

Oracle® Server X8-2L Product Notes



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Using This Documentation

- **Overview** – Provides late-breaking information about Oracle Server X8-2L
- **Audience** – System administrators, network administrators, and service technicians
- **Required knowledge** – Advanced understanding of server systems

Product Documentation Library

Documentation and resources for this product and related products are available at <https://www.oracle.com/goto/x8-2l/docs>.

Feedback

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

Oracle Server X8-2L Product Information

For the most updated information about supported firmware and operating systems, important operating notes, and known issues, refer to the latest platform Product Notes document, which is available in the Oracle Server X8-2L Documentation Library at <https://www.oracle.com/goto/x8-2l/docs>.

Supported Hardware

You can find detailed information about supported hardware in these Oracle Server X8-2L documents:

- *Oracle Server X8-2L Installation Guide*
- *Oracle Server X8-2L Service Manual*

Within those documents, you can find descriptions of supported hardware components, including the following:

- Processors
- Memory modules (DIMMs)
- Storage drives
- Host bus adapters and other PCIe cards

Related Information

- [“Supported Storage Drives” on page 16](#)
- [“Supported PCIe Cards” on page 16](#)
- https://support.oracle.com/handbook_private/Systems/Oracle_Server_X8_2L/Oracle_Server_X8_2L.html (Access requires Oracle Support purchase and log in.)

Supported Firmware

Some product features are enabled only when the latest versions of patches or firmware are installed. You must install the latest software version for optimal performance, security, and stability. For details, see [“Important – Install Latest OS Updates, Patches, and Firmware” on page 24](#).

You can find detailed information about supported firmware releases here:

- [Latest Firmware Releases for Oracle x86 Servers](#)
- [Firmware Downloads and Release History for Oracle Systems](#)

Information about the latest firmware and Software Release, including tools, drivers, component firmware versions, and bug fixes is available in the ReadMe file for each Software Release. To learn how to access the ReadMe file, see [“Getting Firmware and Software Updates” on page 47](#).

Supported Operating Systems

The following table lists supported operating systems for Oracle Server X8-2L. To identify the latest version of an operating system supported on your server, go to an Oracle Hardware Compatibility List (HCL) or to the third-party operating system certification information.

Operating System	Link to HCL or Other Configuration Information
Oracle Linux	https://linux.oracle.com/pls/apex/f?p=117:1:3991604960223967
Oracle VM	https://linux.oracle.com/pls/apex/f?p=117:1:3991604960223967
Oracle Solaris	https://www.oracle.com/webfolder/technetwork/hcl/index.html
Microsoft Windows Server	https://www.windowsservercatalog.com/
VMware ESXi	https://www.vmware.com/resources/compatibility/search.php

The following table lists the latest supported operating systems and virtual machine software. Supported operating systems and software are cumulative with each release; that is, later software releases contain all components of earlier software releases.

Platform Software Release	Latest Supported Operating Systems
3.1.0 or later	■ Oracle Linux 8 Update 1 with the Unbreakable Enterprise Kernel Release 6

Platform Software Release	Latest Supported Operating Systems
	<ul style="list-style-type: none"> ■ Oracle Linux 7 Update 8 with the Unbreakable Enterprise Kernel Release 5 Update 3 ■ VMware ESXi 7.0
1.2.0	<ul style="list-style-type: none"> ■ Oracle Linux 8 ■ Oracle Linux 7 Update 7 with the Unbreakable Enterprise Kernel Release 5 Update 2 ■ VMware ESXi 6.7 Update 3
1.1.1	<ul style="list-style-type: none"> ■ Oracle Linux 7 Update 6 with the Unbreakable Enterprise Kernel Release 5 Update 2 ■ Windows Server 2019 ■ VMware ESXi 6.7 Update 2
1.1.0	<ul style="list-style-type: none"> ■ Oracle Linux 7 Update 6 with the Unbreakable Enterprise Kernel Release 5 Update 1 or the Red Hat Compatible Kernel ■ Oracle Linux 7 Update 5 with the Unbreakable Enterprise Kernel Release 4 Update 7 or the Red Hat Compatible Kernel ■ Oracle Linux 6 Update 10 with the Unbreakable Enterprise Kernel Release 4 Update 7 or the Red Hat Compatible Kernel ■ Oracle VM Server 3.4.6 ■ Oracle Solaris 11.4 SRU 9.2 ■ Windows Server 2016 ■ VMware ESXi 6.7 Update 1
1.0.0	<ul style="list-style-type: none"> ■ Oracle Linux 7 Update 6 with the Unbreakable Enterprise Kernel Release 5 Update 1 (UEK5U1) or the Red Hat Compatible Kernel ■ Oracle Linux 6 Update 10 ■ Oracle VM 3.4.6 ■ Windows Server 2016 ■ VMware ESXi 6.7 Update 1

Server Management Tools

The following single system management tools are available for the server:

- **Oracle Integrated Lights Out Management (ILOM).** For information, refer to the product information page at: <https://www.oracle.com/servers/technologies/integrated-lights-out-manager.html>. For documentation, refer to the Oracle Integrated Lights Out Manager (ILOM) 5.0 Documentation Library at: <https://www.oracle.com/goto/ilom/docs>

You can find descriptions of new Oracle ILOM 5.0 features in the *Oracle ILOM Feature Updates and Release Notes*.

- **Oracle Hardware Management Pack**, available with the Oracle Solaris OS or as a standalone product with other OS. For information, refer to the product information page at: <https://www.oracle.com/servers/technologies/hardware-management-pack.html>. For

documentation and OS support matrix, refer to the Oracle Hardware Management Pack 2.4 Documentation Library at: <https://www.oracle.com/goto/ohmp/docs>

Oracle Hardware Management Pack for Oracle Solaris 11.4 Documentation Library at https://docs.oracle.com/cd/E79568_01/index.html

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

Oracle Enterprise Manager Ops Center, available software to manage multiple systems in a data center. For information, refer to the product information page at: <https://www.oracle.com/enterprise-manager/technologies/>. For documentation, refer to the Oracle Enterprise Manager Cloud Control Documentation Library at: <https://docs.oracle.com/en/enterprise-manager/related-products.html>

Supported Storage Drives

The table below lists the storage drives and part numbers that are supported for use with Oracle Server X8-2L. Support for storage drives depends on the server model and its configuration. Basic storage drive support is listed below.

Internal Solid State Drive (SSD)

- 480 GB M.2 SATA SSD with riser card for 2U: 7117384 (factory installation). Refer to https://docs.oracle.com/cd/E86841_01/index.html

Internal Hard Disk Drive (HDD)

- 14 TB 7200 rpm 3.5-inch SAS-3 HDD: 7600029 (factory installation), 7600183 (orderable option). Refer to https://docs.oracle.com/cd/F15116_01/index.html
- 14 TB 7200 rpm 3.5-inch SAS-3 HDD without encryption: 7600030 (factory installation), 7600184 (orderable option)

NVM Express (NVMe)

- Oracle 6.4 TB NVMe SSD v2 with 3.5-inch bracket: 7120559 (factory installation), 7120560 (orderable option) Refer to https://docs.oracle.com/cd/E87231_01/index.html

Supported PCIe Cards

The table below lists the PCI Express (PCIe) cards that are supported for use with Oracle Server X8-2L.

Note the following restrictions:

- PCIe slots 1 through 5 are nonfunctional in single-processor systems.
- Do not mix Emulex and QLogic versions of the PCIe Host Bus Adapter cards in the system. You can use PCIe option cards from only one vendor in the system.
- Do not mix Oracle Flash Accelerator F640 PCIe Card v2s and Oracle Flash Accelerator F640 PCIe Cards in the system.

PCIe Card Installation Order	PCIe Card	Maximum Quantity Supported in a Single-Processor System	Slot Restrictions for a Single-Processor System	Maximum Quantity Supported in a Dual-Processor System	Slot Restrictions for a Dual-Processor System
1	Oracle Storage 12 Gb SAS PCIe RAID HBA, Internal: 16 port 7117125 (factory installation), 7117126 (orderable option) Note - This HBA is required to manage SAS storage drives.	1	Supported in slot 11 only.	1	Supported in slot 11 only.
2	Oracle Storage 12 Gb SAS PCIe HBA, Internal: 8 port 7113249 (factory installation), 7113401 (orderable option) Note - Optionally, this HBA can be installed in slots 10 and 11 to manage SAS storage drives instead of using the Oracle Storage 12 Gb SAS PCIe RAID HBA, Internal: 16 port in slot 11.	2	Supported in slots 10 and 11 only.	2	Supported in slots 10 and 11 only.
3	Oracle Flash Accelerator F640 PCIe Card v2: 6.4 TB, NVMe PCIe 3.0 7120561 (factory installation), 7120562 (orderable option)	N/A	N/A	1. 8 (no front disk is allowed) 2. 4 with one Oracle Storage 12 Gb SAS PCIe RAID HBA or Oracle Storage 12 Gb SAS PCIe HBA 3. 3 with Oracle NVMe PCIe Switch cards 4. 3 with 2x Oracle Storage 12 Gb SAS PCIe HBA	1. Supported in slots 2,3,4,5,6,8,9 and 10 2. Supported in slots 4,5,6 and 10 3. Supported in slots 1,2,5,6,7,10 4. Supported in slots 1 through 9
4	Oracle Flash Accelerator F640 PCIe Card: 6.4 TB, NVMe PCIe 3.0 7115454 (factory installation), 7115455 (orderable option)	N/A	N/A	1. 8 (no front disk is allowed) 2. 4 with one Oracle Storage 12 Gb SAS PCIe RAID HBA or	1. Supported in slots 2,3,4,5,6,8,9 and 10

Supported PCIe Cards

PCIe Card Installation Order	PCIe Card	Maximum Quantity Supported in a Single-Processor System	Slot Restrictions for a Single-Processor System	Maximum Quantity Supported in a Dual-Processor System	Slot Restrictions for a Dual-Processor System
				Oracle Storage 12 Gb SAS PCIe HBA 3. 3 with Oracle NVMe PCIe Switch cards 4. 3 with 2x Oracle Storage 12 Gb SAS PCIe HBA	2. Supported in slots 4,5,6 and 10 3. Supported in slots 1,2,5,6,7,10 4. Supported in slots 1 through 9
5	Oracle NVMe PCIe Switch 7117385 (factory installation) Note - The Oracle NVMe PCIe Switch is required to manage NVMe storage drives.	N/A	N/A	4	Supported in slots 3, 4, 8, and 9.
6	Oracle Quad Port 10GBase-T Adapter 7111182 (factory installation), 7111181 (orderable option)	2	Supported in slots 6 through 10.	8	Supported in slots 1 through 10.
7	Oracle Dual Port QDR InfiniBand Adapter M3 7104073 (factory installation), 7104074 (orderable option)	2	Supported in slots 6 through 10.	2	Supported in slots 1 through 10.
8	Oracle Quad 10 Gb or Dual 40 Gb Ethernet Adapter 7114148 (factory installation), 7114134 (orderable option)	Oracle Quad 10 Gb (default mode) 2 Oracle Dual 40 Gb 1	Supported in slots 6 through 10.	Oracle Quad 10 Gb (default mode) 4 Oracle Dual 40 Gb 1	Supported in slots 1 through 10.
9	Oracle Storage 12 Gb SAS PCIe HBA, External: 8 port 7110118 (factory installation), 7110119 (orderable option)	2	Supported in slots 6 through 10.	2	Supported in slots 1 through 10.
10	Oracle Storage Dual-Port 32 Gb Fibre Channel PCIe Low Profile HBA, Emulex 7115459 (factory installation), 7115461 (orderable option)	2	Supported in slots 6 through 10.	4	Supported in slots 1 through 10.
11	Oracle Storage Dual-Port 32 Gb Fibre Channel PCIe Low Profile HBA, QLogic 7115460 (factory installation), 7115462 (orderable option)	2	Supported in slots 6 through 10.	4	Supported in slots 1 through 10.

PCIe Card Installation Order	PCIe Card	Maximum Quantity Supported in a Single-Processor System	Slot Restrictions for a Single-Processor System	Maximum Quantity Supported in a Dual-Processor System	Slot Restrictions for a Dual-Processor System
12	Oracle Dual Port 25 Gb Ethernet Adapter 7118015 (factory installation), 7118016 (orderable option)	2	Supported in slots 6 through 10.	8	Supported in slots 1 through 10.
13	Oracle Storage 12 Gb SAS PCIe HBA, internal 7113249 (factory installation), 7113401 (orderable option)	2	Supported in slots 6 through 10.	2	Supported in slots 1 through 10.
14	Oracle 1/10 GbE Dual Rate SFP+ Short Range (SR) Transceiver 7120050 (factory installation), 7120053 (orderable option)	2	Supported in slots 6 through 10.	2	Supported in slots 1 through 10.

Oracle Server X8-2L Product Accessibility

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Oracle Server X8-2L Hardware Accessibility

Oracle Server X8-2L hardware has color-coded labels, component touch points, and status indicators (LEDs) that provide information about the system. These labels, touch points, and indicators can be inaccessible features for sight-impaired users. The product's HTML documentation provides context and descriptive text available to assistive technologies to aid in interpreting status and understanding the system. For information about system-level descriptions, see the *Oracle Server X8-2L Service Manual* at <https://www.oracle.com/goto/x8-2l/docs>.

You can also use the built-in Oracle Integrated Lights Out Manager (ILOM) to obtain information about the system. Oracle ILOM provides a browser-based interface (BUI) and a command-line interface (CLI) that support assistive technologies for real-time viewing of

system status, indicator interpretation, and system configuration. For details, see [“Oracle ILOM Accessibility” on page 20](#).

Oracle ILOM Accessibility

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

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

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

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

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

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

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

- Restore the XML file of the backed up or edited configuration parameters to BIOS.

The BUI and CLI methods for using Oracle ILOM are described in the accessible HTML documentation for Oracle ILOM at <https://www.oracle.com/goto/ilom/docs>.

Oracle Hardware Management Pack Accessibility

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

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

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

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

The CLI tools for using the software are described in the accessible HTML documentation for Hardware Management Pack at <https://www.oracle.com/goto/ohmp/docs>.

BIOS Accessibility

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

As an alternative method of configuring BIOS settings using the BIOS Setup Utility screens, Oracle ILOM provides a set of configurable properties that can help you manage the BIOS configuration parameters on an Oracle x86 server. For more information, see [“Oracle ILOM Accessibility” on page 20](#).

BIOS information and its functions are documented in the *Oracle Server X8-2L Service Manual* and *Oracle Servers X8-2 and X8-2L Installation Guide*.

Documentation Accessibility

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

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

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

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

You can access the accessible HTML documentation for Oracle Server X8-2L products at <https://www.oracle.com/goto/x8-2l/docs>.

Software and Critical Patch Updates

This section includes important operating information and requirements for Oracle Server X8-2L.

Update Your System to the Latest Software Release

It is highly recommended that you update your system to the latest Software Release before you use the system. Software Releases often include bug fixes, and updating your system ensures that your server software is compatible with the latest server firmware and other component firmware and software.

You can download the latest Software Release, which includes firmware and software updates, from My Oracle Support at <https://support.oracle.com>. For information about downloading firmware and software from My Oracle Support, see “Getting Firmware and Software Updates” on page 47.

Server Security, Software Releases, and Critical Patch Updates

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

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

Oracle notifies customers about security vulnerability fixes for all its products four times a year through the Critical Patch Update (CPU) program. Customers should review the CPU advisories to ensure that the latest Software Release updates are applied to their Oracle

products. Note that updates for Engineered Systems will be specifically published for a specific Engineered Systems product (that is, you need not look at specific updates for individual software components included in your Engineered System). For more information about the Oracle CPU program, go to <https://www.oracle.com/security-alerts/>.

Oracle also recommends that you update to the latest operating system release when it becomes available. Although a minimum operating system release is supported, updating to the latest OS release will ensure that you have the most up-to-date software and security patches. To confirm that you have the latest OS release, refer to the Oracle Hardware Compatibility Lists or third-party operating system certification information. See “Supported Operating Systems” on page 14.

For details about how to download the latest system software update, see “Getting Firmware and Software Updates” on page 47.

▼ Important – Install Latest OS Updates, Patches, and Firmware

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

To verify that the Oracle ILOM firmware version is a minimum 5.0.1.21 or newer:

1. **Use Oracle ILOM to verify the system firmware version.**
 - **From the web interface, click System Information → Summary, then view the property information for the System Firmware Version in the General Information table.**
 - **From the command-line interface, at the command prompt (->), type:**
`show /System/Firmware`
- For more details, refer to information about viewing system information and inventory in your server Administration Guide, which is available at <https://www.oracle.com/goto/x86admindiag/docs>.
2. **Ensure that the firmware version is at the minimum required version, noted above, or a subsequent release, if available.**
3. **If the required firmware version (or newer) is not installed:**

- a. **Download the latest Software Release from My Oracle Support at <https://support.oracle.com>.**

For more information, see “[Getting Firmware and Software Updates](#)” on page 47.

- b. **Install the downloaded firmware.**

See “[Update System Firmware Using Oracle ILOM](#)” on page 50.

Refer to the information about performing firmware updates in the *Oracle ILOM Administrators Guide for Configuration and Maintenance Firmware Release 5.0.x*, which is available at <https://www.oracle.com/goto/ilom/docs>. Ensure that you perform the preparatory steps described in that document before updating the firmware.

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

Issues Fixed in Software Releases

This section lists issues that have been fixed in software releases.

Issue Fixed in Software Release 1.1.1

Bug ID	Issue
Bug 28891599	Add support for the next generation Intel CPU and feature bits (Cascade Lake)
Bug 29013899	sxadm needs to be updated for Cascade Lake

Issue Fixed in Software Release 1.1.0

Bug ID	Issue
Bug 28891599	Add support for the next generation Intel CPU and feature bits (Cascade Lake)
Bug 29013899	sxadm needs to be updated for Cascade Lake

Hardware Issues

This section describes important operating notes and known hardware issues for Oracle Server X8-2L.

Diagnosing SAS Data Path Failures on Servers Using MegaRAID Disk Controllers

Important Operating Note

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

To classify a MegaRAID disk controller event:

- Gather and parse the MegaRAID disk controller event logs either by running the automated `sundiag` utility or manually using the `StorCLI` command.
 - For Oracle Exadata Database Machine database or storage cell servers, run the `sundiag` utility.
 - For Oracle Server X8-2L, use the `StorCLI` command.

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

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

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

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

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

Error Counters:

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

These error counters reflect drive or slot errors separately.

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

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

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

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

Failure of a Single Server Fan Module Might Impact Performance

Important Operating Note

If a single server fan module fails and the server's operating temperature rises above 30 degrees C (86 degrees F), the performance of the server's processors might be reduced.

Remove and Replace a Fan Module Within 60 Seconds

Important Operating Note

When removing and replacing a server fan module, you must complete the entire removal and replacement procedure within 60 seconds in order to maintain adequate cooling within the system. In anticipation of this time limit, prior to starting the replacement procedure, obtain the replacement fan module and verify that the new fan module is ready for installation. Remove and replace only one fan module at a time.

Fan modules are hot-swappable components, with N+1 fan redundancy. Each fan module contains two fans, with one fan motor per fan. The two fan motors provide separate tachometer signals so that the fan module reports two tachometer signals to Oracle ILOM. Even if only one fan motor is faulted within the fan module, the Oracle ILOM service processor detects that two fan motors have failed to spin while the fan module is removed. If the fan module is not replaced within 60 seconds of removal, Oracle ILOM will take the protective action to shut down the system to prevent thermal damage to the system. This is expected behavior.

Lockstep Memory (Channel) Mode Is Not Supported

Important Operating Note

Oracle Server X8-2L does not support lockstep memory mode, which is also known as double device data correction, or Extended ECC.

Do Not Mix Single-Rank and Dual-Rank DIMMs

Important Operating Note

Mixing of single-rank and dual-rank DIMMs in Oracle Server X8-2L is not supported.

Oracle Dual Port 25 Gb Ethernet Adapter Can Experience a Fault During System Reset

Bug ID: 26259122

Issue: The Oracle Dual Port 25 Gb Ethernet Adapter can experience a completion timeout fault during a system warm reset operation. The fault is logged by Oracle ILOM.

Affected Hardware: Oracle Dual Port 25 Gb Ethernet Adapter

Workaround: This issue has no functional impact on normal system behavior and can be ignored.

BIOS Issues

This section describes important operating notes and known BIOS issues for Oracle Server X8-2L.

Do Not Use the Network Adapter iSCSI Configuration in BIOS

Important Operating Note

There are two locations within the Oracle Server X8-2L system BIOS where you can configure iSCSI settings:

- Advanced → iSCSI Configuration
- Advanced → Broadcom NetXtreme 25G Gigabit Ethernet → iSCSI Boot Configuration Menu

System iSCSI settings should be configured only in Advanced → iSCSI Configuration. Do not use the network adapter iSCSI configuration option to configure iSCSI settings for the system.

Power Cycle the Server After Changing the Disk Freeze Lock Option

Important Operating Note

A power cycle must be performed on the server after changing the Disk Freeze Lock option in the system BIOS. The Disk Freeze Lock option updates in the BIOS after you select Save & Exit in the BIOS Setup Utility, but the drive remains frozen/locked until a power cycle is performed.

System Boot Hangs If M.2 Boot Devices Are Not Set to RAID

Bug ID: 26437207

Issue: The system boot process will hang indefinitely if M.2 devices that are configured as boot devices are not set to RAID.

Affected Software: System BIOS

Workaround: Open the BIOS Setup Utility and set M.2 devices to RAID. Select Save & Exit in the BIOS Setup Utility to preserve settings.

Oracle ILOM Issues

This section describes important operating notes and known Oracle ILOM issues for Oracle Server X8-2L.

For updated information about Oracle ILOM, refer to the latest Oracle ILOM documents at <https://www.oracle.com/goto/ilom/docs>.

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

Important Operating Note

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

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

To resolve the SSL warning message, refer to the following applicable sections in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 5.0.x*, which is available at <https://www.oracle.com/goto/ilom/docs>:

- “Warning Messages for Self-Signed SSL Certificate”
- “Resolving Warning Messages for Custom Certification Authority (CA) SSL Certificate”

Changes to TLSv1.1 Configuration Property

Important Operating Note

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

Future Behavior: The following changes will occur to the TLSv1.1 configuration property sometime after the Oracle ILOM 4.0.3 firmware release:

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

For future updates regarding TLSv1.1 support in Oracle ILOM, refer to latest release information in the *Oracle ILOM Feature Updates and Release Notes for Firmware 5.0.x* at https://docs.oracle.com/cd/E81115_01/index.html.

Deprecation Notice for Oracle ILOM IPMI 2.0 Management Service

Important Operating Note

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

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

- **First IPMI Service Support Change** – The default configuration property for IPMI 2.0 Sessions will change from Enabled to Disabled. Clients relying on Oracle ILOM IPMI 2.0 session support by default will no longer be able to communicate with Oracle ILOM. To enable IPMI communication with Oracle ILOM, perform one of the following:
 - Use the Oracle IPMI TLS service and interface. For more information, refer to “IPMI TLS Service and Interface” in the *Oracle ILOM Protocol Management Reference SNMP and IPMI Firmware Release 5.0.x*.
 - or
 - Manually enable the configuration property for IPMI 2.0 Session. For details, refer to “IPMI Service Configuration Properties” in the *Oracle ILOM Administrator’s Guide for Configuration and Maintenance Firmware Release 5.0.x*.
- **Second IPMI Service Support Change** – Removal of IPMI 2.0 client support. IPMI 2.0 clients no longer will be able to communicate with Oracle ILOM. Clients relying on IPMI communication will need to use the IPMI TLS service and interface. For more information, refer to “IPMI TLS Service and Interface” in the *Oracle ILOM Protocol Management Reference SNMP and IPMI Firmware Release 5.0.x*.

For future updates about IPMI Management Service support in Oracle ILOM, refer to the latest firmware release information published in the *Oracle ILOM Feature Updates and Release Notes Firmware Release 5.0.x*. You can access the Oracle ILOM documents at <https://www.oracle.com/goto/ilom/docs>.

Linux Issues

This section describes important operating notes and known Linux operating system issues for Oracle Server X8-2L.

Upgrade to the Latest UEK 5 Kernel With Systems That Have Oracle Storage 12 Gb/s SAS PCIe HBAs

Important Operating Note

After installing the Oracle Linux 7 operating system (OS) on a system that has internal and/or external Oracle Storage 12 Gb/s SAS PCIe HBAs, upgrade to the latest Unbreakable Enterprise Kernel (UEK) 5 before rebooting the system. Otherwise, a kernel panic failure might occur upon rebooting the system after OS installation. In the event that a kernel panic failure does occur, upgrading to the latest UEK 5 kernel addresses the failure.

For more information and instructions on updating the UEK for Oracle Linux, refer to the Unbreakable Enterprise Kernel web site at: https://docs.oracle.com/cd/E93554_01/.

Perform a Yum Update When Using UEK Kernel

Important Operating Note

When using the Unbreakable Enterprise Kernel (UEK) with Oracle Linux 7 or Oracle Linux 6, you should perform a yum update to obtain the latest UEK release updates. Oracle Server X8-2L requires kernel version 4.14.35-1844.2.5 or later.

For more information and instructions for updating the UEK for Oracle Linux, refer to the Unbreakable Enterprise Kernel web site at: https://docs.oracle.com/cd/E93554_01/.

Linux MMIO Kernel Configuration Can Affect Oracle Hardware Management Pack fwupdate Tool for Intel NIC/LOM Updates

Important Operating Note

On systems running Linux with Intel network interface cards or LAN-on-Motherboard (LOM) controllers, if MMIO memory access is set to strict access in the Linux kernel (iomem=strict or as part of the kernel build configuration) you will see the following message in syslog/dmlog when running the Oracle Hardware Management Pack fwupdate tool:

```
kernel: Program fwupdate tried to access /dev/mem between  
c4a00000->c4a01000. (Address may vary)
```

This message is expected and should not cause an issue with the operation of the operating system. There will be one message each time fwupdate is run and the kernel is in strict MMIO access mode.

However, when the kernel is running in this mode, fwupdate will not be able to access Intel-based network controllers to either list information or update firmware.

For more information on this issue including a workaround, see the "Linux MMIO Access Settings Can Affect fwupdate Commands On Intel Network Controllers" section in the *Oracle Hardware Management Pack 2.4 Server CLI Tools User's Guide* at: <https://www.oracle.com/goto/ohmp/docs>.

Oracle Solaris Issues

This section describes important operating notes and known Oracle Solaris operating system issues for Oracle Server X8-2L.

Turbo Mode Not Available on Oracle Solaris 11.4

Bug ID: 28629908

Issue: The PowerTOP version 1.3 tool in Oracle Solaris 11.4 does not display accurate processor Turbo Mode information.

Affected Software: Oracle Solaris 11.4

Workaround: None.

Reset Power for Oracle Storage 12 Gb SAS PCIe RAID HBA, Internal: 16 port During Reboot

Bug ID: 28381446

Issue: If power is not reset for the Oracle Storage 12 Gb SAS PCIe RAID HBA, internal: 16 port, a system that is running Oracle Solaris 11 can stop during reboot.

Affected Hardware: Oracle Storage 12 Gb SAS PCIe RAID HBA, Internal: 16 port

Affected Software: Oracle Solaris 11

Workaround: Use the -p option with the reboot command to ensure that power is reset for the Oracle Storage 12 Gb SAS PCIe RAID HBA, Internal: 16 port card.

```
# reboot -p
```


Windows Issues

This section describes important operating notes and known Windows Server operating system issues for Oracle Server X8-2L.

NVMe Hot Plug Is Not Supported

Important Operating Note

NVMe storage drives are supported by the Microsoft Windows Server 2016 operating systems. However, NVMe hot plug is not supported on Oracle Server X8-2L under Windows Server 2016. You must power down the system before removing and replacing NVMe storage drives.

For more information, refer to the *Oracle Server X8-2L Service Manual*.

Updated Driver Is Required to iSCSI Boot Windows Server Using Intel i210 Gigabit Ethernet Connection

Bug ID: 25534023

Issue: There is a mismatch between the inbox Intel i210 Gigabit Ethernet driver used during Windows Server setup and the inbox Intel i210 Gigabit Ethernet driver used in the Windows Server operating system. When performing an iSCSI installation using the Intel i210 Gigabit Ethernet connection, the driver mismatch results in a failure to boot the installed Windows Server OS.

Affected Software: Microsoft Windows Server 2016

Workaround: You must install one of the following newer drivers during server setup:

- Windows Server 2016 driver INF file: e1r65x64.inf

These driver files are located in \windows\drivers\Intel-NIC-1gbe.

VMware ESXi Issues

This section lists important operating notes and known VMware ESXi issues for Oracle Server X8-2L.

NVMe Hot Plug Is Not Supported

Important Operating Note

Issue: NVMe storage drives are supported by VMware ESXi 6.7 U1 technology. However, NVMe hot plug is not supported on Oracle Server X8-2L using VMware ESXi 6.7 U1 technology. You must power down the system before removing and replacing NVMe storage drives.

Incorrect PCIe Card Storage Capacity is Displayed with VMware ESXi 6.7 U1

Bug ID: 29299681

Issue: Only half of the storage capacity of an Oracle Flash Accelerator F640 PCIe card is displayed when using the VMware ESXi 6.7 U1 technology. If the card has 6.4 Terabytes of storage space, it is displayed as having 3.2 Terabytes of space.

Workaround: To view accurate storage capacity for the PCIe card, download the nvme driver from the VMware Drivers and Tools web site at: <https://my.vmware.com/web/vmware/details?downloadGroup=DT-ESX65-INTEL-INTEL-NVME-1328&productId=614>

Getting Firmware and Software Updates

This section explains the options for accessing server firmware and software updates using My Oracle Support.

Customers are required to install the latest available operating system (OS), patches, and firmware versions for optimal system performance, security, and stability.

Firmware and Software Updates

Firmware and software for your server are updated periodically. These updates are made available as software releases. The software releases are a set of downloadable files (patches) that include all available firmware, software, hardware drivers, tools, and utilities for the server. All of these files have been tested together and verified to work with your server.

You must 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. These updates will increase your system performance, security, and stability.

To determine which firmware version is installed on your server, you can use either the Oracle ILOM web interface or the command-line interface (CLI).

- From the web interface, click System Information → Summary, then view the property value for System Firmware Version in the General Information table.
- From the CLI, at the command prompt, type: `show /System/Firmware`

The server Product Notes list the current server software release and firmware version that are available.

Firmware and Software Update Options

Use one of the following options to update your server to the latest firmware and software:

- **My Oracle Support** – All system software releases are available from the My Oracle Support web site at <https://support.oracle.com>.
For information about what is available from the My Oracle Support web site, see [“Software Releases” on page 48](#).
- **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 System Firmware Using Other Methods” on page 52](#).

Software Releases

Software releases on My Oracle Support are grouped by product family (such as Oracle Server), then the product (the specific server), and finally the software release version. A software release contains all the updated software and firmware for your server as a set of downloadable files (patches), including firmware, drivers, tools, or utilities, all tested together to be compatible with your server.

Each patch is within a zip file that contains set of firmware and software subdirectories and files, along with a ReadMe file. The ReadMe file provides information about the patch, such as what has changed since the prior software release and the bugs that have been fixed in the current release.

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.

Package Name	Description	When to Download This Package
X8-2L SW <i>release</i> – Firmware Pack	Contains all system firmware, including Oracle ILOM, BIOS, and option card firmware.	You need the latest firmware.
X8-2L SW <i>release</i> – OS Pack	Includes a package of all tools, drivers, and utilities for a specific OS. An OS Pack is available for each supported operating system version. Software includes Oracle Hardware Management Pack, LSI MegaRAID software, and any other optional software that Oracle recommends. For the Windows OS, the OS Pack also includes Intel Network Teaming and Install Pack.	You need to update OS-specific tools, drivers, or utilities.

Package Name	Description	When to Download This Package
X8-2L SW <i>release</i> – All Packs	Includes the Firmware Pack and all OS Packs. This pack does not include the Oracle VTS image.	You need to update a combination of system firmware and OS-specific software.
X8-2L SW <i>release</i> – Diagnostics	Includes Oracle VTS diagnostics image.	You need the Oracle VTS diagnostics image.

Getting Updates From My Oracle Support

You can obtain updated firmware and software from the My Oracle Support web site at <https://support.oracle.com>. For instructions, see “[Download Firmware and Software Updates From My Oracle Support](#)” on page 49.

▼ Download Firmware and Software Updates From My Oracle Support

1. **Go to the My Oracle Support web site:** <https://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).**
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 (for example, Oracle Server X8-2L) until a match appears.
6. **In the Release field, select a software release from the drop-down list.**
Expand the list to see all available software releases.
7. **Click Search.**
The Patch Advanced Search Results screen appears, listing the patches for the software release. See “[Software Releases](#)” on page 48 for a description of the available software releases.

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 panel contains several action options, including the ReadMe, Download, and Add to Plan options. For information about the Add to Plan option, click the associated button and select “Why use a plan?”.

9. **To review the ReadMe file for this patch, click ReadMe.**
10. **To download the patch for the software release, click Download.**
11. **In the File Download dialog box, click the patch zip file name.**

The patch for the software release downloads. The download is an archive zip file, which you must extract to find the directory containing the image .pkg file.

▼ Update System Firmware Using Oracle ILOM

You can update Oracle ILOM system firmware while the host is powered on. The Oracle ILOM firmware image includes firmware for the service processor (SP, Oracle ILOM) and the server's host components (FPGAs). The Oracle ILOM firmware update goes into effect immediately. However, the update of host components is deferred until the affected host is power cycled. Because Oracle ILOM can be updated while the host is powered on, this feature reduces the total system downtime.

Before You Begin

- Determine the Oracle ILOM firmware version currently installed on the system. At the Oracle ILOM prompt, type: `show /System/Firmware`
- Download the Firmware Pack (Patch) update from My Oracle Support.

Note - This procedure uses the Oracle ILOM command-line interface to update the system firmware. You can also update system firmware using the Oracle ILOM web interface. For web interface instructions, refer to the Oracle ILOM documentation at <https://www.oracle.com/goto/ilom/docs>.

To update system firmware, follow these steps:

1. **Notify Oracle ILOM SP users of the scheduled firmware update and ask them to close all client sessions until after the firmware update is complete. Do not perform any other Oracle ILOM tasks during the firmware update.**

2. **Navigate to the directory where you saved the FIRMWARE PACK (Patch) archive zip file.**

3. **Extract the FIRMWARE PACK files from the archive zip file.**

When you extract the files, the *<image.pkg>* file is in the Firmware/service-processor directory.

For example:

```
% unzip p26981570_102_Generic.zip
Archive: 26981570_102_Generic.zip
creating Oracle_Server_X8-2-1.0.2.87665-FIRMWARE_PACK/Firmware/service-processor/
inflating: Oracle_Server_X8-2-1.0.2.87665-FIRMWARE_PACK/Firmware/service-processor/
ILOM-4_0_0_28_r121827-ORACLE_SERVER_X8-2-rom.pkg
```

4. **Review the README file that accompanies the firmware image to be aware of any special release notes or instructions.**

5. **Update the firmware using the Oracle ILOM command-line interface:**

- a. **Log in to Oracle ILOM with an account with Admin privileges.**

- b. **Load the firmware image from the stored location using the `load -source` command followed by the directory path to the firmware image you want to install. Type:**

```
-> load -source protocol://server_IPaddress/<path_to_image>/<image.pkg>
```

Where *protocol* can be: http, https, ftp, tftp, sftp, scp

For example, if you are accessing the server through a tftp server with an IP address of 198.51.100.123 in a directory called ilom/jdoe and with the *<image.pkg>* named firmware.pkg, enter the following command:

```
-> load -source tftp://198.51.100.123/tftpboot/ilom/jdoe/firmware.pkg
```

The following information is displayed:

An upgrade takes several minutes to complete. Oracle ILOM will enter a special mode to load new firmware. No other tasks can be performed in Oracle ILOM until the firmware upgrade is complete and Oracle ILOM is reset.

You can choose to postpone the server BIOS upgrade until the next server power off. If you do not do that, you should perform a clean shutdown of the server before continuing.

c. Answer the following prompts:

Are you sure you want to load the specified file? **y**

Preserve existing SP configuration (y/n)? **y**

This prompt preserves your existing Oracle ILOM settings after the firmware update is complete.

Preserve existing BIOS configuration (y/n)? **y**

This prompt preserves your existing BIOS configuration settings after the firmware upgrade is complete.

Delay BIOS upgrade until the next poweroff or reset (y/n)? **y**

Answer "Y" (yes) to the Delay BIOS Upgrade question and, if the host is ON and there are host components to be updated, the host remains powered on and the host component updates are deferred until the next time the host powers off and powers on (next reset/reboot).

Answer "N" (no) to the Delay BIOS Upgrade question and, if the host is ON and there are host components to be updated, the host is forced OFF so that host component updates can be applied immediately. After Oracle ILOM reboots, the host is powered on automatically if it was forced off.

Note - If the server has a pending BIOS upgrade, the power reset could take longer to complete. This is expected behavior, as it is necessary to power cycle the server to upgrade the BIOS firmware. If the upgrade includes an FPGA update, the process can take as long as 26 minutes to complete.

d. Wait for the Oracle ILOM status message to confirm that the process is complete.

6. To verify that the updated firmware is installed, at the Oracle ILOM prompt, type:

-> `show /System/Firmware`

Installing System Firmware Using Other Methods

In addition to using Oracle ILOM, you can install firmware and software updates using one of the following methods:

- **Oracle Enterprise Manager Ops Center** – Use Oracle Enterprise Manager Ops Center to automatically download the latest firmware from Oracle and then install the firmware

onto one or more servers. Firmware updates can also be loaded manually into the Enterprise Controller.

For information, refer to the product information page at: <https://www.oracle.com/enterprise-manager/technologies/>. For documentation, refer to the Oracle Enterprise Manager Cloud Control Documentation Library at: <https://docs.oracle.com/en/enterprise-manager/related-products.html>

- **Oracle Hardware Management Pack** – Use the fwupdate CLI Tool in the Oracle Hardware Management Pack software to update firmware in the system.

For information, refer to the product information page at: <https://www.oracle.com/servers/technologies/hardware-management-pack.html>. For documentation, refer to the Oracle Hardware Management Pack Documentation Library at: <https://www.oracle.com/goto/ohmp/docs>

- **Oracle Integrated Lights Out Management (ILOM)**. For information, refer to the product information page at: <https://www.oracle.com/servers/technologies/integrated-lights-out-manager.html>. For documentation, refer to the Oracle Integrated Lights Out Manager (ILOM) 5.0 Documentation Library at: <https://www.oracle.com/goto/ilom/docs>

Downloading an OS or Software Applications

You can download an operating system (OS) or software applications for all licensed Oracle products from Oracle Software Delivery Cloud (formerly called Oracle eDelivery). Software is available in zip and ISO formats, which you can unzip or burn to DVDs, respectively. All of the download links on the Oracle Technology Network (OTN) point to the Software Delivery Cloud, making this site the authoritative source for all Oracle OS and application downloads. To access Oracle Software Delivery Cloud, go to <https://edelivery.oracle.com/osdc/faces/SoftwareDelivery>.

Oracle Support

If you need help getting firmware or software updates, or downloading a complete software application, you can call Oracle Support. Use the appropriate number from the Oracle Global Customer Support Contacts Directory at:

<https://www.oracle.com/support/contact.html>

