Oracle® Server X5-2L Product Notes

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Référence: E48334-26

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Contents

Using This Documentation

- **Overview** – The Oracle Server X5-2L Product Notes includes information about supported software and firmware, and important operating guidelines for the Oracle Server X5-2L. This document also lists known issues for the server.
- **Audience** – These product notes are intended for system administrators, network administrators, and service technicians.
- **Required knowledge** – Users should have an 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/x5-2l/docs.

Feedback

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

Oracle Server X5-2L Product Notes

For the most updated information about supported firmware and operating systems, important operating notes, and known issues, refer to the latest product notes, which are available at https://www.oracle.com/goto/x5-2l/docs.

These product notes include the following information.

Oracle Server X5-2L Documentation

To access the documentation for the Oracle Server X5-2L, go to: https://www.oracle.com/goto/x5-2l/docs

Supported Hardware

You can find detailed information about supported hardware in these Oracle Server X5-2L documents:

- "Server Features and Components" in *Oracle Server X5-2L Installation Guide*

- "About the Oracle Server X5-2L" in *Oracle Server X5-2L Service Manual*

Within those documents, you can find information about supported hardware for these and other components:

- Processors
- Memory
- Storage drives
- Host bus adapters

Related Information

- "Supported PCIe Cards" on page 41

Server Update Information

Server software updates are available to maintain support, add enhancements, or correct issues. Updates can include new versions of firmware (BIOS and Oracle ILOM SP), new releases of tools and drivers, and updates to any other packaged software components. When an update is released, the changes are described in the ReadMe file for the update, which is available at the following sources:

- In Oracle System Assistant, by clicking the Help button on the System Information page.
- On My Oracle Support at `https://support.oracle.com`.
- With any server software package downloaded from My Oracle Support.

Supported Oracle ILOM Firmware Version

Some product features are enabled only when the latest versions of patches or firmware are installed. You must install the latest system software release for optimal performance, security, and stability. See "Important – Install Latest OS Updates, Patches, Firmware" on page 15.

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

For the latest and most up-to-date information on supported firmware versions, see the ReadMe file located on My Oracle Support. For download instructions, see "Getting Firmware and Software Updates" on page 70.

Supported Operating Systems

The minimum supported Oracle Solaris version is Oracle Solaris 11.2 with the latest SRU. The latest supported Oracle Solaris version is Solaris 11.4 with the latest SRU.

The following table shows other minimum supported operating systems, and provides links to Hardware Compatibility Lists (HCLs) or third-party operating system certification information.

The following Hardware Compatibility Lists (HCLs) identify the latest operating system versions supported on Oracle hardware. To find the latest operating system version supported for the Oracle Server X5-2L, go to the following sites and search using your server model number:

- 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
- Windows – https://www.windowsservercatalog.com/
- VMware ESXi – https://www.vmware.com/resources/compatibility/search.php
- Red Hat Enterprise Linux – https://access.redhat.com/certifications
- SUSE Linux Enterprise Server – https://www.suse.com/yessearch/Search.jsp

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
3.1.3 or later	■ Oracle Linux 8 Update 2, 3 ■ Oracle Linux 7 Update 9
3.1.0	■ Oracle Linux 8 Update 1 with the Unbreakable Enterprise Kernel Release 6 ■ Oracle Linux 7 Update 8 with the Unbreakable Enterprise Kernel Release 5 Update 3
2.3.0	■ Oracle Linux 7.6 for x86 (64-bit) ■ Oracle Solaris 11.4 ■ Oracle VM Server 3.4.6
2.2.0	■ Oracle Linux 6.10 and 7.5 for x86 (64-bit) with the Oracle Unbreakable Enterprise Kernel Release 5 for Linux ■ Oracle VM Server 3.4.5
2.1.2	No changes to supported operating systems or virtual machine software.
2.1.1	No changes to supported operating systems or virtual machine software.
2.1.0	No changes to supported operating systems or virtual machine software.
2.0	■ Oracle Linux 7 Update 4 ■ Oracle VM Server 3.4.4

Platform Software Release	Latest Supported Operating Systems
1.10	■ VMware ESXi 6.5 Update 1 ■ Oracle Linux 6 Update 9 ■ Oracle VM Server 3.4.3 ■ VMware ESXi 6.0 Update 3
1.9	Windows Server 2016
1.8	■ Oracle Linux 7.3 ■ Oracle VM 3.4.2
1.7	■ Oracle Solaris 11.3 SRU 8 ■ Oracle VM 3.3.4
1.6	■ Oracle Linux 6.8 for x86 (64-bit) ■ Oracle VM 3.4.1 ■ Red Hat Enterprise Linux 6.8 for x86 (64-bit) ■ VMware ESXi 6.0 Update 2
1.5	■ Oracle Solaris 11.3 ■ Oracle Linux 7.2 for x86 (64-bit) ■ Red Hat Enterprise Linux 7.2 for x86 (64-bit)
1.4	■ Oracle Linux 6.7 for x86 (64-bit) ■ Oracle VM 3.3.1 ■ Oracle VM 3.3.2 ■ Oracle VM 3.3.3 ■ Red Hat Enterprise Linux 6.7 for x86 (64-bit) ■ VMware ESXi 5.5 U2 and U3 ■ VMware ESXi 6.0 Update 1
1.3	No changes to supported operating systems or virtual machine software.
1.2	■ Oracle Linux 7.1 for x86 (64-bit) ■ Red Hat Enterprise Linux 7.1 for x86 (64-bit) ■ SUSE Linux Enterprise Server 12 (64-bit) ■ VMware ESXi 6.0
1.1	■ Oracle Linux 6.6 for x86 (64-bit) ■ Oracle Linux 7.0 for x86 (64-bit) ■ Red Hat Enterprise Linux 6.6 for x86 (64-bit) ■ Red Hat Enterprise Linux 7.0 for x86 (64-bit)
1.0	■ Oracle Solaris 11.2 SRU5 (and later SRU releases) ■ Oracle Linux 6.5 for x86 (64-bit) with the Oracle Unbreakable Enterprise Kernel Release 3 for Linux or the Red Hat Compatible Kernel ■ Oracle VM 3.3 ■ Red Hat Enterprise Linux 6.5 for x86 (64-bit) ■ SUSE Linux Enterprise Server 11 SP3 (64-bit) ■ VMware ESXi 5.5 U2 ■ Windows Server 2012 and 2012 R2

Related Information

- “Preinstalled Oracle VM Server and Oracle VM Manager Compatibility Requirements” on page 25
- “Supported Operating System Limitations” on page 22

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
- Oracle System Assistant – For information, refer to instructions for setting up the server using Oracle System Assistant in the *Oracle X5 Series Servers Administration Guide* at https://www.oracle.com/goto/x86admindiag/docs.

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

Important Operating Notes

This section includes important operating information and requirements for the Oracle Server X5-2L.

Related Information

Software and Critical Patch Updates

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 ensures that your server software is compatible with the latest server firmware and other component firmware and software.

You can get the latest available system BIOS, Oracle Integrated Lights Out Manager (ILOM), firmware, and drivers from Oracle by performing the Get Updates task in Oracle System Assistant. An Internet connection is required. For instructions on how to use the Get Updates task, see the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

You also can download the latest firmware and software updates from My Oracle Support at `https://support.oracle.com`. For information about downloading firmware and software from My Oracle Support, refer to "Getting Firmware and Software Updates" on page 70.

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. See "Supported Operating Systems" on page 11.

For details about the latest system software update, see "Getting Firmware and Software Updates" on page 70.

▼ Important – Install Latest OS Updates, Patches, Firmware

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

To verify that the Oracle ILOM firmware version is a minimum of 5.0 or newer:

1. **Use Oracle ILOM to verify the Oracle ILOM 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 minimum 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 70.

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

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

Oracle ILOM Important Operating Notes

Changes to TLSv1.1 Configuration Property as of ILOM 4.0.3.x

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 4.0.x* at `https://docs.oracle.com/cd/E81115_01/index.html`.

Changes to Top-Level /Storage/raid Oracle ILOM CLI Namespace

Important Operating Note

Present Behavior: Similar storage information appears in both the /STORAGE/raid and /System/Storage namespaces.

Future Behavior: In the next major release of Oracle ILOM, the top level /STORAGE namespace in the Oracle ILOM CLI tree will be removed, and all storage information will appear under the /System/Storage namespace.

Enhancement Request: 27810408

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 4.0.x*.

    or

  - Manually enable the configuration property for IPMI 2.0 Session. For details, refer to “IPMI Service Configuration Properties” in the *Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x*.
- **Second IPMI Service Support Change** – Removal of IPMI 2.0 client support. IPMI 2.0 clients 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 4.0.x*.

For future updates about IPMI Management Service support in Oracle ILOM, refer to the latest firmware release information published in the *Oracle ILOM Feature Updates and Release Notes Firmware Release 4.0.x* at `https://www.oracle.com/goto/ilom/docs`.

Oracle ILOM Deprecation Notice for Default Self-Signed Certificate

Present Behavior: An earlier version of the default SSL self-signed certificate is provided by Oracle ILOM.

Future Behavior: A newer version of the default SSL self-signed certificate will be provided in a future Oracle ILOM firmware release.

Impact to Customer Configuration:

After updating to a future firmware release, users connecting to Oracle ILOM through the web interface will need to accept a newer version of the default SSL self-signed certificate that is provided by Oracle ILOM. Customer provided SSL certificates will not be impacted by this change.

For information about the SSL self-signed certificate that is provided by Oracle ILOM, refer to the latest firmware release information in the *Oracle ILOM Feature Updates and Release Notes for Firmware 3.2.x or the Oracle ILOM Administrator's Guide for Configuration and Maintenance Firmware Release 4.0.x*. To access these documents, go to `https://www.oracle.com/goto/ilom/docs`.

▼ Enhanced IP Connectivity Settings Available in Oracle ILOM

Oracle ILOM supports the ability to independently enable or disable the property States for IPv4 and IPv6 network connectivity. In addition, a new static IPv6 gateway property is available for configuration.

To access these enhanced network settings in Oracle ILOM, follow these steps:

1. **Log in to Oracle ILOM as an Administrator.**

   For instructions on how to launch Oracle ILOM from the web interface or CLI, refer to the *Oracle Server X5-2L Installation Guide*.

2. **To modify the SP network settings, perform one of the following:**

   - **From the web interface:**

     a. **Click ILOM Administration → Connectivity → Network.**

     b. **Modify the settings on the Network Settings page as required.**

        For further details about how to configure the properties on the Network Setting page, click the *More Details* link.

     c. **Save the network property changes by clicking Save.**

Note - All user sessions on the SP are terminated upon saving the IP network property changes. To log back in to Oracle ILOM, use the newly assigned service processor IP address.

   - **From the CLI interface:**

     a. **To view the assigned IPv4 and IPv6 network settings on the SP, enter the following:**

        For IPv4, type: **`show /SP/network`**

        For IPv6, type: **`show /SP/network/ipv6`**

     b. **To view the descriptions of each IPv4 and IPv6 network property, enter the following:**

        For IPv4, type: **`help /SP/network`**

        For IPv6, type: **`help /SP/network/ipv6`**

c. To modify the IPv4 and IPv6 network properties on the SP, issue the `set` command.

IPv4 Example:

`set /SP/network state=`*enabled*`|`*disabled*

`pendingipdiscovery=`*static*`|`*dhcp*

`pendingipaddress=`*value*

`pendingipgateway=`*value*

`pendingipnetmask=`*value*

IPv6 Example:

`set /SP/network/ipv6 state=`*enabled*`|`*disabled*

`pending_static_ipaddress=`*value/subnet_mask_value*

`pending_static_ipgatewayaddress=`*value*

Note - A dual-stack network connection is enabled when both the IPv4 and IPv6 State properties are set to enabled. By default, Oracle ILOM arrives configured with network settings enabled for a dual stack (IPv4 and IPv6) network connection. If the IPv4 State property is enabled (`SP/network state=enabled`), and the IPv6 State property is disabled (`SP/network state=disabled`), Oracle ILOM supports an IPv4-only network connection.

d. To commit the IPv4 and IPv6 pending network changes in Oracle ILOM, issue the following commands:

For IPv4, type: **`set /SP/network commitpending=true`**

For IPv6, type: **`set /SP/network/ipv6 commitpending=true`**

Note - All user sessions on the SP are terminated upon committing the IP network property changes. To log back in to Oracle ILOM, use the newly assigned service processor IP address.

Ensuring Successful File Transfers from Oracle ILOM

Do not use the # ; and ? special characters in the password of a target host. If the target host password includes these special characters, file transfers fail from Oracle ILOM to the target host when using Uniform Resource Identifier (URI) to perform the file transfer. Examples of these file transfers include using host storage redirection, and backing up and restoring BIOS

and SP configurations. To ensure successful file transfers between Oracle ILOM and a target host, remove these special characters from the target host password.

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

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"

Operating System Important Operating Notes

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 or software application downloads. To access Oracle Software Delivery Cloud, go to `https://edelivery.oracle.com/osdc/faces/SoftwareDelivery`.

Supported Operating System Limitations

This section provides information about limitations and recommendations for supported operating systems when the Oracle Server X5-2L is configured with 4-terabyte (4-TB) 7200-RPM 3.5-inch SAS hard disk drives (HDDs).

TABLE 1 Limitations and Recommendations for 4-TB Drive Boot Support

Operating System	Legacy Boot	UEFI Boot
Oracle Solaris 11.2 SRU5 and 11.3	Recommended	Recommended
Oracle Linux 6.5, 6.6, 7.0, 7.1, 7.2, and 7.3	2 TB used, 2 TB unusable	Recommended
RHEL 6.5, 6.6, 7.0, 7.1, and 7.2	2 TB used, 2 TB unusable	Recommended
SLES 11 SP3, and 12	2 TB used, 2 TB unusable	Recommended
Windows Server 2012/2012 R2	2 TB used, 2 TB unusable	Recommended
Oracle VM 3.3.3 and 3.4.2	Recommended	Not applicable
ESXi 5.5 U2, and 6.0	Recommended	Recommended

Rear-Mounted HDD Naming When Using Oracle Solaris

When using the Oracle Solaris `croinfo` command to display hard disk drive (HDD) information for the Oracle Server X5-2L, the rear-mounted hard disk drives (HDDs) are displayed as follows:

- In the 12+2 HDD configuration, the rear-mounted HDDs are displayed as HDD12 and HDD13.
- In the 24+2 HDD configuration, the rear-mounted HDDs are displayed as HDD24 and HDD25.

Segfaults Might Occur on Servers Running 64-bit Linux Operating Systems

Servers running 64-bit Linux operating systems with Advanced Vector Extensions (AVX) processor support might experience segmentation faults (segfaults) when loading applications such as the Oracle Database or other Oracle Middleware products.

To avoid these unpredictable segfaults, you should ensure that the `glibc` package on your system is version `glibc-2.12-1.47.0.2.el6_2.12.x86_64`, or later.

You can obtain an updated `glibc` package from the Oracle Public Yum repository.

Use of NVMe Drives With Oracle Linux Requires UEK3 Update 3

If you use NVMe drives in the Oracle Server X5-2L with Oracle Linux, you must also use the Unbreakable Enterprise Kernel 3 (UEK 3) Update 3 or later. UEK 3, Update 3 is required for NVMe support.

SLES 11 SP3 Requires a Driver Update

If you are using SUSE Linux Enterprise Server (SLES) 11 SP3 on your server with the Oracle Storage 12 Gb/s SAS PCIe RAID host bus adapter (HBA), you must update the device driver to version 06.703.06.00_3 or later.

If your server contains an Oracle System Assistant USB drive, the device driver is available in an Oracle System Assistant directory. If your server does not contain an Oracle System Assistant USB drive, you can download the device driver from My Oracle Support.

Note - You can download the latest SLES 11 SP3 driver and software package from My Oracle Support at `https://support.oracle.com`. For information about downloading software from My Oracle Support, refer to "Getting Firmware and Software Updates" on page 70.

▼ Update the SLES 11 SP3 Device Driver

Perform the procedure in this section to update the SLES 11 SP3 device driver.

1. **Install and boot SLES 11 SP3 as described in your Linux operating system installation guide.**

For instructions, refer to the *Oracle Server X5-2L Installation Guide for Linux Operating Systems*.

- If the system contains an Oracle System Assistant USB drive that was auto-mounted by the operating system, continue with Step 5. If the Oracle System Assistant USB drive was not auto-mounted by the operating system, you must first find the SCSI device that represents the Oracle System Assistant USB drive. Continue with Step 2.
- If you downloaded and unzipped the SLES 11 SP3 driver and software package from My Oracle Support, continue with Step 5.

2. **Open a terminal window. At the system prompt, type the `lsscsi` command to list SCSI devices on the server.**

   Your output should be similar to the following example:

```
#>lsscsi
     [0:2:0:0]    disk    LSI      MR9361-8i        4.23  /dev/sda
     [0:2:1:0]    disk    LSI      MR9361-8i        4.23  /dev/sdb
     [1:0:0:0]    cd/dvd  TEAC     DV-W28S-B        AT11  /dev/sr0
     [7:0:0:0]    disk    ORACLE   SSM              PMAP  /dev/sdc
```

   In the above example, the Oracle System Assistant (`ORACLE SSM`) USB drive is available as SCSI block device `/dev/sdc`.

   Note - Alternatively, you can view the SCSI block device assignments in `/var/log/messages`.

3. **Type the `mount <`*SCSI_blk_dev*`>` command to manually mount the Oracle System Assistant image.**

   Where the *SCSI_blk_dev* variable represents partition 1 on the SCSI block device from the `lsscsi` command output. For example:

```
#>mount /dev/sdc1 /mnt
```

4. **Type the `ls -l /mnt` command to verify that the Oracle System Assistant image has been mounted.**

   For example:

```
#>ls -l /mnt
     total 724
     drwxr-xr-x  2 root root   4096 Sep 18 18:53 boot
     drwxr-xr-x  4 root root   4096 Aug  7 16:35 Documentation
     drwxr-xr-x  3 root root   4096 Aug  7 16:33 EFI
     drwxr-xr-x 12 root root   4096 Sep 18 20:02 Firmware
     -r-xr-xr-x  1 root root  32768 Aug  7 16:33 ldlinux.sys
     -rwxr-xr-x  1 root root    715 Sep 18 20:02 license.txt
```

```
drwxr-xr-x  6 root root   4096 Aug  7 16:33 Linux
drwxr-xr-x  2 root root   4096 Aug  7 16:34 LiveOS
-rwxr-xr-x  1 root root 605102 Oct 20  2014 manifest.xml
-rwxr-xr-x  1 root root    256 Oct 20  2014 mansig
drwxr-xr-x  4 root root   4096 Sep 18 18:54 Oracle
drwxr-xr-x  3 root root   4096 Aug  7 16:33 OracleVM
-rwxr-xr-x  1 root root  36732 Oct 20  2014 readme.html
drwxr-xr-x  3 root root   4096 Aug  7 16:35 Solaris
-rwxr-xr-x  1 root root    277 Aug  7 16:33 syslinux.cfg
-rwxr-xr-x  1 root root   4343 Oct 20  2014 Versions.txt
drwxr-xr-x  3 root root   4096 Aug  7 16:33 VMware
drwxr-xr-x  5 root root   4096 Aug  7 16:33 Windows
```

5. **Navigate to the location of the Oracle System Assistant image.**

   If the Oracle System Assistant image was auto-mounted by the operating system or downloaded from My Oracle Support, navigate to that location; otherwise, navigate to the location where you manually mounted the image. For example:

   ```
   #>cd /mnt/Linux/SLES/11SP3/Drivers/Sun_Storage_12Gb_SAS_PCIe_RAID
   ```

6. **Type the `ls -l` command to find the updated SLES 11 SP3 device driver for the Oracle Storage 12 Gb/s SAS PCIe RAID HBA.**

   For example:

   ```
   #>ls -l
        total 296
        -rwxr-xr-x 1 root root 299893 Sep 18 20:04 lsi-megaraid_sas-kmp-default-
   06.703.06.00_3.0.76_0.11-4.1.x86_64.rpm
   ```

7. **Type the `rpm -Uvh` command to install the new device driver.**

   For example:

   ```
   #>rpm -Uvh lsi-megaraid_sas-kmp-default-06.703.06.00_3.0.76_0.11-4.1.x86_64.rpm
   ```

8. **Reboot the server to load the updated device driver.**

Preinstalled Oracle VM Server and Oracle VM Manager Compatibility Requirements

If you use the Oracle VM Server software that is preinstalled on your system, you must ensure that it is compatible with the version of Oracle VM Manager that you use to manage your Oracle VM infrastructure. If necessary to achieve compatibility, upgrade your Oracle VM Server or Oracle VM Manager so that they are the same version.

For information about upgrading the Oracle VM software, refer to the *Oracle VM Installation and Upgrade Guide*. The Oracle VM documentation is available at the following web site:
http://www.oracle.com/technetwork/documentation/vm-096300.html

SSL Must Be Turned On When Booting a Redirected ISO Image

When booting a redirected installation ISO image, SSL (Secure Sockets Layer) must be turned on. This is the default setting. If SSL is not turned on, the installation might stall or fail. This affects all supported operating systems.

Power Management Important Operating Notes

Use Back Panel USB Ports to Prevent the Host from Powering Off

The Oracle Server X5-2L is USB 2.0 compliant and meets all requirements from the USB 2.0 specification on both the front and back panel USB ports. Most external USB powered HDDs do not meet the USB 2.0 specification power draw of 500mA or less. The front and back USB ports have different layouts on the server, and there are electrical differences that make the front ports more sensitive to non-specification loads above 500mA.

When you plug any external USB powered hard disk drive (HDD), drawing more than the USB 2.0 specified 500mA, into the front USB ports, the host powers off due to an OverCurrent fault condition.

To prevent the host from powering off, install a flash drive, solid state drive (SSD), or hard disk drive (HDD) with an AC-powered USB enclosure in any USB port. Alternatively, use an inline bus powered hub in between the external USB powered device and the front port, for additional capacitance and to reduce the current spike recognized by the host, which allows you to also use the device on front USB ports.

Reset Takes a Long Time and Causes the Server to Power Cycle

If you have a pending BIOS upgrade, a routine reset takes longer than expected, and causes the server to power cycle and reboot several times. This is expected behavior, as it is necessary to power cycle the server to upgrade the BIOS firmware. If the upgrade includes an FPGA update, it can take more than 30 minutes to complete.

A pending BIOS upgrade exists when both conditions are true:

- You update the BIOS and service processor firmware using Oracle Integrated Lights Out Manager (ILOM).
- You select the Oracle ILOM option to Delay BIOS Upgrade.
- The host is powered on.

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

Caution - Data corruption and system downtime. Interrupting the firmware upgrade process can corrupt the firmware and render the server inoperable. Do not interrupt the upgrade. Allow the process to finish.

Note - Oracle ILOM and BIOS updates are designed to work together. When you have a pending BIOS upgrade, it is recommended that you install the upgrade by resetting or power cycling your server as soon as possible.

For details, refer to "Update the BIOS and Service Processor Firmware (Oracle ILOM)" in the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

Hardware Important Operating Notes

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 or `StorCLI` command.
  - For Oracle Exadata Database Machine database or storage cell servers, run the sundiag utility.
  - For Oracle Server X5-2L, 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

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.

Removing and Replacing a Fan Module Within 20 Seconds

When removing and replacing a server fan module, you must complete the entire removal and replacement procedure within 20 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.

Fan modules are hot-swappable components, with N+1 fan redundancy. Each fan module contains two complete counter-rotating fans with two fan motors per fan. The four fan motors provide separate tachometer signals so that the fan module reports four tach signals to Oracle ILOM. Even if only one fan is faulted within the fan module, the Oracle ILOM service processor detects that four fans have failed to spin while the fan module is being removed for replacement. If replacing the fan module is not replaced within 20 seconds of removal, Oracle ILOM will take protective action to shut down the system to prevent thermal damage to the system. This is expected behavior.

Single-Processor to Dual-Processor Upgrade Is Not Supported

Oracle does not support a single-processor to dual-processor upgrade on the Oracle Server X5-2L. Oracle does not provide a single-processor to dual-processor upgrade kit for the server.

Avoid Overwriting the Embedded Oracle System Assistant USB Flash Drive

Oracle Server X5-2L systems that have the Oracle System Assistant USB flash drive are (for the purposes of installing a Linux operating system or virtual machine software), multi-storage drive systems, even if they have only one hard-disk drive (HDD) or solid-state drive (SSD). The Oracle System Assistant USB flash drive looks like an ordinary disk to the installer.

During operating system (OS) installations, you must not accept the default disk layout presented by the installer without carefully reviewing the devices used for disk partitions. If you accept the default disk partitions suggested by the OS installer without reviewing or correcting the device selections, you might overwrite the Oracle System Assistant USB flash drive and incur other system software issues.

This is more likely to happen in Oracle Linux 6.x and 7.x, or Red Hat Enterprise Linux (RHEL) 6.x and 7.x based installations in Unified Extensible Firmware Interface (UEFI) mode, because the installer will recognize the USB flash drive as a valid EFI System Partition (ESP boot partition) and will attempt to use the Oracle System Assistant USB flash drive to boot the OS in many of the default disk configurations. Always select the disk partitioning options that allow you to review the disk layout.

For details on creating a custom layout or modifying the default layout, and for setting up the disk partition, refer to the Red Hat Enterprise Linux installation guides at the Red Hat web site https://www.redhat.com/en

For more information, see the following sections in the software installation guides:

- For Linux operating systems, see "Installation Target Options" in *Oracle Server X5-2L Installation Guide for Linux Operating Systems*.
- For Oracle VM, see "Installation Target Options" in *Oracle Server X5-2L Installation Guide for Oracle VM*.
- For VMware ESXi, see "Installation Target Options" in *Oracle Server X5-2L Installation Guide for VMware ESXi*.

Lockstep Memory (Channel) Mode Is Not Supported

Your Oracle Server X5-2L does not support lockstep memory mode, which is also known as double device data correction, or Extended ECC.

Configuring Jumbo Frames on the Onboard Network Interface Controller

Your Oracle Server X5-2L includes an internal Intel X540 Ethernet controller, similar to the Sun Dual Port 10GBase-T Adapter. It can be configured to support jumbo frame sizes up to 15.5 KB. The default frame size is 1.5 KB.

For more information, refer to:

Documentation	Links
Sun Dual Port 10GBase-T Adapter Documentation	https://docs.oracle.com/cd/E25543_01/index.html
Intel X540 Ethernet controller datasheet	https://www.intel.com/content/www/us/en/embedded/products/networking/ethernet-x540-datasheet.html

MAC Address Mapping to Ethernet Ports

A system serial label that displays the MAC ID (and the associated barcode) for the server is attached to the top, front-left side of the Oracle Server X5-2L server disk cage bezel.

This MAC ID (and barcode) corresponds to a hexadecimal (base 16) MAC address for a sequence of six consecutive MAC addresses. These six MAC addresses correspond to the server's network ports as shown in the following table.

Base MAC Address	Corresponding Ethernet Port
“base” + 0	NET 0
“base” + 1	NET 1
“base” + 2	NET 2
“base” + 3	NET 3
“base” + 4	SP (NET MGT)
“base” + 5	Used only when Network Controller-Sideband Interface (NC-SI) sideband management is configured.

Updating HBA Firmware to Support UEFI BIOS

If you are using a host bus adapter (HBA) card that was *not* shipped with your system, you might need to update the firmware on your HBA card to support the Unified Extensible Firmware Interface (UEFI) BIOS. The following HBA cards might need updating:

- Sun Storage Dual 16 Gb Fibre Channel PCIe Universal HBA, QLogic (7101674)
- Sun Storage Dual 16 Gb Fibre Channel PCIe Universal HBA, Emulex (7101684)

Therefore, you might need to update your HBA firmware if any of the following statements are true:

- You receive a replacement card for a faulty HBA card.
- You order an HBA card separately from your system.
- You want to use an HBA card that you already own.

You can use Oracle System Assistant or Oracle Hardware Management Pack to update your HBA firmware. For information on updating HBA firmware using Oracle System Assistant, refer to instructions for updating firmware in the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

JBOD Mode Properties in HBA Option ROMs Are Not Supported

The option ROMs for the Oracle Storage 12 Gb/s SAS PCIe RAID HBA (host bus adapter), Internal include properties for enabling JBOD mode. In JBOD mode, each physical drive on

the server is identified as one logical partition. This configuration is an alternative to redundant array of independent disk (RAID) implementations. However, the HBA does not support JBOD mode.

Enabling JBOD mode on the HBA might result in improper functioning of the system. Therefore, disregard the JBOD mode options in the following utilities:

- LSI Human Interface Infrastructure (HII) Configuration Utility (UEFI Boot Mode)
- LSI MegaRAID BIOS Configuration Utility (Legacy BIOS Boot Mode)

For more information about these interfaces, refer to "Configuring RAID Using the BIOS RAID Configuration Utilities" in *Oracle Server X5-2L Installation Guide*.

Processor Replacement Tool Must Be Used to Replace a Processor

Caution - For the Oracle Server X5-2L, use only the following color-coded Processor Replacement Tool that is designed for the processor used in the system. The part number is recorded on the tool.

- Green – part number G29477-002 or later

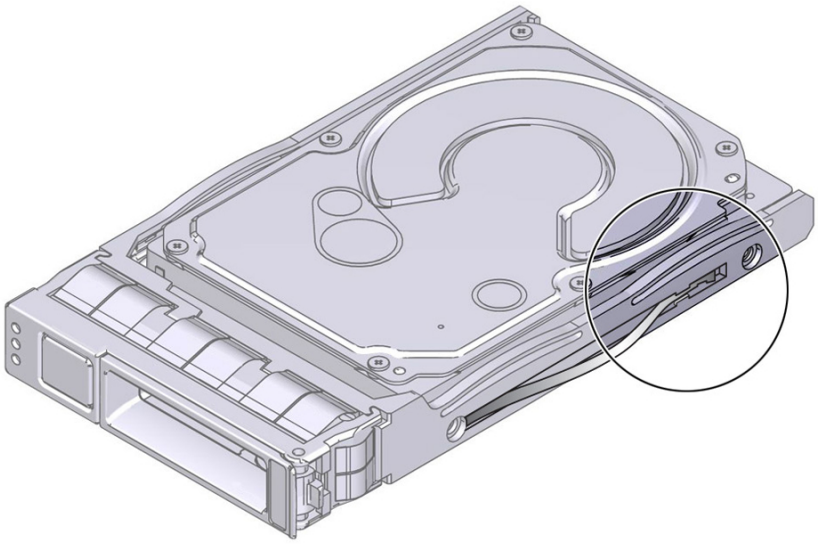
Do not use a tool that is designed for earlier generations of Intel processors (CPUs). If you use an earlier generation tool, the processor will only be partially held by the tool and it could fall from the tool, which could damage the processor socket.

Inspecting Grounding Strap on 3.5-inch HDD Bracket Before Installing HDDs

The 3.5-inch hard disk drive (HDD) bracket that is used in the Oracle Server X5-2L incorporates a spring-loaded metal grounding strap, which is located on the right side of the HDD bracket. A deflection in the grounding strap can cause the strap to catch on the server disk cage, which can further damage the grounding strap. Once damaged, the grounding strap cannot be repaired and the HDD bracket must be replaced.

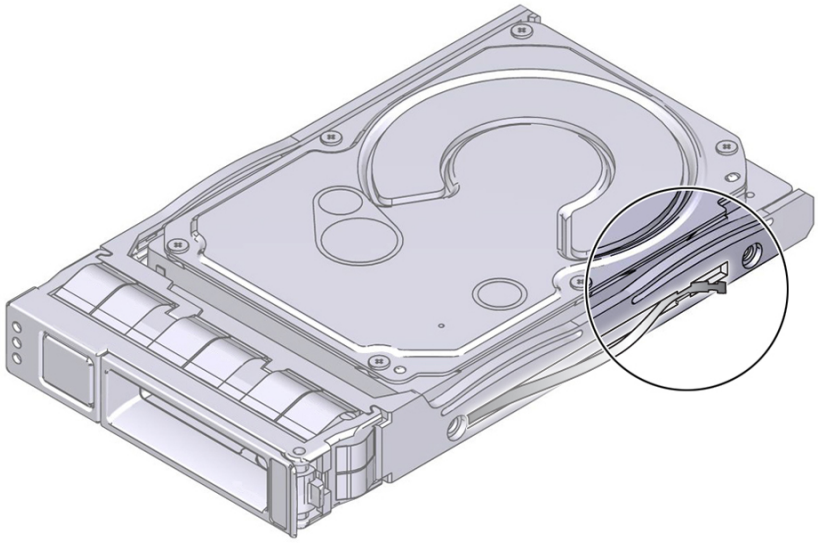
Before installing a 3.5-inch HDD into your system, visually inspect the grounding strap to ensure that the end of the strap is seated correctly in the HDD bracket. See the following figure for an example of a grounding strap that is seated correctly.

FIGURE 1 Grounding Strap Seated Correctly in the HDD Bracket



If the grounding strap is not seated correctly, or is protruding past the outer edge of the HDD bracket, the HDD bracket should be replaced. See the following figure for an example of a grounding strap that is not seated correctly.

FIGURE 2 Grounding Strap Not Seated Correctly in the HDD Bracket



Bracket Required When Shipping a Rackmounted Server

If you plan to ship the Oracle Server X5-2L in a Sun Rack II with a space of one or more rack units below the server, you must install the Shipping Bracket With Cable Trough to prevent damage to the server. The bracket is required for each server in the rack that meets this requirement. The installation instructions for the Shipping Bracket With Cable Trough are included with the bracket, and in the English and localized versions of your server Installation Guide.

The Shipping Bracket With Cable Trough is available as a separately orderable option. Contact your Oracle Service representative for more information.

Connecting AC Power Cables Before Installing Slide-Rails in Sun Rack II 1042

Right-angle AC power cables must be installed before slide-rails when installing the Oracle Server X5-2L into a Sun Rack II 1042 (1000-mm) system rack. The standard rail kit tool-less

slide-rails impede access to the 15kVA and 22kVA Power Distribution Unit (PDU) electrical sockets in the 1000-mm rack. If you use the standard AC power cables and then install the slide-rails into the rack, you will be unable to disconnect or remove the AC power cables.

Note - This procedure applies only to server installations within the Sun Rack II 1042 (1000-mm) system rack. You do not have to perform this procedure if you are installing the servers into the Sun Rack II 1242 (1200-mm) system rack.

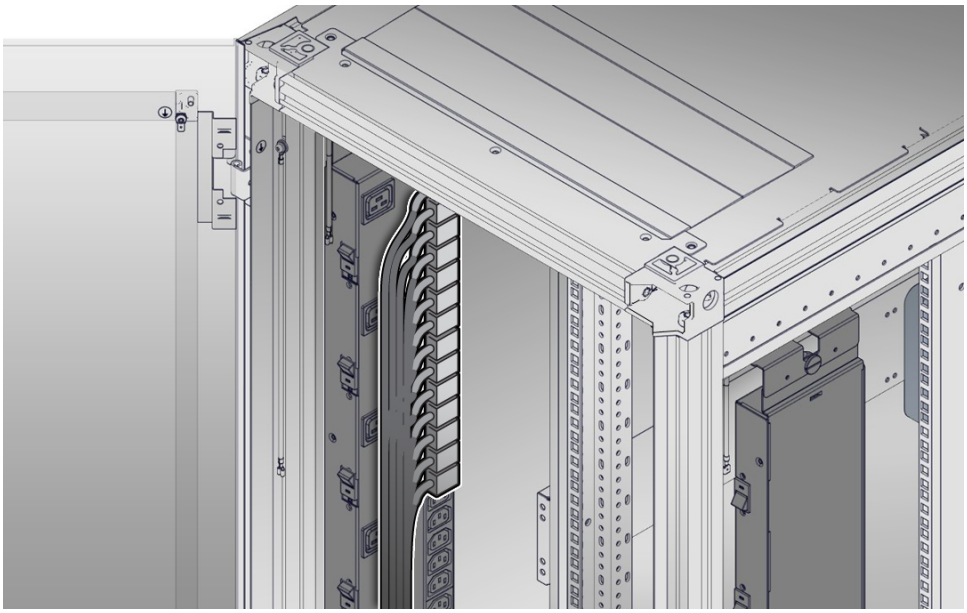
You must use the following 2-meter right-angle AC power cable for this procedure:

- 7079727 – Pwrcord, Jmpr, Bulk, SR2, 2m, C14RA, 10A, C13

Perform this procedure in conjunction with the instructions provided in "Installing the Server Into a Rack" in *Oracle Server X5-2L Installation Guide*.

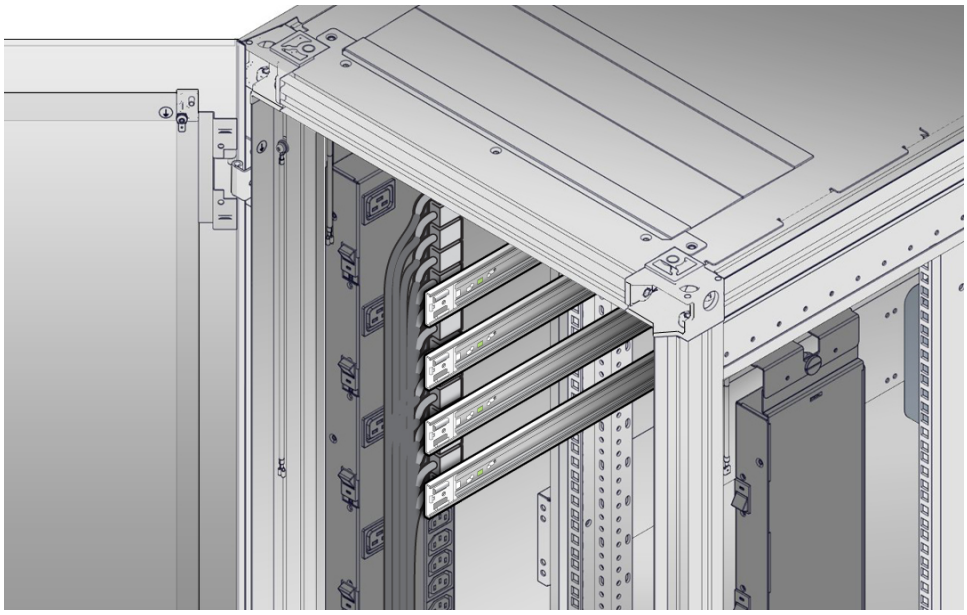
▼ Install AC Power Cables and Slide-Rails

1. **Prior to installing the slide-rails into the rack, install right-angle AC power cables into the left-side and right-side PDU electrical sockets for the servers you are going to rack mount.**



2. **Install the slide-rails into the rack.**

   Refer to "Attach Tool-less Slide-Rail Assemblies" in *Oracle Server X5-2L Installation Guide*.



3. **Continue to install servers into the rack.**

   Refer to "Install the Server Into the Slide-Rail Assemblies" in the *Oracle Server X5-2L Installation Guide* and "Install the First-Generation Cable Management Arm" in the *Sun Server X5-2 Installation Guide*.

Oracle Server X5-2L Product Accessibility

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

For more information about Oracle's commitment to accessibility, go to `http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc`.

Oracle Server X5-2L Hardware Accessibility

Oracle Server X5-2L 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 X5-2L Service Manual at `https://www.oracle.com/goto/x5-2l/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 38.

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 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 38.

BIOS information and its functions are typically documented in the Oracle Server X5-2L Service Manual or Installation Guide.

Documentation Accessibility

Documentation for Oracle hardware is provided in HTML and PDF formats. The HTML documents are accessible using standard operating system controls and assistive technology. PDF documents are also provided, 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 X5-2L products at `https://www.oracle.com/goto/x5-2l/docs`.

Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle recognizes the influence of ethnic and cultural values and is working to remove language from our products and documentation that might be considered insensitive. While doing so, we are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is an ongoing, long-term process.

Supported PCIe Cards

This section includes information about the PCIe cards that are supported on the Oracle Server X5-2L.

The following table lists the quantity and slot restrictions for PCIe cards supported on the Oracle Server X5-2L. The Maximum Quantity Supported column indicates the number of cards tested and supported by Oracle.

Note - PCIe slots 1, 2, and 3 are nonfunctional in single-processor systems. PCIe cards that are supported in slots 1 through 5 in dual-processor systems are only supported in slots 4 and 5 in single-processor systems.

TABLE 2 PCIe Cards Supported, Quantity Supported, and Slot Restrictions

PCIe Card	Maximum Quantity Supported	Slot Restrictions
Oracle Storage 12 Gb/s SAS PCIe HBA, external: 8 port 7110119 (orderable option) 7110118 (for factory installation)	2	Supported in slots 1, 2, 3, 4, and 5.
Oracle Storage 12 Gb/s SAS PCIe HBA, internal: 8 port 7110485 **Note -** This PCIe HBA card is supported only on servers that are running the Solaris 11.2 or 11.3 operating system.	1	Supported in slot 6 only.
Oracle Storage 12 Gb/s SAS PCIe RAID HBA, internal: 8 port and 1 GB memory 7110116	1	Supported in slot 6 only.

PCIe Card	Maximum Quantity Supported	Slot Restrictions
Oracle 10 Gb Ethernet Adapter with 2 QSFP+ connectors 7111185 (orderable option) 7111186 (for factory installation)	4 (4x 10 GbE mode)	Supported in slots 1, 2, 3, 4, and 5. **Note -** Any card installed in slots 1, 2, or 3 should have their option ROM disabled.
Sun Quad Port GbE PCIe 2.0 Low Profile Adapter, UTP 7100477 (orderable option)	4	Supported in slots 1, 2, 3, 4, and 5.
Sun Storage Dual 16 Gb Fibre Channel PCIe Universal HBA, QLogic **Note -** This HBA is not supported with the Windows Server 2016 operating system. 7101674 (orderable option) 7101673 (for factory installation)	3	Supported in slots 1, 2, 3, 4, and 5.
Sun Storage Dual 16 Gb Fibre Channel PCIe Universal HBA, Emulex **Note -** This HBA is not supported with the Windows Server 2016 operating system. 7101684 (orderable option) 7101683 (for factory installation)	3	Supported in slots 1, 2, 3, 4, and 5.
Sun Storage 16 Gb FC Long Wave Optics, QLogic 7101680 (orderable option)	3	Supported in slots 1, 2, 3, 4, and 5.
Sun Storage 10 Gb FCoE Short Range Optics, QLogic 7101678 (orderable option) 7101677 (for factory installation)	3	Supported in slots 1, 2, 3, 4, and 5.
Sun Storage 16 Gb FC Short Wave Optics, Emulex 7101686 (orderable option) 7101685 (for factory installation)	3	Supported in slots 1, 2, 3, 4, and 5.
Sun Storage 10 Gb FCoE Short Range Optics, Emulex 7101688 (orderable option)	3	Supported in slots 1, 2, 3, 4, and 5.

PCIe Card	Maximum Quantity Supported	Slot Restrictions
7101687 (for factory installation)		
Sun Dual Port QDR InfiniBand Host Channel Adapter for PCIExpress Gen 3 7104074 (orderable option) 7104073 (for factory integration)	2	Supported in slots 1, 2, 3, and 5.
Sun Dual Port 10 GbE PCIe 2.0 Low Profile Adapter, Base-T 7100488 (orderable option) 7100563 (for factory installation)	2	Supported in slots 1, 2, 3, 4, and 5.
Sun Dual 10GbE SFP+ PCIe 2.0 Low Profile Adapter (incorporates the Intel 82599 10 Gigabit Ethernet controller) 1109A-Z (orderable option) X1109A-Z (for factory installation)	3	Supported in slots 1, 2, 3, 4, and 5.
Oracle NVMe PCIe switch 7110357 (factory installation for eight disk cages) 7110632 (factory installation for twenty-four disk cages) **Note -** The Oracle NVMe PCIe switch card is supported only in server configurations that include NVMe storage drives.	1	Supported in slot 3.

Known Issues

For the latest information about known issues on the Oracle Server X5-2L, refer to the updated product notes, which are available at the following web site:

`https://www.oracle.com/goto/x5-2l/docs`

Known open issues are grouped by categories and presented in the following sections.

Note - The known issues list the issues by the Bug ID number which is the identification number assigned by the current Oracle BugDB bug tracking system.

Related Information

- “Server Update Information” on page 10
- “Important Operating Notes” on page 14
- “Resolved Issues” on page 66
- “Getting Firmware and Software Updates” on page 70

Hardware Known Issues

Issues resulting from system firmware SW 3.1.3 (Oracle ILOM 5.0.1 based) downgrade to prior versions

Bug ID 33116505, 32456638

Issue: Oracle Server X5-2, Oracle Server X5-2L, Oracle Server X6-2, and Oracle Server X6-2L may encounter multiple issues as a result of downgrading system firmware in UEFI mode from SW 3.1.3 (Oracle ILOM 5.0.1 based) and later to prior versions.

See these issues in bugs reported:

- 32456638 - POST hang after ipmiflash downgrade from 5.0.1.27 to 5.0.1.21 with delaybios
- 32463224 - X5 Downgrade ILOM from SW3.1.3 to SW2.4 with Preserving BIOS Config, PCIe Devices are Not Initialized
- 32457643 - POST hang at "Microcode loading" after ipmiflash downgrade from 5.0.1.93 to 5.0.0.93.c with delaybios

Affected hardware: Oracle Server X5-2, Oracle Server X5-2L, Oracle Server X6-2, Oracle Server X6-2L

Affected software: SW 3.1.3 (Oracle ILOM 5.0.1 based)

Workaround: When downgrading from SW 3.1.3 to an earlier version in UEFI mode, use *downgrade without preserving configuration* option to avoid the above-mentioned issues.

Oracle ILOM SNMP v3 traps are not delivered after SNMP engine ID change

Bug ID 23634048

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

Affected hardware: Oracle Server X5-2L

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

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

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

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

Processor fails BIOS built-in self-test

Bug ID 21865183

Issue: The Oracle ILOM fault manager has applied diagnosis to error reports indicating a processor has failed the BIOS built-in self-test (fault.cpu.intel.bist-failure). This will result

in the "MRC failure" fault to get diagnosed, but this is really a processor fault that BIOS is sending as an MRC warning. The fault causes the boot process to be aborted by platform services. The chassis wide and processor Service Required LEDs will be illuminated. BIOS will hang and the host operating system will not be allowed to proceed with boot.

Affected hardware: Oracle Server X5-2L and other Oracle x64 server platforms

Workaround: Authorized Oracle Service personnel should replace the faulty processor. If the problem persists, contact Oracle Support Services for further assistance.

During fan module replacement, the server unexpectedly powers down

Bug ID 21645694

Issue: If a motor on a server fan module needs to be replaced, requiring the whole fan module to be replaced, the fan module reports a fault value to Oracle Integrated Lights Out Manager (ILOM), thus causing Oracle ILOM to power down the server.

Affected software: Oracle ILOM 3.2.2 and later releases

Workaround: You must replace fan modules one at a time, and within a 20-second time interval, per fan module. If replacing a fan module takes longer than 20 seconds to perform, Oracle ILOM receives the fault condition, and automatically powers down the server.

Server might hang during reboot if two or more Oracle 10Gb Ethernet Adapter cards are installed in the server

Bug ID 20819849

Issue: If the server is in UEFI Boot Mode, and you have two or more Oracle 10Gb Ethernet Adapter cards installed in the server, the server might hang when you start to boot the server. The boot process starts, but hangs after the following message is displayed: `Boot Mode=UEFI`.

Affected hardware: Oracle 10Gb Ethernet Adapter cards

Workaround: Perform additional reboots to address the server hang.

Option ROM space might run out when server uses Legacy BIOS Mode and Oracle 10Gb Ethernet Adapter cards are installed

Bug ID 22083224

Issue: The Oracle Server X5-2L supports up to four Oracle 10Gb Adapter Cards. In Legacy BIOS Mode, one or two cards must be installed in slots 4 and/or slot 5, and any card installed in slots 1, 2, or 3 must have their option ROM disabled. As a result, some of the cards or ports will not be listed in BIOS as available for booting over the network. This issue does not occur when the Oracle Server X5-2L is running in UEFI Mode.

Affected hardware: Oracle 10Gb Ethernet Adapter Cards

Workaround: Do one of the following:

- If you have encountered this situation, you can obtain Option ROM space by disabling cards and ports that are listed as available for booting over the network, but that are not actually used for booting:

  1. Boot the server from the SP by issuing the **`reset /System`** or **`start /System`** command.
  2. During the system boot process, press F2, when prompted, to access the BIOS Setup Utility.
  3. Navigate to the IO tab, and press Enter.
  4. From the options that are displayed, select Add In Cards, and then select Slot Number.
  5. To disable the slot, select Disable.
  6. Press the Esc key to return to the main BIOS Setup Utility menu, and select Exit.
  7. To save your changes, select Save Changes and Exit.

     You will now have Option ROM space, and the Oracle 10Gb Ethernet Adapter card will now be listed as available for booting over the network.
- If you have not yet encountered this situation and would like to prevent it from occurring, you can disable 64-bit resource allocation:

  1. Boot the server from the SP by issuing the **`reset /System`** or **`start /System`** command.
  2. During the system boot process, press F2, when prompted, to access the BIOS Setup Utility.
  3. Navigate to the IO tab, and press Enter.
  4. From the options that are displayed, select PCI Subsystem Settings, and then select PCI 64 bit Resources.
  5. To disable the PCI 64-bit resource allocation, select Disabled.
  6. Press the Esc key to return to the main BIOS Setup Utility menu, and select Exit.

7. To save your changes, select Save Changes and Exit.

   The server will now maintain enough Option ROM space to list which Oracle 10Gb Ethernet Adapter cards and their ports are available for booting over the network.

When you launch a serial redirection session to the host using terminal emulation software, some keyboard keys produce unexpected results

Bug ID 19219462

Issue: When you use terminal emulation software to access the Oracle ILOM command-line interface, and then launch a serial redirection session to the host, some keyboard keys produce unexpected results. For example, the Backspace key might not erase the previous character.

Workaround: This is expected behavior. Terminal emulation software automatically remaps some keys when you initiate serial redirection. To delete characters, use the Ctrl+H key sequence.

After a hotplug insertion, the NVMe drive remains powered down

Bug ID 18552548

Issue: The Oracle Linux operating system hotplug driver might require user interaction to bring an NVMe drive online after it has been hotplug inserted. The drive might need to be brought online after the hotplug insert.

Affected software: Oracle Linux 6.5, 6.6, 7.0, and 7.1

Workaround:

Detailed instructions for removing and replacing NVMe drives are documented in "Removing and Replacing an NVMe Storage Drive Using Oracle Linux" in *Oracle Server X5-2L Service Manual*.

Virtual disk performance might be degraded during some operations

Bug ID 19587107

Issue: Performance of a virtual disk that uses parity for data reconstruction (RAID 5 and RAID 6) will be degraded during rebuild operations, for example, copying data to a hot spare. This performance loss is most notable on virtual disks with very high workloads.

Affected hardware: Oracle Storage 12 Gb/s SAS PCIe RAID HBA, Internal (models 7110116 and 7110117)

Workaround: There is no workaround. This is expected behavior of RAID volumes.

Special keys in Oracle ILOM Remote System Console Plus can become locked

Bug ID 18420613

Issue: When using the Oracle Integrated Lights Out Manager (ILOM) Remote System Console Plus application, if you need to use a two-key sequence combination that includes first pressing one of the special keys for the application (for example, by pressing the Alt+Print-Screen keys), that special key might not be released in the application window when the second key in the sequence is entered. This results in all subsequent keystrokes or mouse clicks sent by Remote System Console Plus to the remote host to be a combination of the special key and the desired keystroke or mouse click.

Affected software: Oracle ILOM 3.2.2 and later releases

Workaround: To unlock the locked special key, click the button for the locked key in the Remote System Console Plus special key bar.

LSI MegaRAID Manager incorrectly displays 4TB drives as 3TB drives when the system is booted in UEFI mode

Bug ID 20952576

Issue: LSI MegaRAID Manager incorrectly displays 4TB drives as 3TB drives when the system is booted in UEFI mode. This issue affects only systems configured with twelve 3.5-inch 4TB hard disk drives (HDDs).

Affected hardware: Oracle Server X5-2L configured with twelve 3.5-inch 4TB HDDs

Workaround: No workaround exists for this issue.

Oracle System Assistant Known Issues

FM Package Does Not Install When Installing Operating Systems Using Oracle System Assistant

Bug ID 26792735

Issue: FM package fm-2.4.2.0.0-1.el6.x86_64.rpm does not install when installing Oracle Linux and Oracle VM operating systems using Oracle System Assistant.

Affected software: Oracle Linux 6.x and 7.4, Oracle VM 3.4.x

Workaround: Perform the following procedure to manually complete the FM package installation.

Note - You can manually find the FM package in the Oracle System Assistant image for the installed operating system (OS). The path is different for each OS.

For example, for Oracle Linux 6.9, perform the following procedure:

1. Type the `lsscsi` command to list the Oracle System Assistant partition name and path.

```
root@x86bj046 ~]# lsscsi |grep -i SSM [0:0:0:0] disk ORACLE SSM
PMAP /dev/sdg
```

2. Mount the Oracle System Assistant partition.

```
#>mkdir /mnt/osa
mount /dev/sdg1 /mnt/osa/
```

3. Type the path to the FM package.

```
#>cd /mnt/osa/Linux/OL/Common/OL_6U5_6U6_6U7_6U8_6U9/Tools/Oracle-Hardware-
Management-Pack/oracle-hmp-2.4.2.0/packages
[root@x86bj046 packages]# ls fm-2.4.2.0.0-1.el6.x86_64.rpm
fm-2.4.2.0.0-1.el6.x86_64.rpm
```

4. Install the FM package.

```
[root@x86bj046 packages]# export LFMA_UPDATE=1
[root@x86bj046 packages]# rpm -ivh fm-2.4.2.0.0-1.el6.x86_64.rpm
Preparing...                ########################################### [100%]
This is OL: 6.9
Checking for mcelog setup:
Checking for standard commands:
Updating system configuration for lfma.
```

```
Making sure edac is disabled.
Disabling edac and blacklisting it
Blacklisting sb_edac
Making backup copy of /etc/modprobe.d/blacklist.conf -> /etc/modprobe.d/
blacklist.conf.lfma.
Blacklisting edac_core
Updating mcelog configuration.
Making backup copy of /etc/mcelog/mcelog.conf -> /etc/mcelog/mcelog.conf.lfma.
Uncommenting/Adding RAW mode
Changing memory-ce-threshold
Starting mcelog.
Stopping mcelog
Starting mcelog daemon
System configuration looks good.
Host-to-ILOM interconnect is enabled
   1:fm                    ########################################### [100%]
/sbin/chkconfig --add fmd.init
/sbin/chkconfig --add ksyseventd.init
[  OK  ] ksyseventd: [  OK  ]
[  OK  ] fmd: [  OK  ]
```

5. Confirm that the FM package is installed.

```
[root@x86bj046 packages]# rpm -qa|grep -i fm-2.4.2
fm-2.4.2.0.0-1.el6.x86_6
```

Browsing the platform documentation in Oracle System Assistant might cause the documentation viewer to crash with a fatal Java exception

Bug ID 19781109

Issue: When you use the Platform Documentation button in Oracle System Assistant to browse the server documentation, the documentation viewer might crash. After the crash, the host command-line shell appears in the remote console window and reports the following error:

```
<command>A fatal error has been detected by the Java Runtime Environment:
SIGSEGV (0xb) at pc=00007fd3b0000000</command>
```

Affected software: Oracle System Assistant 1.2.x

Workaround: Reboot the system to the Oracle System Assistant application. For instructions, refer to the *Oracle X5 Series Servers Administration Guide* at https://www.oracle.com/goto/x86admindiag/docs.

Unable to set hostname when using Oracle System Assistant to install Oracle VM 3.3.x or 3.4.1 from a redirected ISO image

Bug ID 20023265

Issue: If you attempt to install Oracle VM 3.3.x or 3.4.1 using Oracle System Assistant and ISO image redirection, the hostname configuration screen does not appear. This issue does not occur when you use Oracle System Assistant to install Oracle VM 3.3.x or 3.4.1 over the network, or when you use DHCP for IP address configuration.

Affected software:

- Oracle System Assistant 1.2.x
- Oracle VM 3.3.x and 3.4.1

Workaround: To install Oracle VM 3.3.x or 3.4.1 using Oracle System Assistant, use either a network installation or DHCP for IP configuration. If you use Oracle System Assistant and ISO image redirection to install Oracle VM 3.3.x or 3.4.1, you must manually configure the hostname after Oracle VM 3.3.x or 3.4.1 boots.

Oracle Solaris Operating System Known Issues

Oracle Solaris 11.2 or 11.3 with Desktop Package cannot be powered off using certain options in Oracle ILOM

Bug ID 15795941

Issue: For a server running Oracle Solaris 11.2 or 11.3 with the Desktop Package, the following Oracle Integrated Lights Out Manager (ILOM) power-off options do not power off the server:

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

Other power off options work normally.

Affected software: Oracle Solaris 11.2 and 11.3

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

- To use the Oracle ILOM CLI for power-off, first do the following at the server running Oracle Solaris:
  1. `In /usr/share/dbus-1/services/gnome-power-manager.service`, add **`--verbose`** to the following line: `Exec=/usr/bin/gnome-power-manager`

     The edited line should read:

     ```
     Exec=/usr/bin/gnome-power-manager --verbose
     ```
- To use the Oracle ILOM web interface for power-off, first do the following at the server running Oracle Solaris:
  1. Select System → Preferences → Startup Applications from the gnome-panel's menu list.
  2. Select Power Manager → Edit.
  3. Add **`--verbose`** to the following line: `gnome-power-manager`.

     The edited line should read:

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

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

A media validity check is not performed when Oracle Solaris 11.2 or 11.3 is installed with Oracle System Assistant

Bug ID 19662699

Issue: Oracle System Assistant normally checks the validity of user attached media and determines if the operating system (OS) is valid by matching it to the list of official OS releases. If the media is valid, the application continues to the next step of the OS installation. If the media does not match the list of official OS releases, an error is displayed.

Oracle System Assistant currently approves only major and minor OS releases for installation and does not recognize SRU releases. The Oracle Server X5-2L supports both Oracle Solaris 11.2 with SRU and 11.3 with SRU. Media validity checking is disabled for Oracle Solaris 11.2 with SRU and 11.3 with SRU.

Note - A media validity check is still performed for all other supported operating systems.

Affected software: Oracle Solaris 11.2 with SRU and 11.3 with SRU

Workaround: When using Oracle System Assistant to install the Oracle Solaris OS, use only operating systems listed in “Supported Operating Systems” on page 11.

Oracle Solaris 11.2 occasionally reports polling errors against onboard Network Interface Cards (NICs)

Bug ID 20194728

Issue: The ixgbe driver occasionally writes polling error messages to `/var/adm/messages`. For example:

```
Dec 23 08:30:49 solaris ; stack = [ mac`mac_fm_error_node_create+116 () | mac`ma
c_fm_error_log+d6 () | ixgbe`ixgbe_fm_shared_code_error+114 () | ixgbe`ixgbe_set
up_phy_link_generic+215 () | ixgbe`ixgbe_setup_phy_link_speed_generic+64 () | ix
gbe`ixgbe_setup_mac_link_X540+21 () | ixgbe`ixgbe_setup_link+2a () | ixgbe`ixgbe
_driver_setup_link+b9 () | ixgbe`ixgbe_m_setprop+4aa () | mac`mac_set_prop+20c (
) | dld`drv_ioc_prop_common+5c1 () | dld`drv_ioc_setprop+2d () | dld`drv_ioctl+1
8f () | genunix`cdev_ioctl+6e () | specfs`spec_ioctl+5d () | genunix`fop_ioctl+d
6 () | genunix`ioctl+188 () ] ; ; driver_error_message = PHY autonegotiation tim
e out
```

Affected software: Oracle Solaris 11.2 SRU5

Workaround: These messages are infrequent and benign, and can be safely ignored. To eliminate these error messages, edit the file `/kernel/drv/ixgbe.conf` and add the following lines. Then reboot the system.

```
act-correctable-polling-user_ops = 1;
act-config-polling-user_ops = 1;
```

The grub2 boot menu indicates the incorrect Oracle Solaris 11.2 or 11.3 preinstalled OS image

None

Issue: The grub2 boot menu indicates the incorrect menu for Oracle Solaris 11.2 or 11.3 preinstalled OS image with SRU patch.

Affected software: Oracle Solaris 11.2 with SRU and 11.3 with SRU patch (preinstalled image)

Workaround: Manually modify the boot entry:

```
# bootadm change-entry -i 0 title="Oracle Solaris 11.2.6.4.0"
```

Linux Operating Systems Known Issues

Oracle Linux 6.7 Randomly Boots with Other Pre-Installed Oracle Linux Volumes

Bug ID 23699011

Issue: Oracle Linux L6.7 boots with the first enumerated volumes with the matched Logic Volume ID. If several Linux volumes are installed on the same system, they share the same LVID (lv_root_<HOST-Domain-Name>). The HOST-Domain-Name is automatically generated with the DHCP IP address, by default.

Affected software: Oracle Linux 6.7

Workaround: For best practice, do not install multiple Linux volumes with the same HOST-Domain-Name on the same server.

Hotplug of an NVMe drive in a system running the Oracle Linux operating system requires a kernel argument

Bug ID 18706294

Issue: With the default Oracle Linux kernel settings, a hotplug insert of an NVMe storage drive will result in the PCIe configuration settings for the device to be incorrect. The values for MPS (MaxPayloadSiz) and MRR (MaxReadRequest) of the hotplugged NVMe storage drive will not be the same as the values for the PCIe switch or root port that the NVMe is plugged into. Any attempt to use the drive with those mismatched settings will result in a FATAL PCIe ERROR, system reset, and possible data corruption.

Affected software: Oracle Linux 6.5, 6.6, 7.0, 7.1, and 7.2

Workaround: A kernel argument must be passed at boot time that sets the MPS and MRR values for hotplugged NVMe storage drives to values that are supported by (identical to) the upstream PCIe root port and switch that it is connected to. Users should configure their boot loader with the following argument before attempting any hotplug actions:

```
pci=pcie_bus_perf
```

Oracle Linux NVMe driver displays an error message during PCIe hotplug remove or system shutdown

Bug ID 19195500

Issue: When performing an NVMe PCIe hotplug removal procedure or system shutdown on a system running Oracle Linux, the system logs display the following warning message:

```
"Device shutdown incomplete; abort shutdown"
```

Affected software: Oracle Linux 6.5, 6.6, 7.0, 7.1, and 7.2

Workaround: This warning message is benign and can be safely ignored.

If using NVMe hardware, Oracle Linux with UEK Release 3 users are required to run Update 3 or a subsequent version of the kernel, as earlier versions might cause problems

Bug ID 18678666

Issue: If using NVMe hardware, Oracle Linux with Unbreakable Enterprise Kernel (UEK) Release 3 users are required to run Update 3 or a subsequent version of the kernel, as earlier versions might cause problems. Many improvements and fixes have been added to Update 3 of UEK Release 3 that are necessary for NVMe hardware support.

Affected software: Oracle Linux 6.5, 7.0, and 7.1 with the Oracle Unbreakable Enterprise Kernel Release 3

Workaround: If your server is configured with NVMe hardware and you use Oracle Linux 6.5, 7.0, or 7.1 with UEK 3, the minimum required version of the kernel is UEK R3u3. For more information, refer to "Post Installation Tasks for Oracle Linux 6.5, 6.6, or 7 OS" in *Oracle Server X5-2L Installation Guide for Linux Operating Systems*.

The Red Hat-compatible kernel version is old and contains very early PCIe AER code

Bug ID 18957991

Issue: When using Red Hat-compatible kernel version 2.6.32-431 with Integrated Device Technology (IDT) PCIe switches to hotplug remove NVMe storage drives, the Advanced Error Reporting (AER) driver will print error messages that are similar to the following:

```
pcieport 0000:00:01.0: AER: Corrected error received: id=0420
pcieport 0000:04:04.0: PCIe Bus Error: severity=Corrected, type=Physical
Layer, id=0420(Receiver ID)
pcieport 0000:04:04.0: device [111d:80b5] error
status/mask=00000001/0000e000
pcieport 0000:04:04.0: [ 0] Receiver Error
```

Affected software: Oracle Linux 6.5, 6.6, 7.1, and 7.2

Workaround: These messages are not indicative of actual problems and can be safely ignored.

Installation of Oracle Linux in UEFI mode to a Virtual Disk created in Legacy BIOS mode will not boot

Bug ID 20204841

Issue: Installation of Oracle Linux 6.5, 6.6, 7.1, or 7.2 in UEFI mode to an R50 Virtual Disk (VD) created and/or used in Legacy BIOS mode will not boot.

Affected software: Oracle Linux 6.5, 6.6, 7.1, and 7.2

Workaround: Perform a "fast init" from the BIOS Setup Utility advanced MegaRAID HII menu to the virtual drive to ensure any residual Legacy mode meta data is cleared.

An error is reported in the system log when installing a Linux OS on the server

Bug ID 20614500

Issue: An error is reported in the system log when installing a Linux operating system (OS) on the server. The following error is reported in the system log:

```
"mei_me 0000:00:16.0: initialization failed."
```

Affected software:

- Oracle Linux 6.5, 6.6, 7.0, 7.1, and 7.2
- Red Hat Enterprise Linux (RHEL) 6.5, 6.6, 7.0, 7.1, and 7.2
- SUSE Linux Enterprise Server (SLES) 11 SP3, and 12

Workaround: This error message is not indicative of an actual problem and can be safely ignored.

RDMA service fails to start on a system running Oracle Linux 7.1 UEK3 or 7.2, or RHEL 7.1 or 7.2

Bug ID 20912503

Issue: Remote Direct Memory Access (RDMA) service fails to start on a system running Oracle Linux 7.1 Unbreakable Enterprise Kernel, Release 3 (UEK3) Quarterly Update 5 (QU5) or 7.2, or Red Hat Enterprise Linux (RHEL) 7.1 or 7.2 with the Sun Storage 16 Gb Fibre Channel PCIe Universal Host Bus Adapter, QLogic card installed. The following error message is displayed:

```
[root@x86bj073 ~]# systemctl start rdma.service
Job for rdma.service failed. See 'systemctl status rdma.service' and
'journalctl -xn' for details.
[root@x86bj073 ~]# systemctl status rdma.service
rdma.service - Initialize the iWARP/InfiniBand/RDMA stack in the kernel
   Loaded: loaded (/usr/lib/systemd/system/rdma.service; disabled)
   Active: failed (Result: exit-code) since Mon 2015-04-20 14:31:15 CST; 1h
44min ago
     Docs: file:/etc/rdma/rdma.conf
  Process: 1076 ExecStart=/usr/libexec/rdma-init-kernel (code=exited,
status=1/FAILURE)
Main PID: 1076 (code=exited, status=1/FAILURE)
.
Apr 20 14:31:15 x86bj073.cn.oracle.com rdma-init-kernel[1076]: modprobe:
FATAL: Module ocrdma not found.
Apr 20 14:31:15 x86bj073.cn.oracle.com rdma-init-kernel[1076]: Failed to load
.
module ocrdma
Apr 20 14:31:15 x86bj073.cn.oracle.com systemd[1]: rdma.service: main process
.
exited, code=exited, status=1/FAILURE
Apr 20 14:31:15 x86bj073.cn.oracle.com systemd[1]: Failed to start Initialize
.
the iWARP/InfiniBand/RDMA stack in the kernel.
Apr 20 14:31:15 x86bj073.cn.oracle.com systemd[1]: Unit rdma.service entered
failed state.
```

Affected hardware and software:

- Oracle Linux 7.1 UEK3 QU5, or later, and 7.2
- Red Hat Enterprise Linux (RHEL) 7.1 and 7.2
- Sun Storage 16 Gb Fibre Channel PCIe Universal Host Bus Adapter, QLogic

Workaround: No workaround exists for this issue.

Oracle Linux 7.1 UEK kernel cannot boot in UEFI mode

Bug ID 20841099

Issue: Oracle Linux 7.1 with the default Unbreakable Enterprise Kernel Release 3 (UEK3) (3.8.13-55.1.6.el7uek.x86_64) cannot boot in UEFI mode in a system configured with the following adapter cards:

- Sun Storage Dual 16 Gb Fibre Channel PCIe Universal HBA, Emulex
- Sun Storage Dual 16 Gb Fibre Channel PCIe Universal HBA, QLogic

Affected software: Oracle Linux 7.1

Workaround: Update to the latest UEK3 (3.8.13-68.1.3.el7uek.x86_64 or above).

Oracle Linux 6.6 or 7.1 displays an error message and might hang at system reboot

Bug ID 21073340

Issue: Oracle Linux 6.6 or 7.1 might display the following message and hang during a system reboot.

```
INFO: task modprobe:2320 blocked for more than 120 seconds
```

Affected software: Oracle Linux 6.6 and 7.1

Workaround: Update to Unbreakable Enterprise Kernel (UEK) (3.8.13-68.2.2.el6uek.x86_64) or above.

Server hangs and cannot boot with Oracle Linux 7.1 and Oracle 10Gb Ethernet Adapter cards installed

Bug ID 21220126

Issue: After installing Oracle Linux 7.1 using an ISO image mounted in UEFI Boot mode, the server hangs, and can not boot with an Oracle 10Gb Ethernet Adapter card installed.

Affected software: Oracle Linux 7.1

Workaround: Update to Unbreakable Enterprise Kernel (UEK) (3.10.0-229.el7.x86_64) or above.

PXE fails to start after installation of Oracle Linux 7.2 or RHEL 7.2

Bug ID 22545770

Issue: The installation-stage version (3.10.0-327) of the Red Hat Enterprise Linux (RHEL) kernel and Oracle Unbreakable Enterprise Kernel (UEK) sets the onboard NIC to low power mode when system shuts down after installation, then disables the Preboot eXecution Environment (PXE) on reboot.

Affected software:

- Oracle Linux 7.2
- Red Hat Enterprise Linux 7.2
- Oracle Unbreakable Enterprise Kernel (UEK)
- Red Hat Compatible Kernel

Workaround:

- Red Hat Enterprise Linux 7.2: Perform a cold reboot of the server.
- Oracle Linux 7.2 with UEK: Boot directly into the UEK kernel.
- Oracle Linux 7.2 with Red Hat Compatible Kernel: Boot directly into the UEK kernel. A cold reboot of the server can also fix the issue.

During warm reboot of Oracle Linux with UEK4, a Call Trace warning message might appear

Bug ID 22842138

Issue: When performing a warm reboot of Oracle Linux 6.7, 7.1, or 7.2 and the Unbreakable Enterprise Kernel 4 (UEK4), a Call Trace warning message might appear that indicates there is a busy endpoint. If there is still data in transfer queue when the NetworkManager service resets the internal usbnet device, the system prints the warning message once.

Affected software: Oracle Linux 6.7, 7.1, and 7.2 with UEK4 kernel

Workaround: This is a benign warning message that can be safely ignored.

Network port name and onboard NIC port name are not accurate after system reboots

Bug ID 22849478

Issue: When installing Oracle Linux 7.x or Red Hat Enterprise Linux 7.x using Oracle System Assistant, the network port name will be named “ethX”, following the Legacy naming policy. If the server is configured with one to four Sun Quad Port GbE PCIe 2.0 Low Profile Adapter UTP cards (7100477), the port name for this card and the port name for the onboard NIC might become inaccurate after system reboots. For example, if the onboard NIC0 is named “eth0” and the Low Profile Adapter UTP card port0 is named “eth8” at first boot, after a few reboots, the onboard NIC0 might become named “eth8” and the Low Profile Adapter UTP card port0 might become named “eth0”. The name might change again after more reboots. A similar issue can occur on the other onboard NIC and Low Profile Adapter UTP card port.

Affected hardware and software:

- Sun Quad Port GbE PCIe 2.0 Low Profile Adapter UTP
- Oracle Linux 7.x
- Red Hat Enterprise Linux 7.x

Workaround: Change the kernel parameter from `net.ifnames=0` to `net.ifnames=1` to keep the consistent network device naming policy enabled. Do this in the kernel parameter according to the Legacy BIOS mode or UEFI mode you are using:

- For Legacy BIOS mode, change the kernel parameter in `/boot/grub2/grub.cfg`
- For UEFI mode, change the kernel parameter in `/boot/efi/EFI/redhat/grub.cfg`

The network naming will follow consistent network device naming policy and the issue will be resolved.

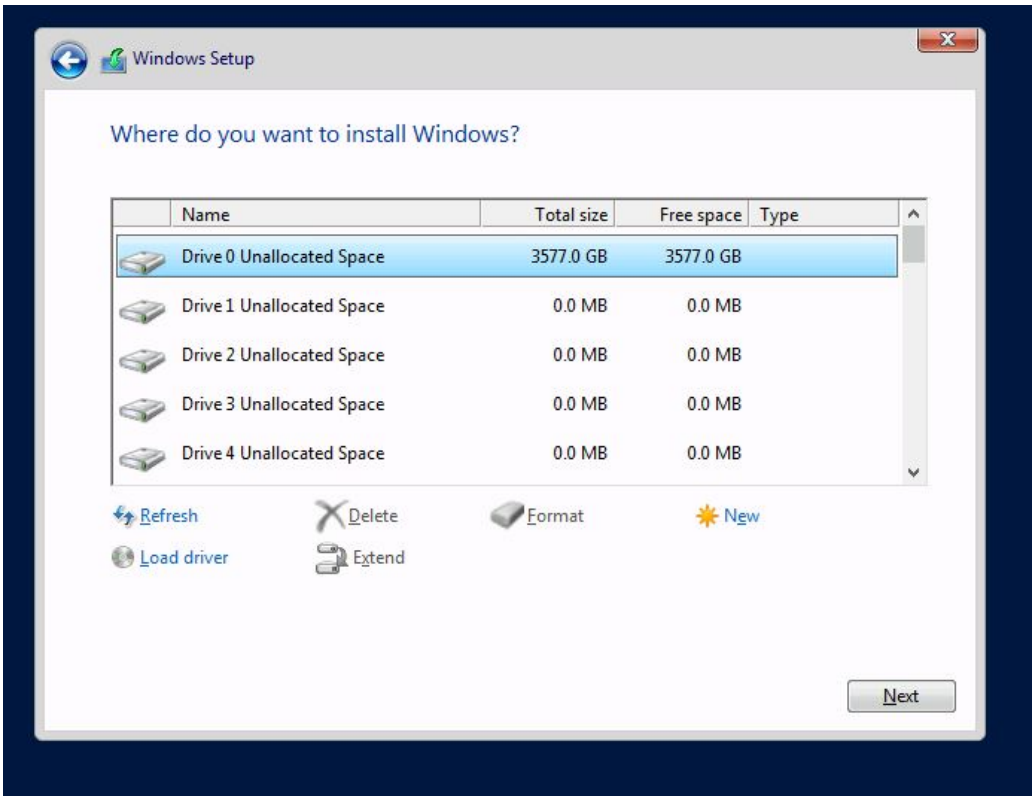
Windows Operating System Known Issues

NVMe Phantom Drives Appear When Using Windows Server 2016 Inbox Drivers

Bug ID: 32158109

Issue: During Windows Server 2016 installation on a system with an NVMe storage drive, Windows Setup lists the NVMe storage device and 127 phantom listings of the same NVMe

storage device. These phantom storage devices each show a total size and free space of 0.0 MB. For example:



After you install Windows Server 2016, the 127 phantom drives also appear in Windows Device Manager. This issue is due to an out-of-date inbox Windows Server 2016 NVMe driver that does not support the multiple namespace feature of some NVMe storage devices.

Affected Software: Microsoft Windows Server 2016, version 1607 (OS build 14393.3986).

Affected Hardware: Any system with NVMe storage drives that supports multiple namespaces.

Workaround: After Windows Server 2016 is installed, perform a Microsoft Windows Update. A newer version of the Windows Server 2016 NVMe driver installs and corrects the issue. After the update, the phantom drives are no longer listed for your NVMe storage device.

Installing the Windows operating system with Oracle System Assistant causes delays when attempting to view network properties

Bug ID 21080170

Issue: Installing the Windows Server 2012 or 2012 R2 operating system using Oracle System Assistant can cause delays when attempting to view network properties. For example, this issue occurs when performing the following steps:

1. Open Network and Sharing Center to check the Network cards driver.
2. Click Change adapter settings. It takes several minutes to show the Network Connections window.
3. Click any network connection to show the network properties. It takes a long time to display the Network Properties windows.

Affected software: Windows Server 2012 and 2012 R2

Workaround: Reboot the system service processor (SP).

Virtual Machine Known Issues

Oracle VM does not support UEFI boot mode

Bug ID 23588838

Issue: When you install Oracle VM 3.4.1 through an ISO image with Oracle System Assistant in UEFI boot mode, the following Oracle System Assistant warning message appears.

```
The server is currently running in UEFI mode. Oracle VM Server 3.4.1 is not
UEFI bootable. The server has to be rebooted in Legacy BIOS mode. Would you
like to reboot in Legacy BIOS mode now?
```

Affected software: Oracle VM 3.4.1

Workaround: There is no workaround. Platform software release 1.6 does not support the Oracle System Assistant installation for Oracle VM 3.4.1 in UEFI boot mode.

Oracle VM does not install Oracle Hardware Management Pack

Bug ID 23629299

Issue: When you install Oracle VM 3.4.1 on an Oracle Server X5-2L through an ISO image with Oracle System Assistant in Legacy Boot Mode, the Oracle Hardware Management Pack (HMP) is not installed, even if you select to install it in Oracle System Assistant. The /var/log/osa.log displays the error, `mstflint failed dependencies`, as in the following example:

```
warning: mstflint-1.4-9.mlnx1.5.5r2.el6.x86_64.rpm: Header V3 RSA/SHA256
Signature, key ID ec551f03: NOKEY
error: Failed dependencies:
  mstflint = 4.0.0-1.35.gac9a120.0.1.el6 is needed by (installed)
oracle-ofed-release-1.0.0-7.el6.x86_64
```

Affected software: Oracle VM 3.4.1

Workaround: Download `Oracle_Server_X5-2L-1.6.0.85645-OS_PACK_ORACLEVM-3U4P1.zip` and install the InstallPack manually.

VMware ESXi 5.5 does not support MMIO regions above 4 GB

Bug ID 16480679

Issue: The server defaults in BIOS to 64-bit MMIO (Memory Mapped I/O). This allows additional PCIe memory address space to be mapped above the standard 32-bit 4 GB of space for PCIe cards that include option ROMs. However, VMware ESXi is incompatible with MMIO space above the standard 4 GB. This issue can cause some PCIe cards to function improperly with ESXi.

Affected software: VMware ESXi 5.5

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

Oracle VM does not support VT-d and SR-IOV

Bug ID 21077731

Issue: Oracle VM 3.3.x and 3.4.1 do not support the Intel Virtualization Technology for directed I/O (VT-d) and Single Root I/O Virtualization (SR-IOV) BIOS options. These options are enabled by default in the system BIOS settings.

Affected software: Oracle VM 3.3.x and 3.4.1

Workaround: Disable VT-d and SR-IOV before installing Oracle VM 3.3.x or 3.4.1.

From the BIOS Setup Utility main menu:

1. Navigate to IO → IO Virtualization.
2. Disable VT-d and SR-IOV.

Documentation Known Issues

This section describes known documentation issues. The Oracle Server X5-2L documents are published on the Oracle Documentation web site at https://www.oracle.com/goto/x5-2l/docs.

Update to the *Oracle Server X5-2L Getting Started Guide*

In the Oracle Server X5-2L *Getting Started Guide* (E48326-01/7080352) that is included in the server ship kit and published on the Oracle Documentation web site, the document states that an RJ-45 crossover adapter is supplied with the servers. This is incorrect. An RJ-45 adapter is not included in the server ship kit.

Update to the *Oracle Server X5-2L Service Manual*

Earlier versions of the *Oracle Server X5-2L Service Manual* (E48333) that were published on the Oracle Documentation web site and included on the Oracle System Assistant USB flash drive, which is embedded in the server, contain an incorrect illustration for removing the system battery in procedure "Remove the Battery." The illustration showed the negative side of the battery facing the server chassis wall. The illustration should have shown the positive (+) side of the battery facing the server chassis wall.

Update to the *Oracle Server X5-2L Installation Guide for Oracle Solaris Operating System*

The *Oracle Server X5-2L Installation Guide for Oracle Solaris Operating System* (E48328-03), that is published on the Oracle Documentation web site, incorrectly states that NVMe drives should not be used as installation targets in the "Installation Target Options" section of the guide. The correct information for the first paragraph of this section is the following:

You can install the operating system on any of the storage drives installed in the server. Hard disk drives (HDDs), solid state drives (SSDs), NVMe Express (NVMe) storage drives, and RAID volumes are valid installation targets for Oracle Solaris OS.

The **Note** about NVMe drives is incorrect and should be disregarded.

Update to the *Oracle Server X5-2L Installation Guide for Linux Operating Systems*

The *Oracle Server X5-2L Installation Guide for Linux Operating Systems* (E48330-05) that is published on the Oracle Documentation web site and included on the Oracle System Assistant USB flash drive, which is embedded in the server, does not include Oracle Linux 7.1 and Red Hat Enterprise Linux 7.1 as supported operating systems for platform software release 1.2. For supported operating systems, refer to "Supported Operating Systems" on page 11.

Translated Documents Use Abbreviated Titles

In the translated versions of the PDF documents, the document titles used in cross-references are abbreviated. The abbreviated titles correspond to the complete document titles listed in the table that follows.

TABLE 3 Complete Document Titles

Abbreviated Document Title	Complete Document Title
Installation	*Oracle Server X5-2L Installation Guide*
Oracle Solaris Installation	*Oracle Server X5-2L Installation Guide for Oracle Solaris Operating System*
Oracle VM Installation	*Oracle Server X5-2L Installation Guide for Oracle VM*
Linux Installation	*Oracle Server X5-2L Installation Guide for Linux Operating Systems*
Windows Installation	*Oracle Server X5-2L Installation Guide for Windows Operating Systems*
VMware ESXi Installation	*Oracle Server X5-2L Installation Guide for VMware ESXi*
Service	*Oracle Server X5-2L Service Manual*

Resolved Issues

For the latest information about resolved issues on the Oracle Server X5-2L, refer to the updated product notes, which are available at the following web site:

`https://www.oracle.com/goto/x5-2l/docs`

This section lists and describes issues that have been resolved.

Note - The resolved issues lists the issues by the Bug ID number, which is the identification number assigned by the current Oracle BugDB bug tracking system.

Related Information

- "Important Operating Notes" on page 14
- "Known Issues" on page 43
- "Getting Firmware and Software Updates" on page 70

Resolved Issues

Oracle System Assistant does not provide complete support for Oracle VM 3.3.1 installation

Bug ID 19870207

Bug ID 19870253

Issue: If you use Oracle System Assistant to install Oracle VM 3.3.1, the network and boot loader configuration screens do not appear during the installation process. The boot loader default values are applied to the installation.

Resolved in: Platform software release 1.1

Oracle System Assistant does not recognize an uppercase "HTTP" or "FTP" as part of a URL

Bug ID 19872922

Issue: Oracle System Assistant does not recognize an uppercase "HTTP" or "FTP" as part of a URL in the OS Installation screen.

Resolved in: Platform software release 1.1

NVMe modules are not listed as a FRU in fmtopo; NVMe indicts the PCIe switch card

Bug ID 19217448

Issue: When a fault occurs on an NVMe SFF (small form factor) drive in the server, Oracle Solaris Fault Management Architecture (FMA) indicts the PCIe switch card that the drive is connected to, and the PCIe slot in which the switch card resides. The failing drive is not faulted. However, the Oracle Solaris ereport provides the correct path to the error source.

Resolved in: Platform software release 1.1

When Linux operating systems are installed with Oracle System Assistant, some FMA services are not started

Bug ID 19138568

Issue: When Oracle Linux 6.5 and Red Hat Enterprise Linux (RHEL) 6.5 operating systems are installed using Oracle System Assistant, Fault Management Architecture (FMA) services `ksyseventd` and `fmd` are not started. This causes an error about `fmd` not being registered when running the `fmadm` command.

Resolved in: Platform software release 1.1

Benign fault for USB endpoint occurs at Oracle Solaris boot

Bug ID 16268647

Issue: When booting Oracle Solaris operating system on the Oracle Server X5-2L, the console might display that `fault.io.usb.espe` has occurred. The server fault LED indicator also will be lit. However, the system will boot and function correctly.

Here is an example of console messages for this issue, which are also logged in `/var/adm/messages`.

```
Sep 10 11:36:43 x5-2l-test fmd: [ID 377184 daemon.error] SUNW-MSG-ID: USB-8000-4U,
TYPE: Fault, VER: 1, SEVERITY: Major
Sep 10 11:36:43 x5-2l-test EVENT-TIME: Wed Sep 10 11:36:43 EDT 2014
Sep 10 11:36:43 x5-2l-test PLATFORM: ORACLE-SERVER-X5-2L, CSN: 1418NM7019, HOSTNAME: x5-
2l-test
Sep 10 11:36:43 x5-2l-test SOURCE: eft, REV: 1.16
Sep 10 11:36:43 x5-2l-test EVENT-ID: 64910990-98ff-427a-a495-da47f4c6afce
```

```
Sep 10 11:36:43 x5-2l-test DESC: An end point stall was detected in the USB device and
 the corresponding
driver may not be able to recover from the errors automatically.
Sep 10 11:36:43 x5-2l-test AUTO-RESPONSE: Device may have been disabled or may not be
 fully functional.
Sep 10 11:36:43 x5-2l-test IMPACT: Loss of services provided by the device instances
 associated with this
fault.
```

Here is the corresponding log for `# fmadm faulty`.

```
---------------------------------------------------------------------------
TIME EVENT-ID MSG-ID SEVERITY
---------------------------------------------------------------------------
Sep 10 11:36:43 64910990-98ff-427a-a495-da47f4c6afce USB-8000-4U Major
Problem Status: solved
Diag Engine: eft / 1.16
System
Manufacturer: Oracle-Corporation
Name: ORACLE-SERVER-X5-2L
Part_Number: X5-2L-P1.0-20
Serial_Number: 1418NM7019
Host_ID: 008928db
----------------------------------------
Suspect 1 of 1:
Fault class: fault.io.usb.eps
Certainty: 100%
Affects: dev:////pci@0,0/pci108e,4853@1d/hub@1/communications@8
Status: faulted but still in service
FRU Name: "hc://:chassis-mfg=Oracle-Corporation:chassis-name=ORACLE-SERVER-
X5-2L:chassis-part=
unknown:chassis-serial=1418NM7019:fru-part=a4a2-0430:parent-serial=489089M+14164S004J/
chassis=0
/motherboard=0/hostbridge=0/usb-bus=1/usbhub=1/usbdev=8"
Manufacturer: unknown
Name: unknown
Part_Number: a4a2-0430
Revision: unknown
Serial_Number: unknown
Chassis Manufacturer: Oracle-Corporation
Name: ORACLE-SERVER-X5-2L
Part_Number: unknown
Serial_Number: 1418NM7019
Status: faulty
Description : An end point stall was detected in the USB device and the corresponding
 driver
may not be able to recover from the errors automatically.
Response: Device may have been disabled or may not be fully functional.
Impact: Loss of services provided by the device instances associated with this fault.
```

```
Action: Use 'fmadm faulty' to provide a more detailed view of this event. Please refer
 to the
associated reference document at http://support.oracle.com/msg/USB-8000-4U for the
 latest service
procedures and policies regarding this diagnosis.
```

Resolved in: Oracle Solaris 11.2 SRU4.4 and 11.3

Oracle Solaris installation fails during disk discovery on a system configured with NVMe storage drives

Bug ID 20104442

Issue: When performing an Oracle Solaris 11.2 installation on an Oracle Server X5-2L system with NVMe storage drives, the installation fails during disk discovery.

Resolved in: Oracle Solaris 11.3

Oracle Solaris 11.2 or 11.3 preinstalled OS image does not include the NVMe administration utilities package

None

Issue: The Oracle Solaris 11.2 or 11.3 preinstalled operating system (OS) image does not include the NVMe administration utilities package.

Resolved in: Oracle Solaris 11.2 SRU5.5 and 11.3 SRU2.4

Getting Firmware and Software Updates

This section explains the options for accessing server firmware and software updates using Oracle System Assistant or My Oracle Support (MOS).

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

Description	Links
Learn about server firmware and software updates.	“Firmware and Software Updates” on page 71

Description	Links
Learn about options for accessing firmware and software.	“Options for Accessing Firmware and Software Updates” on page 71
Review available firmware and software releases.	“Software Releases” on page 72
Learn how to get firmware and software updates using Oracle System Assistant or My Oracle Support.	“Getting Updates From Oracle System Assistant or My Oracle Support” on page 73
Learn how to Install firmware and software updates using other methods.	“Installing Updates Using Other Methods” on page 74
Learn how to get support from Oracle.	“Oracle Support” on page 75

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.

The server product notes list the current server software release and firmware version that are available. To determine which Oracle ILOM firmware version is installed on your server, you can use either the Oracle ILOM web interface or the command-line interface (CLI).

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

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, and bugs that are fixed with the current release.

Options for Accessing Firmware and Software Updates

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

- **Oracle System Assistant** – Oracle System Assistant is a factory-installed option for some Oracle x86 servers that enables you to easily download and install the latest software releases.

  For information about using Oracle System Assistant, refer to the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.
- **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 72.
- **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 74.

Software Releases

Software releases on My Oracle Support are grouped by product family (such as Oracle Server), then the product (the specific server or blade), and finally the software release version. A software release contains all the updated software and firmware for your server or blade 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 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 the bugs that have been 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. Alternatively, you can download the same firmware and software to your server using Oracle System Assistant.

TABLE 4 Software Release Packages

Package Name	Description	When to Download This Package
X5-2L SW *release* – Firmware Pack	Contains all system firmware updates, such as Oracle ILOM, BIOS, and option card firmware.	You need the latest firmware.
X5-2L SW *release* – 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	You need to update OS-specific tools, drivers, or utilities.

Package Name	Description	When to Download This Package
	software, and any other optional software that Oracle recommends. For the Windows OS, the OS Pack also includes Intel Network Teaming and Install Pack.	
X5-2L SW *release* – All Packs	Includes the Firmware Pack, and all OS Packs. 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.
X5-2L SW *release* – Diagnostics	Includes Oracle VTS diagnostics image.	You need the Oracle VTS diagnostics image.
X5-2L SW *release* – Oracle System Assistant Updater	Includes Oracle System Assistant recovery/update ISO image.	You need to manually recover or update Oracle System Assistant.

Getting Updates From Oracle System Assistant or My Oracle Support

You can use Oracle System Assistant to easily download and then use the latest software release. For further information and download instructions, refer to the *Oracle X5 Series Servers Administration Guide* at `https://www.oracle.com/goto/x86admindiag/docs`.

You can also 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 73.

▼ 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 X5-2L) 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 72 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.

Installing Updates Using Other Methods

In addition to using Oracle System Assistant and My Oracle Support, 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

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