>n</i> 3.3 volt output sensor
/SYS/PS <i>n</i> /P_IN	Power	Power supply <i>n</i> input power sensor
/SYS/PS <i>n</i> /P_OUT	Power	Power supply <i>n</i> output power sensor
/SYS/VPS	Power	Server total input power consumption sensor

# Entity Presence Sensors

TABLE 4-7 describes the entity presence sensors. In the table, *n* designates numbers 0, 1, 2, etc.

**TABLE 4-7** Entity Presence Sensors

Sensor Name	Sensor Type	Description
/SYS/DBP/HDD <i>n</i> /PRSNT	Entity presence	Hard drive device present monitor
/SYS/DBP/PRSNT	Entity presence	Disk backplane present monitor
/SYS/FB/FAN <i>n</i> /PRSNT	Entity presence	Fan board; Fan <i>n</i> present monitor
/SYS/MB/P <i>n</i> /PRSNT	Entity presence	Motherboard; CPU <i>n</i> present monitor
/SYS/MB/P <i>n</i> /MR <i>n</i> /PRSNT	Entity presence	Motherboard; CPU <i>n</i> ; Memory riser <i>n</i> present monitor

**TABLE 4-7** Entity Presence Sensors (Continued)

Sensor Name	Sensor Type	Description
/SYS/MB/Pn/MRn/Dn/PRSNT	Entity presence	Motherboard; CPU <i>n</i> ; Memory riser <i>n</i> ; DIMM <i>n</i> present monitor
/SYS/MB/PCIE <sub>n</sub> /PRSNT	Entity presence	PCIe card <i>n</i> present monitor <b>Note</b> - <i>n</i> represents PCIe cards 0-9 or the cluster controller (cc) card.
/SYS/PS <sub>n</sub> /PRSNT	Entity presence	Power supply <i>n</i> present monitor

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## SNMP and PET Message Reference Information

This section describes Simple Network Management Protocol (SNMP) and Platform Event Trap (PET) messages that are generated by devices being monitored by Oracle ILOM.

- [“SNMP Traps” on page 26](#)
- [“PET Event Messages” on page 34](#)

### SNMP Traps

SNMP Traps are generated by the SNMP agents that are installed on the SNMP devices being managed by Oracle ILOM. Oracle ILOM receives the SNMP Traps and converts them into SNMP event messages that appear in the event log. For more information about the SNMP event messages that might be generated on your system, see [TABLE 4-8](#).

**TABLE 4-8** SNMP Traps and Corresponding Oracle ILOM Events for Sun Server X2-4

SNMP Trap Message	ILOM Event Message	Severity and Description	Sensor Name
<b>Memory Events</b>			
sunHwTrapComponentFault	fault.memory.intel.boot-setup-init-failed	Major; A component is suspected of causing a fault	/SYS/
	fault.memory.intel.boot-retries-failed		
	fault.memory.intel.dimm.none		/SYS/MB
	fault.memory.controller.input-invalid		
	fault.memory.controller.init-failed		
sunHwTrapComponentFaultCleared	fault.memory.intel.boot-setup-init-failed	Informational; A component fault has been cleared	/SYS/
	fault.memory.intel.boot-retries-failed		
	fault.memory.intel.dimm.none		/SYS/MB
	fault.memory.controller.input-invalid		
	fault.memory.controller.init-failed		
<b>Service Processor Events</b>			
sunHwTrapComponentFault	fault.chassis.device.misconfig	Major; A component is suspected of causing a fault	/SYS/SP
	fault.sp.failed		
sunHwTrapComponentFaultCleared	fault.chassis.device.misconfig	Informational; A component fault has been cleared	
	fault.sp.failed		
<b>Environmental Events</b>			
sunHwTrapComponentFault	fault.chassis.env.temp.over-fail	Major; A component is suspected of causing a fault	/SYS/
sunHwTrapComponentFaultCleared	fault.chassis.env.temp.over-fail	Informational; A component fault has been cleared	/SYS/

**TABLE 4-8** SNMP Traps and Corresponding Oracle ILOM Events for Sun Server X2-4 (Continued)

SNMP Trap Message	ILOM Event Message	Severity and Description	Sensor Name
sunHwTrapTempCritThresholdExceeded	Lower critical threshold exceeded	Major; A temperature sensor has reported that its value has gone above an upper critical threshold setting or below a lower critical threshold setting	/SYS/MB/T_OUT /SYS/DBP/T_AMB
	Upper critical threshold exceeded	Major; A temperature sensor has reported that its value has gone above an upper critical threshold setting or below a lower critical threshold setting	/SYS/MB/T_OUT /SYS/T_AMB /SYS/DBP/T_AMB
sunHwTrapTempCritThresholdDeasserted	Lower critical threshold no longer exceeded	Informational; A temperature sensor has reported that its value is in the normal operating range	/SYS/MB/T_OUT /SYS/DBP/T_AMB
	Upper critical threshold no longer exceeded	Informational; A temperature sensor has reported that its value is in the normal operating range	/SYS/MB/T_OUT /SYS/T_AMB /SYS/DBP/T_AMB
sunHwTrapTempNonCriticalThresholdExceeded	Upper noncritical threshold exceeded	Minor; A temperature sensor has reported that its value has gone above an upper critical threshold setting or below a lower critical threshold setting	/SYS/MB/T_OUT /SYS/DBP/T_AMB
sunHwTrapTempOk	Upper noncritical threshold no longer exceeded	Informational; A temperature sensor has reported that its value is in the normal operating range	/SYS/MB/T_OUT /SYS/DBP/T_AMB
sunHwTrapTempFatalThresholdExceeded	Lower fatal threshold exceeded	Critical; A temperature sensor has reported that its value has gone above an upper fatal threshold setting or below a lower fatal threshold setting	/SYS/MB/T_OUT /SYS/DBP/T_AMB
	Upper fatal threshold exceeded	Critical; A temperature sensor has reported that its value has gone above an upper fatal threshold setting or below a lower fatal threshold setting	/SYS/MB/T_OUT /SYS/T_AMB /SYS/DBP/T_AMB

**TABLE 4-8** SNMP Traps and Corresponding Oracle ILOM Events for Sun Server X2-4 (Continued)

SNMP Trap Message	ILOM Event Message	Severity and Description	Sensor Name
sunHwTrapTempFatalThresholdDeasserted	Lower fatal threshold no longer exceeded	Informational; A temperature sensor has reported that its value has gone below an upper fatal threshold setting or above a lower fatal threshold setting	/SYS/MB/T_OUT
	Upper fatal threshold no longer exceeded		/SYS/DBP/T_AMB
<b>System Power Events</b>			
sunHwTrapComponentFault	fault.chassis.power.missing	Major; A component is suspected of causing a fault	/SYS/
	fault.chassis.power.overcurrent		
	fault.chassis.power.inadequate		
sunHwTrapComponentFaultCleared	fault.chassis.power.missing	Informational; A component fault has been cleared	/SYS/
	fault.chassis.power.overcurrent		
	fault.chassis.power.inadequate		
sunHwTrapPowerSupplyFault	fault.chassis.env.power.loss	Major; A power supply component is suspected of causing a fault	/SYS/PS
	fault.chassis.power.ac-low-line		
	fault.chassis.device.wrong		
sunHwTrapPowerSupplyFaultCleared	fault.chassis.env.power.loss	Informational; A power supply component fault has been cleared	/SYS/PS
	fault.chassis.power.ac-low-line		
	fault.chassis.device.wrong		

**TABLE 4-8** SNMP Traps and Corresponding Oracle ILOM Events for Sun Server X2-4 (Continued)

SNMP Trap Message	ILOM Event Message	Severity and Description	Sensor Name
sunHwTrapPowerSupplyError	Assert	Major; A power supply sensor has detected an error	/SYS/PWRBS
			/SYS/PSn/ V_IN_ERR /SYS/PSn/ V_IN_WARN /SYS/PSn/ V_OUT_ERR /SYS/PSn/ I_OUT_ERR /SYS/PSn/ I_OUT_WARN /SYS/PSn/T_ERR /SYS/PSn/ T_WARN /SYS/PSn/ FAN_ERR /SYS/PSn/ FAN_WARN /SYS/PSn/ERR
	Deassert		/SYS/PSn/ V_OUT_OK

**TABLE 4-8** SNMP Traps and Corresponding Oracle ILOM Events for Sun Server X2-4 (Continued)

SNMP Trap Message	ILOM Event Message	Severity and Description	Sensor Name
sunHwTrapPowerSupplyOk	Deassert	Informational; A power supply sensor has returned to its normal state	/SYS/PWRBS /SYS/PSn/ V_IN_ERR /SYS/PSn/ V_IN_WARN /SYS/PSn/ V_OUT_ERR /SYS/PSn/ I_OUT_ERR /SYS/PSn/ I_OUT_WARN /SYS/PSn/T_ERR/ /SYS/PSn/ T_WARN /SYS/PSn/ FAN_ERR /SYS/PSn/ FAN_WARN /SYS/PSn/ERR
	Assert		/SYS/PSn/ V_OUT_OK
sunHwTrapComponentError	ACPI_ON_WORKING ASSERT ACPI_ON_WORKING DEASSERT ACPI_SOFT_OFF ASSERT ACPI_SOFT_OFF DEASSERT	Major; A sensor has detected an error	/SYS/ACPI
<b>Entity Presence Events</b>			
UNKNOWN	ENTITY_PRESENT ASSERT	Informational	/SYS/MB/Pn/ PRSNT
	ENTITY_PRESENT DEASSERT		/SYS/MB/Pn/MRn/ PRSNT
	ENTITY_ABSENT ASSERT		/SYS/MB/PCIE <sub>n</sub> / PRSNT
	ENTITY_ABSENT DEASSERT		/SYS/MB/ PRSNT
	ENTITY_DISABLED ASSERT		/SYS/MB/ PCIE_CC/PRSNT
	ENTITY_DISABLED DEASSERT		

**TABLE 4-8** SNMP Traps and Corresponding Oracle ILOM Events for Sun Server X2-4 (Continued)

SNMP Trap Message	ILOM Event Message	Severity and Description	Sensor Name
<b>Fans, Hard Drives, and Physical Security Events</b>			
sunHwTrapComponentFault	fault.chassis.device.fan.column-fail fault.security.enclosure-open	Major; A component is suspected of causing a fault	/SYS
sunHwTrapComponentFaultCleared	fault.chassis.device.fan.column-fail fault.security.enclosure-open	Informational; A component fault has been cleared	/SYS/
UNKNOWN	Assert Deassert	Informational	/SYS/MB/PCIE <sub>n</sub> /WIDTH /SYS/ESMR/ESM/FAULT
sunHwTrapSecurityIntrusion	CHASSIS_INTRUSION ASSERT CHASSIS_INTRUSION DEASSERT	Major; An intrusion sensor has detected that someone may have physically tampered with the system	/SYS/INTSW



**TABLE 4-8** SNMP Traps and Corresponding Oracle ILOM Events for Sun Server X2-4 (Continued)

SNMP Trap Message	ILOM Event Message	Severity and Description	Sensor Name
sunHwTrapFanSpeedCritThreshholdExceeded	Lower critical threshold exceeded	Major; A fan speed sensor has reported that its value has gone above an upper critical threshold setting or below a lower critical threshold setting	/SYS/FB/FAN <i>n</i> /TACH
sunHwTrapFanSpeedCritThreshholdDeasserted	Lower critical threshold no longer exceeded	Informational; A fan speed sensor has reported that its value has gone below an upper critical threshold setting or above a lower critical threshold setting	
sunHwTrapFanSpeedFatalThreshholdExceeded	Lower fatal threshold exceeded	Critical; A fan speed sensor has reported that its value has gone above an upper fatal threshold setting or below a lower fatal threshold setting	
sunHwTrapFanSpeedFatalThreshholdDeasserted	Lower fatal threshold no longer exceeded	Informational; A fan speed sensor has reported that its value has gone below an upper fatal threshold setting or above a lower fatal threshold setting	

### System Chassis and I/O Events

**TABLE 4-8** SNMP Traps and Corresponding Oracle ILOM Events for Sun Server X2-4 (Continued)

SNMP Trap Message	ILOM Event Message	Severity and Description	Sensor Name
sunHwTrapComponentFault	fault.chassis.boot.ipmi-init-failed	Major; A component is suspected of causing a fault	/SYS/
	fault.io.quickpath.qpirc-init-failed		
	fault.io.quickpath.qpirc-failed		
	fault.io.quickpath.mrc-failed		
sunHwTrapComponentFaultCleared	fault.chassis.boot.ipmi-init-failed	Informational; A component fault has been cleared	/SYS/
	fault.io.quickpath.qpirc-init-failed		
	fault.io.quickpath.qpirc-failed		
	fault.io.quickpath.mrc-failed		

## PET Event Messages

Platform Event Trap (PET) event messages are generated by systems with Alert Standard Format (ASF) or an IPMI baseboard management controller. The PET events provide advance warning of possible system failures. For more information about the PET event messages that might occur on your system, see [TABLE 4-9](#).

**TABLE 4-9** PET Messages and Corresponding Oracle ILOM Events for Sun Server X2-4

PET Message	ILOM Event Message	Severity and Description	Sensor Name
<b>System Power Events</b>			
petTrapACPIPowerStateS5G2SoftOffAssert	SystemACPI 'ACPI_ON_WORKING'	Informational; System ACPI Power State S5/G2 (soft-off) was asserted	/SYS/ACPI
petTrapACPIPowerStateS5G2SoftOffDeassert	System ACPI Power State : ACPI : S5/G2: soft-off : Deasserted	Informational; System ACPI Power State S5/G2 (soft-off) was deasserted	
petTrapACPIPowerStateS0G0WorkingAssert	System ACPI Power State : ACPI : S0/G0: working : Asserted	Informational; System ACPI Power State S0/G0 (working)	
petTrapACPIPowerStateS0G0WorkingDeassert	System ACPI Power State : ACPI : S0/G0: working : Deasserted	Informational; System ACPI Power State S0/G0 (working) was deasserted	
petTrapPowerSupplyStateAssertedAssert	PowerSupply sensor DEASSERT	Informational; Power Supply is connected to AC Power	/SYS/PSn/ V_OUT_OK
petTrapPowerSupplyStateDeassertedAssert	PowerSupply sensor ASSERT	Warning; Power Supply is disconnected from AC Power	V_IN_ERR /SYS/PSn/ V_IN_WARN /SYS/PSn/ V_OUT_ERR /SYS/PSn/ I_OUT_ERR /SYS/PSn/ I_OUT_WARN /SYS/PSn/T_ERR /SYS/PSn/ T_WARN /SYS/PSn/ FAN_ERR /SYS/PSn/ FAN_WARN /SYS/PSn/ERR

**TABLE 4-9** PET Messages and Corresponding Oracle ILOM Events for Sun Server X2-4 (Continued)

PET Message	ILOM Event Message	Severity and Description	Sensor Name
<b>Entity Presence Events</b>			
petTrapEntityPresenceEntityPresentAssert	Entity Presence : PCIE1/PRSNT : Present : Asserted	Informational; The Entity identified by the Entity ID is present	/SYS/PCIE $n$ / PRSNT /SYS/PCIE_CC/ PRSNT
petTrapEntityPresenceEntityAbsentDeassert	Entity Presence : PCIE1/PRSNT : Absent : Deasserted		
petTrapEntityPresenceEntityAbsentAssert	Entity Presence : PCIE1/PRSNT : Absent : Asserted	Informational; The Entity identified by the Entity ID is absent	
petTrapEntityPresenceEntityPresentDeassert	Entity Presence : PCIE1/PRSNT : Present : Deasserted	Informational; The Entity identified by the Entity ID for the sensor is absent	
petTrapEntityPresenceEntityDisabledAssert	Entity Presence : PCIE1/PRSNT : Disabled : Asserted	Informational; The Entity identified by the Entity ID is present, but has been disabled	/SYS/PCIE4/ PRSNT /SYS/PCIE6/ PRSNT
petTrapEntityPresenceEntityDisabledDeassert	Entity Presence : PCIE1/PRSNT : Disabled : Deasserted	Informational; The Entity identified by the Entity ID is present and has been enabled	/SYS/PCIE_CC/ PRSNT
petTrapEntityPresenceDeviceInsertedAssert	Entity Presence : PS0/PRSNT : DevicePresent	Informational; A device is present or has been inserted	/SYS/PS $n$ /PRSNT /SYS/FB/FAN $n$ / PRSNT
petTrapEntityPresenceDeviceRemovedAssert	Entity Presence : PS0/PRSNT : DeviceAbsent	Informational; A device is absent or has been removed	/SYS/DBP/HDD $n$ / PRSNT

**TABLE 4-9** PET Messages and Corresponding Oracle ILOM Events for Sun Server X2-4 (Continued)

PET Message	ILOM Event Message	Severity and Description	Sensor Name
<b>Environmental Events</b>			
petTrapTemperatureUpperNonRecoverableGoingLowDeassert	Temperature Upper non-critical threshold has been exceeded	Major; Temperature has decreased below upper non-recoverable threshold	/SYS/MB/T_OUT /SYS/DBP/T_AMB /SYS/T_AMB
petTrapTemperatureUpperCriticalGoingLowDeassert	Temperature Lower non-critical threshold has been exceeded	Warning; Temperature has decreased below upper critical threshold	
petTrapTemperatureUpperNonRecoverableGoingHigh	Temperature Lower non-critical threshold no longer exceeded	Critical; Temperature has decreased below upper non-recoverable threshold	
petTrapTemperatureUpperCriticalGoingHigh	Temperature Lower fatal threshold has been exceeded	Major; Temperature has increased above upper critical threshold	
<b>Fans, Hard Drives, and Physical Security Events</b>			
petTrapPhysicalSecurityChassisIntrusionStateDeassertedAssert	Physical Security : INTSW : State Deasserted	Informational; Physical security: chassis intrusion alarm cleared	/SYS/INTSW
petTrapPhysicalSecurityChassisIntrusionStateAssertedAssert	Physical Security : INTSW : State Asserted	Warning; Physical security breach: chassis intrusion	
petTrapFanLowerCriticalGoingLow	Fan Lower fatal threshold has been exceeded	Major; Fan speed has decreased below lower critical threshold	/SYS/FB/FAN <i>n</i> / TACH
petTrapFanLowerCriticalGoingHighDeassert	Fan Lower fatal threshold no longer exceeded	Warning; Fan speed has increased above lower critical threshold	

**TABLE 4-9** PET Messages and Corresponding Oracle ILOM Events for Sun Server X2-4 (*Continued*)

<b>PET Message</b>	<b>ILOM Event Message</b>	<b>Severity and Description</b>	<b>Sensor Name</b>
petTrapDriveSlotDriveFaultAssert	Drive Slot : DBP/HDD0/STATE : Drive Fault : Asserted	Critical; HDD Fault has been detected. A corresponding HDD Fault LED is ON	DBP/HDDn/ STATE
petTrapDriveSlotDriveFaultDeassert	Drive Slot : DBP/HDD0/STATE : Drive Fault : Deasserted	Informational; HDD Fault has been cleared. An HDD Fault LED which was ON is now OFF	
petTrapDriveSlotPredictiveFailureAssert	Drive Slot : DBP/HDD0/STATE : Predictive Failure : Asserted	Major; HDD Predictive Failure has been detected	
petTrapDriveSlotReadyToRemoveAssert	Drive Slot : DBP/HDD0/STATE : Hot Spare : Asserted	Informational: A drive has been unmounted and is ready to be physically removed. A corresponding OK-to-Remove LED is ON	
petTrapDriveSlotReadyToRemoveDeassert	Drive Slot : DBP/HDD0/STATE : Hot Spare : Deasserted	Informational; A drive is no longer ready to be physically removed. It has either been removed or mounted again. A corresponding OK-to-Remove LED is OFF	
petTrapDriveSlotPredictiveFailureDeassert	Drive Slot : DBP/HDD0/STATE : Predictive Failure : Deasserted	Informational; Hard Disk Predictive Failure state has been cleared	

# Getting Server Firmware and Software

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

- [“Firmware and Software Updates”](#) on page 39
- [“Firmware and Software Access Options”](#) on page 40
- [“Available Software Release Packages”](#) on page 40
- [“Accessing Firmware and Software”](#) on page 41
- [“Installing Updates”](#) on page 45

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## 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.

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# Firmware and Software Access Options

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

- **Oracle Hardware Installation Assistant** – Oracle Hardware Installation Assistant is a factory-installed feature for the Sun Server X2-4 that allows you to easily update server firmware and software.
- For more information about Oracle Hardware Installation Assistant, refer to the *Oracle Hardware Installation Assistant 2.5 User's Guide for x86 Servers* at <http://www.oracle.com/pls/topic/lookup?ctx=hia>.
- **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 <http://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 41.

- **Physical Media Request (PMR)** – You can request a DVD that contains any of the downloads (patches) that are available from My Oracle Support.

For information see, “[Requesting Physical Media](#)” on page 42.

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# 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. These can also be requested through a physical media request (PMR).



Package Name	Description	When to Download This Package
X4470 M2 SERVER SW 1.3 – ILOM_AND_BIOS	Oracle ILOM and BIOS	You need the latest platform firmware.
X4470 M2 SERVER SW 1.3 – ORACLE_HARDWARE_INSTALLATION_ASSISTANT	Oracle Hardware Installation Assistant recovery and ISO update image.	You need to manually recover or update Oracle Hardware Installation Assistant.
X4470 M2 SERVER SW 1.3 – TOOLS_DRIVERS_AND_FIRMWARE_DVD	Includes the tools and drivers and platform firmware. This DVD image does not include Oracle VTS.	You need to update a combination of system firmware and OS-specific software.
X4470 M2 SERVER SW 1.0 - DIAGNOSTICS	Oracle VTS diagnostics image.	You need the Oracle VTS diagnostics image.

## Accessing Firmware and Software

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

- “Download Firmware and Software Using My Oracle Support” on page 41
- “Requesting Physical Media” on page 42

### ▼ Download Firmware and Software Using My Oracle Support

1. Go to the following web site: <http://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 X2-4) until a match appears.

**6. In the Release field, select a software release from the drop-down list.**

Expand the folders to see all available software releases.

**7. Click Search.**

The software release comprises a set of downloads (patches).

**8. To select a patch, click the check box next to the patch name (you can select more than one patch).**

A pop-up action panel appears. The panel contains several action options.

**9. To download the update, click Download in the pop-up panel.**

The download begins automatically.

## Requesting Physical Media

If your processes do not allow downloads from Oracle web sites, you can access the latest software release through a physical media request (PMR).

The following table describes the high-level tasks for making a physical media request and provides links for further information.

Description	Link
Gather information you will need to provide for the request.	<a href="#">"Gathering Information for the Physical Media Request" on page 42</a>
Make the physical media request either online or by calling Oracle Support.	<a href="#">"Request Physical Media (Online)" on page 43</a> <a href="#">"Request Physical Media (By Phone)" on page 44</a>

## Gathering Information for the Physical Media Request

You must have a warranty or support contract for your server in order to make a physical media request (PMR).

Before you make the PMR, gather the following information:

- **Obtain product name, software release version, and patches required.** It will be easier to make the request if you know the latest software release and the name of the download packages (patches) that you are requesting.
  - *If you have access to My Oracle Support* – Follow the instructions in “[Download Firmware and Software Using My Oracle Support](#)” on page 41 to determine the latest software release and view available downloads (patches). After viewing the list of patches, you can navigate away from the Patch Search Results page, if you do not want to continue with the download steps.
  - *If you do not have access to My Oracle Support* – Use the information in “[Available Software Release Packages](#)” on page 40 to determine which packages you want, then request those packages for the latest software release.
- **Have the shipping information ready.** You will need to provide a contact, phone number, email address, company name, and shipping address as part of the request.

## ▼ Request Physical Media (Online)

Gather the information described in “[Gathering Information for the Physical Media Request](#)” on page 42 before making the request.

1. **Go to the following web site:** <http://support.oracle.com>.
2. **Sign in to My Oracle Support.**
3. **Click on the Contact Us link in the upper right corner of the page.**
4. **In the Request Description section, fill in the following:**
  - a. **In the Request Category drop-down menu, select the following:**  
Software and OS Media Requests
  - b. **In the Request Summary field, type:** PMR for latest software release for Sun Server X2-4.
5. **In the Request Details section, answer the questions shown in the following table:**

Question	Your Answer
Is this a physical software media shipment request?	Yes
Which product line does the media request involve?	Sun Products
Are you requesting a required password for a patch download?	No

Question	Your Answer
Are you requesting a patch on CD/DVD?	Yes
If requesting a patch on CD/DVD, please provide the patch number and OS/platform?	Enter the patch number for each download that you want from the software release.
List the product name and version requested for the physical media shipment?	<i>Product Name:</i> Sun Server X2-4 <i>Version:</i> Latest software release number
What is the OS/platform for the requested media?	If you are requesting OS-specific downloads, specify the OS here. If you are requesting system firmware only, enter Generic.
Are any languages required for this shipment?	No

**6. Fill in the Ship-To contact, phone number, email address, company name, and shipping address information.**

**7. Click Next.**

**8. In the Upload Files, Relevant Files screen, click next.**

You do not need to supply any information.

**9. In the Related Knowledge screen, review Knowledge Articles applicable to your request.**

**10. Click Submit.**

## ▼ Request Physical Media (By Phone)

Gather the information described in “[Gathering Information for the Physical Media Request](#)” on page 42 before making the request.

**1. Call Oracle support, using the appropriate number from the Oracle Global Customer Support Contacts Directory at:**

<http://www.oracle.com/us/support/contact-068555.html>

**2. Tell Oracle support that you want to make a physical media request (PMR) for the Sun Server X2-4.**

- If you are able to access the specific software release and patch number information from My Oracle Support, provide this information to the support representative.
- If you are unable to access the software release information, request the latest software release for the Sun Server X2-4.

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# Installing Updates

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

- “Installing Firmware” on page 45
- “Installing Hardware Drivers and OS Tools” on page 46

## Installing Firmware

Updated firmware can be installed using one of the following:

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

For more information about Oracle Hardware Installation Assistant, refer to the *Oracle Hardware Installation Assistant 2.5 User’s Guide for x86 Servers* at:  
<http://www.oracle.com/pls/topic/lookup?ctx=hia>.

- **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/us/products/enterprise-manager/044497.html>.

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

- **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 Oracle Lights Out Manager (ILOM) 3.0 Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ilom30>.

You can access the Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ilom31>.

# 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/us/products/enterprise-manager/044497.html>.

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

For more information, refer to your operating system documentation.

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