

**Sun Server X3-2L**  
**(formerly Sun Fire X4270 M3)**

Administration Guide



Part No.: E23402-10  
April 2014

Copyright © 2012, 2014, Oracle and/or its affiliates. All rights reserved.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software or related software documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, the following notice is applicable:

U.S. GOVERNMENT END USERS. Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information on content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services.

---

Copyright © 2012, 2014, Oracle et/ou ses affiliés. Tous droits réservés.

Ce logiciel et la documentation qui l'accompagne sont protégés par les lois sur la propriété intellectuelle. Ils sont concédés sous licence et soumis à des restrictions d'utilisation et de divulgation. Sauf disposition de votre contrat de licence ou de la loi, vous ne pouvez pas copier, reproduire, traduire, diffuser, modifier, breveter, transmettre, distribuer, exposer, exécuter, publier ou afficher le logiciel, même partiellement, sous quelque forme et par quelque procédé que ce soit. Par ailleurs, il est interdit de procéder à toute ingénierie inverse du logiciel, de le désassembler ou de le décompiler, excepté à des fins d'interopérabilité avec des logiciels tiers ou tel que prescrit par la loi.

Les informations fournies dans ce document sont susceptibles de modification sans préavis. Par ailleurs, Oracle Corporation ne garantit pas qu'elles soient exemptes d'erreurs et vous invite, le cas échéant, à lui en faire part par écrit.

Si ce logiciel, ou la documentation qui l'accompagne, est concédé sous licence au Gouvernement des Etats-Unis, ou à toute entité qui délivre la licence de ce logiciel ou l'utilise pour le compte du Gouvernement des Etats-Unis, la notice suivante s'applique :

U.S. GOVERNMENT END USERS. Oracle programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, delivered to U.S. Government end users are "commercial computer software" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, use, duplication, disclosure, modification, and adaptation of the programs, including any operating system, integrated software, any programs installed on the hardware, and/or documentation, shall be subject to license terms and license restrictions applicable to the programs. No other rights are granted to the U.S. Government.

Ce logiciel ou matériel a été développé pour un usage général dans le cadre d'applications de gestion des informations. Ce logiciel ou matériel n'est pas conçu ni n'est destiné à être utilisé dans des applications à risque, notamment dans des applications pouvant causer des dommages corporels. Si vous utilisez ce logiciel ou matériel dans le cadre d'applications dangereuses, il est de votre responsabilité de prendre toutes les mesures de secours, de sauvegarde, de redondance et autres mesures nécessaires à son utilisation dans des conditions optimales de sécurité. Oracle Corporation et ses affiliés déclinent toute responsabilité quant aux dommages causés par l'utilisation de ce logiciel ou matériel pour ce type d'applications.

Oracle et Java sont des marques déposées d'Oracle Corporation et/ou de ses affiliés. Tout autre nom mentionné peut correspondre à des marques appartenant à d'autres propriétaires qu'Oracle.

Intel et Intel Xeon sont des marques ou des marques déposées d'Intel Corporation. Toutes les marques SPARC sont utilisées sous licence et sont des marques ou des marques déposées de SPARC International, Inc. AMD, Opteron, le logo AMD et le logo AMD Opteron sont des marques ou des marques déposées d'Advanced Micro Devices. UNIX est une marque déposée d'The Open Group.

Ce logiciel ou matériel et la documentation qui l'accompagne peuvent fournir des informations ou des liens donnant accès à des contenus, des produits et des services émanant de tiers. Oracle Corporation et ses affiliés déclinent toute responsabilité ou garantie expresse quant aux contenus, produits ou services émanant de tiers. En aucun cas, Oracle Corporation et ses affiliés ne sauraient être tenus pour responsables des pertes subies, des coûts occasionnés ou des dommages causés par l'accès à des contenus, produits ou services tiers, ou à leur utilisation.



Adobe PostScript

# Contents

---

## **Using This Documentation ix**

## **Planning the System Management Environment 1**

- Choosing Tools for Single System Management 2
- Choosing Tools for Multiple System Management 3
- System Management Tools Overview 3
  - Oracle System Assistant 4
  - Oracle Integrated Lights Out Manager (Oracle ILOM) 5
  - Oracle Hardware Management Pack 6
- Common System Management Tasks 8
- Common System Administrative Tasks 9
- Evaluating the Server Environment 12
  - Planning for Operating System Installation 12
  - Planning for System Component Updating and Monitoring 13
  - Planning for Modular System Management 14
- Installing System Management Tools 15
- System Management Documentation 15

## **Accessing System Management Tools 17**

- Accessing Oracle System Assistant 17
  - ▼ Enable Oracle System Assistant From BIOS 18
  - ▼ Access Oracle System Assistant at Startup 19

- ▼ Access Oracle System Assistant Using the Oracle ILOM Web Interface 21
- ▼ Access Oracle System Assistant Using the Oracle ILOM CLI 23

#### Accessing Oracle ILOM 23

- ▼ Access Oracle ILOM Using the Web Interface 24
- ▼ Access Oracle ILOM Using the CLI 25

#### Accessing Oracle Hardware Management Pack 25

- ▼ Access Oracle Hardware Management Pack From Oracle System Assistant 26
- ▼ Access Oracle Hardware Management Pack From My Oracle Support 27

### **Setting Up Software and Firmware 29**

- ▼ Set Up Software and Firmware Using Oracle System Assistant 29
- ▼ Set Up Software and Firmware Using Oracle ILOM 30
- ▼ Set Up Software and Firmware Using Oracle Hardware Management Pack 32

### **Setting Up the Server Using Oracle System Assistant 35**

#### Organization of Oracle System Assistant 37

#### Configuring the Server Using Oracle System Assistant 38

- ▼ View Oracle System Assistant ReadMe File 39
- ▼ Exit From Oracle System Assistant 40
- ▼ View System Information 41
- ▼ View System Inventory Information 42
- ▼ Configure Network Settings 43
- ▼ Get Platform Software Release Updates 44
- ▼ Configure MOS to Enable Oracle System Assistant Updates 46
- ▼ Update Firmware 48
- ▼ Configure Hardware for RAID 53
- ▼ Configure Hardware for the Oracle ILOM SP 55



▼ Install an Operating System	62
▼ Set Preferences to Disable Oracle System Assistant	65
▼ Set Preferences for Keyboard Language	67
▼ Perform Advanced Tasks to Access Oracle System Assistant Shell	68
▼ Perform Advanced Tasks to Check Media Integrity	70
▼ View Files on the Oracle System Assistant USB Flash Drive	71
▼ View Documentation From Oracle System Assistant	72
Mounting the Oracle System Assistant USB Flash Drive	73
▼ Mount the Oracle System Assistant USB Flash Drive on Oracle VM 3.0	74
▼ Mount the Oracle System Assistant USB Flash Drive on a Linux Operating System	75
▼ Mount the Oracle System Assistant USB Flash Drive on an Oracle Solaris 10 Operating System	76
Troubleshooting Oracle System Assistant	77
▼ Verify Oracle System Assistant Is Installed	78
▼ Troubleshoot Oracle System Assistant Launch From Oracle ILOM	80
▼ Restore Oracle System Assistant	81
Accessing the Oracle System Assistant Filesystem	86
▼ Access the Oracle System Assistant Filesystem	86

## **Managing the Server Using Oracle ILOM 89**

Oracle ILOM Features	89
Oracle ILOM Features for Oracle x86 Servers	90
Sideband Management	92
Power Control Policies	92
Power Management Policy	93
Local Host Interconnect Management Connection	94
Diagnostics Using Pc-Check and NMI	94
Control Next Boot Device	95

FRU TLI Auto-Update	95
Switch Serial Port Output to Host Management Console	96
Back Up and Restore BIOS Configuration	96
Set PCIe Cooling Mode	96
Administer Open Problems and Clear Server Faults	97

## **Configuring RAID 99**

Supported HBA Disk Controllers	99
RAID Configuration Options	100
Creating a RAID Volume Before Installing an Operating System	101
Creating a RAID Volume After Installing an Operating System	101
Using Oracle ILOM to Monitor Storage Devices	102

## **Setting Up BIOS Configuration Parameters 105**

Managing the BIOS Configuration	105
Accessing the BIOS Setup Utility	106
BIOS Setup Utility Menus	106
BIOS Key Mappings	107
▼ Access BIOS Setup Utility Menus	108
▼ Navigate BIOS Setup Utility Menus	109
Using Legacy BIOS or UEFI	110
Selecting Legacy BIOS or UEFI Boot Mode	111
Switching Between Legacy BIOS and UEFI	112
UEFI Boot Mode Advantages	112
Configuration Utilities for Add-In Cards	113
Using BIOS for Resource Allocation	114
Legacy Option ROM Allocation	114
IO Resource Allocation	115
Common BIOS Setup Utility Tasks	116

- ▼ Verify BIOS Factory Default Settings 116
- ▼ Select Legacy BIOS or UEFI Boot Mode 117
- ▼ Select the Boot Device 119
- ▼ Configure iSCSI Virtual Drives 120
- ▼ Enable or Disable Oracle System Assistant 128
- ▼ Configure TPM Support 129
- ▼ Configure SP Network Settings 132
- ▼ Configure Option ROM Settings 134
- ▼ Configure IO Resource Allocation 136
- ▼ Exit BIOS Setup Utility 136

## **BIOS Setup Utility Menu Options 139**

- BIOS Main Menu Selections 140
- BIOS Advanced Menu Selections 145
- BIOS IO Menu Selections 156
- BIOS Boot Menu Selections 161
- UEFI Driver Control Menu Selections 165
- BIOS Save & Exit Menu Selections 167

## **Monitoring Components and Identifying SNMP Messages 169**

- Monitoring Component Health and Faults Using Oracle ILOM 169
- Monitoring System Components 170
  - System Chassis Components 171
  - Cooling Unit Components 173
  - Disk Backplane Components 174
  - Memory Device Components 174
  - Power Unit Components 175
  - Processor Components 176
  - System Board Components 177

System Firmware Components	179
Hard Disk Drive Components	179
Identifying SNMP Trap Messages	181
<b>Getting Server Firmware and Software</b>	<b>195</b>
Firmware and Software Updates	195
Firmware and Software Access Options	196
Software Releases	197
Getting Firmware and Software from MOS or PMR	198
▼ Download Firmware and Software Using My Oracle Support	198
Requesting Physical Media	199
Gathering Information for the Physical Media Request	200
▼ Request Physical Media (Online)	200
▼ Request Physical Media (By Phone)	202
Installing Updates Using Other Methods	202
<b>Index</b>	<b>203</b>

# Using This Documentation

---

This administration guide describes the tools that are available to manage the Sun Server X3-2L from Oracle, and the Oracle ILOM features specific to the server.

---

**Note** – The Sun Server X3-2L was formerly named the Sun Fire X4270 M3 server. This former name might still appear in the software. The new product name does not indicate any change in system features or functionality.

---

This document is written for technicians, system administrators, authorized service providers, and users who have experience configuring and administering servers.

This section describes how to obtain the latest software and firmware, documentation and feedback, and support and accessibility information.

- [“Getting the Latest Software and Firmware” on page ix](#)
- [“About This Documentation” on page x](#)
- [“Related Documentation” on page x](#)
- [“Feedback” on page x](#)
- [“Access to Oracle Support” on page xi](#)

---

## 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.

You can obtain the latest version in one of three ways:

- Oracle System Assistant – This is a new factory-installed option for Oracle x86 servers. It has all the tools and drivers you need and is built into the server.
- My Oracle Support: <http://support.oracle.com>
- Physical media request

For more information, see “Getting Server Firmware and Software” on page 195.

---

## About This Documentation

This documentation set is available in both PDF and HTML formats. The information is presented in topic-based organization (similar to online help) and therefore does not include chapters, appendices, or section numbering.

A PDF version that includes all information on a particular topic subject (such as hardware installation or product notes) can be generated by clicking the PDF button in the upper left corner of the HTML page.

---

## Related Documentation

Documentation	Link
All Oracle documentation	<a href="http://www.oracle.com/documentation">http://www.oracle.com/documentation</a>
Sun Server X3-2L	<a href="http://www.oracle.com/pls/topic/lookup?ctx=SunServerX3-2L">http://www.oracle.com/pls/topic/lookup?ctx=SunServerX3-2L</a>
Oracle Integrated Lights Out Manager (Oracle ILOM) 3.1	<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 2.2	<a href="http://www.oracle.com/pls/topic/lookup?ctx=ohmp">http://www.oracle.com/pls/topic/lookup?ctx=ohmp</a>

---

## Feedback

You can provide feedback on this documentation at:

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

---

## Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.





# Planning the System Management Environment

---

**Note** – The Sun Server X3-2L was formerly named the Sun Fire X4270 M3 server. This former name might still appear in the software. The new product name does not indicate any change in system features or functionality.

---

This section includes information about the management tools that are available to manage a single Oracle server or multiple Oracle servers, and how to select the best tool to use.

The following topics are discussed.

Description	Links
Review descriptions of the tools available to manage a single server.	<a href="#">“Choosing Tools for Single System Management” on page 2</a>
Review descriptions of tools available to manage multiple servers.	<a href="#">“Choosing Tools for Multiple System Management” on page 3</a>
Review advantages of the system management tools.	<a href="#">“System Management Tools Overview” on page 3</a>
View a list of common system management tasks to see which tool you can use.	<a href="#">“Common System Management Tasks” on page 8</a>
View a list of common system administrative tasks to see which tool you can use.	<a href="#">“Common System Administrative Tasks” on page 9</a>
Evaluate which tool fits your server environment.	<a href="#">“Evaluating the Server Environment” on page 12</a>
Review how system management tools are installed.	<a href="#">“Installing System Management Tools” on page 15</a>
Locate system management documentation.	<a href="#">“System Management Documentation” on page 15</a>

## Related Information

- [“Accessing System Management Tools” on page 17](#)

---

# Choosing Tools for Single System Management

A data center administrator can use single system management tools for local management or for remote access management over a network. In addition, single system management tools provide interfaces for integrating with other Oracle enterprise tools, as well as third-party management applications.

Use the following system management tools to manage Oracle servers.

Tool	Description	See:
Oracle System Assistant	Embedded setup tool that helps you to locally or remotely configure and update server firmware and software, and to install supported operating systems.	<a href="#">“Oracle System Assistant” on page 4</a>
Oracle Integrated Lights Out Manager (Oracle ILOM)	Embedded service processor utility used to configure and manage server components. Oracle ILOM enables you to locally or remotely connect to a dedicated network port, a sideband port, or a local serial port.	<a href="#">“Oracle Integrated Lights Out Manager (Oracle ILOM)” on page 5</a>
Oracle Hardware Management Pack	Add-on software pack that enables you to monitor hardware through the host operating system either remotely using SNMP, or locally using command-line interface tools.	<a href="#">“Oracle Hardware Management Pack” on page 6</a>

## Related Information

- [“System Management Tools Overview” on page 3](#)
- [“Evaluating the Server Environment” on page 12](#)
- [“Accessing System Management Tools” on page 17](#)

---

# Choosing Tools for Multiple System Management

If you need to perform system management functions across multiple systems simultaneously, you should consider using Oracle Enterprise Manager Ops Center. Oracle Enterprise Manager Ops Center might be included with your server as part of a server support contract. You also can order Oracle Enterprise Manager Ops Center software from Oracle.

Oracle Enterprise Manager Ops Center is a highly scalable, unified management platform for physical and virtual environments. Use Oracle Enterprise Manager Ops Center to manage multiple Oracle x86 and SPARC systems that are distributed throughout a global data center, and to integrate those systems with existing tools sets. Oracle Enterprise Manager Ops Center facilitates many aspects of compliance reporting (ITIL) and data center automation, enabling you to manage thousands of systems simultaneously.

Refer to the Oracle Enterprise Manager Ops Center product information at:

<http://www.oracle.com/technetwork/oem/ops-center/index.html>

## Related Information

- [“System Management Tools Overview” on page 3](#)

---

# System Management Tools Overview

These sections briefly describe the following system management tools:

- [“Oracle System Assistant” on page 4](#)
- [“Oracle Integrated Lights Out Manager \(Oracle ILOM\)” on page 5](#)
- [“Oracle Hardware Management Pack” on page 6](#)

## Related Information

- [“Common System Management Tasks” on page 8](#)
- [“Common System Administrative Tasks” on page 9](#)
- [“Evaluating the Server Environment” on page 12](#)

- “Installing System Management Tools” on page 15

## Oracle System Assistant

Oracle System Assistant allows you to get the latest software and firmware updates, update firmware, configure hardware, and install supported operating systems. Oracle System Assistant is a management tool that integrates Oracle’s system management products and related software.

It is highly recommended that you use Oracle System Assistant to update your system to the latest software release before you use the system. You can get the latest available system BIOS, Oracle ILOM, firmware, and drivers from Oracle by performing the Get Updates task in Oracle System Assistant. For instructions on how to use the Get Updates task, see “Get Platform Software Release Updates” on page 44. An Internet connection is required.

You also can download the latest firmware and software updates from My Oracle Support at <http://support.oracle.com>. For information about downloading firmware and software from My Oracle Support, see “Getting Server Firmware and Software” on page 195.

You can start Oracle System Assistant from the BIOS or from Oracle ILOM. Oracle System Assistant then displays a graphical user interface application from which you can access features and complete tasks with or without an operating system installed on the server. After the operating system is running on the server, the tools, drivers, and documentation appear as files on a typical storage device, allowing you to use Oracle System Assistant as resource media.

With Oracle System Assistant, you can:

- Get the latest available system BIOS, Oracle ILOM, firmware, and drivers from Oracle (an Internet connection is required).
- Update system BIOS, Oracle ILOM, and Oracle-certified device drivers for optional accessory cards and other system hardware.
- Configure RAID 0 or RAID 1 for servers that contain a supported disk controller.
- Configure the Oracle ILOM service processor, including modifying identification information; configuring network settings (IPv4 and IPv6) and DNS; adding, deleting, or modifying users; and setting the service processor clock.
- Install supported operating systems with the latest drivers and supported tools.
- Display system overview and hardware inventory information.
- Set the keyboard language.
- Access the Oracle System Assistant (Linux) shell terminal window allowing use of the runtime environment.

- Access Oracle Hardware Management Pack (using the Oracle System Assistant shell).
- Access product documentation.

Oracle System Assistant is delivered on a storage device embedded in the system as an integral part of your server, and is ready to use as soon as you power on. This embedded storage device includes everything you need to start using the server with your choice of supported operating system and hardware. You provide the operating system installation media, Oracle System Assistant provides everything else.

Oracle System Assistant components are updated online. The embedded storage drive is factory configured with a server-specific version of Oracle System Assistant that you maintain as such by using an online update feature for all components. In addition, the components can be updated using an UPDATER ISO image that you can obtain from the My Oracle Support web site.

The components of Oracle System Assistant include:

- Oracle System Assistant application
- Operating system-specific software, drivers, and tools
- Server-specific firmware
- Oracle Hardware Management Pack
- Oracle System Assistant (Linux) command-line environment
- Server-specific and related documentation

Oracle continually strives to improve its products. To send comments about Oracle System Assistant, contact `server-sysmgmt-feedback_ww@oracle.com`.

### **Related Information**

- [“Setting Up the Server Using Oracle System Assistant” on page 35](#)

## **Oracle Integrated Lights Out Manager (Oracle ILOM)**

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/technetwork/oem/ops-center/index.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>

## Related Information

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

## 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.

System Management Task From Host OS	CLI Tool
Configure BIOS settings, device boot order, and some SP settings.	ubiosconfig
Update Oracle ILOM and BIOS.	fwupdate
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.	ilomconfig
View or create RAID volumes on storage drives that are attached to RAID controllers, including storage arrays.	raidconfig
Monitor the health of the system.	hwmgmtcli

## Related Information

- Oracle Hardware Management Pack Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ohmp>

---

# 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.

Task	Oracle System Assistant	Oracle ILOM	Oracle Hardware Management Pack
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

## Related Information

- [“System Management Tools Overview” on page 3](#)
- [“Evaluating the Server Environment” on page 12](#)
- [“Installing System Management Tools” on page 15](#)



# Common System Administrative Tasks

The following table includes information about common administrative tasks that you can perform using the system management tools.

Task	Oracle System Assistant	Oracle ILOM	Oracle Hardware Management Pack	Other
Set up software and firmware.	<a href="#">“Set Up Software and Firmware Using Oracle System Assistant” on page 29</a>	<a href="#">“Set Up Software and Firmware Using Oracle ILOM” on page 30</a>	<a href="#">“Set Up Software and Firmware Using Oracle Hardware Management Pack” on page 32</a>	Not applicable
Set power-on and cooling policies.	Not applicable	<a href="#">“Managing the Server Using Oracle ILOM” on page 89</a>	Not applicable	Not applicable
Update BIOS or Oracle ILOM firmware.	Update Firmware	CLI: load Web interface: ILOM Administration > Maintenance > Firmware Upgrade	fwupdate	Not applicable
Update HBA and expander firmware.	Update Firmware	Not applicable	fwupdate	Not applicable
Configure a preinstalled OS.	Not applicable	Not applicable	Not applicable	<a href="#">Sun Server X3-2L Installation Guide, “About Server Features and Components” on page 5</a>
Install Linux OS.	Install OS	Not applicable	Not applicable	<a href="#">Sun Server X3-2L Installation Guide for Linux Operating Systems, “About Linux Operating System Installs” on page 1</a>

<b>Task</b>	<b>Oracle System Assistant</b>	<b>Oracle ILOM</b>	<b>Oracle Hardware Management Pack</b>	<b>Other</b>
Install Windows OS.	Install OS	Not applicable	Not applicable	<i>Sun Server X3-2L Installation Guide for Windows Operating Systems, "About Microsoft Windows Server Operating System Installs" on page 1</i>
Install Oracle VM software.	Install OS	Not applicable	Not applicable	<i>Sun Server X3-2L Installation Guide for Oracle VM, "About Oracle VM Installs" on page 1</i>
Install Oracle Solaris OS.	Not applicable	Not applicable	Not applicable	<i>Sun Server X3-2L Installation Guide for Oracle Solaris Operating System, "About Oracle Solaris Operating System Installs" on page 1</i>
Install VMware ESXi software.	Not applicable	Not applicable	Not applicable	<i>Sun Server X3-2L Installation Guide for VMware ESXi, "About VMware ESXi Installs" on page 1</i>
Display server SP IP address.	System Overview	CLI: show /System ilom_address Web interface: System Information > Summary	Not applicable	Not applicable
Display the host MAC address.	System Overview	CLI: show /System host_primary_mac _address Web interface: System Information > Summary	Not applicable	Not applicable

Task	Oracle System Assistant	Oracle ILOM	Oracle Hardware Management Pack	Other
Configure Oracle ILOM network settings.	Configure Hardware > Service Processor Configuration	CLI: set /SP/network <property>=<value> Web interface: ILOM Administration > Network Settings	ilomconfig	Not applicable
Configure RAID.	Configure Hardware > RAID Configuration	Not applicable	raidconfig	<a href="#">“Configuring RAID” on page 99</a>
Power on the server remotely.	Not applicable	CLI: start /System Web interface: System Information > Summary	Not applicable	Not applicable
Power off the server remotely.	Not applicable	CLI: stop /System Web interface: System Information > Summary	Not applicable	Not applicable
Reset the SP to default values.	Not applicable	CLI: set /SP reset_to_default s=all Web interface: ILOM Administration > Configuration Management > Reset Defaults	ilomconfig	Not applicable
Monitor hardware components for faults.	Not applicable	CLI: show /System/Open_Pro blems Web interface: System Information	hwmgmtcli Hardware Management Agent	Not applicable

## Related Information

- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ilom31>
- Oracle Hardware Management Pack Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ohmp>

- *Sun Server X3-2L Installation Guide, “About the Installation Procedure” on page 1*
- 

## Evaluating the Server Environment

This section can help you to decide which type of system management tool or combination of tools is best for your server environment.

The evaluation covers the following information:

- “Planning for Operating System Installation” on page 12
- “Planning for System Component Updating and Monitoring” on page 13
- “Planning for Modular System Management” on page 14

### Related Information

- “System Management Tools Overview” on page 3
- “Common System Management Tasks” on page 8
- “Common System Administrative Tasks” on page 9
- “Installing System Management Tools” on page 15

## Planning for Operating System Installation

Most of the system management tools will work with most operating systems that are supported for Oracle servers. However, there are some exceptions that are important to note. See the following table for detailed information.

For a list of the supported operating systems for your server, refer to the *Sun Server X3-2L Product Notes* at: <http://www.oracle.com/pls/topic/lookup?ctx=SunServerX3-2L>.

System Management Tool	Operating System Limitations
Oracle System Assistant	<p>Using Oracle System Assistant, you can install Windows and Linux (Oracle Linux, Red Hat Enterprise Linux, SUSE Linux Enterprise Server) operating systems, as well as Oracle VM software.</p> <p>If you have Oracle Solaris or VMware ESXi installed on the server, you can update firmware and perform additional system management tasks.</p>
Oracle Integrated Lights Out Manager (Oracle ILOM)	There are no operating system limitations with Oracle ILOM, because the software runs on the system service processor, not on the operating system.
Oracle Hardware Management Pack	<p>To confirm which operating systems are supported with the Oracle Hardware Management Pack components, refer to the Support Matrix at:</p> <p><a href="http://www.oracle.com/technetwork/server-storage/servermgmt/tech/hardware-management-pack/index.html">http://www.oracle.com/technetwork/server-storage/servermgmt/tech/hardware-management-pack/index.html</a>.</p>

## Related Information

- [“System Management Tools Overview” on page 3](#)

# Planning for System Component Updating and Monitoring

Use the system management tools to update or monitor server software or components.

The easiest way to obtain and update firmware and software is by using Oracle System Assistant. See [“Set Up Software and Firmware Using Oracle System Assistant” on page 29](#).

Alternatively, you can obtain the latest firmware and software from the My Oracle Support web site or by requesting physical media. For more information, see [“Getting Server Firmware and Software” on page 195](#).

The following table lists the main functions of each tool.

System Management Tool	Update Functions	Monitoring Functions
Oracle System Assistant	Updates and configures Oracle ILOM and BIOS firmware. Updates and configures HBA and expander firmware. Assists in operating system and driver installation. Configures RAID.	Provides minimal system status information.
Oracle Integrated Lights Out Manager (Oracle ILOM)	Updates Oracle ILOM and BIOS firmware.	Monitors component status and reports faults.
Oracle Hardware Management Pack	Updates and configures Oracle ILOM and BIOS firmware. Updates HBA and expander firmware. Configures RAID.	Monitors component status and reports faults.

### Related Information

- [“System Management Tools Overview” on page 3](#)

## Planning for Modular System Management

You can use all of the system management tools to manage modular systems (blades) or rack servers. However, only Oracle ILOM can be used to manage blade server modules from both the chassis monitoring module (CMM) of the modular system and blade server interfaces.

### Related Information

- [“System Management Tools Overview” on page 3](#)

---

# Installing System Management Tools

The following table describes how you can install the system management software tools.

System Management Tool	How to Access the Tool
Oracle System Assistant	Preinstalled. Embedded in the server. No installation required.
Oracle Integrated Lights Out Manager (Oracle ILOM)	Preinstalled. Embedded on system service processor. No installation required.
Oracle Hardware Management Pack	Get from Oracle System Assistant or download from <a href="http://www.oracle.com/goto/system-management">http://www.oracle.com/goto/system-management</a> .

## Related Information

- [“Accessing System Management Tools” on page 17](#)
- [“Getting Server Firmware and Software” on page 195](#)

---

# System Management Documentation

The following table describes where you can find additional documentation for the system management tools.

System Management Tool	Documentation Location
Oracle System Assistant	Refer to the Oracle System Assistant online Help. Documentation for Oracle System Assistant is within this Administration Guide and other guides that are part of the server Documentation Library. <a href="#">“View Documentation From Oracle System Assistant” on page 72</a>
Oracle Integrated Lights Out Manager (Oracle ILOM)	<a href="http://www.oracle.com/pls/topic/lookup?ctx=ilom31">http://www.oracle.com/pls/topic/lookup?ctx=ilom31</a>

System Management Tool	Documentation Location
Oracle Hardware Management Pack	<a href="http://www.oracle.com/pls/topic/lookup?ctx=ohmp">http://www.oracle.com/pls/topic/lookup?ctx=ohmp</a>

### Related Information

- “Accessing System Management Tools” on page 17
- “Getting Server Firmware and Software” on page 195



# Accessing System Management Tools

---

This section describes how to access each of the system management tools. The following topics are discussed.

Description	Links
Learn how to access Oracle System Assistant.	<a href="#">“Accessing Oracle System Assistant” on page 17</a>
Learn how to access Oracle ILOM.	<a href="#">“Accessing Oracle ILOM” on page 23</a>
Learn how to access Oracle Hardware Management Pack.	<a href="#">“Accessing Oracle Hardware Management Pack” on page 25</a>

## Related Information

- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at: <http://www.oracle.com/pls/topic/lookup?ctx=ilom31>
- Oracle Hardware Management Pack Documentation Library at: <http://www.oracle.com/pls/topic/lookup?ctx=ohmp>

---

## Accessing Oracle System Assistant

Oracle System Assistant must be in an online state (available to the operating system) to launch the tool. You can enable Oracle System Assistant using the BIOS Setup Utility. See the following procedure:

- [“Enable Oracle System Assistant From BIOS” on page 18](#)

When Oracle System Assistant is enabled, you can choose one of the following methods to access Oracle System Assistant:

- [“Access Oracle System Assistant at Startup” on page 19](#)

- [“Access Oracle System Assistant Using the Oracle ILOM Web Interface” on page 21](#)
- [“Access Oracle System Assistant Using the Oracle ILOM CLI” on page 23](#)

## ▼ Enable Oracle System Assistant From BIOS

To enable the Oracle System Assistant USB storage device in an online state (available to the operating system), use the Configure OSA setting in the server BIOS Setup Utility Boot menu.

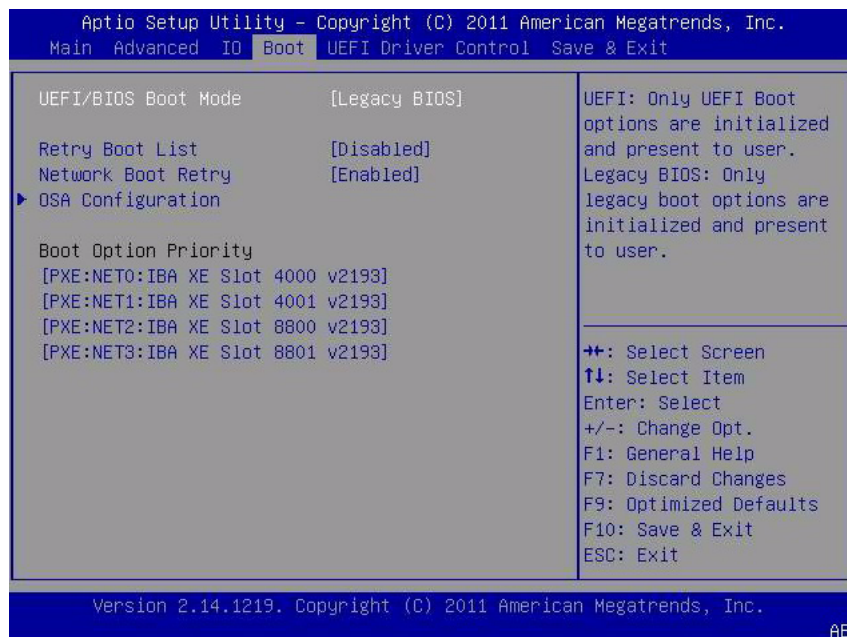
You can also use the Configure OSA setting in BIOS to disable the USB storage device in an offline state, so that it is unavailable to the server operating system. This protects the device from accidental erasure and overwrite. When the device is offline, it is not bootable, and the tools, drivers, and files that reside on the Oracle System Assistant device are inaccessible. You can also disable Oracle System Assistant from the application’s task screens.

To enable Oracle System Assistant from BIOS, follow these steps.

### 1. Access the Server BIOS Setup Utility.

See [“Access BIOS Setup Utility Menus” on page 108](#).

### 2. Navigate to the BIOS Boot menu screen.



### 3. Navigate to the OSA Configuration screen.



4. Choose Enabled (or Disabled) for the OSA Internal Support setting, then press Enter.
5. To save your settings and to exit from the BIOS Setup Utility, press F10.  
See “Exit BIOS Setup Utility” on page 136.

#### Related Information

- “BIOS Boot Menu Selections” on page 161

## ▼ Access Oracle System Assistant at Startup

Use the following procedure to access Oracle System Assistant after you have started the server.

1. Verify that the server is in standby power mode or full power mode.
2. Verify that a monitor, keyboard, and mouse are attached either locally to the server or remotely to the server using the Oracle ILOM KVMS (keyboard, video, mouse, storage) feature.

For more information, refer to the *Sun Server X3-2L Installation Guide*, “Setting Up an Operating System and Drivers” on page 90.

### 3. Start (boot) the server.

Perform one of the following actions, depending on the server power state:

- If the server is in standby power mode, press the Power button on the front of the server.
- If the server is in full power mode, power the server on and off.

The BIOS screen appears with boot messages.

```
Version 2.14.1219, Copyright (C) 2011 American Megatrends, Inc.  
BIOS Date: 05/11/2012 11:52:57 Ver: 18021000  
Press F2 to run Setup (CTRL+E on serial keyboard)  
Press F8 for BBS Popup (CTRL+P on serial keyboard)  
Press F12 for network boot (CTRL+N on serial keyboard)  
Press F9 to start Oracle System Assistant (CTRL+O on serial keyboard)
```

### 4. When prompted, press the F9 function key to start Oracle System Assistant.

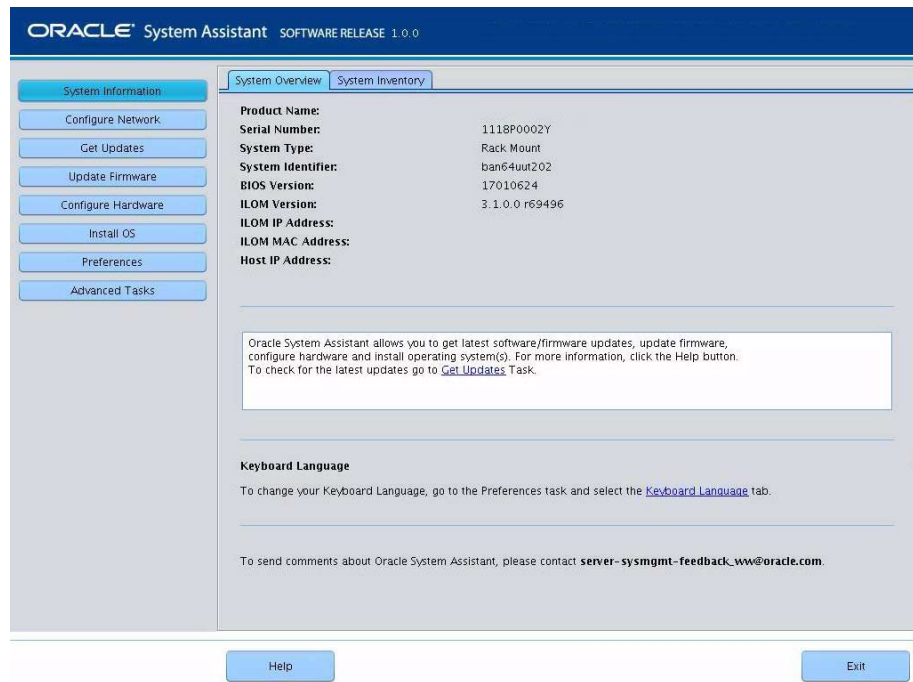
---

**Note** – If you use KVMs to access the server remotely, press F9 several times; otherwise, the server might miss the signal due to delays.

---

Power-on self-test messages are displayed as well as a line that states “Oracle System Assistant Is Selected.” The Oracle System Assistant application is launched and the Launching Oracle System Assistant screen appears. Then the System Overview task screen appears.

If the Oracle System Assistant screen does not appear, see [“Troubleshooting Oracle System Assistant” on page 77](#).



## 5. Perform tasks using Oracle System Assistant, as required.

### Related Information

- [“Oracle System Assistant” on page 4](#)
- [“Setting Up the Server Using Oracle System Assistant” on page 35](#)

## ▼ Access Oracle System Assistant Using the Oracle ILOM Web Interface

When launching Oracle System Assistant from the Oracle ILOM web interface, you will be prompted to open a new Oracle ILOM Remote System Console session. Therefore, prior to launching Oracle System Assistant, ensure that the setup requirements for using the Oracle ILOM Remote System Console (JDK version, browser Java plug-in, and KVMS settings) are met. For information about these requirements, refer to the *Oracle Integrated Lights Out Manager (ILOM) 3.1 Configuration and Maintenance Guide*.

The Admin (a) role is required in Oracle ILOM to launch Oracle System Assistant. The Console (c) role is required to launch the Oracle ILOM Remote System Console.

Use the following procedure to access Oracle System Assistant using the Oracle ILOM web interface.

**1. Go to the Oracle ILOM web interface System Information > Summary page.**

See “Access Oracle ILOM Using the Web Interface” on page 24.

**ORACLE Integrated Lights Out Manager**

User: adminuser Role: Administrator SP Hostname: ban54ud202sp

**Summary**  
View system summary information. You may also change power state and view system status and fault information.

**General Information**

System Type	Rack Mount
Model	SUN FIRE i4170 M3
Part Number	07011490
Serial Number	1116P09029
System Identifier	ban54ud202
System Firmware Version	ILOM: 3.1.0.0 BIOS: 17010624
Primary Operating System	Not Available
Host Primary MAC Address	Not Available
ILOM Address	10.153.55.202
ILOM MAC Address	00:21:28:D5:C0:CE

**Actions**

Power State: ☒ ON

Locator Indicator: ☒ OFF

Oracle System Assistant Version: 1.0.0.0

System Firmware Update

Remote Console

**Status**

Overall Status: ☒ OK Total Problem Count: 0

Subsystem	Status	Details	Inventory
<b>Processors</b>	<input checked="" type="checkbox"/> OK	Processor Architecture: x86 64-bit Processor Summary: Two Intel Xeon Processor E5 Series	Processors (Installed / Maximum): 2 / 2
<b>Memory</b>	<input checked="" type="checkbox"/> OK	Installed RAM Size: 16 GB	DBMRs (Installed / Maximum): 4 / 16
<b>Power</b>	<input checked="" type="checkbox"/> OK	Permitted Power Consumption: 589 watts Actual Power Consumption: 117 watts	PSUs (Installed / Maximum): 1 / 2
<b>Cooling</b>	<input checked="" type="checkbox"/> OK	Inlet Air Temperature: 22 °C Exhaust Air Temperature: 30 °C	Fans (Installed / Maximum): 16 / 16
<b>Storage</b>	<input type="checkbox"/> Not Available	Installed Disk Size: Not Available Disk Controllers: Not Available	Internal Disks (Installed / Maximum): 1 / 8
<b>Networking</b>	<input checked="" type="checkbox"/> OK		Installed Ethernet NICs: 4

**2. Power off the operating system on the host server.**

**a. Select Host Management > Power Control.**

**b. In the Select Action drop-down list, select Graceful Shutdown and Power Off.**

**c. Click Save.**

---

**Note** – The host operating system must have power shutdown enabled.

---

**3. Click the Launch button for Oracle System Assistant.**

Oracle ILOM launches Oracle System Assistant in the Oracle ILOM Remote System Console window. The Oracle System Assistant System Overview task screen appears.

If the Oracle System Assistant screen does not appear, see “Troubleshoot Oracle System Assistant Launch From Oracle ILOM” on page 80.

**4. Perform tasks using Oracle System Assistant, as required.**

### Related Information

- “Oracle System Assistant” on page 4
- “Setting Up the Server Using Oracle System Assistant” on page 35
- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ilom31>

## ▼ Access Oracle System Assistant Using the Oracle ILOM CLI

Use the following procedure to access Oracle System Assistant using the Oracle ILOM command-line interface (CLI).

1. **Access the Oracle ILOM CLI.**  
See “Access Oracle ILOM Using the CLI” on page 25.
2. **Type `stop /System` to power off the operating system on the host server.**
3. **In the Oracle ILOM CLI, type:**  

```
start /HOST/provisioning/system-assistant
```

The following prompt appears:

```
Are you sure that you want to start  
/HOST/provisioning/system-assistant (y/n)?
```
4. **Type `y` to launch Oracle System Assistant (or type `n` to cancel the operation).**  
Oracle ILOM launches Oracle System Assistant. The Oracle System Assistant System Overview task screen appears.
5. **Perform tasks using Oracle System Assistant, as required.**

### Related Information

- “Oracle System Assistant” on page 4
- “Setting Up the Server Using Oracle System Assistant” on page 35
- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ilom31>

---

## Accessing Oracle ILOM

Choose one of the following methods to access Oracle ILOM:

- “Access Oracle ILOM Using the Web Interface” on page 24
- “Access Oracle ILOM Using the CLI” on page 25

## ▼ Access Oracle ILOM Using the Web Interface

Use the following procedure to log in to the Oracle ILOM web interface.

### 1. Connect the server cables and set up the IP addresses for the server.

See the *Sun Server X3-2L Installation Guide*, “About the Installation Procedure” on page 1.

### 2. Type the IP address of the server’s service processor (SP) into the web browser’s address field.

### 3. Type your user name and password at the prompt.

The default user name is `root` and the default password is `changeme`.

### 4. Click the Log In button.

The Oracle ILOM System Information > Summary page appears.

**ORACLE® Integrated Lights Out Manager**

Warnings ABOUT REFRESH LOG OUT

User: administrator Role: Administrator SP Hostname: ban64us202sp

System Information

- Summary
- Processors
- Memory
- Power
- Cooling
- Storage
- Networking
- PCI Devices
- Firmware
- Open Problems (0)
- Remote Control
- Host Management
- System Management
- Power Management
- ILOM Administration

**Summary**

View system summary information. You may also change power state and view system status and fault information.

General Information	
System Type	Rack Mount
Model	SUN FIRE X4170 M3
Part Number	07011490
Serial Number	1118P0002Y
System Identifier	ban64us202
System Firmware Version	ILOM: 3.1.0.0 BIOS: 17010524
Primary Operating System	Not Available
Host Primary MAC Address	Not Available
ILOM Address	10.153.95.202
ILOM MAC Address	00:21:28:D9:C0:0E

Actions	
Power State	<input checked="" type="checkbox"/> ON <input type="button" value="Turn Off"/>
Locator Indicator	<input type="checkbox"/> OFF <input type="button" value="Turn On"/>
Oracle System Assistant Version: 1.0.0.0	<input type="button" value="Launch"/>
System Firmware Update	<input type="button" value="Update"/>
Remote Console	<input type="button" value="Launch"/>

Status			
Overall Status:	OK Total Problem Count: 0		
Subsystem	Status	Details	Inventory
Processors	OK	Processor Architecture: x86 64-bit Processor Summary: Two Intel Xeon Processor E5 Series	Processors (Installed / Maximum): 2 / 2
Memory	OK	Installed RAM Size: 16 GB	DIMMs (Installed / Maximum): 4 / 16
Power	OK	Permitted Power Consumption: 589 watts Actual Power Consumption: 117 watts	PSUs (Installed / Maximum): 1 / 2
Cooling	OK	Inlet Air Temperature: 22 °C Exhaust Air Temperature: 30 °C	Fans (Installed / Maximum): 16 / 16
Storage	Not Available	Installed Disk Size: Not Available Disk Controllers: Not Available	Internal Disks (Installed / Maximum): 1 / 8
Networking	OK		Installed Ethernet NICs: 4

### 5. Perform Oracle ILOM tasks using the web interface, or launch Oracle System Assistant, as required.



### Related Information

- “Oracle Integrated Lights Out Manager (Oracle ILOM)” on page 5
- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ilom31>

## ▼ Access Oracle ILOM Using the CLI

Use the following procedure to log in to the Oracle ILOM command-line interface (CLI).

1. **Connect the server cables and set up the IP addresses for the server.**  
See the *Sun Server X3-2L Installation Guide*, “About the Installation Procedure” on page 1.
2. **Open a terminal window.**
3. **Log in to the server’s service processor (SP) using a Secure Shell (SSH) session.**  
For example, type the following command:  

```
$ ssh username@SP_IPaddress
```

  
Where: *username* is a user account with administrative privileges; and *SP\_IPaddress* is the IP address of the Oracle ILOM SP.
4. **Enter your user name and password at the prompt.**  
The default user name is `root` and the default password is `changeme`.  
After you have successfully logged in to Oracle ILOM, the default CLI prompt appears (`->`).
5. **Perform Oracle ILOM tasks using the CLI, as required.**

### Related Information

- “Oracle Integrated Lights Out Manager (Oracle ILOM)” on page 5
- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ilom31>

---

# Accessing Oracle Hardware Management Pack

Choose one of the following methods to access Oracle Hardware Management Pack:

- “Access Oracle Hardware Management Pack From Oracle System Assistant” on page 26
- “Access Oracle Hardware Management Pack From My Oracle Support” on page 27

## ▼ Access Oracle Hardware Management Pack From Oracle System Assistant

The Oracle Hardware Management Pack files are within the operating system (OS) directories in the Oracle System Assistant filesystem. Browse to the applicable OS directory in the filesystem, then to the subdirectory for drivers and tools, where the Oracle Hardware Management Pack files are located. Then run the Oracle Hardware Management Pack installer application.

To install the Oracle Hardware Management Pack, perform the following steps:

1. **After your OS is installed, access the Oracle Hardware Management Pack files on the Oracle System Assistant device from your file system.**

---

**Note** – If you are running the Oracle VM 3.0 virtual machine software, a Linux operating system, or the Oracle Solaris 10 Operating System, you must mount the Oracle System Assistant USB flash drive before you can access it using your file system. For mounting instructions, see “[Mounting the Oracle System Assistant USB Flash Drive](#)” on page 73.

---

2. **Run the Oracle Hardware Management Pack installer application from the Oracle System Assistant USB flash drive.**

For installation instructions, refer to the Oracle Hardware Management Pack 2.2.x Documentation Library at:

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

### Related Information

- “Oracle Hardware Management Pack” on page 6
- Oracle Hardware Management Pack installation instructions at:  
<http://www.oracle.com/goto/system-management/>
- Oracle Hardware Management Pack Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ohmp>

## ▼ Access Oracle Hardware Management Pack From My Oracle Support

Use the following procedure to download Oracle Hardware Management Pack from the My Oracle Support web site.

1. **Download Oracle Hardware Management Pack by following the instructions in “Getting Server Firmware and Software” on page 195.**
2. **Install Oracle Hardware Management Pack by following the instructions in the Oracle Hardware Management Pack library.**  
After Oracle Hardware Management Pack is installed, you can access all of the Oracle Hardware Management Pack tools.
3. **Perform tasks using Oracle Hardware Management Pack by typing commands, as required.**

### Related Information

- “Oracle Hardware Management Pack” on page 6
- Oracle Hardware Management Pack installation instructions at:  
<http://www.oracle.com/goto/system-management/>
- Oracle Hardware Management Pack Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ohmp>



# Setting Up Software and Firmware

---

This section includes information about using Oracle System Assistant, Oracle ILOM, and Oracle Hardware Management Pack to set up the server software and firmware.

In most cases, use Oracle System Assistant to set up your server's software and firmware. Alternatively, you can update firmware for your server using either Oracle ILOM or Oracle Hardware Management Pack.

The following topics are discussed.

Description	Links
Set up software and firmware using Oracle System Assistant.	<a href="#">"Set Up Software and Firmware Using Oracle System Assistant" on page 29</a>
Set up software and firmware using Oracle ILOM.	<a href="#">"Set Up Software and Firmware Using Oracle ILOM" on page 30</a>
Set up software and firmware using Oracle Hardware Management Pack.	<a href="#">"Set Up Software and Firmware Using Oracle Hardware Management Pack" on page 32</a>

## Related Information

- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at: <http://www.oracle.com/pls/topic/lookup?ctx=ilom31>
- Oracle Hardware Management Pack Documentation Library at: <http://www.oracle.com/pls/topic/lookup?ctx=ohmp>

---

## ▼ Set Up Software and Firmware Using Oracle System Assistant

### 1. Connect to Oracle System Assistant.

See ["Accessing Oracle System Assistant" on page 17](#).

## 2. Perform setup tasks using Oracle System Assistant.

See [“Configuring the Server Using Oracle System Assistant”](#) on page 38.

For example:

### a. Configure the server network settings.

See [“Configure Network Settings”](#) on page 43.

### b. Get updates for server firmware, drivers, software, and documentation.

See [“Get Platform Software Release Updates”](#) on page 44.

### c. Update server firmware.

See [“Update Firmware”](#) on page 48.

### d. Configure the server SP network settings, user accounts, and clock settings,

See [“Configure Hardware for the Oracle ILOM SP”](#) on page 55.

### e. Configure RAID volumes.

See [“Configure Hardware for RAID”](#) on page 53.

### f. Install an operating system.

See [“Install an Operating System”](#) on page 62.

## Related Information

- [“Setting Up the Server Using Oracle System Assistant”](#) on page 35

---

# ▼ Set Up Software and Firmware Using Oracle ILOM

## 1. Ensure that the server is in standby power mode.

In standby mode, the Power/OK LED on the server illuminates the standby blink (approximately every three seconds). In standby power mode, the server is not yet initialized or powered on.

## 2. Connect to Oracle ILOM.

For instructions, see [“Accessing Oracle ILOM”](#) on page 23.

Also refer to the *Sun Server X3-2L Installation Guide*, [“Connecting to Oracle ILOM”](#) on page 67.

## 3. Apply full power to the server using the Oracle ILOM web interface or command-line interface (CLI).

- To apply power using the Oracle ILOM web interface, on the System Information > Summary screen, next to Power State, click Turn On.
- To apply power using the Oracle ILOM CLI, from the server SP CLI, type **start /System**.

The Power/OK LED on the front panel of the server illuminates a slow blink while the server is booting. The LED then illuminates a steady-on green light after the server has successfully powered on, indicating that the host is fully booted into the operating system.

#### 4. Update and configure Oracle ILOM and BIOS.

Refer to the Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library.

#### 5. Perform additional setup tasks that are not available from Oracle ILOM.

##### a. Update disk expander or HBA firmware.

Refer to “Update Firmware” on page 48.

##### b. Configure RAID.

See “Configuring RAID” on page 99.

##### c. Install an operating system or configure a preinstalled operating system.

Refer to:

- *Sun Server X3-2L Installation Guide for Oracle Solaris Operating System*, “About Oracle Solaris Operating System Installs” on page 1
- *Sun Server X3-2L Installation Guide for Linux Operating Systems*, “About Linux Operating System Installs” on page 1
- *Sun Server X3-2L Installation Guide for Oracle VM*, “About Oracle VM Installs” on page 1
- *Sun Server X3-2L Installation Guide for Windows Operating Systems*, “About Microsoft Windows Server Operating System Installs” on page 1
- *Sun Server X3-2L Installation Guide for VMware ESXi*, “About VMware ESXi Installs” on page 1

#### Related Information

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

---

## ▼ Set Up Software and Firmware Using Oracle Hardware Management Pack

This procedure assumes that you have:

- Installed the operating system and optionally configured RAID. See “[Configuring RAID](#)” on page 99.
- Installed Oracle Hardware Management Pack. See “[Accessing Oracle Hardware Management Pack](#)” on page 25.

### 1. If not already done, connect the data and network cables to the server.

For instructions, refer to the *Sun Server X3-2L Installation Guide*, “[About the Installation Procedure](#)” on page 1.

### 2. If the server is not powered on, press the Power button on the server front panel to power on the server to full power mode.

The Power/OK LED on the front panel of the server illuminates a steady-on green light after the server has successfully powered on, indicating that the host is ready for normal operation.

### 3. Install or configure the host operating system, and install any required drivers.

See the installation guide for the operating system you want to install:

- *Sun Server X3-2L Installation Guide for Oracle Solaris Operating System*, “[About Oracle Solaris Operating System Installs](#)” on page 1
- *Sun Server X3-2L Installation Guide for Linux Operating Systems*, “[About Linux Operating System Installs](#)” on page 1
- *Sun Server X3-2L Installation Guide for Oracle VM*, “[About Oracle VM Installs](#)” on page 1
- *Sun Server X3-2L Installation Guide for Windows Operating Systems*, “[About Microsoft Windows Server Operating System Installs](#)” on page 1
- *Sun Server X3-2L Installation Guide for VMware ESXi*, “[About VMware ESXi Installs](#)” on page 1

### 4. If not already installed, install Oracle Hardware Management Pack.

See “[Accessing Oracle Hardware Management Pack](#)” on page 25.

Also refer to the instructions at the following site:

<http://www.oracle.com/goto/system-management>.

### 5. Update Oracle ILOM and BIOS firmware.

Use the fwupdate tool, as required.



---

**Note** – Alternative methods to update Oracle ILOM and BIOS firmware include using: Oracle System Assistant, Oracle ILOM (CLI and web browser) and `ipmiflash`.

---

## 6. Configure Oracle ILOM.

Use the `ilomconfig` tool, as required.

---

**Note** – Alternative methods to configure Oracle ILOM include using: Oracle System Assistant and Oracle ILOM (CLI and web browser).

---

## 7. (Optional) Configure BIOS.

Use the `ubiosconfig` tool, as required.

---

**Note** – Alternative methods to configure BIOS include using: Oracle System Assistant and Oracle ILOM (CLI and web browser).

---

## 8. (Optional) Explore and configure RAID.

Use the `raidconfig` tool, as required.

---

**Note** – Alternative methods to configure RAID include using: Oracle System Assistant, Oracle ILOM (CLI and web browser), LSI MegaRAID Storage Manager application, and LSI HBA BIOS Utilities (WebBIOS configuration utility, MegaCLI, and sas2ircu).

---

## 9. Query, update, and validate firmware versions on supported SAS storage drives, embedded SAS storage controllers, LSI SAS storage expanders, and storage drives.

Use the `fwupdate` tool, as required.

## Related Information

- Oracle Hardware Management Pack Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ohmp>



# Setting Up the Server Using Oracle System Assistant

---

This section describes the organization of Oracle System Assistant and how to set up your server using Oracle System Assistant.

The following topics are discussed.

Description	Link
Review the organization of Oracle System Assistant.	<a href="#">“Organization of Oracle System Assistant” on page 37</a>
Review procedures to configure the server.	<a href="#">“Configuring the Server Using Oracle System Assistant” on page 38</a>
View the Oracle System Assistant ReadMe file.	<a href="#">“View Oracle System Assistant ReadMe File” on page 39</a>
Exit from the Oracle System Assistant application.	<a href="#">“Exit From Oracle System Assistant” on page 40</a>
View system summary information.	<a href="#">“View System Information” on page 41</a>
View system inventory information.	<a href="#">“View System Inventory Information” on page 42</a>
Configure network settings for the server that are used to get updates for Oracle System Assistant.	<a href="#">“Configure Network Settings” on page 43</a>
Update to the latest software release, including firmware, drivers, software, and documentation.	<a href="#">“Get Platform Software Release Updates” on page 44</a>
Update supported hardware to the latest firmware version.	<a href="#">“Update Firmware” on page 48</a>
Configure RAID for the server.	<a href="#">“Configure Hardware for RAID” on page 53</a>
Configure settings for the Oracle ILOM SP.	<a href="#">“Configure Hardware for the Oracle ILOM SP” on page 55</a>
Install Linux or Windows operating systems, or Oracle VM software.	<a href="#">“Install an Operating System” on page 62</a>

Description	Link
Disable Oracle System Assistant.	<a href="#">“Set Preferences to Disable Oracle System Assistant” on page 65</a>
Set the keyboard language for Oracle System Assistant.	<a href="#">“Set Preferences for Keyboard Language” on page 67</a>
Access the Oracle System Assistant shell.	<a href="#">“Perform Advanced Tasks to Access Oracle System Assistant Shell” on page 68</a>
Check the integrity of the Oracle System Assistant media.	<a href="#">“Perform Advanced Tasks to Check Media Integrity” on page 70</a>
View and access firmware and software on the Oracle System Assistant USB flash drive.	<a href="#">“View Files on the Oracle System Assistant USB Flash Drive” on page 71</a>
View product documentation.	<a href="#">“View Documentation From Oracle System Assistant” on page 72</a>
Review requirements for mounting the Oracle System Assistant USB flash drive.	<a href="#">“Mounting the Oracle System Assistant USB Flash Drive” on page 73</a>
Mount the USB flash drive on Oracle VM 3.0.	<a href="#">“Mount the Oracle System Assistant USB Flash Drive on Oracle VM 3.0” on page 74</a>
Mount the USB flash drive on a Linux system.	<a href="#">“Mount the Oracle System Assistant USB Flash Drive on a Linux Operating System” on page 75</a>
Mount the USB flash drive on an Oracle Solaris 10 Operating System.	<a href="#">“Mount the Oracle System Assistant USB Flash Drive on an Oracle Solaris 10 Operating System” on page 76</a>
Troubleshoot Oracle System Assistant installation.	<a href="#">“Troubleshooting Oracle System Assistant” on page 77</a>
Check whether Oracle System Assistant is installed on the server.	<a href="#">“Verify Oracle System Assistant Is Installed” on page 78</a>
Troubleshoot issues when launching Oracle System Assistant from Oracle ILOM.	<a href="#">“Troubleshoot Oracle System Assistant Launch From Oracle ILOM” on page 80</a>
Restore Oracle System Assistant.	<a href="#">“Restore Oracle System Assistant” on page 81</a>
Review the directory structure of the Oracle System Assistant filesystem.	<a href="#">“Accessing the Oracle System Assistant Filesystem” on page 86</a>
Access the filesystem.	<a href="#">“Access the Oracle System Assistant Filesystem” on page 86</a>

## Related Information

- [“Accessing Oracle System Assistant” on page 17](#)

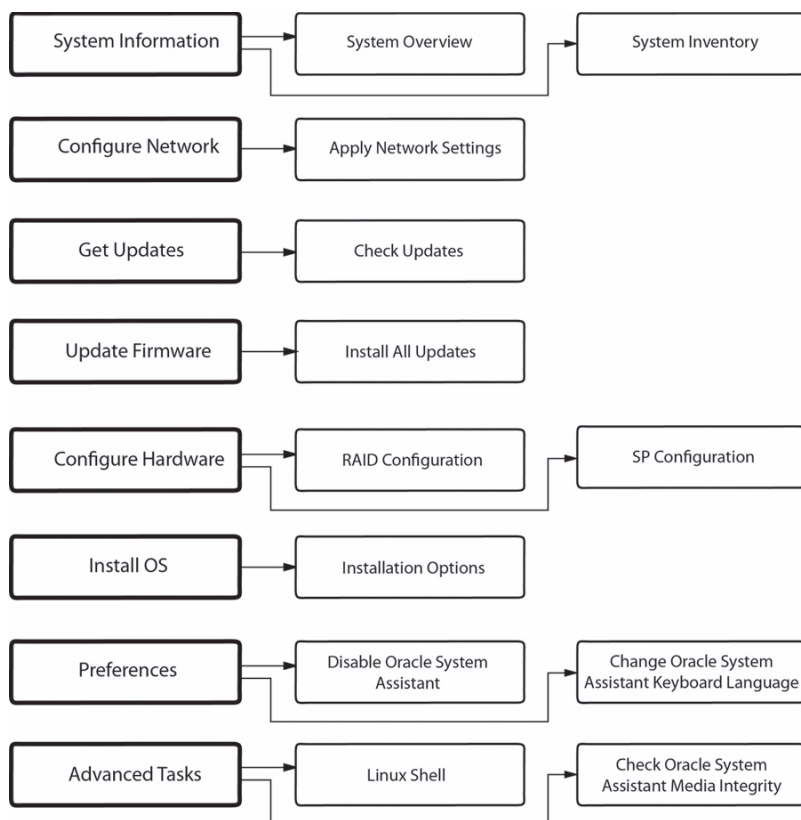
- “Common System Management Tasks” on page 8
- “Common System Administrative Tasks” on page 9

## Organization of Oracle System Assistant

The following figure shows the Oracle System Assistant System Overview task screen. The tasks buttons for Oracle System Assistant are located in the left panel.



The following figure shows the organization of the Oracle System Assistant functions.



---

## Configuring the Server Using Oracle System Assistant

You can configure your new system easily using Oracle System Assistant:

1. Power on the system.
2. Boot to Oracle System Assistant. For information, see [“Accessing Oracle System Assistant” on page 17](#).
3. From the Oracle System Assistant System Overview task screen, click the Help button to display the ReadMe file (Release Notes) for the installed platform software release.
4. Use Oracle System Assistant to configure the server.

Use the following procedures for initial setup and configuration of the server:

- [“View Oracle System Assistant ReadMe File” on page 39](#)
- [“Exit From Oracle System Assistant” on page 40](#)
- [“View System Information” on page 41](#)
- [“View System Inventory Information” on page 42](#)
- [“Configure Network Settings” on page 43](#)
- [“Get Platform Software Release Updates” on page 44](#)
- [“Configure MOS to Enable Oracle System Assistant Updates” on page 46](#)
- [“Update Firmware” on page 48](#)
- [“Configure Hardware for RAID” on page 53](#)
- [“Configure Hardware for the Oracle ILOM SP” on page 55](#)
- [“Install an Operating System” on page 62](#)
- [“Set Preferences to Disable Oracle System Assistant” on page 65](#)
- [“Set Preferences for Keyboard Language” on page 67](#)
- [“Perform Advanced Tasks to Access Oracle System Assistant Shell” on page 68](#)
- [“Perform Advanced Tasks to Check Media Integrity” on page 70](#)
- [“View Files on the Oracle System Assistant USB Flash Drive” on page 71](#)
- [“View Documentation From Oracle System Assistant” on page 72](#)

## ▼ View Oracle System Assistant ReadMe File

Follow these steps to view the Oracle System Assistant ReadMe file (Release Notes) for the installed platform software release.

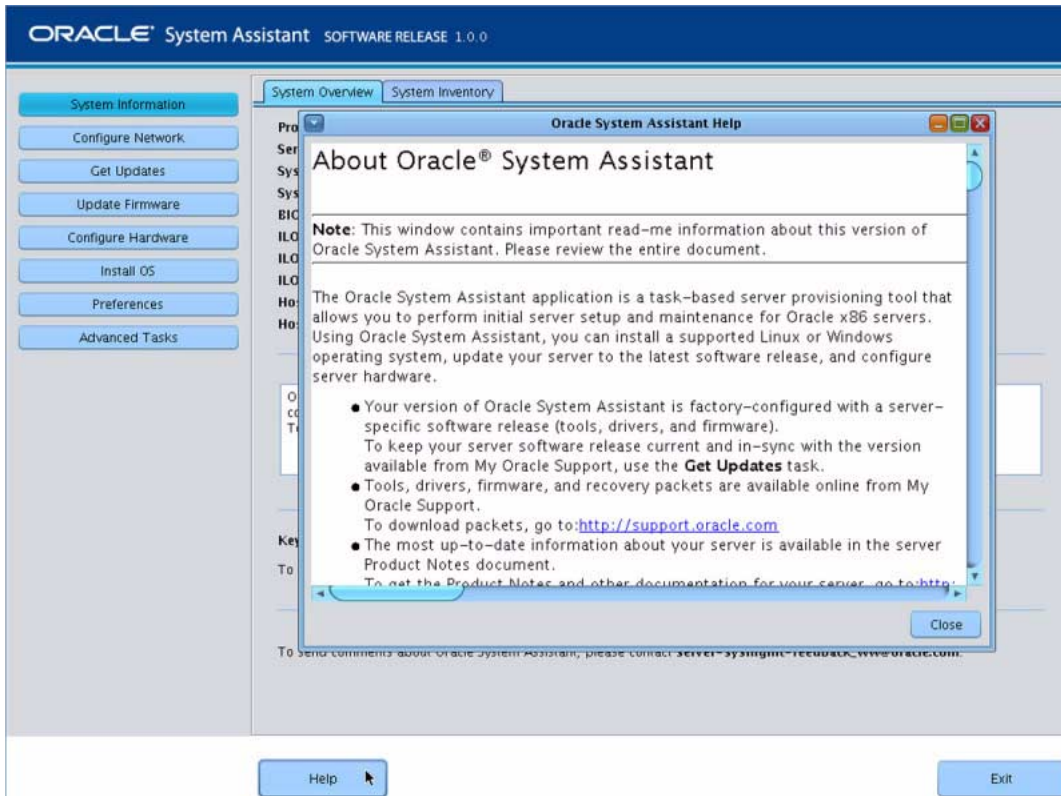
### 1. Access Oracle System Assistant.

See [“Accessing Oracle System Assistant” on page 17](#).

The System Overview task screen appears.

### 2. At the bottom of the System Overview task screen, click the Help button.

The ReadMe file appears, with information about Oracle System Assistant and your platform software release.



## Related Information

- “Accessing Oracle System Assistant” on page 17

## ▼ Exit From Oracle System Assistant

Follow these steps to exit from Oracle System Assistant.

1. **From within Oracle System Assistant, click the Exit button to quit the application session.**

The Exit dialog appears.





2. Choose whether you want to reboot or power off the system.

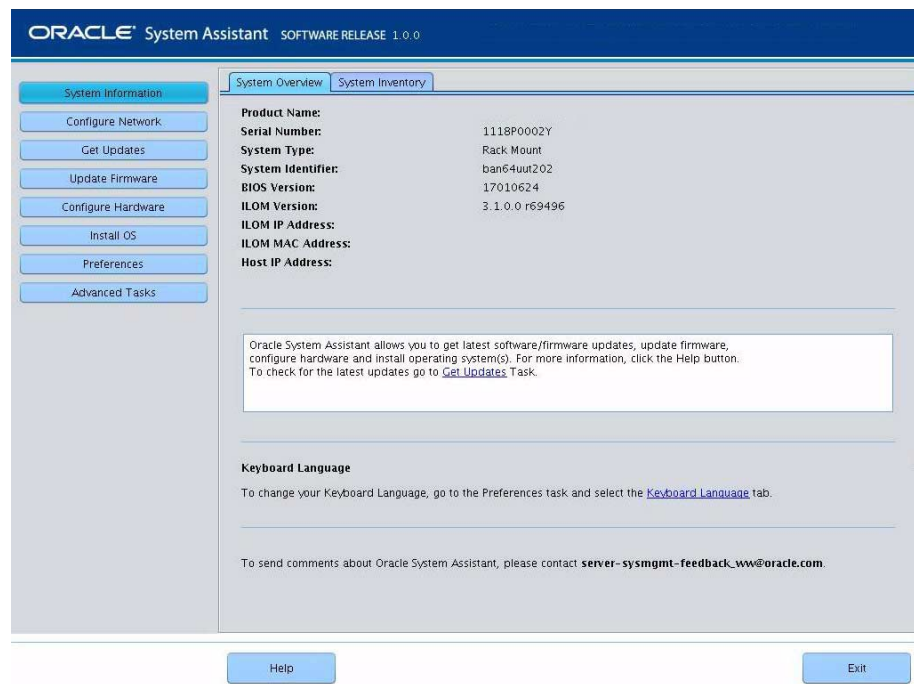
### Related Information

- [“Accessing Oracle System Assistant” on page 17](#)

## ▼ View System Information

Follow these steps to view system information using Oracle System Assistant.

1. Click the **System Information** task button, then select the **System Overview** tab.  
The System Overview screen appears.



2. Click the **Help** button to display the ReadMe file (Release Notes) for the installed platform software release.
3. From the **System Overview** screen, review information about the system.
4. If desired, click **Exit** to quit Oracle System Assistant and reboot or power off the server.

### Related Information

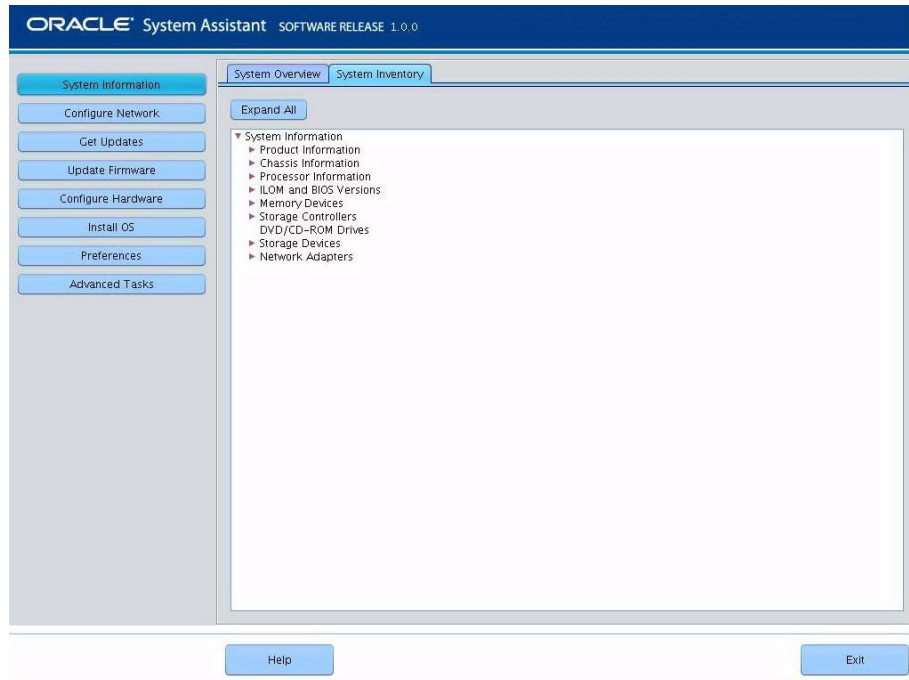
- [“Accessing Oracle System Assistant” on page 17](#)

## ▼ View System Inventory Information

Follow these steps to view system inventory information using Oracle System Assistant.

1. Click the **System Information** task button, then select the **System Inventory** tab.

The System Inventory screen appears.



2. Click on one of the entries to view detailed information.
3. Click the **Expand All** button to view information for all entries.
4. Click the **Collapse** button to contract the system information.
5. If desired, click **Exit** to quit Oracle System Assistant and reboot or power off the server.

### Related Information

- [“Accessing Oracle System Assistant” on page 17](#)

## ▼ Configure Network Settings

The Configure Network task enables you to configure network settings for Oracle System Assistant. Perform this task to ensure that Oracle System Assistant can access the most up-to-date tools and drivers during initial server installation and setup.

---

**Note** – You must configure the network settings before you can use the Get Updates task in Oracle System Assistant.

---

Before you begin, obtain your system's network information, such as name server or a static IP, as required.

Follow these steps to configure the network settings using Oracle System Assistant.

### 1. Click the **Configure Network** task button.

The Configure Network screen appears.

ORACLE System Assistant SOFTWARE RELEASE 1.0.0

System Information  
**Configure Network**  
Get Updates  
Update Firmware  
Configure Hardware  
Install OS  
Preferences  
Advanced Tasks

### CONFIGURE NETWORK

Enter your network configuration (interface and IP settings).

net0 - Intel Corporation Ethernet Controller 10 Gigabit X540-AT2

Link Status: Link Up

MAC Address:

☐ Disabled  
☐ DHCP  
☒ Static IP

☐ Auto DNS via DHCP

IP Address:   
Netmask:   
Gateway:   
Nameserver:  \* Required for Get Updates  
Search Domains:

☐ HTTP Proxy Configuration

Proxy Host:   
Proxy Port:

Apply Network Settings

Help Exit

### 2. Select the network device to configure.

The drop-down list identifies the devices that are visible to the server.

### 3. Configure the network address settings.

Select the method for determining the IP address of the server. Choose one of the following:

- **Disabled** – Do not allow network access for this device.
- **DHCP** – Automatically assign an IP address to the server using Dynamic Host Configuration Protocol (DHCP). When this option is selected, you can choose the Auto DNS via DHCP option to automatically assign the Name Server IP address and Search Domain. If you do not choose the Auto DNS via DHCP option, you must also provide the following information:
  - Name Server IP address
  - (Optional) Search Domain
- **Static** – Assign a fixed IP address to the server. You must provide the following information:
  - Server IP address
  - Netmask
  - Gateway
- **HTTP Proxy Configuration** – Select this option if you want to use a proxy server. You must provide the following information:
  - Proxy host
  - Proxy port

### 4. Click the **Apply Network Settings** button.

The system prompts for confirmation to apply the network settings.

### 5. In the confirmation dialog, click **Yes to proceed**.

### 6. If desired, click **Exit** to quit Oracle System Assistant and reboot or power off the server.

### Related Information

- [“Accessing Oracle System Assistant” on page 17](#)

## ▼ Get Platform Software Release Updates

Oracle System Assistant enables you to download updates of platform software. The updated components include firmware, drivers, and tools. With Oracle System Assistant, you no longer need to download and unpack firmware and software packages from a download site or use a Tools and Drivers CD/DVD or ISO image.

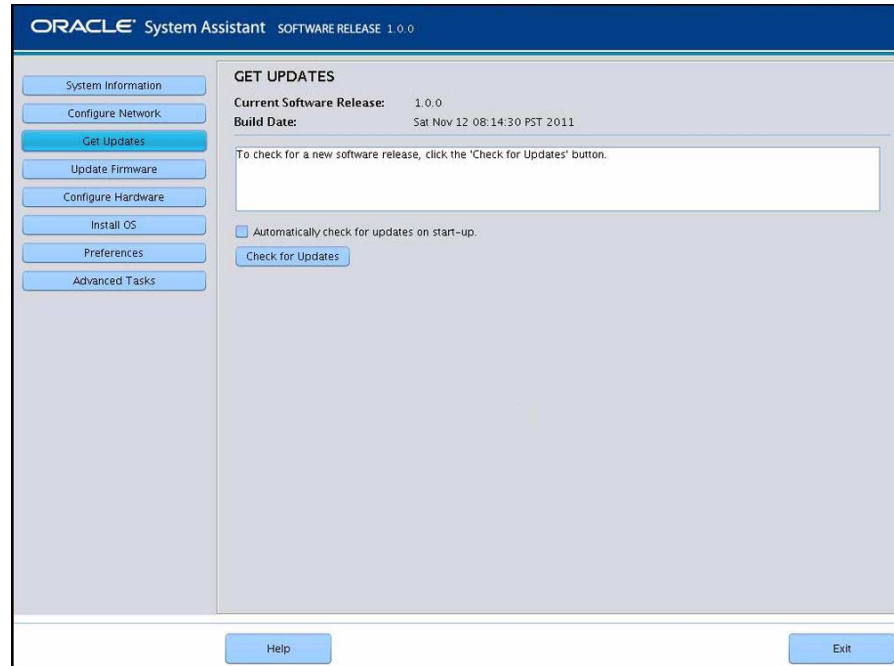
Use this procedure to update Oracle System Assistant.

Ensure that the server has:

- External web access to enable downloading of a new platform software release.
- Download entitlement at My Oracle Support (MOS). See [“Configure MOS to Enable Oracle System Assistant Updates”](#) on page 46.

**1. Click the Get Updates task button.**

The Get Updates screen appears.




---

**Note** – To automatically check for updates each time the system is started, click the check box.

---

**2. To check for a new software release, click the Check for Updates button.**

If an update is available, the update’s readme file appears.

**3. To get the update, click the Download and Apply Updates button.**

The Get Updates Sign In screen appears.

**4. Provide your MOS credentials.**

Enter your MOS credentials (username and password).

---

**Note** – The server must have download entitlement with MOS. If the sign-in process halts because Oracle System Assistant cannot verify entitlement, you need to configure MOS to enable Oracle System Assistant updates. See [“Configure MOS to Enable Oracle System Assistant Updates”](#) on page 46.

---

After the updates are downloaded, the system reboots.

### Related Information

- [“Organization of Oracle System Assistant”](#) on page 37

## ▼ Configure MOS to Enable Oracle System Assistant Updates

Before allowing the server to download a platform software release update, Oracle System Assistant first verifies that the server has download entitlement with My Oracle Support (MOS). A server has entitlement when the server serial number has an association with a valid MOS Customer Support Identifier (CSI). If this association has not been made prior to attempting the Get Updates task, Oracle System Assistant will not be able to verify entitlement, and the update process halts at the Get Updates Sign In screen, disallowing server access to MOS.



Use this procedure to associate the server with the CSI at MOS.

You must have one of the following:

- Customer Support Identifier (CSI), which is printed on the Oracle Premier Support for Systems purchase confirmation letter or available in the server warranty contract documents.
- Server serial number, which is available on the Oracle System Assistant in the System Overview tab.

**1. Log in to MOS at:**

<http://support.oracle.com>.

**2. Select the Settings tab from the More drop-down list.**

**3. In the left-side pane under Personal, click Accounts/Privileges.**

**4. Click the Request Access button in the Support Identifiers window.**

The Request Access to a Support Identifier window appears.

**5. Do one of the following:**

- If you have the CSI, enter it in the Support Identifier field of the Request Access tab and click Request Access.



Approval *might* be required, but once access is granted, the Oracle System Assistant Get Updates capability is enabled for all servers associated with the CSI.

---

**Note** – If you cannot obtain the CSI access or are unable to download updates for the server using Oracle System Assistant, contact Oracle Support.

---

- If you have the server serial number but do not have the CSI, do the following:
  - a. Click the Find a Support Identifier tab.

**Request Access to a Support Identifier**

Request Access Find a Support Identifier

Find Support Identifier by Serial Number and Organization

\* System Serial Number

\* Organization

Support Identifier	Organization	Status	Serial Numbers

**b. Type the server serial number in the System Serial Number field.**

**c. Type the organization name in the Organization field.**

**d. Click Search.**

**e. Highlight the CSI in the search results table and click Request Access.**

Approval *might* be required, but, once access is granted, the Oracle System Assistant Get Updates capability is enabled for all servers associated with the CSI.

---

**Note** – If you cannot obtain the CSI access or are unable to download updates for the server using Oracle System Assistant, contact Oracle Support.

---

## ▼ Update Firmware

The Update Firmware task allows you to update system firmware (BIOS and Oracle ILOM SP) and device firmware.

The Update Firmware task determines whether an update is available by comparing the firmware versions in the most recent platform software release to the currently installed server system and device firmware. You can preview the changes, compare version numbers, manually select which components to update, or choose to update all firmware components. It is highly recommended that you choose to update all firmware components.

Some firmware components require a server reboot immediately following a firmware update. If required, the server might automatically reboot when the update process finishes.



For updates to Oracle ILOM, the actual time it takes to perform the update depends on the Local Host Interconnect setting in Oracle ILOM. A quicker method using an internal USB Ethernet connection is used by Oracle System Assistant when the Local Host Interconnect setting in Oracle ILOM is configured as host managed (true), which is the default. If the Oracle ILOM Local Host Interconnect setting is not configured as host managed, a slower method is used by Oracle System Assistant for the update.

---

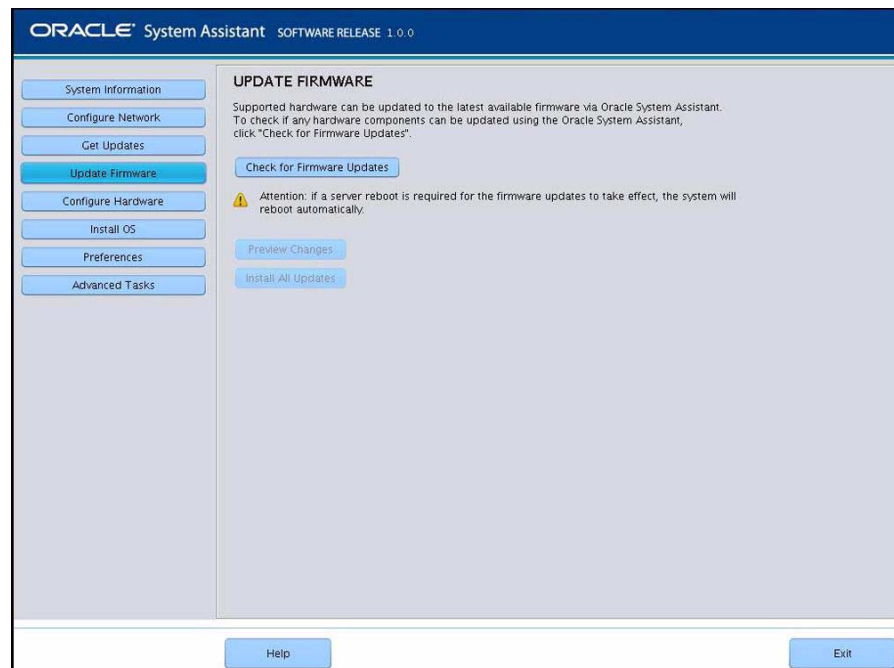
**Note** – Before you begin the firmware update, use the Get Updates task to download the most recent platform software release from Oracle.

---

Follow these steps to update firmware using Oracle System Assistant.

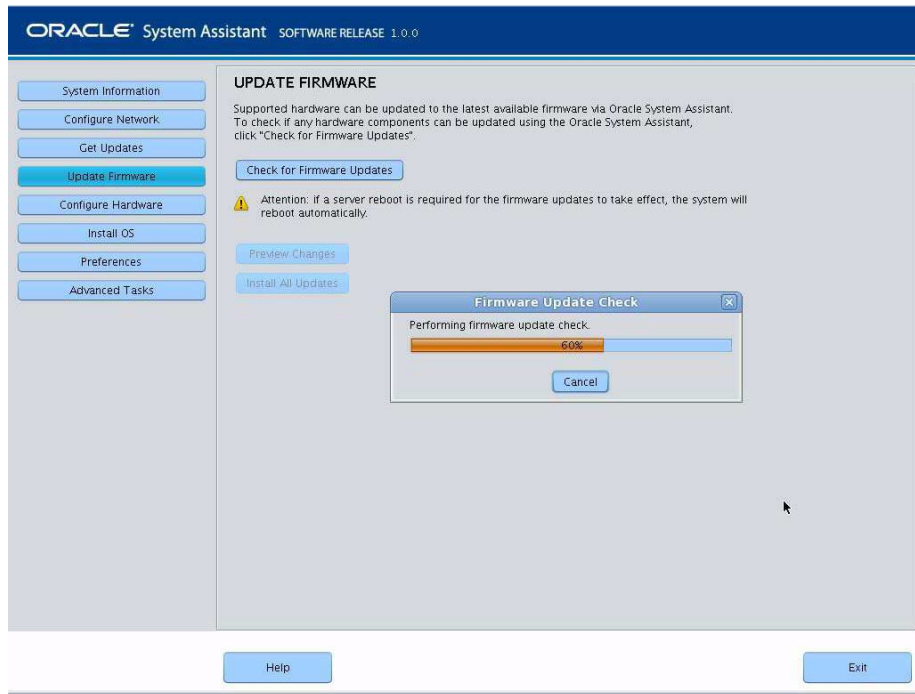
**1. In Oracle System Assistant, click the Update Firmware task button.**

The Update Firmware screen appears.



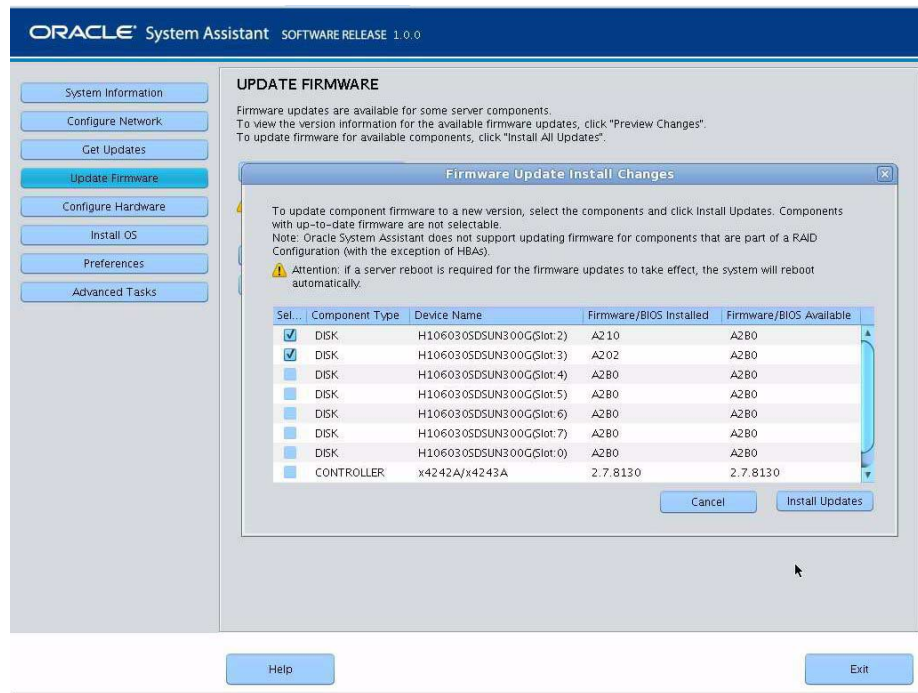
**2. To view the hardware components that can be updated using Oracle System Assistant, click the Check for Firmware Updates button.**

The system performs the firmware update check and the Firmware Update Check progress box appears.



**3. (Optional) Click the Preview Changes button.**

The Firmware Update Install Changes dialog appears.



**4. View a list of firmware components that need updates and compare current and available version numbers.**

You can also review the Component Type, Device Name, Firmware/BIOS Installed, and Firmware/BIOS Available.

**5. To proceed, do one of the following:**

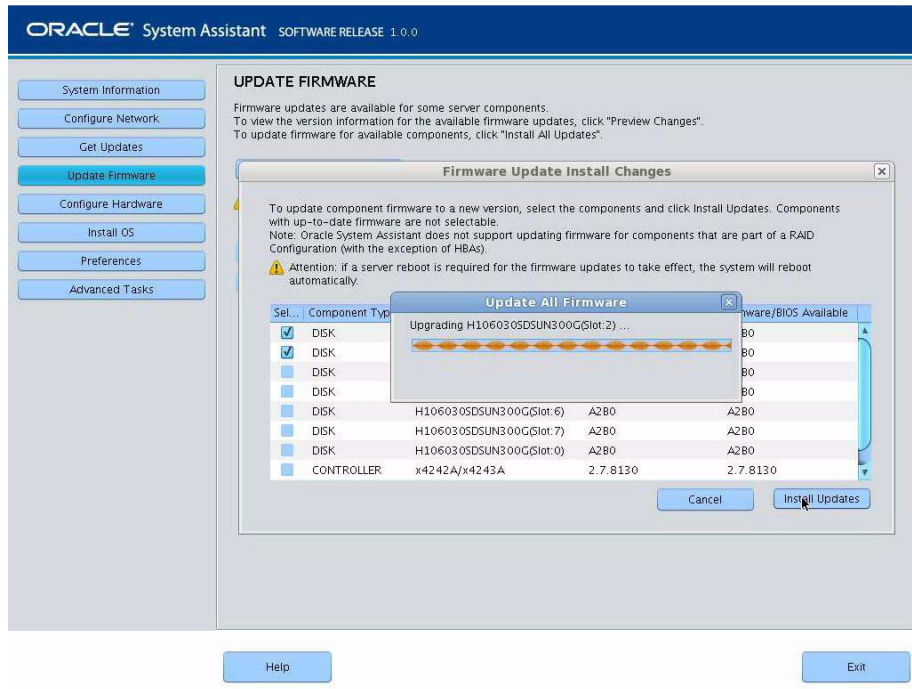
- To perform a selective firmware update, select the firmware updates that you want to install, then click the Install Updates button.

---

**Note** – Components that are up to date cannot be updated and, therefore, are not selectable.

---

- To install all firmware updates (if you did not click the Preview Changes button), click the Install All Updates button on the Update Firmware screen.



6. If you are prompted to log in to Oracle ILOM to perform the update, you must log in using an account with full administrator or root privileges, such as:

- The Oracle ILOM root account.
- A user account assigned the Administrator role (which includes the `aurco` roles.)
- A user account customized with the `aurco` roles.

---

**Note** – A user account with only the admin (a) role will not provide enough privileges to perform the update from Oracle System Assistant.

---



---

**Note** – If the update process proceeds without prompting you to log in to Oracle ILOM, a different update method is used which can take longer to complete (up to 40 minutes).

---

7. Wait while the system updates the firmware.

The Update Firmware progress bar appears.

If a system reboot is required for the firmware updates to take effect, the system will reboot automatically.

## Related Information

- [“Accessing Oracle System Assistant” on page 17](#)

## ▼ Configure Hardware for RAID

The RAID Configuration task allows you to configure RAID-0 or RAID-1 for the server.

---

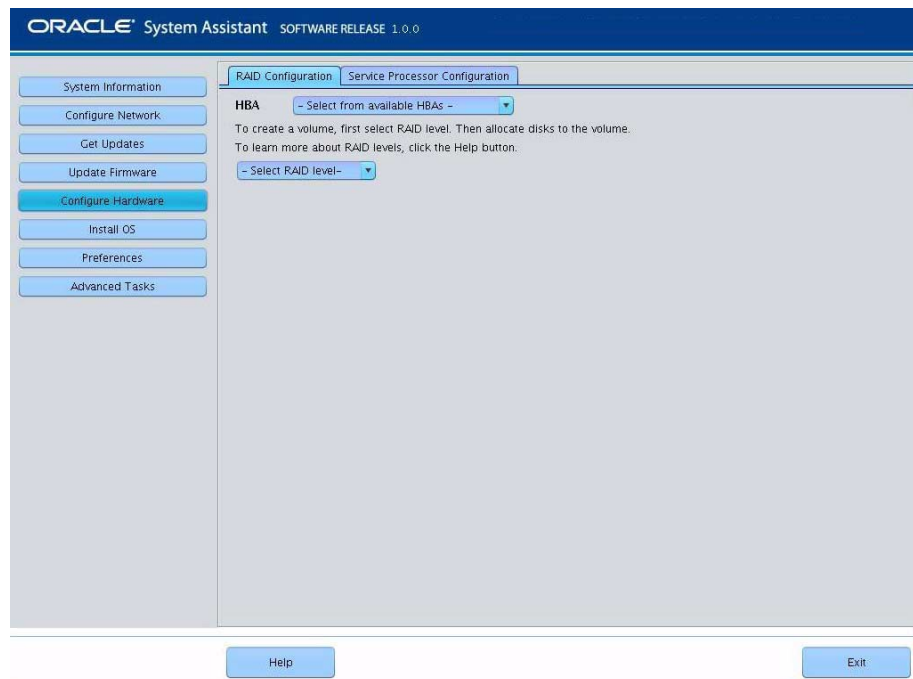
**Note** – Perform this task before installing an operating system.

---

Follow these steps to configure RAID using Oracle System Assistant.

1. Click the **Configure Hardware** task button, then select the **RAID Configuration** tab.

The RAID Configuration screen appears.



2. In the HBA list box, verify that the host bus adapter (HBA) disk controller is correct.

For example, the server supports the SGX-SAS6-INT-Z HBA or the SGX-SAS6-R-INT-Z HBA (if you want to create a bootable volume). For more information about these HBAs, refer to the [Sun Server X3-2L Installation Guide](#), “RAID Configuration Requirements” on page 94.

3. In the Select RAID Level list box, select the RAID level; RAID-0, RAID-1, or RAID-10.

You can use Oracle System Assistant to set only these RAID levels. To set other RAID levels, you need to use the HBA BIOS Setup Utility.

The number of disks allowed in an array is dependent on the controller.

- The SGX-SAS6-R-INT-Z HBA requires one or more disks.
- The SGS-SAS6-INT-Z HBA requires two or more disks.

4. In the Available Disks table, select the storage drives that you want to add to the RAID configuration.

If a volume already exists on the disk, it appears in the Created Volumes section. If necessary, highlight and delete the existing volume.

5. Click the Create Volume button.

The Creating RAID Volume information box appears.

6. Wait for the RAID Volume to be created.

The Volume Details dialog box appears. Information about the highlighted volume is displayed.

7. In the Volume Details dialog box, enter the volume name in the Volume Name box, then click the Save Changes button.

The RAID Configuration screen appears. This completes the RAID configuration.

8. Continue with the next steps if you want to delete a RAID volume or configure a bootable volume.

- If you want to delete a RAID volume, in the RAID Configuration screen, select the RAID volume, then click the Delete Volume button.

This action deletes all data on the existing volume.

- If you want to create a bootable volume, in the RAID Configuration screen, select the RAID volume, then click the Set Volume for Boot button.

The RAID Configuration screen now indicates the bootable volume. The server then boots from this volume if selected to boot from the RAID controller.

---

**Note** – Your disk controller might not support this feature.

---

9. Click Save Settings.
10. If desired, click Exit to quit Oracle System Assistant and reboot or power off the server.

### Related Information

- [“Accessing Oracle System Assistant” on page 17](#)
- [“RAID Configuration Options” on page 100](#)

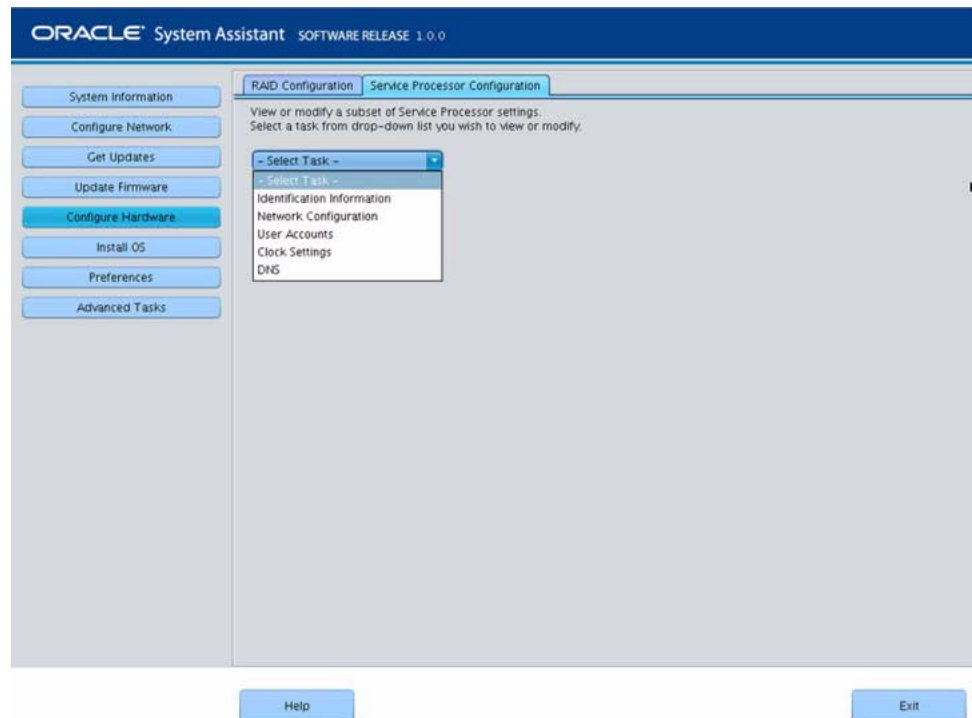
## ▼ Configure Hardware for the Oracle ILOM SP

You can view or modify a subset of the Oracle ILOM service processor (SP) settings.

Follow these steps to view or modify the Oracle ILOM SP settings using Oracle System Assistant.

1. Click the **Configure Hardware** task button, then click the **Service Processor Configuration** tab.

The Server Processor Configuration screen appears.



2. From the **Select Task** drop-down list, select a task:

- Identification Information – See Step 3.
- Network Information – See Step 4.
- User Accounts – See Step 5.
- Clock Settings – See Step 6.
- DNS Settings – See Step 7.

**3. To view or modify Identification Information, complete the following information:**

**a. SP Hostname**

Type the Oracle ILOM SP hostname.

The hostname must start with a letter and can contain up to 60 alphanumeric characters, hyphens, and underscores.

**b. SP System Identifier**

Type the name that identifies the system. Use any characters except quotation marks.

**c. SP System Contact**

Type the name of the person to contact. Use any characters except quotation marks.

**d. SP System Location**

Type the name of the physical location of the system. Use any characters except quotation marks.



#### 4. To view or modify Network Information, complete the following information:

---

**Note** – Complete the information for the network configuration you are using: either IPv4 or IPv6.

---

##### a. IP Discovery Mode (IPv4)

Select whether the system uses Dynamic Host Configuration Protocol (DHCP) or a static IP assignment.

##### b. IP Address (IPv4)

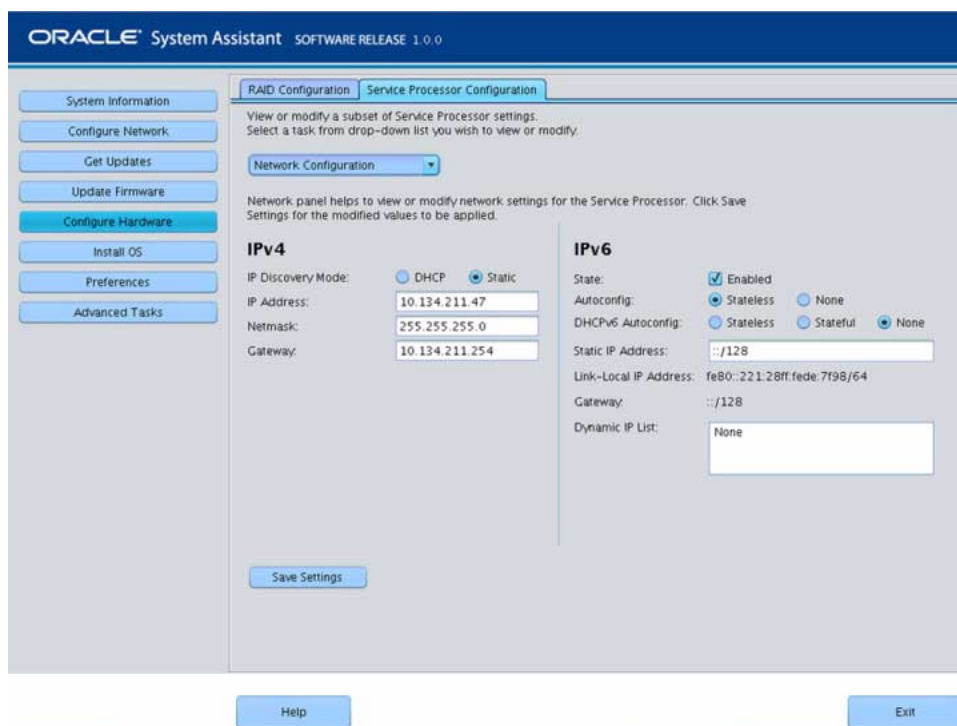
If you selected a static IP assignment, provide the IP address of the SP.

##### c. Netmask (IPv4)

If you selected a static IP assignment, provide the netmask for the SP.

##### d. Gateway (IPv4)

If you selected a static IP assignment, provide the gateway address for the SP.



**e. State (IPv6)**

Click the Enabled check box to enable IPv6 network settings.

**f. Autoconfig (IPv6)**

When enabled, the IPv6 Stateless autoconfiguration is run to learn the IPv6 addresses.

**g. DHCPv6 Autoconfig (IPv6)**

When enabled, the DHCPv6 Stateless autoconfiguration is run to learn the DNS and domain information.

When enabled, the DHCPv6 Stateful autoconfiguration is run to learn the IPv6 addresses and DNS information.

When enabled, the None state will only set the Link Local address in Oracle ILOM.

**h. Static IP Address (IPv6)**

This is the static IP address of the SP.

**i. Link-Local IP Address (IPv6)**

This is a non-routable address that you can use to connect to the SP from another IPv6 enabled node on the same network.

**j. Gateway (IPv6)**

This is the gateway address for the SP.

**k. Dynamic IP List**

This field is read-only. Oracle System Assistant gets these values from Oracle ILOM.

**5. To view or modify local Oracle ILOM User Accounts, complete the following information:**

**a. Add User**

Click the Add User button to add a new local user account. Type a unique user name, select the role (Basic or Advanced) from the drop-down list, set privileges, and type the password.

---

**Note –** If you want to choose specific privileges (not preset) for the user, choose Advanced.

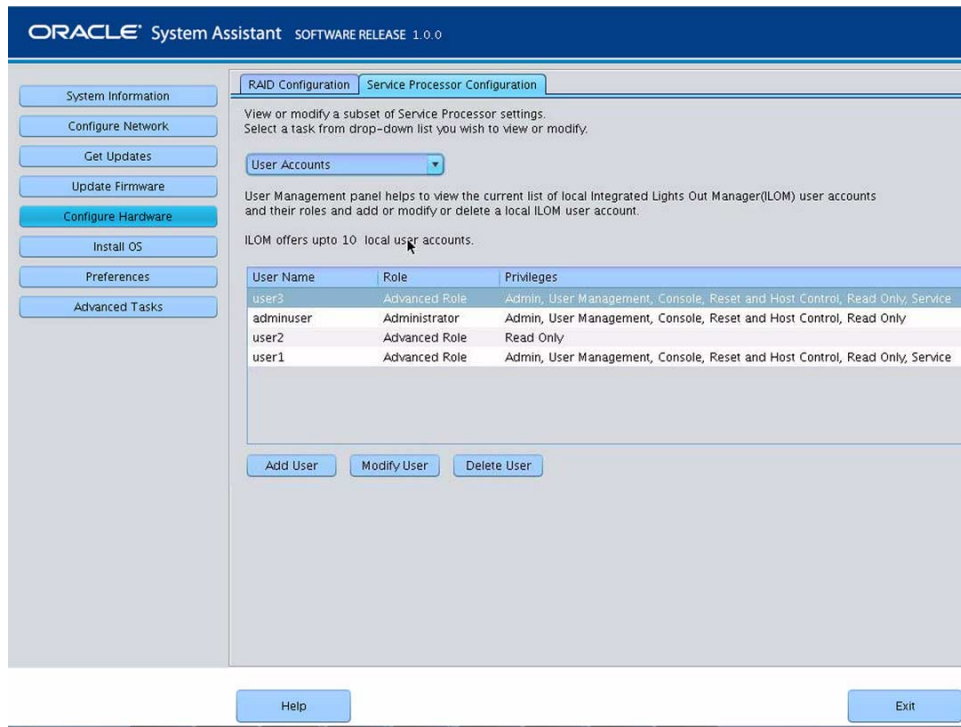
---

**b. Modify user**

Highlight a user account in the list and click Modify User to review or change the local user account settings.

**c. Delete User**

Highlight a user account in the list and click Delete User to delete a local user account.



**6. To view or modify Clock Settings, complete the following information:**

**a. Date**

Use the drop-down list to select the month, day, and year.

**b. Time**

Use the drop-down list to set the time using 24-hour format.

**c. Timezone**

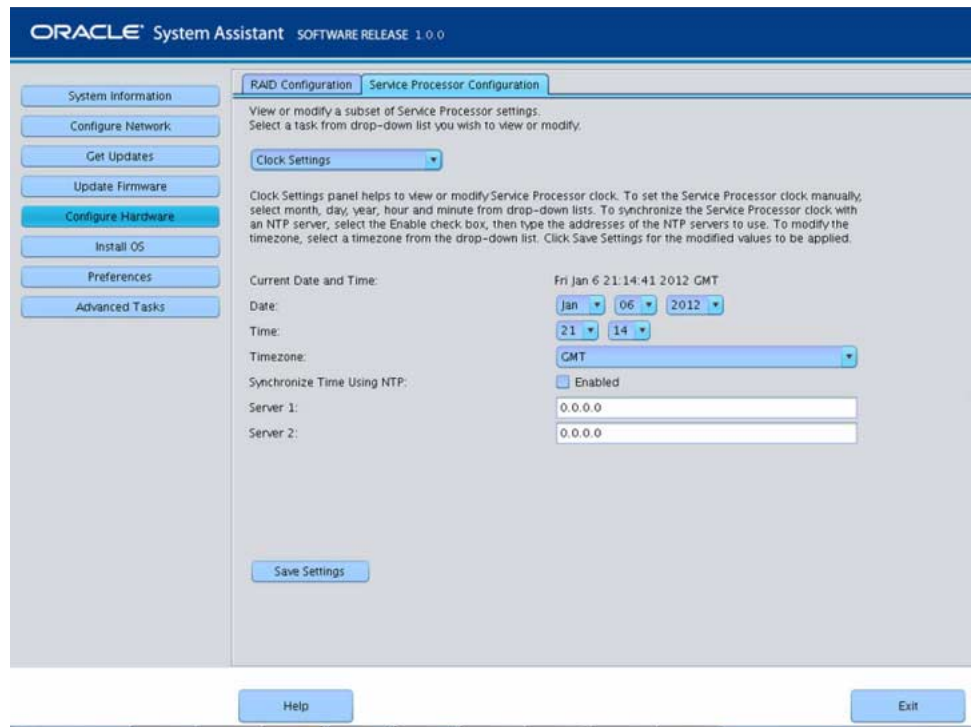
Use the drop-down list to select the timezone.

**d. Synchronize Time Using NTP**

Click the check box to enable synchronization with a Network Time Protocol (NTP) server.

**e. Server 1, Server 2**

Enter the information for the NTP servers.



**7. To view or modify DNS settings, complete the following information.**

**a. Auto DNS via DHCP.**

Check enabled or disabled.

**b. DNS Server Name**

Edit this only if Auto DNS is disabled.

Enter up to three comma-separated name server IP addresses in preferred order. For example, 1.2.3.4.5.6.7.8.

**c. DNS Search Path**

Edit this only if Auto DNS is disabled.

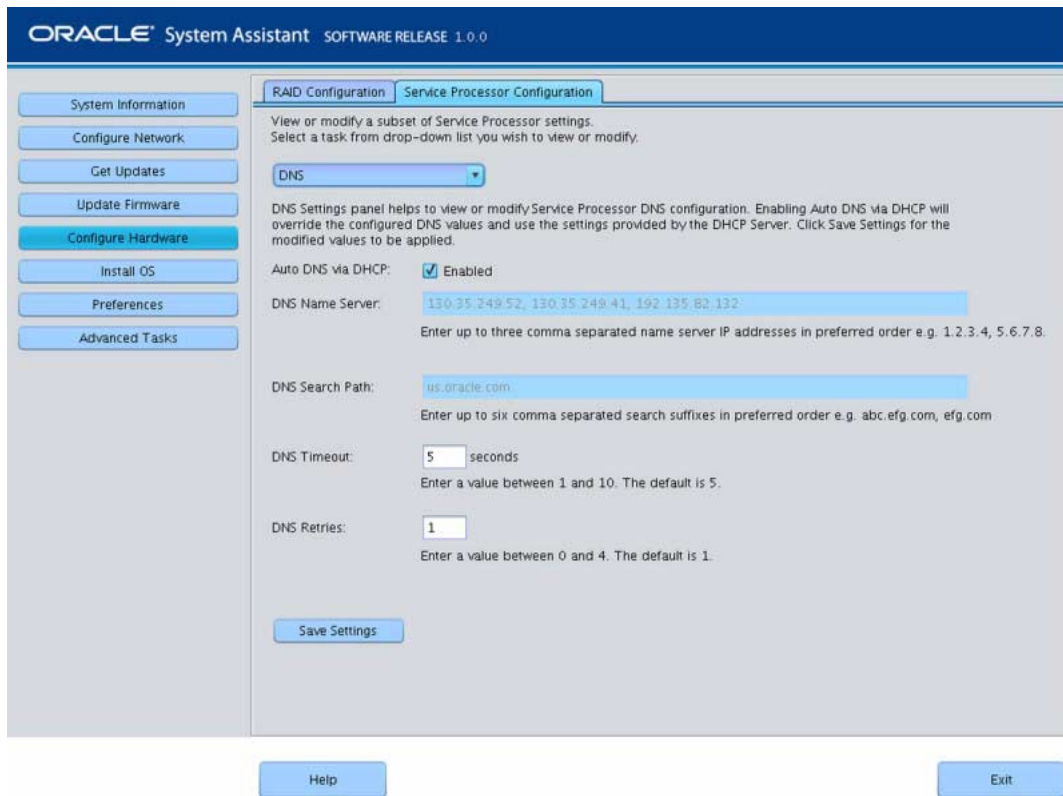
Enter up to six comma-separated search suffixes in preferred order. For example, abc.efg.com,efg.com.

**d. DNS Timeout**

Enter a value between 1 and 10. The default is 5.

**e. DNS Retries**

Enter a value between 0 and 4. The default is 1.



8. Click **Save Settings**.

9. If desired, click **Exit** to quit Oracle System Assistant and reboot or power off the server.

### Related Information

- [“Accessing Oracle System Assistant” on page 17](#)

## ▼ Install an Operating System

You must supply the operating system (OS) media and license.

---

**Note** – The Oracle System Assistant Install OS task is available for supported versions of Microsoft Windows and Linux operating systems and Oracle VM software.

---

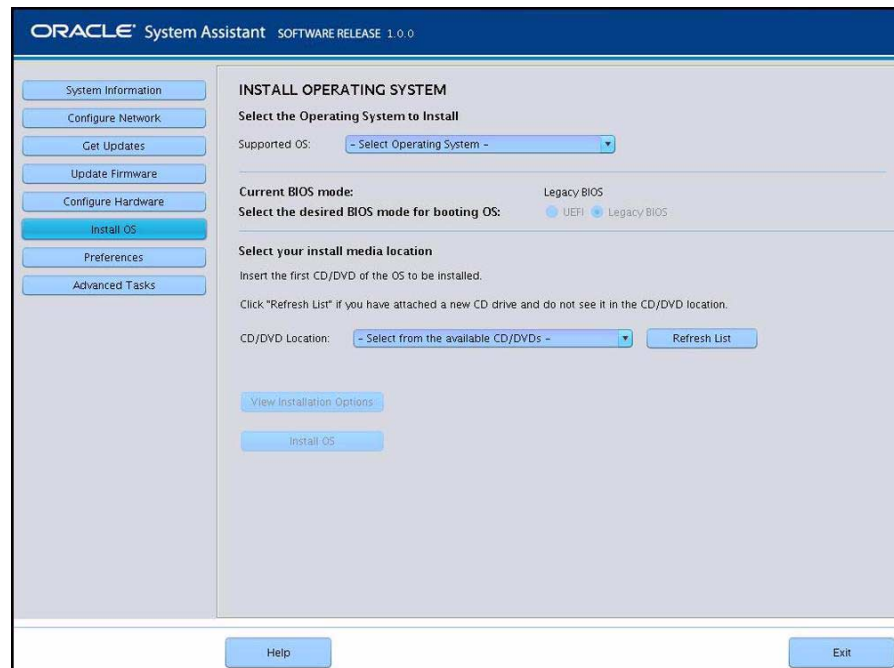
It is highly recommended that you perform the following tasks before you begin this procedure:

- Click Get Updates to get the latest tools and drivers. See [“Get Platform Software Release Updates”](#) on page 44.
- Click Update Firmware to update firmware. See [“Update Firmware”](#) on page 48.
- Click Configure Hardware > RAID Configuration to configure RAID. See [“Configure Hardware for RAID”](#) on page 53.

Follow these steps to install an operating system using Oracle System Assistant.

**1. Click the Install OS task button.**

The Install Operating System screen appears.



**2. From the Supported OS drop-down list, select the OS to install.**

The list contains only the supported operating systems that can be installed using the Install OS task.

**3. In the Select the desired BIOS mode for booting OS portion of the screen, select the BIOS mode (UEFI or Legacy BIOS) that you want to use for the OS installation.**

The choice of BIOS modes is available only if the target OS supports booting in UEFI mode. See [“Selecting Legacy BIOS or UEFI Boot Mode”](#) on page 111.

**4. In the Select your install media location portion of the screen, indicate the location of the installation media.**

This is the location of the OS distribution media. Options are CD/DVD devices. Click the Refresh button to update the list of devices.

---

**Note** – If you are installing the OS remotely using KVM, choose the KVM menu option Devices and click CD-ROM to get the remote CD-ROM to appear. Then on the Oracle System Assistant screen, click Refresh and select the CD/DVD location.

---

**5. In the Select the boot disk portion of the screen, select the boot device from the Boot disk drop-down list.**

This is the device on which you install the OS.

If you chose a Linux distribution, the Select the boot disk portion of the screen appears. If you chose a Windows distribution, the Select the boot disk portion of the screen does not appear.



---

**Caution** – Loss of data. The OS installation erases the contents of the disk. All data on the selected disk is erased.

---

**6. To confirm your selection of the boot device, click Yes.**

**7. Click View Installation Options.**

The Operating System Installation Details dialog appears. The OS and Drivers software components are listed. Deselect any components that you do not want to install. For *most* operating systems, all components that are listed are required and cannot be deselected.





**8. Click Close to exit the dialog.**

The Install Operating System screen appears.

**9. Click the Install OS button.**

**10. Follow the process and respond to the prompts until the process finishes.**

After the installation is complete, the server boots.

**Related Information**

- [“Accessing Oracle System Assistant” on page 17](#)
- [“Using Legacy BIOS or UEFI” on page 110](#)

## ▼ Set Preferences to Disable Oracle System Assistant

If you are already booted into Oracle System Assistant, you can use the Disable Oracle System Assistant task to put the Oracle System Assistant USB device in an offline state, so that it is unavailable to the server operating system (OS). This

protects the device from accidental erasure and overwrite. When the device is offline, it is not bootable, and the tools, drivers, and files that reside on the Oracle System Assistant device are inaccessible.

---

**Note** – To re-enable Oracle System Assistant, see [“Enable or Disable Oracle System Assistant” on page 128](#).

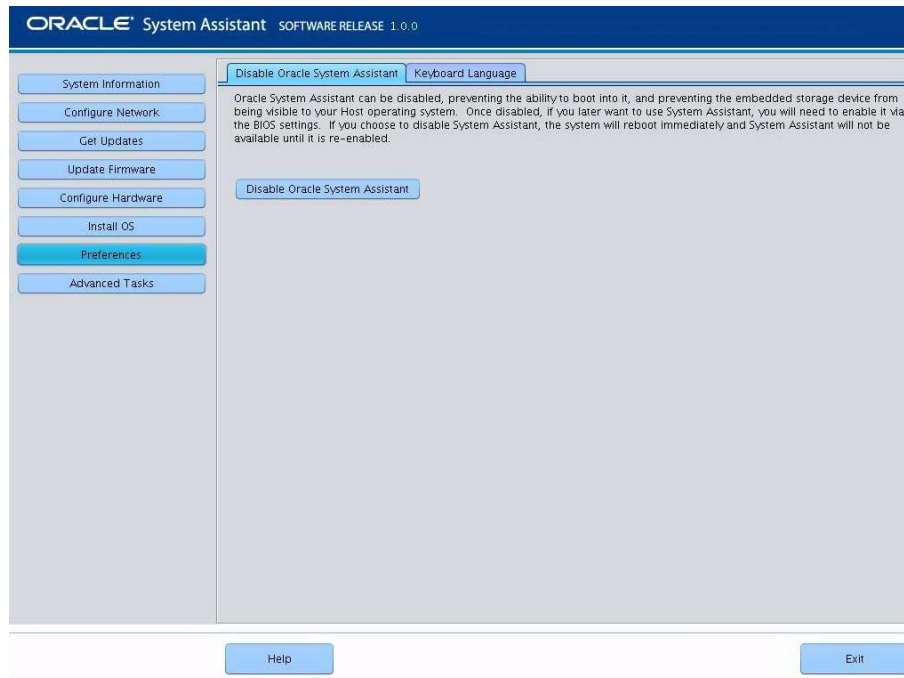
---

To put the device in an online state (available to the OS), use the Configure OSA setting in the server BIOS Setup Utility Boot menu.

To disable Oracle System Assistant when you are booted into Oracle System Assistant, do the following.

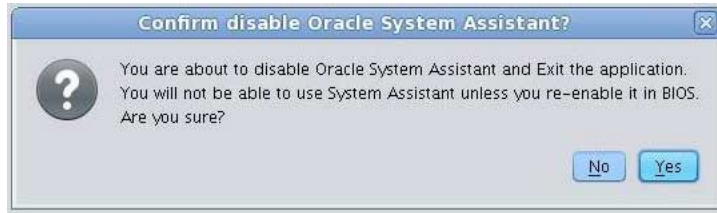
**1. Click the Preferences task button, then click the Disable Oracle System Assistant tab.**

The Disable Oracle System Assistant screen appears.



**2. Click the Disable Oracle System Assistant button.**

A confirmation dialog box appears.



3. **Click Yes to confirm that you want to disable Oracle System Assistant.**

The Oracle System Assistant application quits and the server reboots.

4. **To re-enable Oracle System Assistant, use the BIOS Setup Utility.**

See [“Enable or Disable Oracle System Assistant” on page 128](#).

#### **Related Information**

- [“Accessing Oracle System Assistant” on page 17](#)

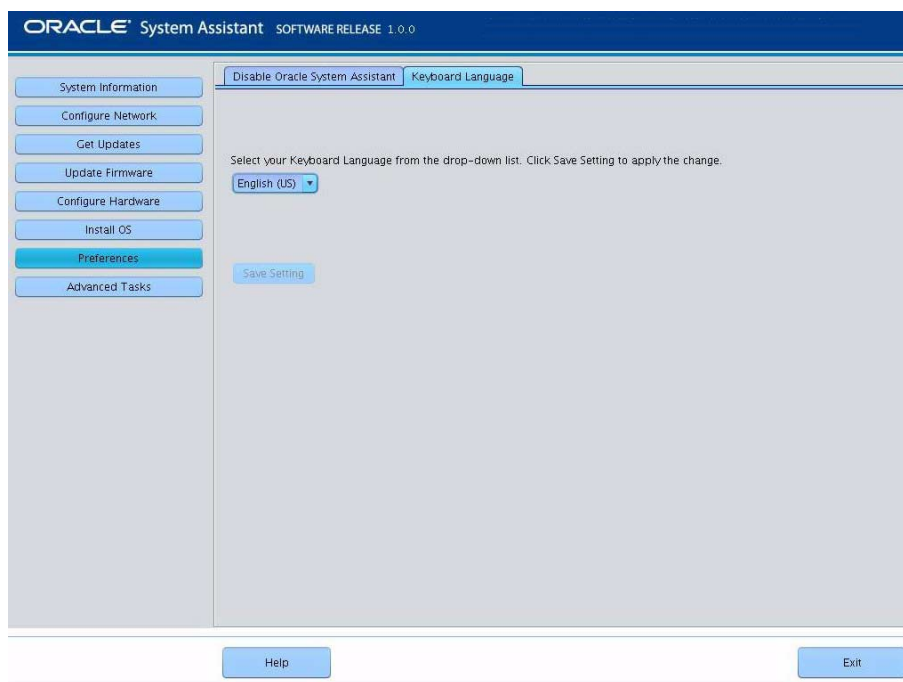
## ▼ **Set Preferences for Keyboard Language**

The Keyboard Language task enables you to configure the keyboard language for Oracle System Assistant.

Follow these steps to set the keyboard language using Oracle System Assistant.

1. **Click the Preferences task button, then click the Keyboard Language tab.**

The Keyboard Language screen appears.



**2. From the drop-down list, select the keyboard language.**

Options include: English (US), French, German, Italian, Spanish, and Swedish.

**3. Click Save Settings.**

**4. If desired, click Exit to quit Oracle System Assistant and reboot or power off the server.**

**Related Information**

- [“Accessing Oracle System Assistant” on page 17](#)

## ▼ Perform Advanced Tasks to Access Oracle System Assistant Shell

This task provides Linux root-level access to the Oracle System Assistant filesystem. Use the command-line shell to access tools and files that reside on the internal Oracle System Assistant USB device.



---

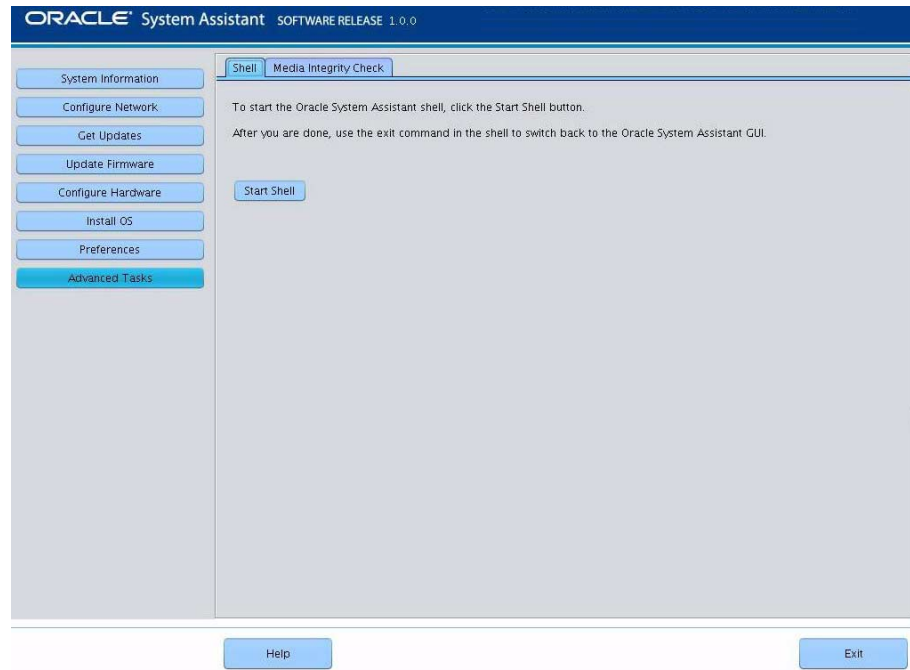
**Caution** – Possible loss of data or loss of Oracle System Assistant functionality. Only advanced users or system administrators should access and use the Oracle System Assistant shell.

---

Follow these steps to access the command-line shell using Oracle System Assistant.

1. Click the **Advanced Tasks** task button, then click the **Shell** tab.

The Shell screen appears.



2. Click the **Start Shell** button.

The Oracle System Assistant command-line shell window appears.



3. To leave the shell and return to the Oracle System Assistant user interface, type **exit** at the shell command-line prompt.
4. If desired, click **Exit** to quit Oracle System Assistant and reboot or power off the server.

## Related Information

- [“Accessing Oracle System Assistant” on page 17](#)

## ▼ Perform Advanced Tasks to Check Media Integrity

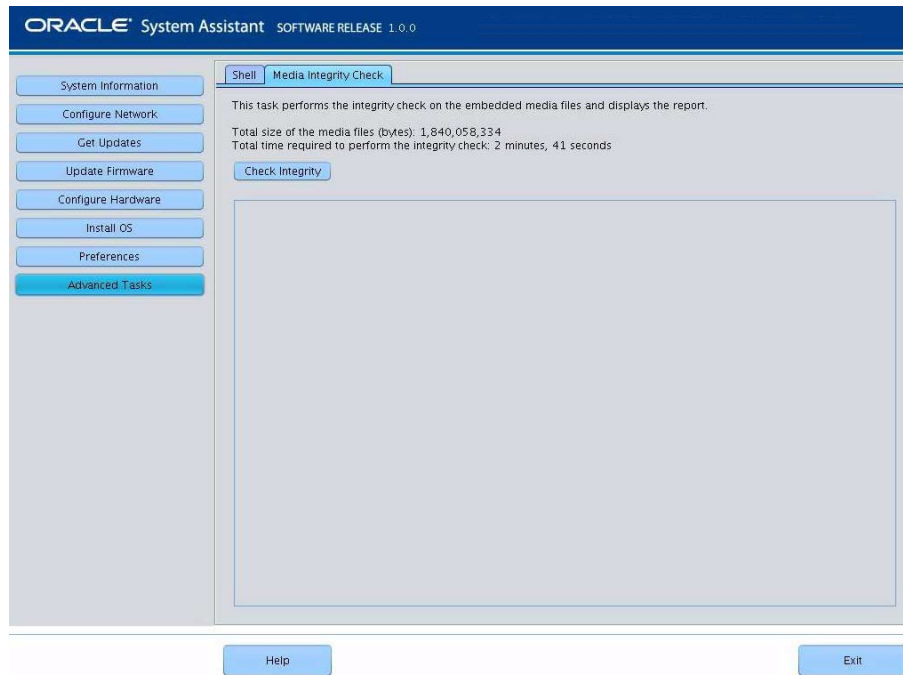
The Media Integrity Check task verifies the integrity of the internal Oracle System Assistant media files and displays a report. You should perform this task when the USB device produces errors or when requested by Oracle Service personnel.

If your version of Oracle System Assistant is damaged, download the Updater ISO image file for your server from the My Oracle Support site. For more information, see [“Restore Oracle System Assistant” on page 81](#).

Follow these steps to verify that the USB media for Oracle System Assistant is working properly.

1. **Click the Advanced Tasks task button, then click the Media Integrity Check tab.**

The Media Integrity Check screen appears.



**2. Click the Check Integrity button.**

The system tests the internal Oracle System Assistant USB device and generates a report. The test provides an estimated run time. You can cancel the test at any time.

**3. If desired, click Exit to quit Oracle System Assistant and reboot or power off the server.**

**Related Information**

- [“Accessing Oracle System Assistant” on page 17](#)

## ▼ View Files on the Oracle System Assistant USB Flash Drive

The Oracle System Assistant USB flash drive contains firmware and software for your server. The USB flash drive is accessible through the operating system or virtual machine software filesystem. Updated firmware and software are downloaded with every software release update using the Get Updates task within Oracle System Assistant.

This procedure describes how to access the firmware and software that resides on the Oracle System Assistant USB flash drive.

**1. Ensure that the server is powered on and the operating system is running.**

**2. Mount the Oracle System Assistant USB flash drive.**

- For Oracle VM, see [“Mount the Oracle System Assistant USB Flash Drive on Oracle VM 3.0” on page 74](#).
- For Linux operating systems, see [“Mount the Oracle System Assistant USB Flash Drive on a Linux Operating System” on page 75](#).
- For Oracle Solaris 10, see [“Mount the Oracle System Assistant USB Flash Drive on an Oracle Solaris 10 Operating System” on page 76](#).

**3. Use a filesystem browser to navigate to the internal Oracle System Assistant USB flash drive.**

The label for the USB flash drive is: ORACLE\_SSM on Oracle VM systems and ORACLE\_SSM on Oracle Solaris 10 and Linux operating systems.

---

**Note** – If the Oracle System Assistant USB flash drive is mounted but is still is not visible, Oracle System Assistant might be disabled. To enable Oracle System Assistant, from the BIOS Setup Utility, access the Boot > OSA Configuration screen and change the setting to Enabled. For instructions for enabling Oracle System Assistant, see [“Enable or Disable Oracle System Assistant” on page 128](#).

---

**4. To view the contents of the ORACLE\_SSM or ORACLE SSM drive, double-click on the drive.**

The Oracle System Assistant USB flash drive directory appears and lists the contents of the drive.

**Related Information**

- [“Mounting the Oracle System Assistant USB Flash Drive” on page 73](#)
- [“Accessing Oracle System Assistant” on page 17](#)
- [“Organization of Oracle System Assistant” on page 37](#)

## ▼ View Documentation From Oracle System Assistant

Oracle System Assistant contains product documentation for your server. The documentation is accessible through the filesystem. Updated documentation is downloaded with every software release update using the Get Updates task within Oracle System Assistant.

---

**Note** – The latest and most up-to-date documentation for your server also is available online at the server documentation library page at:

<http://www.oracle.com/pls/topic/lookup?ctx=SunServerX3-2L>.

---

This procedure describes how to access the HTML documentation that resides within Oracle System Assistant. To view the documentation, you need a web browser or an HTML viewer.

- 1. Ensure that the server is powered on and the operating system is running.**
- 2. Use a filesystem browser to navigate to the internal Oracle System Assistant USB device.**

The label for the device is: ORACLE\_SSM on Oracle Solaris and Linux operating systems, and ORACLE SSM on Oracle VM systems. See [“View Files on the Oracle System Assistant USB Flash Drive” on page 71](#).



---

**Note** – If the USB device is not visible, Oracle System Assistant might be disabled. To enable Oracle System Assistant, from the BIOS Setup Utility, access the Boot > OSA Configuration screen and change the setting to Enabled. For more information, see [“Enable or Disable Oracle System Assistant” on page 128](#).

---

**3. Navigate to the Documentation/ directory.**

The documentation directory is at the top level on the USB device. See [“Accessing the Oracle System Assistant Filesystem” on page 86](#).

**4. To view the library page, right-click on the `index.html` file and select Open With.**

**5. View the documentation using an HTML viewer or browser.**

The documentation library page appears.

**Related Information**

- [“Accessing Oracle System Assistant” on page 17](#)
- [“Organization of Oracle System Assistant” on page 37](#)

---

## Mounting the Oracle System Assistant USB Flash Drive

Before you can access the Oracle System Assistant USB flash drive on Oracle VM 3.0 or the Oracle Solaris 10 and Linux operating systems, you must first mount the USB flash drive.

If you are using the Windows Server operating system or the Oracle Solaris 11 operating system, you do not need to mount the USB flash drive because Windows and Oracle Solaris 11 will auto-mount this drive so that it is visible using the file system browser.

---

**Note** – Currently you cannot mount the Oracle System Assistant USB flash drive using the VMware ESXi 5.0 virtual machine software. Go to My Oracle Support to retrieve the required drivers for VMware ESXi software.

---

The procedures for mounting the drive are provided in the following sections:

- [“Mount the Oracle System Assistant USB Flash Drive on Oracle VM 3.0” on page 74](#)

- “Mount the Oracle System Assistant USB Flash Drive on a Linux Operating System” on page 75
- “Mount the Oracle System Assistant USB Flash Drive on an Oracle Solaris 10 Operating System” on page 76

### Related Information

- “View Files on the Oracle System Assistant USB Flash Drive” on page 71

## ▼ Mount the Oracle System Assistant USB Flash Drive on Oracle VM 3.0

If the server is running Oracle VM 3.0 software, you must mount the Oracle System Assistant USB flash drive before you use the filesystem to display or access its contents.

1. **Connect to your Oracle VM 3.0 server as the `root` user.**
2. **To determine the device mapping of the Oracle System Assistant USB flash drive, enter the `lsscsi` command.**

An example of how this command displays the storage devices on the server is shown below.

```
# lsscsi
[0:0:0:0]    disk      SEAGATE   ST360057SSUN600G 0805  /dev/sda
[0:0:1:0]    disk      SEAGATE   ST32000SSSUN2.0T 0313  /dev/sdb
[0:0:2:0]    disk      SEAGATE   ST32000SSSUN2.0T 0313  /dev/sdc
[0:0:3:0]    disk      ATA        INTEL SSDSA2BZ30 0362  /dev/sdd
[0:0:4:0]    enclosu  ORACLE    CONCORD14        0903  -
[7:0:0:0]    disk      SUN        StorEdge 3511    421F  /dev/sde
[7:0:0:1]    disk      SUN        StorEdge 3511    421F  /dev/sdf
[7:0:0:2]    disk      SUN        StorEdge 3511    421F  /dev/sdg
[7:0:0:3]    disk      SUN        StorEdge 3511    421F  /dev/sdh
[9:0:0:0]    disk      SUN        CSM200_R        0660  /dev/sdi
[9:0:0:1]    disk      SUN        CSM200_R        0660  /dev/sdj
[9:0:0:2]    disk      SUN        CSM200_R        0660  /dev/sdk
[9:0:0:3]    disk      SUN        CSM200_R        0660  /dev/sdl
[9:0:0:4]    disk      SUN        CSM200_R        0660  /dev/sdm
[9:0:0:5]    disk      SUN        CSM200_R        0660  /dev/sdn
[11:0:0:0]   disk      ORACLE    SSM              PMAP  /dev/sdo
```

The Oracle System Assistant USB flash drive is the disk labelled `ORACLE SSM` and in this example is mapped to `/dev/sdo`.

3. To determine the name of the partition on the Oracle System Assistant USB device, enter the `fdisk -l /dev/sdo` command.

An example of the output produced by this command is shown below.

```
# fdisk -l /dev/sdo
Disk /dev/sdo: 3880 MB, 3880452096 bytes
4 heads, 32 sectors/track, 59211 cylinders
Units = cylinders of 128 * 512 = 65536 bytes
Device Boot      Start    End      Blocks   Id  System
/dev/sdo1 *        17     57344     3668992   ef   EFI (FAT-12/16/32)
```

4. (Optional) Create a mount point to use when mounting the Oracle System Assistant USB flash drive.

For example:

```
# mkdir /mnt/OSA
```

5. To mount the Oracle System Assistant USB device, use the partition name determined in [Step 3](#) and an existing mount point or the mount point created in [Step 4](#).

Here is an example of a mount command:

```
# mount -t vfat -o codepage=850 /dev/sdo1 /mnt/OSA
# ls /mnt/OSA
boot          Firmware      LiveOS        OracleVM      syslinux.cfg
Documentation  ldlinux.sys  manifest.xml  readme.html   Versions.txt
EFI           Linux         Oracle        Solaris       Windows
#
```

The Oracle System Assistant USB flash drive is now mounted at the mount location specified.

## ▼ Mount the Oracle System Assistant USB Flash Drive on a Linux Operating System

If the server is running a Linux operating system, you must mount the Oracle System Assistant USB flash drive before you use the filesystem to display or access its contents.

This procedure shows how to mount the Oracle System Assistant USB flash drive on a Linux operating system.

- To mount the Oracle System Assistant USB flash drive, enter the commands shown below:

```
#>mkdir /mnt/OSA
#>mount LABEL=ORACLE_SSM /mnt/OSA
#>cd /mnt/OSA
#>ls -l
total 916
drwxr-xr-x  2 root root    4096 Nov 21 07:42 boot
drwxr-xr-x  3 root root    4096 Nov 21 07:42 Documentation
drwxr-xr-x  3 root root    4096 Oct 26 21:05 EFI
drwxr-xr-x 16 root root    4096 Nov 21 07:42 Firmware
-r-xr-xr-x  1 root root   15218 Oct 26 19:10 ldlinux.sys
drwxr-xr-x  5 root root    4096 Nov 21 07:41 Linux
drwxr-xr-x  2 root root    4096 Oct 26 21:05 LiveOS
-rwxr-xr-x  1 root root  787672 Nov 21 08:17 manifest.xml
drwxr-xr-x  2 root root    4096 Nov 21 08:00 Oracle
-rwxr-xr-x  1 root root  78879 Nov 21 07:42 readme.html
drwxr-xr-x  4 root root    4096 Nov 21 07:41 Solaris
-rwxr-xr-x  1 root root     263 Oct 26 21:05 syslinux.cfg
-rwxr-xr-x  1 root root   3755 Nov 21 07:42 Versions.txt
drwxr-xr-x  3 root root    4096 Nov 21 07:42 VMware
drwxr-xr-x  4 root root    4096 Nov 21 07:42 Windows
#>
```

The Oracle System Assistant USB flash drive is now mounted at the location specified.

## ▼ Mount the Oracle System Assistant USB Flash Drive on an Oracle Solaris 10 Operating System

If the server is running the Oracle Solaris 10 operating system, you must mount the Oracle System Assistant USB flash drive before you use the filesystem to display or access its contents

This procedure shows how to mount the Oracle System Assistant USB flash drive on an Oracle Solaris 10 operating system.

1. To turn off the volfs service, enter the following command:

```
# svcadm disable volfs
```

2. To identify the Oracle System Assistant USB flash drive, enter the following command:

```
# rmformat -l
```

The system responds with the following output:

```
Looking for devices...
1. Logical Node: /dev/rdisk/clt0d0p0
Physical Node:
    /pci@0,0/pci108e,484e@1a/hub@1/storage@2/disk@0,0
Connected Device: ORACLE SSM PMAP
Device Type: Removable
#
```

3. To mount the USB flash drive as read only, enter the following command:

```
# mount -F pcfs -o ro /dev/dsk/clt0d0p1 /mnt
```

The Oracle System Assistant USB flash drive is now mounted.

4. To access the content of the USB flash drive, enter the following commands:

```
# cd /mnt/Solaris
# ls
10U10  11
#
```

5. To unmount the USB flash drive and restart the volfs service, enter the following commands:

```
# cd /
# umount /mnt
# svcadm enable volfs
```

---

## Troubleshooting Oracle System Assistant

By default, Oracle System Assistant is installed with each supported server. It is not necessary to download the Oracle System Assistant software because it is preinstalled on the server. However, an Updater image is available for download in the event that it is needed.

---

**Note** – Oracle System Assistant is not available as a download for initial installation; however, you can recover the Oracle System Assistant image if it was installed on your server.

---

- If the version of Oracle System Assistant on your server is corrupted, erased, or overwritten, you will need to download the Updater ISO image file from the My Oracle Support web site and then restore Oracle System Assistant onto the internal USB device. For more information, see [“Restore Oracle System Assistant” on page 81](#).
- If you opt out of having Oracle System Assistant as part of your server configuration, you can get the latest updates for your server through the My Oracle Support web site, or submit a request for physical media. See [“Getting Server Firmware and Software” on page 195](#).

This section contains the following procedures:

- [“Verify Oracle System Assistant Is Installed” on page 78](#)
- [“Troubleshoot Oracle System Assistant Launch From Oracle ILOM” on page 80](#)
- [“Restore Oracle System Assistant” on page 81](#)

## ▼ Verify Oracle System Assistant Is Installed

Your Sun Server X3-2L supports Oracle System Assistant as a default option, and is preinstalled in the server. If Oracle System Assistant is physically installed in your server, but it is not visible from the filesystem, it could be offline, corrupted, or overwritten. Use this procedure to determine whether Oracle System Assistant is installed in your server and is working properly.

To check the Oracle System Assistant installation, do the following:

### 1. Verify Oracle System Assistant installation using Oracle ILOM.

In the Oracle ILOM web interface, go to the Summary page to check whether Oracle System Assistant is installed in the server. See [“Access Oracle System Assistant Using the Oracle ILOM Web Interface” on page 21](#).

### 2. Verify Oracle System Assistant installation from the operating system.

Open a filesystem browser or command-line terminal, navigate to the computer or devices directory, and check whether the Oracle System Assistant USB device is present.

The Oracle System Assistant USB device is labeled: ORACLE\_SSM or ORACLE SSM. Double-click the device to ensure that it is accessible.

- If the device is present and accessible, launch the application, see [“Accessing Oracle System Assistant” on page 17](#).

- If the device is not present to the OS, perform a physical check of the server.
  - If the device is present but not accessible, it might contain corrupt data. See [“Restore Oracle System Assistant” on page 81](#).
3. **Verify whether Oracle System Assistant appears in the BIOS Boot Priority list.**
- Access the server BIOS Setup Utility and navigate to the Boot Menu. For information about accessing your server BIOS Setup Utility, see [“Setting Up BIOS Configuration Parameters” on page 105](#).
- The Oracle System Assistant device label is ORACLE\_SSM or ORACLE SSM.
  - If the correctly labeled device appears on the boot list, then your server has Oracle System Assistant. To launch the application, see [“Accessing Oracle System Assistant” on page 17](#).
  - If the device is physically present in the server, but does not appear in the boot list, then Oracle System Assistant might be disabled and offline. Use the next step to check whether Oracle System Assistant is disabled and offline.
4. **Check whether Oracle System Assistant is disabled and offline.**
- See [“Enable Oracle System Assistant From BIOS” on page 18](#).
- If Oracle System Assistant is disabled and offline, enable it to make it visible and bootable.
5. **Perform a physical check of the server.**
- Oracle System Assistant is installed on an USB device inside the server. For the location of the internal USB ports for your server, refer to the [Sun Server X3-2L Service Manual, “Servicing the Internal USB Flash Drives \(CRU\)” on page 91](#).
- If the device is present, try to launch the application, see [“Accessing Oracle System Assistant” on page 17](#).
  - If the device is present, but cannot be seen from the operating system, it might be disabled and offline. See [“Enable Oracle System Assistant From BIOS” on page 18](#).
  - If the application does not launch, it might contain corrupt data. See [“Restore Oracle System Assistant” on page 81](#).

## ▼ Troubleshoot Oracle System Assistant Launch From Oracle ILOM

When you launch Oracle System Assistant from the Oracle ILOM web interface, you might encounter the following prompts when you click the Launch button for Oracle System Assistant in the Oracle ILOM Summary page:

- **Power off host prompt** – This prompt appears only if the power on the host server was not powered off prior to starting the Oracle System Assistant launch procedure. Click OK to power off the host server.
- **Launch a new Oracle ILOM Remote System Console prompt** – This prompt appears prior to launching the Oracle ILOM Remote System Console.

You might also encounter the following behavior:

- An alert message appears stating “cannot get power state.”
- A powered-off state is shown for Power in the Actions panel.

If this behavior occurs, it is because Oracle ILOM is temporarily unable to obtain the host server information. To continue the Oracle System Assistant launch operation, do the following:

1. **Click OK in the alert message to continue launching Oracle System Assistant.**

The Oracle ILOM Summary page reappears.

2. **In the Summary page, click Refresh to update the host power state shown in the Actions panel.**

Oracle ILOM will then launch Oracle System Assistant in the Oracle ILOM Remote System Console window.

### **Related Information**

- [“Access Oracle System Assistant Using the Oracle ILOM Web Interface” on page 21](#)



## ▼ Restore Oracle System Assistant

If Oracle System Assistant has been erased, overwritten, or corrupted, you can download the image file that is available from the My Oracle Support web site to restore an update image of Oracle System Assistant to the USB device.

### 1. Download the appropriate image file from the My Oracle Support web site.

The package name for the update image for the server is:

- X3-2L (X4270 M3) SW<sub>version</sub> – Oracle System Assistant

Download the image that is specific to your server. For example, you could download the image:

Sun\_Fire\_X4270\_M3-x.x.x.yyyyy-ORACLE\_SYSTEM\_ASSISTANT\_UPDATER.iso

Where x.x.x is the release number and yyyyy is the build number of Oracle System Assistant.

For information about accessing My Oracle Support and downloading this image, see [“Download Firmware and Software Using My Oracle Support”](#) on page 198.

### 2. Make the update image available to the server in either of the following ways:

- Use the image file to burn a physical DVD image. Install the DVD in the server’s DVD drive or in a DVD drive attached to the server. You can also make the DVD available to the server as a redirected DVD by using the Oracle ILOM Remote System Console application.
- Make the update image file available to the server as an ISO image using the Oracle ILOM Remote System Console application.

### 3. Reset or power on the server.

For example:

- **From the local server**, press the Power button (approximately 1 second) on the server front panel to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface**, click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI on the server SP**, type `reset /System`

The BIOS screen appears.



Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.  
BIOS Date: 05/11/2012 11:52:57 Ver: 18021000  
Press F2 to run Setup (CTRL+E on serial keyboard)  
Press F8 for BBS Popup (CTRL+P on serial keyboard)  
Press F12 for network boot (CTRL+N on serial keyboard)  
Press F9 to start Oracle System Assistant (CTRL+O on serial keyboard)

---

**Note** – The next events occur very quickly; therefore, focused attention is needed for the following steps. Please watch carefully for these messages as they appear only briefly on the screen.

---

4. In the BIOS screen, press F8 to specify a temporary boot device for the Oracle System Assistant installation.

The Please Select Boot Device screen appears.

5. Depending on the method you used to make the update image available to the server, perform one of the following steps:

---

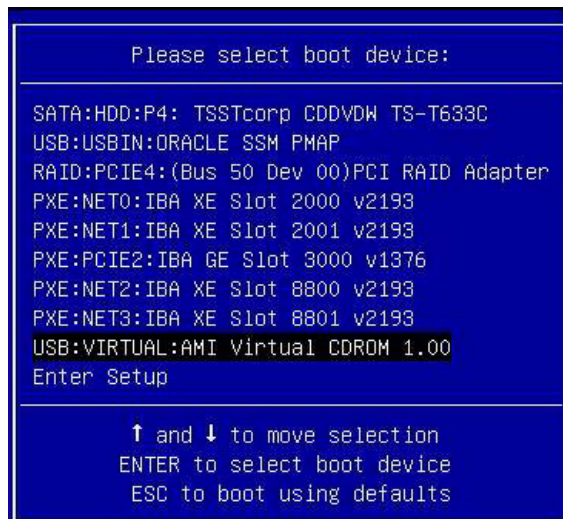
**Note** – The items listed in the Please Select Boot Device menu might differ, depending on whether the system was booted in Legacy BIOS or UEFI Boot Mode. The following screens reflect a Legacy BIOS boot.

---

- If you chose to burn a DVD and placed the DVD into the server's DVD drive or into an attached DVD drive, select SATA:HDD:P4:TSSTcorp CDDVDW TS-T633C as shown in the following Please Select Boot Device menu, then press Enter.



- If you chose to use the Oracle ILOM Remote System Console application to make the image available to the server as a redirected DVD or as an ISO image, select USB:VIRTUAL:AMI Virtual CDROM 1.00 as shown in the following Please Select Boot Device menu, then press Enter.



A message appears and a prompt asks whether you want to continue the restore process.

```
This program will restore your Oracle System Assistant embedded
storage device to the version contained on the recovery media.
It will overwrite any existing content on the embedded storage
device.
```

```
Would you like to proceed? [yes or no]
```

**6. To restore the Oracle System Assistant image, type *yes*, then press Enter.**

The following message appears, indicating the progress of the restore process, and, when the process completes, asks whether the restored Oracle System Assistant USB flash drive should be verified to ensure that it was programmed correctly.

```
The embedded storage device is being recovered.
Please do not reboot or power off the server
during this process.

[=====>] 100%

Recovery is complete, you may optionally perform an integrity verification
of the device to insure that it was correctly programmed.

Would you like to verify the device? [yes or no]
```

**7. If you want to perform an integrity check of the USB device, type *yes*, then press Enter. If you do not want to perform an integrity check, proceed to [Step 8](#).**

It is recommended that you perform this integrity check of the USB device.

The following screen appears, indicating that the Oracle System Assistant USB device was verified successfully. The system then reboots and launches the Oracle System Assistant application.

```

The embedded storage device is being recovered.
Please do not reboot or power off the server
during this process.

[=====>] 100%

Recovery is complete, you may optionally perform an integrity verification
of the device to insure that it was correctly programmed.

Would you like to verify the device? [yes or no] yes

Verifying...
[=====>] 100%

Verification Succeeded.

Rebooting to start Oracle System Assistant...
Connected. Use ^D to exit.
-> set /HOST/provisioning/system-assistant _setboot=system-assistant

```

8. If you *do not* want to perform an integrity verification of the USB device, type **no**, then press Enter.

The following screen appears, indicating that the restore process is complete. The system then reboots and launches the Oracle System Assistant application.

```

The embedded storage device is being recovered.
Please do not reboot or power off the server
during this process.

[=====>] 100%

Recovery is complete, you may optionally perform an integrity verification
of the device to insure that it was correctly programmed.

Would you like to verify the device? [yes or no] no

Rebooting to start Oracle System Assistant...
Connected. Use ^D to exit.

```

## Related Information

- [“Getting Server Firmware and Software” on page 195](#)

# Accessing the Oracle System Assistant Filesystem

The following table shows the directory structure of Oracle System Assistant on the internal USB drive.

To access the Oracle System Assistant filesystem, see:

- [“Access the Oracle System Assistant Filesystem” on page 86](#)

Top-Level Directory	File Information or Directory Contents
boot/	<ul style="list-style-type: none"><li>• Oracle Linux Runtime</li><li>• boot files</li><li>• Oracle System Assistant application</li></ul>
Oracle/	The platform.xml file
Common/	Content not appropriate for other directories
Documentation/	Server-related documentation
Firmware/	Firmware for Oracle ILOM, BIOS, HBAs, etc.
Linux/	Tools and drivers specific to Linux
Oracle_VM/	Tools and drivers specific to Oracle VM
readme.html	HTML formatted ReadMe file
Solaris/	Tools and drivers specific to Oracle Solaris
Versions.txt	List of driver and tool versions for all operating systems
VMware/	Tools and drivers specific to VMware
Windows/	Tools and drivers specific to Windows
Legal_notices/	Content required by Oracle Legal

## Related Information

- [“Organization of Oracle System Assistant” on page 37](#)

## ▼ Access the Oracle System Assistant Filesystem

To access the Oracle System Assistant files, use the following procedure.

1. Click the **Advanced Tasks** button, and then click the **Shell** tab.
2. Click the **Start Shell** button.

The Oracle System Assistant command-line shell window appears.

3. Go to the root directory by typing: `cd \sysroot`
4. To exit the shell, type: `exit`

#### **Related Information**

- [“Accessing the Oracle System Assistant Filesystem” on page 86](#)
- [“Perform Advanced Tasks to Access Oracle System Assistant Shell” on page 68](#)





# Managing the Server Using Oracle ILOM

---

The Sun Server X3-2L supports all standard features in Oracle Integrated Lights Out Manager (Oracle ILOM) 3.1 firmware. In addition, Oracle ILOM 3.1 provides features that are designed specifically for Oracle x86 servers.

This following topics are discussed.

Description	Links
Learn about Oracle ILOM features for all Oracle servers.	<a href="#">“Oracle ILOM Features” on page 89</a>
Learn about Oracle ILOM features specifically for Oracle x86 servers	<a href="#">“Oracle ILOM Features for Oracle x86 Servers” on page 90</a>

## Related Information

- [“Accessing Oracle ILOM” on page 23](#)
- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at: <http://www.oracle.com/pls/topic/lookup?ctx=ilom31>
- Oracle Hardware Management Pack Documentation Library at: <http://www.oracle.com/pls/topic/lookup?ctx=ohmp>
- *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>

---

## Oracle ILOM Features

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 (FRU) 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 PETs, 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>.

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*

### **Related Information**

- [“Oracle Integrated Lights Out Manager \(Oracle ILOM\)” on page 5](#)
- [“Common System Management Tasks” on page 8](#)
- [“Common System Administrative Tasks” on page 9](#)

---

## **Oracle ILOM Features for Oracle x86 Servers**

The following table identifies the Oracle ILOM 3.1 features and functions that are supported on Oracle x86 servers. For complete information about these features and functions, refer to the documents in the Oracle ILOM 3.1 Documentation Library.

**TABLE:** Oracle ILOM 3.1 Features Supported for Oracle x86 Servers

Oracle ILOM 3.1 Feature	For Complete Information and Procedures, See:
Sideband management	<ul style="list-style-type: none"><li>• “Setting Up a Management Connection to Oracle ILOM and Logging In” in the <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i></li></ul>
Power control policies	<ul style="list-style-type: none"><li>• “Controlling Host Server Management Actions” in the <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i></li></ul>
Power management policy	<ul style="list-style-type: none"><li>• “Setting SP Power Target Limit Properties” in the <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i></li><li>• “Set Advanced Power Capping Policy” in the <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i></li></ul>
Local host interconnect management connection	<ul style="list-style-type: none"><li>• “Establishing a Management Connection to Oracle ILOM” in the <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i></li><li>• “Enabling the Local Interconnect Interface” in the <i>Oracle Hardware Management Pack 2.2 Installation 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 the <i>Oracle ILOM 3.1 User’s Guide</i></li><li>• “Performing Pc-Check Diagnostics Tests in the <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 the <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>• <a href="#">“FRU TLI Auto-Update” on page 95</a></li></ul>
Switch serial port output to host management console	<ul style="list-style-type: none"><li>• “Serial Management Port Owner” in the <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i></li></ul>
Back up and restore BIOS configuration	<ul style="list-style-type: none"><li>• “Maintaining x86 BIOS Configuration Parameters” in the <i>Oracle ILOM 3.1 Configuration and Maintenance Guide</i></li></ul>
Set PCIe cooling mode policy	<ul style="list-style-type: none"><li>• “Power-On and Cooling-Down Policies Configurable From the Server SP” in the <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 the <i>Oracle ILOM 3.1 User’s Guide</i></li><li>• “Managing Oracle Hardware Faults Through the Oracle ILOM Fault Management Shell” in the <i>Oracle ILOM 3.1 User’s Guide</i></li></ul>

For information about these features, see these sections:

- “Sideband Management” on page 92
- “Power Control Policies” on page 92
- “Power Management Policy” on page 93
- “Local Host Interconnect Management Connection” on page 94
- “Diagnostics Using Pc-Check and NMI” on page 94
- “Control Next Boot Device” on page 95
- “FRU TLI Auto-Update” on page 95
- “Switch Serial Port Output to Host Management Console” on page 96
- “Back Up and Restore BIOS Configuration” on page 96
- “Set PCIe Cooling Mode” on page 96
- “Administer Open Problems and Clear Server Faults” on page 97

## 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 and Logging In” 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:** 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 “Configuring Host Server Management Actions” 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>

## Power Management Policy

The Power Management Policy is enabled in Software Release 1.1 on the Sun Server X3-2L. This policy controls the power consumption (or power usage) for the server. Oracle ILOM provides configurable properties for power limiting and power granting on the server. Oracle ILOM provides power capping policy properties that help enforce the system target power limit by enabling system administrators to set soft caps with grace period and violation actions, or to set hard caps to keep the peak permitted power consumption under the target power limit.

For further information, refer to the power management topics in the *Oracle ILOM 3.1 Configuration and Maintenance Guide*.

# 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 “Establishing a Management Connection to Oracle ILOM” in the *Oracle ILOM 3.1 Configuration and Maintenance Guide*, and also refer to “Enabling the Local Interconnect Interface” in the *Oracle Hardware Management Pack 2.2 Installation 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 the *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 the *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 supply 0 (PS0), motherboard (MB), and disk backplane 0 (DBP0).

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.

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

## Back Up and Restore BIOS Configuration

The BIOS configuration back up and restore feature in Oracle ILOM makes it easy for maintaining your host data store BIOS configuration parameters. Use this feature to back up the BIOS parameters from the host data store to Oracle ILOM or to restore the saved parameters from Oracle ILOM to the host data store. Additionally, you can sync the BIOS parameters between the host data store and Oracle ILOM, and reset the BIOS parameters in the host data store to their factory defaults.

For more information about this feature and instructions on how to perform these operations in Oracle ILOM, refer to “Maintaining x86 BIOS Configuration Parameters” in *Oracle ILOM 3.1 Configuration and Maintenance Guide*.

## Set PCIe Cooling Mode

The Enhanced PCIe Cooling Mode Policy setting is provided to satisfy the cooler operating temperature requirement for certain PCIe cards. Enabling this policy lowers the chassis’ output temperature sensor thresholds that are used by the system’s fan control algorithm to keep the PCIe cards operating within their required temperature range. Enable this policy when it is desirable to keep the chassis even cooler, as necessary.

For information about how to set the PCIe Cooling Mode Policy, refer to “System Management Policies Configurable From Server SP” in the *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*.

For the Sun Server X3-2L, 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.



# Configuring RAID

---

This section contains information about configuring redundant array of independent disk (RAID) volumes for the server.

The following topics are discussed.

Description	Links
Review which HBA disk controllers are supported.	<a href="#">“Supported HBA Disk Controllers” on page 99</a>
Review RAID configuration options and requirements.	<a href="#">“RAID Configuration Options” on page 100</a>
Create a RAID volume before installing an operating system.	<a href="#">“Creating a RAID Volume Before Installing an Operating System” on page 101</a>
Create a RAID volume after installing an operating system.	<a href="#">“Creating a RAID Volume After Installing an Operating System” on page 101</a>
Monitor storage devices using Oracle ILOM	<a href="#">“Using Oracle ILOM to Monitor Storage Devices” on page 102</a>

## Related Information

- [“Accessing Oracle System Assistant” on page 17](#)

---

## Supported HBA Disk Controllers

The following table lists the available host bus adapter (HBA) disk controllers for the Sun Server X3-2L and the RAID levels available for each controller. These HBA disk controllers can be ordered with the server or ordered separately. For instructions on installing the disk controllers and connecting storage drives, see the [Sun Server X3-2L Service Manual](#), [“Servicing Storage Drives and Rear Drives \(CRU\)” on page 45](#).

Disk Controller	HBA Part Number	RAID Levels Supported
Sun Storage 6Gb/s SAS PCIe HBA, Internal	SGX-SAS6-INT-Z	Hardware 0, 1, 10
Sun Storage 6Gb/s SAS PCIe RAID HBA, Internal	SGX-SAS6-R-INT-Z	Hardware 0, 1, 5, 6, 10, 50, 60

---

**Note** – If you are using Oracle System Assistant to configure RAID for a disk controller, you can configure only RAID volumes 0 and 1. To configure other RAID volumes, you must use the BIOS Setup Utility.

---

For more information about the supported disk controllers, refer to:

- *Sun Storage 6 GB SAS PCIe HBA, Internal Installation Guide For HBA Models SGX-SAS6-INT-Z and SG-SAS6-INT-Z at:*  
<http://docs.oracle.com/cd/E19337-01/index.html>
- *Sun Storage 6 GB SAS PCIe RAID HBA, Internal Installation Guide For HBA Models SGX-SAS6-R-INT-Z and SG-SAS6-R-INT-Z at:*  
<http://docs.oracle.com/cd/E19221-01/index.html>

---

## RAID Configuration Options

Configuring storage drives into RAID volumes is an optional task. It is recommended that you use Oracle System Assistant to configure RAID on the server. If your server does not have Oracle System Assistant, you can use the Oracle Hardware Management Pack `raidconfig` command to configure RAID on the server.

For more information, see the *Sun Server X3-2L Installation Guide*, “Configuring Server Drives for OS Installation” on page 93.

You have the following options with respect to RAID:

- **Option 1** – If you intend to use the preinstalled version of Oracle Solaris operating system, you cannot configure RAID on the boot disk because the preinstalled operating system (OS) does not support RAID configurations.
- **Option 2** – If you are going to do a fresh OS installation and you want to configure the server’s storage drives into RAID volumes, you must configure the storage drives into RAID volumes before you install the operating system.

- **Option 3** – If you are going to do a fresh OS installation, but you do not want to configure the storage drives into RAID volumes, you can proceed to install your selected OS.
- **Option 4** – If the server has the Sun Storage 6Gb/s SAS PCIe HBA, Internal (SGX-SAS6-INT-Z) installed and you are going to do a fresh OS install, but you do not want to configure the server's storage drives into RAID volumes, you can proceed to install your selected OS.

### Related Information

- [“Configure Hardware for RAID” on page 53](#)
- Oracle Hardware Management Pack Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ohmp>

---

## Creating a RAID Volume Before Installing an Operating System

The following guidelines apply when using a storage drive connected to a supported disk controller to install an operating system (OS).

- **For SGX-SAS6-INT-Z** – You can install an OS on a drive without creating a RAID volume. However, if you want to install the OS from an OS install disk, you will need to create the RAID volume before installing the OS.
- **For SGX-SAS6-R-INT-Z** – You must create a RAID volume before installing an OS on a drive. You must also make the drive bootable.

For information on creating RAID volumes and making drives bootable, see the *Sun Server X3-2L Installation Guide*, “Configuring Server Drives for OS Installation” on page 93.

---

## Creating a RAID Volume After Installing an Operating System

RAID configuration is most often completed before installing an operating system and for the boot disk. However, it is possible to create a RAID volume on other non-boot disks after installing an operating system.

To create RAID volumes after an OS is installed, you can choose from among these tools for creating and managing the RAID resources in your server:

- **Oracle System Assistant** – You can use Oracle System Assistant to create RAID 0 or 1 level volumes and prepare drives for OS installation. See “[Configure Hardware for RAID](#)” on page 53 and refer to the *Sun Server X3-2L Installation Guide*, “[Setting Up Software and Firmware Using Oracle System Assistant](#)” on page 87.
- **Oracle Hardware Management Pack** – You can use the `raidconfig` commands contained in this software’s Oracle Server CLI Tools component to create and manage RAID volumes on your server. See “[Accessing Oracle Hardware Management Pack](#)” on page 25 and refer to the Oracle Hardware Management Pack documentation at <http://www.oracle.com/pls/topic/lookup?ctx=ohmp>.
- **(SGX-SAS6-INT-Z only) LSI SAS2 Integration RAID Configuration Utility** – You can use the `sas2ircu` commands contained in the LSI SAS2 Integrated RAID Configuration Utility to configure and manage RAID volumes on your server.  
  
You can download the SAS2IRCU software for your operating system from the Utilities section at the following location:  
[http://www.lsi.com/sep/Pages/oracle/sg\\_x\\_sas6-int-z.aspx](http://www.lsi.com/sep/Pages/oracle/sg_x_sas6-int-z.aspx)
- **(SGX-SAS6-R-INT-Z only) LSI MegaCLI or MegaRAID Storage Manager** – You can use the LSI MegaCLI command-line tool or the MegaRAID Storage Manager graphical interface to configure and manage RAID volumes for the SGX-SAS6-R-INT-Z disk controller.

You can download the LSI MegaCLI and MegaRAID Storage Manager software for your operating system from the Utilities section at following location:  
[http://www.lsi.com/sep/Pages/oracle/sg\\_x\\_sas6-r-int-z.aspx](http://www.lsi.com/sep/Pages/oracle/sg_x_sas6-r-int-z.aspx)

---

## Using Oracle ILOM to Monitor Storage Devices

You can use Oracle ILOM 3.1 to view information and health status for installed storage devices. To view information and health details for system storage in the Oracle ILOM web interface, click System Information > Storage. To view similar information in the Oracle ILOM command-line interface, type `show /System/Storage`. System information presented in the Oracle ILOM interfaces includes: number of installed storage devices, storage size, health status, configured disks, controllers, volumes, and expanders.

For further information about viewing system component activity, refer to “Collecting System Information, Monitoring Health Status, and Initiating Host Management Actions” in the *Oracle ILOM 3.1 User’s Guide*.

### **Related Information**

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





# Setting Up BIOS Configuration Parameters

This section provides an overview of BIOS configuration management, Legacy BIOS, UEFI BIOS, and the BIOS Setup utility.

The following topics are discussed.

Description	Links
Learn about the tools available to manage the BIOS configuration.	<a href="#">“Managing the BIOS Configuration” on page 105</a>
Learn how to access the BIOS Setup Utility.	<a href="#">“Accessing the BIOS Setup Utility” on page 106</a>
Learn about Legacy BIOS and UEFI BIOS.	<a href="#">“Using Legacy BIOS or UEFI” on page 110</a>
Learn how BIOS allocates Option ROM and I/O resources.	<a href="#">“Using BIOS for Resource Allocation” on page 114</a>
Learn how to perform common BIOS setup procedures.	<a href="#">“Common BIOS Setup Utility Tasks” on page 116</a>

## Related Information

- [“BIOS Setup Utility Menu Options” on page 139](#)

# Managing the BIOS Configuration

The BIOS configuration parameters on an Oracle x86 server are manageable from the BIOS Setup Utility and Oracle ILOM. You can also download the BIOS firmware using Oracle System Assistant. For information about using these tools to manage the BIOS configuration, see:

- **Oracle System Assistant** – [“Update Firmware” on page 48](#)

- **Oracle ILOM** – “Managing x86 BIOS Configuration Parameters” in the *Oracle ILOM 3.1 Configuration and Maintenance Guide*
- **BIOS Setup Utility** – “Common BIOS Setup Utility Tasks” on page 116

### Related Information

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

## Accessing the BIOS Setup Utility

The BIOS Setup Utility provides six main menus that you can use to view product information, and to configure, enable and disable, or manage system components.

This section provides the following information:

- “BIOS Setup Utility Menus” on page 106
- “BIOS Key Mappings” on page 107
- “Access BIOS Setup Utility Menus” on page 108
- “Navigate BIOS Setup Utility Menus” on page 109

## BIOS Setup Utility Menus

The following table provides descriptions for the top-level BIOS Setup Utility menus.

**TABLE:** BIOS Setup Utility Menus Summary

Menu	Description
Main	General product information, including memory, time/date, security settings, system serial number, and CPU and DIMM information.
Advanced	Configuration information for the CPU, trusted computing, USB, and other information. Set the IP address for the server SP.
Boot	Enable or disable Oracle System Assistant support, set the boot mode to Legacy BIOS or UEFI BIOS, and configure the boot device priority.

**TABLE:** BIOS Setup Utility Menus Summary (*Continued*)

Menu	Description
IO	Manage configuration settings for I/O devices, such as I/O virtualization settings, and enable and disable Option ROMs.
UEFI Driver Control	Manage PCIe drivers for all configurable devices. Menu is only available when operating in UEFI Boot Mode.
Save & Exit	Save changes and exit, discard changes and exit, discard changes, or restore the default BIOS settings.

See [“BIOS Setup Utility Menu Options” on page 139](#) for examples of each of these screens.

**Related Information**

- [“BIOS Setup Utility Menu Options” on page 139](#)
- [“Navigate BIOS Setup Utility Menus” on page 109](#)

# BIOS Key Mappings

When viewing the BIOS output from a terminal using the serial console redirection feature, some terminals do not support function keys. BIOS supports the mapping of function keys to Control key sequences when serial redirection is enabled. The following table provides a description of the function key to Control key mappings.

**TABLE:** Function Key to Control Key Sequence Mapping

Function Key	Control Key Sequence	BIOS POST Function	BIOS Setup Function
F1	Ctrl+Q	Not applicable	Activate the Setup Utility Help menu.
F2	Ctrl+E	Enter BIOS Setup Utility while the system is performing the power-on self-test (POST).	Not applicable
F7	Ctrl+D	Not applicable	Discard changes. (Not applicable to UEFI Driver Control menu)
F8	Ctrl+P	Activate the BIOS Boot Menu.	Not applicable

**TABLE:** Function Key to Control Key Sequence Mapping *(Continued)*

Function Key	Control Key Sequence	BIOS POST Function	BIOS Setup Function
F9	Ctrl+O	Launches Oracle System Assistant. BIOS boots to Oracle System Assistant, bypassing the current Boot Priority List for this one-time boot method.	Activate Load Optimal Values pop-up menu. (Not applicable to UEFI Driver Control menu)
F10	Ctrl+S	Not applicable	Activate Save and Exit pop-up menu. (Not applicable to UEFI Driver Control menu)
F12	Ctrl+N	Activate Network boot.	Not applicable

### Related Information

- [“Access BIOS Setup Utility Menus” on page 108](#)
- [“Navigate BIOS Setup Utility Menus” on page 109](#)

## ▼ Access BIOS Setup Utility Menus

You can access BIOS Setup Utility screens from the following interfaces:

- Use a USB keyboard and VGA monitor connected directly to the server. (A mouse is not required to access the BIOS Setup Utility.)
- Use a terminal (or terminal emulator connected to a computer) through the serial port on the back panel of the server.
- Connect to the server using the Oracle ILOM Remote System Console application.

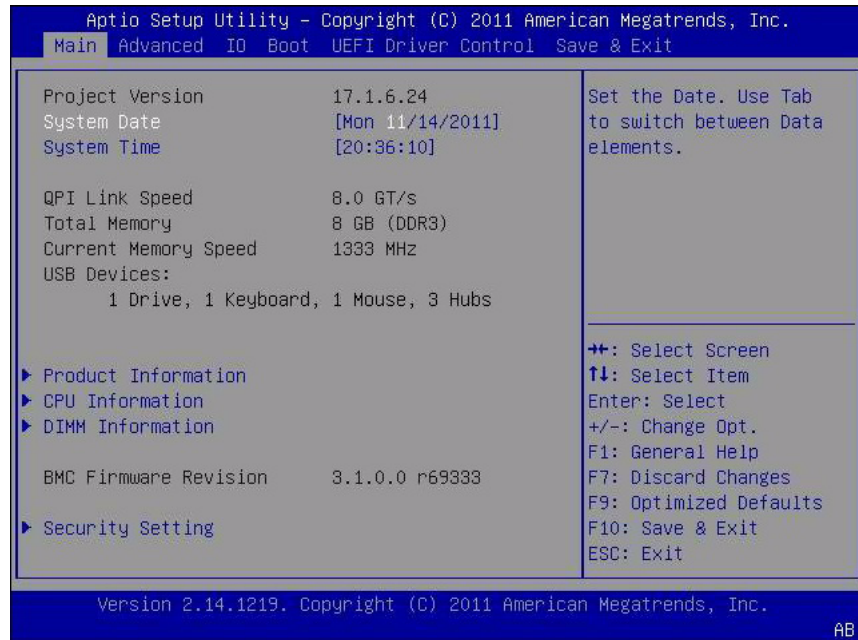
### 1. Reset or power on the server.

- **From the local server**, press the Power button on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface**, click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI on the server SP**, type **reset /System**

The power-on self-test (POST) sequence begins.

### 2. To enter the BIOS Setup Utility, press the F2 key (Ctrl+E from a serial connection) when prompted and while the BIOS is running the power-on self-tests (POST).

The BIOS Setup Utility Main Menu screen appears.



## Related Information

- [“BIOS Setup Utility Menus” on page 106](#)
- [“BIOS Key Mappings” on page 107](#)
- [“BIOS Setup Utility Menu Options” on page 139](#)

## ▼ Navigate BIOS Setup Utility Menus

To navigate the menus or options listed on a menu, use the arrow keys. The currently selected option or sub-menu is highlighted. For further instructions on how to navigate and change settings in the BIOS Setup Utility, refer to the online information provided on the menu.

### 1. Access the BIOS Setup Utility.

See [“Access BIOS Setup Utility Menus” on page 108](#).

### 2. Use the left and right arrow keys to select the different primary menu options.

As you select each menu option, the top-level screen for that menu option appears.

3. To select an option on a top-level screen, use the up and down arrow keys to navigate the options presented.

Only options that can be modified are highlighted when you press the up and down arrow keys.

- If a field can be modified, as you select the option, user instructions for modifying the option appear in the right column of the screen.
- If a field is a link to a sub-screen, a description of the sub-menu content appears in the right column.

4. Modify the setup field by pressing the + or - keys (plus or minus keys) or by pressing Enter and selecting the desired option from the pop-up menus.

5. Press the Esc key to return from a sub-menu to the previous menu screen.

Pressing Esc from a top-level menu is equivalent to selecting the Discard Changes and Exit option from the Save & Exit Menu.

6. Modify parameters as needed.

7. Press F10 to save your changes and exit the BIOS Setup Utility.

Alternatively, you can select the Save & Exit Menu and then select the Save Changes and Reset to save your changes and exit the BIOS Setup Utility.

---

**Note** – After modifying any BIOS settings and selecting Save Changes and Reset from the Save & Exit Menu, the subsequent reboot might take longer than a typical reboot where no settings were modified. The additional delay is required to ensure that changes to the BIOS settings are synchronized with Oracle ILOM.

---

### Related Information

- [“BIOS Setup Utility Menus” on page 106](#)
- [“BIOS Key Mappings” on page 107](#)
- [“BIOS Setup Utility Menu Options” on page 139](#)

---

## Using Legacy BIOS or UEFI

The BIOS firmware controls the system from power-on until an operating system is booted. The BIOS supports booting from both Legacy BIOS and Unified Extensible Firmware Interface (UEFI), depending on which operating system you are using.

This section includes the following information:

- [“Selecting Legacy BIOS or UEFI Boot Mode” on page 111](#)

- “Switching Between Legacy BIOS and UEFI” on page 112
- “UEFI Boot Mode Advantages” on page 112
- “Configuration Utilities for Add-In Cards” on page 113

## Selecting Legacy BIOS or UEFI Boot Mode

BIOS supports two boot modes: Legacy BIOS and UEFI. You can set the boot mode using the Boot Menu in the BIOS Setup Utility. Boot mode selection depends on the operating system type and configuration that is installed in the system. Some devices and operating systems do not yet support UEFI and can only boot from Legacy BIOS. Depending on your situation, you might have to specify which mode of BIOS you want to use.

Choose Legacy BIOS Boot Mode to allow host bus adapters (HBAs) to use Option ROMs. Choose UEFI Boot Mode to use UEFI drivers.

When using operating systems that support booting only from Legacy BIOS, the Legacy BIOS Boot Mode must be used. When using operating systems that support booting from Legacy BIOS or UEFI, either mode can be used. However, once a mode is chosen, and an operating system is installed, the installation can be booted only using the same mode that was used for the installation.

The following operating systems do not support UEFI:

- Oracle Linux 5.x
- Red Hat Enterprise Linux 5.x
- Oracle VM 3.0 and 3.1

For updates to this list, refer to the *Sun Server X3-2L Product Notes* at:  
<http://www.oracle.com/pls/topic/lookup?ctx=SunServerX3-2L>.

Only devices that support the selected mode are listed on the BIOS Boot screen. If you select UEFI Boot Mode, only boot candidates that support UEFI are listed in the Boot Options Priority list. If you select Legacy BIOS Boot Mode, only boot candidates that support Legacy BIOS are listed in the Boot Options Priority list.

- When an operating system is installed using Legacy BIOS Boot Mode, the operating system can be booted only in Legacy BIOS Boot Mode.
- When an operating system is installed using UEFI Boot Mode, the operating system can be booted only in UEFI Boot Mode.

### Related Information

- “Switching Between Legacy BIOS and UEFI” on page 112
- “UEFI Boot Mode Advantages” on page 112

- “Configuration Utilities for Add-In Cards” on page 113

## Switching Between Legacy BIOS and UEFI

When switching between Legacy BIOS Boot Mode and UEFI Boot Mode (either direction), BIOS settings that affect the Boot Options Priority list settings will be changed. If the boot mode is changed, the boot candidates from the previous boot mode disappear. The boot candidates for the newly changed boot mode appear after you save your changes and reset the host and in the next boot to the BIOS Setup Utility.

---

**Note** – When switching between Legacy and UEFI modes, Boot Options Priority list settings will not be preserved. Typically, once a boot mode is selected, there is no need to switch boot modes. However, there is one notable exception: the Pc-Check utility must be run in Legacy BIOS Boot Mode. If boot settings are customized while in UEFI Boot Mode, and you need to run Pc-Check, you should use the BIOS Backup and Restore feature to capture the customized settings prior to switching the boot mode to Legacy BIOS Boot Mode to run Pc-Check. When you return to UEFI Boot Mode, you can use the Oracle ILOM Backup and Restore feature to reinstate your saved settings.

---

Because the settings for a given mode do not persist after a transition between modes, you should use the BIOS Backup and Restore feature to capture and preserve the BIOS configuration if you intend to switch back to the previous BIOS mode and want to retain your previous BIOS settings. For information about the BIOS Backup and Restore feature, refer to the Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at <http://www.oracle.com/pls/topic/lookup?ctx=ilom31>.

### Related Information

- “Selecting Legacy BIOS or UEFI Boot Mode” on page 111
- “UEFI Boot Mode Advantages” on page 112
- “Configuration Utilities for Add-In Cards” on page 113

## UEFI Boot Mode Advantages

When the option is available to choose between a Legacy BIOS or UEFI Boot Mode operating system installation, the advantages to choosing a UEFI Boot Mode installation include the following:



- Avoids Legacy Option ROM address constraints. For more information, see [“Legacy Option ROM Allocation” on page 114](#).
- Supports operating system boot partitions greater than 2 terabytes (2 TB) in size. For more information about limitations for supported operating systems, refer to the *Sun Server X3-2L Product Notes* at: <http://www.oracle.com/pls/topic/lookup?ctx=SunServerX3-2L>.
- PCIe device configuration utilities are integrated within the BIOS Setup Utility menus. For more information, see [“BIOS Setup Utility Menu Options” on page 139](#).
- Bootable operating system images will appear in the boot list as labeled entities, for example Windows boot manager label versus raw device labels.

### Related Information

- [“Selecting Legacy BIOS or UEFI Boot Mode” on page 111](#)
- [“Select the Boot Device” on page 119](#)

## Configuration Utilities for Add-In Cards

The method for interacting with configuration utilities for add-in cards (and system resident) I/O adapters differs depending on whether Legacy BIOS Mode or UEFI Boot Mode is used.

In Legacy BIOS Mode, I/O adapter utilities are invoked during BIOS POST progression using hot keys identified by the adapter’s Option ROM during POST. When the hot key is pressed, the adapter’s specific configuration utility interface is presented. Often the interface will have a vendor-specific design.

In UEFI Boot Mode, the configuration screens for the add-in cards will appear as menu items in the BIOS UEFI Driver Control Menu as part of the standard BIOS Setup Utility screens. For example, if the Oracle Sun Storage 6Gb/s SAS PCIe RAID host bus adapter is installed in the server, its configuration utility appears as a menu selection on the BIOS UEFI Driver Control Menu.

### Related Information

- [“Selecting Legacy BIOS or UEFI Boot Mode” on page 111](#)

---

# Using BIOS for Resource Allocation

This section explains how the BIOS allocates Option ROM and I/O resources.

- [“Legacy Option ROM Allocation” on page 114](#)
- [“IO Resource Allocation” on page 115](#)

## Legacy Option ROM Allocation

In Legacy BIOS Mode, there are PC architecture constraints that are placed on Legacy Option ROM allocation. These constraints are not placed on UEFI Option ROMs, which are often referred to as UEFI drivers.

Choose Legacy BIOS Mode to allow host bus adapters (HBAs) to use Option ROMs. Choose UEFI Boot Mode to use UEFI drivers.

The system BIOS allocates 128 Kbytes of address space for Legacy Option ROMs. This address space is shared between on-board devices and PCIe add-in cards. This fixed address space limitation is imposed by the PC architecture and not by the BIOS itself. It is possible to exhaust the available address space when installing PCIe add-in cards. When the address space is exhausted, Oracle ILOM displays an `Option ROM Space Exhausted` message, which means that one or more devices cannot load Option ROMs.

For example, if you install a SAS PCIe card, you might encounter the following message in the Oracle ILOM event log:

```
Option ROM Space Exhausted - Device XXX Disabled
```

By default, all on-board Legacy Options ROMs are enabled in the BIOS. However, you can disable most of these Option ROMs, unless they are required to support booting from the associated device or to provide some other boot-time function. For example, it is not necessary to load the Option ROM for the on-board network ports unless you want to boot from one or more network ports (even then, you can disable the Options ROMs for the remaining ports).

To minimize server boot time and reduce the likelihood of exhausting the available Option ROM address space, disable the Option ROMs for all devices that you do not intend to boot from. Enable Option ROMs only for those devices from which you intend to boot. If Option ROMs are enabled for more than one boot device, you might encounter an Option ROM space exhausted condition.

If you encounter the Option ROM space exhausted condition even after disabling all devices from which you do not intend to boot, then disable additional Option ROMs. Under some circumstances it might be necessary to disable Option ROMs for all devices except for the primary boot device.

### Related Information

- [“Access BIOS Setup Utility Menus” on page 108](#)
- [“Configure Option ROM Settings” on page 134](#)

## IO Resource Allocation

The system provides 64 Kbytes of I/O address space. With the increasing number of PCIe devices supported on the system, there is a possibility that there is not enough I/O resources for all the devices. Setup options are available to enable or disable the I/O resource allocation for each PCIe slot. The default for this option is enabled. When enabled, I/O resources are allocated to the device as normal. When disabled, I/O resources are not allocated to the device.

If there are one or more Sun Quad Port Gigabit Ethernet PCIe Low Profile Adapter Cards installed in the server, then the BIOS might detect a condition where legacy I/O address space resources are exhausted. The following is a common form of error that might be logged:

```
6491 Tue Dec 7 14:19:57 2012 IPMI Log minor
```

```
ID = a5a9 : 12/07/2012 : 14:19:57 : System Firmware Error :  
sensor number
```

```
= 0x00 : PCI resource exhaustion : Bus 147 Device 0 Func 0
```

```
6490 Tue Dec 7 14:19:57 2012 IPMI Log minor
```

```
ID = a5a8 : 12/07/2012 : 14:19:57 : System Firmware Error :  
sensor number
```

```
= 0x00 : PCI resource exhaustion : Bus 147 Device 0 Func 1
```

To eliminate the PCI resource exhaustion condition, you should disable I/O resource allocation for any slot in which the Quad Gigabit Ethernet card is installed unless you intend to use that card as a bootable device. If you intend to use that card as a bootable device and you are encountering a PCI resource exhaustion event for that specific device, then it is necessary to disable I/O allocation for some of the other

card slots in the system. In general, it is safe, but not typically required, to disable I/O resource allocation for any cards not intended to be used as bootable devices, similar to the disabling of Option ROMs.

### Related Information

- [“Access BIOS Setup Utility Menus” on page 108](#)
- [“Configure IO Resource Allocation” on page 136](#)

---

## Common BIOS Setup Utility Tasks

This section presents the procedures for some of the BIOS setup tasks that you will typically perform when setting up and managing the server.

- [“Verify BIOS Factory Default Settings” on page 116](#)
- [“Select Legacy BIOS or UEFI Boot Mode” on page 117](#)
- [“Select the Boot Device” on page 119](#)
- [“Configure iSCSI Virtual Drives” on page 120](#)
- [“Enable or Disable Oracle System Assistant” on page 128](#)
- [“Configure TPM Support” on page 129](#)
- [“Configure SP Network Settings” on page 132](#)
- [“Configure Option ROM Settings” on page 134](#)
- [“Configure IO Resource Allocation” on page 136](#)
- [“Exit BIOS Setup Utility” on page 136](#)

### ▼ Verify BIOS Factory Default Settings

In the BIOS Setup Utility, you can restore factory defaults, as well as view and edit settings as needed. Any changes that you make in the BIOS Setup Utility (using the F2 key) are permanent until the next time you change the settings.

Before you begin, ensure that the following requirements are met:

- A hard disk drive or solid state drive is properly installed in the server.
- A console connection is established to the server.

#### 1. Reset or power on the server.

- **From the local server**, press the Power button on the front panel of the server to power off the server, and then press the Power button again to power on the server.
  - **From the Oracle ILOM web interface**, click Host Management > Power Control and select Reset from the Select Action list box.
  - **From the Oracle ILOM CLI on the server SP**, type **reset /System**  
The server resets.
2. **When prompted, press the F2 key to access the BIOS Setup Utility.**
  3. **To ensure that the factory defaults are set, do the following:**
    - a. **Press the F9 key to automatically load the factory default settings.**

A message appears prompting you to continue this operation by selecting OK or to cancel the operation by selecting Cancel.
    - b. **In the message, highlight OK, then press Enter.**

The BIOS Setup Utility screen appears with the cursor highlighting the first value on the screen.
  4. **Press F10 to save the changes and exit the BIOS Setup Utility.**

Alternatively, you can save the changes and exit the BIOS Setup Utility by navigating to the Save & Exit menu and selecting Save Changes and Reset.

#### **Related Information**

- [“Access BIOS Setup Utility Menus” on page 108](#)
- [“BIOS Setup Utility Menus” on page 106](#)
- [“BIOS Key Mappings” on page 107](#)

## ▼ **Select Legacy BIOS or UEFI Boot Mode**

The BIOS firmware supports both Legacy BIOS Boot Mode and UEFI Boot Mode. The default setting is Legacy BIOS Boot Mode. Because some operating systems (OS) support both Legacy BIOS and UEFI, and some operating systems support only Legacy BIOS, you have the following options:

- If the OS being installed supports only Legacy BIOS, you must ensure that the boot mode is set to Legacy BIOS before you do the OS installation.
- If the OS being installed supports both Legacy BIOS and UEFI, you can set the boot mode to either Legacy BIOS or UEFI before you do the OS installation.

The following operating systems do not support UEFI:

- Oracle Linux 5.x

- Red Hat Enterprise Linux 5.x
- Oracle VM 3.0 and 3.1

**1. Access the BIOS Setup Utility menus.**

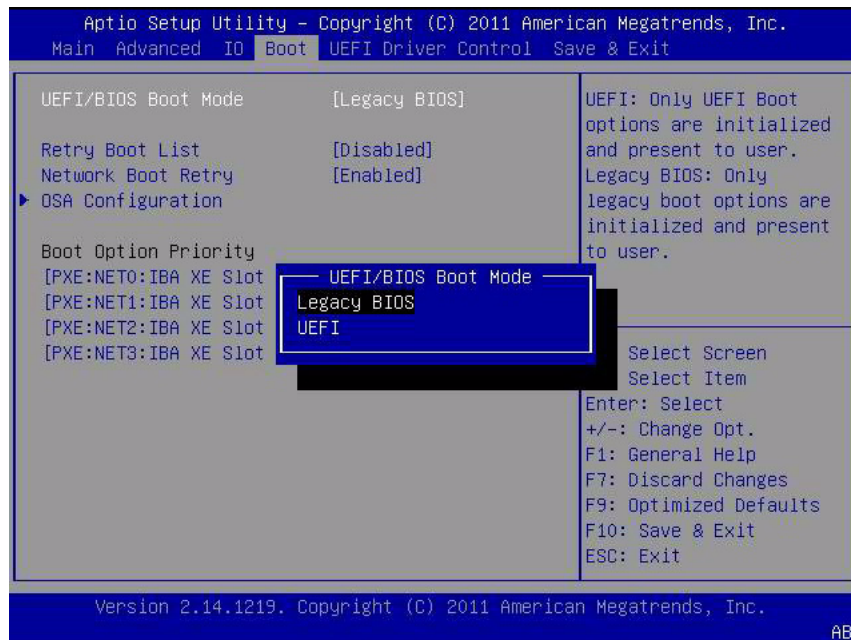
See “Access BIOS Setup Utility Menus” on page 108.

**2. From the BIOS Main menu screen, select Boot.**

The Boot Menu screen appears.

**3. From the Boot Menu screen, use the up and down arrow keys to select UEFI/Legacy BIOS Boot Mode, then press Enter.**

The UEFI/BIOS dialog appears.




---

**Note** – You cannot configure the boot device priority after switching the boot mode. A system reboot is required to properly populate the Boot Device Priority list with devices that support the chosen boot mode.

---

**4. Use the up and down arrow keys to select the appropriate Legacy or UEFI mode, then press Enter.**

**5. Press F10 to save the changes and exit the BIOS Setup Utility.**

### Related Information

- [“BIOS Setup Utility Menus” on page 106](#)
- [“BIOS Key Mappings” on page 107](#)

## ▼ Select the Boot Device

The Boot Options Priority list contents depend on which BIOS mode is selected. When UEFI Boot Mode is selected, only UEFI boot candidates will be initialized and displayed in the Boot Options Priority list. When Legacy BIOS is selected, only Legacy BIOS boot candidates are initialized and displayed.

In addition to using the F2 key to view or edit the system BIOS settings, you can use the F8 key during the BIOS startup to specify a temporary boot device. This selected boot device is in effect only for the current system boot. The permanent boot device specified using the F2 key will be in effect after booting from the temporary boot device.

### 1. Reset or power on the server.

- **From the local server**, press the Power button on the front panel of the server to power off the server, then press the Power button again to power on the server.
- **From the Oracle ILOM web interface**, click Host Management > Power Control and select Reset from the Select Action list box.
- **From the Oracle ILOM CLI on the server SP**, type **reset /System**

The server resets.

### 2. Press the F8 key (or Ctrl+P from a serial connection) when prompted while the BIOS is running the power-on self-test (POST).

The Please Select Boot Device dialog appears.

### 3. In the dialog, select the boot device option according to the operating system and BIOS mode you elected to use, then press Enter.

Use the up and down arrow keys to select the boot device. Based on the boot mode you selected (UEFI Boot Mode or Legacy BIOS Boot Mode), the Please Select Boot Device dialog displays only the applicable devices. For example, when the UEFI Boot Mode is elected, only UEFI boot devices are displayed in the dialog.

### 4. Press F10 to save the changes and exit the BIOS Setup Utility.

### Related Information

- [“BIOS Setup Utility Menus” on page 106](#)
- [“BIOS Key Mappings” on page 107](#)

## ▼ Configure iSCSI Virtual Drives

iSCSI virtual drives are used primarily to run supported operating systems that reside on an external server that function as the Sun Server X3-2L host operating system.

iSCSI virtual drives must be configured in the iSCSI BIOS Setup Utility screens. You must set the iSCSI parameters on the selected port.

Before you begin:

- You should be familiar with iSCSI theory of operation for the selected OS.
- Refer to the OS documentation to verify that iSCSI targets can be mounted on a client.
- You will need access to an external iSCSI server running on any supported OS.
- The Sun Server X3-2L must be in UEFI Boot Mode, not Legacy BIOS Boot Mode. See [“Select Legacy BIOS or UEFI Boot Mode” on page 117](#).
- You must provide the following information from the iSCSI target server. The following items are entered into the iSCSI BIOS Setup Utility screens.

Item Number	Name	Example
1	Target name	iqn.198812.com.oracle:x4270-M3-target <b>Note</b> - iSCSI requires an iqn format for this item.
2	iSCSI initiator name	iqn.198812.com.oracle:002222de444e <b>Note</b> - iSCSI requires an iqn format for this item.
3	Virtual device	Virtual Disk 0
4	Logical Unit Number	LUN 0
<i>Additional Information:</i>		
5	IP address of iSCSI server	192.0.2.11 (ipv4)
6	Port number	3210

### 1. Access the BIOS Setup Utility menus.

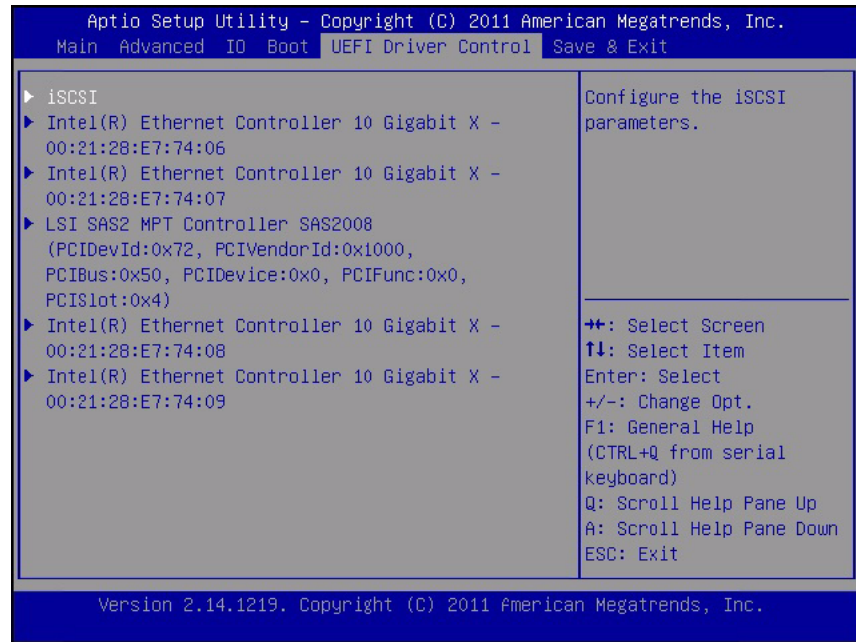
See [“Access BIOS Setup Utility Menus” on page 108](#).

### 2. In the BIOS Setup Utility menus, navigate to the UEFI Driver Control Menu.

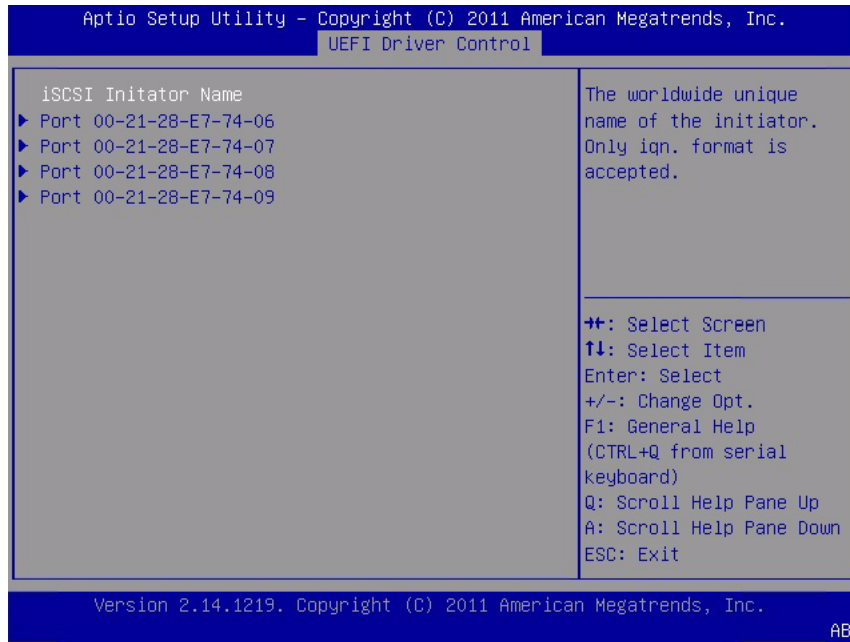
Options displayed include iSCSI booting and all controllable devices.



**Note** – The selection for iSCSI will always be an option in UEFI Boot mode; however, other menu options might change depending on which cards are installed in the system.



**3. Select iSCSI to access the iSCSI screen.**

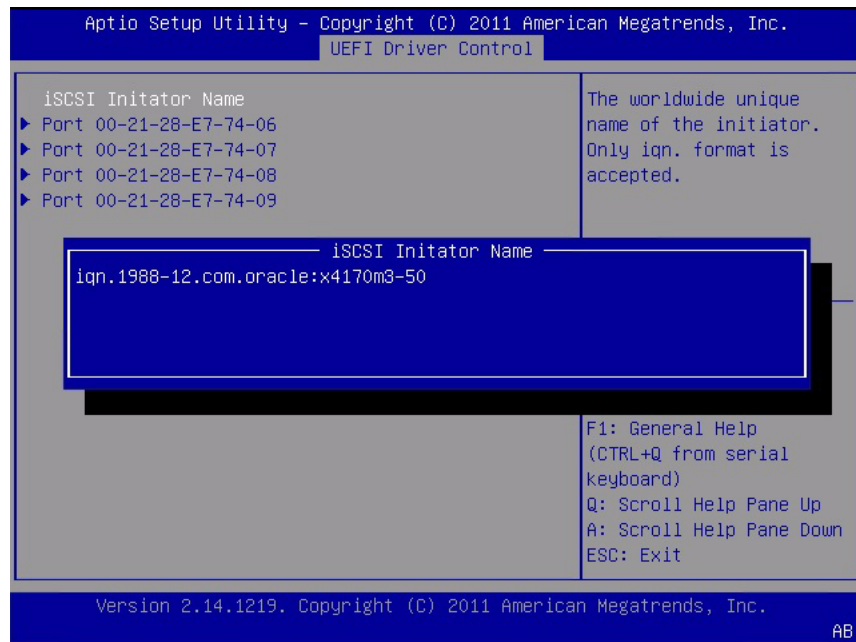


**4. Select iSCSI Initiator Name, type the desired iSCSI Qualified Name (IQN) into the dialog box, then press Enter to accept the changes.**

The IQN identifies:

- The string “iqn”
- A date code that specifies the year and month in which the organization registered the domain or subdomain name used as the naming authority string
- The organizational naming authority string, which consists of a valid, reversed domain or subdomain name
- Optionally, a “:” (colon) followed by a string that the assigning organization can choose, which must make each assigned iSCSI name unique

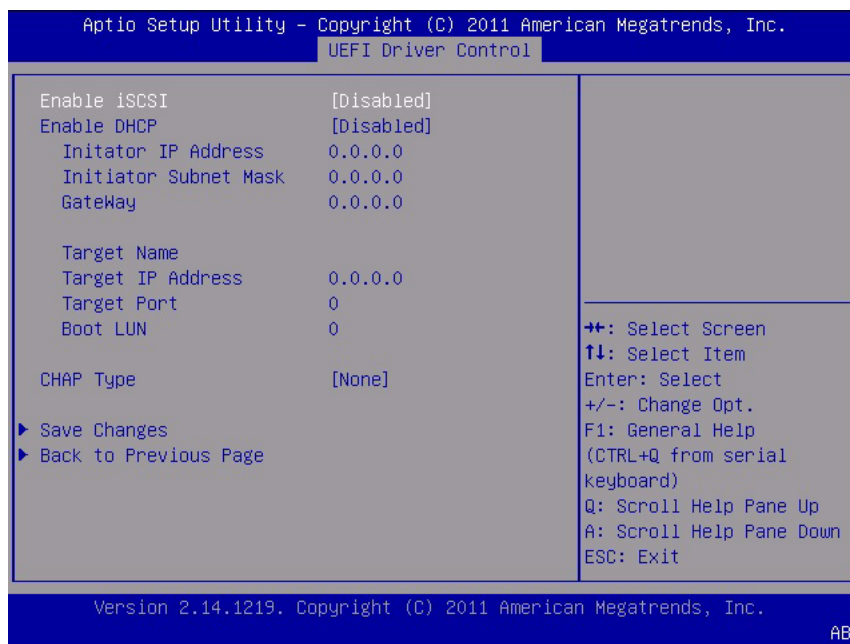
The iSCSI Initiator Name must conform to the IQN naming scheme (see RFC 3271 – Internet Small Computer Systems Interface (iSCSI) Naming and Discovery). For example: iqn.1988-2.com.oracle:000000000000



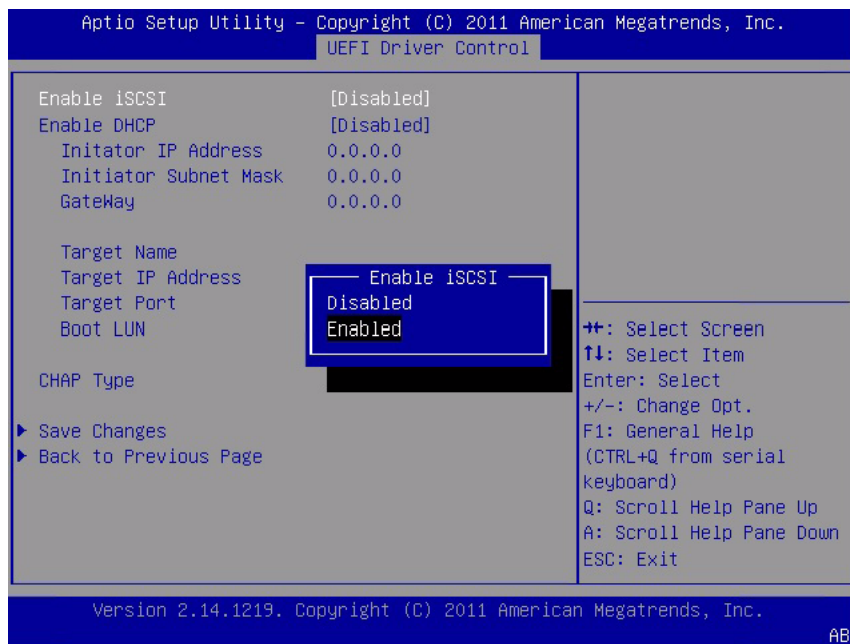
5. Press Enter to accept the changes.
6. Select the NIC port MAC address that corresponds to your chosen iSCSI boot target, then press Enter.

For example, Port 00-21-28-E7-71-06.

The Port Configuration screen appears, and iSCSI is disabled by default.



7. **Select Enable iSCSI, then press the + or - key (plus or minus key) to toggle Enable iSCSI to Enabled to enable the iSCSI port for iSCSI boot.**



8. Determine whether you want to set DHCP to enabled or disabled.

DHCP is disabled by default.

If you keep DHCP disabled, continue to [Step 9](#).

If you set DHCP to enabled, continue to [Step 10](#).

9. If DHCP is set to disabled, manually enter the following settings, then press **Enter** to save your changes.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
UEFI Driver Control	
Enable iSCSI	[Disabled]
Enable DHCP	[Disabled]
Initiator IP Address	0.0.0.0
Initiator Subnet Mask	0.0.0.0
GateWay	0.0.0.0
Target Name	
Target IP Address	0.0.0.0
Target Port	0
Boot LUN	0
CHAP Type	[None]
▶ Save Changes	
▶ Back to Previous Page	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help (CTRL+Q from serial keyboard) Q: Scroll Help Pane Up A: Scroll Help Pane Down ESC: Exit	

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.

AB

a. Select Target Name, then type the iqn target name.

For example: **iqn.1988-12.oracle.com:x4170-m3-target**

b. Select Target IP Address, then type the target IP address of the iSCSI server in dotted-decimal notation.

For example: **192.0.2.1**

c. Select the Target Port, then type the target port of the iSCSI server.

For example: **3260** (default target port setting)

---

**Note** – When iSCSI is enabled on a network port, PXE is disabled for the port.

---

- d. Select the Boot LUN, then type the hexadecimal representation of the logical unit number (LUN).

For example: 0

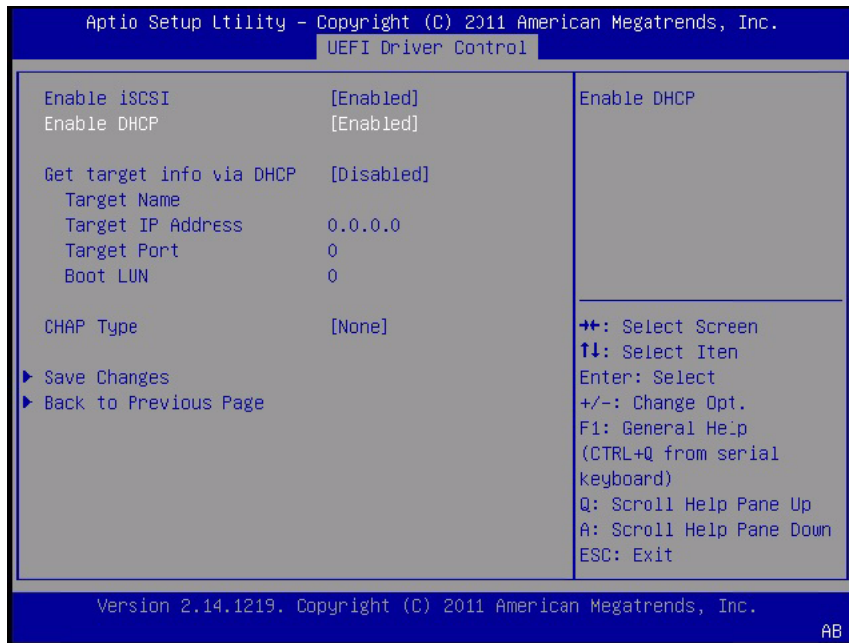
10. To set DHCP to enabled, do the following, then press Enter to save your changes.

- a. Select the DHCP setting, then press the + or - key (plus or minus key) to change the setting to Enabled.

You do not need to enter the settings for the Initiator and the related fields are hidden.

- b. Select the Get target info via DHCP setting, and toggle the setting to Enabled.

The Target information is retrieved from the DHCP service and the related fields are hidden.



11. Select a Challenge-Handshake Authentication Protocol (CHAP) Type to enable password security.

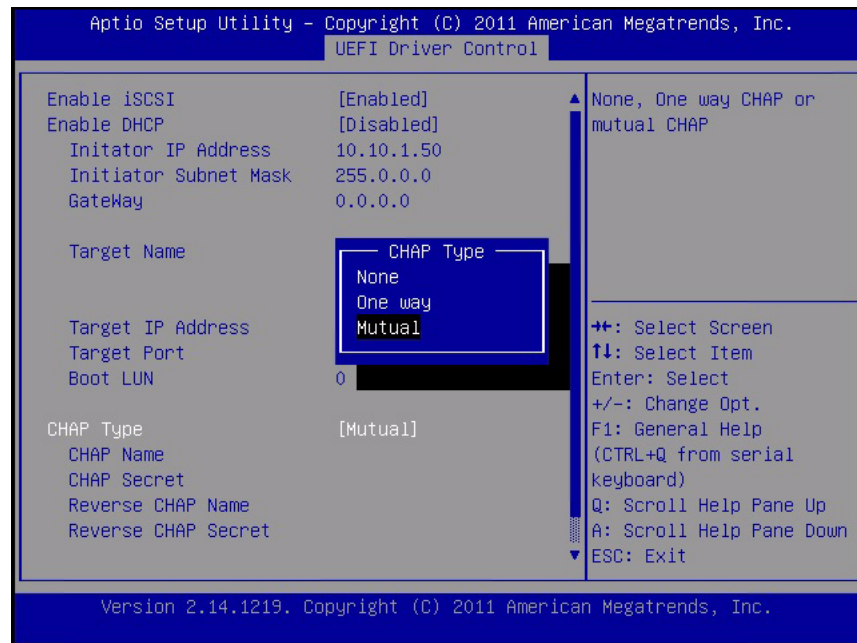
- None – Default setting; CHAP disabled and not required.
- One Way – Also known as unidirectional; required information is CHAP Name and CHAP Secret.
  - CHAP Name – User configurable. Typically the name of the Initiator, but can be any name. Must also be set at the target to authenticate the Initiator.

- CHAP Secret – User configurable password. Must be set on the target and the initiator.
- Mutual – Also known as bidirectional; required information is CHAP Name, CHAP Secret, Reverse CHAP Name, and Reverse CHAP Secret.
- Reverse CHAP Name – Set a CHAP name for the target as a parameter of the target.
- Reverse CHAP Secret – Set a password for the target.

---

**Note** – The target must be configured to acknowledge a CHAP and the parameters used.

---



12. Verify that your settings match the iSCSI target server information.
13. Save the changes and exit the BIOS Setup Utilities.  
See "Exit BIOS Setup Utility" on page 136.
14. Restart the server.
15. Press the F8 key (or Ctrl+P from a serial console) when prompted while the BIOS is running the power-on-self-test (POST) checkpoints.  
The Please Select Boot device dialog appears.
16. Verify that the iSCSI target appears in the boot list.

17. Refer to the supported operating systems (OS) documentation for instructions on installing an OS on an iSCSI drive.

### Related Information

- “Access BIOS Setup Utility Menus” on page 108
- “Exit BIOS Setup Utility” on page 136

## ▼ Enable or Disable Oracle System Assistant

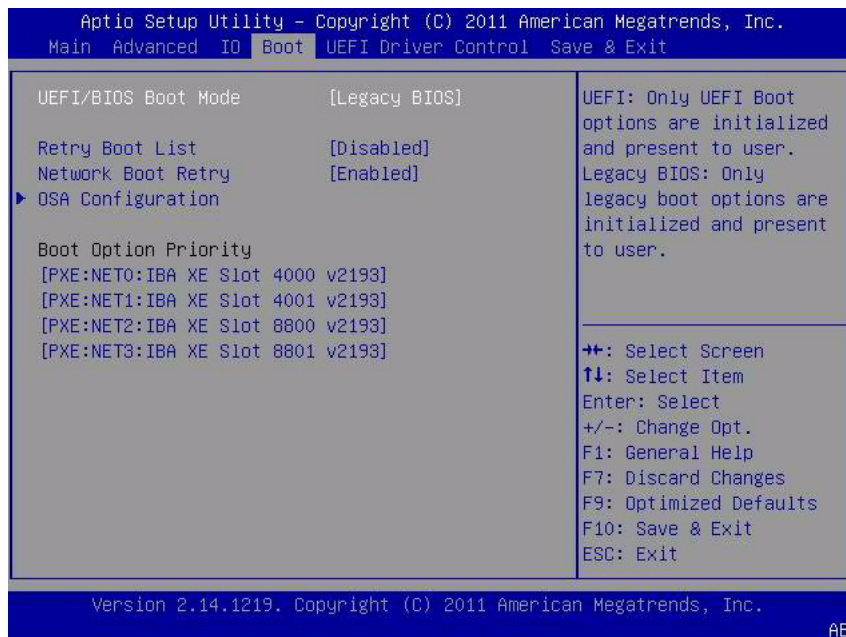
If you have disabled Oracle System Assistant, you can use the BIOS Setup Utility Boot Menu to put the USB device in an online state, so that Oracle System Assistant becomes available to the operating system.

### 1. Access the BIOS Setup Utility.

See “Access BIOS Setup Utility Menus” on page 108.

### 2. In the BIOS Setup Utility menus, navigate to the Boot Menu.

The Boot Menu screen appears.



### 3. Select the OSA Configuration option.

The OSA Configuration screen appears. The setting for OSA Internal Support is either Enabled or Disabled.





4. To change the setting, use the + or - key (plus or minus key), then press Enter to select either Enabled or Disabled.
5. Press F10 to save the changes and exit the BIOS Setup Utility.

### Related Information

- [“BIOS Boot Menu Selections” on page 161](#)

## ▼ Configure TPM Support

If you intend to use the Windows Server Trusted Platform Module (TPM) feature set, you must configure the server to support this feature.

---

**Note** – TPM enables you to administer the TPM security hardware in your server. For additional information about implementing this feature, refer to the Windows Trusted Platform Module Management documentation provided by Microsoft.

---

### 1. Access the BIOS Setup Utility menus.

See [“Access BIOS Setup Utility Menus” on page 108](#).

**2. In the BIOS Setup Utility menus, navigate to the Advanced Menu.**

The Advanced Settings screen appears.

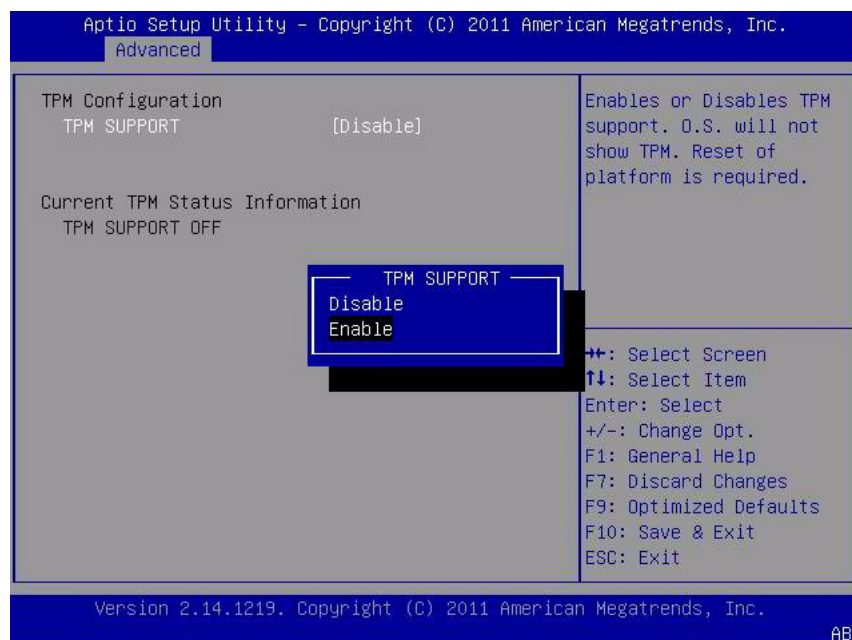
**3. In the Advanced Settings screen, select Trusted Computing.**

The TPM Configuration screen appears.



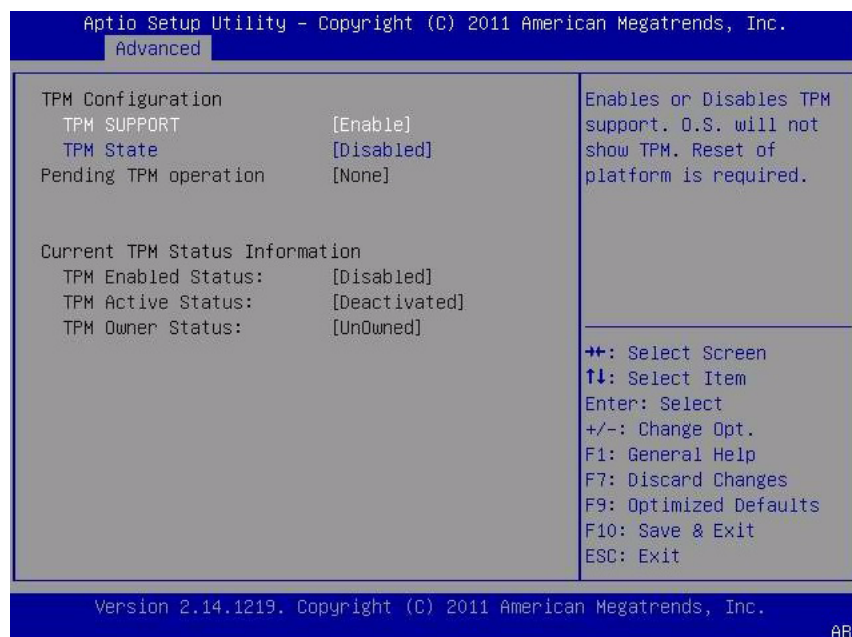
**4. If the TPM State is listed as Disabled, select TPM Support and press Enter.**

A TPM Support dialog appears.



5. In the dialog, set TPM Support to Enable, then press Enter.

The updated TPM Configuration screen appears.



6. Press F10 to save the changes and exit the BIOS Setup Utility.

#### Related Information

- “BIOS Setup Utility Menus” on page 106
- “Exit BIOS Setup Utility” on page 136
- Microsoft’s Windows Trusted Platform Module Management documentation

## ▼ Configure SP Network Settings

Choose one of the following methods to specify service processor (SP) network settings:

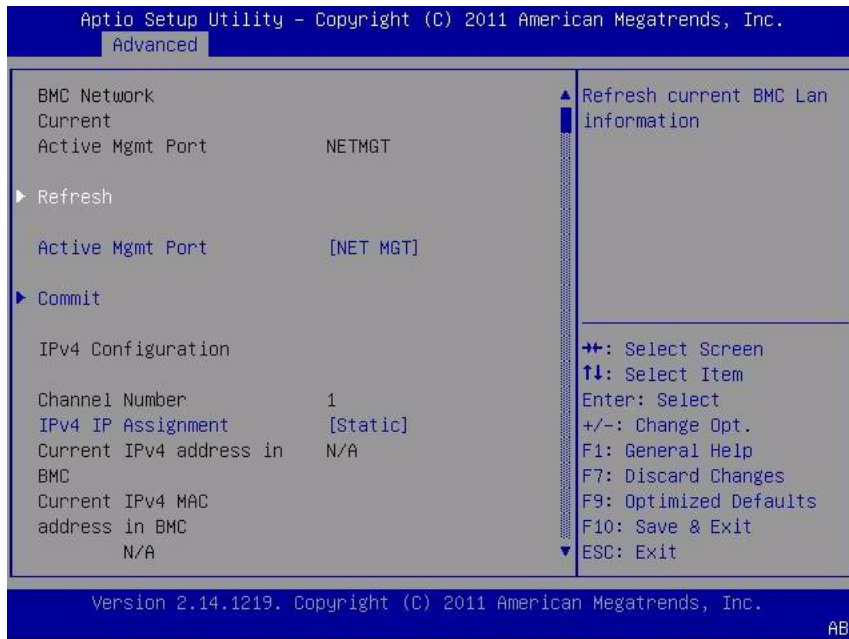
- **BIOS** – Assign the IP address for the server SP from the BIOS Setup Utility on the Advanced Menu.
- **Oracle ILOM** – For instructions on setting the IP address for the server SP using Oracle ILOM, refer to the Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at:  
<http://www.oracle.com/pls/topic/lookup?ctx=ilom31>
- **Oracle System Assistant** – For instructions on using Oracle System Assistant to configure SP network settings, see “Configure Network Settings” on page 43.

#### 1. Access the BIOS Setup Utility menus.

See “Access BIOS Setup Utility Menus” on page 108.

#### 2. In the BIOS Setup Utility menus, navigate to the Advanced Menu.

The Advanced Settings screen appears.

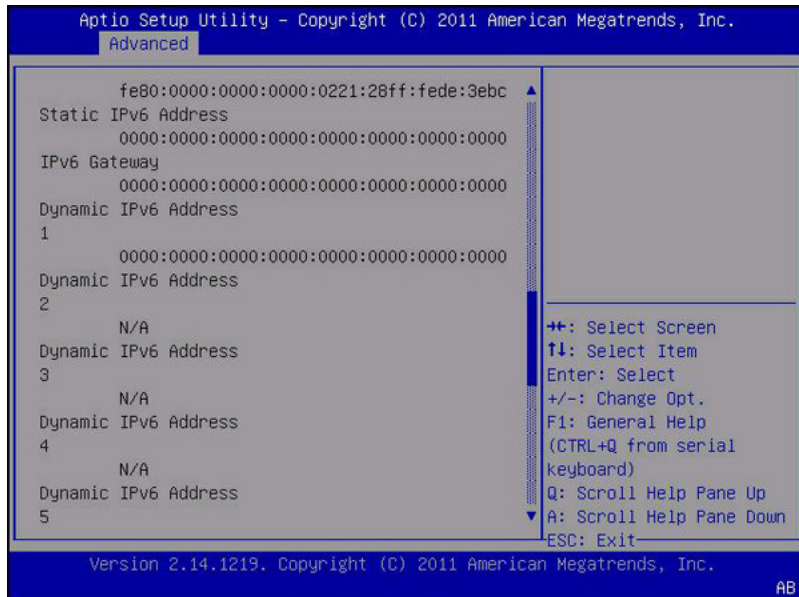


**3. In the Advanced Menu, select BMC Network.**

The BMC Network Configuration screen appears.

The BMC is the Baseboard Management Controller.

**4. In the BMC Network Configuration screen, you can view and configure network settings for IPv4 Assignment or IPv6 Assignment.**



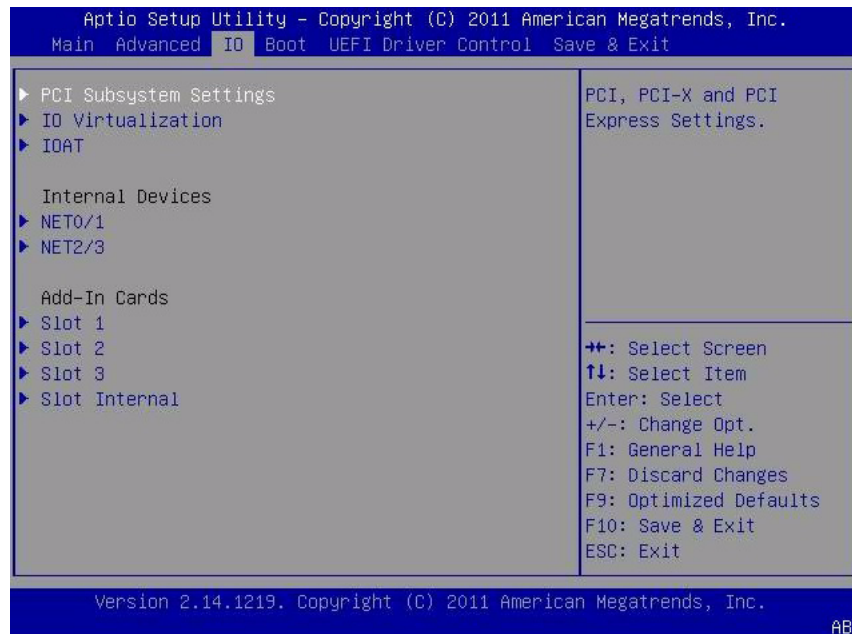
5. Select Refresh to display the current BMC network settings.
6. Select Commit to update the BMC network settings with the latest values.
7. Press F10 to save the changes and exit the BIOS Setup Utility.

### Related Information

- [“BIOS Setup Utility Menus” on page 106](#)
- [“Exit BIOS Setup Utility” on page 136](#)

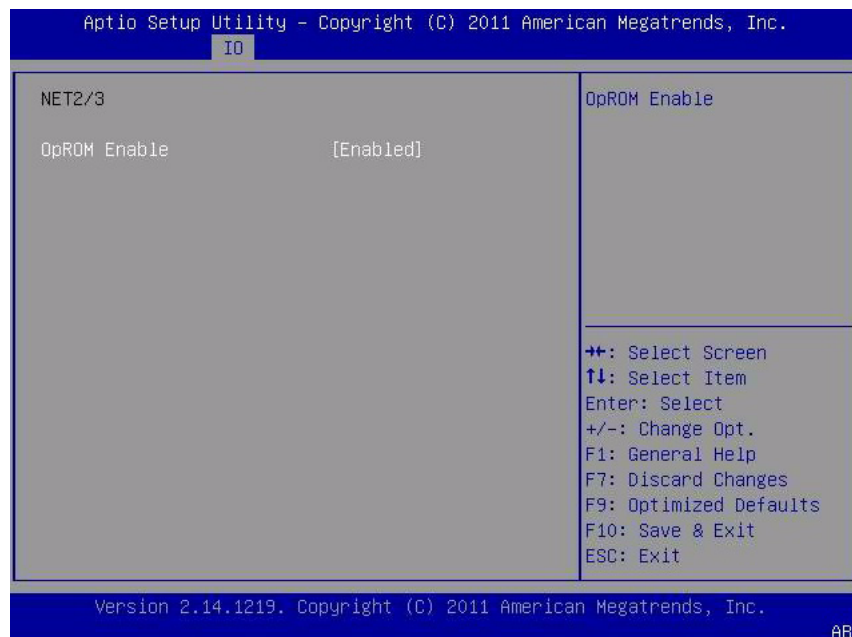
## ▼ Configure Option ROM Settings

1. Access the BIOS Setup Utility menus.  
See [“Access BIOS Setup Utility Menus” on page 108](#).
2. In the BIOS Setup Utility menus, navigate to the IO Menu.  
The IO Menu screen appears.



### 3. Select the internal device or add-in card slot for which you want to enable or disable Option ROM.

The Option ROM screen for that device or add-in card slot appears.



**4. Do one of the following:**

- Select Enabled to enable the Option ROM setting.
- Select Disabled to disable the Option ROM setting.

**5. Press the F10 key to save the changes and exit the BIOS Setup Utility.**

**Related Information**

- [“Legacy Option ROM Allocation” on page 114](#)
- [“Access BIOS Setup Utility Menus” on page 108](#)
- [“BIOS Setup Utility Menus” on page 106](#)
- [“Exit BIOS Setup Utility” on page 136](#)

## ▼ Configure IO Resource Allocation

**1. Access the BIOS Setup Utility menus.**

See [“Access BIOS Setup Utility Menus” on page 108](#).

**2. In the BIOS Setup Utility menus, navigate to the IO Menu.**

The IO Menu screen appears.

**3. Select the desired add-in card.**

**4. Do one of the following:**

- Select Enabled to enable I/O resource allocation for the add-in card.
- Select Disabled to disable the I/O resource allocation for the add-in card.

**5. Press F10 to save the changes and exit the BIOS Setup Utility.**

**Related Information**

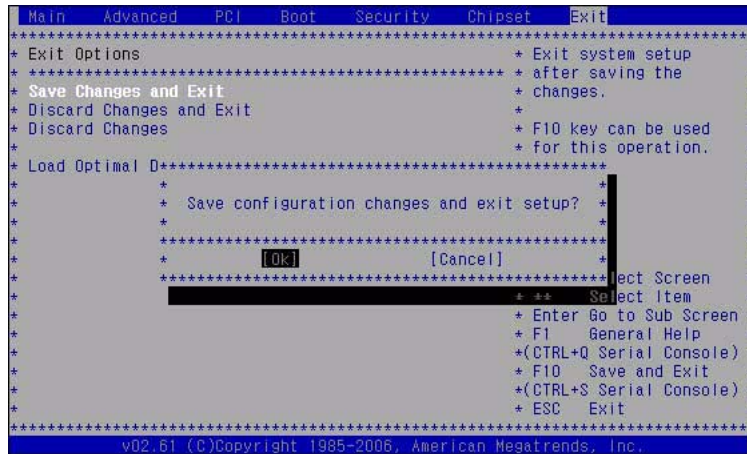
- [“IO Resource Allocation” on page 115](#)
- [“Access BIOS Setup Utility Menus” on page 108](#)
- [“BIOS Setup Utility Menus” on page 106](#)
- [“Exit BIOS Setup Utility” on page 136](#)

## ▼ Exit BIOS Setup Utility

**1. Use the left and right arrow keys to navigate to the top-level Save & Exit menu.**

**2. Use the up and down arrow keys to select the desired action.**





3. Press the Enter key to select the option.

A confirmation dialog box appears.

4. In the confirmation dialog box, select OK to proceed and exit the BIOS Setup Utility, or select Cancel to stop the exit process.

---

**Note** – After modifying any BIOS settings and selecting Save Changes and Reset from the Save & Exit Menu, the subsequent reboot might take longer than a typical reboot where no settings were modified. The additional delay is required to ensure that changes to the BIOS settings are synchronized with Oracle ILOM.

---

### Related Information

- [“Access BIOS Setup Utility Menus” on page 108](#)
- [“BIOS Setup Utility Menus” on page 106](#)



# BIOS Setup Utility Menu Options

---

This section includes searchable text-based representations and on-screen images of the main menus in the BIOS Setup Utility for the Sun Server X3-2L. Following the text and on-screen menus is a table of the options available from that menu.

The following topics are discussed.

Description	Links
Review the BIOS Main Menu selections.	<a href="#">“BIOS Main Menu Selections” on page 140</a>
Review the BIOS Advanced Menu selections.	<a href="#">“BIOS Advanced Menu Selections” on page 145</a>
Review the BIOS IO Menu selections.	<a href="#">“BIOS IO Menu Selections” on page 156</a>
Review the Boot Menu selections.	<a href="#">“BIOS Boot Menu Selections” on page 161</a>
Review the BIOS UEFI Driver Control Menu selections.	<a href="#">“UEFI Driver Control Menu Selections” on page 165</a>
Review the BIOS Save & Exit Menu selections.	<a href="#">“BIOS Save &amp; Exit Menu Selections” on page 167</a>

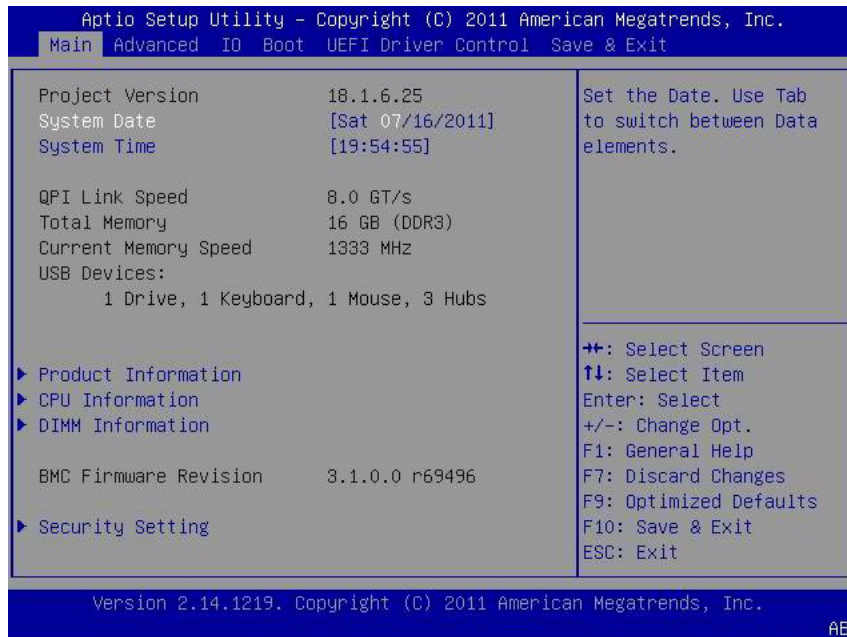
## Related Information

- [“Setting Up BIOS Configuration Parameters” on page 105](#)

## BIOS Main Menu Selections

This section includes a searchable text-based representation and an on-screen image of the BIOS Main Menu. The options that are available from the Main Menu are described in the table that follows. Options in the table that are marked as “(R/O)” are read-only information and cannot be changed.

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Main Advanced IO Boot UEFI Driver Control Save & Exit		
-----+-----\		
Project Version	18.1.6.25	Set the Date. Use Tab
System Date	[Sat 07/16/2011]	to switch between Data
System Time	[19:58:46]	elements.
CPU Thread Count	32	
QPI Link Speed	8.0 GT/s	
Total Memory	16 GB (DDR3)	
Current Memory Speed	1333 MHz	
USB Devices:		
1 Drive, 1 Keyboard, 1 Mouse, 3 Hubs		
BMC Status	Healthy	
BMC Firmware Revision	3.1.2.42 r84477	
		-----
> Product Information		><: Select Screen
> CPU Information		^v: Select Item
> DIMM Information		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F7: Discard Changes
		F9: Optimized Defaults
> Security Setting		F10: Save & Exit
		ESC: Exit
-----+-----/		
Version 2.15.1229. Copyright (C) 2012 American Megatrends, Inc.		



**TABLE:** BIOS Main Menu Options

Setup Options	Options	Defaults	Description
Project Version (R/O)			<p>BIOS version is displayed. This string is a unique identifier used to reference a specific BIOS release. Format is XYYZZPP, which decodes to:</p> <ul style="list-style-type: none"> <li>• XX - Unique project/platform code.</li> <li>• YY - BIOS major release.</li> <li>• ZZ - BIOS minor release.</li> <li>• PP - Build number.</li> </ul> <p>Example: 18.01.04.01</p>
System Date			<p>Current date is displayed. You can change the date setting.</p> <p>Example: [Thu 10/20/2011]</p>
System Time			<p>Current time is displayed. You can change the time setting.</p> <p>Example: [13:38:27]</p>

**TABLE:** BIOS Main Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
CPU Thread Count (R/O)			Number of logical processor threads is displayed.
QPI Link Speed (R/O)	SLOW, 6.4GT/s 7.2GT/s 8.0GT/s		Intel Quick Path Interconnect (QPI) operational speed is displayed.
Total Memory (R/O)			Memory in gigabytes is displayed. Example: 16GB (DDR3)
Current Memory Speed (R/O)			Memory speed is displayed. Example: 1333 MHz
USB Devices (R/O)			Detected USB devices are displayed. Example: 1 keyboard, 1 mouse, 3 hubs
BMC Status (R/O)			Displays the service processor health status. Example: Healthy
BMC Firmware Revision (R/O)			Displays the service processor firmware version. Example: 3.1.00r6933
<b>PRODUCT INFORMATION (R/O)</b>			Product information is displayed.
Product Name			Product name is displayed. Example: Sun Server X3-2L
Product Serial Number			Product serial number is displayed. Example: 1134FML00V
Board Serial Number			Board serial number is displayed. Example: 0328MSL-1132U900
<b>CPU INFORMATION (R/O)</b>			Defines the attributes of a single processor (CPU). A separate information structure is provided for each processor supported in the system. Most of the values are dependent on the processor.

**TABLE:** BIOS Main Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
<b>Socket 0 CPU Information</b>			If CPU socket 0 is populated, displays the options listed. Otherwise, displays "Not Present."
Intel CPU @ 2.70 GHz			Processor's ID brand is displayed.
CPU Signature			Processor (CPU) information is displayed Example: 206d5
Microcode Patch			Software update (microcode patch) information is displayed. Example: 512
Max CPU Speed			Maximum non-turbo speed of the processor is displayed. Example: 2700 MHz
Min CPU Speed			Minimum speed of the processor is displayed. Example: 1200 MHz
Processor Cores			Number of available processor cores is displayed. Example: 8
Intel HT Technology			Indicates whether Intel Hyper Threading is supported.
Intel VT-x Technology			Indicates whether Intel Virtualization Technology is supported.
L1 Data Cache			Example: 32 kB x 8
L1 Code Cache			Example: 32 kB x 8
L2 Cache			Example: 256 kB x 8
L3 Cache			Example: 20480 kB
<b>Socket 1 CPU Information</b>			If CPU socket 1 is populated, displays the same options as Socket 0 CPU Information. Otherwise, displays "Not Present."
<b>DIMM INFORMATION (R/O)</b>			Memory module (DIMM) presence and size information is displayed.

**TABLE:** BIOS Main Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
<b>CPU Socket 0 DIMM Information</b>			If DIMM is present, displays memory size in gigabytes. Otherwise, displays "Not Present."
D0...D7			Displays memory size in gigabytes. Example: Socket 0 DIMMs D0 - 4 GB D1 - 4 GB D2 - 4 GB D3 - 4 GB D4 - 2 GB D5 - 2 GB D6 - Not present D7 - Not present
<b>CPU Socket 1 DIMM Information</b>			If DIMM is present, displays memory size in gigabytes. Otherwise, displays "Not Present."
D0...D7			See previous DIMM information example.
<b>BMC Firmware Revision (R/O)</b>			Displays the service processor firmware version. Example: 3.1.00r6933
<b>SECURITY SETTING</b>			Configure the security setting.
Administrator Password			Set the Administrator password.

### Related Information

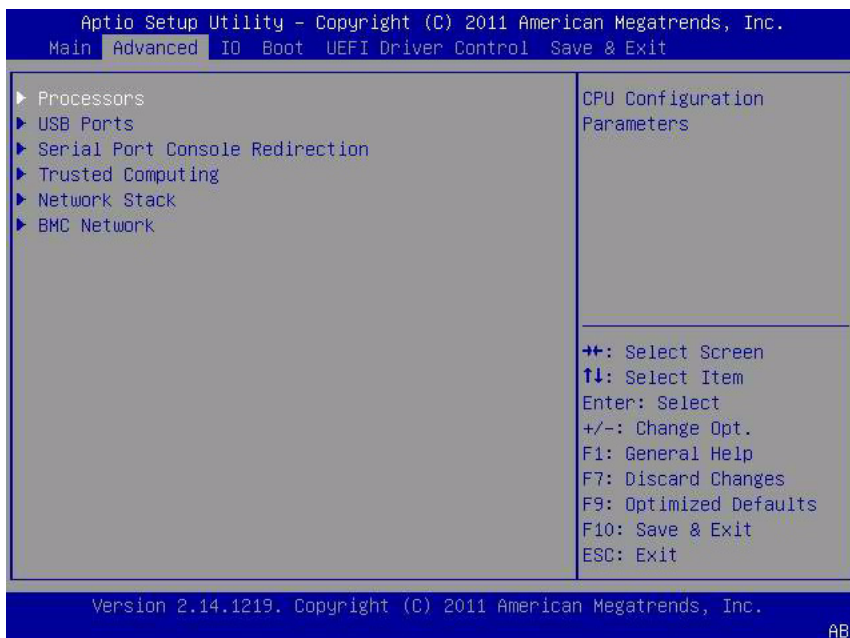
- ["BIOS Advanced Menu Selections" on page 145](#)
- ["BIOS IO Menu Selections" on page 156](#)
- ["BIOS Boot Menu Selections" on page 161](#)
- ["UEFI Driver Control Menu Selections" on page 165](#)
- ["BIOS Save & Exit Menu Selections" on page 167](#)



\_\_\_\_\_

This section includes a searchable text-based representation and an on-screen image of the BIOS Advanced Menu. The options that are available from the Advanced Menu are described in the table that follows. Options in the table that are marked as “(R/O)” are read-only information and cannot be changed.

[illegible]



**TABLE:** BIOS Advanced Menu Options

Setup Options	Options	Defaults	Description
<b>PROCESSORS</b>			Enable or disable processor (CPU) features.
Hyper-threading	Disabled/Enabled	Enabled	When enabled, two threads are available per enabled core. When disabled, only one thread per enabled core is available.
Execute Disable Bit	Disabled/Enabled	Enabled	When enabled, execute disable bit can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (for example, Windows Server 2003 SP1, Windows XP SP2, SUSE Linux 9.2, Red Hat Enterprise Linux 3 Update 3).
Hardware Prefetcher	Disabled/Enabled	Enabled	Enable the mid-level cache (L2) streamer prefetcher.

**TABLE:** BIOS Advanced Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
Adjacent Cache Line Prefetcher	Disabled/Enabled	Enabled	Enable the mid-level cache (L2) prefetching of adjacent cache lines.
DCU Streamer Prefetcher	Disabled/Enabled	Enabled	Enable prefetch of next L1 data line based on multiple loads in same cache line.
DCP IP Prefetcher	Disabled/Enabled	Enabled	Enable prefetch of next L1 line based on sequential load history.
Intel Virtualization Technology	Disabled/Enabled	Enabled	When enabled, a Virtual Machine Manager (VMM) can utilize the additional hardware capabilities provided by Intel Vanderpool Technology.
<b>CPU Power Management Configuration</b>			Displays processor (CPU) information. BIOS provides C-states, P-states, and T-states support in order for the OS to manage the power utilization of the system. Power management is also controlled by the service processor based on system policies.
Power Technology	Disabled/Enabled Efficient/Custom	Efficient	Enable the power management features. The following options are not displayed if Power Technology is set to Disabled.
Intel SpeedStep	Disabled/Enabled	Enabled	Displays only if Power Technology is set to Custom. Enable or disable Intel SpeedStep. The Intel technology used to support P-state transitions is referred to as Intel SpeedStep.
Turbo Mode	Disabled/Enabled	Enabled	Displays only if Power Technology is set to Custom and Intel SpeedStep is set to enabled and Turbo Mode is supported in the CPU. Enable or disable Turbo Mode.

**TABLE:** BIOS Advanced Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
CPU C3 Report	Disabled/Enabled	Disabled	Displays only if Power Technology is set to Custom and power state (C3) is supported in the CPU. Enable or disable CPU C3 (ACPI C2) report to operating system.
CPU C6 Report	Disabled/Enabled	Enabled	Displays only if Power Technology is set to Custom and power state (C6) is supported in the CPU. Enable or disable CPU C6 (ACPI C3) report to operating system.
CPU C7 Report	Disabled/Enabled	Enabled	Displays only if Power Technology is set to Custom and power state (C7) is supported in the CPU. Enable or disable CPU C7 (ACPI C3) report to operating system.
Package C-States	Disabled/Enabled	Enabled	Displays only if Power Technology is set to Custom. The power state control is referred to as C-State. Enable or disable the Package C-State limit.
Energy Performance	Performance Balanced Performance Balanced Energy Energy Efficient	Balanced Performance	Optimize between performance and power savings. Windows 2008 and later operating systems override this value according to its power plan.
<b>USB PORTS</b>			Set USB port configuration parameters.
EHCI Hand-off	Disabled/Enabled	Disabled	Enable or disable Enhanced Host Controller Interface (EHCI) hand-off support.
Port 60/64 Emulation	Disabled/Enabled	Enabled	Enable I/O port 60h/64h emulation support. Enable this setting for the complete USB keyboard legacy support for non-USB aware operating systems.
All USB Devices	Disabled/Enabled	Enabled	Enable or disable all USB devices.
Rear Port 0	Disabled/Enabled	Enabled	Enable or disable USB Port 0.

**TABLE:** BIOS Advanced Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
Rear Port 1	Disabled/Enabled	Enabled	Enable or disable USB Port 1.
Front Port 0	Disabled/Enabled	Enabled	Enable or disable USB Port 2.
Front Port 1	Disabled/Enabled	Enabled	Enable or disable USB Port 3.
Internal Port 0	Disabled/Enabled	Enabled	Enable or disable USB Port 4.
Internal Port 1	Disabled/Enabled	Enabled	Enable or disable USB Port 9.
<b>SERIAL PORT CONSOLE REDIRECTION</b>			Provides the capability to redirect console output/input to the serial port. Graphic output is not redirected. BIOS serial console redirection lets you monitor BIOS POST messages and navigate the BIOS Setup menus and Option ROMs from a terminal connected to the server using a serial connection.
External Serial Port	System/BMC	System	Control whether the external serial port connects to the Baseboard Management Controller (BMC) or directly to the system. Set to BMC for serial link management.
EMS Console Redirection	Disabled/Enabled	Disabled	Enable or disable console redirection for Windows Emergency Management Service (EMS) administration.
Console Redirection	Disabled/Enabled	Enabled	Enable or disable console redirection.
Terminal Type	VT100 VT100+ VT-UTF8 ANSI	VT100+	Select the emulation for the terminal: <ul style="list-style-type: none"> <li>• VT100: ASCII character set.</li> <li>• VT100+: Extends VT100 to support color, function keys, etc.</li> <li>• VT-UTF8: Uses UTF8 encoding to map Unicode characters onto one or more bytes.</li> <li>• ANSI: Extended ASCII character set.</li> </ul>

**TABLE:** BIOS Advanced Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
Bits per Second	9600 10200 57600 115200	9600	Select the serial port transmission speed. The speed must be matched on the connecting serial device. Long or noisy lines require lower speeds.
Data Bits	07/08/11	8	Select the data bits.
Parity	None Even Odd Mark Space	None	<p>A parity bit can be sent with the data bits to detect some transmission errors.</p> <ul style="list-style-type: none"><li>• None: No parity bits are sent.</li><li>• Even: Parity bit is 0 if the number of 1's in the data bits is even.</li><li>• Odd: Parity bit is 0 if the number of 1's in the data bits is odd.</li><li>• Mark: Parity bit is always 1.</li><li>• Space: Parity bit is always 0.</li></ul> <p>Mark and Space parity do not allow for error detection. They can be used as an additional data bit.</p>
Stop Bits	01/02/11	1	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning of a serial packet.) The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
Flow Control	None/Hardware RTS/CTS	None	Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to restart the flow. Hardware flow control uses two wires to send start and stop signals.

**TABLE:** BIOS Advanced Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
<b>TRUSTED COMPUTING</b>			If you intend to use the Windows Server Trusted Platform Module (TPM) feature set, you must configure the server to support TPM. The TPM feature is used by the OS for proof that BIOS code has not been tampered with.
TPM Support	Disabled/Enabled	Enabled	Enable or disable TPM support. Only UEFI BIOS implements this setup option. If disabled, the OS will not show TPM. Reset of the platform is required.
TPM State	Disabled/Enabled	Disabled	Displays if TPM Support is enabled.
Current TPM Status Information (R/O)			<p>If TPM Support is disabled, Current TPM Status displays "TPM SUPPORT OFF."</p> <p>If TPM Support is enabled, Current TPM Status displays:</p> <ul style="list-style-type: none"> <li>• TPM Enabled Status:</li> <li>• TPM Active Status:</li> <li>• TPM Owner Status:</li> </ul>
<b>NETWORK STACK</b>			Configure network stack settings.
Network Stack	Disabled/Enabled	Enabled	Enable or disable the network stack (PXE and UEFI).
IPv4 PXE Support	Disabled/Enabled	Enabled	Enabled or disable IPv4 PXE boot support.
IPv6 PXE Support	Disabled/Enabled	Disabled	Enabled or disable IPv6 PXE boot support.
<b>UEFI CONFIGURATION SYNCHRONIZATION</b>			Change the BIOS configuration synchronization setting.
Synchronization Late	Disabled/Enabled	Enabled	If Synchronization Late is enabled, the BIOS configuration stored in Oracle ILOM is updated before BIOS passes control to the host OS or after exiting the BIOS menu.

**TABLE:** BIOS Advanced Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
<b>BMC NETWORK</b>			Configure Baseboard Management Controller (BMC) network parameters.
BMC Network: Current Active Management Port (R/O)			Active management port settings are displayed.
Refresh			Refresh current BMC network information with the latest information from the service processor.
Active Management Port	NETMGT NET0 NET1 NET2 NET3		Change the management port that is currently active.
Commit			Commit the current BMC network information.
IPv4 Configuration (R/O)			Current configuration of the IPv4 settings is displayed.
Channel Number (R/O)		1	Current channel number is displayed.
IPv4 Assignment	Static/Dynamic	Static	View whether the service processor is assigned a static IPv4 address or assigned a dynamic IPv4 address using Dynamic Host Control Protocol (DHCP).
Current IPv4 Address in BMC (R/O)			Current IPv4 address of the service processor is displayed. Example: 192.0.2.86
Current IPv4 MAC Address in BMC (R/O)			Current IPv4 MAC address for the service processor is displayed. Example: 00:12:46:BE:0A:02
Current IPv4 Subnet Mask in BMC (R/O)			Current IPv4 subnet mask address for the service processor is displayed. Example: 255.255.255.0
Refresh			Select Refresh to update to the current settings.



**TABLE:** BIOS Advanced Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
IPv4 Address			If IPv4 Assignment is set to Static, set the IPv4 address for the service processor. Example: 192.0.2.86
IPv4 Subnet Mask			If the IPv4 Assignment is set to Static, set the IPv4 subnet mask. Example: 255.255.255.0
IPv4 Default Gateway			If the IP Assignment is set to Static, set the IPv4 default gateway Example: 192.0.2.86
Commit			Commit the IPv4 configuration settings.
IPv6 Configuration (R/O)			Current configuration of the IPv6 settings is displayed. IPv6 addresses are written with hexadecimal digits and colon separators. For example: 2001:db8:000:82a1:0000:0000:1234:abcd. IPv6 addresses are composed of two parts: a 64-bit subnet prefix and a 64-bit host interface ID. To shorten the IPv6 address, you can (1) omit all leading zeros, and (2) replace one consecutive group of zeros with a double colon (::). For example: 2001:db8:0:82a1::1234:abcd
Channel Number (R/O)		1	Current channel number is displayed.
Current IPv6 State (R/O)			Current IPv6 state is displayed.
Current IPv6 Auto Configuration (R/O)			Current IPv6 autoconfiguration parameters are displayed.
Link Local IPv6 Address (R/O)			Current link local IPv6 address is displayed. Example: fe80::214:4fff:feca:5f7e/64

**TABLE:** BIOS Advanced Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
Static IPv6 Address (R/O)			Current static IPv6 address is displayed. Example: 2001:0db0:000:82a1:0000:0000:1234:abcd
IPv6 Gateway (R/O)			Current IPv6 gateway address is displayed. Example: fe80::211:5dff:febe:5000/128
Dynamic IPv6 Address 1 (R/O)			Current dynamic IPv6 address is displayed. Example: fec0:a:8:b7:214:4fff:feca:5f7e/64
Dynamic IPv6 Address 2 (R/O)			If the IPv6 address is moved in the network, packets will be routed to the first IPv6 address.
Dynamic IPv6 Address n (R/O)			If the IPv6 address is moved in the network, packets will be routed to the first IPv6 address.
Dynamic IPv6 Address 10 (R/O)			If the IPv6 address is moved in the network, packets will be routed to the first IPv6 address.
Refresh			Select Refresh to update to the current settings.
IPv6 State	Disabled/Enabled	Enabled	View whether IPv6 state is enabled or disabled.

**TABLE:** BIOS Advanced Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
Auto IPv6 Configuration	Disabled Stateless Dhcpv6_stateless Dhcpv6_stateful	Stateless	Autoconfiguration options are: <ul style="list-style-type: none"><li>• Disabled: When autoconfiguration is disabled, only the Link Local address is set. None of the autoconfiguration options to configure an IPv6 address are run.</li><li>• Stateless: When enabled, the IPv6 Stateless autoconfiguration is run to learn the IPv6 addresses for the device.</li><li>• Dhcpv6_stateless: When enabled, the Dhcpv6_stateless autoconfiguration is run to learn the DNS and domain information for the device.</li><li>• Dhcpv6_stateful: When enabled, the Dhcpv6_stateful autoconfiguration is run to learn the IP addresses and DNS information for the device.</li></ul>
Static IPv6 Address			Set the static IPv6 address. Example: 2001:0db0:000.82a1:0000:0000:1234:abcd
Commit			Commit the IPv6 configuration settings.

### Related Information

- [“BIOS Main Menu Selections” on page 140](#)
- [“BIOS IO Menu Selections” on page 156](#)
- [“BIOS Boot Menu Selections” on page 161](#)
- [“UEFI Driver Control Menu Selections” on page 165](#)
- [“BIOS Save & Exit Menu Selections” on page 167](#)

---

## BIOS IO Menu Selections

This section includes a searchable text-based representation and an on-screen image of the BIOS IO Menu. The options that are available from the IO Menu are described in the table that follows.

```
Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main  Advanced  IO  Boot  UEFI Driver Control  Save & Exit
/-----+-----\
|> PCI Subsystem Settings          |PCI, PCI-X and PCI
|> IO Virtualization              |Express Settings.
|> IOAT                           |
|                                  |
|   Internal Devices               |
|> NET0/1                         |
|> NET2/3                         |
|                                  |
|   Add-In Cards                  |
|> Slot 1                         |-----\
|> Slot 2                         |><: Select Screen
|> Slot 3                         |^v: Select Item
|> Slot 4                         |Enter: Select
|> Slot 5                         |+/-: Change Opt.
|> Slot 6                         |F1: General Help
|                                  |F7: Discard Changes
|                                  |F9: Optimized Defaults
|                                  |F10: Save & Exit
|                                  |ESC: Exit
|-----+-----\
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```

---

**Note** – PCIe slots 1, 2, 3, and Ethernet ports NET2 and NET3 are nonfunctional in single-processor systems.

---



**Note** – PCIe slots 1, 2, 3, and Ethernet ports NET2 and NET3 are nonfunctional in single-processor systems.

**TABLE:** BIOS IO Menu Options

Setup Options	Options	Defaults	Description
<b>PCI SUBSYSTEM SETTINGS</b>			Configure PCI, PCI-X and PCI Express settings.
PCI 64 Bit Resources Allocation	Disabled/Enabled	Enabled	Enable or disable 64-bit capable devices to be decoded in above 4G address space. This setting is available only if system supports 64-bit decoding.
<b>IO VIRTUALIZATION</b>			Configure single root I/O virtualization settings.

**TABLE:** BIOS IO Menu Options *(Continued)*

Setup Options	Options	Defaults	Description
VT-d	Disabled/Enabled	Enabled	Enable or disable Intel Virtualization Technology (VT-d) for directed I/O. If enabled, ensures improved isolation of I/O resources for greater reliability, security, and availability.
SR-IOV	Disabled/Enabled	Enabled	Single Root I/O Virtualization (SR-IOV) is used to configure devices into multiple virtual devices that can be used on virtual OS installation. If supported by hardware and set to enabled, all devices within the system that are SR-IOV capable will be configured to support SR-IOV and I/O resources are allocated to the device as normal. If set to disabled, I/O resources are not allocated to the device.
ARI	Disabled/Enabled	Disabled	If Alternate Routing ID (ARI) is supported by hardware and set to enabled, devices are permitted to locate virtual functions (VFs) in function numbers 8 to 255 of the captured bus number, instead of normal function numbers 0 to 7.
<b>I/OAT</b>			Configure settings for the Intel I/O Acceleration Technology (I/OAT).
Intel I/OAT	Disabled/Enabled	Enabled	Enable or disable Intel I/OAT.
DCA Support	Disabled/Enabled	Enabled	Enable or disable direct cache access (DCA) support.
<b>INTERNAL DEVICES</b>			Configure settings for the embedded network controller.
NET 0/1 OpROM Enable	Disabled/Enabled	Enabled	Enable or disable Option ROM. If set to enabled, Option ROM for the card executes as normal. If set to disabled, Option ROM for the card is not copied into memory and the execution of the Option ROM is inhibited.

**TABLE:** BIOS IO Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
<b>NET 2 and NET 3 OpROM Enable</b> <b>Note</b> - Ethernet ports NET2 and NET3 are nonfunctional in single-processor systems.	Disabled/Enabled	Enabled	Enable or disable Option ROM. If set to enabled, Option ROM for the card executes as normal. If set to disabled, Option ROM for the card is not copied into memory and the execution of the Option ROM is inhibited.
<b>ADD-IN CARDS</b>			Enable or disable the add-in cards.
<b>Slot 1</b> <b>Note</b> - PCIe slot 1 is nonfunctional in single-processor systems.			
IO Enable	Disabled/Enabled	Enabled	Enable or disable I/O for the add-in card.
OpROM Enable	Disable/Enable	Enabled	Enable or disable Option ROM.
<b>Slot 2</b> <b>Note</b> - PCIe slot 2 is nonfunctional in single-processor systems.			
IO Enable	Disabled/Enabled	Enabled	Enable or disable I/O for the add-in card.
OpROM Enable	Disable/Enable	Enabled	Enable or disable Option ROM.
<b>Slot 3</b> <b>Note</b> - PCIe slot 3 is nonfunctional in single-processor systems.			
IO Enable	Disabled/Enabled	Enabled	Enable or disable I/O for the add-in card.
OpROM Enable	Disable/Enable	Enabled	Enable or disable Option ROM.
<b>Slot 4</b>	Disabled/enabled	Enabled	
IO Enable	Disabled/Enabled	Enabled	Enable or disable the I/O for the add-in card.
OpROM Enable	Disable/Enable	Enabled	Enable or disable Option ROM.
<b>Slot 5</b>			
IO Enable	Disabled/Enabled	Enabled	Enable or disable I/O for the add-in card.
OpROM Enable	Disabled/Enabled	Enabled	Enable or disable Option ROM.

**TABLE:** BIOS IO Menu Options *(Continued)*

Setup Options	Options	Defaults	Description
Slot 6			
IO Enable	Disabled/Enabled	Enabled	Enable or disable I/O for the add-in card.
OpROM Enable	Disabled/enabled	Enabled	Enable or disable Option ROM.

### **Related Information**

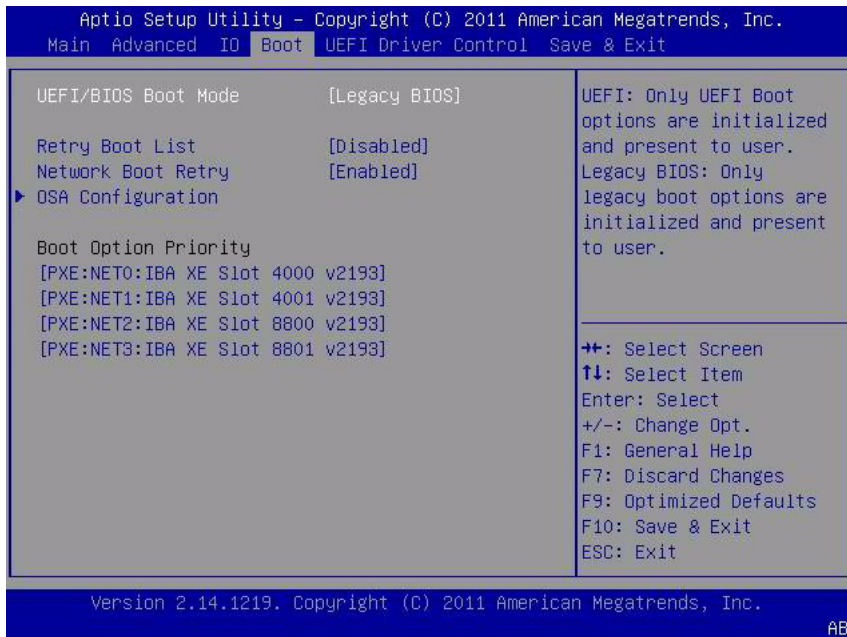
- [“BIOS Main Menu Selections” on page 140](#)
- [“BIOS Advanced Menu Selections” on page 145](#)
- [“BIOS Boot Menu Selections” on page 161](#)
- [“UEFI Driver Control Menu Selections” on page 165](#)
- [“BIOS Save & Exit Menu Selections” on page 167](#)



# BIOS Boot Menu Selections

This section includes a searchable text-based representation and an on-screen image of the BIOS Boot Menu. The options that are available from the Boot Menu are described in the table that follows.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Main Advanced IO Boot UEFI Driver Control Save & Exit		
/-----+-----\		
UEFI/BIOS Boot Mode	[Legacy BIOS]	UEFI: Only UEFI Boot
		options are initialized
Retry Boot List	[Disabled]	and present to user.
Network Boot Retry	[Enabled]	Legacy BIOS: Only
> OSA Configuration		legacy boot options are
		initialized and present
Boot Option Priority		to user.
[PXE:NET0:IBA XE Slot 4000 v2193]		
[PXE:NET1:IBA XE Slot 4001 v2193]		
[PXE:NET2:IBA XE Slot 8800 v2193]		-----
[PXE:NET3:IBA XE Slot 8801 v2193]		><: Select Screen
		^v: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F7: Discard Changes
		F9: Optimized Defaults
		F10: Save & Exit
		ESC: Exit
-----+-----/		
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.		



**TABLE:** BIOS Boot Menu Options

Setup Options	Options	Defaults	Description
<b>UEFI/BIOS Boot Mode</b>	Legacy BIOS/UEFI	Legacy BIOS	Select either Legacy BIOS or UEFI as the boot mode. <ul style="list-style-type: none"><li>• Enable UEFI: Only UEFI boot options are initialized and present to user.</li><li>• Enable Legacy BIOS: Only Legacy BIOS boot options are initialized and present to user.</li></ul>
<b>Retry Boot List</b>	Disabled/Enabled	Enabled	If enabled, BIOS automatically retries to boot from the top of the Boot Priority List when all devices have been attempted and failed.
<b>Network Boot Retry</b>	Disabled/Enabled	Enabled	If enabled, BIOS automatically retries the PXE list present in the system when all PXE attempts have failed. If set to disabled, the system halts and displays the error message "Network Boot Failed" when all PXE boots failed. If set to Boot List, fail over to the main Boot Option Priority list.

**TABLE:** BIOS Boot Menu Options (*Continued*)

Setup Options	Options	Defaults	Description
<b>OSA Configuration</b>			Configure whether the operating system recognizes Oracle System Assistant at boot.
OSA Internal Support	Disabled/Enabled	Enabled	Enable or disable internal USB port for Oracle System Assistant boot. If enabled, the Oracle System Assistant media is recognized by the system. If disabled, the Oracle System Assistant media will not be seen by the system.
<b>Boot Option Priority</b>			Set the system boot order. Example: [PXE:NET0:IBA XESlot 2000 v2193] [PXE:NET0:IBA XESlot 2001 v2193] [PXE:NET0:IBA XESlot 8800 v2193] [PXE:NET0:IBA XESlot 8801 v2193] [Disabled]

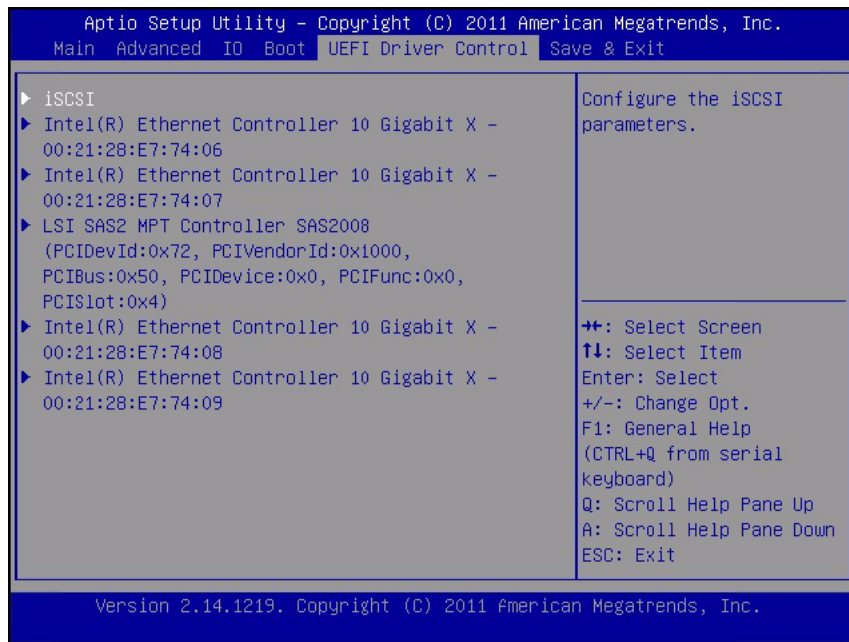
### Related Information

- [“BIOS Main Menu Selections” on page 140](#)
- [“BIOS Advanced Menu Selections” on page 145](#)
- [“BIOS IO Menu Selections” on page 156](#)
- [“UEFI Driver Control Menu Selections” on page 165](#)
- [“BIOS Save & Exit Menu Selections” on page 167](#)

# UEFI Driver Control Menu Selections

This section includes a searchable text-based representation and an on-screen image of the UEFI Driver Control Menu. The options that are available from the UEFI Driver Control Menu are described in the table that follows.

```
Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.
Main  Advanced  IO  Boot  UEFI Driver Control  Save & Exit
/-----+-----\
| iSCSI - ***** |Configure the iSCSI |
| Intel(R) Ethernet Controller 10 Gigabit X - |parameters |
| 00:21:28:E7:74:CC |
| Intel(R) Ethernet Controller 10 Gigabit X - |
| 00:21:28:E7:74:CD |
| LSI SAS2 MPT Controller SAS2008 |
| (PCIDevId:0x72, PCIVendorId:0x1000, |
| PCIBus:0x50, PCIDevice:0x0, PCIFunc:0x0, |
| PCISlot:0x4) |
| Intel(R) Ethernet Controller 10 Gigabit X - |
| 00:21:28:E7:74:CE |-----|
| Intel(R) Ethernet Controller 10 Gigabit X - |>=: Select Screen
| 00:21:28:E7:74:CF |^v: Select Item
| |Enter: Select
| |+/-: Change Opt.
| |F1: General Help
| |F7: Discard Changes
| |F9: Optimized Defaults
| |F10: Save & Exit
| |ESC: Exit
|-----+-----|
Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.
```



**TABLE:** BIOS UEFI Driver Control Menu Options

Setup Options	Options	Default	Description
iSCSI			Select to configure the iSCSI parameters. Only available in UEFI mode.
Controller Management			Select to manage controller properties, to create or clear controller configurations, and to save or clear controller events.
View Controller Properties			Select to view controller properties.
Change Controller Properties			Select to change controller properties.
Save Controller Events			Select to save controller events.
Port Configuration Menu			Port configuration information is displayed.
NIC Configuration			Select to view the network device port setting.
FCoE Configuration			Select to view the Fibre Channel over Ethernet port setting.

- “BIOS Main Menu Selections” on page 140
- “BIOS Advanced Menu Selections” on page 145
- “BIOS IO Menu Selections” on page 156
- “BIOS Boot Menu Selections” on page 161
- “BIOS Save & Exit Menu Selections” on page 167

This section includes a searchable text-based representation and an on-screen image of the BIOS Save & Exit Menu. The options that are available from the Save & Exit Menu are described in the table that follows.

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.

Main   Advanced   IO   Boot   UEFI   Driver   Control   Save & Exit

Save Changes and Reset

## Discard Changes and Exit

## Discard Changes

## Restore Defaults

```
|Reset the system after
|saving the changes.
```

|><: Select Screen

| ^v: Select Item

```
|Enter: Select
```

|+/-: Change Opt.

|F1: General Help

|F7: Discard Changes

|F9: Optimized Defaults

|F10: Save &amp; Exit.

|ESC: Exit

Version 2.14.1219. Copyright (C) 2011 American Megatrends, Inc.



**TABLE:** BIOS Save & Exit Menu Options

Setup Options	Description
Save Changes and Reset	Save changes and then reset the system.
Discard Changes and Exit	Exit the BIOS Setup Utility without saving any changes.
Discard Changes	Discard changes made to the setup options so far.
Restore Defaults	Restore and load all default setup options for BIOS.

### Related Information

- “BIOS Main Menu Selections” on page 140
- “BIOS Advanced Menu Selections” on page 145
- “BIOS IO Menu Selections” on page 156
- “BIOS Boot Menu Selections” on page 161
- “UEFI Driver Control Menu Selections” on page 165



# Monitoring Components and Identifying SNMP Messages

This section includes information about monitoring components and identifying SNMP messages for the Sun Server X3-2L.

The following topics are discussed.

Description	Links
Review how Oracle ILOM monitors component health and faults.	<a href="#">“Monitoring Component Health and Faults Using Oracle ILOM” on page 169</a>
Review information about system components and nomenclature.	<a href="#">“Monitoring System Components” on page 170</a>
Review SNMP traps generated by the server.	<a href="#">“Identifying SNMP Trap Messages” on page 181</a>

## Related Information

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

## Monitoring Component Health and Faults Using Oracle ILOM

Oracle ILOM 3.1 interfaces provide easy-to-view access to information about the health status of system components. From the web interface or the Oracle ILOM /SYS target, you can collect system-specific information about the server, determine the health state of discrete components, and view open problems, if detected on the server. Oracle ILOM automatically detects system hardware faults and environmental conditions on the server. If a problem occurs on the server, Oracle ILOM will automatically do the following:

- Illuminate the Service Action Required LED indicator on the server front and back panels.
- Identify the faulted component in the Open Problems table.
- Record system information about the faulted component or condition in the event log.

For further information about administering open problems that are detected and reported by Oracle ILOM, refer to “Administering Open Problems” in the *Oracle ILOM 3.1 User’s Guide*.

### Related Information

- Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Collection at: <http://www.oracle.com/pls/topic/lookup?ctx=ilom31>

---

## Monitoring System Components

The tables in this section identify the system components and describe the naming conventions applied to the components of the Sun Server X3-2L.

Each section corresponds to an IPMI entity ID and lists sensors, indicators, and field-replaceable units (FRUs) related to that entity. The tables contain the following fields:

- **Component Name** – The user-visible component name used in management interfaces to refer to a specific sensor, indicator, or FRU. The IPMI name is a shortened form of the component name, and is indicated by the **boldface** portion of the component name.
- **IPMI Type** – Indicates the type of sensor, indicator, or FRU represented.
- **Description** – Textual description of this particular component name reference.
- **Values** – Defines the states of the sensor, indicator or FRU entity, and any specific units or values that are expected, if applicable.

Some component names are hidden from the Oracle ILOM user interfaces. These names are marked as hidden in the tables.

This section includes information for the following server components:

- “System Chassis Components” on page 171
- “Cooling Unit Components” on page 173
- “Disk Backplane Components” on page 174
- “Memory Device Components” on page 174

- “Power Unit Components” on page 175
- “Processor Components” on page 176
- “System Board Components” on page 177
- “System Firmware Components” on page 179
- “Hard Disk Drive Components” on page 179

## System Chassis Components

The following table lists the system chassis components.

Component Name (Oracle ILOM CLI Targets)	IPMI Type	Description	Values (if applicable)
/SYS	FRU	General host FRU	
/SYS/UUID	FRU	Unique system ID	Derived from host MAC address. Use for PXE boot and licensing.
/SYS/ACPI	State sensor	Precondition for sensors that need to know if the host is on	<i>(hidden)</i> 01h-ACPI_ON_WORKING 20h-ACPI_SOFT_OFF
/SYS/PWRBS	Discrete sensor	Power budget status	01h-DEASSERTED 02h-ASSERTED
/SYS/VPS	Threshold sensor	Virtual power sensor	Watts
/SYS/VPS_CPUS	Threshold sensor	Virtual power sensor (CPUs)	Watts
/SYS/VPS_MEMORY	Threshold sensor	Virtual power sensor (Memory)	Watts
/SYS/VPS_FANS	Threshold sensor	Virtual power sensor (Fans)	Watts
/SYS/INTSW	Discrete sensor	Chassis intrusion switch	01h-DEASSERTED 02h-ASSERTED
/SYS/T_AMB	Threshold sensor	System ambient temperature	Degrees C
/SYS/TEMP_FAULT	Indicator	Temperature Fault LED	Color: Amber Location: Mainboard Off: Normal On: Chassis overtemp fault

Component Name (Oracle ILOM CLI Targets)	IPMI Type	Description	Values (if applicable)
/SYS/OK	Indicator	OK LED	Color: Green Location: Front panel Off: Power is off. Fast blink: SP is booting. Slow blink: Host is in BIOS. On: Host is booting OS.
/SYS/SERVICE	Indicator	Service LED	Color: Amber Location: Front panel Off: Server is OK. On: Server requires service.
/SYS/LOCATE	Indicator	Locate LED	Color: White Location: Front and rear panels Off: Normal Fast blink: Locate function is activated. Self-extinguishes after 30 minutes.
/SYS/HOST_ERR	Discrete sensor	Writable digital, OEM reserved sensor type, per IPMI	0x02: asserts SYS/SERVICE 0x01: deasserts SYS/SERVICE
/SYS/PS_FAULT	Indicator	Power Supply Service LED	Color: Amber Location: Mainboard Off: Normal On: General power supply fault
/SYS/FAN_FAULT	Indicator	Top Fan Fault LED	Color: Amber Location: Mainboard Off: Normal On: General fan fault

### Related Information

- [“Cooling Unit Components” on page 173](#)
- [“Disk Backplane Components” on page 174](#)
- [“Memory Device Components” on page 174](#)
- [“Power Unit Components” on page 175](#)
- [“Processor Components” on page 176](#)

- [“System Board Components” on page 177](#)
- [“System Firmware Components” on page 179](#)
- [“Hard Disk Drive Components” on page 179](#)

## Cooling Unit Components

The system has 3.5-inch fan modules with two fans in each module. The following table lists the system cooling unit components.

Component Name (Oracle ILOM CLI Targets)	IPMI Type	Description	Values (if applicable)
/SYS/MB/FM[0-3]	FRU	Fan module FRU	
/SYS/MB/FM[0-3]/PRSNT	Discrete sensor	Fan module is present.	01h-ENTITY_PRESENT, 02h-ENTITY_ABSENT
/SYS/MB/FM[0-3]/F[0-1]/TACH	Threshold sensor	Fan module fan speed	RPM
/SYS/MB/FM[0-3]/SERVICE	Indicator	Fan Module Fault LED	Color: Amber Location: Mainboard Off: Normal On: Fan module was diagnosed as faulty.
/SYS/MB/FM[0-3]/OK	Indicator	Fan Module OK LED	Color: Green Location: Mainboard On: Normal Off: Fan module is offline.

### Related Information

- [“System Chassis Components” on page 171](#)
- [“Disk Backplane Components” on page 174](#)
- [“Memory Device Components” on page 174](#)
- [“Power Unit Components” on page 175](#)
- [“Processor Components” on page 176](#)
- [“System Board Components” on page 177](#)
- [“System Firmware Components” on page 179](#)
- [“Hard Disk Drive Components” on page 179](#)

# Disk Backplane Components

The following table lists the disk backplane (DBP) components.

Component Name (Oracle ILOM CLI Targets)	IPMI Type	Description
/SYS/DBP[0-2]	FRU	Disk backplane FRUs for a multiple DBP configuration
/SYS/DBP	FRU	Disk backplane FRU for a single DBP configuration

## Related Information

- [“System Chassis Components” on page 171](#)
- [“Cooling Unit Components” on page 173](#)
- [“Memory Device Components” on page 174](#)
- [“Power Unit Components” on page 175](#)
- [“Processor Components” on page 176](#)
- [“System Board Components” on page 177](#)
- [“System Firmware Components” on page 179](#)
- [“Hard Disk Drive Components” on page 179](#)

# Memory Device Components

The following table lists the memory device components.

Component Name (Oracle ILOM CLI Targets)	IPMI Type	Description	Values (if applicable)
/SYS/MB/P[0-1]/D[0-7]	FRU	Host CPU DIMM FRU	
/SYS/MB/P[0-1]/D[0-7]/PRSNT	Discrete sensor	Host CPU DIMM is present.	01h-ENTITY_PRESEN T, 02h-ENTITY_ABSENT
/SYS/MB/P[0-1]/D[0-7]/SERVICE	Indicator	Host CPU DIMM Service LED	Color: Amber Location: Mainboard Off: Normal On: DIMM was diagnosed as faulty.

## Related Information

- “System Chassis Components” on page 171
- “Cooling Unit Components” on page 173
- “Disk Backplane Components” on page 174
- “Power Unit Components” on page 175
- “Processor Components” on page 176
- “System Board Components” on page 177
- “System Firmware Components” on page 179
- “Hard Disk Drive Components” on page 179

## Power Unit Components

The following table lists the power unit components.

Component Name (Oracle ILOM CLI Targets)	IPMI Type	Description	Values (if applicable)
/SYS/PS[0-1]	FRU	Power supply FRU	
/SYS/PS[0-1]/PRS NT	Discrete sensor	Power supply is present.	01h-ENTITY_PRESENT, 02h-ENTITY_ABSENT
/SYS/PS[0-1]/STA TE	Discrete sensor	Multistate, power supply sensor type, per IPMI	Presence detected Failure detected Predictive failure Power supply input lost Power supply input lost or out-of-range Power supply input out-of-range Configuration error
/SYS/PS[0-1]/P_I N	Power sensor	Input power draw	Watts
/SYS/PS[0-1]/P_O UT	Power sensor	Output power	Watts
/SYS/PS[0-1]/V_I N	Voltage sensor	Input voltage	Volts
/SYS/PS[0-1]/V_1 2V	Voltage sensor	12V rail voltage	Volts

Component Name (Oracle ILOM CLI Targets)	IPMI Type	Description	Values (if applicable)
/SYS/PS[0-1]/V_3 V3	Voltage sensor	3.3V rail voltage	Volts
/SYS/PS[0-1]/T_O UT	Temperat ure sensor	Ambient temperature	Degrees C

## Related Information

- [“System Chassis Components” on page 171](#)
- [“Cooling Unit Components” on page 173](#)
- [“Disk Backplane Components” on page 174](#)
- [“Memory Device Components” on page 174](#)
- [“Processor Components” on page 176](#)
- [“System Board Components” on page 177](#)
- [“System Firmware Components” on page 179](#)
- [“Hard Disk Drive Components” on page 179](#)

## Processor Components

The following table lists the processor (CPU) components.

Component Name (Oracle ILOM CLI Targets)	IPMI Type	Description	Values (if applicable)
/SYS/MB/P[0-1]	FRU	Host CPU FRU	
/SYS/MB/P[0-1]/PRSN T	Discrete sensor	Host CPU is present.	01h-ENTITY_PRESENT, 02h-ENTITY_ABSENT
/SYS/MB/P[0-1]/SERVI CE	Indicator	Host CPU Service LED	Color: Amber Location: Mainboard Off: Normal On: Processor was diagnosed as faulty.
/SYS/MB/P[0-1]/V_DI MM	Static sensor	CPU's DIMM bank operating voltage	LVDIMM = 1.3V non-LVDIMM = 1.5V



## Related Information

- “System Chassis Components” on page 171
- “Cooling Unit Components” on page 173
- “Disk Backplane Components” on page 174
- “Memory Device Components” on page 174
- “Power Unit Components” on page 175
- “System Board Components” on page 177
- “System Firmware Components” on page 179
- “Hard Disk Drive Components” on page 179

## System Board Components

The following table lists the system board components.

Component Name (Oracle ILOM CLI Targets)	IPMI Type	Description	Values (if applicable)
/SYS/MB	FRU	General host system board FRU	
/SYS/MB/NET[0-3]	FRU	Host Ethernet FRU	
/SYS/MB/PCIE[1-6]/PRSENT	Discrete sensor	Option card inserted into PCIe slot	01h-ENTITY_PRESENT, 02h-ENTITY_PRESENT
/SYS/MB/T_OUT_ZONE[0-2]	Threshold sensor	Cooling zone exhaust temperature	Degrees C
/SYS/MB/T_IN_ZONE[0-2]	Threshold sensor	Cooling zone inlet temperature	Degrees C
/SYS/MB/T_CORE_NET01, /SYS/MB/T_CORE_NET23	Threshold sensor	Gigabit Ethernet controller die temperature	Degrees C
/SYS/MB/T_IN_PS[0,1]	Threshold sensor	PSU inlet temperature	Degrees C
/SYS/MB/SASEXP	FRU	SAS expander FRU	
/SYS/MB/SASEXP/PRSENT	Discrete sensor	SAS expander board presence	01h-ENTITY_PRESENT, 02h-ENTITY_PRESENT

Component Name (Oracle ILOM CLI Targets)	IPMI Type	Description	Values (if applicable)
/SYS/MB/SASEXP/T_CO RE	Threshold sensor	SAS expander board temperature	Degrees C
/SYS/MB/RIO	FRU	Rear IO board	
/SYS/MB/RIO/PRSNT	Discrete sensor	Rear IO board presence	01h-ENTITY_PRESE NT, 02h-ENTITY_PRESE NT
/SYS/MB/CONNBD	FRU	Connector board on QPI bridge	
/SYS/MB/CONNBD/PRS NT	Discrete sensor	Connector board presence	01h-ENTITY_PRESE NT, 02h-ENTITY_PRESE NT
/SYS/SP	FRU	Service processor FRU	
/SYS/SP/OK	Indicator	SP OK LED	Color: Green Location: Front panel On: SP is operating.
/SYS/SP/SERVICE	Indicator	SP Service LED	Color: Amber Location: Front panel Off: SP is working properly. On: SP requires service.
/SYS/SP/NET[0-1]	FRU	SP Ethernet FRU	

## Related Information

- [“System Chassis Components” on page 171](#)
- [“Cooling Unit Components” on page 173](#)
- [“Disk Backplane Components” on page 174](#)
- [“Memory Device Components” on page 174](#)
- [“Power Unit Components” on page 175](#)
- [“Processor Components” on page 176](#)
- [“System Firmware Components” on page 179](#)
- [“Hard Disk Drive Components” on page 179](#)

# System Firmware Components

The following table lists the system firmware components.

Component Name (Oracle ILOM CLI Target)	IPMI Type	Description
/SYS/MB/BIOS	FRU	BIOS FRU

## Related Information

- [“System Chassis Components” on page 171](#)
- [“Cooling Unit Components” on page 173](#)
- [“Disk Backplane Components” on page 174](#)
- [“Memory Device Components” on page 174](#)
- [“Power Unit Components” on page 175](#)
- [“Processor Components” on page 176](#)
- [“System Board Components” on page 177](#)
- [“Hard Disk Drive Components” on page 179](#)

# Hard Disk Drive Components

The following table lists the hard disk drive (HDD) components.

Component Name (Oracle ILOM CLI Targets)	IPMI Type	Description	Values (if applicable)
/SYS/MB/RHDD[0-1]	FRU	Rear hard disk drive FRU	From host
/SYS/MB/RHDD[0-1]/PRSEN T	Discrete sensor	Rear hard disk drive presence	01h-ENTITY_PRESEN T, 02h-ENTITY_ABSENT
/SYS/MB/RHDD[0-1]/SER VICE	Indicator	Rear hard disk drive Service LED	Color: Amber Location: Rear HDD On: Hard disk drive was diagnosed as faulty.

Component Name (Oracle ILOM CLI Targets)	IPMI Type	Description	Values (if applicable)
/SYS/MB/RHDD[0-1]/OK2RM	Indicator	Rear hard disk drive OK to Remove LED	Color: Blue Location: Rear HDD Off: Normal On: Ready to remove
/SYS/MB/RHDD[0-1]/STATE	Discrete sensor	Writable multistate, slot/connector sensor type, per IPMI	FAULT: Asserts SERVICE IDENTIFY: Blinks OK2RM OK2RM: Asserts OK2RM
/SYS/DBP[0-2]/HDD[0-x]	FRU	Hard disk drive FRU	From host
/SYS/DBP[0-2]/HDD[0-y]/PRSNT	Discrete sensor	Hard disk drive presence	01h-ENTITY_PRESENT, 02h-ENTITY_ABSENT
/SYS/DBP[0-2]/HDD[0-y]/SERVICE	Indicator	Hard disk drive Service LED	Color: Amber Location: HDD Off: Normal On: Hard disk drive was diagnosed as faulty.
/SYS/DBP[0-2]/HDD[0-y]/OK2RM	Indicator	Hard disk drive OK to Remove LED	Color: Blue Location: HDD Off: Normal On: Ready to remove
/SYS/DBP[0-2]/HDD[0-y]/STATE	Discrete sensor	Writable multistate, slot/connector sensor type, per IPMI	FAULT: Asserts SERVICE IDENTIFY: Blinks OK2RM OK2RM: Asserts OK2RM

### Related Information

- [“System Chassis Components” on page 171](#)
- [“Cooling Unit Components” on page 173](#)
- [“Disk Backplane Components” on page 174](#)
- [“Memory Device Components” on page 174](#)
- [“Power Unit Components” on page 175](#)
- [“Processor Components” on page 176](#)

- “System Board Components” on page 177
- “System Firmware Components” on page 179

## Identifying SNMP Trap Messages

It is possible to configure Oracle ILOM to generate Simple Network Management Protocol (SNMP) traps when hardware problems occur. For information about how to configure SNMP alert rule destinations to start receiving these traps, refer to the Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at:

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

The following table lists the set of SNMP traps that are generated from Oracle ILOM.

Messages and Descriptions	Sensor Name
<b>GENERIC HOST EVENTS</b>	
<b>SNMP Trap Message:</b> sunHwTrapComponentError	/SYS/HOST_ERR
<b>Oracle ILOM Event Message:</b> Assert	
<b>Severity and Description:</b> A sensor has detected an error. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	
<b>SNMP Trap Message:</b> sunHwTrapComponentError	/SYS/HOST_ERR
<b>Oracle ILOM Event Message:</b> Deassert	
<b>Severity and Description:</b> Major; A sensor has detected an error. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	
<b>ENVIRONMENTAL EVENTS</b>	
<b>SNMP Trap Message:</b> sunHwTrapTempFatalThresholdExceeded	/SYS/PS0/T_OUT
<b>Oracle ILOM Event Message:</b> Lower fatal threshold exceeded	/SYS/PS1/T_OUT
<b>Severity and Description:</b> Critical; A temperature sensor has reported that its value has gone above an upper fatal threshold setting or below a lower fatal threshold setting.  The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	/SYS/MB/T_IN_ZONE0
	/SYS/MB/T_OUT_ZONE0
	/SYS/MB/T_IN_ZONE1
	/SYS/MB/T_OUT_ZONE1
	/SYS/MB/T_IN_ZONE2
	/SYS/MB/T_OUT_ZONE2

Messages and Descriptions	Sensor Name
<b>SNMP Trap Message:</b> sunHwTrapTempFatalThresholdDeasserted	/SYS/PS0/T_OUT
<b>Oracle ILOM Event Message:</b> Lower fatal threshold no longer exceeded	/SYS/PS1/T_OUT
<b>Severity and Description:</b> 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_IN_ZONE0 /SYS/MB/T_OUT_ZONE0 /SYS/MB/T_IN_ZONE1 /SYS/MB/T_OUT_ZONE1 /SYS/MB/T_IN_ZONE2 /SYS/MB/T_OUT_ZONE2
The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	
<b>SNMP Trap Message:</b> sunHwTrapTempFatalThresholdExceeded	/SYS/PS0/T_OUT
<b>Oracle ILOM Event Message:</b> Upper fatal threshold exceeded	/SYS/PS1/T_OUT
<b>Severity and Description:</b> 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_IN_ZONE0 /SYS/MB/T_OUT_ZONE0 /SYS/MB/T_IN_ZONE1 /SYS/MB/T_OUT_ZONE1 /SYS/MB/T_IN_ZONE2 /SYS/MB/T_OUT_ZONE2
The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	
<b>SNMP Trap Message:</b> sunHwTrapTempFatalThresholdDeasserted	/SYS/PS0/T_OUT
<b>Oracle ILOM Event Message:</b> Upper fatal threshold no longer exceeded	/SYS/PS1/T_OUT
<b>Severity and Description:</b> 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_IN_ZONE0 /SYS/MB/T_OUT_ZONE0 /SYS/MB/T_IN_ZONE1 /SYS/MB/T_OUT_ZONE1 /SYS/MB/T_IN_ZONE2 /SYS/MB/T_OUT_ZONE2
The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	
<b>SNMP Trap Message:</b> sunHwTrapTempFatalThresholdExceeded	/SYS/T_AMB
<b>Oracle ILOM Event Message:</b> Lower fatal threshold exceeded	/SYS/MB/T_CORE_NET01 /SYS/MB/T_CORE_NET23 /SYS/MB/T_IN_PS0 /SYS/MB/T_IN_PS1
<b>Severity and Description:</b> Critical; A temperature sensor has reported that its value has gone above an upper fatal threshold setting or below a lower fatal threshold setting.	
The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	
<b>SNMP Trap Message:</b> sunHwTrapTempFatalThresholdDeasserted	/SYS/T_AMB
<b>Oracle ILOM Event Message:</b> Lower fatal threshold no longer exceeded	/SYS/MB/T_CORE_NET01 /SYS/MB/T_CORE_NET23 /SYS/MB/T_IN_PS0 /SYS/MB/T_IN_PS1
<b>Severity and Description:</b> Informational; A temperature sensor has reported that its value has gone below an upper fatal threshold setting or above a lower fatal threshold setting.	
The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	

Messages and Descriptions	Sensor Name
<b>SNMP Trap Message:</b> sunHwTrapTempFatalThresholdExceeded	/SYS/MB/T_CORE_NET01
<b>Oracle ILOM Event Message:</b> Upper fatal threshold exceeded	/SYS/MB/T_CORE_NET23
<b>Severity and Description:</b> 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_IN_PS0
The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	/SYS/MB/T_IN_PS1
<b>SNMP Trap Message:</b> sunHwTrapTempFatalThresholdDeasserted	/SYS/MB/T_CORE_NET01
<b>Oracle ILOM Event Message:</b> Upper fatal threshold no longer exceeded	/SYS/MB/T_CORE_NET23
<b>Severity and Description:</b> 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_IN_PS0
The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	/SYS/MB/T_IN_PS1
<b>HARD DISK DRIVE EVENTS</b>	
<b>SNMP Trap Message:</b> sunHwTrapSlotOrConnectorError	/SYS/DBP/HDD0/STATE
<b>Oracle ILOM Event Message:</b> Assert	/SYS/DBP/HDD1/STATE
<b>Severity and Description:</b> Major: A sensor associated with a slot or connector has detected an error.	/SYS/DBP/HDD2/STATE
	/SYS/DBP/HDD3/STATE
	/SYS/DBP/HDD4/STATE
	/SYS/DBP/HDD5/STATE
	/SYS/DBP/HDD6/STATE
	/SYS/DBP/HDD7/STATE
	/SYS/DBP/HDD8/STATE
	/SYS/DBP/HDD9/STATE
	/SYS/DBP/HDD10/STATE
	/SYS/DBP/HDD11/STATE
	/SYS/DBP/HDD12/STATE
	/SYS/DBP/HDD13/STATE
	/SYS/DBP/HDD14/STATE
	/SYS/DBP/HDD15/STATE
	/SYS/DBP/HDD16/STATE
	/SYS/DBP/HDD17/STATE
	/SYS/DBP/HDD18/STATE
	/SYS/DBP/HDD19/STATE
	/SYS/DBP/HDD20/STATE
	/SYS/DBP/HDD21/STATE
	/SYS/DBP/HDD22/STATE
	/SYS/DBP/HDD23/STATE

Messages and Descriptions	Sensor Name
<b>SNMP Trap Message:</b> sunHwTrapSlotOrConnectorOk	/SYS/DBP/HDD0/STATE
<b>Oracle ILOM Event Message:</b> Deassert	/SYS/DBP/HDD1/STATE
<b>Severity and Description:</b> Informational; A sensor associated with a slot or connector has returned to its normal state.	/SYS/DBP/HDD2/STATE
	/SYS/DBP/HDD3/STATE
	/SYS/DBP/HDD4/STATE
	/SYS/DBP/HDD5/STATE
	/SYS/DBP/HDD6/STATE
	/SYS/DBP/HDD7/STATE
	/SYS/DBP/HDD8/STATE
	/SYS/DBP/HDD9/STATE
	/SYS/DBP/HDD10/STATE
	/SYS/DBP/HDD11/STATE
	/SYS/DBP/HDD12/STATE
	/SYS/DBP/HDD13/STATE
	/SYS/DBP/HDD14/STATE
	/SYS/DBP/HDD15/STATE
	/SYS/DBP/HDD16/STATE
	/SYS/DBP/HDD17/STATE
	/SYS/DBP/HDD18/STATE
	/SYS/DBP/HDD19/STATE
	/SYS/DBP/HDD20/STATE
	/SYS/DBP/HDD21/STATE
	/SYS/DBP/HDD22/STATE
	/SYS/DBP/HDD23/STATE
<b>POWER EVENTS</b>	
<b>SNMP Trap Message:</b> sunHwTrapPowerSupplyError	/SYS/PS0/POLL
<b>Oracle ILOM Event Message:</b> Assert	/SYS/PS1/POLL
<b>Severity and Description:</b> Major; A power supply sensor has detected an error.	
<b>SNMP Trap Message:</b> sunHwTrapPowerSupplyOk	/SYS/PS0/POLL
<b>Oracle ILOM Event Message:</b> Deassert	/SYS/PS1/POLL
<b>Severity and Description:</b> Informational; A power supply sensor has returned to its normal state.	
<b>SNMP Trap Message:</b> sunHwTrapPowerSupplyError	/SYS/PS0/STATE
<b>Oracle ILOM Event Message:</b> PS_PRESENCE ASSERT	/SYS/PS1/STATE
<b>Severity and Description:</b> Major; A power supply sensor has detected an error.	



Messages and Descriptions	Sensor Name
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_PRESENCE DEASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_FAILURE ASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_FAILURE DEASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_PREDICTIVE_FAILURE ASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_PREDICTIVE_FAILURE DEASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_INPUT_LOST ASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_INPUT_LOST DEASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_INPUT_ERROR ASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_INPUT_ERROR DEASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_INPUT_RANGE_ERROR ASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	

Messages and Descriptions	Sensor Name
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_INPUT_RANGE_ERROR DEASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_CONFIG_ERROR ASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PS0/STATE
Oracle ILOM Event Message: PS_CONFIG_ERROR DEASSERT	/SYS/PS1/STATE
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapSensorNonCritThresholdExceeded	/SYS/VPS
Oracle ILOM Event Message: Upper noncritical threshold exceeded	
Severity and Description: Minor; A sensor has reported that its value has gone above an upper non-critical threshold setting or below a lower non-critical threshold setting. The generic 'sensor' trap is generated when the SNMP agent does not recognize the component type. The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	
SNMP Trap Message: sunHwTrapSensorThresholdOk	/SYS/VPS
Oracle ILOM Event Message: Upper noncritical threshold no longer exceeded	
Severity and Description: Informational; A sensor has reported that its value is in the normal operating range. The generic 'sensor' trap is generated when the SNMP agent does not recognize the component type.	
SNMP Trap Message: sunHwTrapPowerSupplyError	/SYS/PWRBS
Oracle ILOM Event Message: Assert	
Severity and Description: Major; A power supply sensor has detected an error.	
SNMP Trap Message: sunHwTrapPowerSupplyOk	/SYS/PWRBS
Oracle ILOM Event Message: Deassert	
Severity and Description: Informational; A power supply sensor has returned to its normal state.	
SNMP Trap Message: sunHwTrapComponentError	/SYS/ACPI
Oracle ILOM Event Message: ACPI_ON_WORKING ASSERT	
Severity and Description: Major; A sensor has detected an error. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	

Messages and Descriptions	Sensor Name
<b>SNMP Trap Message:</b> sunHwTrapComponentError <b>Oracle ILOM Event Message:</b> ACPI_ON_WORKING DEASSERT <b>Severity and Description:</b> Major; A sensor has detected an error. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/ACPI
<b>SNMP Trap Message:</b> sunHwTrapComponentError <b>Oracle ILOM Event Message:</b> ACPI_SOFT_OFF ASSERT <b>Severity and Description:</b> Major; A sensor has detected an error. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/ACPI
<b>SNMP Trap Message:</b> sunHwTrapComponentError <b>Oracle ILOM Event Message:</b> ACPI_SOFT_OFF DEASSERT <b>Severity and Description:</b> Major; A sensor has detected an error. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/ACPI
<b>FAN EVENTS</b>	
<b>SNMP Trap Message:</b> sunHwTrapFanSpeedCritThresholdExceeded <b>Oracle ILOM Event Message:</b> Lower Critical threshold exceeded <b>Severity and Description:</b> 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. The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	/SYS/MB/FM0/F0/TACH /SYS/MB/FM0/F1/TACH /SYS/MB/FM1/F0/TACH /SYS/MB/FM1/F1/TACH /SYS/MB/FM2/F0/TACH /SYS/MB/FM2/F1/TACH /SYS/MB/FM3/F0/TACH /SYS/MB/FM3/F1/TACH
<b>SNMP Trap Message:</b> sunHwTrapFanSpeedCritThresholdDeasserted <b>Oracle ILOM Event Message:</b> Lower Critical threshold no longer exceeded <b>Severity and Description:</b> 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. The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	/SYS/MB/FM0/F0/TACH /SYS/MB/FM0/F1/TACH /SYS/MB/FM1/F0/TACH /SYS/MB/FM1/F1/TACH /SYS/MB/FM2/F0/TACH /SYS/MB/FM2/F1/TACH /SYS/MB/FM3/F0/TACH /SYS/MB/FM3/F1/TACH
<b>SNMP Trap Message:</b> sunHwTrapFanSpeedFatalThresholdExceeded <b>Oracle ILOM Event Message:</b> Lower fatal threshold exceeded <b>Severity and Description:</b> 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. The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	/SYS/MB/FM0/F0/TACH /SYS/MB/FM0/F1/TACH /SYS/MB/FM1/F0/TACH /SYS/MB/FM1/F1/TACH /SYS/MB/FM2/F0/TACH /SYS/MB/FM2/F1/TACH /SYS/MB/FM3/F0/TACH /SYS/MB/FM3/F1/TACH

Messages and Descriptions	Sensor Name
<b>SNMP Trap Message:</b> sunHwTrapFanSpeedFatalThresholdDeasserted	/SYS/MB/FM0/F0/TACH
<b>Oracle ILOM Event Message:</b> Lower fatal threshold no longer exceeded	/SYS/MB/FM0/F1/TACH
<b>Severity and Description:</b> 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.	/SYS/MB/FM1/F0/TACH
	/SYS/MB/FM1/F1/TACH
	/SYS/MB/FM2/F0/TACH
The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	/SYS/MB/FM2/F1/TACH
	/SYS/MB/FM3/F0/TACH
	/SYS/MB/FM3/F1/TACH

## MEMORY EVENTS

<b>SNMP Trap Message:</b> sunHwTrapSensorNonCritThresholdExceeded	/SYS/VPS_CPUS
<b>Oracle ILOM Event Message:</b> Upper noncritical threshold exceeded	/SYS/VPS_MEMORY
<b>Severity and Description:</b> Minor; A sensor has reported that its value has gone above an upper non-critical threshold setting or below a lower non-critical threshold setting. The generic 'sensor' trap is generated when the SNMP agent does not recognize the component type. The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.	
<b>SNMP Trap Message:</b> sunHwTrapSensorThresholdOk	/SYS/VPS_CPUS
<b>Oracle ILOM Event Message:</b> Upper noncritical threshold no longer exceeded	/SYS/VPS_MEMORY
<b>Severity and Description:</b> Informational; A sensor has reported that its value is in the normal operating range. The generic 'sensor' trap is generated when the SNMP agent does not recognize the component type.	
<b>SNMP Trap Message:</b> sunHwTrapComponentFault	/SYS/MB
<b>Oracle ILOM Event Message:</b> event fault.cpu.intel.quickpath.link_slow	
<b>Severity and Description:</b> Major; A component is suspected of causing a fault. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	
<b>SNMP Trap Message:</b> sunHwTrapComponentFaultCleared	/SYS/MB
<b>Oracle ILOM Event Message:</b> event fault.cpu.intel.quickpath.link_slow	
<b>Severity and Description:</b> Informational; A component fault has been cleared. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	
<b>SNMP Trap Message:</b> sunHwTrapComponentFault	/SYS/MB
<b>Oracle ILOM Event Message:</b> event fault.cpu.intel.quickpath.unknown-errcode	
<b>Severity and Description:</b> Major; A component is suspected of causing a fault. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	

Messages and Descriptions	Sensor Name
<b>SNMP Trap Message:</b> sunHwTrapComponentFaultCleared <b>Oracle ILOM Event Message:</b> event fault.cpu.intel.quickpath.unknown-errcode <b>Severity and Description:</b> Informational; A component fault has been cleared. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB
<b>SNMP Trap Message:</b> sunHwTrapComponentFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.none <b>Severity and Description:</b> Major; A component is suspected of causing a fault. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB
<b>SNMP Trap Message:</b> sunHwTrapComponentFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.none <b>Severity and Description:</b> Informational; A component fault has been cleared. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB
<b>SNMP Trap Message:</b> sunHwTrapComponentFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.memtest-failed <b>Severity and Description:</b> Major; A component is suspected of causing a fault. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB
<b>SNMP Trap Message:</b> sunHwTrapComponentFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.memtest-failed <b>Severity and Description:</b> Informational; A component fault has been cleared. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB
<b>SNMP Trap Message:</b> sunHwTrapComponentFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.quadrant-3rd-slot <b>Severity and Description:</b> Major; A component is suspected of causing a fault. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB
<b>SNMP Trap Message:</b> sunHwTrapComponentFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.quadrant-3rd-slot <b>Severity and Description:</b> Informational; A component fault has been cleared. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB

Messages and Descriptions	Sensor Name
<b>SNMP Trap Message:</b> sunHwTrapComponentFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.ddr3u-unsupported <b>Severity and Description:</b> Major; A component is suspected of causing a fault. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB
<b>SNMP Trap Message:</b> sunHwTrapComponentFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.ddr3u-unsupported <b>Severity and Description:</b> Informational; A component fault has been cleared. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB
<b>SNMP Trap Message:</b> sunHwTrapComponentFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.mrc.unknown-errcode <b>Severity and Description:</b> Major; A component is suspected of causing a fault. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB
<b>SNMP Trap Message:</b> sunHwTrapComponentFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.mrc.unknown-errcode <b>Severity and Description:</b> Informational; A component fault has been cleared. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.udimm-unsupported <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.udimm-unsupported <b>Severity and Description:</b> Informational; A memory component fault has been cleared.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.sodimm-unsupported <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.sodimm-unsupported <b>Severity and Description:</b> Informational; A memory component fault has been cleared.	/SYS/MB/P/D

Messages and Descriptions	Sensor Name
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.4gb-fused <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.4gb-fused <b>Severity and Description:</b> Informational; A memory component fault has been cleared.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.8gb-fused <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.8gb-fused <b>Severity and Description:</b> Informational; A memory component fault has been cleared.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.incompatible <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.incompatible <b>Severity and Description:</b> Informational; A memory component fault has been cleared.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.incompatible-maxranks <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.incompatible-maxranks <b>Severity and Description:</b> Informational; A memory component fault has been cleared	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.incompatible-quadrant <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D

Messages and Descriptions	Sensor Name
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.incompatible-quadrant <b>Severity and Description:</b> Informational; A memory component fault has been cleared.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.numranks-unsupported <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.numranks-unsupported <b>Severity and Description:</b> Informational; A memory component fault has been cleared.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.speed-slow <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.speed-slow <b>Severity and Description:</b> Informational; A memory component fault has been cleared.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.disable-quadrant <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.disable-quadrant <b>Severity and Description:</b> Informational; A memory component fault has been cleared.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.population-invalid <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D



Messages and Descriptions	Sensor Name
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.population-invalid <b>Severity and Description:</b> Informational; A memory component fault has been cleared.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.out-of-order <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.out-of-order <b>Severity and Description:</b> Informational; A memory component fault has been cleared.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFault <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.category-unknown <b>Severity and Description:</b> Major; A memory component is suspected of causing a fault.	/SYS/MB/P/D
<b>SNMP Trap Message:</b> sunHwTrapMemoryFaultCleared <b>Oracle ILOM Event Message:</b> event fault.memory.intel.dimm.category-unknown <b>Severity and Description:</b> Informational; A memory component fault has been cleared.	/SYS/MB/P/D
<b>ENTITY PRESENCE EVENTS</b>	
<b>SNMP Trap Message:</b> sunHwTrapComponentError <b>Oracle ILOM Event Message:</b> ENTITY_PRESENT ASSERT <b>Severity and Description:</b> Major; A sensor has detected an error. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB/P0/PRSNT /SYS/MB/P1/PRSNT
<b>SNMP Trap Message:</b> sunHwTrapComponentError <b>Oracle ILOM Event Message:</b> ENTITY_PRESENT DEASSERT <b>Severity and Description:</b> Major; A sensor has detected an error. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB/P0/PRSNT /SYS/MB/P1/PRSNT
<b>SNMP Trap Message:</b> sunHwTrapComponentError <b>Oracle ILOM Event Message:</b> ENTITY_ABSENT ASSERT <b>Severity and Description:</b> Major; A sensor has detected an error. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	/SYS/MB/P0/PRSNT /SYS/MB/P1/PRSNT

Messages and Descriptions	Sensor Name
<b>SNMP Trap Message:</b> sunHwTrapComponentError	/SYS/MB/P0/PRSNT
<b>Oracle ILOM Event Message:</b> ENTITY_ABSENT DEASSERT	/SYS/MB/P1/PRSNT
<b>Severity and Description:</b> Major; A sensor has detected an error. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	
<b>SNMP Trap Message:</b> sunHwTrapComponentError	/SYS/MB/P0/PRSNT
<b>Oracle ILOM Event Message:</b> ENTITY_DISABLED ASSERT	/SYS/MB/P1/PRSNT
<b>Severity and Description:</b> Major; A sensor has detected an error. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	
<b>SNMP Trap Message:</b> sunHwTrapComponentError	/SYS/MB/P0/PRSNT
<b>Oracle ILOM Event Message:</b> ENTITY_DISABLED DEASSERT	/SYS/MB/P1/PRSNT
<b>Severity and Description:</b> Major; A sensor has detected an error. This generic 'component' trap is generated when the SNMP agent does not recognize the component type.	
<b>PHYSICAL SECURITY EVENTS</b>	
<b>SNMP Trap Message:</b> sunHwTrapSecurityIntrusion	/SYS/INTSW
<b>Oracle ILOM Event Message:</b> Assert	/SYS/SP/SP_NEEDS_REBOOT
<b>Severity and Description:</b> Major; An intrusion sensor has detected that someone may have physically tampered with the system.	
<b>SNMP Trap Message:</b> sunHwTrapSecurityIntrusion	/SYS/INTSW
<b>Oracle ILOM Event Message:</b> Deassert	/SYS/SP/SP_NEEDS_REBOOT
<b>Severity and Description:</b> Major; An intrusion sensor has detected that someone may have physically tampered with the system.	

# 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.	<a href="#">“Firmware and Software Updates” on page 195</a>
Learn about the options for accessing firmware and software.	<a href="#">“Firmware and Software Access Options” on page 196</a>
View the available firmware and software packages.	<a href="#">“Software Releases” on page 197</a>
Access the firmware and software packages through Oracle System Assistant, My Oracle Support, or Physical Media Request.	<a href="#">“Getting Firmware and Software from MOS or PMR” on page 198</a>
Install firmware and software updates.	<a href="#">“Installing Updates Using Other Methods” on page 202</a>

---

## Firmware and Software Updates

Firmware and software for your server are updated periodically. These updates are made available as a software release. The software releases are a set of downloadable files (patches) that includes all available firmware, hardware drivers, tools, and utilities for the server. All these files have been tested together and verified to work with your server.

You should update your server firmware and software as soon as possible after a new software release becomes available. Software releases often include bug fixes, and updating your server ensures that your server has the latest firmware and software.

The ReadMe document that is included with each patch in a software release contains information about the patch, such as what has changed or not changed from the prior software release, as well as bugs that are fixed within the current release.

The product notes that are part of the server documentation identify which server software release is the latest release supported on your server.

---

## 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, refer to “[Setting Up the Server Using Oracle System Assistant](#)” on page 35.

- **My Oracle Support** – All system firmware and software are available from My Oracle Support at <http://support.oracle.com>.

For more information on what is available on the My Oracle Support web site, see “[Software Releases](#)” on page 197.

For instructions on how to download software releases from My Oracle Support, see “[Download Firmware and Software Using My Oracle Support](#)” on page 198.

- **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, “[Request Physical Media \(Online\)](#)” on page 200.

- **Other methods** – You can use Oracle Enterprise Manager Ops Center, Oracle Hardware Management Pack, or Oracle ILOM to update your server software and firmware.

For information, see “[Installing Updates Using Other Methods](#)” on page 202.

---

# Software Releases

Software releases on My Oracle Support are grouped by product family (such as Sun Fire), then the product (the specific server or blade), and finally the software release version. A software release contains all the updated software or firmware for your server or blade as a set of downloadable files (patches), including firmware, drivers, tools, and utilities, all tested together to be compatible with your server.

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

My Oracle Support provides the set of software releases for your server as described in the following table. You can obtain these software releases by downloading the files from My Oracle Support or by submitting to Oracle a physical media request (PMR). Alternatively, you can download the firmware and software for your server using Oracle System Assistant.

Package Name	Description	When to Download This Package
X3-2L (X4270 M3) <i>SWversion</i> – Firmware Pack	All the system firmware, including Oracle ILOM, BIOS, and option card firmware.	You need the latest firmware.
X3-2L (X4270 M3) <i>SWversion</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. 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.	You need to update OS-specific drivers, tools, or utilities.
X3-2L (X4270 M3) <i>SWversion</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.

Package Name	Description	When to Download This Package
X3-2L (X4270 M3) <i>SWversion</i> – Diagnostics	Oracle VTS diagnostics image.	You need the Oracle VTS diagnostics image.
X3-2L (X4270 M3) <i>SWversion</i> – Oracle System Assistant	Oracle System Assistant recovery and ISO update image.	You need to manually recover or update Oracle System Assistant.

## Getting Firmware and Software from MOS or PMR

You can use Oracle System Assistant to easily download and use the latest software release. For further information, see [“Set Up Software and Firmware Using Oracle System Assistant”](#) on page 29.

You can also obtain updated firmware and software by using My Oracle Support (MOS) or by submitting to Oracle a physical media request (PMR). For information, see:

- [“Download Firmware and Software Using My Oracle Support”](#) on page 198
- [“Requesting Physical Media”](#) on page 199

## ▼ 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 & Updates tab.**  
The Patch search pane appears at the right of the screen.
4. **Within the Search tab area, click Product or Family (Advanced Search).**  
The Search tab area 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 until a match appears, for example, Sun Server X3-2L.

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

Expand the list to see all available software packages.

**7. Click Search.**

The Patch Advanced Search Results screen appears, listing the patches for the software release.

See [“Software Releases” on page 197](#) for a description of the available downloads.

**8. To select a patch for a software release, click the patch number next to the software release version.**

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 ReadMe, 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 review the ReadMe file for the patch, click ReadMe.**

**10. To download the patch for the software release, click Download.**

The File Download dialog box appears.

**11. In the File Download dialog box, click the patch zip file name.**

The patch for the software release downloads.

## Requesting Physical Media

If your processes do not allow downloads from Oracle web sites, you can receive the latest software release packages by submitting to Oracle a physical media request (PMR). The preferred method for submitting a PMR is through the My Oracle Support (MOS) web site.

The high-level tasks for submitting a physical media request are described in these sections:

- [“Gathering Information for the Physical Media Request” on page 200](#)
- [“Request Physical Media \(Online\)” on page 200](#)
- [“Request Physical Media \(By Phone\)” on page 202](#)

## 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 198 to determine the latest software release version and view available software release packages (patches). After viewing the list of patches, you can navigate away from the Patch Advanced 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 “[Software Releases](#)” on page 197 to determine which packages you want, and 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 200 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.  
The Create Service Request: Problem screen appears.
4. Describe your request as follows:
  - a. In the Problem Summary field, type: **PMR for latest software release for Sun Server X3-2L**.
  - b. From the Problem Type drop-down menu, select **Software & OS Media Request**.
  - c. In the Support Identifier field, type the Customer Support Identifier associated with your support contract.



5. **Skip the Create Service Request: Selections screen by clicking the Next button in the upper right corner of the screen twice.**

The Create Service Request: More Details screen appears.

6. **Provide more information about your request as follows:**

- a. **In the Additional Information section, answer the questions listed 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
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 X3-2L. <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

- b. **Fill in the Ship-To contact information, which includes a contact name, phone number, email address, company name, and shipping address.**

7. **Click the Next button.**

The Create Service Request: Severity/Contact screen appears.

8. **Enter your contact phone number and preferred method of contact.**

9. **Click the Submit button.**

This completes the physical media request. It can take up to seven business days to receive the physical media.

## ▼ Request Physical Media (By Phone)

Gather the information described in “[Gathering Information for the Physical Media Request](#)” on page 200 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 X3-2L.**

- 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 X3-2L.

---

## Installing Updates Using Other Methods

In addition to using Oracle System Assistant and My Oracle Support, you can install updated firmware and software using one of the following methods:

- **Oracle Enterprise Manager Ops Center** – You can use Ops Center Enterprise Controller to 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 Hardware Management Pack** – You can use the fwupdate CLI Tool within the Oracle Hardware Management Pack to update firmware within the system.

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

- **Oracle ILOM** – You can use the Oracle ILOM web interface or command-line interface to update Oracle ILOM and BIOS firmware.

For more information, refer to the Oracle Integrated Lights Out Manager (ILOM) 3.1 Documentation Library at:

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

# Index

---

## A

- accessing management tools, 17
- add-in cards
  - configuration utilities in Legacy BIOS Boot Mode, 113
  - configuration utilities in UEFI BIOS Boot Mode, 113
- Advanced BIOS screen, 145

## B

- BIOS boot mode, switching between Legacy BIOS and UEFI BIOS modes, 112
- BIOS factory defaults, verifying, 116
- BIOS Setup Utility
  - accessing, 108
  - Advanced screen, 145
  - boot mode, 111
  - Boot screen, 161
  - exiting from, 136
  - function keys, 107
  - IO screen, 156
  - legacy boot mode, 111
  - Main screen, 140
  - menus, accessing, 108
  - navigating menu options, 109
  - Save & Exit screen, 167
  - service processor network settings, 132
  - setup screens summary, 106
  - shortcut key sequences, 107
  - TPM support, 129
  - UEFI boot mode, 111
  - UEFI Driver Control screen, 165
  - UEFI-compliant, description, 110
- board components, 171
- Boot BIOS screen
  - checking for Oracle System Assistant installation, 79

- options available, 161

- boot device, selecting, 119
- boot mode
  - preserving settings when switching modes, 112

## C

- chassis components, 171
- CLI Tools, in Hardware Management Pack, 7
- components and nomenclature, 171
- cooling unit components, 173

## D

- default boot mode, 117
- directory structure, of Oracle System Assistant, 86
- disk backplane components, 174
- disk components, 179
- disk controllers, supported, 99
- documentation
  - for server management tools, 15
  - Oracle Hardware Management Pack, x
  - Oracle ILOM, x
  - server, x
  - viewing from Oracle system Assistant, 71, 72

## E

- evaluating server environment, 12

## F

- feedback, for documentation, x
- firmware components, 171
- function keys within BIOS Setup Utility, 107

## H

- hard disk drive components, 179

## I

### IO allocation

- address space, 115
- enabling and disabling resources, 136
- minimizing resource exhaustion, 115

### IO BIOS screen, 156

### IP address, assigning using Oracle System Assistant, 44

### IP address, setting, 132

### IPMI type, 170

## K

### keyboard language, setting for Oracle System Assistant, 67

## L

### Legacy BIOS boot mode

- selecting, 111
- switching between UEFI boot mode, 112

### LSI utilities, used to create RAID volumes, 102

## M

### Main BIOS screen, 140

### management policies

- configuring PCIe cooling mode, 96

### management strategy, determining, 1

### management tasks

- administrative, which tools support, 9
- common, which tools support, 8

### management tools

- accessing, 17
- choosing multiple-system tools, 3
- choosing single system tools, 2
- documentation for, 15
- installing, 15
- managing modular chassis systems, 14
- using to update and monitor components, 13

### memory device components, 174

### menus, BIOS Setup Utility, 108

## N

### network settings, service processor, 132

## O

### operating system

- choosing a management tool for installation, 12

### installing with Oracle System Assistant, 62

### Option ROMs

- enabling and disabling, 120, 134
- legacy BIOS allocation, 114
- minimizing resource exhaustion, 114

### Oracle Enterprise Manager Ops Center

#### product information, 3

### Oracle Hardware Management Pack

- advantages, 6
- instructions for installing, 32
- setting up software and firmware, 32
- using the CLI Tools, 7
- using to create RAID volumes, 102

### Oracle Integrated Lights Out Manager (Oracle ILOM)

- advantages, 5
- backing up and restoring BIOS configuration, 96
- configuring SP settings using Oracle System Assistant, 55
- controlling next boot device, 95
- detecting server problems and clearing faults, 97
- diagnostics for Oracle x86 servers, 94
- documents, 90
- features supported on Oracle x86 servers, 90
- integrating with third-party products, 6
- local host interconnect property, 94
- monitoring storage devices, 102
- power management policies not supported on Oracle x86 servers, 93
- power policies supported for Oracle x86 servers, 92
- setting enhanced PCIe cooling mode, 96
- setting up software and firmware, 30
- sideband management, 92
- switching serial port output to host console, 96
- top-level indicator for FRUID auto-update feature, 95

### Oracle System Assistant

- advantages, 5
- checking for disabled or offline status, 79
- checking for installation, 77
- configuring RAID, 100
- directory structure of, 86
- disabling the application, 65
- managing the server with, 35
- organization of, 37
- ReadMe file, 38, 41
- setting up software and firmware, 29

- using to access the command-line shell, 68
- using to check the media integrity, 70
- using to configure network settings, 43
- using to configure the server, 38
- using to create a RAID volume, 53, 102
- using to install an operating system, 62
- using to modify service processor settings, 55
- using to restore image, 81
- using to set keyboard language, 67
- using to update firmware, 48
- using to update to a new release, 44
- using to view documentation, 71, 72
- using to view system information, 41
- verifying installation, 78

Oracle System Assistant shell, accessing from Oracle System Assistant, 68

## P

power on, server, 108  
 power unit components, 175  
 processor components, 176

## Q

quick reference  
     for common administrative tasks, 9  
     for common management tasks, 8

## R

### RAID

- configuration options, 100
- configuring for server, 99
- configuring using Oracle System Assistant, 53, 100
- creating after operating system installation, 102
- creating before operating system installation, 101
- support for HBA disk controllers, 99
- using LSI utilities to create RAID volumes, 102

restore Oracle System Assistant image, 81

## S

Save & Exit BIOS screen, 167  
 screens, BIOS Setup Utility, 106, 108  
 server environment, evaluating, 12  
 server management tools. See management tools  
 server, power on, 108  
 service processor

- configuring settings using Oracle System Assistant, 55
- network settings, configuring, 132
- setting up software and firmware
  - using Oracle Hardware Management Pack, 32
  - using Oracle ILOM, 30
  - using Oracle System Assistant, 29
- setting up the server, using Oracle System Assistant, 43
- shortcut key sequences in BIOS Setup Utility, 107
- Simple Network Management Protocol (SNMP)
  - Traps
    - entity presence events, 193
    - environmental events, 181
    - fan events, 187
    - generated by system, 181
    - generic host events, 181
    - hard disk drive events, 183
    - memory events, 188
    - physical security events, 194
    - power events, 184
- software and firmware
  - access options, ix
  - setting up using Oracle ILOM, 30
  - updating using Oracle System Assistant, 48
- system board components, 177
- system chassis components, 171
- system components and nomenclature, 170
- system firmware components, 179
- system information, viewing from Oracle System Assistant, 41

## T

tools and documentation, downloading, 15  
 tools and drivers, updating using Oracle System Assistant, 44  
 Trusted Platform Module (TPM), configuring support for, 129

## U

UEFI boot mode
 

- advantages of using, 112
- selecting, 111

 UEFI Driver Control BIOS screen, 165  
 UEFI driver control, enabling and disabling, 120

UEFI-compliant BIOS, description, 110